

The Inquiry into Hyponatraemia-related Deaths

Report

January 2018

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INTRODUCTION

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Preamble

- 1.1 In June 2001 nine year old Raychel Ferguson was admitted to the Altnagelvin Area Hospital in Derry. She underwent routine surgery but did not recover as expected. She vomited repeatedly and her condition deteriorated. Her parents voiced concern. Within 48 hours of admission Raychel had suffered brain death. Mr and Mrs Ferguson were not satisfied with the explanation they were given for her death.
- 1.2 In February 2003 the Coroner at Raychel's inquest found that her death had been caused by hyponatraemia brought about by an intravenous ('IV') fluid therapy which had given her inadequate sodium replacement in the context of vomiting and water retention. Reference was also made at the inquest to the death of another child in Northern Ireland from hyponatraemia, that of Adam Strain.
- 1.3 Mr and Mrs Ferguson were determined to question why their daughter had died. They were not alone. Investigative journalists at Ulster Television ('UTV') also questioned her death and broadcast a documentary in February 2003 drawing attention to hyponatraemia and the clinical failings in Raychel's case.¹
- 1.4 At the same time, and in response to the inquest, the Chief Officer of the Western Health and Social Services Council ('WHSSC') drew the Coroner's attention to the death in 2000 of a child called Lucy Crawford because her case had similarities to Raychel's. He asked whether an inquest into Lucy's death might not have saved Raychel.²
- 1.5 The UTV team then added Lucy's case to their investigation and, in October 2004, broadcast a further documentary entitled 'When Hospitals Kill' which examined the deaths of Raychel, Adam and Lucy.³ It claimed that all had died from hyponatraemia because all had been given too much of the wrong type of fluid. The programme raised concerns about a failure to learn

¹ UTV 'Insight' 27-02-03 'Vital Signs'

² 006-012-297

³ UTV 'Insight' 21-10-04 'When Hospitals Kill'. UTV also treated the issue in 'The Issue' 25-03-04.

lessons and the possibility that there had been a deliberate 'cover-up'. It criticised clinicians, Trusts and the Chief Medical Officer.

- 1.6 The programme provoked considerable media interest and public disquiet. Concern was widespread and Ms Angela Smith MP, then Minister with responsibility for Health in Northern Ireland, was obliged to take action. In November 2004 she announced that *"in pursuance of the powers conferred by Article 54 and Schedule 8 of the Health and Personal Social Services (Northern Ireland) Order 1972, the Department of Health, Social Services and Public Safety hereby appoints Mr John O'Hara QC to hold an Inquiry into the events surrounding and following the deaths of Adam Strain, Lucy Crawford and Raychel Ferguson."*⁴
- 1.7 The Minister emphasised that it is *"of the highest importance that the general public has confidence in the quality and standards of care provided by our health and social services."* The Department of Health, Social Services and Public Safety for Northern Ireland ('the Department'), recognising that public confidence in the Health Service had been undermined, granted the Inquiry broad terms of reference so as to permit the concerns of families and public alike to be addressed.
- 1.8 The terms of reference required inquiry into:
- (i) The care and treatment of Adam Strain, Lucy Crawford and Raychel Ferguson, with particular reference to the management of fluid balance and the choice and administration of intravenous fluids in each case.
 - (ii) The actions of the statutory authorities, other organisations and responsible individuals concerned in the procedures, investigations and events which followed the deaths of Adam Strain, Lucy Crawford and Raychel Ferguson.

⁴ 303-034-460

- (iii) The information and explanations given to the respective families and others by the relevant authorities.

Additionally, discretion was granted me to examine and report on any other matter I should think relevant and to make such recommendations to the Department as I should think fit.

- 1.9 The UTV documentary was also watched by the parents of Claire Roberts who had died in the Royal Belfast Hospital for Sick Children ('RBHSC') or ('the Children's Hospital') in 1996. Her death had not been reported to the Coroner and her parents had never really understood why she had died. When Mr and Mrs Roberts watched the programme they immediately recognised similarities with their own daughter's case and were prompted to ask questions. Subsequent investigation and inquest revealed that hyponatraemia had played a part in her death too. I added Claire's case to those I had been originally tasked to investigate because hyponatraemia was implicated and she had died in the same hospital as Adam. In addition to my obvious concern about the treatment Claire had received, I was troubled by the failure to report her death to the Coroner in 1996 and about what was revealed at her inquest 10 years later.
- 1.10 In May 2008, and for private reasons, Mr and Mrs Crawford requested that the Minister withdraw Lucy's case from the scope of my Inquiry. This request was respected and the terms of reference revised. However, concern was then raised that had the circumstances of Lucy's death been made known at the time of her death and had appropriate lessons been learnt, then the deficient therapy given Raychel 14 months later might have been avoided and her life spared. Accordingly it was urged upon me that examination of what happened after Lucy's death was integral to the Inquiry into Raychel's case and should therefore be pursued.
- 1.11 I found this persuasive, and having issued a consultation paper on the issue in 2009 and received extensive response, I decided in February 2010 that the terms of reference both permitted and required investigation into what

had transpired after Lucy's death.⁵ Accordingly, I directed that that part of her case be examined by the Inquiry.

- 1.12 In the course of conducting this Inquiry, 4 other deaths were brought to my attention. I considered them in detail and having satisfied myself that hyponatraemia was not implicated, determined that they required no further investigation. Notwithstanding, it cannot be assumed that there were no other child deaths in Northern Ireland from hospital related hyponatraemia during the period under scrutiny.
- 1.13 In examining the issues it also became necessary to determine whether the Department's 'Guidance on the Prevention of Hyponatraemia in Children,' issued in 2002, was being followed in Northern Ireland's hospitals. The death in 2003 of 15 year old Conor Mitchell in Craigavon Area Hospital was not a death from hyponatraemia but it was a case in which concerns were raised about whether the Departmental guidance had been followed properly, or at all. I directed that his case be examined in order to scrutinise an actual implementation of the hyponatraemia guidance and to ascertain whether concrete change in practice had resulted.
- 1.14 I think it important to acknowledge the role played by informed investigative journalism in revealing the extent of the hospital mismanagement in these sad cases. But for the UTV documentary, the close public scrutiny of this Inquiry would not have happened and Mr and Mrs Roberts might never have learnt what really happened to Claire. Whilst the process of inquiry has been long and costly and the amount of information gathered considerable, it is to be recognised that the essential issues as identified by the initial UTV investigation remain as they were. This Inquiry found a Health Service that had been largely self-regulating and unmonitored. In such circumstances the value of independent and inquiring journalism cannot be overstated.

⁵ 303-037-466

Process

Inquiry procedures

- 1.15 Upon appointment I directed the following protocols to govern procedures, namely:
- (i) General Procedure.
 - (ii) Oral Hearing.
 - (iii) Interested Parties.
 - (iv) Documents.
 - (v) Witnesses.
 - (vi) Experts.
 - (vii) Costs.
 - (viii) Disclosure.
 - (ix) Consultation with, and questioning of, Witnesses.

These protocols were amended from time to time as was necessary and are to be found on the Inquiry website at www.ihrdni.org

Counsel

- 1.16 Counsel were appointed to assist in identifying and investigating relevant issues, the analysis of evidence and the examination of witnesses at public hearings. Legal advices were sought from counsel and received. These duties were performed with great distinction by counsel to the Inquiry, Ms Monye Anyadike-Danes QC and her juniors, Martin Wolfe QC, Jill Comerton, David John Reid, James Anderson and John Stewart.

Solicitors

- 1.17 An immense debt of gratitude is owed Anne Dillon, Solicitor to the Inquiry. With patience and expertise she assisted and guided at every turn. She was preceded in this role with no less distinction by Fiona Chamberlain. The Inquiry also received the assistance of Brian McLoughlin, Htaik Win, Brian Cullen, Caroline Martin and Clare McGivern. To them I extend my gratitude.

The Secretariat

- 1.18 The Secretary to the Inquiry, Mrs Bernie Conlon, together with her deputies Ms Denise Devlin and Miss Leanne Ross rose to the formidable challenge of creating and managing the structures and office of the Inquiry. They were assisted by a dedicated and hard-working team. Their administration was one of great professionalism and the tasks performed by them, with efficiency and good grace, were beyond number. I particularly wish to place on record my admiration for the caring and sensitive support given intuitively by them to many of the witnesses to the Inquiry. Given the stresses and sensitivities involved this cannot have been easy and was of considerable assistance to all.

Conflict of Interests

- 1.19 All who worked for the Inquiry were required to and did sign a 'Declaration of Interests' for the purposes of confirming the credentials of independence underpinning the Inquiry.

Documentation

- 1.20 The Inquiry, having been established pursuant to the Health and Personal Social Services (Northern Ireland) Order 1972, enjoyed broad powers to compel the production of documents.
- 1.21 A very considerable volume of documentary evidence was received and collated. Documents were filed in an electronic management system, with

each page given a 9 figure identifying number, comprising a file number (first 3 figures), the document number (second 3 figures) and page number (final 3 figures). These are available on the website. Irrelevant and protected information was redacted. Documents and materials which were subject to legal privilege or which failed to satisfy the tests of relevance or fairness were excluded from consideration and do not appear on the Inquiry website.

- 1.22 In order to marshal and present aspects of the very extensive information gathered, a number of tables, schedules, charts and chronologies was compiled for summary and reference. These too may be found on the website.
- 1.23 The Inquiry website is the archive for documents released by the Inquiry. It includes transcripts of public hearings, openings, witness statements, exhibits, expert reports, medical notes and records, charts, schedules, briefing papers, memoranda and other relevant materials. This record amounts to more than 113,000 pages and 12,650 documents. All documents comprising the Inquiry record will be deposited with the Public Record Office for Northern Ireland and access to the website will be maintained within the Record Office web archive. Accordingly, it is unnecessary to append specific documents to this Report.

Expert witnesses, advisors and peer reviewers

- 1.24 Respected specialists were retained by the Inquiry to advice and report on relevant aspects of clinical care as well as hospital management and governance. Many of these experts gave evidence at the public hearings. Their invaluable contribution is gratefully acknowledged. In addition, a number of expert background briefing papers were commissioned advising on matters ranging from fluid management training for nurses (1975-2009)

to post-mortem practice, coronial process and statistics. They are to be found on the Inquiry website.⁶

- 1.25 I wish to acknowledge the guidance of the team of expert advisors who assisted the work of the Inquiry. To Dr Harvey Marcovitch in paediatrics, the late Dr Peter Booker in paediatric anaesthetics, Ms Carol Williams in nursing and Ms Mary Whitty and Mr Grenville Kershaw in health service governance and management, I owe a debt of gratitude. Independent of the Health Service in Northern Ireland the advisors submitted their assessment of matters to be considered at the public hearings. Their reports are to be found on the Inquiry website.
- 1.26 The work of the advisors was in turn ‘peer reviewed’ by leading international experts Dr Desmond Bohn (paediatric anaesthesia) and Dr Sharon Kinney (paediatric intensive care nursing). Their signal contribution is to be recognised.
- 1.27 Additionally, I received expert assistance in finalising my draft recommendations from Professor Gabriel Scally (Professor of Public Health and Planning and one time Regional Director of Public Health, NHS England 1996 – 2012) and Dr Tracey Cooper (Chief Executive for Public Health, Wales and former Chief Executive of the Health Information and Quality Authority, Ireland). They advised as to whether my draft recommendations were realistic and achievable and, where appropriate, suggested refinement.

Witnesses and Interested Parties

- 1.28 In accord with convention, the Inquiry sought and received an undertaking from the Director of the Public Prosecution Service that the evidence of witnesses would not be used in criminal proceedings against them.⁷ This was done to encourage co-operation.

⁶ http://www.ihrdni.org/background_papers.htm

⁷ 370-048-001

- 1.29 Evidence was sought initially from potential witnesses by way of detailed questionnaires known as witness statement requests. Supplementary witness statements were then sought to clarify and particularise. The Inquiry received 538 individual witness statements but some were of lesser importance than others and not all witnesses were asked to give oral testimony. A list of all who provided evidence to the Inquiry may be found at Appendices 4 and 5.
- 1.30 I designated family members and key witnesses ‘interested parties’ in accordance with protocol. Doctors, nurses, managers and healthcare professionals were named in this way together with the Department, HSC Trusts and others. Interested parties became entitled to legal representation at the public hearing, were allowed to make submissions, suggest lines of questioning and on occasion to question witnesses. A full list of those accorded interested party status is provided at Appendix 6

List of Issues

- 1.31 These reflected the terms of reference as revised and the evidence as received. They were subject to comment and suggestion from interested parties and are to be found on the Inquiry website.

Background

Hyponatraemia

- 1.32 The shared fate of Adam, Claire, Lucy and Raychel was to suffer hyponatraemia, a condition in which the concentration of sodium in the blood falls below safe levels. It can result from excessive sodium losses, caused for example by vomiting, or can arise in a number of different ways. One variant is dilutional hyponatraemia in which excess fluid in the system reduces sodium levels by dilution. The less sodium in the excess fluid, the greater the dilution. Excess fluid can be introduced by excessive intravenous infusion or can result from excess water retention, or a combination of both.

- 1.33 Children can react to illness or surgical stress with a recognised Syndrome of Inappropriate Anti-Diuretic Hormone secretion ('SIADH') which inhibits urine production and causes water retention. The resultant increase in the amount of water in the blood leads to dilution of its sodium concentration. This can become problematic if the sodium level is already low. Thus, for example, if sodium rich fluids lost through vomiting are replaced by sodium light fluids (such as an intravenous low saline solution) in the presence of anti-diuretic hormone activity, the inevitable result will be a lowering by dilution of already lowered sodium levels and ultimately a dilutional hyponatraemia. If left untreated, the fall in the sodium concentration will induce cerebral oedema causing raised intracranial pressure, respiratory arrest, coma and potential brain-stem death. The symptoms of hyponatraemia are often lethargy, headaches, nausea and vomiting. The severity of the symptoms relates to the rate at which the sodium level falls. A diagnosis is made easily by assessing the serum sodium levels. Accordingly, safe IV fluid management of a child with sodium losses cannot be assured without testing the sodium levels and understanding the fluid balance. Because such a patient is the subject of active fluid therapy, dilutional hyponatraemia should not happen in a hospital. It is a preventable hospital illness.

Solution No. 18

- 1.34 In each of the cases examined in this Report (excepting only Conor) the patient was given intravenous infusion of a fluid known as Solution No.18, so called because it contains only 0.18% sodium chloride. This is deemed a low saline or hypotonic solution because it contains only about 1/5 of the sodium and chloride found in blood. Because it is so low in sodium it cannot replace sodium lost through vomiting or diarrhoea and can, if administered excessively or too quickly, create a dilutional effect on sodium levels resulting in hyponatraemia. It is not dangerous of itself, but can become so if given inappropriately in the presence of established sodium losses or SIADH.

- 1.35 The risks of using low sodium solutions such as Solution No.18 and the dangers of dilutional hyponatraemia were understood from the early 1990s. In a leading paper published in the British Medical Journal ('BMJ') in 1992,⁸ Professors Arieff, Ayus and Fraser concluded that "*symptomatic hyponatraemia can best be prevented by not infusing hypotonic fluids to hospitalised children unless there is a clear cut indication for their use.*"⁹ Notwithstanding and despite similar subsequent warnings in the medical literature, it is clear that even at the time of Raychel's death, Solution No.18 remained the standard IV solution for general use with children.
- 1.36 In consequence of Raychel's death, Dr Henrietta Campbell¹⁰ the Chief Medical Officer ('CMO'),¹¹ directed that the Department issue Guidance on the Prevention of Hyponatraemia in Children.¹² This was published in March 2002 specifically warning that "*hyponatraemia may occur in any child receiving any IV fluids... vigilance is needed for all children receiving fluids.*" It gave clear advice for the regular monitoring of fluid balance, the regular evaluation of sodium levels and the accurate calculation of IV fluid requirements. Fluids were specifically to be prescribed as maintenance fluids to meet anticipated fluid requirements or as replacement fluids to replace fluids and sodium actually lost. This was a most valuable guideline and the first of its kind in the UK. The work of providing guidance was thereafter undertaken by the National Patient Safety Agency ('NPSA').¹³ By 2010 the Regulation and Quality Improvement Authority ('RQIA') was able to report that Solution No.18 had been removed from all clinical areas where children might receive treatment.¹⁴

⁸ 070-005-018

⁹ 070-005-018

¹⁰ 337-001-002

¹¹ 338-001-001

¹² 007-003-004

¹³ 303-026-350

¹⁴ 303-031-435

The Children

Adam Strain

- 1.37 Adam was born on 4th August 1991 and died on 28th November 1995 at the RBHSC having undergone renal transplant surgery. He was born with kidney abnormality and, having suffered multiple problems, was placed on the transplant register and admitted for kidney transplant on 26th November 1995. He did not survive surgery. As with the other cases being examined he received intravenous infusion of Solution No.18. His death was scrutinised at inquest and found to have been caused by cerebral oedema brought about by the acute onset of hyponatraemia suffered in consequence of an excess administration of fluids containing only very small amounts of sodium. There may also have been other factors combining with this underlying cause. The consultant anaesthetist responsible for the management of Adam's fluids refused to accept that Adam had suffered dilutional hyponatraemia.¹⁵
- 1.38 In the course of Adam's inquest, draft 'Recommendations for the Prevention and Management of Hyponatraemia arising during Paediatric Surgery'¹⁶ were submitted by the RBHSC paediatric anaesthetists in order to reassure the Coroner as to the future management of such cases. These recommendations specifically referenced Professor Arieff's paper on hyponatraemia and indicated that all anaesthetic staff would be made aware of the complications of hyponatraemia. The recommendations were not however circulated, and the opportunity to familiarise clinicians in the RBHSC and elsewhere with the risk to children of dilutional hyponatraemia in the context of IV infusion of hypotonic solution was lost.

Claire Roberts

- 1.39 Four months after the inquest into Adam's death Claire Roberts was also admitted to the RBHSC. She was nine years old and had a past history of

¹⁵ 093-038-238

¹⁶ 060-018-036

convulsions in early childhood. On 21st October 1996 she was referred by her GP to the RBHSC with symptoms of vomiting, malaise and drowsiness. In light of her medical history it was thought that she could be suffering seizures. She was admitted and placed on an IV infusion of Solution No.18. Her blood tests revealed slightly lower than normal sodium levels but her sodium was not then reassessed over the next 24 hours despite the fact that she was receiving a continuous infusion of Solution No.18. Her condition did not improve, her consciousness reduced and the doctors did not know what was wrong with her. No further tests were performed. She was then given too much of an anti-convulsant medication, her levels of consciousness declined further and early in the morning of 23rd October she suffered respiratory arrest and was transferred to the Paediatric Intensive Care Unit ('PICU') where she died. Her death was not reported to the Coroner and only a partial autopsy was performed. A death certificate was issued citing cerebral oedema and status epilepticus as the cause of her death. Mr and Mrs Roberts were led to believe that Claire may have suffered encephalitis.

- 1.40 Eight years later, having watched the UTV programme about the deaths of Adam, Lucy and Raychel and recognising similarities with Claire's case, Mr and Mrs Roberts contacted the RBHSC. They queried the management of her fluids and asked whether hyponatraemia might not have played a part in her death. Only then was the Coroner notified. He conducted an inquest in May 2006 and found that hyponatraemia due to SIADH had contributed to the cerebral oedema which caused her death. He also found an indeterminate contribution from meningo-encephalitis and status epilepticus.

Lucy Crawford

- 1.41 Lucy was born on 5th November 1998 and admitted to the Erne Hospital on 12th April 2000 with a history of drowsiness and vomiting. The vomiting may have caused dehydration and she was assessed an appropriate candidate for IV fluid replacement. Blood tests revealed normal sodium levels and an

IV infusion of Solution No.18 was commenced. However, she was given an excessive volume of Solution No.18 at an excessive rate. In the early hours of 13th April she suffered a seizure. Her serum sodium levels had fallen significantly since admission. She was transferred to PICU in the RBHSC where she was pronounced dead the following day. Her death was not formally notified to the Coroner. A hospital post-mortem was performed and a death certificate issued citing cerebral oedema due to dehydration and gastroenteritis as the cause of death. Lucy's parents were concerned with the treatment she had received at the Erne Hospital and did not feel that the cause of her death had been adequately explained to them.

- 1.42 The Erne hospital conducted a review of her case and sought the opinion of Dr Murray Quinn, Consultant Paediatrician of the Altnagelvin Area Hospital. He concluded that the cause of Lucy's seizure and cerebral oedema could not be determined with confidence but that her fluid therapy had been acceptable. There the matter would have rested but for the concern of Mr Stanley Millar,¹⁷ Chief Officer of the WHSSC, who referred her death to the Coroner. The subsequent verdict at inquest was that Lucy's death was caused by cerebral oedema due to acute dilutional hyponatraemia in the context of gastroenteritis. In terms, the Coroner found that the cerebral oedema had not been due to dehydration but rather to excessive rehydration with Solution No.18. Revised terms of reference restricted the Inquiry to an investigation of what had happened after Lucy's death and specifically to the failure to correctly identify the cause of her death.

Raychel Ferguson

- 1.43 Raychel was born on 4th February 1992 and enjoyed a childhood of excellent health. She was admitted to Altnagelvin Area Hospital on the evening of 7th June 2001 with pain on urination, stomach ache and nausea. She underwent an uneventful appendectomy that night. On admission her sodium levels had been normal and she was placed on an IV infusion of

¹⁷ 325-002-011

Solution No.18 which was re-commenced after surgery. The rate of fluid administration was marginally more than it should have been. Raychel vomited repeatedly over the course of the following day and her parents expressed concern. Notwithstanding that her condition deteriorated, her sodium levels were not reassessed, her fluid balance was not monitored and her IV infusion continued until she suffered a collapse in the early hours of 9th June. Her sodium levels were then found to be exceptionally low. She had acute hyponatraemia and was transferred to PICU at RBHSC where she was pronounced dead the next day. Raychel's parents did not feel they were given a satisfactory explanation. Her death was notified to the Coroner who found at inquest that she had died from cerebral oedema caused by hyponatraemia which had been caused in turn by a combination of inadequate electrolyte replacement in the face of severe post-operative vomiting and water retention resulting from anti-diuretic hormone activity.

- 1.44 After Raychel's death Altnagelvin reviewed her case and having identified shortcomings in clinical care, set about addressing them. It also took steps to draw the risks attaching to the infusion of Solution No.18 and hyponatraemia to the attention of the CMO and a wider medical audience. This prompted the Department to prepare its Guidance for the Prevention of Hyponatraemia in Children.

Conor Mitchell

- 1.45 Conor was born on 12th October 1987 with spastic tetraplegia, cerebral palsy and mild epilepsy. He was admitted onto an adult medical ward at the Craigavon Area Hospital ('CAH') on 8th May 2003 with a history of vomiting and malaise. He was given IV fluids but unlike the other children, received an isotonic solution rather than Solution No.18. Nonetheless, his condition deteriorated and his family expressed concern. He suffered two seizures in the evening and was transferred to PICU at the RBHSC the following day. He was pronounced dead on 12th May. His family were concerned about the care he had received. The Coroner commissioned expert opinion and conducted an inquest but the precise cause of Conor's

death remained unclear. There was cerebral oedema but no obvious cause. Notwithstanding that the Coroner considered the fluid management to have been acceptable, concerns were raised about whether the Department's hyponatraemia guidance had been followed properly, or at all, and whether the fluid therapy administered was appropriate.

- 1.46 It was a matter of particular interest to this Inquiry to determine whether the guidance introduced in consequence of Raychel's death was being followed. Accordingly, I directed investigation into the way in which the guidance had been issued by the Department and the means by which it had been implemented and enforced. Conor's case was selected for scrutiny so as to permit inquiry into how the hyponatraemia guidance had been introduced at CAH, whether Conor's treatment had been informed by it and whether any changes to practice or procedure had resulted. The terms of reference were accordingly amended so as to permit inquiry into *"the circumstances of the death of Conor Mitchell in the context of the guidelines on fluid management in children."*

The Department

- 1.47 One of the fundamental questions for this Inquiry was whether lessons could and should have been learned from the 'adverse incidents' described. Whilst clinicians and hospitals were obliged to investigate such incidents it was also necessary to consider whether responsibility for collecting information about such matters extended to the Department. It was necessary to understand the Departmental procedures for assuring delivery of safe healthcare and the extent to which information about healthcare problems, and specifically the deaths of Adam, Claire, Lucy and Raychel, became known to the statutory authorities, and what was done in response.
- 1.48 Having so closely examined all that had gone wrong it became equally necessary to determine whether it had been put right and to assess what the relevant statutory bodies had done to remedy matters in the years

following the period under review. I was interested to know, for example, if updated systems could be bypassed in a culture which concealed error.

1.49 Accordingly, and when examining the present Health Service and in exploring what might be achieved for the future, I considered that a different approach to information gathering was required of the Inquiry. In order that views could be more readily aired and ideas for improvement exchanged, I directed a forum for opinion and discussion with representatives from the Department, the Belfast Health & Social Care Trust ('BHSCT'), the Health and Social Care Board ('HSCB'), Action against Medical Accidents ('AvMA'), the Patient and Client Council ('PCC'), Regulation and Quality Improvement Authority ('RQIA') and others. Participants were not subject to criticism and it was hoped debate would emerge from the evidence already received, the agenda for discussion and my own questions. Parties were asked for up-to-date information and position papers about the current processes for ensuring the provision of satisfactory healthcare. In particular, submissions were invited in respect of my more significant concerns including the handling of complaints, the notification and investigation of Serious Adverse Incidents ('SAIs'), the involvement of families and the introduction of a legally enforceable duty of candour. The responses and position papers received were circulated amongst the interested parties and are to be found on the Inquiry website.¹⁸

1.50 Identification of relevant lessons for the future is necessarily dependent upon an understanding of the systems as they are today. The Inquiry has sought relevant up-to-date information and has attempted to note the changes which have occurred in the years since the deaths examined. Given the pace of reform and procedural change in the years since, this has been no easy task. This Report is not to be understood as intending a comprehensive and up-to-the-minute account of the current position.

¹⁸ <http://www.ihrdni.org/supp-eviden-additional-papers.htm>

Hearings

- 1.51 The public hearings were conducted over the course of 148 days at The Courthouse, Banbridge, County Down, from February 2012 to November 2013. In all, 179 witnesses gave evidence. Full transcripts of the hearings extending to over 32,000 pages may be found on the website, together with the written closing submissions of 37 of the interested parties.
- 1.52 In relation to all the cases under consideration (excepting Lucy) evidence was heard and examined in respect of both clinical and governance issues. Hearings were conducted on that basis and in that order. There was occasional and inevitable overlap between clinical and governance evidence. Senior Counsel to the Inquiry opened each stage with a full background statement identifying the facts and issues as then understood. These openings are to be found on the website. It was not the function of counsel to advance any particular case but to test the evidence and assist the process of the Inquiry.
- 1.53 All hearings were conducted openly and in public, save for one issue considered in private session in accordance with the requirements of the European Convention on Human Rights and two separate and specific orders of the High Court.¹⁹ This was done in an attempt to identify the possible whereabouts of the consultant responsible for Claire's care while protecting the privacy of other patients then receiving treatment within the RHBSC.
- 1.54 All witnesses were advised as to the general subject matter of questioning in advance. They were questioned by Inquiry counsel. On occasion I permitted the legal representatives of interested parties to pose questions when there was a reasonable basis so to do.
- 1.55 Salmon letters²⁰ were sent in confidence to those witnesses thought most likely to be criticised, so as to place them on notice. This is done in the

¹⁹ http://www.ihrdni.org/high_court_orders.htm *O'Hara v BHSC* [2012] NIQ 575

²⁰ Letters of 'warning' compliant with the 'Salmon principles' set out in The Royal Commission on Tribunals of Inquiry Report, 1966.

interests of fairness. I directed such letters be sent to a number of individuals and organisations in accordance with the procedure for hearings.

- 1.56 Those who assisted the Inquiry and re-lived their experiences in public, did so with dignity and patience. The Inquiry is indebted to them for their invaluable assistance. In particular and in this regard I acknowledge the courage of family members and pay tribute to them.
- 1.57 The Inquiry also heard from a wide range of clinicians, healthcare professionals and independent expert witnesses. The experience of giving evidence in public was no doubt stressful for many and the Inquiry is grateful.

Evidence

- 1.58 The Public Inquiry process is investigative and inquisitorial and seeks to determine what has happened in order to better identify what may be learned. Accordingly, I have found myself in a very different position to a judge sitting in a court of law. In identifying what has gone wrong I have inevitably criticised some individuals and organisations, but my findings are not binding and are not determinative of liability.
- 1.59 This has not been an investigation into allegations of criminal wrongdoing. It has been an investigation into deficiencies in clinical performance and shortcomings in governance control and response. Accordingly, I did not think it correct to adopt the criminal standard of proof when making a finding of fact. I considered the civil standard of proof found on the balance of probabilities to be appropriate. Were it otherwise, my findings would be limited in number by the more onerous criminal burden of proof and would suffer a consequent reduction in scope to identify lessons. The drawing of lessons is the most important task of this Inquiry.
- 1.60 In applying the balance of probabilities as the standard of proof, I have borne in mind the concepts of 'common sense' and 'inherent improbability'

when reaching a finding of fact. In addition and for the avoidance of doubt, where I permit myself comment expressing suspicion or concern, it is because I think it relevant. It is not a finding of fact. I have striven at all times to be fair.

- 1.61 I have, of course, assessed the acts and omissions of all involved against contemporaneous expectations and standards and not against those of today. Where there was no consensus as to those standards I have taken that into account. I have not assumed that a written record is proof of its content any more than I have assumed that the absence of record means that something did not happen.
- 1.62 Passage of time and memory degraded some of the evidence. Given the absence of full investigation at the time of the deaths and the time since lapsed, this was a relevant consideration. Nonetheless, I was surprised at how little some witnesses found themselves able to recall.
- 1.63 I am conscious that the individuals who are criticised were not able to defend themselves as they might in adversarial proceedings and were circumscribed in their right to make representations. I am also aware that individuals who are criticised may attract adverse publicity affecting both reputation and career. Therefore where critical comment is made of an individual, it must be assessed in the context of the limitations of the process.

Costs

- 1.64 Inquiry costs are as set out at Appendix 10.

Report

- 1.65 This Report deals in turn with the deaths of Adam and Claire, the events that post-dated Lucy's death, Raychel's case and the fluid management and organisational issues presented by Conor's treatment.

- 1.66 The role and involvement of the Department in these specific cases and in general is dealt with in a separate chapter as is my assessment of the progress and current involvement of the Department and Health Service.
- 1.67 In general, and unless otherwise stated, I have accepted the evidence as recited. Whilst I have had regard to all the evidence and to the submissions made, I have not referenced it all in the Report or made fully reasoned decisions for each and every issue of fact because to do so would unduly extend the Report. Footnoted references are given for fact or quotation or otherwise to explain. Where significant dispute has arisen as to fact, I have given a fuller reasoning for my conclusion. It is important when considering my treatment of the facts as well as my comments, criticisms and conclusions, to read them in context, just as the Report itself must be read in its entirety.
- 1.68 The Report does in large measure deal with all those issues appearing in the list of issues. However, some matters once thought germane, were found on examination to have less relevance to the overall view, in which circumstances they do not always find detailed reference in the Report. It has been inevitable that some material and evidence will be referred to in more than one chapter. Whilst repetition has been kept to a minimum, in some contexts it has been permitted in aid of clarity.
- 1.69 I acknowledge the assistance of counsel to the Inquiry in the assessment of the evidence and its significance. However, the conclusions of the Report are mine and mine alone.

Recommendations

- 1.70 I set out my recommendations to strengthen and improve practice and systems in the hope that the failings found, cannot easily be repeated. The recommendations are presented in Chapter 9 of this Report. It is for the Department of Health to take them forward. Many will doubtless require significant detailed consideration to enable implementation. I expect the Department to indicate not only which of my recommendations it accepts

but also to make clear how and when implementation is to be achieved. Further and subsequent reports should then be made detailing progress towards implementation with a final published confirmation of same.

Delay

1.71 I accept there has been delay in the presentation of my Report. This is regrettable but has been due to a number of factors starting with the suspension of all work from October 2005 - May 2008 to allow a police investigation into the deaths of Adam, Lucy and Raychel. A detailed revision of the terms of reference, in consultation with all concerned, then followed. The scope of the terms of reference (both original and revised) required an ambitiously broad and time consuming range of investigation. Analysis of differing expert opinion in complex areas of hyper-specialism was particularly demanding. Differences of opinion required that not only the evidence and the clinical basis for conclusion be tested, but also underlying expert assumptions.

1.72 The scope of the Inquiry's work broadened to examine the deaths (in various respects) of five children over a period of eight years. The work of the Department and the Chief Medical Officer together with clinicians and administrators from the following came within the remit of the Inquiry's investigation:

- (i) Royal Belfast Hospital for Sick Children.
- (ii) Royal Group of Hospitals Trust (now Belfast Health & Social Care Trust).
- (iii) Eastern Health & Social Services Board (now Regional Health & Social Care Board).
- (iv) Erne Hospital.
- (v) Sperrin Lakeland Trust (now Western Health & Social Care Trust).
- (vi) Altnagelvin Area Hospital.

- (vii) Altnagelvin Hospital Trust (now Western Health & Social Care Trust).
- (viii) Western Health & Social Services Board (now Regional Health & Social Care Board).
- (ix) Craigavon Area Hospital.
- (x) Craigavon Area Hospitals Group Trust (now Southern Health & Social Care Trust).
- (xi) Southern Health & Social Services Board (now Regional Health & Social Care Board).

1.73 In addition, there were other investigations into the circumstances of the children's deaths, namely at inquest and by the Police Service of Northern Ireland ('PSNI'). The General Medical Council ('GMC') also investigated the conduct of a number of doctors involved with the cases of Lucy and Raychel and the Nursing and Midwifery Council likewise considered complaints relating to nursing care in two of the cases. The detail and documentation thereby generated was all potentially relevant and was analysed in full. Where appropriate it was shared.

1.74 Apart from the very real difficulties experienced in gathering the evidence, investigating and analysing testimony, I found the writing of this report exceptionally time consuming. This was due to the mass and complexity of detail together with the nature and nuance of the evidence. I recognise that it has been delayed and regret that it has taken so long. I offer my sincere apologies for any additional distress which this has caused.

Conclusion

1.75 It is the task of an Inquiry to focus specifically on what has gone wrong, not on what has gone right and such close focus can act as a distorting lens. It is to be stressed that critical comment of an individual does not necessarily imply that the same individual has not otherwise made much positive contribution to healthcare or that the pressures of modern clinical practice

have been taken for granted. It is recognised that untoward clinical incidents can cause terrible suffering, not only for patients and their families but also to the clinical professions.

- 1.76 The purpose of identifying underperformance is to highlight acts or omissions, attitudes or assumptions to be avoided in the future. Whilst it is proper that individuals be accountable, it is also better to learn than to punish. To place undue emphasis on blame is to encourage the cycle of defensiveness, concealment, indifference to learning and further harm. There is much for all who work in the Health Service to reflect upon and learn from in the sad narratives of this Report. In addition, I recognise that others, including Her Majesty's Coroners, may draw insight and instruction from what has been revealed.
- 1.77 However, in each of the cases examined, deficiencies in practice and system did become apparent and in most cases the shortcomings were evident from the outset. Accordingly, I was surprised at how difficult it was to persuade some witnesses to be open and frank with the work of the Inquiry. All too often, concessions and admissions were extracted only with disproportionate time and effort. The reticence of some clinicians and healthcare professionals to concede error or identify the underperformance of colleagues was frustrating and depressing, most especially for the families of the dead children.
- 1.78 This remained largely the case until 30th August 2013 when Altnagelvin fully and publically accepted its responsibility for the death of Raychel Ferguson. Twelve years had passed since her death and ten years since the start of litigation.²¹ Altnagelvin's concession, whilst belated, was correct and was to be followed by the Belfast and Southern Trusts in October 2013 when they accepted full responsibility for the deaths of Adam and Claire and the failings revealed in Conor's case.²² They proffered formal apology for all the hurt caused by the acts and omissions of the Trusts. This was a

²¹ T-30-08-13 p.1

²² T-17-10-13 p.2 *et seq*

welcome and partial vindication of the work of the Inquiry but was achieved at considerable cost to all.

- 1.79 It should not have been so. Health service guidance for 25 years and more has repeatedly recommended transparency and openness in the interests of the patient. This has proved inadequate to the problem which is why this Report must recommend a statutory duty of candour in Northern Ireland.

ADAM STRAIN

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Introduction

- 2.1 Adam Strain was born on 4th August 1991¹ and died on 28th November 1995 in the Royal Belfast Hospital for Sick Children (the ‘Children’s Hospital’) having undergone renal transplant surgery.² During his short life he lived with his mother and maternal grandparents in Holywood, Co Down. His devoted mother Debra Slavin paid warm tribute to her son, recalling that *“no matter what life threw at him he faced it with a smile, he was such a happy little boy who endured more in his four short years than most people go through in a lifetime.”*
- 2.2 Adam was born with cystic dysplastic kidneys and a medical abnormality known as vesico-ureteric reflux causing him repeated and damaging urinary tract infection.³ He endured five surgical operations to re-implant the ureter and another procedure to treat gastro-oesophageal reflux.⁴ On a number of occasions he became critically ill and was admitted into Intensive Care. Feeding and nutrition were problematic and it became necessary to administer gastronomy feeds. Eventually he refused all feeds and took nothing by mouth.⁵ His condition deteriorated and he suffered renal failure necessitating peritoneal dialysis. Adam produced urine of poor quality and was described as polyuric. His kidneys were unable to regulate the salt content of his urine very well and he had suffered acute hyponatraemia following surgery in November 1991. He was assessed a potential candidate for renal replacement (without which he would not have survived⁶) and was placed on the transplant register in July 1994.⁷
- 2.3 Throughout this period he was the patient of Professor Maurice Savage,⁸ Consultant Nephrologist, who co-ordinated his *“care, prescribed and monitored his dialysis treatment with support from a dietician, psychologist,*

¹ 050-022-061

² 070-001-001

³ 011-009-025

⁴ 011-009-025

⁵ 011-011-054 & 011-009-025

⁶ Professor Savage T-17-04-12 p.80 line 16

⁷ 016-042-078

⁸ 303-001-003

*social worker, the renal nursing team, and of course his mother*⁹ who actually performed the home dialysis.

Expert reports

2.4 The Inquiry, guided by its advisors, engaged the following experts to address specific issues:

- (i) Dr Simon Haynes¹⁰ (Consultant in Paediatric Cardiothoracic Anaesthesia and Intensive Care, Freeman Hospital, Newcastle-upon-Tyne) who provided reports on anaesthetic matters.¹¹
- (ii) Dr Malcolm Coulthard¹² (Honorary Consultant Paediatric Nephrologist, Royal Victoria Infirmary, Newcastle-upon-Tyne) who reported on the roles and responsibilities of the nephrologists involved in Adam's case and analysed the management of Adam's fluid balance and electrolytes.¹³
- (iii) Professor John Forsythe¹⁴ (Consultant Transplant Surgeon, the Royal Infirmary of Edinburgh and Honorary Professor, University of Edinburgh) and Mr Keith Rigg (Consultant Transplant Surgeon, Nottingham University Hospitals NHS Trust), who provided joint reports addressing aspects of paediatric renal transplant surgery.¹⁵
- (iv) Professor Dr Peter Gross¹⁶ (Professor of Medicine and Nephrology, Universitätsklinikum Carl Gustav Carus, Dresden) who provided reports on hyponatraemia and fluid management.¹⁷
- (v) Ms Sally Ramsay¹⁸ (former Director of Nursing and Family Services and Director of Nursing, Quality and Clinical Support at Great

⁹ WS-002-1 p.2

¹⁰ 303-001-009

¹¹ File 204

¹² 303-001-008

¹³ File 200

¹⁴ 303-001-009

¹⁵ File 203

¹⁶ 303-001-008

¹⁷ File 201

¹⁸ 303-001-009

Ormond Street Hospital for Children, NHS Trust) who advised on nursing care at the Children's Hospital and in particular the care given Adam in November 1995.¹⁹

- (vi) Professor Fenella Kirkham²⁰ (Professor of Paediatric Neurology, Institute of Child Health, London and Consultant Paediatric Neurologist, Southampton General Hospital) who provided neurological opinion as to the effect of fluid infusion upon the brain and the possible contribution, if any, of venous obstruction to Adam's cerebral oedema.²¹
- (vii) Dr Waney Squier²² (Consultant Neuropathologist and Clinical Lecturer, John Radcliffe Hospital, Oxford) who advised on the histological slides of brain tissue and the autopsy photographs of Adam's brain.²³
- (viii) Dr Caren Landes²⁴ (Consultant Paediatric Radiologist, Alder Hey Children's NHS Foundation Trust) who reported on the chest x-rays taken at 13:20 and 21:30 on 27th November 1995.²⁵
- (ix) Dr Philip Anslow²⁶ (Consultant Neuroradiologist, Radcliffe Infirmary, Oxford) who interpreted CT scans dated 7th July 1995 and 27th November 1995.²⁷
- (x) Professor Dr Dietz Rating (Consultant in Paediatric Neurology at the Children's Hospital at the University of Heidelberg) who reported on neurological issues arising in Adam's case.²⁸

¹⁹ File 202
²⁰ 303-001-009
²¹ File 208
²² 303-001-009
²³ File 206
²⁴ 303-001-009
²⁵ File 207
²⁶ 303-001-009
²⁷ 206-005-109
²⁸ File 240

- (xi) Professor Aidan Mullan²⁹ (former Acting Chief Executive Officer and Director of Nursing and Clinical Governance, North Tees and Hartlepool NHS Trust) who provided his opinion on clinical governance issues.³⁰
- (xii) Mr Stephen Ramsden³¹ (Chief Executive Officer of the Luton & Dunstable Hospital NHS Foundation Trust), who reported on hospital management and governance issues.³²
- (xiii) Professor Sebastian Lucas³³ (Department of Histopathology, St Thomas' Hospital London) who commented on Adam's autopsy and other aspects of coronial autopsy practice.³⁴
- (xiv) Mr Geoff Koffman³⁵ (Consultant Transplant Surgeon at Guy's and St Thomas's NHS Foundation Trust) who provided a report on the transplant surgery.³⁶

2.5 The Inquiry also had the benefit of expert opinion commissioned by the Coroner and the Police Service of Northern Ireland ('PSNI') from:

- (i) Professor Peter Jeremy Berry (Professor of Paediatric Pathology, University of Bristol) who reported to the Coroner on 23rd March 1996.³⁷
- (ii) Dr Edward Sumner (Consultant Paediatric Anaesthetist at Great Ormond Street Childrens' Hospital) who reported for the Coroner on 22nd January 1996³⁸ and the PSNI in September 2005.³⁹

²⁹ 306-081-008

³⁰ File 210

³¹ 306-081-008

³² File 211

³³ 306-081-009

³⁴ File 209

³⁵ 303-001-010

³⁶ 205-002-009

³⁷ 011-007-020

³⁸ 059-054-109

³⁹ 094-002-002

- (iii) Mr Geoff Koffman (Consultant Surgeon at Guy's & St Thomas Hospital and Great Ormond Street Hospital, London) who provided a report to the PSNI on 5th July 2006.⁴⁰
- (iv) Dr John Alexander (Consultant Anaesthetist at Belfast City Hospital) who provided his expert opinion to the Coroner on 5th January 1996.⁴¹

Schedules compiled by the Inquiry

2.6 In an attempt to summarise the very considerable quantities of information received, the following schedules and charts were compiled:

- (i) Chronology of events (clinical).⁴²
- (ii) List of persons - clinical.⁴³
- (iii) Schedule detailing experience of the anaesthetists and surgeons involved.⁴⁴
- (iv) Schedule of anaesthetic nurses and trainee anaesthetists involved.⁴⁵
- (v) Schedule detailing education and training of doctors involved.⁴⁶
- (vi) Table detailing education & training of nurses involved.⁴⁷
- (vii) Chronology of hospital management and governance.⁴⁸
- (viii) List of persons - governance.⁴⁹

⁴⁰ 094-007-027
⁴¹ 059-057-134
⁴² 306-003-001
⁴³ 303-001-001
⁴⁴ 306-004-001
⁴⁵ 306-002-001
⁴⁶ 306-005-001
⁴⁷ 306-001-001
⁴⁸ 306-010-001
⁴⁹ 306-081-001

- (ix) Chronology relating to draft recommendations submitted to the Coroner.⁵⁰
- (x) Summaries of Inquiry expert opinion as to contributory factors to death, given before and after Newcastle-upon-Tyne meeting of experts (March 2012).⁵¹
- (xi) Glossary of Medical Terms⁵²

2.7 All of the above, together with the reports of the Inquiry experts, have been published on the Inquiry website.

The Paediatric Transplant Service

2.8 Professor Savage was appointed Consultant Paediatrician and Nephrologist at the Children's Hospital in 1980.⁵³ He is a Fellow of both the Royal College of Physicians ('RCP') and the Royal College of Paediatrics and Child Health ('RCPCH'). He is now Professor Emeritus of the Medical Faculty of The Queens University of Belfast. For 15 years he was the only consultant paediatrician and nephrologist working in Northern Ireland but was always careful to maintain his broader professional contacts through the European Society of Paediatric Nephrology.⁵⁴

2.9 A paediatric renal transplant programme was started in 1980 at the Belfast City Hospital ('BCH') which was, at that time, providing an established adult transplant service.⁵⁵ Professor Savage subsequently arranged for some paediatric renal transplants to be performed at the Children's Hospital as well. The first renal transplant involving a child younger than five years took place in the Children's Hospital in 1990.⁵⁶ Whilst the BCH (which was run by a different Trust to that of the Children's Hospital) was the recognised

⁵⁰ 306-122-001

⁵¹ 306-016-130 & 306-017-146

⁵² 303-002

⁵³ 306-018-004

⁵⁴ 306-018-001 *et seq*

⁵⁵ Mayes C, Savage JM. Paediatric renal transplantation in Northern Ireland (1984-1998). *The Ulster Medical Journal*. 2000; 69(2):90-96.

⁵⁶ 300-021-033

Renal Transplant Centre for Northern Ireland, it appears that the Royal Group Hospitals Trust (the 'Trust') assumed control of those paediatric renal transplants performed in the Children's Hospital.⁵⁷

- 2.10 Professor Savage became the moving force behind a gradual transfer of paediatric renal transplant surgery to the Children's Hospital. He explained that *"as we gradually developed the service... and as we gained the skill to dialyse and transplant smaller and smaller children, it became obvious that we should be taking those children into the environment of a children's hospital..."*⁵⁸
- 2.11 Paediatric renal transplants were a comparatively recent innovation in the 1980s and 1990s. Between 1984 and 1993 there were 1,406 paediatric renal transplants in the UK⁵⁹ of which less than 10% involved children under the age of five years. In Northern Ireland an Ulster Medical Journal review of the years 1984-98 recorded 77 transplants for patients under 18 years.⁶⁰
- 2.12 There was then comparative inexperience at both the BCH and the Children's Hospital in renal transplant surgery for children as young as Adam.⁶¹ There was no dedicated paediatric renal transplant surgeon and there had been no paediatric transplants involving a living donor.⁶² The provision of cadaveric transplants meant that the Paediatric Renal Transplant Service was reliant upon the availability of the necessary expertise and resources 'around the clock.' On occasion, the offer of a kidney had to be declined because of the lack of key nephrology or surgical staff or the want of a post-operative intensive care bed.⁶³
- 2.13 The British Association for Paediatric Nephrology produced a working party report in March 1995 on 'The Provision of Services in the United Kingdom

⁵⁷ 300-021-033

⁵⁸ Professor Savage T-17-04-12 p.12 line 1

⁵⁹ 'Audit of United Kingdom Transplants Support Service Authority' 1995

⁶⁰ Mayes C, Savage JM. Paediatric renal transplantation in Northern Ireland (1984-1998). *The Ulster Medical Journal*. 2000; 69(2):90-96.

⁶¹ Professor Savage T-17-04-12 p.15 line 12 *et seq*

⁶² Professor Forsythe T-03-05-12 p.173 line 5

⁶³ Mayes C, Savage JM. Paediatric renal transplantation in Northern Ireland (1984-1998). *The Ulster Medical Journal*. 2000; 69(2):90-96.

for Children and Adolescents with Renal Disease'⁶⁴ which provides insight into paediatric nephrology and transplantation practice at that time. It recommended that to accumulate and maintain expertise, a population base of 3 million was the minimum necessary to sustain a comprehensive paediatric renal service although a population of 4 million was deemed optimal. However, it was recognised that some exceptions to this proposition were necessary and on geographical grounds Northern Ireland was recognised as a justifiable exception, notwithstanding a population in 1995 of approximately 1.6 million.⁶⁵

2.14 Northern Ireland paediatric transplant statistics at that time reveal comparable outcomes to those recorded in other transplant centres in the UK.⁶⁶ Such is testimony to the work of Professor Savage and the anaesthetists, surgeons and nurses who collectively provided the paediatric renal transplant service. Accordingly, Dr Coulthard considered that the Children's Hospital did have the experience, infrastructure and case load to undertake paediatric renal transplants in 1995.⁶⁷ However, it was also clear that by 1995 the service required a second consultant to assist Professor Savage.

2.15 To that end Dr Mary O'Connor⁶⁸ was appointed as an additional Consultant Paediatric Nephrologist in the Children's Hospital on 1st November 1995.⁶⁹ She had trained under Professor Savage and advanced her specialism at the Southmead Hospital, Bristol.⁷⁰ She returned to Belfast a little less than four weeks before Adam was admitted.⁷¹ Her appointment gave Professor Savage a consultant colleague with whom to share the workload and develop the service.

⁶⁴ 306-065-001

⁶⁵ 'Population and Migration Estimates Northern Ireland' (statistical report, NISRA 2011)

⁶⁶ 306-065-027 & Transcript 17-04-12 p.24 line 21

⁶⁷ 200-007-111

⁶⁸ 303-001-002

⁶⁹ WS-014-1 p.2

⁷⁰ 306-030-001

⁷¹ WS-014-1 p.2

- 2.16 At that time Professor Savage prepared for transplant operations using a procedure protocol he had drawn up in 1990.⁷² This was a brief document developed as a checklist to be attached to the medical records of the patient in order to better inform the doctors and nurses involved.⁷³ Dr O'Connor brought to Belfast a copy of the protocol used in Bristol which had been updated to 1995 and was a more detailed and comprehensive guide. It set out very clearly the steps to be taken from point of acceptance of a donor kidney for transplant through to the post-operative care to be delivered.⁷⁴ This updated protocol was to be adopted in Belfast but not before Adam's death.⁷⁵
- 2.17 Likewise, developments emerging from other transplant centres had yet to be adopted in Belfast. An important innovation referred to by Professor Forsythe and Mr Rigg was the detailed consideration of a patient's case at the time of acceptance onto the transplant list.⁷⁶ This was to be undertaken by a multi-disciplinary team including nephrologists, surgeons and renal nurses in order to better identify patient-specific issues. These could range from assessments of urgency and general health to necessary preparatory procedures and surgical difficulties. A summary of these considerations might then attach to the medical record and thereby save the transplant team valuable time when an offer of a donor kidney was made. An inherent disadvantage of cadaveric transplant surgery is that the timing of the offer of the donor kidney is unpredictable. If a kidney is a reasonable match then the necessity to accept it places pressure on the transplant team to act quickly.⁷⁷ In such a context the advantage of preparatory work is clear.
- 2.18 I do not criticise Professor Savage's 1990 Protocol nor the absence of multi-disciplinary team input because these developments had not yet become

⁷² WS-002-2 p.52

⁷³ Professor Savage T-17-04-12 p.26 line 25

⁷⁴ WS-014-2 p.31

⁷⁵ WS-014-2 p.22

⁷⁶ Mr Rigg T-03-05-12 p.167-68

⁷⁷ Professor Forsythe T-03-05-12 p.172-73

standard by 1995. The existence of better practice elsewhere does not mean that the practices of the Children's Hospital were sub-standard.

July 1994 - November 1995

- 2.19 Professor Savage had lengthy discussions with Ms Slavin at the time Adam was placed on the transplant register.⁷⁸ She had volunteered donation of one of her own kidneys.⁷⁹ Professor Savage did not support this idea (although success rates were favourable) because Ms Slavin was a single mother and were complications to arise then her ability to care for Adam might be affected, and even if all went well she might take months to recuperate.⁸⁰ I cannot disagree with that approach.
- 2.20 Additionally, it has been suggested that the possibility of transfer to another transplant centre such as Great Ormond Street Hospital in London ought to have been discussed.⁸¹ However, Professor Savage maintained that he did not then believe that it was beyond the ability of local paediatric anaesthetists and surgeons with relevant experience to treat Adam and “*as there was only one venue for transplant surgery in Northern Ireland for a child of Adam's age, I did not offer Ms Slavin any other venue for the transplant.*”⁸² While this was not unreasonable it would have been better had he discussed it with her.⁸³
- 2.21 Professor Savage described how Ms Slavin was given a copy of the ‘Kidney Transplantation in Childhood... a Guide for Families’⁸⁴ which explained that “*Placement on the transplant waiting list follows discussion with the kidney specialist and transplant surgeon.*”⁸⁵ Ms Slavin could not remember this document nor indeed any discussion with a transplant surgeon. Professor Savage conceded that “*the transplant surgeon did not participate in these multi-disciplinary team meetings, except by special arrangement, as he*

⁷⁸ WS-002-3 p.6

⁷⁹ Professor Savage T-17-04-12 p.68-69

⁸⁰ Professor Savage T-17-04-12 p.70

⁸¹ Professor Savage T-17-04-12 p.74 line 13

⁸² WS-002-3 p.11

⁸³ Professor Savage T-17-04-12 p.74 line 15

⁸⁴ City Hospital Nottingham - WS-002-3 p.124

⁸⁵ WS-002-3 p.127

*worked not on the Royal Victoria site but on the Belfast City site*⁸⁶ and accepted that *“it would have been better if one of the transplant surgeons had met Adam in advance... it’s one of my regrets that we didn’t have that arrangement.”*⁸⁷

2.22 Professor Savage acknowledged that he did not make a record of what he said to Ms Slavin⁸⁸ at that time but described how the relevant *“information is repeated and drip fed over many months, not just by me, but by our renal nurse specialists...in the ward and by our social worker, by perhaps the psychologist...so that information is generally reiterated and built up.”*⁸⁹

2.23 Photographs taken of Adam just a fortnight before his renal transplant show him looking happy and well. His mother described him, despite his renal problems, as being *“back on top form again. He was really well at that point.”*⁹⁰ Accordingly, it is clear that while Adam required a transplant he was not an emergency patient and, if a donor kidney was not a particularly good match, it did not have to be accepted. Of course, were a reasonable match to become available then it would have been a good time to proceed because he was comparatively well.

Offer of kidney, Sunday 26th November 1995

2.24 A donor kidney became available at the Glasgow Southern General Hospital at 01:42 on Sunday 26th November 1995 from a 16 year old who had enjoyed previous good health.⁹¹ The kidney was formally offered to Professor Savage and it seems that he discussed it first with Ms Slavin, then Dr Robert Taylor,⁹² the on-call Consultant Paediatric Anaesthetist at

⁸⁶ WS-002-3 p.19-20 & Professor Savage T-17-04-12 p.83 line 11

⁸⁷ Professor Savage T-17-04-12 p.89 line 9

⁸⁸ WS-002-3 p.11

⁸⁹ Professor Savage T-17-04-12 p.82 line 13

⁹⁰ WS-001-1 p.2

⁹¹ 306-007-043 & 059-006-012

⁹² 303-001-003

the Children's Hospital,⁹³ and then Mr Patrick Keane,⁹⁴ a Consultant Urologist at BCH with transplant experience.

- 2.25 Dr Taylor was an experienced consultant who had previously anaesthetised Adam but had not previously acted as lead anaesthetist in a renal transplant. Nonetheless, he was a consultant paediatric anaesthetist in a regional centre and one who had responsibility for critically ill children in intensive care. He should therefore have had the necessary skills to manage Adam safely.⁹⁵
- 2.26 Mr Keane had extensive experience of adult transplant surgery and had previously undertaken four paediatric transplants,⁹⁶ the most recent being only weeks before and on a three year old child.⁹⁷ He was therefore an appropriate surgeon in the local context.
- 2.27 Mr Keane required confirmation that the donor kidney was a reasonable match for Adam. Only limited information was available about donor size, age and anatomy. However, it was established that the tissue type match was an acceptable 50%⁹⁸ and that the kidney could be brought to Belfast within a cold ischaemic time ('CIT') of 24 hours.⁹⁹
- 2.28 On that basis Professor Savage conferred with Ms Slavin and decided to accept the kidney.¹⁰⁰ Adam was admitted to the Children's Hospital at 20:00 on 26th November 1995¹⁰¹ at which time the donor kidney had a CIT of about 19 hours. That was close to the 24 hour optimal CIT period within which to commence surgery.¹⁰²
- 2.29 There was some disagreement between Professor Savage and Mr Keane as to the extent of the surgeon's involvement in the decision to accept the

⁹³ 093-006-016

⁹⁴ 303-001-002

⁹⁵ 204-004-147

⁹⁶ 094-013k-083

⁹⁷ WS-006-2 p.12 & 301-047-414

⁹⁸ 059-006-012 & Professor Savage T-17-04-12 p.125 line 1

⁹⁹ WS-002-3 p.8

¹⁰⁰ WS-002-1 p.3

¹⁰¹ 057-006-007

¹⁰² WS-002-3 p.8

kidney.¹⁰³ I do not however, attach much significance to the lack of clear recollection¹⁰⁴ of the events of that Sunday evening, given that much time has passed since and those discussions became relatively unimportant given what was to happen in the next 24 hours.

- 2.30 Nor do I intend to analyse the much debated issue of the viability of the donor kidney given its CIT. Mr Keane believed that it was acceptable and Mr Koffman agreed.¹⁰⁵ Professor Forsythe and Mr Rigg did not think that they themselves would have accepted the kidney, but recognised that other UK transplant surgeons might have.¹⁰⁶ It had been removed from its donor early on the morning of 26th November 1995 and offered to Professor Savage in the afternoon, perhaps having already been offered elsewhere.¹⁰⁷ It was flown to Belfast with an intention of transplantation between 01:00 and 02:00 on 27th November.¹⁰⁸ However, and for reasons which remain unclear, the operation was delayed until approximately 08:00¹⁰⁹ by which time the CIT was approximately 30 hours. It is impossible to be certain that the kidney was viable at the time of implantation but the likelihood is that it was. Whilst a CIT of 30 hours was certainly less than ideal and more than Professor Savage would have wanted, it was not the cause of Adam's death. In addition, Mr Keane considered that the kidney was a sufficiently good match to warrant transplant.¹¹⁰ Expert evidence was received from those who agreed with this proposition and some who did not.¹¹¹ However, on the basis that it has not been strongly suggested that death was associated with transplantation of an unsuitable kidney, I do not intend to make any finding on this issue.

¹⁰³ WS-006-3 p.23 & Professor Savage T-17-04-12 p.131 line 24

¹⁰⁴ Professor Savage T-17-04-12 p.140 line 23

¹⁰⁵ 205-002-009

¹⁰⁶ 203-004-064

¹⁰⁷ Professor Savage T-18-04-12 p.14 line 17

¹⁰⁸ Professor Savage T-18-04-12 p.14

¹⁰⁹ 093-038-127 & WS-006-3 p.12

¹¹⁰ Mr Keane T-24-04-12 p.9 line 22

¹¹¹ 205-002-009 & Professor Forsythe T-04-05-12 p.16

Recruiting the transplant team

- 2.31 Professor Savage was responsible for bringing together the team for Adam's transplant and in particular for recruiting the anaesthetist and the surgeon.¹¹² Confirmation of operating theatre availability and a post-operative bed in the Paediatric Intensive Care Unit ('PICU') must also have been obtained.¹¹³
- 2.32 Discussions with Dr Taylor ensued and he *"agreed to provide general anaesthesia for Adam with an experienced senior registrar, Dr T Montague, experienced theatre nursing staff and the ready access to experienced surgeons, and nephrologists..."*¹¹⁴
- 2.33 Dr Terence Montague,¹¹⁵ a Senior Registrar in anaesthesia, was recruited by Dr Taylor directly. He had no previous experience of paediatric renal transplants¹¹⁶ and indeed *"from January 1995 until November 1995 [he] had not actually anaesthetised any children, supervised or unsupervised."*¹¹⁷ It seems that his commitment was for a limited period only¹¹⁸ because his 24 hour shift was to end at 09:00 on Monday 27th November.¹¹⁹ His contribution was not therefore intended to be significant.
- 2.34 Over the course of the Sunday evening Professor Savage continued to assemble the transplant team.¹²⁰ The details cannot now be recalled,¹²¹ but Mr Keane was to be assisted by Mr Stephen Brown,¹²² a senior Consultant Paediatric Surgeon who had operated on Adam before. Whilst his experience and familiarity with Adam ought to have recommended him, Ms Slavin was not informed of his inclusion and has said that she had previously made it clear to Professor Savage that she *"did not want Mr*

¹¹² WS-002-2 p.2-3

¹¹³ Professor Savage T-17-04-12 p.37 line 3

¹¹⁴ WS-008-1 p.4

¹¹⁵ 303-001-002

¹¹⁶ WS-009-1 p.4

¹¹⁷ WS-009-1 p.4

¹¹⁸ WS-009-1 p.3

¹¹⁹ WS-009-1 p.3

¹²⁰ WS-002-2 p.15

¹²¹ WS-002-2 p.15

¹²² 303-001-001

*Brown to be involved in any surgery with Adam because previous experience had left me with no faith in him.”*¹²³

- 2.35 Professor Savage conceded that he knew of Ms Slavin’s concerns, but it is not clear that he knew the full extent of them¹²⁴ and Mr Brown may not have been aware of these concerns at all. Indeed he said that had he known of her objection he would not have agreed to assist Mr Keane.¹²⁵ In any event the role of the assistant surgeon was limited and, given that Mr Brown had no previous transplant experience,¹²⁶ his role was always intended to be limited.
- 2.36 Even after Adam’s admission and until such time as the compatibility tests with the donor kidney had been satisfactorily concluded, there remained some uncertainty as to whether the transplant would proceed.¹²⁷ Professor Savage believed that a positive compatibility result was received at some time after 01:00 hours on 27th November.¹²⁸ It was then that he obtained Ms Slavin’s consent to surgery.¹²⁹

Consent process

- 2.37 The consent of a parent on behalf of a child to something so serious as transplant surgery is an important matter. The fact that Adam was on the transplant register with his mother’s approval did not mean that she would automatically consent to the surgery. Professor Savage had been closely involved with Adam’s care and it must therefore have seemed natural that he would obtain her consent. He explained that in 1995 it was not uncommon for the *“initial consent to be obtained by someone other than the surgeon carrying out the procedure”*¹³⁰ and accordingly he sought the consent.¹³¹ However, at that time Ms Slavin had neither spoken with the

¹²³ WS-001-1 p.2

¹²⁴ Professor Savage T-17-04-12 p.167 line 19

¹²⁵ Mr Brown T-01-05-12 p.9 line 6-11

¹²⁶ WS-007-1 p.3

¹²⁷ WS-002-2 p.13

¹²⁸ WS-002-2 p.13

¹²⁹ WS-002-2 p.12

¹³⁰ WS-002-3 p.27

¹³¹ WS-002-3 p.5

intended anaesthetist or surgeon nor, does she believe, discussed the risks involved,¹³² recalling “*the only complication that was discussed with me was that of rejection.*”¹³³ Professor Savage remembered things differently, believing that he had discussed with her the process of the operation, the suitability of the donor kidney and the likelihood of a successful transplant.¹³⁴ He believed that she “*was aware of risks associated with surgery*”¹³⁵ excepting only the risk of fluid mismanagement because he did not foresee that as a likely problem.¹³⁶

2.38 The signed consent form¹³⁷ is the sole record of their conversation and it contains scant detail. Likewise, Professor Savage was “*unable to identify in Adam’s notes any recording of the discussions... in relation to obtaining consent, nor in relation to the detail of the transplant surgery.*”¹³⁸ He explained that it was “*not my habit at that time to make such detailed notes, but would now be standard practice. Modern consent forms now require the list of potential complications discussed to be recorded. This was not so in 1995.*”¹³⁹

2.39 It was suggested that Mr Keane, as lead surgeon, should have obtained the consent.¹⁴⁰ It is clear that had Mr Keane or Dr Taylor spoken to Ms Slavin at that time they would then have had to examine Adam’s medical history and condition. That alone would have constituted an important step in preparation for the surgery and justification in itself for their engagement in the consent process.

2.40 My concern relates not so much to the fact that Professor Savage obtained the consent but rather that he did so before Ms Slavin had spoken to the surgeon or learned of the identity and experience of the transplant team. The Trust had at that time formally acknowledged that “*patients and their*

¹³² WS-001-2 p.7-8

¹³³ WS-001-2 p.5

¹³⁴ WS-002-3 p.5 & Professor Savage T-18-04-12 p.33

¹³⁵ Professor Savage T-18-04-12 p.48 line 5-15

¹³⁶ Professor Savage T-18-04-12 p.48 line 17

¹³⁷ 058-039-185

¹³⁸ WS-002-3 p.11

¹³⁹ WS-002-3 p.11

¹⁴⁰ 203-002-032

families [are] entitled to be told the name and status of each person involved in their care."¹⁴¹ Mr Keane considered that he ought to have been part of the process of consent¹⁴² and indeed Professor Savage had the opportunity to involve him.¹⁴³ In the circumstances, I consider that, on balance, it was inappropriate for Professor Savage to have proceeded to take the consent as he did.

- 2.41 Evidence revealed that a new and detailed consent form had been issued to the Trust by the Management Executive of the Department in October 1995 with the direction that it be introduced by 31st December 1995.¹⁴⁴ The fact that it was not used in relation to Adam five weeks before the deadline cannot be a matter for criticism. What is however a matter of much more particular concern, is that it took almost five years before it was eventually adopted in the Children's Hospital.¹⁴⁵

Overnight

- 2.42 Adam was admitted at about 21:00 hours on 26th November 1995 to Musgrave Ward in the Children's Hospital.¹⁴⁶ He was seen by Dr Jacqueline Cartmill¹⁴⁷ who prescribed fluids and took blood samples as part of routine pre-operative hospital procedures.¹⁴⁸ A normal serum sodium concentration of 139mmol/L was recorded.¹⁴⁹
- 2.43 Dr Coulthard gave it as his view that "*if you put all the evidence together as to what condition he was in when he went to theatre, everything else points to him being in a relatively good condition.*"¹⁵⁰
- 2.44 In the early hours of Monday morning Dr Montague was contacted because of difficulty in re-siting the cannula used for the infusion of intravenous ('IV')

¹⁴¹ WS-061-2 p.42: 1993/94 Annual Report Royal Hospitals - 'Charter for Patients and Clients'

¹⁴² Mr Keane T-24-04-12 p.135 line 5

¹⁴³ Professor Savage T-18-04-12 p.32 line 4

¹⁴⁴ 305-002-004

¹⁴⁵ 210-003-022

¹⁴⁶ 057-013-017

¹⁴⁷ 303-001-002

¹⁴⁸ 058-035-144

¹⁴⁹ 058-035-144 as confirmed by Dr O'Connor T- 25-04-12 p.137 line 8

¹⁵⁰ 307-008-184

fluid.¹⁵¹ Adam was upset and crying.¹⁵² Dr Montague considered that if the paediatric doctors on the ward were unable to reinsert the cannula then it was unlikely that he could.¹⁵³ Accordingly, he telephoned Dr Taylor for advice and was told that Dr Taylor would attend to it in theatre. As Adam was distressed it was decided to leave it until then.¹⁵⁴

Preparation for theatre

- 2.45 Dr Haynes explained that “*preoperative assessment is an integral part of the anaesthetist’s duties... If not performed adequately, mistakes will inevitably be made.*”¹⁵⁵ Accordingly, and as part of that assessment, he would have expected Dr Taylor to have taken steps to ascertain the nature of Adam’s renal pathology, and to have noted his normal fluid balance, fluid intake, insensible fluid losses and urine production.¹⁵⁶ Furthermore, in his view, Dr Taylor should have taken time to understand Adam’s electrolyte requirements and the fact that he could not regulate urinary sodium losses and required sodium supplements to maintain normal sodium serum levels.¹⁵⁷ Dr Haynes emphasised that in particular Dr Taylor should have understood the “*central importance*”¹⁵⁸ of Adam’s previous history of hyponatraemia¹⁵⁹ and its implications for fluid management.
- 2.46 Dr Taylor did not attend on the Sunday evening to assess Adam or meet Ms Slavin. He now recognises that this “*was a mistake.*”¹⁶⁰ Had he done so he would have had time to examine the extensive case record and note that inadequate sodium administration and/or water overload had previously resulted in hyponatraemia (including one instance when he had himself administered the anaesthetic in December 1991).¹⁶¹ He could then

¹⁵¹ WS-009-1 p.3

¹⁵² 093-037-117

¹⁵³ Dr Montague T-11-05-12 p.27 line 17

¹⁵⁴ WS-009-1 p.3

¹⁵⁵ 204-004-163

¹⁵⁶ 204-004-163

¹⁵⁷ 204-004-163

¹⁵⁸ 204-002-023

¹⁵⁹ With serum sodium readings of below 120mmol/L

¹⁶⁰ Dr Taylor T-19-04-12 p.121 line 14

¹⁶¹ 200-002-047

have planned his IV fluid therapy in light of known risk and discussed any queries with Professor Savage.

- 2.47 Similarly, Mr Keane did not attend at the Children's Hospital on Sunday 26th November to meet with Adam and Ms Slavin.¹⁶² He apologised for this omission but was unable to explain it.¹⁶³
- 2.48 At one stage it had been hoped to operate at approximately 02:00 on Monday; it was then decided to start at 06:00¹⁶⁴ and finally surgery was rescheduled for 07:00.¹⁶⁵ Delay may have been justified in the hope of a well-rested transplant team but each delay increased the CIT. By 07:00 the donor kidney CIT was approximately 30 hours.
- 2.49 Professor Savage acted appropriately to ensure that Adam was in a suitable condition when he finally went to theatre. He had oversight of the overnight dialysis which was important because it affected both Adam's fluid balance and his serum sodium levels. Notwithstanding, there is no record of his fluid balance upon completion of the dialysis at 05:00¹⁶⁶ nor any indication of the urinary sodium concentration.¹⁶⁷ Whilst Professor Savage liaised with Dr Taylor and communicated relevant information including fluid status,¹⁶⁸ urine output,¹⁶⁹ and Adam's "*propensity to develop hyponatraemia*,"¹⁷⁰ Dr Taylor may not have been given the fullest of information¹⁷¹ and may not have read Professor Savage's Renal Transplant Protocol. In any event, Dr Taylor did not make any record of what Professor Savage did tell him.¹⁷²
- 2.50 Nonetheless, it remained Dr Taylor's responsibility to assess "*the preoperative condition of the patient, including liaison with referring*

¹⁶² Mr Keane T-24-04-12 p.108 line 23

¹⁶³ Mr Keane T-24-04-12 p.107

¹⁶⁴ 058-035-133

¹⁶⁵ 058-035-133

¹⁶⁶ Professor Savage T-17-04-12 p.100 line 2

¹⁶⁷ Professor Savage T-17-04-12 p.56-57

¹⁶⁸ Professor Savage T-18-04-12 p.94 line 2

¹⁶⁹ WS-002-1 p.3

¹⁷⁰ Professor Savage T-17-04-12 p.119 line 24

¹⁷¹ Dr Taylor T-20-04-12 p.28 line 15

¹⁷² Dr Taylor T-20-04-12 p.14 line 12

*clinicians... ensuring that appropriate fluid management took place in the hours leading up to the operation that the appropriate investigations had taken place and the results were obtained and noted...*¹⁷³

- 2.51 It was thus that Adam was submitted to a surgeon and a paediatric anaesthetist whose knowledge in respect of his case was what they had gathered on the telephone late the previous evening¹⁷⁴ and what they had learned when presented with his extensive medical record in theatre. That was less than adequate because Adam's medical history of multiple previous surgical interventions and occasional hyponatraemia made the surgery and anaesthetic more demanding and the nature of his renal condition meant that particular attention had to be paid to the detail of fluid and electrolyte replacement.¹⁷⁵ Dr Haynes suggested that the lead up to the transplant surgery meant that Dr Taylor "*put himself... on the back foot.*"¹⁷⁶ I agree and believe that both Dr Taylor and Mr Keane were disadvantaged by inadequate preparation.

The operation

- 2.52 Adam entered the operating theatre at 07:00 hours.¹⁷⁷ Ms Slavin accompanied him. He was crying.¹⁷⁸ Professor Savage met with Dr Taylor in theatre¹⁷⁹ and "*having checked that he felt he had all the information he needed*" withdrew "*and let him get on with the essential things that he had to do...*"¹⁸⁰ Dr Taylor then anaesthetised Adam in the presence of his mother.¹⁸¹ No criticism is made of the induction of anaesthesia.
- 2.53 Throughout the transplant Dr Taylor was to take the lead in the "*monitoring of vital signs and fluid/blood management.*"¹⁸² His task was to assess ECG, blood pressure, temperature, heart rate and central venous pressure

¹⁷³ 204-002-026

¹⁷⁴ Dr Taylor T-19-04-12 p.141 line 18

¹⁷⁵ 204-002-021

¹⁷⁶ Dr Haynes T-02-05-12 p.61 line 5

¹⁷⁷ 057-014-019

¹⁷⁸ 058-003-057

¹⁷⁹ Professor Savage T-18-04-12 p.116 line 18

¹⁸⁰ Professor Savage T-18-04-12 p.132 line 6-8

¹⁸¹ 011-014-096

¹⁸² WS-008-2 p.2

(‘CVP’)¹⁸³ in order to gauge the depth of anaesthesia and the stability of respiratory and cardiovascular systems. He was to make periodic checks on blood loss and urine output in order to manage fluids and perform blood gas tests for serum sodium concentration. In addition, he was to monitor the colour of blood, other losses and the general appearance of the veins so as to assess fluid replacement needs.¹⁸⁴ Dr Taylor claimed to have made pre-operative fluid calculations to inform his fluid management in respect of deficit, maintenance and blood loss.

2.54 Shortly after the anaesthetic was administered, arterial access was obtained in order to monitor the arterial blood pressure¹⁸⁵ and permit an assessment of electrolytes. Professor Savage recalled that he “*made it clear to Dr Taylor that it was important that his sodium and electrolytes were checked...*”¹⁸⁶ However, and significantly, this was not done. Mr Keane was unable to “*explain why Adam’s electrolytes were not checked when the central line was inserted. He should have had his electrolytes checked once the central or arterial lines were inserted.*”¹⁸⁷ Dr Taylor provided multiple explanations as to why he did not take a blood sample at that stage. However he has since acknowledged that he “*omitted doing blood samples as requested by Professor Savage*”¹⁸⁸ and should have sent “*a blood sample for electrolyte analysis... before starting the operation. I should also have sent other samples as necessary and used those results to adjust the rate and type of the intravenous fluids.*”¹⁸⁹ Given Adam’s history of electrolyte abnormality that was an important failure because it risked uncontrolled electrolyte disturbance during surgery.

2.55 In addition to the failure to measure Adam’s electrolytes after the induction of anaesthesia there was a failure to measure his urinary output during surgery. This was of particular importance for Adam because his urine

¹⁸³ WS-008-2 p.2

¹⁸⁴ WS-008-2 p.2

¹⁸⁵ 011-030-155

¹⁸⁶ WS-002-3 p.14

¹⁸⁷ WS-006-2 p.13

¹⁸⁸ Dr Taylor T-19-04-12 p.74 line 7

¹⁸⁹ WS-008-6 p.3

production was abnormal. Dr Haynes advised that *“Adam produced significant volumes of urine and his urinary output should have been monitored when possible during the operation and a urinary catheter should have been inserted following induction of anaesthesia prior to commencing surgery.”*¹⁹⁰ This was so that Dr Taylor might know the rate of fluid lost as urine in order to calculate the correct rate for the IV fluid infusion.

- 2.56 However, Adam’s urinary output remained unmeasured until a catheter was inserted by Mr Keane at about 10:30.¹⁹¹ Mr Keane indicated that whilst there was no contra-indication to inserting a urinary catheter immediately after Adam was anaesthetised¹⁹² he nonetheless felt that *“Adam’s urethra was very small and in my opinion urethral catheterisation was unnecessary. I wanted the bladder full.”*¹⁹³ However, it was the anaesthetist’s responsibility to manage fluid balance and that entailed monitoring the output of urine. Dr Taylor should have insisted that a urinary catheter be inserted for that purpose. He would then have been able to gauge the quantity of urine spent and review and adjust the volume of fluids Adam was receiving. Dr Taylor eventually conceded that this was *“another element of care that... left me unable to reassess and review my fluid administration during Adam’s procedure.”*¹⁹⁴

Fluids administered

- 2.57 Dr Taylor commenced an infusion of Solution No.18¹⁹⁵ in accordance with his own calculation of fluid requirements¹⁹⁶ predicated upon a maintenance rate of 200mls per hour.¹⁹⁷ He then administered 750mls of Solution No. 18 in the first hour of surgery¹⁹⁸ in order to restore perceived deficit, provide maintenance and replace insensible losses.¹⁹⁹ In total, he gave Adam

¹⁹⁰ 204-002-031

¹⁹¹ WS-006-3 p.8

¹⁹² WS-006-2 p.6

¹⁹³ WS-006-3 p.9

¹⁹⁴ Dr Taylor T-20-04-12 p.51 line 10

¹⁹⁵ 303-002-042 An IV solution containing 30mmol/litre of sodium and chloride or 1/5 the concentration occurring in natural body fluids such as blood.

¹⁹⁶ 058-003-005

¹⁹⁷ WS-008-2 p.31

¹⁹⁸ WS-008-5 p.5 & 058-003-005

¹⁹⁹ 011-014-101

1,500mls of Solution No.18 during surgery. Because Solution No. 18 contains one fifth of the sodium content of normal saline this equated to 300mls of normal saline and 1,200mls of “*free water*.”²⁰⁰ Other solutions given included 1,000mls of human plasma and 500mls of packed blood cells each containing similar levels of sodium to blood.²⁰¹

2.58 In justifying his fluid management Dr Taylor insisted that Adam would pass 200mls of dilute urine per hour²⁰² and that because of kidney disease this was a “*minimum loss*” which may indeed have been “*unlimited*”²⁰³ rendering Adam like a hole in a bucket which he was obliged to fill.²⁰⁴ Consequently he argued that Adam would not retain “*free water*” and could not therefore suffer dilutional hyponatraemia.²⁰⁵

2.59 Dr Coulthard’s expert opinion categorised this argument as “*without foundation*”²⁰⁶ and estimated urinary output as significantly less than 200mls. Indeed he was of the opinion that Adam’s urinary output was fixed,²⁰⁷ that the kidneys were working “*flat out*”²⁰⁸ and that if Adam were given more fluids than he could excrete, the surplus would be retained in the body.²⁰⁹

2.60 Dr Haynes said that he was amazed at the suggestion that Adam might have had an hourly urine output of 200mls which would amount to 4.8 litres per day. He was surprised that the “*simple arithmetic*” did not strike Dr Taylor as “*being extremely unusual and well beyond what would normally be expected, certainly for a 20-kilogram boy*.”²¹⁰

2.61 Only belatedly did Dr Taylor reconsider his position and acknowledge that Adam did in fact have a fixed urine output of 70-80mls per hour. He then

²⁰⁰ 201-006-176

²⁰¹ 058-003-005

²⁰² WS-008-2 p.6 & WS-008-3 p.12

²⁰³ 093-038-242

²⁰⁴ 093-038-195

²⁰⁵ WS-008-2 p.39

²⁰⁶ 200-002-056

²⁰⁷ Dr Coulthard T-08-05-12 p.168 line 22

²⁰⁸ 200-009-151

²⁰⁹ 200-002-045

²¹⁰ Dr Haynes T-02-05-12 p.128

conceded that his arguments about fluid requirements were wrong, that he “*wrongly estimated or calculated his urinary losses*”²¹¹ and that he administered Solution No.18 to Adam “*at a rate in excess of his ability to excrete it, particularly in the first hour of anaesthesia.*”²¹²

- 2.62 Such sodium as was lost in surgery through bleeding could not have been replaced by the low sodium Solution No.18. Whilst Solution No.18 may have served as a partial maintenance fluid it could never have been a sodium replacement fluid given the levels of sodium lost.
- 2.63 Dr Haynes considered that hyponatraemia was the inevitable consequence of administering the low sodium Solution No. 18 in significant volume.²¹³
- 2.64 In addition, expert evidence agreed that not only was the quantity of low sodium fluids administered excessive but the rate was “*dramatically fast.*”²¹⁴ This led to an acute fall in Adam’s serum sodium levels and as Dr Coulthard explained the “*absolutely critical element of management is about how quickly or how slowly you allow the sodium to fall. Letting the sodium fall quickly leads to cerebral oedema and brain death.*”²¹⁵ In the opinion of Mr Keane, Adam was given “*no chance.*”²¹⁶
- 2.65 When, at the end of surgery, Dr Taylor reversed the anaesthesia and removed the sterile towels from Adam’s face - Adam did not wake, he did not breathe. His pupils were fixed and dilated²¹⁷ and his face was markedly swollen.²¹⁸
- 2.66 Adam’s death was avoidable.

²¹¹ Dr Taylor T-19-04-12 p.26 line 1

²¹² WS-008-6 p.3

²¹³ 204-002-035

²¹⁴ 200-002-054

²¹⁵ 307-007-102

²¹⁶ Mr Keane T-23-04-12 p.29 line 24

²¹⁷ 058-035-135

²¹⁸ WS-008-2 p.45

Other fluid management issues

- 2.67 From the outset, Dr Taylor persistently raised misleading assertion and argument in defence of his fluid management, namely:

Fluid Deficit

- 2.68 Dr Taylor asserted that Adam was in fluid deficit before surgery and accordingly there was “*an urgency to replace this deficit so that Adam did not become dehydrated...*”²¹⁹ However, expert opinion agreed that Adam was in little or no fluid deficit and was not dehydrated when he arrived in theatre.²²⁰ Not only was Dr Taylor’s assumption that Adam required fluid to correct a deficit wrong, but the nature of the fluid he chose to correct it was also wrong.²²¹

Solution No. 18

- 2.69 Dr Taylor claimed that Solution No.18 was the fluid recommended by the British National Formulary²²² for the treatment of dehydration, however, as Dr Coulthard pointed out, the actual recommendation was for normal saline²²³ and the use of Solution No. 18 to “*replace his deficit*” was quite “*simply wrong.*”²²⁴ Further, Dr Taylor contended in his evidence that Solution No.18 was more widely used in 1995 than it is now. That proposition was accepted by Dr Haynes and others in their evidence but as Dr Haynes emphasised basic training warned against the inappropriate infusion of low sodium fluids.²²⁵

²¹⁹ WS-008-1 p.3

²²⁰ Dr Coulthard T-08-05-12 p.169 line 17

²²¹ 200-007-126

²²² 093-038-132

²²³ 200-005-094

²²⁴ 200-002-054

²²⁵ Dr Haynes T-02-05-12 p.24 line12

Blood Loss

- 2.70 Dr Taylor maintained that he administered fluids to replace what he categorised as a “*substantial ongoing blood loss*”²²⁶ which he estimated to be as much as 1,411mls.²²⁷ However, Mr Keane recalled “*no major bleeding in Adam’s case*”²²⁸ and Dr Haynes, having examined the evidence, ventured an informed guess of 800-1,000mls.²²⁹ Dr Taylor conceded in evidence that it was “*possible that there was an error on my measurement and otherwise of the blood loss.*”²³⁰

Monitoring the CVP

- 2.71 CVP readings were displayed throughout surgery and were an important guide for the safe management of Adam’s fluid balance.²³¹ Notwithstanding that the readings were high indicating fluid overload, Dr Taylor ignored them and insisted that a mis-siting of the CVP catheter had rendered the read-out inflated and unreliable.²³² Rather than remedy the problem or disregard the reading altogether, he chose to silence the alarm²³³ and reinterpret the unreliable figures.²³⁴ Dr Coulthard was simply unable to “*accept that it was good practice to assume that a monitoring system is not working, and to make clinical decisions that appear to conflict with its read-outs.*”²³⁵ Dr Haynes pointed out that if the CVP readings were wrong then that was all the more reason not to use them as the basis for reinterpretation.²³⁶ If Dr Taylor did not believe the reading he should have agreed with Mr Keane at the outset to rectify the problem.²³⁷ It is unlikely that time thus spent would have had “*significant negative impact.*”²³⁸ Mr Keane said that if the reading

²²⁶ 011-014-096
²²⁷ WS-008-1 p.7
²²⁸ WS-006-2 p.14
²²⁹ 204-006-337
²³⁰ Dr Taylor T-20-04-12 p.108 line 10
²³¹ 058-008-022
²³² WS-008-2 p.12
²³³ Dr Taylor T-06-09-12 p.137 line 10
²³⁴ Dr Taylor T-19-04-12 p.76 line 15
²³⁵ 200-002-055
²³⁶ 204-013-395
²³⁷ 204-004-155
²³⁸ 203-004-076

could not be relied on then *“the whole thing has to stop.”*²³⁹ Dr Coulthard considered the correct approach would have been to delay surgery until a satisfactory CVP reading was available. Somehow and in the event Dr Taylor reassured the surgeons and allowed his lack of concern to reassure Dr O’Connor.²⁴⁰ Dr Taylor now recognises that he *“shouldn’t have relied on that line at all”*²⁴¹ and ought to have considered ending the transplant because *“this potentially should have been a show-stopper.”*²⁴² Had he taken the time to resolve this issue he would then have had a reliable measure of vascular fullness and would have known that Adam did not need extra fluid.

Blood gas machine sodium level assessment

- 2.72 Dr Taylor failed to make an early assessment of Adam’s sodium levels during surgery. After some time he did despatch a blood sample for analysis by blood gas machine and received the result at 09:32. It recorded a sodium value of 123mmol/L.²⁴³ Not only was this reading very low but it revealed a significant drop from normal in only a matter of hours. Dr Taylor ignored this result because he said that it was his understanding that the blood gas machine did not always provide reliable results for serum electrolytes.²⁴⁴ However, Dr Coulthard has since calculated that the *“plasma sodium reading of 123mmol/L as measured is likely to be correct”*²⁴⁵ and should in any event should have prompted an urgent blood sodium assessment from the hospital laboratory to inform fluid management.²⁴⁶ Dr Haynes agreed, observing that even if blood gas testing is not very accurate it does alert the anaesthetist to potentially dangerous changes in sodium levels more quickly than laboratory testing and *“allows corrective action”*²⁴⁷ In Adam’s case it may also have allowed

²³⁹ Mr Keane T-26-04-12 p.95 line 6

²⁴⁰ Dr O’Connor T-25-04-12 p.129 line 14

²⁴¹ Dr Taylor T-19-04-12 p.82 line 1

²⁴² Dr Taylor T-19-04-12 p.82 line 1

²⁴³ 058-003-003

²⁴⁴ Dr Taylor T-20-04-12 p.103

²⁴⁵ 200-002-053

²⁴⁶ 200-004-085

²⁴⁷ 204-002-025

an opportunity to minimise his cerebral oedema.²⁴⁸ That was a missed opportunity. Dr Taylor belatedly acknowledged that he should have sent “a confirmatory sample to the lab. I did not do that and I regret that I did not do that”²⁴⁹ and further that he “should have done regular blood samples to adjust my fluids... and I also failed to do that.”²⁵⁰

Dr Taylor

2.73 In addition to proceeding without understanding Adam’s sodium levels or urine output and with a profound misunderstanding as to his fluid management, Dr Taylor was wrong to ignore the danger signals given by the CVP and the blood gas sodium analysis. Furthermore, it was wrong and misleading of him to insist upon justifying his clinical performance in the way he did and false to assure the Coroner, Adam’s mother and others that his management of Adam was “*caring, appropriate, expert and representative of the highest quality and intensity of care that I can provide.*”²⁵¹

2.74 Dr Taylor steadfastly maintained his baseless justifications for many years and only changed his position in late 2011 after he was provided with the Inquiry expert reports. In early 2012, and having received legal advice which was independent of the Trust for the first time, he made a written statement admitting error.²⁵² In April 2012, he acknowledged in oral evidence much that he had previously denied. He said:

“...I accept that it was my miscalculation of urine output that led me to give the inappropriate amount of fluids that led to a drop in his sodium called dilutional hyponatraemia which led to cerebral oedema.”²⁵³

²⁴⁸ 204-002-033

²⁴⁹ Dr Taylor T-20-04-12 p.105 line 9-10

²⁵⁰ Dr Taylor T-19-04-12 p.74 line 4

²⁵¹ 011-002-009

²⁵² WS-008-6

²⁵³ Dr Taylor T-19-04-12 p.40 line 5

- 2.75 However, Dr Taylor would not accept that Adam's death occurred in consequence of the dilutional hyponatraemia.²⁵⁴ He relied on the evidence of Professor Kirkham that it could not have been so. For the reasons set out in the section of this report entitled "*Fatal cerebral oedema: alternative causes and contributory factors*" (Para 2.177) I do not accept Professor Kirkham's analysis.
- 2.76 Dr Taylor's management of Adam's fluids before and during the surgery of 27th November 1995 defies understanding. In his oral evidence, Dr Taylor accepted that he could not understand it either, nor could he explain or justify what he did or how he subsequently defended it,²⁵⁵ except to say that he found it "*difficult to cope with [his] thought processes, going over such a devastating event. I think that has permitted me to say things that are clearly irrational, wrong, disturbed, confused, and I offer that as an explanation for making such really outrageous statements.*"²⁵⁶
- 2.77 I heard a lot of evidence from Dr Taylor but do not believe I was told the full story. Dr Taylor offered no insight into why he did what he did during Adam's transplant. Ms Slavin wanted to know why he had made so many mistakes.²⁵⁷ Inquiry counsel questioned how, given his experience and expertise, he could make such fundamental errors.²⁵⁸ Yet despite, or perhaps because, he provided so much evidence, Dr Taylor managed to keep his own thought processes obscure. Even though he now accepts what he did, he makes no attempt to explain it.
- 2.78 Dr Taylor made fatal errors in his treatment of Adam. I accept that this was most probably uncharacteristic²⁵⁹ and do not query his usual competence. However, and over and above the hurt inflicted on Adam's family by death, Dr Taylor caused significant additional pain by acting as he did to avoid his own responsibility.

²⁵⁴ Dr Taylor T-20-04-12 p.189 line 13

²⁵⁵ Dr Taylor T-19-04-12 p.56 line 24

²⁵⁶ Dr Taylor T-19-04-12 p.57 line 25

²⁵⁷ Dr Taylor T-20-04-12 p.154 line 10

²⁵⁸ Dr Taylor T-19-04-12 p.67 line 3

²⁵⁹ Dr Taylor T-19-04-12 p.58 line 23

Other issues

Assistant anaesthetist

- 2.79 A question arose as to when Dr Montague left the operating theatre and whether he was replaced. This became an issue of potential concern because Dr Taylor accepted that he had himself left the theatre from time to time²⁶⁰ and accordingly, if he had been without an assistant anaesthetist at any such time, responsibility for monitoring Adam would have fallen to the anaesthetic nurse who cannot now be identified.²⁶¹
- 2.80 Considerable efforts were made to establish the facts. Dr Montague probably left at some point between 09:00 and 09:30.²⁶² He is not to be criticised for leaving because he would not have done so without Dr Taylor's approval and there is no suggestion that that was withheld.²⁶³ The evidence does not suggest that Dr Montague was replaced. No trace of replacement has been found.
- 2.81 The necessity for an anaesthetist to replace Dr Montague is not to be assumed. It depended in part upon whether there was a nurse actually present and assisting Dr Taylor with the anaesthetic. The evidence agreed that there would have been three nurses in theatre, one of whom would have helped Dr Taylor. Whilst none could remember who was there, all agreed that the appropriate number of nurses was present. I therefore accept, on the evidence, that there was such a nurse.²⁶⁴ Her role was a relatively minor one in 1995. Some vagueness as to who was present is understandable, the absence of written record is not.
- 2.82 Furthermore, and given that Dr Montague was inexperienced and probably only there to train and gain experience, I believe that Dr Taylor was in

²⁶⁰ WS-008-2 p.9

²⁶¹ 306-002-003

²⁶² Dr O'Connor T-25-04-12 p.71 line 3

²⁶³ Dr Taylor T-20-04-12 p.60 line 11

²⁶⁴ Staff Nurse Popplestone T-30-04-12 p.60 line 1

charge of anaesthesia at all times during Adam's operation, irrespective of the presence or otherwise of any other doctor or nurse to assist him.

Communication between surgical and anaesthetic teams

2.83 The shared priority of surgeon and anaesthetist is patient safety. Accordingly effective exchange of patient information between them and their assistants is of particular importance.²⁶⁵ Expert witnesses to the Inquiry questioned whether the two teams communicated successfully during the transplant. Dr Haynes observed that "*reading and re-reading the various witness statements does not reassure me that surgeon and anaesthetist were working effectively together as a team, communicating well with each other.*"²⁶⁶ Communication was critical in relation to blood loss,²⁶⁷ CVP readings and fluid management at the time of re-perfusion of the transplanted kidney.²⁶⁸ Mr Keane confirmed that communication between them may not always have been "*helpful*"²⁶⁹ but emphasised that if Dr Taylor did not understand what he was to impart then he was expected to ask.²⁷⁰ I believe that had Dr Taylor explained what he was doing and had better dialogue with the transplant surgeon then the risk of gross fluid mismanagement may have been reduced.

Determining what happened in the operating theatre

2.84 It might be expected that a detailed analysis of Adam's surgery would allow a clear understanding of events in theatre. However, establishing exactly what happened during surgery has proved to be one of the most difficult areas of the Inquiry's investigation. There are issues about which it is not possible to make a clear finding, even on the balance of probabilities. Some issues are more important than others but the overall number of them is significant. This is troubling because of a concern that the full truth of what

²⁶⁵ Mr Keane T-26-04-12 p.161 line 7

²⁶⁶ 204-006-334

²⁶⁷ Mr Keane T-26-04-12 p.41 line 20

²⁶⁸ Mr Keane T-26-04-12 p.160 line 1

²⁶⁹ Mr Keane T-26-04-12 p.157 line 1

²⁷⁰ Mr Keane T-26-04-12 p.158 line 18

happened in theatre may not have been revealed and that Adam's surgery may not have been as recorded by the doctors and nurses in the case notes, or as described by them in their written statements to the Coroner, the Police and this Inquiry or as recounted by them under oath.

2.85 Doubts as to the accuracy of the broad narrative first emerged from the evidence of the Regional Transplant Co-ordinator for Northern Ireland, Ms Eleanor Boyce (née Donaghy),²⁷¹ who made a statement to the Police Service of Northern Ireland ('PSNI') on 28th April 2006 recalling how Staff Nurse Joanne Sharratt (née Clingham)²⁷² had informed her, when Adam was still in theatre, that he might even then be brain-stem dead. Ms Boyce described how, on entering the theatre, she had found the mood very sombre. She believed the surgeons were at the operating table and although she could not say what they were doing or what stage had been reached²⁷³ she could "...remember Patrick Keane (Surgeon) being at the table. There was another surgeon however I do not recall who it was. There were other staff present in the operating theatre; however I do not recall who they were. I remember when I was in the theatre wondering why they were continuing with the procedure if the child was supposed to be brain-stem dead."²⁷⁴ She said that "*there was an awareness that we were dealing with a very serious situation.*"²⁷⁵ Her presence in theatre was confirmed by Dr O'Connor²⁷⁶ but her account was flatly dismissed by everyone.

2.86 Notwithstanding that uniquely Ms Boyce was independent of the Trust and had no apparent reason to invent such an account, her very different recollection of surgery was not initially accorded particular significance beyond that of puzzling anomaly. However, her statement assumed greater significance when a pre-inquest consultation minute taken by Mr George Brangam's²⁷⁷ para-legal assistant, Ms Heather Neill, came unexpectedly to

²⁷¹ 306-081-005

²⁷² 303-001-003

²⁷³ 093-015-048

²⁷⁴ 093-016-049

²⁷⁵ Ms Boyce T-27-04-12 p.120 line 13

²⁷⁶ Dr O'Connor T-25-04-12 p.75 line 22

²⁷⁷ 306-081-006 The late Mr George Brangam, erstwhile partner in Brangam, Bagnall & Co Solicitors, retained by the Trust. His death precluded his giving evidence to the Inquiry

light in June 2012.²⁷⁸ On the 14th June 1996 she had recorded Dr Taylor and Professor Savage in discussion with Dr George Murnaghan,²⁷⁹ Dr Joseph Gaston²⁸⁰ and Mr Brangam and had noted an assertion that “*during the surgery when this kidney was failing to operate a needle was put into the artery and no blood came out and clearly the kidney was not working when the operation site was closed however, the performance of the kidney was no longer relevant at this stage.*”²⁸¹ This perplexed because it is so markedly at odds with the other evidence about what happened in theatre, with the possible exception of Ms Boyce’s account.

2.87 In particular the operation record, far from noting any concern with perfusion, records in Mr Keane’s hand that “*the kidney was perfused reasonably at the end.*”²⁸² Indeed, Mr Keane stated in his deposition for inquest that “*the operation was difficult but a successful result was achieved at the end of the procedure*”²⁸³ (by which he said he meant a “*technically successful result*”).²⁸⁴ Accordingly, had a needle been placed in the artery and no blood emerged so as to indicate that the “*kidney was not working*”,²⁸⁵ then that most certainly would have been recorded.

2.88 The possibility that an ‘unknown event’ had occurred in theatre, which was being concealed, focused attention on the totality of evidence in the search for answers. An unexpected degree of vagueness and inconsistency emerged. I found this very surprising because I had been told repeatedly that the death of a child in hospital is a rare event. It might therefore be supposed that those involved would remember with some clarity what had gone wrong, no matter whose fault it was or even if it was nobody’s fault. However, even the evidence identifying where the operation took place, when it took place and who was there, is worryingly unclear:

²⁷⁸ 122-001-001

²⁷⁹ 306-081-005

²⁸⁰ 306-081-003 to 004

²⁸¹ 122-001-005

²⁸² 059-006-013

²⁸³ 011-003-010

²⁸⁴ Mr Keane T-23-04-12 p.60 line 15

²⁸⁵ 122-001-005

- (i) There is no record as to which theatre was used. Not even the reported closure of the theatre²⁸⁶ after the catastrophic event generated any documentary evidence. The only available record is the swab count marked "*Theatre II*."²⁸⁷ Doubt however emerged in oral evidence²⁸⁸ as to whether this could be correct.
- (ii) There is no reliable record as to who was present in theatre at the time of surgery. Dr Taylor believed that Dr Montague was replaced by a trainee anaesthetist. Despite extensive enquiry this individual could not be identified.²⁸⁹ Likewise, Dr Taylor indicated that an anaesthetic nurse was present. Again, despite exhaustive efforts by the Inquiry and the Directorate of Legal Services ('DLS'), that nurse remains unidentified.²⁹⁰ An auxiliary nurse would have been present in theatre²⁹¹ and another made entries in the record of blood loss.²⁹² These individuals also remain unidentified.²⁹³
- (iii) Additionally, there is a problem determining when surgery started and when it ended. Timings do not appear in the record and reliance must be placed upon the recollection of those involved. Professor Savage recalled that Adam was taken to theatre at 07:00.²⁹⁴ Mr Keane deposed that "*the operation started at 7.30am*."²⁹⁵ Subsequently and upon reflection he stated "... *it would now appear that the surgery started at around 8:00am*"²⁹⁶ and then gave his "*best possible estimate... a start time of 8:10*."²⁹⁷ Witnesses were at odds about the timing of events in surgery. Dr Taylor believed

²⁸⁶ 093-034-086

²⁸⁷ 058-007-020

²⁸⁸ Mr Brown and Dr Montague T-11-05-12 p.80 line 16-25 & other nurse witnesses - Patricia Conway T-30-04-12 p.41 lines 11-16, Nurse Popplestone T-30-04-12 p.63 lines 13-20, Margaret Matthewson T-30-04-12 p.107 line 21-108 line 9 & Dr Gibson's Report (059-069-162)

²⁸⁹ 306-002-004

²⁹⁰ 301-043-407 & 306-002-003

²⁹¹ Dr Taylor 20-04-12 p.78 line 12

²⁹² 058-007-021

²⁹³ Mr Keane T-24-04-12 p.124 line 11

²⁹⁴ 016-004-014

²⁹⁵ 011-013-093

²⁹⁶ WS-006-3 p.12

²⁹⁷ Mr Keane T-26-04-12 p.5 line 16

anastomosis²⁹⁸ occurred shortly after 09:30²⁹⁹ but Dr O'Connor was astounded that he should think that and said that it was not achieved until around 10:30.³⁰⁰ Dr Taylor was driven to concede "*discrepancy in the notes*"³⁰¹ and could neither recollect nor explain why nothing was seemingly done between 10:15 and 11:00.³⁰² The anaesthetic record ends at 11:00 when Dr Taylor administered drugs to reverse the neuromuscular blockade,³⁰³ however he was quite unable to explain what was done subsequently between then and midday.³⁰⁴

2.89 Furthermore, the evidence detailing events in theatre was contradictory.

- (i) Mr Keane has stated that when he left theatre "... *the kidney was reasonably well perfused.*"³⁰⁵ However, his deposition for inquest indicated that "*at the end of the procedure it was obvious that the kidney was not perfusing as well as it had initially done.*"³⁰⁶ Conversely, Staff Nurse Gillian Popplestone³⁰⁷ remembered "... *it was discoloured and then that seemed to subside.*"³⁰⁸ Other witnesses were similarly inconsistent in relation to the condition of the donor kidney. Dr O'Connor said it was described as "*bluish.*"³⁰⁹ Mr Brown in his statement to the PSNI recalled that "*from what I can remember the kidney turned pink... As far as I can remember the kidney remained pink...*"³¹⁰ Dr Taylor informed the Coroner that at around 10:00 the donor kidney was not looking good and not producing urine.³¹¹ Mr Keane recalled urine being produced whereas Mr Brown was clear that none had been produced.³¹²

²⁹⁸ 312-005-002

²⁹⁹ 122-001-003

³⁰⁰ Dr O'Connor T-25-04-12 p.124 line 12

³⁰¹ Dr Taylor T-06-09-12 p.59 line 23

³⁰² Dr Taylor T-06-09-12 p.70 line 22

³⁰³ 058-003-005

³⁰⁴ Dr Taylor T-06-09-12 p.146 line 2 & p.147 line 14 & p.149 line 2

³⁰⁵ WS-006-2 p.7

³⁰⁶ 011-013-093

³⁰⁷ 303-001-004

³⁰⁸ Staff Nurse Popplestone T-30-04-12 p.81 line 2

³⁰⁹ Dr O'Connor T-25-04-12 p.138 line 15

³¹⁰ 093-011-032

³¹¹ 011-014-101

³¹² 059-060-146 & Mr Brown T-01-05-12 p.102 line 21

- (ii) Neither the time of Mr Keane's departure from the operating theatre nor the time of wound closure is recorded. Mr Keane has stated that he left the operating theatre at "*approximately 10-30am*"³¹³ and yet when he gave his evidence at inquest he made no reference whatsoever to leaving early or of relying upon Mr Brown to close the wound and complete the operation.³¹⁴ Similarly Mr Brown, in his statement to the Coroner, made no reference to Mr Keane's departure before the end of transplant surgery or to the fact that he had closed the wound.³¹⁵ Subsequently, and in response to police questioning, he stated that "*it would appear to be the case that Mr Keane left myself to sew up the wound. I do not have any recollection of the end of the operation or the anaesthetist trying to bring Adam round.*"³¹⁶
- (iii) Mr Keane claimed to have left the theatre "*10 minutes prior to the end of the anaesthesia*" to attend an emergency³¹⁷ explaining that he had received a call from the BCH about "*a patient who was undergoing a percutaneous nephrolithotomy, was bleeding heavily in the operating theatre there and they needed help urgently.*"³¹⁸ Despite extensive enquiry this emergency was uncorroborated and remained a mystery until Mr Keane conceded that there may not have been an emergency at all but suggested that he might have returned to BCH for a scheduled operation for which he may already have been late.³¹⁹
- (iv) Mr Keane's surgical notes are poor and remarkably, Mr Brown made no notes at all.³²⁰ Professor Forsythe and Mr Rigg in their joint report describe the operating record as brief.³²¹ Whilst it does record key

³¹³ WS-006-2 p.7

³¹⁴ 011-013-093

³¹⁵ 059-060-146

³¹⁶ 093-011-032

³¹⁷ WS-006-1 p.3

³¹⁸ WS-006-2 p.7

³¹⁹ Mr Keane T-26-04-12 p.163-4

³²⁰ Mr Brown T-20-06-12 p.185 line 18

³²¹ 203-004-078

issues, lesser matters are omitted. Some entries lack detail, there is no timing for the beginning or end of anastomosis and no comment on the perfusion of the kidney after removal of the clamps. Furthermore, the post-operative assessment was not completed,³²² kidney performance at the end of surgery was left unrecorded and there is no post-operative management plan.

- 2.90 The inevitable suspicion was that Adam had suffered a failed transplant and had died earlier than previously indicated and in unclear circumstances. It is to be emphasised that none of the experts believe that the infarction of the kidney contributed to Adam's death. Accordingly, suspicion as to what else may have happened in theatre is almost certainly irrelevant to the history of the development of hyponatraemia, its role in Adam's death and the principal focus of this Inquiry. Nonetheless, the matter assumed considerable importance because it was so clearly relevant to the candour and credibility of all involved in the operating theatre. Were there to have been concealment of facts, such would only have been possible by an active conspiracy of silence and deceit involving all those doctors and nurses engaged in the operating theatre, and some perhaps who were not.
- 2.91 Such a proposition was entirely speculative but would perhaps have accounted for the unexplained delays in theatre, the inconsistencies relating to exchange of CVP values and the perfusion of the kidney, the poor operation notes, the departure of the lead surgeon, the failure of the surgical team to speak to Ms Slavin and the opinion of some experts as to the likely timings of kidney infarction³²³ and brain stem death.³²⁴ Accordingly, hearings were arranged³²⁵ and witnesses recalled in order that the matter be further examined in detail.
- 2.92 Those involved in the operating theatre had their recollection and previous evidence tested under focused examination. Inevitable minor discrepancies

³²² 058-003-006

³²³ 011-007-022

³²⁴ 200-022-267

³²⁵ In September 2012

were revealed but I found the general version of events to be as previously described and no new issues were revealed.

2.93 In particular the evidence of Ms Boyce and the consultation note of Ms Neill were subjected to the closest scrutiny.

- (i) Ms Neill was able and experienced and had recorded a minute of a private consultation between the Trust's witnesses and the Trust's solicitor. She made it for internal legal purposes without any intention of wider circulation. To that extent it might be thought to possess the detachment necessary to lend it weight. There is no reason to suspect that Ms Neill sought to distort or invent what was said at the meeting. It is hard, likewise, to comprehend how she might have misunderstood or misinterpreted what was said. Despite a lack of medical training, much of her note is self-evidently correct. However, the fact remains that identifiable mistakes do appear in the minute, there is re-ordering of subject matter by theme obscuring the nuance and context of the discussion and, with some rearrangement of punctuation and emphasis, less troubling meanings can be found in the controversial wording. The contentious account deals specifically with the surgeon's role but it must be noted that there was no surgeon at the meeting and no surgical perspective on the issue under discussion. Indeed the statement cannot be attributed with confidence to any one individual. The minute was not checked by Ms Neill's principal, Mr Brangam, nor was it circulated for comment or agreement. The account recorded differs so obviously from those depositions already held from the witnesses that Mr Brangam might have been expected to query this particular version of events. Ms Neill would, I am quite sure, have recorded any such discussion. None is noted. Accordingly, I conclude on the balance of probabilities, that the consultation note is not to be relied upon in its entirety and is therefore an unsound basis upon which to make a finding of fact.

(ii) Ms Boyce did not make her statement recalling her presence in theatre until long after Adam's death. Whilst I do not doubt her sincerity, there was nobody who agreed with her recollection. The fact that it differs from everybody else's is a valid reason for taking it seriously but it is also a valid reason for suspecting its accuracy if it is not completely compelling. Ms Boyce gave evidence that she watched from a distance as surgeons worked with Adam and wondered why if he was already dead. Her account was based on what she sensed of the mood in theatre and interpreted in the light of what she remembered being told. If she had misunderstood the context then she may have misinterpreted the scene. She said that she remained in theatre until the end and did so because of her interest in Adam as a patient known to her. Her inability, however, to recall how long she stayed³²⁶ is hard to understand in the circumstances described, as indeed was her failure, then or at any time thereafter, to enquire about what had happened.³²⁷ If she had confused one memory with another that could lead to error. Very properly she accepted the possibility that her memory was wrong.³²⁸ On balance, and on the hearing of the evidence,³²⁹ I am unable to conclude that Ms Boyce's perception and recollection of what she witnessed necessarily reflects what actually occurred.

2.94 It is with frustration that I cannot make findings from the evidence as to what did happen at all times during Adam's surgery. The available evidence was degraded by the passage of time, the paucity of documentation, the absence of contemporary investigation, the number of inconsistencies and the decidedly poor quality of some of the oral testimony given at public hearings. However, I consider my inability to form a view after so rigorous an inquiry into the avoidable death of a child in Northern Ireland's Regional

³²⁶ Ms Boyce T-27-04-12 p.119 lines 10-13

³²⁷ Ms Boyce T-27-04-12 p.121 line 19

³²⁸ Ms Boyce T-27-04-12 p.129 line 20

³²⁹ In particular that of Dr O'Connor

Paediatric Centre to be, of itself, a grave indictment of both the Trust and its systems.

Early appraisal of condition and communication with Ms Slavin

- 2.95 The first assessment of the cause of Adam's death appears to have been made at the conclusion of surgery by Dr O'Connor when she *"was called back to theatre when the fixed dilated pupils were apparent."*³³⁰ She *"formed a view that he had cerebral oedema"*³³¹ and *"a significantly positive fluid balance."*³³² She proceeded to telephone Professor Savage who *"rapidly went to the intensive care unit and reviewed the situation, with her... with a rapid calculation we thought he had had 1,500ml of fluid more in than out... so at that stage with a low sodium and subsequently with a lower sodium coming back from the laboratory, I think Dr O'Connor and I felt that there was a situation where his fluid balance was excessive on the positive side. He had a lot of fifth normal saline and we felt he had probably got cerebral oedema and coned."*³³³ Dr O'Connor concluded that *"the picture seemed to be of fluid overload"*³³⁴ and felt that it was Professor Savage who was best placed to speak to Ms Slavin³³⁵
- 2.96 Professor Savage recalls discussing *"with Dr Taylor that Adam looked bloated and... would appear to [to have] had excessive amounts of fluid and that that was the cause of his cerebral oedema... I said that I believed that I then had to go and explain that to Debra Strain and asked him to accompany me."*³³⁶
- 2.97 Ms Slavin arrived at the PICU at 12:15. She saw Adam and was struck by *"how bloated he was."*³³⁷ She was met by Professor Savage, Dr Taylor and Staff Nurse Susan Beattie.³³⁸ Professor Savage explained to her that

³³⁰ Dr O'Connor T-25-04-12 p.112

³³¹ Dr O'Connor T-25-04-12 p. 114 line 21

³³² Dr O'Connor T-25-04-12 p.115 line 21

³³³ Professor Savage T-18-04-12 p.151 line 6

³³⁴ Dr O'Connor T-25-04-12 p.136 line 5

³³⁵ WS-014-2 p.4

³³⁶ Professor Savage T-22-06-12 p.14 line 3

³³⁷ WS-001-1 p. 2

³³⁸ 303-001-003

*“Adam had cerebral oedema with a swollen brain causing pressure on his vital centres,”*³³⁹ *“there had been an imbalance of fluids in his body”*³⁴⁰ and that *“hope of recovery was remote.”*³⁴¹ He told her that he did not yet understand why this had happened, principally because he felt that *“it did not seem an appropriate time to get into [dilutional hyponatraemia] with Mrs Strain, bearing in mind that I knew she would likely only remember the bad news that I was giving her.”*³⁴² She was informed by Dr Taylor that something was *“drastically wrong”* and that it was a *“one in a million thing.”*³⁴³ Dr Taylor has since apologised for *“this really quite silly statement”* of meaningless statistics.³⁴⁴

2.98 After the operation the surgeons did not speak to Ms Slavin. Mr Keane explained that whilst he would normally speak to the family, on this occasion and in his absence he *“expected Mr Brown to speak to Adam’s family.”*³⁴⁵ Mr Brown stated that he did not consider it his responsibility to speak to Adam’s mother because *“this was not a paediatric surgery operation, but a transplant.”*³⁴⁶ He subsequently acknowledged that he *“should have spoken to the mum because there was nobody else to speak to her.”*³⁴⁷ Expert evidence agreed that a surgeon would normally be expected to join in such a conversation.³⁴⁸ As Professor Savage observed in his oral evidence *“it would have been good if one of the surgeons had come and spoken to them, but they didn’t.”*³⁴⁹ I share this view and furthermore believe that active attempts should have been made to secure the attendance of one of the surgeons.

2.99 Mr Keane returned to the Children’s Hospital the following morning and having reviewed the notes,³⁵⁰ came to his own conclusion as to the cause

³³⁹ WS-002-1 p.4

³⁴⁰ 058-038-181

³⁴¹ WS-002-1 p.4 & 059-006-016

³⁴² Professor Savage T-22-06-12 p.16 line 20

³⁴³ WS-001-1 p.4

³⁴⁴ Dr Taylor T-20-04-12 p.136 lines 12-21

³⁴⁵ WS-006-2 p.7

³⁴⁶ WS-007-3 p.6

³⁴⁷ Mr Brown T-01-05-12 p.141 line 9

³⁴⁸ 200-007-118

³⁴⁹ Professor Savage T-18-04-12 p.158 line 11

³⁵⁰ Mr Keane T-23-04-12 p.30-1

of death. He spoke with Professor Savage and *“confirmed that I was seriously worried about what had happened in terms of the fluid management...”*³⁵¹ He said: *“all I can remember of the encounter was that he had his head buried. I think he was crying.”*³⁵²

2.100 Dr Terence Montague recalled how he *“came into the hospital the next morning and... met Dr Taylor in the theatre where the surgery had taken place... and he told me that Adam was likely to die, that Adam had cerebral oedema, and at that stage he was pointing out to me that the anaesthetic machine was being quarantined so that it could be examined...”*³⁵³

2.101 The 11:30 serum sodium test result was received at 13:00. It revealed a sodium value of 119mmol/L.³⁵⁴ Dr O'Connor noted this in the record at about 13:20,³⁵⁵ and entered a query as to whether this might not be a case of dilutional hyponatraemia.³⁵⁶

2.102 Neurological advice was sought from Dr David Webb³⁵⁷ who saw Adam at 19:30 on 27th November 1995. His examination, witnessed by Dr Rosalie Campbell,³⁵⁸ was the first part of the formal clinical assessment necessary to confirm brain stem death.³⁵⁹ Dr Webb spoke with the clinicians in PICU, examined Adam and reviewed the CT scan. He recorded that *“the examination is comparable with brain stem death 2° severe acute cerebral oedema. This may have occurred on the basis of unexpected fluid shifts – ‘osmotic disequilibrium syndrome.’”*³⁶⁰ It may be significant that he made no reference to Adam's hyponatraemia. He said *“if I'd been aware of the low sodium, I would have considered hyponatraemia to be the likely cause of the fluid shift.”*³⁶¹ Dr Webb should have been aware of Adam's low sodium reading. The notes clearly record the laboratory sodium results of

³⁵¹ Mr Keane T-23-04-12 p.31, line 14

³⁵² Mr Keane T-23-04-12 p.31 line 23

³⁵³ Dr Montague T-11-05-12 p.153-54

³⁵⁴ 058-040-186

³⁵⁵ Dr O'Connor T-25-04-12 p.117 line 5

³⁵⁶ 059-006-016, 058-035-138 & Dr O'Connor T-25-04-12 p.157 line 15

³⁵⁷ 303-001-003 Consultant Paediatric Neurologist

³⁵⁸ 303-001-001 to 002

³⁵⁹ 058-004-009 & 058-035-139

³⁶⁰ 058-035-140

³⁶¹ WS-107-2 p.4

119mmol/L. Dr Webb however, believed that he may not have appreciated this or may have been told that this result was unreliable, because he was prompted to conduct medical literature research in order to explain the brain swelling.³⁶² This is not necessarily convincing. A consultant paediatric neurologist asked for his formal opinion in relation to a brain stem death test would undoubtedly examine the notes and even if told that the sodium result was suspect, could not justify ignoring it. Dr Webb must be open to the criticism that he either did not properly review the notes, or alternatively, that he deliberately avoided entering a diagnosis of hyponatraemia with its inherent suggestion of fluid mismanagement.³⁶³

2.103 In making the necessary clinical assessment to confirm brain stem death, Drs Webb, Campbell and O'Connor had each to satisfy themselves that there was an underlying cause for the brain stem death and, importantly, that other potential reasons for coma, including metabolic causes or drugs, were excluded. The drug record should therefore have been double-checked and the metabolic disorder of hyponatraemia corrected before the tests were undertaken.³⁶⁴

2.104 Notwithstanding,³⁶⁵ Dr Webb recorded the brain stem death criteria to be fulfilled at 09:10.³⁶⁶ Consent was then sought from Ms Slavin to discontinue life support³⁶⁷ and this was done with Adam on her knee³⁶⁸ at 11:30 on 28th November 1995.³⁶⁹

2.105 Professor Savage then notified the Coroner because he "*knew that there had to be a coroner's inquest*"³⁷⁰ but did not seemingly report his views on the mishandling of fluids.³⁷¹ He then attended the post-mortem "*probably*

³⁶² WS-107-2 p.2

³⁶³ Dr Webb provided two witness statements to the Inquiry relating to the death of Adam Strain. For personal reasons he was unable to attend the oral hearings to give evidence.

³⁶⁴ 204-014-003 & 204-012-386 & Dr Haynes T -03-05-12 p.115 line 19

³⁶⁵ Dr Haynes T-03-05-12 p.112 line1

³⁶⁶ 058-004-009

³⁶⁷ WS-001-1 p.4

³⁶⁸ 016-004-015

³⁶⁹ WS-001-1 p.4 & 016-004-015

³⁷⁰ Professor Savage T-22-06-12 p.3 line 19

³⁷¹ 011-025-125

*just to make sure that the conclusions we had reached were correct*³⁷² and to ensure *“that Dr Armour understood my perception of the fluid balance situation.”*³⁷³ The pathologist Dr Alison Armour³⁷⁴ could not remember speaking with Professor Savage and does not appear to have understood the *“fluid balance situation”* until sometime later.³⁷⁵

2.106 Professor Savage wrote to the Strain family GP on 4th December 1995³⁷⁶ to advise as to the circumstances of Adam’s death. He did not however refer to the cause of death because he *“probably thought it would have been inappropriate for me to suggest a diagnosis in advance of the coroner’s inquest.”*³⁷⁷ Ms Slavin recalled that she *“knew that the cause of Adam’s death was the swelling of his brain but at no time do I recall anyone telling me that this had happened because he had been given too much fluid.”*³⁷⁸ Nor does it seem that anyone told her that Adam’s sodium levels had fallen so far and that he had severe hyponatraemia.³⁷⁹

2.107 There is no evidence to suggest any formal communication with Adam’s family by the Trust, not even a letter of condolence.

Adam Strain Governance

2.108 It is understandable and perhaps all too easy to make a mistake working in the complex field of medicine. However, after an unexpected death like Adam’s, it might have been expected, even by the standards of 1995, that those involved would openly and honestly analyse what had happened in order to minimise the risk of recurrence. Analysis should have taken place immediately, when memories were fresh, so that lessons could be learned straight away. A major failing in Adam’s case is that, according to the

³⁷² Professor Savage T-18-04-12 p.156 line 19

³⁷³ Professor Savage T-22-06-12 p.22 line 4

³⁷⁴ 303-001-001

³⁷⁵ Professor Savage T-22-06-12 p.22 line 6

³⁷⁶ 016-004-014

³⁷⁷ Professor Savage T-22-06-12 p.30 line 16

³⁷⁸ WS-001-1 p.4

³⁷⁹ 011-006-019

evidence, that analysis did not take place. How and why that happened will be explored below but central to it was reluctance to accept or attribute fault.

Adverse incident reporting

- 2.109 No Serious Adverse Incident ('SAI') report of Adam's death was made within the Children's Hospital or the Trust. There was, however, no formal requirement to do so at that time.
- 2.110 The Medical Director, Dr Ian Carson,³⁸⁰ explained that "*unexpected or unexplained deaths during or following anaesthesia and surgery would be reported externally to H.M. Coroner, and internally to Dr G Murnaghan in his capacity as Director of Medical Administration*"³⁸¹ but "*were not formally reported to the Medical Director as a routine.*"³⁸² However, in the case of "*death where a doctor's practice is called into question or patients are put at risk, those are cases that quite definitely should have been referred to the Trust Medical Director*"³⁸³ and the Clinical Director of Paediatrics.³⁸⁴
- 2.111 An oral report of the death was made to Dr George Murnaghan who, in his capacity as Director of Medical Administration, was charged with risk management and the defence of medical negligence claims.³⁸⁵ He served on the Clinical Risk Management Group which was responsible for untoward incident reporting in clinical matters.³⁸⁶ He was, in addition, responsible for the Trust's engagement with the Coroner³⁸⁷ and the internal dissemination of lessons drawn from inquests.³⁸⁸ He was ideally placed to ensure that relevant issues were brought to the attention of all those who needed to know within the Trust. His reporting line was to the Medical Director,³⁸⁹ he sat in "*attendance at the Board,*"³⁹⁰ reported to the Hospital

³⁸⁰ 306-081-004

³⁸¹ WS-077-2 p.6

³⁸² WS-077-2 p.21

³⁸³ Dr Carson T-16-01-13 p.66 line 12

³⁸⁴ Dr Carson T-16-01-13 p.67 line 11

³⁸⁵ Dr Murnaghan T-25-06-12 p.33 line 19

³⁸⁶ WS-061-2 p.262

³⁸⁷ 011-025-125 & 093-025-068

³⁸⁸ WS-061-1 p.2

³⁸⁹ Dr Murnaghan T-25-06-12 p.2 line 9

³⁹⁰ Dr Murnaghan T-25-06-12 p.6 line 16

Council on behalf of the Medical Risk Management Group³⁹¹ and kept the Chief Executive “*in the loop*.”³⁹² His role was significant within the Trust. He was a link between clinicians and the Trust Board and the connection between the internal procedures of the Trust and the external requirements of the Coroner.

2.112 Dr Murnaghan liaised with Dr Gaston who, as Clinical Director of Anaesthetics, Theatre & Intensive Care (‘ATICS’), likewise held a ‘governance’ position in the Trust and was also Dr Taylor’s clinical lead. Dr Gaston was experienced in critical incident reporting, incident investigation and audit³⁹³ and was an appointed surveyor with Kings Fund Organisational Audit (‘KFOA’).³⁹⁴

2.113 Dr Gaston did not seek a written report in respect of this unexpected and unexplained death. Nor, would it seem, did he really expect one.³⁹⁵ He heard about the death from a nurse on a corridor.³⁹⁶

2.114 Notwithstanding, and within days, Professor Savage and Dr Taylor³⁹⁷ did submit written statements. They cannot however have been of much assistance to Drs Murnaghan and Gaston, omitting as they do all reference to hyponatraemia and any explanation for Adam’s unexpected death.

2.115 Professor Savage received a copy of Dr Taylor’s statement very soon after.³⁹⁸ He immediately informed Dr Murnaghan that there was an explanation for what had happened and stated his belief that “*Adam’s cerebral oedema and death were related to fluid mismanagement*.”³⁹⁹ Dr Murnaghan accepts that Professor Savage brought this to his attention.⁴⁰⁰

³⁹¹ Dr Murnaghan T-25-06-12 p.56 line 3 & WS-061-2 p.241

³⁹² Dr Murnaghan T-25-06-12 p.3 line 8

³⁹³ Dr Gaston T-18-06-12 p.76 line 23 & p.77 line 10 & p.105 line 12

³⁹⁴ Dr Gaston T-18-06-12 p.71 line 17

³⁹⁵ Dr Gaston T-18-06-12 p.114 line 17

³⁹⁶ Dr Gaston T-19-06-12 p.12 line 4

³⁹⁷ 059-066-153 & 059-067-155

³⁹⁸ 059-067-156

³⁹⁹ Professor Savage T-22-06-12 p.22 line 19

⁴⁰⁰ Dr Murnaghan T-25-06-12 p.119 line 5

- 2.116 Dr Murnaghan said that then *“informally, if not formally, I brought the matter up with the Medical Director, Dr Carson”*⁴⁰¹ and that he was *“almost certain that I would have told him that Dr Taylor had a different view... that the Coroner was involved and was going to hold an Inquest. And I do not know what we agreed after that.”*⁴⁰²
- 2.117 Dr Carson was very clear that Dr Murnaghan did not bring Adam’s death to his attention whether formally or informally until the time of the inquest.⁴⁰³ There is no evidence of any involvement of Dr Carson before then, whether as Medical Director or as a fellow anaesthetist. Had he been notified I believe he would have taken some action or at the very least sought some information - which he seemingly did not. The sole suggestion that he was notified was made by Dr Murnaghan, whose evidence on the point was far from compelling.⁴⁰⁴ He was unable to provide any detail about what was said or agreed or done in respect of this most important communication. On balance I do not believe that Dr Murnaghan reported Adam’s death to the Medical Director until very much later. Instead he proceeded to act without reference to Dr Carson.
- 2.118 Nor did Drs Murnaghan or Gaston report the death to the Clinical Lead of the Paediatric Directorate, the Director of Nursing or the Chief Executive.
- 2.119 The acting Clinical Lead of the Children’s Hospital⁴⁰⁵ was Dr Conor Mulholland.⁴⁰⁶ He had only recently assumed this responsibility in addition to his full time practice as a Consultant Paediatric Cardiologist and his role as Clinical Director in Cardiology and Cardiac Surgery.⁴⁰⁷ There was no written guidance to assist him in his duties as acting Clinical Director of

⁴⁰¹ Dr Murnaghan T-25-06-12 p.155 line 6
⁴⁰² Dr Murnaghan T-25-06-12 p.165 line 1
⁴⁰³ Dr Carson T-15-01-13 p.156 line 6
⁴⁰⁴ Dr Murnaghan T-25-06-12 p.152 line 15
⁴⁰⁵ The Directorate of Paediatrics
⁴⁰⁶ 306-081-004
⁴⁰⁷ Dr Mulholland T-21-06-12 p.141

Paediatrics.⁴⁰⁸ His principal administrative concerns at that time in the Children's Hospital were financial.⁴⁰⁹

- 2.120 With hindsight he accepted that he should have received a report into Adam's death⁴¹⁰ in order to understand what had happened.⁴¹¹ However, on hearing of the death, he assumed that the matter would be taken forward by Drs Murnaghan and Gaston,⁴¹² that the Medical Director would be informed⁴¹³ and that the death would be formally dealt with by the Coroner. On the basis of these assumptions he did nothing⁴¹⁴ and remained "*completely outside the loop on Adam Strain.*"⁴¹⁵
- 2.121 Dr Mulholland had appointed Consultant Paediatric Anaesthetist Dr Peter Crean⁴¹⁶ to be his Sub-Director in the Children's Hospital with responsibility for anaesthetics. Dr Crean did not, however, report Adam's case within the Paediatric Directorate because he was accountable to Dr Gaston's ATICS Directorate⁴¹⁷ and the matter had already been reported to Dr Gaston.
- 2.122 The necessity for the Clinical Director of Paediatrics to become involved in the investigation of a death in the Children's Hospital was obvious, yet the system imposed no obligation to report the matter to him, gave him no guidance as to what was expected of him and left him no time from his other duties to engage. A structural confusion of reporting lines left him in ignorance and allowed others to proceed without him.
- 2.123 The Director of Nursing and Patient Services was Miss Elizabeth Duffin.⁴¹⁸ She reported to the Chief Executive, received reports from nurse managers and talked regularly with Drs Murnaghan and Carson.⁴¹⁹ Her responsibilities included clinical quality assurance and the Trust application

⁴⁰⁸ Dr Mulholland T-21-06-12 p.191 line 14

⁴⁰⁹ Dr Mulholland T-21-06-12 p.143 line 9

⁴¹⁰ Dr Mulholland T-21-06-12 p.173 line 11

⁴¹¹ Dr Mulholland T-21-06-12 p.174 line 1

⁴¹² Dr Mulholland T-21-06-12 p.173 line 2

⁴¹³ Dr Mulholland T-21-06-12 p.177 line 6

⁴¹⁴ Dr Mulholland T-21-06-12 p.178 line 9

⁴¹⁵ Dr Mulholland T-21-06-12 p.182 line 22

⁴¹⁶ 303-001-007

⁴¹⁷ Dr Crean T-20-06-12 p.5

⁴¹⁸ 306-081-005

⁴¹⁹ Miss Duffin T-26-06-12 p.36 line 16

for KFOA accreditation.⁴²⁰ Nonetheless, she also claimed to have heard nothing about Adam's death and to have learned nothing about it for many years.⁴²¹ She said she thought this "*very strange*"⁴²² and was quite unable to explain it given that she would have expected to hear about it on her own 'grapevine.'⁴²³

2.124 The Trust's Clinical Risk Management Group was charged on paper with responsibility for untoward clinical incident reporting. In reality this group does not appear to have fulfilled this function⁴²⁴ and its existence may have been largely aspirational.⁴²⁵ It was chaired by the Medical Director Dr Carson.⁴²⁶

2.125 Dr Carson was aware of the correct procedures for serious adverse incident reporting. He possessed the 'Risk Management in the NHS' manual⁴²⁷ received from the Management Executive of the Department in 1993-4.⁴²⁸ It provided guidance on clinical incident reporting⁴²⁹ as did KFOA in its published criteria for accreditation (1994).⁴³⁰

2.126 More current advices were also then available from The Report of the Independent Inquiry into deaths on the Children's ward at Grantham & Kesteven General Hospital (the 'Allitt Inquiry') also published in 1994.⁴³¹ In relation to clinical incidents it was emphatic that "*There must be a quick route to ensure that serious matters... are reported in writing to the Chief Executive of the hospital...All District Health Authorities and NHS Trust Boards should take steps immediately to ensure that such arrangements are in place*" These advices were not acted upon nor were policies for

⁴²⁰ Miss Duffin T-26-06-12 p.58 line 11

⁴²¹ Miss Duffin T-26-06-12 p.35 line 10

⁴²² Miss Duffin T-26-06-12 p.24 line 18

⁴²³ Miss Duffin T-26-06-12 p.27 line 20

⁴²⁴ WS-273-1 p.9

⁴²⁵ Dr Murnaghan T-25-06-12 p.71 line 12

⁴²⁶ WS-061-2 p.263

⁴²⁷ Dr Carson T-16-01-13 p.6 line 2

⁴²⁸ Dr Carson T-16-01-12 p.44 line 5

⁴²⁹ 306-117-013

⁴³⁰ 211-003-026

⁴³¹ 210-003-038

critical and serious clinical incident reporting developed within the Trust. That was primarily a failure of the Trust Board.

- 2.127 The lack of formal obligation and mechanism to report such a death to the Medical Director was an obvious deficiency in control and one which created a system dangerously vulnerable to abuse and failure. These systemic shortcomings are clear and should have been clear in 1995 not least to the Medical Director.
- 2.128 Notwithstanding the lack of leadership from the clinical directors on the Trust Board, Drs Murnaghan and Gaston both held ‘governance’ positions within the Trust and both knew from their professional experience that a potentially avoidable hospital death should be formally reported to the medical director. In Dr Haynes’ view that was just “*commonsense*.”⁴³² Dr Carson agreed, even “*in the light of very early developments in our clinical governance agenda*.”⁴³³ The failure of Drs Murnaghan and Gaston in this regard, foreshadows their later failures to investigate, manage and assess.

Investigation

- 2.129 The investigative response of the Trust was led by Dr Murnaghan in liaison with Dr Gaston.⁴³⁴ Dr Murnaghan acknowledged that where there “*was a possibility that medical care and treatment would have contributed to a death I would have expected that to be the cause of an investigation*.”⁴³⁵
- 2.130 There was no investigation of the case involving the Medical Director of the Trust.
- 2.131 There was no investigation of the case within the Paediatric Directorate. Dr Mulholland conceded that Adam’s case should have been discussed at a paediatric mortality meeting and that a written record should have been

⁴³² Dr Haynes T-03-05-12 p.129 line 7

⁴³³ Dr Carson T-15-01-13 p.160 line 5

⁴³⁴ Dr Gaston T-18-06-12 p.114 line 25

⁴³⁵ WS-273-1 p.4

kept.⁴³⁶ However, there is no record of any such meeting⁴³⁷ and Dr Mulholland did not believe that Adam's case was reviewed.⁴³⁸

2.132 There was no investigation of the case within nursing.⁴³⁹ Miss Elizabeth Duffin said that had she been notified she would have pursued a nursing investigation to "*to prevent something similar happening again.*"⁴⁴⁰ That would indeed have been useful because then the nurses in theatre could have been identified from the "*record of the staffing in theatre.*"⁴⁴¹ She said she would have expected Dr Murnaghan to involve nurses in his investigation⁴⁴² and expressed her dismay that he had failed to seek statements from the nursing staff.⁴⁴³

2.133 Mr Keane said that he "*would have expected a full clinical... investigation of this, with no lawyers...*"⁴⁴⁴ That didn't happen. Professor Savage expressed to the Inquiry his "*eternal regret that there wasn't a more detailed internal inquiry...*"⁴⁴⁵ and Mr Brown conceded that this was "*self-evidently unsatisfactory.*"⁴⁴⁶

Dr Gaston's role in investigation

2.134 Despite the fact that Dr Gaston was an anaesthetist, he did not review the anaesthetic record.⁴⁴⁷ Dr Taylor explained his calculations⁴⁴⁸ but Dr Gaston neither assessed the intraoperative fluid balance nor made any search of the medical literature. He did, however, understand that there was a problem because he "*felt we needed an external assessor because it wasn't*

⁴³⁶ Dr Mulholland T-21-06-12 p.156 line 14
⁴³⁷ Dr Savage T-22-06-12 p.69 line 24
⁴³⁸ Transcript 21-06-12 p.156 line 11
⁴³⁹ Staff Nurse Popplestone T-30-04-12 p.95
⁴⁴⁰ Miss Duffin T-26-06-12 p.26 line 4
⁴⁴¹ Miss Duffin T-26-06-12 p.32 line 21
⁴⁴² Miss Duffin T-26-06-12 p.34
⁴⁴³ Miss Duffin T-26-06-12 p.32 line 11
⁴⁴⁴ Mr Keane T-10-09-12 p.38 line 25
⁴⁴⁵ Professor Savage T-22-06-12 p.68 line 4
⁴⁴⁶ Mr Brown T-01-05-12 p.151 line1
⁴⁴⁷ Dr Gaston T-19-06-12 p.15 line 10 *et seq*
⁴⁴⁸ Dr Gaston T-18-06-12 p.127 line 21

*particularly clear right at the beginning... and there were differences of opinion and it needed to be... clarified.”*⁴⁴⁹

2.135 Despite these differences of professional opinion, Dr Gaston did not commission an external assessment but rather arranged for an internal investigation to be conducted by his anaesthetic colleague Dr Fiona Gibson,⁴⁵⁰ because she was *“the one person... in Northern Ireland who would have experience of... major Paediatric Anaesthesia and who I considered independent...”*⁴⁵¹ She was asked to review the processes and equipment involved in Adam’s case⁴⁵² and to discuss the matter with Dr Taylor.⁴⁵³ Her inspection took place on 2nd December 1995⁴⁵⁴ and focused on anaesthetic issues. She was not asked to speak to Professor Savage, Dr O’Connor or the surgeon.

2.136 At the same time Drs Gaston and Murnaghan instructed two Trust Technical Officers to check the equipment in the operating theatre.⁴⁵⁵ The lead technician Mr John Wilson⁴⁵⁶ was then a member of Dr Gaston’s ATICS Management team.⁴⁵⁷ Dr Gibson was not present when Messrs Wilson and McLaughlin⁴⁵⁸ carried out their inspection.⁴⁵⁹ Nonetheless, her report states that she *“was accompanied by Mr J. Wilson and Mr B. McLaughlin, senior Medical Technical Officers, on the site who carried out checks into the ventilators and other equipment in the theatre. The technical checks... found nothing at fault...”*⁴⁶⁰ Her report concluded that *“a very carefully thought out and well monitored anaesthetic was delivered with great care to fluid management”*⁴⁶¹ and that *“the protocols for*

⁴⁴⁹ Dr Gaston T-19-06-12 p.10 line 2

⁴⁵⁰ 303-001-002 due to ill health the late Dr Gibson was unable to provide oral evidence

⁴⁵¹ Dr Gaston T-19-06-12 p.20 line 13

⁴⁵² 093-026-069

⁴⁵³ 059-069-162

⁴⁵⁴ 059-069-161

⁴⁵⁵ 093-023-065c & 093-025-068b

⁴⁵⁶ 306-081-006

⁴⁵⁷ Dr Gaston T-18-06-12 p.99 line 24

⁴⁵⁸ 306-081-006

⁴⁵⁹ WS-109-1 p.3

⁴⁶⁰ 059-069-162

⁴⁶¹ 059-069-162

*monitoring, anaesthetic set-up and drug administration in this area are among the best on the Royal Hospital site...”*⁴⁶²

- 2.137 Quite apart from Dr Gibson’s praise for protocols which may be doubted to exist⁴⁶³ it is now clear that the relevant medical devices were not actually examined. Her conclusion that great care was paid to fluid management, is hard to comprehend in the absence of recorded urinary output. Her involvement was not independent and her conclusions were not reliable. Her worryingly uncritical report was submitted to Dr Murnaghan on 11th December 1995.⁴⁶⁴

Dr Gaston’s approach

- 2.138 Dr Gaston believed strongly in Dr Taylor’s outstanding professional ability⁴⁶⁵ and was concerned because “*there was more to this than just that event... there were issues about... a shortage of anaesthetists at that time.*”⁴⁶⁶ He went further to say that should Dr Taylor “*stop giving anaesthetics... we probably would have had the collapse of anaesthesia and ICU in Northern Ireland.*”⁴⁶⁷
- 2.139 Dr Gaston offered support to Dr Taylor and listened to his “*feelings about the anaesthetic, his feelings about what had happened, his feeling about how he was going to actually take it forward and how he would cope with it.*”⁴⁶⁸ He did not question or pursue inconsistency between what he was being told and Dr Taylor’s written statement nor draw it to the attention of anyone else. He now concedes that he should have done so.⁴⁶⁹
- 2.140 Dr Gaston thought “*it was important that Dr Taylor had an opportunity to speak to some of the people of a senior level... partly as a follow up to the*

⁴⁶² 059-069-162

⁴⁶³ 305-014-001

⁴⁶⁴ 059-065-151

⁴⁶⁵ Dr Gaston T-19-06-12 p.130 line 19

⁴⁶⁶ Dr Gaston T-19-06-12 p.113 line 6

⁴⁶⁷ Dr Gaston T-19-06-12 p.138 line 13

⁴⁶⁸ Dr Gaston T-19-06-12 p.24 line13

⁴⁶⁹ Dr Gaston T-19-06-12 p.65 line 16

*counselling type situation.*⁴⁷⁰ Accordingly, and rather than report the matter to the Medical Director and fellow anaesthetist Dr Carson, he approached an even more senior anaesthetic colleague Dr Samuel Morrell Lyons⁴⁷¹ (President of The Association of Anaesthetists of Great Britain and Ireland and Chairman of the Central Medical Advisory Committee of The Department of Health).⁴⁷²

- 2.141 Dr Gaston then led a delegation of Dr Lyons and Dr Murnaghan to speak with the Coroner. By that stage the Coroner had already commissioned expert opinion on Adam's case from consultant anaesthetist Dr John Alexander.⁴⁷³ Drs Gaston and Lyons cautioned the Coroner against relying upon such opinion because Dr Alexander had "*little if any experience in this very specialist field.*"⁴⁷⁴ They urged upon the Coroner the importance of obtaining the opinion of a consultant paediatric anaesthetist. To that end, the Trust recommended that the Coroner approach Dr Edward Sumner.⁴⁷⁵
- 2.142 After the meeting the Coroner wrote that "*their considered view is that the death had nothing to do with anaesthetics.*"⁴⁷⁶ I consider it remarkable that a senior Trust delegation to the Coroner could have felt confident to advance a "*considered view*" exonerating the anaesthetics on the basis of so little investigation. Dr Lyons has confirmed that he has "*no recollection of being involved in any formal review or interviews of any of the doctors involved in the care of Adam Strain,*"⁴⁷⁷ Dr Gibson's Report had not then been received,⁴⁷⁸ there had been no examination of the anaesthetic equipment and Dr Gaston had probably not even read the anaesthetic record.⁴⁷⁹ More troubling is Dr Murnaghan's tacit association with this view

⁴⁷⁰ Dr Gaston T-19-06-12 p.25 line 6

⁴⁷¹ 306-081-006

⁴⁷² 093-024-066 – (11th December 1995)

⁴⁷³ 303-001-010

⁴⁷⁴ 011-027-128

⁴⁷⁵ 303-001-010

⁴⁷⁶ 011-027-128

⁴⁷⁷ 093-024-067

⁴⁷⁸ 059-065-151: meeting with Coroner, Monday 11th December 1995

⁴⁷⁹ Dr Gaston T-19-06-12 p.15

given what he had been told by Professor Savage regarding Dr Taylor's mismanagement of the fluids.⁴⁸⁰

- 2.143 Dr Gaston was unrepentant when he gave evidence about how Adam's death was dealt with: *"Yes, it would have been better to have had an investigation, better to have a discussion, but it was important that Dr Taylor's confidence and his ability as an anaesthetist, was not damaged by the process. And I still believe... that today, and I think history backs that up."*⁴⁸¹ Such an approach may have seemed pragmatic to Dr Gaston but it was clearly wrong, even by the standards of 1995 to risk patient safety in the interests of a single individual, no matter how important. Long term confidence in, and respect for, the Health Service, depends upon proper response to critical incidents, rather than an approach which fails to engage with a problem in the hope that it will not recur.

Dr Murnaghan's role in investigation

- 2.144 Even though internal control systems within the Trust at that time were rudimentary, Dr Murnaghan's responsibilities were clear. He was to lead the Trust in assisting the Coroner and respond to the challenges of risk management and litigation.⁴⁸² It was his task to decide what and how to investigate. He might reasonably have been expected to analyse what had gone so tragically wrong. That is at least what Dr Armour, the pathologist, believed when she volunteered to Dr Murnaghan her willingness to attend any meeting to review Adam's case because she felt her *"opinion... relevant... and as such the case could be discussed in full."*⁴⁸³ Her input was not sought.
- 2.145 Dr Murnaghan has stated that *"no steps were taken apart from... involving... clinicians in discussion with pathologists and the anaesthetic technical staff in attempting to clarify the cause of death and thereby assist*

⁴⁸⁰ Professor Savage T-22-06-12 p.22 line 19

⁴⁸¹ Dr Gaston T-19-06-12 p.138 line 23

⁴⁸² 093-025-068

⁴⁸³ 059-063-149

*the Coroner...*⁴⁸⁴ If there were any such discussions they were neither recorded nor monitored. Almost nothing was put in writing. There was no multi-disciplinary meeting to discuss the issue, no consideration of the matter within the Paediatric Directorate and no involvement of nursing staff in any consideration of Adam's case.⁴⁸⁵ Dr Murnaghan did not even request a list of the staff on duty.

2.146 Dr Murnaghan explained that he did not fully review the death because "*it was a Coronial investigation, it wasn't my investigation.*"⁴⁸⁶ He worked on the assumption that the Trust had to await the views of the Coroner's experts.⁴⁸⁷ Such an approach was not only potentially dangerous but ran contrary to the specific advice of the Health and Personal Social Services ('HPSS') 'Complaint Procedure Guide'⁴⁸⁸ which stressed how important it was "*for the Trust... to initiate proper investigations regardless of the Coroner's inquiries.*"⁴⁸⁹

2.147 On 30th November 1995 the Coroner wrote to request that Dr Murnaghan obtain a statement from "*the technician responsible for the equipment in the theatre confirming that it was functioning properly.*"⁴⁹⁰ Dr Murnaghan did nothing. The Coroner wrote again to Dr Murnaghan on 8th December 1995 stressing that it was "*imperative that the equipment [is] now independently examined.*"⁴⁹¹ Dr Murnaghan decided instead to rely upon the internal investigation report submitted by Messrs Wilson and McLaughlin which clearly indicated that they had not been able to inspect all the equipment.⁴⁹² Notwithstanding, Dr Murnaghan then asserted that "*this examination observed [that] the equipment was found to be in satisfactory condition.*"⁴⁹³

484 093-025-068b

485 093-025-068b

486 Dr Murnaghan T-25-06-12 p.132 line 10

487 Dr Murnaghan T-25-06-12 p.152 line 4

488 314-016-001 (March 1996)

489 314-016-010

490 059-073-166

491 011-025-125

492 094-210-999

493 WS-015-1 p.2

- 2.148 On 30th November 1995 the Coroner also requested that Dr Murnaghan forward statements from the clinicians involved as soon as possible.⁴⁹⁴ Dr Murnaghan sought only a limited number of statements, advising witnesses to restrict content to factual matter and exclude opinion. Dr O'Connor was not asked to make a statement.⁴⁹⁵ Dr Montague was not asked to make a statement.⁴⁹⁶ No member of the nursing team or technical staff was asked to make a statement.⁴⁹⁷ By so doing Dr Murnaghan allowed a restricted number of uninformative reports to be furnished to the Coroner on the basis that that was "*the information that was provided and I was the conduit for that information.*"⁴⁹⁸
- 2.149 When Dr Murnaghan asked for Professor Savage's factual statement he advised him not to draw any conclusions because that was the role of the Coroner.⁴⁹⁹ Accordingly and notwithstanding that Professor Savage believed that Adam's death was due to fluid mismanagement,⁵⁰⁰ he made a statement on 28th November 1995⁵⁰¹ omitting not only his own opinion as to the cause of hyponatraemia but also the relevant known factual information relating to Adam's sodium levels and the quantities of fluid infused.
- 2.150 Mr Keane, who had likewise formed the view that Adam's death was due to fluid mismanagement, made a statement for the Coroner and failed to identify anything untoward. He was unable to explain this omission.⁵⁰²
- 2.151 On 6th December 1995 Dr Murnaghan wrote to Dr Webb requesting his statement for the Coroner.⁵⁰³ Dr Webb obliged and he too omitted all reference to Adam's hyponatraemia.

⁴⁹⁴ 059-073-166

⁴⁹⁵ Dr O'Connor T-20-06-12 p.115 line 6

⁴⁹⁶ Dr Montague T-11-05-12 p.153 line 18

⁴⁹⁷ 093-025-068b

⁴⁹⁸ Dr Murnaghan T-25-06-12 p.131 line 16

⁴⁹⁹ Professor Savage T-22-06-12 p.90 line 18

⁵⁰⁰ Professor Savage T-22-06-12 p.22 line 19

⁵⁰¹ 059-066-154

⁵⁰² Mr Keane T-23-04-12 p.71 line 22 *et seq*

⁵⁰³ 059-071-164

- 2.152 Mr Brown supplied his statement on 20th December 1995 to inform only that *“the transplantation procedure appeared to be technically satisfactory and at no stage during the operation was I conscious of any problem with his general condition.”*⁵⁰⁴ Mr Brown’s remarkable detachment extended so far as to even avoid any reference to the death.
- 2.153 Dr Taylor prepared his statement for Dr Murnaghan on 30th November 1995.⁵⁰⁵ He stated that he was unable to *“offer a physiological explanation for such severe pulmonary and cerebral oedema in the presence of normal monitoring signs.”*⁵⁰⁶ Given what Dr Taylor must have known of the abnormal CVP and sodium readings – that assertion was clearly suspect and should have prompted inquiry. Likewise, Dr Taylor’s claim that he *“regarded the fluids to be appropriate and discussed this with other doctors present in the theatre”*⁵⁰⁷ presented further obvious issues for discussion and enquiry which were seemingly ignored.
- 2.154 Dr Murnaghan’s failure, then and subsequently, to query the content of these statements, given what he had been told by Professor Savage, is remarkable. His failure to ask any questions about fluid management is striking. This cannot have been accidental. Not only did the Trust thereby disregard the opportunity to establish what had happened, but it denied the Coroner assistance he might reasonably have expected.

The Coroner’s expert anaesthetic reports received

- 2.155 On 5th January 1996 the Coroner forwarded to Dr Murnaghan⁵⁰⁸ a copy of the report he had received from Dr John Alexander, Consultant Anaesthetist.⁵⁰⁹ It concluded that Adam’s requirements *“led to the administration of a large volume of hypotonic (0.18%) saline which produced a dilutional hyponatraemia and subsequent cerebral oedema.”*⁵¹⁰

⁵⁰⁴ 059-060-146

⁵⁰⁵ 059-067-155

⁵⁰⁶ 059-067-156

⁵⁰⁷ 059-067-156

⁵⁰⁸ 059-057-134

⁵⁰⁹ 011-012-084

⁵¹⁰ 094-027-140

He cited Professor Arieff's paper in support. This was clear support for Professor Savage's stated opinion.

2.156 Dr Sumner's anaesthetic report was then received at the end of January 1996.⁵¹¹ It was even more damning in its conclusion and provided additional external confirmation for Drs Murnaghan and Gaston that Dr Taylor may have been wrong in both his anaesthetic and his argument. Even though Dr Murnaghan claimed that he would have gone to the Medical Director had anaesthetic colleagues advised him that something was seriously wrong,⁵¹² he still neglected to inform Dr Carson and no further steps were taken to question the clinicians or examine the case in the light of these reports. Dr Murnaghan's continued omission to report to the medical director is hard to understand unless it was to avoid the formalised response and investigation a medical director might expect. Dr Gaston was unable to explain his reason for not informing the Medical Director.⁵¹³

2.157 It should be noted that throughout this period, Professor Savage maintained contact with Adam's mother⁵¹⁴ and was content to discuss both Dr Alexander's and Dr Sumner's medical opinions with her "*provided that Dr Murnaghan was happy and there were no medico-legal reasons to suggest otherwise.*"⁵¹⁵ He was cautious lest he say anything inappropriate from the point of view of the Trust,⁵¹⁶ perhaps because he knew that "*Debbie Strain, at that time, felt that someone should take the blame for what happened to Adam.*"⁵¹⁷ He wrote to her to say that "*once the cause of Adam's death is established it is right we should try and work out why.*"⁵¹⁸

2.158 Dr Murnaghan and Dr Gaston were part of the 'governance' investigation into Adam's death⁵¹⁹ but their failure to investigate was blatant. I believe their failure to conduct a thorough investigation was deliberate. Their

⁵¹¹ 059-051-106

⁵¹² Dr Murnaghan T-25-06-12 p.152 line 15

⁵¹³ Dr Gaston T-19-06-12 p.129 line 8

⁵¹⁴ 093-006-019

⁵¹⁵ 011-033-165

⁵¹⁶ Professor Savage T-22-06-12 p.31 line 22

⁵¹⁷ Professor Savage T-22-06-12 p.36 line 14

⁵¹⁸ 306-090-001

⁵¹⁹ Dr Gaston T-18-06-12 p.114 line 25

response to Adam's death was to commit as little to writing as possible and to reveal as little by investigation as was consistent with appearing to assist the Coroner. Realising, as they must have done, the vulnerabilities of the Trust to criticism, I interpret their actions on behalf of the Trust as essentially defensive. That was inappropriate. Whilst this failing was grave and principally the responsibility of Dr Murnaghan, I consider that all involved must bear responsibility because the necessity to investigate what had happened to Adam must have been obvious to all.

Assessment of Dr Taylor

2.159 Dr Murnaghan described an informal and off-the-record routine for managing the problem of the skilled doctor who has made a mistake. In such situations, he said the lead clinicians together with their colleagues might review the problem, the doctor and his performance. A decision would then be made amongst themselves about how best to proceed and "*almost certainly there might be an element of supervision.*"⁵²⁰

2.160 It was in this context, and rather than report the death formally to the Medical Director, that I believe Dr Murnaghan allowed Dr Taylor's anaesthetic colleagues some control of the situation, not least because they were "*separately and severally... all totally supportive of Dr Taylor.*"⁵²¹ Dr Murnaghan "*knew and had been reassured that Dr Taylor had never ever in all his time... in the Royal... ever had a problem... he was probably the most diligent of all the anaesthetists in the RBHSC.*"⁵²² Indeed, Dr Taylor received support from the most senior anaesthetist in the Trust, Dr Dennis Coppel, who wrote to say that he did "*not believe on reading the information available to me that there is any negligence on your part and, to the contrary, you demonstrated considerable professional skills and expertise.*"⁵²³

⁵²⁰ Dr Murnaghan T-25-06-12 p.35 line 17 *et seq*

⁵²¹ Dr Murnaghan T-25-06-12 p.157 line 23

⁵²² Dr Murnaghan T-25-06-12 p.155 line 15

⁵²³ 122-048-002

- 2.161 It was Professor Savage who sensed that Dr Taylor was “*ill advised*”⁵²⁴ by his anaesthetic colleagues. He suggested that “*...what was allowed to happen was that Dr Taylor did not get advice from anyone that said ‘look, the evidence from Dr Sumner, from the Autopsy, from Dr Savage, from Dr O’Connor is such that we think the position you are taking is untenable.’ No one ever said that to him, I don’t think. Therefore he was allowed to proceed down that road and, unfortunately, has got into the difficulties that he is now in.*”⁵²⁵
- 2.162 That was a mistaken approach. When Dr Sumner’s report confirming Dr Taylor’s error was received, Dr Murnaghan did nothing because “*Dr Taylor had a view which differed from Dr Sumner’s view and he received a degree of support from Dr Gaston in relation to that view... I wasn’t in a position to make a judgment on that.*”⁵²⁶ What I believe he should have done was to seek the opinion of someone who was in a position to make a judgment. That would then have obligated Dr Taylor to either accept his error or, if he wished to defend it, to do so from a position independent of the Trust.
- 2.163 To make matters worse, Dr Murnaghan did not assess Dr Taylor’s fitness to practice because he had been “*reassured that his colleagues were looking after him, overseeing his work.*”⁵²⁷ That approach meant that the safety of Dr Taylor’s patients may have become dependent upon the supervision his colleagues provided.⁵²⁸ That was unacceptable. Dr Murnaghan justified his actions on the basis that “*This was a singular aberration that he would have learned from as well as everybody else... He didn’t cause dilutional hyponatraemia again.*”⁵²⁹ However, Dr Murnaghan knew that Dr Taylor did not accept the aberration⁵³⁰ and could not therefore have been satisfied that lessons had been learned.

⁵²⁴ Professor Savage T-10-09-12 p.125 line 7
⁵²⁵ Professor Savage T-10-09-12 p.128 line 12
⁵²⁶ Dr Murnaghan T-25-06-12 p.185 line 16
⁵²⁷ Dr Murnaghan T-25-06-12 p.160 line 25
⁵²⁸ Dr Murnaghan T-25-06-12 p.162 line 4
⁵²⁹ Dr Murnaghan T-25-06-12 p.223 line 17
⁵³⁰ Dr Murnaghan T-25-06-12 p.221 line 8

- 2.164 Drs Gaston and Murnaghan failed to place patient safety before other interests. Dr Murnaghan has conceded that “*on reflection... we should have done things earlier and we didn’t do, even then afterwards, what we should have done. And I’m sorry.*”⁵³¹

Post-mortem

- 2.165 Adam’s death was reported to the Coroner on 28th November 1995.⁵³² Upon his instruction a post-mortem was carried out on 29th November 1995 at the Royal Victoria Hospital by Dr Alison Armour,⁵³³ a trainee Forensic Pathologist of Senior Registrar grade employed within the State Pathologist’s Department.⁵³⁴ She was at that time an experienced pathologist who had been a member of the College of Pathologists for a number of years. Dr Armour had 10 files of medical notes and records made available to her.⁵³⁵ She performed external and internal examinations⁵³⁶ and amongst other things noted “*complete infarction*” of the transplanted kidney.⁵³⁷
- 2.166 Dr Armour examined the brain on 12th January 1996⁵³⁸ noting swelling and “*massive cerebral oedema of the cortex and white matter.*”⁵³⁹ She subsequently described the severity of Adam’s cerebral oedema as “*the worst she had ever seen.*”⁵⁴⁰ Dr Armour sought the input and advice of others, namely Drs Mirakhur,⁵⁴¹ O’Hara⁵⁴² and Bharucha.⁵⁴³
- 2.167 Dr Murnaghan then made an approach to Dr Armour. He wrote to her on 7th February 1996 that “*I have spoken on the telephone with Bob Taylor and obtained his permission to share the attached with you on the*

⁵³¹ Dr Murnaghan T-11-09-12 p.181 line 14
⁵³² 011-025-125 & Professor Savage T-22-06-12 p.3 line 17
⁵³³ 011-010-034
⁵³⁴ WS-021-1 p.1
⁵³⁵ 011-010-033
⁵³⁶ 011-010-037-8
⁵³⁷ 059-039-088
⁵³⁸ 011-010-039
⁵³⁹ 011-010-040
⁵⁴⁰ 011-010-033
⁵⁴¹ 303-001-002
⁵⁴² 303-001-003
⁵⁴³ Dr Armour T-13-06-12 p.20 line 4

*understanding that its contents are for your personal information and as a background briefing, in order to assist in coming to your conclusions in this difficult matter.”*⁵⁴⁴ His attachment was a note prepared by Dr Taylor pointing out the “*several major problems*”⁵⁴⁵ he had identified in the evidence of Drs Sumner and Alexander together with Dr Taylor’s assertion that both experts had “*failed to comprehend the physiological difference in this case and have used dubious scientific argument in an attempt to explain cerebral oedema.*”⁵⁴⁶ If this was an attempt to influence Dr Armour it was to fail because she was quite confident that she “*did not agree with him and he knew I did not agree with him.*”⁵⁴⁷

- 2.168 Dr Armour completed her work and produced an Autopsy Report in which she referred to Professor Arieff’s 1992 paper⁵⁴⁸ and formulated the cause of Adam’s death as:

“1 (a) cerebral oedema due to

*(b) dilutional hyponatraemia and impaired cerebral perfusion during renal transplant operation for chronic renal failure (Congenital Obstructive Uropathy).”*⁵⁴⁹

She did not implicate the infarcted kidney in the cause of cerebral oedema or death.

- 2.169 The Autopsy Report is undated.⁵⁵⁰ Copies were sent to the Coroner on 22nd April 1996⁵⁵¹ and to Adam’s mother, Dr Murnaghan and Dr Sumner.⁵⁵²

- 2.170 Dr Armour’s reference to “*impaired cerebral perfusion*” arises from her identification of “*a suture in situ on the left side of the neck at the junction*

⁵⁴⁴ 059-052-107

⁵⁴⁵ 059-053-108

⁵⁴⁶ 059-053-108

⁵⁴⁷ Dr Armour T-13-06-12 p.88 line 25

⁵⁴⁸ 011-011-074: Arieff A. I., Ayus J. C., Fraser C. L. Hyponatraemia and death or permanent brain damage in healthy children. BMJ 1992; 304 :1218

⁵⁴⁹ 011-010-034

⁵⁵⁰ 011-010-041

⁵⁵¹ 011-059-124

⁵⁵² 011-061-196, 011-062-197 & 011-059-194

*of the internal jugular vein and the sub-clavian vein*⁵⁵³ which she thought had impaired the blood flow to Adam's brain. She believed that this had exacerbated the effect of the cerebral oedema and was thus relevant to her conclusions as to cause of death.

2.171 Evidence was received that the presence of such a suture was improbable.⁵⁵⁴ On this issue (which is relevant but not central to the investigation of Adam's death) I believe that Dr Armour's identification of a suture was mistaken. She subsequently acknowledged this herself, having considered the expert opinion of others.⁵⁵⁵

2.172 However and apart from that, her identification and analysis of the important issues was more than competent. Professor Sebastian Lucas advised the Inquiry as to the content of her report. He found her autopsy to have been "*performed competently*" and to have been "*internally consistent*."⁵⁵⁶ He stated that he would grade the report as "*good*" because it "*addressed the central issue and produced a coherent answer*."⁵⁵⁷

2.173 Dr Waney Squire also praised "*a very well worked commentary... Dr Armour has looked at the clinical story in some detail and she has done her best to make a detailed account of the factors which may have been relevant in death and how they fit in with what she has seen*."⁵⁵⁸ However, she believed the Autopsy Report was open to criticism in relation to the possible ligation of the left internal jugular vein and the failure to investigate the cause of infarction in the transplanted kidney.⁵⁵⁹ She also noted some inconsistency between contemporaneous notes and the Autopsy Report and questioned the involvement of Drs O'Hara and Bharucha without supporting documentation. Seemingly Dr Armour formed an opinion differing from that of Drs O'Hara and Bharucha. Dr Squire stated that in such a complex case "*specialist assistance should have been sought formally and the reports of*

⁵⁵³ 011-010-039

⁵⁵⁴ WS-228-1 p.2-3, WS-232-1 p.2 & WS-007-4, p.2

⁵⁵⁵ Dr Armour T-13-06-12 p.1 line 22

⁵⁵⁶ 209-001-005

⁵⁵⁷ 209-001-006

⁵⁵⁸ Dr Squire T-12-06-12 p.136 line 22

⁵⁵⁹ Dr Squire T-12-06-12 p.141 line 3

*those specialists included as signed reports within the final pathology report.”*⁵⁶⁰

- 2.174 The input of Drs O’Hara and Bharucha is unknown but it is clear that their input should have been recorded and Dr Mirakhur’s contribution formally incorporated by way of signed report.⁵⁶¹
- 2.175 Professor Lucas observed in relation to coronial autopsy practice at that time that there was “*no governance, no standard of quality demanded by Coroners, no obligatory linkage with feedback of autopsy findings with pre-mortem clinical practice and no agreed level of investigations for particular scenarios of death.*”⁵⁶² Furthermore, in 1995 the State Pathologists Department generally “*did their own neuropathology*”⁵⁶³ gave limited training,⁵⁶⁴ had no formal system of referral for expert opinion,⁵⁶⁵ did not retain a paediatric pathologist and did not attend mortality meetings for the purposes of clinico-pathological correlation.⁵⁶⁶ It is not believed that the State Pathologist reviewed Dr Armour’s report.⁵⁶⁷ It would therefore be harsh to criticise Dr Armour’s work. I find that her Autopsy Report was independent and, more importantly, correct in its principal finding.
- 2.176 Dr Armour’s Autopsy Report was received by Dr Murnaghan at the end of April 1996.⁵⁶⁸ It was in broad agreement with Dr Sumner and yet Dr Taylor’s performance was still not reviewed nor his fitness to practice assessed. The lessons to be learned from Adam’s death could have been learnt by the end of April 1996.

⁵⁶⁰ 206-004-030
⁵⁶¹ Dr Armour T-13-06-12 p.67 line 17
⁵⁶² 209-001-009
⁵⁶³ Dr Armour T-13-06-12 p.45 line 8
⁵⁶⁴ Dr Armour T-13-06-12 p.90 line 8
⁵⁶⁵ Dr Mirakhur T-12-06-12 p.31 line 8
⁵⁶⁶ Dr Armour T-13-06-12 p.37 line 20
⁵⁶⁷ WS-012-3 p.3
⁵⁶⁸ 059-039-083

Fatal cerebral oedema: alternative causes and contributory factors

2.177 Arising from the expert opinions received by the Inquiry, a range of potential alternate causes for Adam's fatal cerebral oedema emerged together with a number of possible contributory factors, including:

- (i) Pre-existing central nervous system condition.
- (ii) Acute cerebral venous sinus thrombosis.
- (iii) Chronic cerebral venous sinus thrombosis.
- (iv) Thrombosis of the paravertebral plexus.
- (v) Reduced jugular venous drainage or possible venous obstruction.
- (vi) Cerebral blood flow, anaemia and reduced cerebral O₂ delivery/low CO₂.
- (vii) Hypoxia.
- (viii) Posterior Reversible Encephalopathy Syndrome during surgery/hypertensive encephalopathy.
- (ix) Seizure(s) during surgery.
- (x) Halothane in anaesthetic giving rise to cerebral vasodilation.
- (xi) Dilutional anaemia.
- (xii) Head down position during surgery.

These were exhaustively considered and two schedules summarising contrasting expert views compiled.⁵⁶⁹ For the sake of completeness it may be stated that whilst the condition of the kidney did not contribute to death, the possibility cannot be discounted that dilutional hyponatraemia and

⁵⁶⁹ 306-016-130 & 306-017-146

cerebral oedema might have contributed to the non-functioning of the kidney.⁵⁷⁰

- 2.178 In addressing these many issues, the Inquiry sought the neurological opinion of Professor Kirkham, practising Consultant Paediatric Neurologist and Professor of Paediatric Neurology, as to the effect of the fluid infusion upon Adam's brain and the possible contribution of venous obstruction to the cerebral oedema.
- 2.179 Amongst other things, Professor Kirkham gave it as her opinion that hyponatraemia was not, in fact, the primary cause of Adam's death and that he would have survived had it not been for other and unrelated conditions. Whilst conceding the possibility that dilutional hyponatraemia was implicated in a secondary role, she advanced specific vascular pathologies as the likely primary cause of the fatal cerebral oedema.
- 2.180 Her views raised issues going to the heart of the work of the Inquiry. They contradicted the inquest verdict and the opinions of Drs Sumner, Armour and Alexander and ran expressly counter to the analysis and conclusions of Professor Dr Gross, Dr Coulthard and Dr Haynes. Whilst her opinion was unsupported by the neuro-pathological and radiological findings of Drs Squier⁵⁷¹ and Anslow,⁵⁷² it was apparent that her opinion could not be disregarded because her hypothesis could not be excluded. Accordingly, expert response to her opinion was sought and meetings arranged in early 2012 in order to explore the emerging difference in diagnosis.⁵⁷³
- 2.181 Consensus was not possible⁵⁷⁴ and the necessity for a second paediatric neurological opinion became obvious. Accordingly Professor Dr Dietz Rating of the Children's Hospital, University of Heidelberg⁵⁷⁵ was commissioned to analyse the evidence, consider the diagnosis and give his opinion. He too disagreed with Professor Kirkham, concluding that it was

⁵⁷⁰ Professor Forsythe T-04-05-12 p.145 line 8 & Professor Risdon T-03-05-12 p.38-39

⁵⁷¹ 208-003-050

⁵⁷² 208-004-051

⁵⁷³ 307-007-073, 307-008-162, 306-016-130 & 306-017-146

⁵⁷⁴ 306-017-146, 309-008-230 & 307-008-242

⁵⁷⁵ 306-097-001

the “*acute overload with free water, nothing else.*”⁵⁷⁶ Whilst I am unable to make a definitive judgment in such a complex field, I believe that the evidence nonetheless permits a finding on the balance of probabilities.

2.182 Professor Kirkham advanced her opinion because she was unable to accept the proposition that hyponatraemia alone could, on the balance of probabilities, have caused Adam’s death. This was on the basis that she could find no proof for it. She was very clear that available medical literature disclosed no data to confirm that such a large infusion of hypotonic fluid or such a drop in sodium levels had ever given rise to fatal cerebral oedema in the absence of another pre-existing brain compromise.⁵⁷⁷

2.183 Conceding that the literature did not extend much beyond Arieff “*and the number of cases reported is relatively small*”⁵⁷⁸ she argued that those patients comprising Professor Arieff’s study group must all have presented with other pre-existing risk factors and that dilutional hyponatraemia was not therefore the primary cause of their fatal cerebral oedemas. Examination of Professor Arieff’s paper, did not however appear to support this interpretation. It is further to be noted that Professor Arieff has not subsequently amended his central findings⁵⁷⁹ but has maintained his conclusion that the cause of cerebral oedema in such cases is the ill-considered use of hypotonic intravenous fluids. It is in any event unlikely that the literature could encompass cases directly comparable to Adam.⁵⁸⁰

2.184 Professor Kirkham pointed out that Adam had survived previous similar episodes of hyponatraemia and that there must therefore have been other factors involved. However upon analysis it was found that the rate of fall of his serum sodium levels was at least five times greater than that recorded

⁵⁷⁶ 240-002-045

⁵⁷⁷ Professor Kirkham T-14-01-13 p.54 line 1

⁵⁷⁸ Professor Kirkham T-15-01-13 p.41 line 9

⁵⁷⁹ Professor Dr Rating T-15-01-13 p.89 line 9. See also Moritz and Ayus (2005) – 208-007-084 & Halberthal, Halperin and Bohn (2001)

⁵⁸⁰ 307-007-094 & Professor Dr Rating T-15-01-13 p.32 line 22

for his previous episodes.⁵⁸¹ The rate of fall remained for Professor Dr Rating a key diagnostic feature.⁵⁸²

2.185 Nonetheless and proceeding on the basis that dilutional hyponatraemia was not the primary cause of death, Professor Kirkham gave her opinion, again on the balance of probabilities and largely on the basis that Adam presented with what may have been relevant risk factors, that he was likely to have suffered a cerebral venous sinus thrombosis ('CVST') and/or posterior reversible encephalopathy syndrome ('PRES') and that these pathologies caused the cerebral oedema. Whilst they might also have rendered Adam vulnerable to the effects of the dilutional hyponatraemia, she believed he would have survived but for the CVST and/or PRES.⁵⁸³

2.186 Whilst demonstrating that these conditions were possible and that there was no basis upon which to positively exclude them, she was unable to present evidence that Adam actually had them. In particular, there was no persuasive evidence that Adam was neurologically vulnerable⁵⁸⁴ or that he had suffered previous neurological disorder,⁵⁸⁵ or that he suffered any venous sinus thrombosis⁵⁸⁶ or any PRES event⁵⁸⁷ whether in isolation or together or at any time.

2.187 Professor Kirkham further advanced the proposition that hyponatraemia could not have been the primary causative factor unless hypoxia was also present.⁵⁸⁸ The evidence for hypoxia was equivocal⁵⁸⁹ and in any event the conclusion that dilutional hyponatraemia could not cause cerebral oedema without it, uncertain.⁵⁹⁰

2.188 Considerable debate surrounded the interpretation of the neuro-pathological investigations and whether or not the findings were more or

⁵⁸¹ 201-015-225

⁵⁸² 240-004-022 & 200-022-271 & Professor Dr Rating T-15-01-13 p.31 line 18 & 306-113-001

⁵⁸³ 208-007-112 & Professor Kirkham T-15-01-13 p.60 line 19.

⁵⁸⁴ 208-002-034

⁵⁸⁵ Professor Kirkham T-14-01-13 p.68 line 12

⁵⁸⁶ Professor Kirkham T-14-01-13 p.73 line 3 & p.72 line 22 & p.70 line 7

⁵⁸⁷ Professor Kirkham T-15-01-13 p.70 line 8

⁵⁸⁸ Professor Kirkham T-15-01-13 p.5 line 18

⁵⁸⁹ Professor Kirkham T-15-01-13 p.61 line 11 & 206-002-005 & 011-025-125

⁵⁹⁰ Professor Kirkham T-15-01-13 p.83 line 22 & 201-016-289

less typical or indicative of this condition or that. This provided no more conclusive evidence than imperfect analogies drawn from experimentation with piglets.⁵⁹¹ Diagnosis on the basis of risk factors led to analysis of the hypothetical. Ultimately the problem of diagnosis in the absence of comprehensive information became a matter for informed clinical interpretation of the patho-physiology.

- 2.189 In determining the causative factors for the acute event which befell Adam, the overload of approximately 5% of his own body weight in free water⁵⁹² cannot on the evidence be disregarded. Adam was well before he went to theatre, by common agreement received an excessive quantity of free water very much too quickly and within hours suffered acute hyponatraemia and was dead. It is hard not to make the connection given that no other cause can be demonstrated and dilutional hyponatraemia is recognised in the medical literature as a cause of potentially lethal cerebral oedema.
- 2.190 Professor Kirkham conceded very fairly that the infusion of so much free water may have been a factor in the fatal cerebral oedema.⁵⁹³ However she considered it rather more likely that the increase in Adam's blood pressure had given rise to a hypertensive encephalopathy and that was the major factor.⁵⁹⁴ However, as she herself pointed out, the evidence and the literature were not conclusive in supporting such a diagnosis. Nonetheless and on the balance of probabilities she preferred it.⁵⁹⁵
- 2.191 Professor Dr Rating remained at variance with Professor Kirkham. Whilst acknowledging the fine judgments inherent in defining the primary and secondary causes of cerebral oedema, he said that a conventional application of physiological rules permitted the conclusion that dilutional hyponatraemia alone could cause a fatal cerebral oedema.⁵⁹⁶ He said it was a diagnosis that he would accept immediately⁵⁹⁷ being for him "as a

⁵⁹¹ Professor Kirkham T-15-01-13 p.42 line 23

⁵⁹² 300-077-148

⁵⁹³ Professor Kirkham T-14-01-13 p.54 line 12 & Professor Kirkham T-15-01-13 p.84 line 15

⁵⁹⁴ Professor Kirkham T-15-01-13 p.100 line 15

⁵⁹⁵ Professor Kirkham T-15-01-13 p.70 line 8

⁵⁹⁶ 240-004-025 & Professor Dr Gross at 307-008-228 & Dr Coulthard at 307-007-094

⁵⁹⁷ Professor Dr Rating T-15-01-13 p.89 line 20

clinician the most logical and reliable explanation."⁵⁹⁸ Having reviewed the arguments and the theory he said he was "*not convinced*" that there was any other primary cause⁵⁹⁹ and that on the balance of probabilities, hyponatraemia was the primary cause of Adam's fatal cerebral oedema.

2.192 In this Professor Dr Rating was in accord with the other available expert comment as to the cause of death. All proposed that dilutional hyponatraemia was most probably the cause of Adam's fatal cerebral oedema. Accordingly, Professor Kirkham's rejection, on the balance of probabilities, of the consensus diagnosis in preference for a more speculative differential diagnosis could not stand without positive supporting evidence. That evidence was lacking.

2.193 Accordingly and given that there was broad agreement as to a plausible diagnosis and there was no compelling reason for me to prefer any other explanation, I conclude on the balance of probabilities that Professor Kirkham's opinion does not prevail.⁶⁰⁰

Inquest preparation

2.194 Dr Murnaghan had six months to prepare the Trust for Adam's inquest. His activity in meeting the Coroner and forwarding representations to Dr Armour may be contrasted with his inactivity elsewhere. Dr Murnaghan was aware of his obligation to assist the Coroner in clarifying the cause of death⁶⁰¹ but he took no further steps to formally investigate the death⁶⁰² or interview all those involved in order to clarify the conflicting opinions received.

2.195 Dr Murnaghan liaised with the Trust's Solicitor, Mr George Brangam, and arranged meetings with the Trust witnesses prior to inquest.⁶⁰³

⁵⁹⁸ Professor Dr Rating T-15-01-13 p.93 line 9

⁵⁹⁹ Professor Dr Rating T-15-01-13 p.91 line 5

⁶⁰⁰ In these circumstances I determined that no useful purpose was served by seeking Professor Kirkham's opinion as to the cause of Raychel Ferguson's death.

⁶⁰¹ 093-025-068b

⁶⁰² 093-025-068b

⁶⁰³ 059-036-069

Consultation with witnesses was undertaken in April⁶⁰⁴ and May 1996.⁶⁰⁵ Solicitor's advices were received.⁶⁰⁶ Mr Brangam advised Dr Murnaghan on 30th May 1996⁶⁰⁷ that Dr Sumner's views were capable of creating difficulties for the Trust at inquest and moreover that Professor Savage agreed with them. In addition Mr Brangam reiterated Professor Savage's suggestion that the Trust should adopt the attitude "*...that everyone concerned in the care of this child was devastated by his death and that where possible, answers will be provided to the queries raised by the solicitors on behalf of the next of kin.*"⁶⁰⁸

2.196 Dr Taylor's attitude remained assertive and defiant throughout. He informed Dr Murnaghan that it was unacceptable "*to speculate on the cause of Adam's death without direct post-mortem evidence and by misrepresenting the quantities and types of fluids given.*" He found "*several fundamental problems*" with Dr Armour's report and pointedly observed that he "*would hope that reasons [were] not being generated or misrepresented to suit the diagnosis.*"⁶⁰⁹

2.197 Dr Murnaghan was all too keenly aware that Dr Taylor disagreed with both Dr Sumner and Professor Savage. His response was to arrange further discussion with Dr Taylor and Dr Gaston⁶¹⁰ to reconsider the issue of Adam's fluid management. A final meeting with the solicitor, Dr Taylor, Professor Savage and Dr Gaston was convened on 14th June 1996⁶¹¹ presumably in an attempt to establish an agreed position before proceeding to inquest, however, Dr Taylor refused to accept that there had been fluid overload or that Adam had suffered from dilutional hyponatraemia.⁶¹² The

⁶⁰⁴ 059-043-098

⁶⁰⁵ 059-030-061

⁶⁰⁶ 059-014-038

⁶⁰⁷ 059-020-046

⁶⁰⁸ 059-020-046

⁶⁰⁹ 059-036-072

⁶¹⁰ 059-017-043

⁶¹¹ 122-001-001

⁶¹² 122-001-004

most that seems to have been agreed was that they would not use the words “*fluid overload*.”⁶¹³

2.198 In Dr Murnaghan’s view “*the purpose of the meeting [was]... to inform the Trust’s legal advisor who was to ... represent the Trust at the Inquest.*”⁶¹⁴

Indeed Mr Brangam might, when informed of the contradictory opinions expressed by the Trust witnesses as to cause of death, have considered that a conflict existed in the Trust position and suggested separate legal representation for Dr Taylor at the inquest. He did not.

2.199 That was a very unsatisfactory position for the Trust and as Professor Savage observed “*it seemed to be that the people who were advising on the approach to the Coroner’s Inquest were saying ‘Dr Savage has that view, Dr Taylor has that view, and we must allow him to put that view forward.*”⁶¹⁵ To have allowed a medical witness on behalf of the Trust to give evidence relating to the circumstances of a death which was known to be contrary to the beliefs of other medical witnesses appearing on behalf of the Trust was inappropriate. It conflicted the Trust’s position and encouraged witnesses to minimise rather than articulate the differences between them.

2.200 Dr Gaston did not attend the pre-inquest consultations as a potential witness but in his governance capacity as a clinical director.⁶¹⁶ Notwithstanding that he was aware of the differences of opinion between Professor Savage and Dr Taylor as to the cause of Adam’s death, he did not, even then, think it appropriate to inform the medical director but rather continued “*with a view to ensuring the evidence that was presented reflected fairly Dr Taylor’s position so that the Coroner had the opportunity to hear the other points of view...*”⁶¹⁷ I believe that Dr Gaston was principally motivated to support Dr Taylor at a time when he and Dr Murnaghan should have been primarily concerned with ensuring that all involved complied with

⁶¹³ 122-001-004

⁶¹⁴ Dr Murnaghan T-11-09-12 p.152 line 6

⁶¹⁵ Professor Savage T-10-09-12 p.126 line 5

⁶¹⁶ Dr Gaston T-11-09-12 p.42 line 21 & Dr Gaston T-19-06-12 p.111 line 12

⁶¹⁷ Dr Gaston T-11-09-12 p.43 line 2

their legal duty⁶¹⁸ to inform the Coroner about what they knew of the facts and circumstances of Adam's death.

Inquest into Adam's death

- 2.201 Adam's inquest opened on 18th June 1996 before H.M. Coroner, Mr John Leckey, and heard from a number of witnesses including Adam's mother,⁶¹⁹ Dr Armour,⁶²⁰ Dr Alexander⁶²¹ and Mr Keane⁶²² before resuming on 21st June 1996 to hear Dr Taylor⁶²³ and Professor Savage.⁶²⁴ No nursing or technical evidence was given. Mr Brown did not give evidence.
- 2.202 It is significant, that of the opinions expressed as to cause of death at inquest, it was Dr Taylor alone who dissented. He insisted that Adam's polyuric condition meant that he could not develop dilutional hyponatraemia and that this could not therefore have been the cause of death.⁶²⁵ Mr Keane did not proffer his opinion as to what had gone wrong and Professor Savage, whilst indicating his agreement with Dr Sumner⁶²⁶ was less critical of Dr Taylor's fluid management than might have been expected. Indeed, he was reluctant to say that there had been "*gross fluid overload*."⁶²⁷
- 2.203 During the course of the inquest, the Trust provided the Coroner with draft "*recommendations for the prevention and management of hyponatraemia arising during paediatric surgery*."⁶²⁸ These were signed by Dr Taylor and submitted as evidence of how such cases might be managed in the future.⁶²⁹ These recommendations were drafted by Dr Gaston,⁶³⁰ in liaison with Dr Murnaghan,⁶³¹ and endorsed by consultant paediatric anaesthetist

⁶¹⁸ Pursuant to section 7 of the Coroners Act (Northern Ireland) 1959.
www.legislation.gov.uk/apni/1959/15/section/7

⁶¹⁹ 011-009-025

⁶²⁰ 011-010-030

⁶²¹ 011-012-079

⁶²² 011-013-093

⁶²³ 011-014-019

⁶²⁴ 011-015-109

⁶²⁵ 011-014-098

⁶²⁶ 122-044-034

⁶²⁷ 122-044-035

⁶²⁸ 060-018-036

⁶²⁹ 122-044-048

⁶³⁰ 060-018-035 & WS-013-2 p.4

⁶³¹ 093-025-068b

Dr Seamus McKaigue.⁶³² The draft received the approval of Dr Crean⁶³³ who stated that the primary purpose of the recommendations was that they might be produced at Adam's inquest.⁶³⁴

- 2.204 The recommendations specifically claim to be made with regard to the Arieff paper and the circumstances of Adam's case and seek to reassure that in future all anaesthetic staff will be made aware of the complications of hyponatraemia and advised to act appropriately.
- 2.205 Professor Arieff's paper was referenced because it was the medical literature cited by Drs Alexander, Armour and Sumner in support of the conclusion that Adam's cerebral oedema was caused by dilutional hyponatraemia resulting from an excess administration of low sodium fluids. Dr Sumner described it as a "*very important paper on the subject - about which [there is] not much general knowledge.*"⁶³⁵
- 2.206 Rule 23(2) of The Coroner's (Practice and Procedure) Rules (Northern Ireland) 1963 allowed the Coroner discretion to report the circumstances of Adam's death to the relevant authorities, if he considered..."*that action should be taken to prevent the occurrence of fatalities*"⁶³⁶ The suspicion arose that the draft recommendations had been cynically provided to the Coroner in order to deflect him from issuing a Rule 23(2) report by reassuring that action would indeed be taken.
- 2.207 Evidence was received that the recommendations were not distributed beyond the same small group of anaesthetists which had drafted them in the first place.⁶³⁷ They were not circulated amongst other clinicians or paediatricians involved in paediatric surgery or amongst other paediatric anaesthetists. In fact, nothing was done with the 'recommendations.' Accordingly, their principal reassurance that "*all anaesthetic staff will be made aware of the paediatric phenomena [dilutional hyponatraemia] and*

⁶³² 303-001-002, 060-014-025 & 093-023-065b

⁶³³ 060-014-025

⁶³⁴ WS-130-1 p.16

⁶³⁵ 122-044-011

⁶³⁶ 303-052-715

⁶³⁷ WS-130-1 p.16

*advised to act accordingly*⁶³⁸ was almost certainly insincere. Given the lack of any subsequent dissemination of these recommendations or of *“the information contained in the paper by Arieff”*⁶³⁹ it must be concluded that they were indeed drafted solely for production at the inquest and accordingly that their purpose must have been to provide comfort to the Coroner and dissuade him from making a Rule 23 report.

2.208 In the event, the Coroner was not convinced that such a report was necessary. He considered that Professor Savage’s proposal *“to monitor electrolytes more closely”*⁶⁴⁰ was clear⁶⁴¹ and was persuaded *“that changes would be made in relation to the future management of cases such as that of Adam’s.”*⁶⁴²

2.209 In an apparently separate exercise the same draft recommendations were then developed into a *“press release.”* This was forwarded to the Trust’s Public Relations department on 21st June 1996⁶⁴³ *“in anticipation of media interest at the conclusion of the Inquest.”*⁶⁴⁴ It subsequently found reference in both the Belfast Telegraph⁶⁴⁵ and The Irish News.⁶⁴⁶ The press and public were thus given the same empty assurances as were given the Coroner. It was, indeed, an exercise in public relations.

2.210 With hindsight, it was also a wasted opportunity to familiarise clinicians in Northern Ireland with the risks of dilutional hyponatraemia in children. It was later noted by Mr Clive Gowdy⁶⁴⁷ that the references to hyponatraemia *“were of such general application to be of interest and significance to other hospitals likely to be treating young patients.”*⁶⁴⁸ The fact that Dr Mulholland, then acting Clinical Director for Paediatrics, and Dr Terence Montague, Senior Registrar in Anaesthetics at the Children’s Hospital, were both

⁶³⁸ 011-014-107a

⁶³⁹ 011-014-107a & Dr Crean T-04-06-13 p.34 line 5

⁶⁴⁰ 122-044-034

⁶⁴¹ 122-044-051

⁶⁴² 006-015-311

⁶⁴³ 059-007-023 & WS-105-2 p.19

⁶⁴⁴ 305-020-001

⁶⁴⁵ 070-016-073

⁶⁴⁶ 070-016-070

⁶⁴⁷ Permanent Secretary, Department of Health, Social Services and Public Safety (DHSSPS) Northern Ireland

⁶⁴⁸ WS-062-2 p.10

unaware of the Arieff paper⁶⁴⁹ emphasises the importance of this missed opportunity, which may have been significant for the care Claire Roberts was to receive only months later in the Children's Hospital.

2.211 Mr Gowdy went further and observed that he would have expected a copy of the recommendations to be sent to the Department and to Dr Henrietta Campbell, the Chief Medical Officer ('CMO') because of regional implication and the desirability of wider dissemination. The CMO herself believed that had they been brought to her attention she would have considered them an appropriate matter for discussion within the Specialty Advisory Committees ('SAC') for anaesthetics and paediatrics.⁶⁵⁰

2.212 The Inquest verdict given on 21st June 1996 found the cause of Adam's death to be "*(A) Cerebral Oedema due to (B) Dilutional Hyponatraemia and impaired cerebral perfusion during renal transplant operation for a chronic renal failure (congenital obstructive uropathy).*"⁶⁵¹ The Coroner made an additional finding that the onset of "*gross cerebral oedema was caused by the acute onset of hyponatraemia from the excess administration of fluids containing only very small amounts of sodium.*"⁶⁵²

2.213 The Coroner's verdict was damning for Dr Taylor and the Trust.

Post-inquest

2.214 After the inquest, Dr Murnaghan noted that "*generally the outcome was satisfactory with fair write up in Friday evening's Telegraph.*"⁶⁵³ The newspaper report was headlined "*Death left me devastated - op doctor. Boy's death prompts action from Royal Hospital Trust.*"⁶⁵⁴ He telephoned the Editor of the Belfast Telegraph to thank him.

⁶⁴⁹ Dr Mulholland T-21-06-12 p.178 line 15 & Dr Montague T-11-05-12 p.158 line 5

⁶⁵⁰ WS-075-2 p.8

⁶⁵¹ 011-016-114

⁶⁵² 011-011-063

⁶⁵³ 059-001-001

⁶⁵⁴ 070-016-073

- 2.215 The Trust's solicitor, Mr Brangam, wrote to Dr Murnaghan on 2nd July 1996 hoping that *"everyone involved was satisfied by the way in which matters progressed and, indeed, I believe it is not without note that the Coroner did not issue a recommendation in this case, which I believe was in a large part due to the fact that the deponents gave their evidence in fair, objective and professional manner and at the same time were alert and aware of those issues which might cause an erosion of public confidence."*⁶⁵⁵ He also sought to place on *"record my appreciation for the sterling help and assistance given at the hearing of this matter by Dr Gaston."*⁶⁵⁶
- 2.216 Mr Brangam was to write further to Dr Murnaghan on 19th March 1997 in respect of the medical negligence claim brought by Adam's mother to advise that *"from a liability point of view, this case cannot be defended, and this is based largely upon the information given by one of the independent experts retained by H.M. Coroner at the Inquest. Additionally I believe that it would unwise for The Trust to engage in litigation in this matter given the particularly tragic circumstances of the death and the opportunity for the exploration of any differences of opinion which might exist between a number of the attending physicians."*⁶⁵⁷
- 2.217 The solicitor thus reveals what I believe to have been the Trust tactic at inquest. Given that Dr Sumner's views were likely to prevail and that there were issues which could cause an erosion of public confidence, it was decided to draw as little attention as possible to the differences of opinion between doctors lest the full extent of what may have gone wrong be explored. That was an approach which, in effect, withheld relevant information and analysis from the Coroner and discouraged review.
- 2.218 Dr Carson recalled *"Dr Murnaghan coming into my office after the Inquest to say basically, the Inquest went all right... satisfactory."*⁶⁵⁸ Having acknowledged that there could be nothing *"satisfactory"* about such a

⁶⁵⁵ 060-020-039

⁶⁵⁶ 060-020-039

⁶⁵⁷ 060-016-031

⁶⁵⁸ Dr Carson T-16-01-13 p.150 line 13

verdict from the point of view of the Trust, Dr Carson explained that Dr Murnaghan must have thought it “*went all right*” from the perspective of “*reputational risk - being damaged by an adverse outcome in an Inquest.*”⁶⁵⁹

- 2.219 I conclude that overall Dr Murnaghan engaged in a ‘damage limitation’ exercise to protect the reputation of the hospital. That was not the role of one who should have been motivated to assist the Coroner.

Informing the Medical Director

- 2.220 Dr Murnaghan informed Dr Carson about the inquest but did not seemingly communicate the crucial point that Dr Taylor had made a grievous error⁶⁶⁰ and refused to acknowledge it. Dr Carson explained that he had not been told that there was criticism of Dr Taylor⁶⁶¹ or that the Coroner had suggested a dissemination of information⁶⁶² and it was thus that he did not “*give any thought to a review or investigation of any sort into the case.*”⁶⁶³
- 2.221 However, Dr Murnaghan did inform Dr Carson that the inquest had raised risk management issues and Dr Carson seemingly agreed that this warranted a seminar as soon as possible with Drs Taylor, O'Connor, Mulholland and Gaston, Professor Savage and Mr Keane.⁶⁶⁴ This did not happen and Dr Carson did not pursue it. Nor did he ask to see the Coroner's verdict⁶⁶⁵ or enquire if Dr Taylor accepted it.⁶⁶⁶ He asked no questions, sought no report, and made no report to the Board.
- 2.222 The absence of any engagement by the Medical Director, Dr Carson, with the issues generated by the Inquest verdict is extraordinary and may have had a major bearing on how the Trust responded to the Coroner's finding, managed Dr Taylor and learned from the tragedy.

⁶⁵⁹ Dr Carson T-16-01-13 p.151 line 17

⁶⁶⁰ Dr Carson T-16-01-13 p.158 line 7

⁶⁶¹ Dr Carson T-16-01-13 p.159 line 11

⁶⁶² Dr Carson T-16-01-13 p.175 line 9

⁶⁶³ Dr Carson T-16-01-13 p.164 line 13

⁶⁶⁴ 059-001-001

⁶⁶⁵ Dr Carson T-16-01-13 p.155 line 25

⁶⁶⁶ Dr Carson T-16-01-13 p.156 line 24

Post-inquest response

- 2.223 It was Dr Taylor alone who had did not accept the finding of the Coroner.⁶⁶⁷ He continued to brazenly defend his position to both the PSNI and this Inquiry until he was finally obliged to concede error in February 2012.⁶⁶⁸ He did not, however, publically disagree with the inquest verdict and somehow managed to leave his colleagues unclear as to exactly what his position was.
- 2.224 It is to be regretted that the Trust took no formal steps to find out if Dr Taylor accepted the verdict.⁶⁶⁹ Mr Keane *“thought that the verdict of the inquest would have perhaps offered an opportunity for other people to talk to him”*⁶⁷⁰ but as Professor Savage recalled - *“the Coroner made his decision, we accepted it and things seemed to have ended there.”*⁶⁷¹
- 2.225 Mr Koffman was of the view that *“if the Coroner’s verdict was that this was an avoidable hyponatraemic death, it has to be accepted by the team. If you do not accept that, you cannot be part of that team. So I would immediately say he could do no transplant work. But the problem with hyponatraemic illness is that it could relate to any operation; it is not just specific to transplantation. So that is why there is a wider connotation.”*⁶⁷² I believe that was the proper response and the one which should have been adopted by the Trust in 1996. Until such time as the Trust could be confident that such an error would not be repeated, patient safety was potentially jeopardised. Steps ought to have been taken to formally assess and, if necessary, retrain Dr Taylor at that time. Instead, Dr Taylor was permitted to continue in his practice.
- 2.226 However in 1996, the Trust did not assess the clinical performance of its medical staff. Dr Gaston recalled *“no policy... for the appraisal of*

⁶⁶⁷ Dr Montague T-11-05-12 p.155 line 21 & Professor Savage T-18-04-12 p.171 line 12

⁶⁶⁸ WS-008-6 p.3

⁶⁶⁹ Dr Gaston T-11-09-12 p.108 line 20

⁶⁷⁰ Mr Keane T-26-04-12 p.171 line 10

⁶⁷¹ Professor Savage T-22-06-12 p.99 line 3

⁶⁷² Mr Koffman T-16-05-12 p.153-154

*anaesthetic staff after an unexpected death.*⁶⁷³ There was no external review and as Mr William McKee⁶⁷⁴ advised, no “*process of assessing and developing the competence of doctors outside the GMC.*”⁶⁷⁵ There was no referral to the General Medical Council (‘GMC’), whether by the Trust or its medical staff, notwithstanding the clear duty imposed by the GMC Code of Good Practice to protect patients when clinical performance was thought to pose a threat.⁶⁷⁶ Mr McKee stated that the Board “*relied on the wider clinical team to ascertain whether there should be a referral to the GMC.*”⁶⁷⁷ However, as Dr Murnaghan explained “*there wasn’t a culture of referral to the GMC.*”⁶⁷⁸ That must however have been known to all.

2.227 The consultant paediatric anaesthetists in the Children’s Hospital do not appear to have even considered referring Dr Taylor to the GMC. They did discuss Adam’s case⁶⁷⁹ but somehow allowed themselves to understand that whilst Dr Taylor may not have agreed with the Inquest verdict he did acknowledge error in respect of his care of Adam.⁶⁸⁰ They appeared to have been content to leave it at that without further reassurance as to his competency in fluid management.⁶⁸¹ In short, they appear to have trusted to luck.⁶⁸² Professor Savage and the nephrology team do not seem to have been so trusting and in consequence of Adam’s death they made it their “*business to be in theatre for the duration of every transplant and to have discussions with the Anaesthetist about the fluids beforehand and during and actively observe all the fluids that were given.*”⁶⁸³

2.228 I can only conclude that the Trust lacked a proper system to manage the consultant who failed to acknowledge error or the risk he might pose to patients or the extent to which further training might be necessary. The

⁶⁷³ WS-013-2 p.7

⁶⁷⁴ 306-081-006 Chief Executive, Royal Hospitals Trust

⁶⁷⁵ WS-061-2 p.17

⁶⁷⁶ WS-130-1 p.25

⁶⁷⁷ Mr McKee T-17-01-13 p.52 line 11

⁶⁷⁸ Dr Murnaghan T-25-06-12 p.212 line 23

⁶⁷⁹ Dr Crean T-20-06-12 p.51 line 17

⁶⁸⁰ Dr Crean T-20-06-12 p.25 line 11

⁶⁸¹ Dr Crean T-20-06-12 p.28 line 6

⁶⁸² Dr Crean T-20-06-12 p.28 line 3

⁶⁸³ Dr O’Connor T-20-06-12 p.104 line 17

Trust had no means of satisfying itself that the clinicians involved in the paediatric renal transplant programme were competent or that problems would be addressed. Because there was no proper review to identify poor performance, clinicians were left with only themselves to satisfy that the service they provided was of an appropriate standard. Left alone, not even a critical Coroner's verdict on a patient's death could prompt them to formally question their performance or refer to the GMC. This approach amounted to the Trust surrendering such mechanisms of risk management control as it claimed to a culture of uncritical medical self-regulation about which it did not enquire. This was a failure in leadership of the Medical Director, the Board of the Trust and the Chief Executive.

Post-inquest audit and review

- 2.229 The Inquiry was informed that the Paediatric Directorate held regular medical audit meetings in 1995.⁶⁸⁴ Indeed the Royal Hospitals Annual Report 1993-94 described "... sessions on case note review, discussion and presentation of audit projects... More recently there has been a move toward multi-disciplinary audit (clinical audit)..."⁶⁸⁵
- 2.230 There was no clinical audit of Adam's case before the Inquest because as Dr Taylor said he "*did not do anything in terms of clinical audit as it was a Coroner's case.*"⁶⁸⁶ Regrettably, he did nothing about a clinical audit of the case after the inquest either. Nor was Adam's case seemingly presented at any other Paediatric Directorate meeting.
- 2.231 Dr Taylor believed however that Adam's case could have been presented at an ATICS mortality meeting⁶⁸⁷ by Dr Gaston⁶⁸⁸ but was unable to identify any learning to have emerged from the meeting.⁶⁸⁹ That is probably because it was the meeting held on 10th December 1996 when Dr Gaston chose to openly praise the excellence of Dr Taylor's record keeping in the

⁶⁸⁴ 305-011-572

⁶⁸⁵ WS-061-2 p.58

⁶⁸⁶ WS-008-03 p.43

⁶⁸⁷ Dr Taylor T-21-06-12 p.109 line 20

⁶⁸⁸ Dr Taylor T-21-06-12 p.114 line 19

⁶⁸⁹ Dr Taylor T-21-06-12 p.115 line 19

context of assisting the Coroner's investigation.⁶⁹⁰ Given what was by then known about Adam's death I believe that this reveals an underlying institutionalised reluctance to admit major shortcomings. Furthermore, and given that Dr Taylor had not, at that stage, accepted the Coroner's verdict⁶⁹¹ I consider that proper discussion of the case should have focussed on Dr Taylor's position and how it might have been dealt with.

- 2.232 Dr Murnaghan described the response within the Trust to the introduction of clinical audit as slow and incorporating a "*touch of resistance*."⁶⁹² I find that the evidence revealed concrete resistance in 1996 to any meaningful audit, review or analysis of Adam's case.

Lessons

- 2.233 Ms Slavin observed that "*families may still be angry. However, if they can be assured, both that lessons have been learned and that changes have been made, then it may ease their grief and give them solace and closure*."⁶⁹³
- 2.234 In general, I agree with the view expressed to the Inquiry by Mr Ramsden that "*in 1995 I would have expected a more formal approach to the lessons learned to be taken by the RBHSC. I have seen no formal report from RBHSC summarising the incident, the lessons learned and an Action Plan for implementing improvement. In view of the seriousness of this case, I would have expected to see a report created by RBHSC in 1995, summarising all this... certainly such a report should then have commented on whether any broader lessons on fluid management and the prevention of hyponatraemia were needed*."⁶⁹⁴
- 2.235 At inquest the Coroner had a discussion with Dr Sumner about how Dr Sumner's views "*could be disseminated amongst the medical profession in*

⁶⁹⁰ WS-013-1 p.3

⁶⁹¹ Dr Taylor T-21-06-12 p.112 line 7

⁶⁹² Dr Murnaghan T-25-06-12 p.15 line 2

⁶⁹³ WS-001-2 p.17

⁶⁹⁴ 211-005-018

Northern Ireland.”⁶⁹⁵ The Coroner “assumed that the Royal Belfast Hospital for Sick Children would have circulated other hospitals in Northern Ireland with details of the evidence given at the inquest and, possibly, some ‘best practice’ guidelines”⁶⁹⁶ and further that he “attached great importance to [this] bearing in mind that the Royal Victoria Hospital was pre-eminently a teaching hospital.”⁶⁹⁷ He was to be disappointed. Mr McKee advised that “prior to July 2004 there was no formal mechanism or requirement within Northern Ireland to report lessons learned from Inquest.”⁶⁹⁸

2.236 Dr Murnaghan did not report the outcome of the inquest to the Trust Board and neither the Chief Executive nor the Clinical Director of Paediatrics⁶⁹⁹ was informed of the verdict or the Coroner’s intention that information be shared.⁷⁰⁰ Dr Gaston claimed not to remember the Coroner discussing how lessons might be shared⁷⁰¹ and gave no thought to the identification of lessons or the prevention of a possible recurrence.

2.237 In respect of learning lessons within the hospital, Mr McKee advised that “until 1999 the Director of Medical Administration ensured the internal dissemination of lessons learned from Inquests.”⁷⁰² There is no evidence that Dr Murnaghan did anything. Whilst he did discuss convening a seminar involving Professor Savage, Drs Mulholland, Gaston, O’Connor, Taylor, Hicks⁷⁰³ and Mr Keane to address “the other issues identified”⁷⁰⁴ he did not pursue the idea.⁷⁰⁵ Dr Murnaghan spoke of his “regret to this day that I forgot totally about this important issue.”⁷⁰⁶

2.238 With hindsight it is indeed to be regretted that Dr Murnaghan’s idea of a seminar was forgotten because the principal learning from the death was

⁶⁹⁵ WS-091-1 p.2

⁶⁹⁶ WS-091-1 p.4

⁶⁹⁷ Mr Leckey T-25-06-13 p.61 line 12

⁶⁹⁸ WS-061-1 p.2

⁶⁹⁹ Dr Mulholland T-21-06-12 p.178 line 22

⁷⁰⁰ WS-061-1 p.2

⁷⁰¹ Dr Gaston T-19-06-12 p.185 line 8

⁷⁰² WS-061-1 p.2

⁷⁰³ 306-081-004

⁷⁰⁴ 059-001-001

⁷⁰⁵ WS-015-2 p.20

⁷⁰⁶ Dr Murnaghan T-25-06-12 p.209 line 1

available and had been since January 1996 in the reports of Drs Alexander⁷⁰⁷ and Sumner.⁷⁰⁸ Both had relied for authority upon Professor Arieff's paper 'Hyponatraemia and death, or permanent brain damage, in healthy children' (1992)⁷⁰⁹ as indeed had Dr Armour and all the consultant paediatric anaesthetists in the Children's Hospital.⁷¹⁰ The Arieff paper therefore became the obvious basis for teaching about IV administration of hypotonic fluids and the risks of dilutional hyponatraemia in children. Dr Sumner could so easily have been invited to the Children's Hospital for an open discussion as to the issues arising. An invitation to Dr Armour or Professor Savage would have been simpler still.⁷¹¹

2.239 Arieff's study analysed a group of patients who had died or suffered brain damage from hyponatraemia. The paper had broad Children's Hospital application because none of Arieff's study group had undergone renal transplantation or even major paediatric surgery but had been hospitalised by minor fevers, appendicitis and other non-critical conditions. Most were admitted with symptoms of lethargy, emesis or weakness. It is to be remembered that only four months after Inquest, Claire Roberts was admitted to the Children's Hospital with symptoms of lethargy, emesis and nausea.⁷¹²

2.240 Drs Taylor, McKaigue and Crean, who had all felt it appropriate to endorse the draft recommendations for the Coroner with "*regard to the information contained in the paper by Arieff et al (BMJ 1992)*"⁷¹³ all still practiced in the hospital at the time of Claire's admission but had made no attempt to share Arieff's guidance or give any relevant training whatsoever in what was Northern Ireland's only regional paediatric training hospital. Dr Taylor conceded that "*it ought to have been read and understood and put into the*

⁷⁰⁷ 011-012-084

⁷⁰⁸ 011-011-053

⁷⁰⁹ 011-011-074

⁷¹⁰ 011-014-107a

⁷¹¹ Dr Armour T-13-06-12 p.111 line 6

In May 1997 Dr Alison Armour published an article about Adam's case in the Journal of Clinical Pathology (WS-012-1 p.8) "*to ensure that this would not happen again..*"

⁷¹² 090-011-013

⁷¹³ 011-014-107a

*practice of all anaesthetists and paediatricians... who are looking after children in Northern Ireland.”*⁷¹⁴

- 2.241 It is in this context additionally unsettling to record that Lucy Crawford was admitted to the Erne Hospital in 2000 with a history of lethargy, drowsiness and floppiness,⁷¹⁵ and Raychel Ferguson to the Altnagelvin Area Hospital in 2001 for an appendectomy.⁷¹⁶ They, and Claire, all presented with symptoms similar to those recorded in Arieff’s study and all were to receive IV infusion of the hypotonic Solution No.18.
- 2.242 Professor Arieff’s concluding paragraph now seems particularly relevant to the treatment given Claire in that he advised that “*when a paediatric patient receiving hypotonic fluid begins to have headache, emesis, nausea or lethargy the serum sodium concentration must be measured. Although these symptoms are somewhat non-specific, the diagnosis is easily established at minimal cost and with virtually no risk to the patient by evaluating plasma electrolyte values.*”⁷¹⁷
- 2.243 There was ample opportunity to direct and influence the learning from Adam’s case.⁷¹⁸ The lead members of Adam’s transplant team, Professor Savage, Dr Taylor and Mr Keane all held teaching posts at Queens University, Belfast.⁷¹⁹ Professor Savage chaired the Faculty of Medicine Education Committee in 1995⁷²⁰ and Dr Taylor served on the Education Sub-Committee of the Anaesthetics, Theatre and Intensive Care Directorate 1995-1997 and was in a position to influence post-registration training.⁷²¹ This additional aspect of Dr Taylor’s practice emphasises the importance which should have been attached to assessment of his clinical competence in respect of fluid management in the context of end-stage renal failure.

⁷¹⁴ Dr Taylor T-21-06-12 p.98 line 20

⁷¹⁵ 027-009-020

⁷¹⁶ 020-006-010

⁷¹⁷ 011-011-077

⁷¹⁸ Professor Savage T-22-06-12 p.119 line 9

⁷¹⁹ 306-018-004 & 306-019-010 & 306-023-003

⁷²⁰ 306-018-008

⁷²¹ 306-019-011

- 2.244 Indeed, Dr Haynes expressed concern about Dr Taylor's teaching role given the mistakes made by him in fluid management and his failure to acknowledge error.⁷²² However Dr Taylor, doubtless intending to reassure, claimed to have "*stuck to textbook teaching about the management of fluids.*"⁷²³ That must, however, have meant that his teaching was then at odds with his explanations to the PSNI and this Inquiry. Dr Taylor categorised his "*answers to the Police as... irrational.*"⁷²⁴ I categorise his answers as dishonest.
- 2.245 I believe that by refusing to accept Adam's dilutional hyponatraemia, Dr Taylor restricted the scope for learning. His opinion alone seems to have been a limiting factor because even eight years later when the Trust was asked by the Department whether anything had been learned from Adam's case, the Trust's Press and Public Relations Officer responded having "*just spoken with Dr Bob Taylor, Consultant Anaesthetist in PICU, who was involved in the management of Adam Strain and gave evidence at the Inquest. Following a detailed examination of the issues surrounding patient AS there were no new learning points, and therefore no need to disseminate any information.*"⁷²⁵
- 2.246 The Coroner has said that "*looking back, it was one of the most important inquests I've ever held...*"⁷²⁶ It is therefore not only disappointing but disturbing that so little should have been learned from it. Dr Gaston considered that the responsibility for the failing to learn lessons was collective.⁷²⁷ I agree, but would add that those involved were not given the necessary guidance or leadership from within the Trust. In the light of the critical verdict at inquest, Drs Carson and Murnaghan should never have allowed so important a learning opportunity to go unexplored.

⁷²² Dr Haynes T-02-05-12 p.29 lines 6-14

⁷²³ Dr Taylor T-21-06-12 p.136 line 19

⁷²⁴ Dr Taylor T-21-06-12 p.138 line 1

⁷²⁵ 023-045-105

⁷²⁶ Dr Murnaghan T-25-06-12 p.132 line 9

⁷²⁷ Dr Gaston T-19-06-12 p.146 line 7

- 2.247 The learning to be extracted from Adam's death was left to the discretion of the doctors and the individual judgement of Dr Murnaghan.⁷²⁸ Those individuals could not be relied upon. Dr Murnaghan was still engaged in 'defending' the medical negligence claim and unlikely to draw attention to deficiencies in clinical care; Dr Taylor was still denying that Adam had dilutional hyponatraemia and the doctors involved remained predictably averse to focusing on clinical failings.
- 2.248 That Dr Murnaghan was expected to disseminate learning from inquests in addition to all his other responsibilities was unrealistic. That he should have been left alone to manage matters of such importance without reference to the Trust Board, confirms to me that the Board was not engaged with patient safety. From the point of view of the Children's Hospital that was deeply unsatisfactory.

Medical negligence litigation

- 2.249 No apology was given to Adam's mother as contemplated by 'The Complaints Procedure'.⁷²⁹ Her litigation was concluded by settlement on 29th April 1997 without admission of liability and subject to confidentiality.⁷³⁰ The terms of settlement appear to have been drafted by Mr Brangam and the confidentiality clause inserted on his advice.⁷³¹ Refusal to admit liability made it very much less likely that Ms Slavin would ever receive a clear explanation about her son's death and the imposition of confidentiality stifled discussion.
- 2.250 Mr Brangam had previously advised the Trust about handling complaints. He had observed that "*too often in the past clinicians seemed to entertain the notion that the complaints process of itself was threatening, potentially hostile and one where possibly too much information was given to complainants*" and advised that "*to say 'sorry' is not an admission of liability but rather ought to be seen as a proper and sympathetic approach to*

⁷²⁸ 211-005-017

⁷²⁹ WS-062-1 p.351

⁷³⁰ 060-013-024

⁷³¹ Dr Murnaghan T-25-06-12 p.226 line 2

*matters which may have caused a patient or their family concern.*⁷³² These advices were shared with Dr Murnaghan but do not appear to have tempered their shared approach to litigation which was directed at disposing of potentially embarrassing litigation as quietly and unapologetically as possible.

- 2.251 Ms Slavin expressed her frustration, annoyance and disappointment with a litigation settlement process which was confidential and did not admit fault.⁷³³ She said that *“the inquest and subsequent civil proceedings should have brought closure to my grief. They did not.”*⁷³⁴ It was not until 17th October 2013 that the Trust eventually offered Ms Slavin an admission of liability, an apology and an expression of sympathy.⁷³⁵ This could and should have been done after the Inquest in June 1996. The delay was inexcusable and further distress was unnecessarily caused.
- 2.252 On 12th November 2013 the Chief Executive of the Belfast Health and Social Care Trust⁷³⁶ Mr Colm Donaghy publically acknowledged that the way *“litigation has been handled by the Belfast Trust has added to the hurt and grief felt by the families... I wish to apologise unreservedly to the families for the unacceptable delay in the Belfast Trust accepting liability.”*⁷³⁷
- 2.253 That nothing was done to review the medical negligence claim after settlement or draw anything from it confirms my view that the way claims were processed acted as an obstacle rather than a support to the practice of learning from error. That was an obvious waste of opportunity for clinical improvement.
- 2.254 Dr Murnaghan's role as manager of litigation was untenable. His responsibility to defend claims against the Trust was in potential conflict

⁷³² 126-021-001

⁷³³ WS-001-2 p.16

⁷³⁴ WS-001-2 p.17

⁷³⁵ T-17-10-13 p.2-3

⁷³⁶ Which incorporated the former Royal Group of Hospitals Trust ('RGHT')

⁷³⁷ Mr Donaghy T-12-11-13 p.5 line 15

with his duties as impartial investigator of fact, facilitator to the Coroner and disseminator of learning. The arrangement did not work.

Response within paediatric renal transplant service

- 2.255 Professor Savage continued to lead the Paediatric Renal Transplant Service and to rely upon the services of Dr Taylor and Mr Keane. He and Dr O'Connor revised the 1990 Renal Transplant Protocol to ensure that, prior to being called for transplant, each child and family would meet with the surgeon and an individualised transplant plan would be prepared.⁷³⁸ They tried to make sure that Solution No.18 would not be administered⁷³⁹ and that urinary output and sodium concentrations would be measured.⁷⁴⁰
- 2.256 In April 2011 Dr O'Connor was able to advise that all 50 paediatric renal transplant patients operated on in the Children's Hospital since Adam's death had survived transplant surgery.⁷⁴¹ Dr Taylor performed the anaesthesia for six of them⁷⁴² and Mr Keane the surgery for two.⁷⁴³ Of the transplants performed in 2010-2012 she advised that "*100 per cent of the transplants are working, which equals the best results in the UK.*"⁷⁴⁴

Other issues: unsatisfactory evidence

- 2.257 I found the evidence of the surgeons before this Inquiry to be so unsatisfactory as to justify my singling them out for specific comment. It was Dr Taylor who observed that "*It's very unusual for a patient of any age to die on the operating table and has a devastating effect on the operating department.*"⁷⁴⁵ That might be thought self-evident. However, Mr Brown gave evidence from the perspective of one so little marked by the event as to be unable to recall almost anything of it. I did not always find that convincing and consider Mr Brown knew more than he was prepared to

⁷³⁸ Professor Savage T-22-06-12 p.130 line 4

⁷³⁹ Professor Savage T-17-04-12 p.62 line 14

⁷⁴⁰ Professor Savage T-18-04-12 p.77 line 14

⁷⁴¹ WS-014-2 p.20

⁷⁴² 301-047-414

⁷⁴³ Mr Keane T-24-04-12 p.6 line 9 & 301-047-414

⁷⁴⁴ Dr O'Connor T-25-04-12 p.182 line 3

⁷⁴⁵ Dr Taylor T-19-04-12 p.57 line 4

say. He did say by way of an unexpected aside that “*my mantra is I don’t know and I don’t remember.*”⁷⁴⁶ I found his attitude inappropriate.

2.258 By contrast it was Mr Keane’s evidence I found inappropriate. It was so undermined by inconsistency⁷⁴⁷ that only limited reliance could be placed on it. I formed the view that Mr Keane initially told Professor Savage the truth about Adam’s fluid overload but for ‘internal’ purposes only. Later, and for the ‘external’ purpose of inquest, he avoided what he knew to be true hoping that the Coroner would correctly identify the cause of death and relieve him of his obligation to assist.⁷⁴⁸ Then having stated “*as far as I was concerned the anaesthetic went ahead on a very difficult patient without any particular problems*”⁷⁴⁹ he placed himself in a position of inescapable inconsistency as far as this Inquiry was concerned. He failed in his professional duty to assist the Coroner and I believe he failed in his professional duty to assist me.⁷⁵⁰

Concluding remarks

2.259 Even though I found defensiveness, deceit and a strong inclination amongst colleagues to close ranks, I do not conclude that the Trust itself engaged in a systematic ‘cover-up.’ It is to be recognised that Dr O’Connor recorded the provisional diagnosis of dilutional hyponatraemia within hours of Adam’s admission to PICU. Dr Taylor carefully filed the anaesthetic notes and the CVP trace in the chart. The death was notified promptly to the Coroner who commissioned a post-mortem report, investigated and sought

⁷⁴⁶ Mr Brown T-01-05-12 p.102 line 21

⁷⁴⁷ For example, inconsistent evidence in relation to:

- (i) the decision to accept kidney (see: WS-006-3 p.23 & Mr Keane T-24-04-12 p.16)
- (ii) an arrangement to leave before the completion of surgery (see: Mr Keane T-24-04-12 p.83 line 15 & Mr Keane T-24-04-12 p.87 line 17)
- (iii) checking the catheter before inserting supra-pubic catheter (see: Mr Keane T-23-04-12 p.96 line 17 & WS-006-3 p.8)
- (iv) the CVP readings sought from Dr Taylor (see: WS-006-3 p.17 & Mr Keane T-23-04-12 p.117 line 12)
- (v) his role in wound closure (see: 093-010-030 & Mr Keane T-10-09-12 p.16 line 20)
- (vi) his reason for leaving the theatre before completion of surgery (see: WS-006-2 p.7 & Mr Keane T-26-04-12 p.163-64)
- (vii) non-participation in subsequent paediatric transplant surgery (see: 301-127-001 & Mr Keane T-24-04-12 p.17 & 301-047-414)

⁷⁴⁸ Mr Keane T-23-04-12 p.73 line 2

⁷⁴⁹ 059-034-067

⁷⁵⁰ 315-002-009

the views of consultant anaesthetist Dr Alexander. Dr Murnaghan and the paediatric anaesthetists advised the Coroner to obtain the additional expert advices of Dr Sumner. These independent reports were shared with Ms Slavin and Professor Savage was authorised to explain them to her. He met and corresponded with her. Neither the diagnosis nor the implications were concealed and Professor Savage advised her in February 1996 that *“after Adam came out of theatre and we knew his sodium was low we realised this was dilutional.”*⁷⁵¹ Thereafter Dr Armour’s Autopsy Report was forwarded to her.⁷⁵² Professor Savage placed on record his disagreement with Dr Taylor,⁷⁵³ advised the Trust’s solicitors accordingly and publically endorsed the conclusions of Dr Sumner at inquest.

It is, however, impossible to avoid the conclusion that the Trust, by its systems and employees, allowed the barest possible constructive response to Adam’s death. Lessons were not learned and that was to compound tragedy.

⁷⁵¹ 306-090-001

⁷⁵² 011-061-196

⁷⁵³ 059-003-005

CLAIRE ROBERTS

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Introduction

- 3.1 Claire Roberts was born on 10th January 1987, the youngest child of Alan and Jennifer Roberts. She was admitted to the Royal Belfast Hospital for Sick Children (the 'Children's Hospital') on 21st October 1996¹ with symptoms of vomiting and lethargy and died there two days later.² Her death was not reported to the Coroner.³ The post-mortem examination was confined to her brain⁴ and a Death Certificate was issued citing cerebral oedema secondary to status epilepticus as the cause of death.⁵ Mr and Mrs Roberts never quite understood from what they were told at the Children's Hospital what had happened to Claire or why she had died.⁶
- 3.2 Eight years later, on 21st October 2004, they watched the documentary 'When Hospitals Kill' on Ulster Television. The programme focused on the deaths of Adam Strain, Lucy Crawford and Raychel Ferguson and on whether the circumstances of their deaths might have been the subject of a cover-up. Mr and Mrs Roberts were struck by similarities between Claire's death and those others featured in the programme. They contacted the Children's Hospital the next day.⁷ In consequence, Claire's death was re-considered and referred to the Coroner.⁸ An inquest was held in May 2006 and a verdict given that death was caused by:

“(a) cerebral oedema due to

*(b) meningoencephalitis, hyponatraemia due to excess ADH production and status epilepticus.”*⁹

¹ 090-014-020

² 090-009-011

³ 090-045-148

⁴ 090-054-185

⁵ 091-012-077

⁶ WS-253-1 p.17

⁷ WS-253-1 p.17

⁸ 089-004-008

⁹ 091-002-002

The addition of Claire's case to the Inquiry

3.3 When this Inquiry resumed in 2008, having been stayed for three years to permit Police investigation into the other cases, I added Claire's death to those I had been tasked to investigate.¹⁰ I did so because hyponatraemia had contributed to her death and because she had died in the same hospital as Adam, just four months after the inquest into his death. In addition to my concern about the treatment Claire had received, I was troubled by the obvious failure to report Claire's death to the Coroner in 1996 and what was revealed at her inquest ten years later.

Expert reports

3.4 The Inquiry, guided by its advisors, engaged experts to appraise the involvement of the doctors and nurses involved in Claire's care, particularly the Consultant Paediatrician,¹¹ Consultant Paediatric Neurologist¹² and the nurses on duty in Allen Ward. The experts were:

- (i) Dr Robert Scott-Jupp¹³ (Consultant Paediatrician of Salisbury District Hospital) who reported on the role and responsibilities of the Consultant Paediatrician and on paediatric medical issues.¹⁴
- (ii) Professor Brian Neville¹⁵ (Consultant Paediatric Neurologist and Professor of Childhood Epilepsy, Institute of Child Health, University College London and Great Ormond Street Hospital), who advised on neurological issues and the role and responsibilities of the Consultant Paediatric Neurologist.¹⁶

¹⁰ 303-008-176

¹¹ Dr Heather Steen - 310-003-003

¹² Dr David Webb - 310-003-002

¹³ 310-003-007

¹⁴ File 234

¹⁵ 310-003-007

¹⁶ File 232

- (iii) Ms Sally Ramsay¹⁷ (Independent Children's Nursing Advisor) who provided a report on the nursing care.¹⁸

3.5 The Inquiry also engaged experts to address specific issues, including:

- (i) Professor Keith Cartwright¹⁹ (Consultant Clinical Microbiologist) who provided reports on the cerebral spinal fluid ('CSF') sample, the CSF report and changes in Claire's white blood cell count.²⁰
- (ii) Professor Brian Harding²¹ (Consultant Paediatric Neuropathologist and Professor of Pathology & Laboratory Medicine, University of Pennsylvania) who provided a supplemental report to that provided by him to the PSNI on 22nd August 2007²² dealing with the diagnosis of encephalitis in relation to neuropathological changes.²³
- (iii) Dr Waney Squier²⁴ (Consultant Neuropathologist and Clinical Lecturer, John Radcliffe Hospital, Oxford) who provided neuropathological opinion on histological slides.²⁵
- (iv) Dr Philip Anslow²⁶ (Consultant Neuroradiologist, John Radcliffe Hospital, Oxford) who interpreted the Computerised Tomography ('CT') scans of 23rd October 1996.²⁷
- (v) Dr Caren Landes²⁸ (Consultant Paediatric Radiologist, Alder Hey Children's NHS Foundation Trust), who examined and reported on chest x-rays taken at 03:50 and 07:15 on 23rd October 1996 and a CT scan taken the same day.²⁹

¹⁷ 310-003-007

¹⁸ File 231

¹⁹ 310-003-007

²⁰ File 233

²¹ 310-003-007

²² 096-027-357

²³ File 235

²⁴ 310-003-007

²⁵ File 236

²⁶ 310-024-009

²⁷ File 236-006

²⁸ 310-003-007

²⁹ File 230

- (vi) Dr Jeffrey Aronson³⁰ (Consultant Pharmacologist, Oxford University Hospitals NHS Trust) who provided a report on pharmacological issues and in particular the probable effects of the medication prescribed and/or administered.³¹
- (vii) Dr Roderick MacFaul³² (Consultant Paediatrician, now retired) who reported on governance considerations and in addition addressed incidental clinical issues.³³
- (viii) Professor Sebastian Lucas³⁴ (Professor of Clinical Histopathology and Consultant Histopathologist, Guys and St Thomas' Hospitals Trust, London) who provided expert opinion on the autopsy.³⁵
- (ix) Dr Audrey Giles (former Head of The Questioned Documents Section of the Metropolitan Police Forensic Science Laboratory; now Lead of the Giles Document Laboratory) who provided a handwriting analysis report.³⁶

3.6 In addition the Inquiry had the benefit of two further reports prepared for inquest, by:

- (i) Dr Robert Bingham³⁷ (Consultant Paediatric Anaesthetist at the Hospital for Sick Children, Great Ormond Street, London),³⁸ and
- (ii) Dr Ian Maconochie³⁹ (Consultant in Paediatric Accident and Emergency Medicine, St Mary's Hospital London).⁴⁰

³⁰ 310-003-007

³¹ File 237

³² 310-024-009

³³ File 238

³⁴ 310-024-009

³⁵ File 239

³⁶ File 241

³⁷ 310-024-010

³⁸ 091-006-023

³⁹ 310-024-010

⁴⁰ 091-007-031

Schedules compiled by the Inquiry

3.7 In an attempt to summarise the very considerable quantities of information received, a number of schedules and charts was compiled:

- (i) List of Persons - Clinical⁴¹ and Governance.⁴²
- (ii) Chronology of Events - Clinical⁴³ and Chronology of Hospital Management and Governance.⁴⁴
- (iii) Timeline of treatment (21st - 23rd October 1996).⁴⁵
- (iv) Schedule of Consultant Responsibility (22nd - 23rd October 1996).⁴⁶
- (v) Schedule of Medication.⁴⁷
- (vi) Schedule of Fluid and Medication Input.⁴⁸
- (vii) Timeline of Over-lapping Medication.⁴⁹
- (viii) Schedules of Expert Views on Cause of Death⁵⁰ & Cerebral Oedema.⁵¹
- (ix) Schedule of Glasgow Coma Scale ('GCS') scores (22nd October 1996).⁵²
- (x) Schedule of Recorded Sodium Levels (21st - 23rd October 1996).⁵³
- (xi) Schedule of Blood Cell Counts (21st-24th October 1996).⁵⁴

⁴¹ 310-024-001
⁴² 310-023-001
⁴³ 310-004-001
⁴⁴ 310-021-001
⁴⁵ 310-016-001
⁴⁶ 310-005-001
⁴⁷ 310-006-001
⁴⁸ 310-015-001
⁴⁹ 310-020-001
⁵⁰ 310-009-001
⁵¹ 310-019-001
⁵² 310-011-001
⁵³ 310-013-001
⁵⁴ 310-022-001

(xii) Cerebral Oedema Flow Chart.⁵⁵

(xiii) Glossary of Medical Terms.⁵⁶

3.8 All of the above schedules and reports have been published on the Inquiry website in accordance with Inquiry Protocol and procedures.

Clinical history prior to October 1996

3.9 When Claire was six months old, she suffered a number of seizures.⁵⁷ No clear cause was ever identified.⁵⁸ Her condition was assessed and controlled with Epilim (an anti-convulsant medicine) which stabilised her condition from July - September 1987.⁵⁹ The treatment worked allowing the Epilim to be reduced and then discontinued at least 18 months prior to her admission to the Children's Hospital in October 1996.⁶⁰ By then she had not suffered seizures of any sort for at least four years.⁶¹

3.10 Claire was also diagnosed with developmental delay and a moderate learning difficulty.⁶² She attended Tor Bank School, which was able to cater for her needs and where she thrived. She was described as a happy, loving, vibrant and active child who enjoyed all sorts of outdoor activities, adventure playgrounds, trampolines and her motorised bicycle. She was said to have made a positive impact on all who knew her.

3.11 In May 1996, she was seen by Dr Colin Gaston,⁶³ Consultant Community Paediatrician, in relation to behavioural issues. In his letter to Claire's GP, Dr Gaston referred to her as having both moderate learning and attentional difficulties and suggested a brief trial with a stimulant medication such as Ritalin.⁶⁴

⁵⁵ 310-014-001

⁵⁶ 310-007-001

⁵⁷ 099-059-075

⁵⁸ 090-035-120-123

⁵⁹ 090-015-026-027

⁶⁰ 099-006-008

⁶¹ 090-013-018

⁶² 090-013-018

⁶³ 310-003-004

⁶⁴ 090-013-018

- 3.12 Dr Gaston saw the family again on 1st August 1996 and discussed some additional options with them.⁶⁵ Claire was then treated with Ritalin on a daily basis until 2nd October 1996 but by the time of her admission to the Children's Hospital on 21st October, she was no longer taking any medication.⁶⁶

Admission to the Children's Hospital on 21st October 1996

- 3.13 On Friday, 18th October 1996, Claire suffered a loose bowel motion but without diarrhoea. The following day she visited her paternal grandparents for 3 or 4 hours⁶⁷ and came into contact with her 12-year-old cousin who had had a stomach upset earlier in the week. Claire spent the afternoon of Sunday, 20th October, with her maternal grandparents, having been to church in the morning. Her state of health over the weekend was regarded as normal⁶⁸ and she went to school as usual on Monday, 21st.
- 3.14 However, during the course of the school day, Claire's teacher noted her to be unwell and made a record in the homework diary, describing her as pale and lethargic.⁶⁹ When Claire returned home at approximately 15:15,⁷⁰ she vomited several times.⁷¹

Examination by GP

- 3.15 The family GP, Dr Deirdre Savage,⁷² was called and examined Claire at home at approximately 18:00. She noted "*No speech since coming home. Very lethargic at school today. Vomited x 3 – speech slurred. Speech slurred earlier.*"⁷³
- 3.16 Dr Savage described Claire as pale and photophobic on examination. She was unable to find any neck stiffness but did think Claire's tone was

⁶⁵ 090-013-016

⁶⁶ 090-022-050

⁶⁷ WS-253-1 p.2

⁶⁸ WS-253-1 p.2

⁶⁹ WS-253-1 p.19

⁷⁰ WS-253-1 p.2

⁷¹ WS-253-1 p.2

⁷² 310-003-004

⁷³ 090-011-013

increased on the right side and suggested that Claire was perhaps post-seizure and/or had an underlying infection.⁷⁴ Mr and Mrs Roberts did not themselves think that she had suffered a seizure⁷⁵ but were advised to and did take Claire to the Children's Hospital.

Examination at Accident & Emergency

- 3.17 Claire entered the Accident and Emergency Department ('A&E') of the Children's Hospital at approximately 19:00 on Monday, 21st October 1996.⁷⁶ The initial nursing assessment recorded:

*"Medication- none... Epileptic... H/O off form and lethargy. GP referral with H/O seizure. Apyrexia O/A pale and drowsy. O/A mental handicap."*⁷⁷

- 3.18 She was seen by Senior House Officer ('SHO') Dr Janil Puthuchery⁷⁸ in A&E. This was his first posting and he had been there for 2 months.⁷⁹ He assessed Claire at 19:15⁸⁰ and took a history of severe learning difficulties and a past history of epilepsy. He noted that she was no longer taking anti-epileptic medication and had been fit-free for three years. Whilst he did not record diarrhoea, cough or pyrexia, he did note that she had been vomiting since earlier that evening and that her speech was very slurred. Indeed, he observed that she was hardly speaking.⁸¹
- 3.19 On examination, Dr Puthuchery noted that Claire was drowsy, tired and apyrexia, with no abnormality other than increased left sided muscle tone and reflexes. Whilst her pupils were reacting she did not like the light. Her tone was generally increased and her tendon reflexes were heightened on the left compared to the right. He observed Claire's plantar reflexes to be

⁷⁴ 090-011-013
⁷⁵ WS-253-1 p.2
⁷⁶ 090-010-012
⁷⁷ 090-010-012
⁷⁸ 310-003-002
⁷⁹ WS-134-1 p.2
⁸⁰ 090-012-014
⁸¹ 090-012-014

reduced bilaterally, in contrast to the GP's observation of some asymmetry.⁸²

- 3.20 Dr Puthuchear made a primary diagnosis of encephalitis on the basis of Claire's altered mental state. He noted the GP's finding of photophobia and her concerns about a possible fit or underlying infection.⁸³

Admission to Allen Ward

Examination by Dr O'Hare

- 3.21 Dr Bernadette O'Hare⁸⁴ was then asked to review Claire.⁸⁵ She was the on-call Paediatric Registrar and had been a Registrar since December 1995.⁸⁶ Dr O'Hare examined Claire at 20:00 and took a history from Mrs Roberts.⁸⁷ Her note refers to Claire having vomited on an hourly basis since 15:00. There is a record of slurred speech, drowsiness, a loose bowel motion 3 days before and having been off-form the previous day. The history records that Claire was usually capable of meaningful speech and made reference to the recent trial of Ritalin.⁸⁸
- 3.22 Dr O'Hare observed that Claire was unresponsive to her parents' voices, staring vacantly and responding only intermittently to deep pain stimulus.⁸⁹ She recorded Claire's pulse at 96 beats per minute, slowing to 80. This was within the normal range for a child of her age.⁹⁰
- 3.23 She made an initial working diagnosis of "1. viral illness 2. Encephalitis,"⁹¹ but then scored out her secondary diagnosis on the basis that it was unlikely in the absence of fever.⁹² In addition, Dr O'Hare thought that she must also

⁸² 090-011-013

⁸³ WS-134-1 p.7

⁸⁴ 310-003-002

⁸⁵ 090-012-014 & WS-134-1 p.5

⁸⁶ WS-135-1 p.2

⁸⁷ 090-022-050

⁸⁸ 090-022-050

⁸⁹ 090-022-051

⁹⁰ WS-135-1 p.7 - It should be noted in this context that a child with cerebral oedema and raised inter-cranial pressure might have been expected to have a slower pulse rate

⁹¹ 090-022-052

⁹² WS-135-1 p.3

have considered the possibility of sub-clinical seizures at that time, because she gave a direction that Claire be given diazepam in the event of such a seizure.⁹³

- 3.24 At about 20:45, Dr O'Hare decided to admit Claire.⁹⁴ Mr and Mrs Roberts were not expecting this.⁹⁵ Her admission was made under the care of Dr Heather Steen,⁹⁶ the on-call Consultant Paediatrician.⁹⁷ Dr Steen was not informed at that time or at any time that night about Claire's admission, condition or treatment.
- 3.25 Claire was formally admitted onto Allen Ward at 21:14.⁹⁸ Her nursing admission sheet was completed about 21:45 by her "*accountable nurse*"⁹⁹ Staff Nurse Geraldine McRandal.¹⁰⁰ The "*reason for admission*" was entered as "*? seizure, vomiting.*"¹⁰¹
- 3.26 Mr and Mrs Roberts stayed with her until she fell asleep at about 21:00. Before they left the hospital, they were told that Claire had a viral infection. They felt relieved it was not meningitis.¹⁰²
- 3.27 Dr O'Hare directed a number of tests¹⁰³ including a full blood count, bacterial culture, viral titres and urea and electrolytes. It is likely that the blood sample for these tests was taken on Allen Ward at 22:30 at the same time as a cannula was inserted for IV fluids.¹⁰⁴ Claire was started on an IV infusion of Solution No. 18 at a rate of 64 mls per hour.¹⁰⁵
- 3.28 Dr Robert Scott-Jupp, Consultant Paediatrician, provided favourable expert comment on Dr O'Hare's "*clear and competently set out*" admission

⁹³ WS-135-1 p.3

⁹⁴ 090-012-014

⁹⁵ Mr and Mrs Roberts T-31-10-12 p.28 line 14

⁹⁶ 310-003-003

⁹⁷ 090-014-020

⁹⁸ 090-014-020

⁹⁹ 090-041-143

¹⁰⁰ 310-003-005

¹⁰¹ 090-041-142 to 143

¹⁰² 096-001-004

¹⁰³ 090-022-052

¹⁰⁴ 090-038-133

¹⁰⁵ 090-038-134

notes.¹⁰⁶ However, he considered her initial investigation “*somewhat limited*” and thought, albeit with hindsight, that a diagnosis of encephalopathy and/or status epilepticus might have been included.¹⁰⁷ In addition, he indicated that would have expected more extensive biochemical tests to have been performed.¹⁰⁸

3.29 Professor Brian Neville, Consultant Paediatric Neurologist, regarded Dr O’Hare’s examination of Claire to be “*competent*,”¹⁰⁹ but considered:

- (i) That hyponatraemia/cerebral oedema should have been considered as part of a differential diagnosis in light of Claire’s vomiting and reduced consciousness.¹¹⁰
- (ii) That Dr O’Hare should have contacted the on-call Consultant, Dr Steen.¹¹¹
- (iii) That a CT scan should have been performed to explore potential causes for Claire’s reduced consciousness.¹¹²
- (iv) That more extensive biochemical tests should have been undertaken.¹¹³

3.30 In considering these criticisms, I have taken account of the following:

- (i) Dr O’Hare’s competence has been acknowledged by both experts.
- (ii) Professor Neville’s specialism in paediatric neurology might lead him to be rather more alert to the range of possibilities than a paediatric registrar.

¹⁰⁶ 234-002-002

¹⁰⁷ 234-002-002

¹⁰⁸ 234-002-002

¹⁰⁹ 232-002-003

¹¹⁰ 232-002-003

¹¹¹ 232-002-004

¹¹² 232-002-004

¹¹³ 232-002-003

(iii) The Children's Hospital did not have the night staffing necessary to conduct the suggested steps.

(iv) There was ample opportunity for the suggested failings in Dr O'Hare's approach to be remedied the following day.

3.31 In her oral evidence, Dr O'Hare agreed that, whilst it would have been reasonable to perform liver function tests,¹¹⁴ her overall view was that the other tests suggested were matters to have been pursued the following morning had there been no improvement.¹¹⁵ This has some force. It is relevant that in oral evidence, both experts were less critical than they had been in writing. Indeed, Professor Neville accepted that, on reflection, a CT scan was not required on Monday night but remained of the view that it should have been performed as soon as possible the following day.¹¹⁶ By the time they gave their evidence, Dr O'Hare had given hers and explained in clear and reflective terms what she did and why. Her evidence was impressive as indeed was her engagement with the Inquiry in trying to understand how things had gone so terribly wrong. In the circumstances, I believe that it would be unfair to single her out for criticism.

3.32 There are many 'if onlys' about what happened to Claire, including that if only Dr O'Hare had contacted Dr Steen on the Monday night, as suggested by Professor Neville¹¹⁷ (but not Dr Scott-Jupp),¹¹⁸ Dr Steen might then have become involved from the start. However, I do not believe that it would be fair to blame Dr O'Hare in this regard because she could not possibly have known on the Monday night that at no point on the Tuesday would any consultant paediatrician have any contact with Claire.

¹¹⁴ Dr O'Hare T-18-10-12 p.138 lines 15-18

¹¹⁵ Dr O'Hare T-18-10-12 p.155 line 13

¹¹⁶ Professor Neville T-01-11-12 p.70 line 12

¹¹⁷ 232-002-007

¹¹⁸ Dr Scott-Jupp T-12-11-12 p.39 lines 1-9

Review at midnight

3.33 Dr O'Hare reviewed Claire at midnight. She found no signs of meningitis and recorded a slight improvement in responses. On that basis, she suggested that Claire be observed overnight and re-assessed in the morning.¹¹⁹

3.34 It is thought that shortly after midnight, the results of the blood tests became known. They were recorded in Claire's notes as:

*"NA [Sodium] 132↓ IC+ [Potassium] 3.8 U [Urea] 4.5 Gluc [Glucose] 6.6 Cr [Creatinine] 36 Cl [Chloride] 96 Hb [Haemoglobin] 10.4 PCV [Packed cell volume] 3^ WCC [White Cell Count] 16.5↑ Plate [platelets] 422.000."*¹²⁰

The entry was made immediately below the record of Dr O'Hare's midnight review. However, the entry is untimed with the result that the timing of the test sample itself is not immediately apparent. It is unclear who made the written entry¹²¹ but it does not seem to have been either Dr O'Hare or the SHO Dr Andrea Volprecht,¹²²

3.35 Of note, was the serum sodium reading of 132mmol/l¹²³ which was just below the normal range of 135-145.¹²⁴

3.36 Notwithstanding some difference of opinion, I accept that the slightly lowered sodium level was not one that should have triggered any further action or investigation that night. Furthermore, I accept that it was reasonable to leave the IV fluid infusion of Solution No. 18 unchanged at 64mls per hour.¹²⁵ However, I do find that the lowered serum sodium reading was a marker to be followed up the following morning.

¹¹⁹ 090-022-052

¹²⁰ 090-022-052

¹²¹ Dr O'Hare T-18-10-12 p.153 & Dr Volprecht T-01-11-12 p.17

¹²² 310-003-002

¹²³ 090-031-099

¹²⁴ 090-031-099

¹²⁵ 090-038-134

- 3.37 The other blood test result of note was the white cell count ('WCC') which was high at 16.5 (normal range 4 - 11).¹²⁶
- 3.38 Whilst Dr Volprecht did not enter the Urea &Electrolyte ('U&E') results into Claire's records, she did add the downward pointing arrow beside the "132" and the upward pointing arrow beside the "16.5" WCC, to indicate that the readings were outside the expected range.¹²⁷ The balance of the evidence was that this should have acted as a reminder the next morning to re-test to see if Claire's sodium had fallen further.¹²⁸ Indeed, Dr Volprecht assumed that a repeat U&E test would be undertaken in the morning.¹²⁹

Fluid management on 21st October 1996

- 3.39 On admission, Dr O'Hare had directed IV fluid management and suggested that any seizure activity be treated with intravenous diazepam. She also indicated the necessity to review after administration of fluids.¹³⁰
- 3.40 Claire's 'Nursing Care Plan' allowed for the administration of *'IV fluids as prescribed by doctor, according to hospital policy.'*¹³¹ Dr Volprecht seemingly made the IV Fluid Prescription for 500ml of Solution No. 18 at 64ml/h.¹³² It was at this rate that Solution No. 18 would continue to be infused until Claire was eventually transferred to the Paediatric Intensive Care Unit ('PICU').¹³³
- 3.41 Dr O'Hare considered that the prescription was correct for Claire's maintenance fluid requirements and was for a fluid in standard use in paediatrics in 1996.¹³⁴ Moreover, she indicated that it was not then conventional practice to restrict fluids in a child who was vomiting *"unless*

¹²⁶ 090-032-108 & 090-022-052

¹²⁷ 090-022-052 & Dr Volprecht T-01-11-12 p.17 line 17

¹²⁸ Dr Volprecht T-01-11-12 p.24 line 5

¹²⁹ Dr Volprecht T-01-11-12 p.19 line 1

¹³⁰ 090-022-052

¹³¹ 090-043-146

¹³² 090-038-134 equivalent to 65ml/kg /24h

¹³³ 090-022-060

¹³⁴ WS-135-1 p.11

*the electrolytes indicated that they were significantly hyponatraemic.*¹³⁵ Dr Steen agreed and described Claire's fluid regime as "*normal*."¹³⁶

Care and treatment overnight and into the morning of 22nd October 1996

'Nursing Care Plan'

3.42 Claire's 'Nursing Care Plan' was devised by Staff Nurse McRandal on admission and was subject to daily review.¹³⁷ It indicated the necessity to "*ensure safe administration of IV fluids*"¹³⁸ and noted the potential for further vomiting and seizures.¹³⁹ Observations were planned for every four hours to include temperature, pulse and respiration.¹⁴⁰

3.43 Otherwise planned "*Nursing Actions*" included,

- (i) Administering medicine as prescribed and observing effects.
- (ii) Recording an accurate fluid balance chart.
- (iii) Reporting abnormalities to doctor/nurse in charge.¹⁴¹
- (iv) Informing doctor of seizures.

3.44 The Inquiry nursing expert, Ms Sally Ramsay, was mildly critical of the planned frequency for vital sign observations¹⁴² but was otherwise generally positive about the plan for nursing care. In particular, she thought that the nursing actions were "*comprehensive*",¹⁴³ were prepared "*in a timely manner*" and reflected the problems likely to be associated with a child who may have had seizures and had vomited.

¹³⁵ WS-135-1 p.12

¹³⁶ 091-011-067

¹³⁷ 090-043-145

¹³⁸ 090-043-146

¹³⁹ 090-043-146

¹⁴⁰ 090-044-147

¹⁴¹ 090-043-145

¹⁴² 231-002-023

¹⁴³ 231-002-019

Fluid balance measurement

- 3.45 Ms Ramsay considered that recording the urinary output of children receiving IV fluids is a nursing responsibility¹⁴⁴ and should have been done.¹⁴⁵ She noted that whilst nurses did make accurate entries of fluid intake¹⁴⁶ they failed to measure the output. They recorded it only as “*PU*” (‘passed urine’)¹⁴⁷ giving no indication of the volume of urine actually passed. In Ms Ramsay’s opinion this was “*not an accurate measurement of output*”¹⁴⁸ and indicated furthermore that “*urine output could easily have been measured by weighing nappies before and after use.*”¹⁴⁹
- 3.46 Additionally, she believed that in the case of a child with altered consciousness, the nurses should have been aware of the possibility of dehydration or fluid overload¹⁵⁰ and consequently of the importance of making an accurate fluid balance chart. However, as Ms Ramsay acknowledged, such failure was in keeping with custom and practice at that time.¹⁵¹ Indeed, and as Staff Nurse McRandal pointed out, had medical staff required a more accurate measurement of urinary output, they could have asked for it, as they sometimes did, but they did not.¹⁵²
- 3.47 The overnight nursing records indicate that between 22:30 on Monday and 07:00 on Tuesday, Claire suffered one medium and five small vomits.¹⁵³ These were recorded as bile stained¹⁵⁴ in contrast to her vomits at home, which had been described as non-bilious.¹⁵⁵ Ms Ramsay indicated that the volume of vomit was appropriately recorded, but considered that it would have been better had the colour of vomit been noted as well.¹⁵⁶

¹⁴⁴ 231-002-029
¹⁴⁵ 231-002-029
¹⁴⁶ 231-002-028
¹⁴⁷ 090-038-135
¹⁴⁸ 231-002-028
¹⁴⁹ 231-002-029
¹⁵⁰ 231-002-029
¹⁵¹ 231-002-028
¹⁵² WS-145-1 p.10
¹⁵³ 090-038-133
¹⁵⁴ 090-040-140
¹⁵⁵ 090-012-014
¹⁵⁶ 231-002-028

Care and treatment on the morning of 22nd October 1996

Nursing handover

- 3.48 Staff Nurse McRandal recorded at 07:00 the next morning 22nd October that Claire “*Slept well. Much more alert and brighter this morning*”.¹⁵⁷ She then handed care over to Staff Nurse Sara Jordan (née Field)¹⁵⁸ at about 07:45.¹⁵⁹ She told her that Claire had been admitted with suspected seizure activity and for the management of vomiting. She indicated Claire’s history of learning difficulties and previous seizure activity.¹⁶⁰ Whilst Staff Nurse Jordan could not recall any reference to a diagnosis of viral illness or encephalitis,¹⁶¹ she was given a sound ‘Nursing Care Plan’, Staff Nurse McRandal’s 07:00 entry and a verbal handover. That represented appropriate nursing teamwork.

Medical handover

- 3.49 Dr O’Hare had started work on Monday at 09:00 as the on-call registrar in Musgrave Ward.¹⁶² Later at 17:00, she assumed responsibility for all 120 hospital beds and A&E. It was thus that she came to see Claire in both A&E and on Allen Ward. During her night shift, she had the support of nursing staff, one SHO in A&E and one SHO on the wards. At 09:00 on Tuesday, instead of going home after 24 hours on duty, she started a further day shift. Accordingly, and in order to correctly perform all her formal handovers on the Tuesday morning, she would have had to visit a number of wards speaking to all those coming on duty, at a time when she herself was expected to start her next shift on Musgrave Ward.¹⁶³
- 3.50 Dr O’Hare’s ability to effect handovers was therefore compromised by unsatisfactory staffing levels. However, she indicated that she would have

¹⁵⁷ 090-040-140

¹⁵⁸ 310-003-005

¹⁵⁹ WS-148-1 p.6

¹⁶⁰ WS-148-1 p.6

¹⁶¹ WS-148-1 p.6

¹⁶² WS-135-1 p.2

¹⁶³ WS-135-2 p.5

made an informal handover had she been concerned about a patient.¹⁶⁴ Her fellow Paediatric Registrars, Dr Andrew Sands¹⁶⁵ and Dr Brigitte Bartholome,¹⁶⁶ both agreed that informal handovers were often conducted.¹⁶⁷

- 3.51 It seems to me that making even an informal handover would have been difficult, given Dr O'Hare's responsibilities from 09:00 on Tuesday. Her evidence was that, had she handed over to a doctor on Allen Ward, she would have indicated that she was unsure about Claire's condition and suggested a review at ward round.¹⁶⁸ I think it unlikely that she was able to conduct a handover. In any event, Dr Sands, the registrar who came on duty on Tuesday morning, gave evidence that when a ward round came to a new patient such as Claire, doctors would take a fresh history, investigate, examine and draw up their own management plan.¹⁶⁹ This seems close to the sort of review, which would have been urged on them in any event by Dr O'Hare, and one which would necessarily have entailed review of the blood test results.
- 3.52 The lack of clear procedure for handovers between doctors was a weakness in the clinical care provided. There would appear to have been too little focus on this critically important aspect of care. Despite the pressures of work, none of the clinicians engaged in Claire's case took responsibility to ensure that effective handover procedures were followed or that communication between doctors was better ordered.

Dr Steen's involvement in Claire's case

- 3.53 Dr Heather Steen remained the named Consultant Paediatrician responsible for Claire's care from the time of her admission on Monday evening to the time of transfer to PICU on Wednesday.¹⁷⁰ She did not

¹⁶⁴ Dr O'Hare T-18-10-12 p.175 line 21

¹⁶⁵ 310-003-002

¹⁶⁶ 310-003-003

¹⁶⁷ WS-137-1 p.33

¹⁶⁸ Dr O'Hare T-18-10-12 p.178 line 18-21

¹⁶⁹ Dr Sands T-19-10-12 p.48 line 20

¹⁷⁰ WS-143-1 p.3

attend upon Claire during that period. It is to be noted that Dr Steen may have been disadvantaged in giving her evidence by reason of ill health.

- 3.54 Normally, but not invariably, ward rounds were led by consultants but this did not happen in Claire's case. Her round was led by Dr Sands¹⁷¹ who was a paediatric registrar of limited experience having been appointed less than three months before after some four months as a locum registrar in paediatric cardiology.¹⁷² However, his evidence was that it was not unusual for him to lead a ward round in 1996 given the commitments of Dr Steen and others.¹⁷³
- 3.55 I have already indicated that Dr O'Hare was justified in not contacting Dr Steen on Monday night, but how was it that Dr Steen did not see Claire on the Tuesday? This was extensively considered.
- 3.56 Dr Steen's duties at that time involved taking a clinic outside the Children's Hospital at Cupar Street.¹⁷⁴ This was off-site, but not far from the hospital. Her clinic started at 13:00. Dr Steen's evidence was that before that, she would have been in the hospital and available to her patients, junior doctors and nurses, whether in person, by bleeper or telephone. She would thereafter have made contact with Allen Ward at approximately 17:30 when her clinic finished in order to discuss issues of concern and to decide whether she needed to return.¹⁷⁵
- 3.57 Dr Sands did not recall where Dr Steen was on the Tuesday. He stated that whilst he did not believe her to have been in the hospital, he thought she was nonetheless contactable by telephone.¹⁷⁶ There was some limited evidence to suggest that Dr Steen may have seen another patient on Allen Ward and in the same room as Claire in the morning¹⁷⁷ and some evidence to suggest that she was involved in the morning discharge of another

¹⁷¹ 090-022-052

¹⁷² WS-137-1 p.4

¹⁷³ Dr Sands T-19-10-12 p.57

¹⁷⁴ WS-143-1 p.3

¹⁷⁵ Dr Steen T-15-10-12 p.93

¹⁷⁶ WS-137-1 p.20 & p.42

¹⁷⁷ Dr Steen T-16-10-12 p.49-50

patient because she had noted a change in medication.¹⁷⁸ However, there is no record in Claire's medical or nursing notes of any contact with Dr Steen nor any discussion between her and any other member of the medical or nursing team before Claire's collapse on 23rd October.

3.58 Claire was however seen before midday by Dr Sands on his ward round, and having seen her, Dr Sands brought her case to the attention of Dr David Webb,¹⁷⁹ Consultant Paediatric Neurologist. If Dr Steen had been available, I believe that Dr Sands would have spoken to her as a matter of course and urgency. The fact that he did not leads me to conclude that, for whatever reason, Dr Steen was not available to Dr Sands. I do not know why that was and nor seemingly, does anyone else. On the totality of the evidence presented, I cannot say where Dr Steen was or what she was doing on the Tuesday morning.

3.59 Thus, whilst it is reasonable that Claire should not have been seen by Dr Steen on the evening of Monday 21st, it is a matter of significance and concern that she was not seen by her on Tuesday 22nd.

Ward round on morning of 22nd October 1996

3.60 Dr Sands was accompanied on his ward round by two SHOs, Dr Neil Stewart¹⁸⁰ and Dr Roger Stevenson.¹⁸¹ Staff Nurse Kate Linskey¹⁸² was also in attendance.¹⁸³ The round was running late, perhaps because, as Dr Sands suggested, he was slower than an experienced consultant.¹⁸⁴

3.61 Claire's parents arrived at approximately 09:30.¹⁸⁵ Although Staff Nurse McRandal's assessment at 07:00 was reasonably positive, Mr and Mrs Roberts were worried by Claire's appearance.¹⁸⁶ They found her lethargic

¹⁷⁸ Dr Steen T-16-10-12 p.49

¹⁷⁹ 310-003-002

¹⁸⁰ 310-003-003 & WS-141-2 p.2

¹⁸¹ 310-003-003 & WS-139-1 p.10

¹⁸² 310-003-006

¹⁸³ WS-148-1 p.11

¹⁸⁴ Dr Sands T-19-10-12 p.70 lines 4-10

¹⁸⁵ WS-253-1 p.6

¹⁸⁶ WS-253-1 p.6

and vacant¹⁸⁷ and did not think her anything like her usual self. The improvement they had hoped for was not apparent. They expressed their concern to Staff Nurse Jordan who brought it to the attention of Staff Nurse Linskey.¹⁸⁸

3.62 There are differing accounts of the events which then unfolded. Given the passage of time, that is not surprising. On many points, variance in the evidence is not important, but as will appear, there are areas where the differences are of significance.

3.63 The ward round note made by Dr Stevenson (and added to by Dr Sands) is as follows:

“W/R Dr Sands

Admitted ? Viral illness.

Usually very active, has not spoken to parents as per mother.

Wretching. No vomiting.

Vagueness /vacant (apparent to parents).

No seizure activity observed.

Attends Dr Gaston (UHD).

6 mths old seizures and Ix for this – NAD

U+E- Na+ 132. FBC- WCC ↑ 16.4 Gluc 6.6

O/E Aprexic on IV fluids

Pale colour. Little response compared to normal.

CNS Pupils sluggish to light.

Difficult to see fundi.

Bilat long tract signs.

Ears. Throat. Difficult to swallow. Full see.

¹⁸⁷ WS-148-1 p.10

¹⁸⁸ WS-148-1 p.17

*Imp Non fitting status/ [encephalitis/ encephalopathy]*¹⁸⁹

Plan Rectal Diazepam.

Dr Webb.

*D/W Dr Gaston re PmHx.*¹⁹⁰

- 3.64 Dr Sands' impression was that Claire was suffering from "*non-fitting status*"¹⁹¹ and the nursing record of the ward round notes "*Status epilepticus – non-fitting.*"¹⁹²

Discussions between Dr Sands and Claire's parents

- 3.65 Mr and Mrs Roberts do not think that the doctors spent very long with Claire, perhaps only ten minutes.¹⁹³ They were unable to specifically recall Dr Sands, but do remember introductions being made by the doctors, a history being taken (with which they take no issue) and an examination of Claire which was "*fairly quick.*"¹⁹⁴ They expressed concern to Dr Sands that Claire was unresponsive and not 'herself'.¹⁹⁵ They remember being told about some sort of internal fitting and that another doctor would be consulted.¹⁹⁶ They could not recall any discussion about blood samples and were given no sense that the situation was serious. On the contrary, their perception was that Claire had a 24/48 hour stomach bug.¹⁹⁷
- 3.66 Dr Sands however maintains that the possibility of an infection in the brain or encephalitis was discussed on the ward round and was likely to have been discussed with the parents.¹⁹⁸ Mr and Mrs Roberts do not believe that encephalitis was mentioned because the term sounded so serious to them and would have caused them such concern that they would remember.¹⁹⁹

¹⁸⁹ Words within square brackets were added to the record later. Please see section entitled "*Encephalitis/encephalopathy*" note" at page 31

¹⁹⁰ 090-022-052 to 053

¹⁹¹ 090-022-053 - continuous epileptic activity in the brain without clinical effect - see glossary.

¹⁹² 090-040-140

¹⁹³ WS-253-1 p.6 & WS-257-1 p.7

¹⁹⁴ Mr and Mrs Roberts T-31-10-12 p.43

¹⁹⁵ 091-004-006

¹⁹⁶ WS-253-2 p.2

¹⁹⁷ WS-253-1 p.8

¹⁹⁸ Dr Sands T-19-10-12 p.116

¹⁹⁹ Mr and Mrs Roberts T-31-10-12 p.48

Alternatively, Dr Sands suggested that not all discussions between doctors would necessarily have been within range of the family, perhaps deliberately, so as not to cause alarm.²⁰⁰

- 3.67 Dr Sands recalled his examination of Claire and remembered Mr and Mrs Roberts telling him that there had been no improvement since the previous night. He said that in fact he was concerned that he had not been alerted earlier to her condition because he too considered that she was unwell.²⁰¹ He believes that he spent upwards of 20 minutes with her²⁰² and agreed with Mrs Roberts that something was “*significantly wrong*.”²⁰³ Indeed, he thought it necessary to consult the Consultant Paediatric Neurologist, Dr David Webb and did so immediately. In such circumstances, Dr Sands does not appear to have adequately communicated his level of concern to Mr and Mrs Roberts.

Electrolyte testing

- 3.68 Dr Sands gave evidence about the timing of Claire’s blood test and the results. He said that he was aware that both the test and the results related to the night before²⁰⁴ and properly accepted that he should have repeated the blood tests on the morning of 22nd October.²⁰⁵ Further, and with the benefit of hindsight, he said it would have been appropriate at the time of the ward round to reconsider Claire’s fluid regime.²⁰⁶ He wondered whether there might not have been a separate ‘to do’ list which included further blood tests²⁰⁷ but I am not persuaded that there was and Dr Stevenson, who wrote the note, says there was not.²⁰⁸ Dr Sands was only one of a number of clinicians given the opportunity on 22nd October to repeat the U&E tests. Failure to do so was both individual and collective.

²⁰⁰ Dr Sands T-19-10-12 p.112

²⁰¹ Dr Sands T-19-10-12 p.92

²⁰² Dr Sands T-19-10-12 p.93

²⁰³ Dr Sands T-19-10-12 p.95

²⁰⁴ Dr Sands T-19-10-12 p.98

²⁰⁵ Dr Sands T-19-10-12 p.112

²⁰⁶ Dr Sands T-19-10-12 p.102

²⁰⁷ Dr Sands T-19-10-12 p.108

²⁰⁸ Dr Stevenson T-15-10-12 p.170

Diagnosis at ward round

- 3.69 Dr Sands said that his ward round impression of “*non-fitting status*”²⁰⁹ was informed by Dr Savage’s referral note, Mrs Roberts’ description of a history of seizures and Dr O’Hare’s direction to administer diazepam in the event of seizures.²¹⁰ That is understandable but seems to respond to only one of the previously suggested explanations for Claire’s presentation. However, Dr Sands’ said that a viral infection, specifically encephalitis, was considered and most probably discussed during the ward round although this may not be reflected in Dr Stevenson’s note.²¹¹
- 3.70 Dr Stevenson was unable to assist. He had no recall of the events of 22nd October or of Claire or her parents.²¹² He had a limited role on the ward round and had only been a SHO in paediatrics for two months.²¹³ Dr Stewart was however quite sure that not only was status epilepticus discussed²¹⁴ but encephalitis was also advanced at that time as a working diagnosis.²¹⁵

Actions taken after the ward round

- 3.71 The plan at ward round was to administer rectal diazepam, consult Dr Webb and discuss Claire’s previous medical history with Dr Colin Gaston. Dr Sands gave direction for hourly neurological observations to commence at 13:00²¹⁶ and then went to find Dr Webb. Critically it is to be noted that at that stage, the blood tests were not repeated, the fluid regime was left unchanged and there was no further investigation by CT scan or Electroencephalography (‘EEG’). Whilst the doctors did not know what was wrong with Claire, they agree that she was a cause for increasing concern.

²⁰⁹ 090-022-052-053

²¹⁰ Dr Sands T-19-10-12 p.112-113

²¹¹ Dr Sands T-19-10-12 p.116

²¹² Dr Stevenson T-15-10-12 p.130

²¹³ WS-139-1 p.2

²¹⁴ Dr Stewart T-06-11-12 p.15

²¹⁵ Dr Stewart T-06-11-12 p.19

²¹⁶ 090-039-137

Her condition had not improved since Monday evening, her parents were worried and now so too it would appear was Dr Sands.

3.72 Dr Sands said that he was concerned by her level of consciousness indicating that whilst not totally unresponsive²¹⁷ she was certainly not “*bright*.”²¹⁸ He confirmed that even though he did not know how ill she was, he felt that she was more than just a patient of concern.²¹⁹ He hoped and expected that Dr Webb would see her sooner rather than later.²²⁰ In fact, he went so far as to say that had he known that her parents intended to leave at lunchtime he would have advised them not to²²¹ because she was “*very unwell*.”²²²

3.73 I find it difficult to reconcile this evidence with Dr Sands’ failure to warn Mr and Mrs Roberts about how ill Claire was and his subsequent departure from the hospital at 17:00 without alerting them to his concerns. Dr Sands should have ensured that Mr and Mrs Roberts were properly informed as to Claire’s condition.

Decision to seek neurological opinion

3.74 Dr Sands explained that “*what I saw was outside my experience and I then contacted Dr Webb*”.²²³ There is some uncertainty about when they spoke. Dr Sands believed it was about midday²²⁴ because he had wanted to ask Dr Webb²²⁵ about the diazepam and he noted that this was not administered until 12:15.²²⁶ Alternatively, he speculated that he may have spoken initially to Dr Webb to get his approval for the diazepam and then spoken to him again later and in more detail.²²⁷

²¹⁷ Dr Sands T-19-10-12 p.137

²¹⁸ Dr Sands T-19-10-12 p.138

²¹⁹ Dr Sands T-19-10-12 p.132

²²⁰ Dr Sands T-19-10-12 p.35

²²¹ Dr Sands T-19-10-12 p.138

²²² 091-009-056

²²³ 091-009-059

²²⁴ Dr Sands T-19-10-12 p.33

²²⁵ Dr Sands T-19-10-12 p.34

²²⁶ 090-026-075 & 090-040-141

²²⁷ Dr Sands T-19-10-12 p.33-34

- 3.75 Dr Webb believed that, in all probability, he did not speak to Dr Sands until after he had given a pre-arranged talk between 12:45 and 13:30.²²⁸ Then, having spoken to him and with the understanding that there was a real problem, he went quickly to Claire and saw her around 14:00. I am unable to resolve this uncertainty but the point is that they did speak and Dr Webb became involved in Claire's care.
- 3.76 There is no record of their discussion. Dr Webb's thinks he was asked to advise on the possibility of non-convulsive seizures associated with a fluctuating level of consciousness against a background of seizures in infancy and a learning disability.²²⁹ He believes that he was told about both the sodium reading of 132 Mmol/L and the high white cell count but understood that these were results from that same morning rather than the night before.²³⁰ He was asked about medication and getting a CT scan. He believes that the differential diagnoses occurring to him at that time included the possibility of epilepsy, encephalopathy and encephalitis.²³¹
- 3.77 Dr Sands did not seemingly remember the discussion beyond the fact that it happened and may have been repeated and that they discussed why a CT scan might help.²³² He also said that whilst he suggested encephalitis, it would have been Dr Webb who proposed encephalopathy because he did not himself understand the condition.²³³ He could not actually recall being present when Dr Webb attended with Claire.
- 3.78 Dr Webb regarded his role as confined to assessment and the formulation of diagnosis and management plan for the assistance of the paediatric medical team.²³⁴ Dr Webb said that Dr Sands did not request that he take over Claire's case.

²²⁸ Dr Webb T-30-11-12 p.169

²²⁹ Dr Webb T-30-11-12 p.172

²³⁰ Dr Webb T-30-11-12 p.175-176

²³¹ Dr Webb T-30-11-12 p.173

²³² Dr Sands T-19-10-12 p.34

²³³ Dr Sands T-19-10-12 p.167-168;

²³⁴ WS-138-1 p.4

- 3.79 Dr Sands said that although he sought guidance from Dr Webb, he did not attempt to specify the role Dr Webb was to have in Claire's care, because that was something more usually discussed between consultants.²³⁵ He could recall no further communication with Dr Webb after their initial discussion.²³⁶ Nonetheless, he stated that Dr Webb's assessment of Claire may have lessened some of his own concerns²³⁷ because he would then have expected Dr Webb to direct the further investigations and provide further information to Claire's parents.²³⁸
- 3.80 At that time, and as and between Dr Sands and Dr Webb, a decision should have been taken to investigate further. That would probably have meant a CT scan to diagnose haemorrhage, hydrocephalus or cerebral oedema, or in the event of that proving inconclusive, an MRI scan. Professor Neville advised that an EEG was the only way to confirm non-convulsive status epilepticus.²³⁹ Until such tests were done, doctors were treating a "very *unwell*" child without really knowing what was wrong or doing anything to confirm a diagnosis. In addition and critically, active fluid and electrolyte management was being ignored.

"Encephalitis/encephalopathy" note

- 3.81 Mr and Mrs Roberts have since expressed concern about changes made to the ward round notes. The words "*encephalitis/encephalopathy*" have been added at a later time and in a different hand so as to augment Dr Sands' noted impression of "*non-fitting status*."²⁴⁰ Dr Sands indicated that he added this to the notes after he had spoken to Dr Webb.²⁴¹ Regrettably, he did not date or sign the addition.
- 3.82 Claire's parents became increasingly suspicious about this evidence and questioned whether the words might not have been added as late as

²³⁵ WS-137-1 p.17

²³⁶ WS-137-1 p.39

²³⁷ WS-137-1 p.51

²³⁸ WS-137-2 p.8

²³⁹ 232-002-002

²⁴⁰ 090-022-053. Please see paragraph 3.69

²⁴¹ WS-137-1 p.10

2004/05 so as to place Dr Sands and the hospital in a better light.²⁴² This suggestion was strongly denied by Dr Sands.²⁴³ One of the points made by Mr and Mrs Roberts was that Claire did not receive any treatment for encephalitis or encephalopathy until Dr Webb prescribed acyclovir at around 17:00 and accordingly to use these words at any earlier stage would be inconsistent with the logic of the record.²⁴⁴

3.83 The Inquiry engaged Dr Audrey Giles, a highly experienced forensic document analyst to examine this and other entries made by Dr Sands in order to determine when this controversial addition was made. Her findings were essentially inconclusive. She stated that *“I am unable to determine when the questioned entry “encephalitis/encephalopathy” in the Medical Notes was made by Dr Sands, or the entry “4pm” was made by Dr Webb, either in absolute terms or in relation to other entries made by him on these documents.”*²⁴⁵

3.84 I understand why Claire’s parents should question all that is said by the doctors who treated Claire. However, I do not accept this specific allegation against Dr Sands on the evidence before me. It is plausible that the additional words do indicate the differential diagnosis as suggested by Drs Sands, Stewart and Webb²⁴⁶ and that Claire did not receive the relevant treatment at the time because it was hoped that she would respond to another regime. I do not accept it proved that the disputed entry was made dishonestly or to mislead. It was, however, a yet further example of substandard record keeping.

²⁴² Mr and Mrs Roberts T-13-12-12 p.128

²⁴³ Dr Sands T-18-12-12 p.130

²⁴⁴ Mr and Mrs Roberts T-13-12-12 p.120

²⁴⁵ 241-001-008

²⁴⁶ Dr Sands T-19-10-12 p.168-9, Dr Stewart T-06-11-12 p.31-32 & WS-138-1 p.6

Care and treatment during the afternoon of 22nd October 1996

Dr Webb's attendance with Claire at 14:00

3.85 Dr Webb saw Claire at about 14:00.²⁴⁷ Her grandparents were with her at the time.²⁴⁸ Dr Webb may have been accompanied by Dr Stevenson and a nurse. It is unfortunate that Dr Sands does not appear to have attended but he was engaged elsewhere.²⁴⁹

3.86 The entry made by Dr Webb in the record was:

"Neurology – Thank you.

•9 yr old girl with known learning difficulties – parents not available. Grandmothers Hx - vomiting + listless yesterday pm – followed by prolonged period of poor responsiveness. On no AED.

•Note appeared to improve following rectal diazepam 5mg at 12.30pm.

O/E Afebrile. No meningism. Pale.

Rousable – eye opening to voice, Non-verbal, withdraws from painful stimuli. Reduced movements rt side? Antigravity all 4 limbs. Mildly increased tone both arms. Reflexes symmetrically brisk. Clonus – sustained both ankles. Toes ↑↑. Sits up – eyes open + looks vacantly. Not obeying commands. PEARL – 5mm. Optic discs pale. No papilloedema. Facial palatal + lingual movements appear (N).

Imp - I don't have a clear picture of prodrome + yesterday's episodes. Her motor findings today are probably long standing but this needs to be checked with notes. The picture is of acute encephalopathy most probably restricted in nature. I note (N) biochemistry profile.

Suggest

i) starting iv phenytoin 18mg/kg stat followed by 2.5mg/kg 12hrly. Will need levels 6hrs after loading dose

²⁴⁷ 090-040-141 & WS-138-1 p.5

²⁴⁸ Mr and Mrs Roberts T-31-10-12 p.59

²⁴⁹ Dr Sands T-19-10-12 p.26

ii) Hrly neurobs

iii) CT tomorrow if she doesn't wake up. D. Webb."²⁵⁰

- 3.87 Dr Webb maintained that the most likely explanation for Claire's presentation was a recurrence of seizures within a context of inter-current viral illness.²⁵¹ He agreed with Dr Sands that she was probably suffering semi-continuous non-convulsive seizures, which were contributing to her altered level of consciousness. It was these he attempted to treat.²⁵²
- 3.88 Dr Webb acknowledged his error in thinking that Claire's serum sodium result of 132mmol/L was from a test undertaken that morning rather than the previous evening. Indeed, he admits that had he understood that the results were from the previous evening, he "*would have requested an urgent repeat sample*"²⁵³ because Claire was receiving IV fluids and he could not therefore be confident that the sodium level was not relevant to her presentation.²⁵⁴
- 3.89 Dr Webb's confusion about the timing of the blood tests is a matter of significance and concern. Whilst the results were untimed in the medical record (and that is a notable deficiency), the very fact that they were the only results for a patient admitted the previous day should have caused him to double check the timings. Furthermore, the presence of the downward pointing arrow beside the sodium reading should have attracted his particular attention. In the circumstances he should have interrogated the notes for the time of the blood test.

EEG & CT Scan

- 3.90 Professor Neville, being of the view that an EEG was the only means to confirm non-convulsive status epilepticus,²⁵⁵ stated quite simply that Claire should not have been treated for status epilepticus without an EEG because

²⁵⁰ 090-022-054

²⁵¹ WS-138-1 p.10-11

²⁵² WS-138-1 p.10-11

²⁵³ 090-053-174

²⁵⁴ WS-138-1 p.21-22, p.69-70 & p.88

²⁵⁵ 232-002-002

anti-epilepsy medication can further reduce levels of consciousness.²⁵⁶ However, there was no EEG. Dr Webb said that he had intended an EEG for the following day should Claire still have been a cause for concern.²⁵⁷

- 3.91 In addition, Professor Neville was of the opinion that an urgent CT scan was indicated because Claire was suffering from unexplained reduced consciousness and a scan could confirm or exclude cerebral oedema or haemorrhage. He said it should have been carried out on the evening of 21st October,²⁵⁸ or at the latest, on the morning of 22nd October.²⁵⁹ In his view, the failure to do so was a “*major omission*.”²⁶⁰
- 3.92 Dr Webb did not think that either CT scan or EEG would have been of much assistance.²⁶¹ He thought the most likely diagnosis was non-fitting status and whilst that could have been confirmed by an EEG, resources were stretched.²⁶² He believed that had he insisted on an EEG that afternoon, it could have been arranged but at the cost of the operator working extra hours. Accordingly, he decided to wait until the following morning, taking the view that Claire was probably experiencing seizures because of a viral illness. He accepted that his suggestion “*CT tomorrow if she doesn’t wake up*”²⁶³ was poorly phrased but was really meant to indicate that she should have a CT scan if she did not improve.²⁶⁴
- 3.93 Is it fair to criticise Dr Webb for not directing an EEG or CT scan that afternoon? With hindsight, it is obvious that they were more urgently indicated than he thought and that they could have been arranged, however awkward that may have been. It is also acknowledged that Professor Neville, who was particularly critical in this regard,²⁶⁵ is rather more familiar with larger hospitals and their superior access to testing facilities. However,

²⁵⁶ 232-002-006

²⁵⁷ WS-138-1 p.67

²⁵⁸ 232-002-004

²⁵⁹ 232-002-007

²⁶⁰ 232-002-006

²⁶¹ Dr Webb T-30-11-12 p.225

²⁶² Dr Webb T-30-11-12 p.208

²⁶³ 090-022-054

²⁶⁴ Dr Webb T-30-11-12 p.216

²⁶⁵ 232-002-008

it was repeatedly asserted in evidence that while children can recover very quickly from illness, they can also deteriorate very rapidly. Claire was clearly very unwell and at best, Dr Webb had an insecure primary diagnosis of non-fitting status. Accordingly, I believe that he should have done more. He started Claire on anti-convulsant medication with hourly neurological observations at a time when he could and should have reviewed her fluid and electrolyte management and pursued additional investigation.

Phenytoin

- 3.94 Phenytoin was the anti-convulsant drug which was then prescribed for Claire by Dr Stevenson on Dr Webb's direction. It was administered intravenously from 14:45 onwards²⁶⁶ notwithstanding that there was some suggestion to Dr Webb that Claire might have improved.²⁶⁷
- 3.95 The treatment gave rise to the following specific concerns
- (i) Claire was given an overdose of the phenytoin. Her loading dose was incorrectly calculated by Dr Stevenson at 632mg rather than 432mg.²⁶⁸ His was an error in multiplication. Whilst there is confusion in the medical record about exactly how much phenytoin Claire was given and when, it is clear that an overdose was administered in keeping with Dr Stevenson's miscalculation. Notwithstanding, the expert evidence was that, in all probability, this overdose had no material effect on what was to happen.²⁶⁹
 - (ii) The phenytoin given would have acted in conjunction with diazepam administered at 12:15. Each would have had a sedating effect and together could have further affected her levels of consciousness. This is a matter of importance because her consciousness was

²⁶⁶ 090-026-075

²⁶⁷ Dr Webb T-30-11-12 p.214

²⁶⁸ 090-026-075 & 090-022-054

²⁶⁹ 232-002-009

already a cause for concern and was the subject of hourly Glasgow Coma Scale ('GCS') assessment.²⁷⁰

- (iii) Accordingly, the combined effect of the phenytoin and diazepam would have made it more difficult for doctors to assess the extent to which Claire's neurological impairment was due to her underlying illness. Furthermore, diazepam remains active for a prolonged period with the effects of a single dose persisting for up to two days. Claire's GCS score may thus have been compromised on an ongoing basis.²⁷¹

Seizures on 22nd October 1996

- 3.96 Mr Roberts left the hospital at 15:00 and Mrs Roberts remained with Claire. During the afternoon, Claire's condition deteriorated and she suffered a number of seizures.²⁷² These are noted on the 'Claire Roberts Timeline' in red.²⁷³
- 3.97 There is uncertainty about the precise number and timing of these events. Between 15:10 and approximately 15:25, seizures were noted in the 'Record of Attacks Observed'. Mrs Roberts herself noted one at 15:25.²⁷⁴ She thought it had lasted 5 minutes. Dr Sands does not believe he was present on Allen Ward when this seizure occurred and does not recall being informed.²⁷⁵ At 16:30, a further entry notes "*teeth tightened slightly*."²⁷⁶

Neurological observations during 22nd October 1996

- 3.98 Throughout Tuesday 22nd, the nursing observations relevant to Claire's neurological condition were collated for GCS assessment of her levels of consciousness.²⁷⁷ In a patient with reduced consciousness painful stimulus

²⁷⁰ 237-002-016

²⁷¹ 237-002-008

²⁷² 090-042-144

²⁷³ 310-001-001

²⁷⁴ 090-042-144

²⁷⁵ WS-137-1 p.49

²⁷⁶ 090-042-144

²⁷⁷ 310-007-003

is applied and the best visual, verbal and motor responses assessed and scored out of 15.²⁷⁸ The scale is modified for use in the very young by omitting one of the scores to give a total GCS score out of 14.²⁷⁹

3.99 Claire's GCS scores were recorded on an observation chart²⁸⁰ starting with a score of 9 at 13:00 and continuing at either a 6 or 7 for the next few hours. Whilst there is a subjective element to these scores, it remains clear that the lower they are the more worried a clinician should be. A score of 8 or less is consistent with the onset of coma.²⁸¹ Generalised entries in the record at that time appear to confirm Claire's loss of consciousness. Some entries are very telling, for example the clear contrast appearing between the record of "*Eyes open to pain*" at 14:30 and the subsequent failure of all further attempts to repeat this response.²⁸² In Professor Neville's view, any score between 9 and 12 required investigation and all below 9 demanded urgent intervention.²⁸³ He also stated that any drop in the GCS score (as for example that occurring at 21:00) should have prompted the SHO to contact the registrar or consultant.²⁸⁴

3.100 Ms Sally Ramsay considered that a GCS score of 8 in combination with complex IV therapy should have prompted discussion between nursing and medical staff about admission to PICU.²⁸⁵ However, the nursing notes do not suggest that these neurological observations were brought to the attention of the medical staff. In any event, and as Ms Ramsay pointed out, the charts would have been readily available for the doctors to check²⁸⁶ and because Claire was seen by doctors on at least seven occasions, they ought to have been aware of her vital signs and changed neurological status.²⁸⁷ These were warning signals.

²⁷⁸ 090-053-170 *et seq*

²⁷⁹ 090-053-171

²⁸⁰ 090-039-137

²⁸¹ 090-053-171

²⁸² 090-039-137

²⁸³ 232-002-016

²⁸⁴ 232-002-011

²⁸⁵ 231-002-031

²⁸⁶ 231-002-033

²⁸⁷ 231-002-033

Dr Webb's second attendance with Claire

- 3.101 At about 15:15, two letters from Dr Colin Gaston were faxed to the Children's Hospital in response to queries raised on the ward round. They were seen by Dr Stewart.²⁸⁸ Further information was provided about Claire's medical history with particular reference to her behavioural problems. This does not however appear to have prompted any further discussion or enquiry.
- 3.102 At some point in mid-afternoon, Dr Webb returned to see Claire.²⁸⁹ This demonstrated both his interest and concern, even if he did not record his attendance. He believes that he would have reviewed the nursing observations and GCS scores.²⁹⁰ Whilst he knew she was ill, he did not then consider that a transfer to PICU was warranted²⁹¹ but thought that she could be managed on the ward in accordance with his previous treatment plan.

Midazolam

- 3.103 Dr Webb did, however, direct that Claire be given another drug, midazolam. This was again on the basis that she was suffering from non-fitting status in the context of an "*intercurrent viral infection*."²⁹² Remarkably, Claire was then given another overdose, this time of midazolam and once again in error. The initial dose was given at "*0.5mg/kg*"²⁹³ rather than 0.12mg/kg, which was several times the recommended dosage.²⁹⁴
- 3.104 Dr Webb's evidence was that he had first encountered this drug during training in Canada but had not at that time previously prescribed it himself.²⁹⁵ Accordingly, he said he had to check the prescription with his Vancouver notes and then telephone the details to Dr Stevenson so that he

²⁸⁸ 090-013-016 to 019

²⁸⁹ 090-022-055

²⁹⁰ WS-138-1 p.31

²⁹¹ 090-053-175

²⁹² WS-138-1 p.11

²⁹³ 090-022-055

²⁹⁴ WS-138-1 p 32

²⁹⁵ WS-138-3 p.2

could write it up. It transpired however, that Dr Webb had himself directed the same drug be given to another patient and only a few days before.²⁹⁶ His recollection was therefore clearly unreliable.

- 3.105 None of the expert witnesses suggested that this overdose would have been fatal but Dr Aronson, Clinical Pharmacologist, stated without contradiction that such an overdose would increase sedation in a patient with reduced consciousness.²⁹⁷
- 3.106 I cannot determine definitively whether the error in prescription was Dr Webb's or Dr Stevenson's. It is possible that Dr Stevenson misunderstood the instructions given by telephone. However, Dr Webb had the opportunity to note the miscalculation of "0.5"²⁹⁸ in the record, both at 17:00 and again in the early hours of Wednesday morning. He raised no issue about it then or later at the inquest. Dr McFaul was of the opinion that the error should have *"been noted at the review of death in the audit meeting and reported as a major medicines error."*²⁹⁹ It was not raised at all until May 2012 when Mr Roberts drew it to my attention. That it should have been noticed by a layperson is telling.³⁰⁰
- 3.107 There was, however, a more fundamental problem with the administration of midazolam, which is whether it should have been prescribed at all. It was the third drug, after diazepam and phenytoin to be given Claire in the space of three to four hours on the basis that she had non-fitting status. That was the sole condition for which she was being treated despite the suspicion of encephalitis/encephalopathy and the absence of an EEG to confirm the diagnosis.
- 3.108 There was consensus of expert opinion that this approach was highly questionable and undertaken at a time when Dr Webb should have considered other diagnoses.³⁰¹ His assessment of Claire's condition would

²⁹⁶ WS-138-5 p.4

²⁹⁷ 237-002-012 to 014

²⁹⁸ 090-022-055

²⁹⁹ 238-002-180; Under the Management Executive Directive PEL (93)36 - (210-003-1137)

³⁰⁰ 403-005-001

³⁰¹ 232-002-010 & 234-002-009

very clearly have benefited from discussion with Dr Steen and/or Dr Sands but none such took place. That was a failure of all concerned. A joint discussion on 22nd October would have queried why Claire's condition remained so poor despite the treatment administered and that would almost certainly have led to a re-appraisal of diagnosis and a review of treatment.

Dr Webb's examination at 17:00

- 3.109 Dr Webb returned to see Claire for a third time at around 17:00. This was the only time he met Mrs Roberts on the ward. His note records that Claire flexed her left arm in response "*to deep supra orbital pain*" but she did not speak or respond to his voice.³⁰²
- 3.110 Dr Webb discussed Claire's background history with Mrs Roberts recording that Claire had had contact with a cousin on 19th October, that she had gastro-intestinal upset and loose motions on the Sunday (20th) and vomiting on the Monday (21st). Mrs Roberts rejected his note of "*loose motions on Sunday*" maintaining "*Claire had a smelly poo... on Friday...*"³⁰³ and Mr Roberts agreed.³⁰⁴ Dr Webb's note may not be reliable.
- 3.111 However, it was the suspected stomach upset that caused him to think that Claire might have a bowel infection, which had spread to her brain and caused meningo-encephalitis or encephalomyelitis.³⁰⁵ (Otherwise an Enteroviral infection³⁰⁶) Accordingly, he prescribed the anti-biotic cefotaxime and the anti-viral drug acyclovir.³⁰⁷ He directed blood, stool and urine checks and a throat swab for viral culture.³⁰⁸ However and on balance, he did not consider such a diagnosis very likely in the absence of fever, neck stiffness or photophobia.³⁰⁹

³⁰² 090-022-055

³⁰³ WS-257-1, p.10

³⁰⁴ WS-253-1, p.3 & WS-253-1, p.21: "*Claire only had one small loose bowel motion on the Friday, with normal bowel motions on Saturday, Sunday and Monday.*" See also 090-022-050 - Dr O'Hare's admission note made at 20:00 on 21st October 1996 which records a history of "*loose motion three days ago*"

³⁰⁵ 090-053-173 & WS-138-1 p.17

³⁰⁶ 310-007-003 & 090-053-173

³⁰⁷ 090-022-055 & 090-053-173

³⁰⁸ 090-022-055

³⁰⁹ 090-053-173

- 3.112 Notwithstanding, Dr Webb continued with the anti-convulsant medication.³¹⁰ He maintained that he had obtained a history from Mrs Roberts of a seizure affecting Claire's right side which had left him in no doubt that she had had a convulsive seizure on 21st October. It was this history in combination with Claire's ongoing altered awareness at 17:00 within a context of stable vital signs and intermittent mouthing movements that suggested to Dr Webb that she had ongoing sub-clinical seizure activity.³¹¹
- 3.113 He interpreted her GCS and Central Nervous Observations from 14:00 to 17:00 as reflecting a combination of ongoing non-convulsive seizure activity, post-ictal effects and the possible consequences of the anti-convulsant therapy (midazolam).³¹² He did not think her condition was due to raised inter-cranial pressure because his evaluation included an assessment of those features usually expected to be abnormal in the presence of raised intracranial pressure, citing in particular the absence of significant change in heart rate or blood pressure, a cessation of vomiting since his last examination and the fact that her reactive pupils were not enlarged.³¹³ He did not consider Claire's respiratory rates to be a cause for concern. Overall, he felt that her state was similar to that found on examination at 14:00 notwithstanding that her GCS score was potentially depressed by midazolam.³¹⁴ He stated that his diagnosis was predominantly that of an "*epileptic encephalopathy*"³¹⁵ with the impression that Claire was suffering subtle non-convulsive seizure activity triggered by recent inter-current viral infection.³¹⁶
- 3.114 However, and notwithstanding that her sodium levels had not been checked since the previous night, Dr Webb still did not direct a repeat blood test. Dr Sands attended a few minutes later at 17:15 and likewise failed to direct

³¹⁰ WS-138-1 p.42-3

³¹¹ (Dr Webb defined 'status epilepticus' as seizure activity lasting for more than 30 minutes. 090-053-173 & WS-138-1 p.39)

³¹² WS-138-1 p.17 & p.74-75

³¹³ WS-138-1, p.35

³¹⁴ WS-138-1 p.74-75

³¹⁵ WS-138-1 p.17

³¹⁶ 090-053-173

another blood test. He claimed to have been under the impression that a full blood test had been performed and that the results were awaited.³¹⁷ I cannot understand the basis for any such expectation from the entries in the record.

3.115 The experts agree³¹⁸ that more should have been done at 17:15. Indeed Drs Sands and Webb both now recognise this.³¹⁹ Each was then about to go off duty, even though Dr Webb remained the on-call paediatric neurologist. Notwithstanding and whilst the expert views do not entirely concur, I believe that the following should have been done:

- (i) Mr and Mrs Roberts should have been told that Claire was very ill and that diagnosis was unclear.
- (ii) The incoming nursing and medical staff should have been alerted to the seriousness of her condition and the uncertainty of diagnosis.
- (iii) Dr Steen should have been contacted and asked to return to discuss and review.
- (iv) Blood tests should have been carried out.
- (v) Diagnosis should have been reconsidered afresh.
- (vi) Claire's overall treatment should have been reviewed, including her drug regime and fluid management.
- (vii) A paediatric anaesthetist should have been asked to advise on admitting Claire to the PICU.

³¹⁷ WS-137-1 p.29

³¹⁸ 232-002-010 - Professor Neville believed that further assessment was required, including electrolyte testing, EEG, CT scan and drug review; and that any differential diagnosis should include causes of raised intracranial pressure.

234-002-007 - Dr Scott-Jupp considered that Dr Webb should have made it clear whether he had taken over Claire's care completely or was available only for specialist advice and he should have spoken to Dr Bartholome, the on-call Consultant Paediatrician or Dr McKaigue.

³¹⁹ Dr Sands T-19-10-12 p.203 line 21 & Dr Webb T-03-12-12 p.60 line 15

- (viii) An EEG should have been arranged, preferably that day but certainly before the following morning.
- (ix) A clear understanding should have been established as to who was responsible for Claire's care – whether it was the paediatric team or the neurology team.

Responsibility for the failure to take these steps lies overwhelmingly with Dr Webb and Dr Sands.

Discussions between Dr Steen and Dr Sands

- 3.116 Evidence was given by both Dr Steen and Dr Sands that they probably spoke by telephone at some point during the afternoon of 22nd October when Dr Steen was at the Cupar Street Clinic.³²⁰ I have some difficulty with such a proposition because although Dr Sands regarded Claire as the sickest child on the Ward³²¹ he is not thought to have spoken with Dr Webb. So how would his conversation with Dr Steen have gone? One possibility is that Dr Sands informed Dr Steen of Claire's condition and told her that he had obtained assistance from Dr Webb, but they agreed or Dr Steen decided that she did not need to return to see Claire. That does not seem likely in light of the detail he would necessarily have to have given about Claire's condition.
- 3.117 What makes more sense is that if there was a conversation, and I am not at all persuaded that there was, Dr Steen was not alerted to the seriousness of Claire's condition. This may have happened because even though Dr Sands recognised that Claire was "*very unwell*"³²², he was under the impression that he had effectively passed responsibility for Claire to Dr Webb and accordingly felt it was for Dr Webb to determine how to proceed and whether to recall Dr Steen. Meanwhile Dr Webb was unaware of Dr Sands' assumption and remained confident that he had not assumed

³²⁰ Dr Steen T-17-10-12 p.10, Dr Sands T-19-10-12 p.37 & WS-137-1 p.16

³²¹ Dr Sands T-19-10-12 p.233

³²² 091-009-056

responsibility for Claire. This is a more compelling explanation because it fits with both Drs Webb and Sands leaving the hospital between 17:00 and 18:00, Dr Steen staying at Cupar Street, the failure to warn the incoming medical team about the seriousness of Claire's condition, the failure to proceed to EEG or CT scan, the failure to make even preliminary contact with PICU and the extraordinary failure to communicate the gravity of the situation to Mr and Mrs Roberts.

- 3.118 I do not suggest that any one of these doctors was uncaring. Rather, I believe that the real danger of Claire's situation was not recognised, so that despite Dr Webb's repeated intervention, her condition was allowed to deteriorate. The doctors assumed that they could treat her the following day. I do not believe that it occurred to any of them that her life was in danger. Had it, then I am sure that they would all have done something very different. It is for these reasons that I conclude that if there was conversation between Dr Sands and Dr Steen, the reason it did not lead to the return of Dr Steen was that she was not given to understand that Claire was so seriously ill as to require her attendance.

Consultant responsibility

- 3.119 The issue arose as to who was primarily responsible for Claire's care. Clarity as to leadership is important for all concerned in patient care. Was it the paediatric medical team under Dr Steen (even in her absence) or did Dr Webb take over primary responsibility in consequence of his having treated Claire on a number of occasions?
- 3.120 Claire was formally admitted into the care of Consultant Paediatrician Dr Steen. There was no recorded or formal transfer to the neurology team. Dr Webb denied taking over responsibility and there is no evidence that he did. I can only conclude that Claire remained under the care of the paediatric team despite Dr Webb's active and specialist involvement.
- 3.121 Dr Sands may have been uncertain as to who the lead consultant was after Dr Webb had become involved, but such confusion does not appear to have

affected others. This issue was examined in detail at public hearings. Whilst Dr Sands might have made greater efforts to secure the attendance of Dr Steen, it would not appear that any particular nursing or medical failure resulted from confusion as to primary responsibility.

Nursing care during 22nd October 1996

Review of the 'Nursing Care Plan'

- 3.122 The Nursing Care Plan was to have been subject to daily review.³²³ However, it was neither reviewed nor amended after the ward round on the morning of 22nd, nor seemingly at any time thereafter. The 'Nursing Care Plan' does not plan for Claire's deterioration and remained therefore self-evidently unrevised.
- 3.123 Ms Ramsay stated that it was conventional practice to evaluate care on a regular basis. She said this should be done at the end of each shift at the very least and prior to handing over to another nurse.³²⁴ On this analysis, Claire's 'Nursing Care Plan' should have been reviewed at 08:00, 14:00 and 20:00 on 22nd October. Ms Ramsay further stated that the plan ought to have been revised in response to changes in Claire's care needs, such as those prompted by ongoing IV therapy, nursing observations and falling GCS scores.³²⁵
- 3.124 That the 'Nursing Care Plan' was not updated was an oversight in care. It is impossible to determine what difference, if any, regular updates of the 'Nursing Care Plan' might have made. It is however clear that the discipline of making regular written revisions to a plan, might draw attention to necessary nursing action. The nursing staff are to be criticised for failing to adhere to the necessary standards of their own 'Nursing Care Plan'.

³²³ 090-043-145

³²⁴ 231-002-012

³²⁵ 231-002-012

Care and treatment during the evening of 22nd October 1996

- 3.125 There is no evidence that there was any meaningful handover to the incoming nursing or medical teams between 17:00 and 18:00; meaningful in the sense that any single nurse or doctor was actually alerted to the seriousness of Claire's condition. There was a handover to Dr Joanne Hughes who attended to administer drugs,³²⁶ but no indication was given her as to the seriousness of Claire's condition. This further confirms the extraordinary failure to recognise just how sick and at risk Claire was.
- 3.126 Frustratingly, it has not been possible to identify the on-call consultant paediatrician for the night of Tuesday/Wednesday.³²⁷ This is a further and particular failure in the record keeping. The unidentified and unidentifiable consultant should have been the first point of contact for paediatric medical problems. There is no evidence to indicate whether the unknown paediatrician was informed of Claire's illness, or her deteriorating condition or whether there was any attempt to make contact when Claire's condition became critical. If there was a rota of on-call consultant paediatricians, it does not appear to have been used.³²⁸
- 3.127 The role of registrar on duty for Tuesday night was now the almost impossible task of Dr Brigitte Bartholome. She had the assistance of two SHOs, Dr Joanne Hughes and the same Dr Neill Stewart who had accompanied Dr Sands on the morning ward round.
- 3.128 Mr Roberts returned to be with Claire at 18:30. Between 18:30 and 21:15, Claire was reviewed by the nurses on duty but no concern was communicated to the family.³²⁹

³²⁶ 310-003-003

³²⁷ 302-068a-001

³²⁸ 302-068a-001

³²⁹ 089-012-035

Involvement of Dr Joanne Hughes

- 3.129 From 17:00 to 22:00 on Tuesday, 22nd October Dr Joanne Hughes was the sole SHO on the Paediatric medical wards.³³⁰ The only registrar available to her was Dr Bartholome. Dr Hughes was thus responsible for the 40-50 children who were already on the wards together with additional patients admitted through A&E.³³¹ She had at that time one years' experience in paediatrics. She said that she has no recall of the Tuesday night or of her role in Claire's care.³³² Whilst there had been a handover to her at around 17:00, that handover cannot have alerted her to the real seriousness of Claire's condition.
- 3.130 Dr Hughes administered anti-biotics to Claire at 17:15 and anti-viral medication at 21:30.³³³ Significantly, no other doctor saw Claire during that critical period between 17:30 and 23:00 when effective intervention might still have saved her life. That she failed to effectively intervene was not the fault of the then relatively inexperienced Dr Hughes. Opportunities had been missed throughout the day to direct Claire's treatment. It would be unfair to criticise an over-stretched SHO like Dr Hughes for failing to remedy the mistakes of more senior and experienced colleagues.

Further deterioration in Claire's condition and nursing care

- 3.131 Signs were however apparent that not only was Claire failing to respond positively to Dr Webb's drug treatment but she was in fact deteriorating. At 19:15, an entry was made in the 'Record of Attacks Observed' noting that Claire had "*teeth clenched and groaned.*"³³⁴ Dr Webb stated that he was unaware of this attack but would have expected to have been informed.³³⁵

³³⁰ Dr Hughes T-05-11-12 p.109

³³¹ Dr Hughes T-05-11-12 p.110

³³² Dr Hughes T-05-11-12 p.109

³³³ Dr Hughes T-05-11-12 p.151-153 & 090-026-077

³³⁴ 090-042-144

³³⁵ 090-042-144 & WS-138-1 p.43

Indeed the 'Nursing Care Plan' specified that nurses were to inform medical staff of seizures.³³⁶

- 3.132 A further attack was noted at 21:00 as an "*Episode of screaming and drawing up of arms. Pulse rate ↑ 165 bpm. Pupils large but reacting to light. Dr informed.*"³³⁷ However, Dr Hughes could not recall being informed³³⁸ and Dr Webb stated that once again he did not know of the seizure but once again would have expected to be told.³³⁹
- 3.133 Whilst Claire's temperature was noted at 20:30 and 22:30,³⁴⁰ respiratory observations were not recorded at 17:00, 18:00, 19:00, 20:00, 22:00 or 23:00. Ms Ramsay considered that they should have been noted and at least once every 30 minutes during intravenous infusion.³⁴¹ Furthermore, Ms Ramsay regarded the failure to record blood pressure at 22:00, 23:00 and midnight as "*serious omissions*" in the record keeping.³⁴²
- 3.134 Furthermore Ms Ramsay was clear that the nurses were under an ongoing duty to inform doctors about changes in Claire's condition, and in particular:
- (i) The seizure lasting 5 minutes at 15:10.³⁴³
 - (ii) The failure to pass urine for six hours by 17:00.³⁴⁴
 - (iii) The blood pressure reading of 130/70 at 19:00.³⁴⁵
 - (iv) The teeth clenching and groaning incident at 19:15.³⁴⁶

³³⁶ 090-043-145

³³⁷ 090-042-144

³³⁸ WS-140-1 p.28

³³⁹ 090-042-144 & WS-138-1 p.43

³⁴⁰ 090-039-137

³⁴¹ 231-002-026

³⁴² 231-002-02

³⁴³ 231-002-024 & 090-042-144

³⁴⁴ 231-002-030 & 090-038-135

³⁴⁵ 231-002-030 & 090-039-137

³⁴⁶ 231-002-025 & 090-042-144

- (v) The episode of screaming, the GCS score of 6 and the raised pulse rate at 21:00.³⁴⁷ (Whilst the nursing record does indicate, “*Dr informed*”³⁴⁸ this is not confirmed by the medical record).
- 3.135 Additionally Ms Ramsay believed that the episode of screaming at 21:00³⁴⁹ should have been documented. This was, she said, a significant error and represented a further failure in record keeping.³⁵⁰
- 3.136 Even allowing for subjective variation, the GCS numbers that evening were consistently low. They fell further at 21:00 to 6/7. Each GCS assessment presented clear warning. Dr Steen,³⁵¹ Dr Webb,³⁵² and Professor Neville³⁵³ all agreed that Claire’s management should have been discussed with a consultant when the GCS scores dropped at 21:00.
- 3.137 It was wholly improper that with a GCS score as low as 6 that Claire should have been left on the ward without urgent reappraisal. She had already received treatment for 24 hours and was not improving. Even if her levels of consciousness had been depressed by medication, there was no positive indication of progress and urgent action was imperative.
- 3.138 Whilst the nurses did not completely ignore Claire, it cannot be said that they responded to her clinical signs or recognised her danger. Any nurse who was in any doubt about what to do could always have sought advice from the night sister.³⁵⁴ The individual nurses charged with her care are to be criticised for their failure to make necessary observations with appropriate frequency, to respond to Claire’s very low GCS scores or to keep medical staff informed of her condition.

³⁴⁷ 231-002-025, 090-042-144, 090-042-144 & 090-039 to 137

³⁴⁸ 090-042-144

³⁴⁹ 096-025-349

³⁵⁰ 231-002-025

³⁵¹ 091-011-068

³⁵² 091-011-068 & WS-138-1 p.86

³⁵³ 232-002-011

³⁵⁴ Ms Linskey T-30-10-12 p.25 line 8

Claire's parents leave for the night

- 3.139 Claire's family had been at her bedside since the morning. They were constantly available for consultation, reassurance or warning. At some time between 21:15 to 22:30 on the Tuesday night, Mr and Mrs Roberts decided to go home and informed the nurses that they were leaving. Neither doctor, nurse nor any other member of staff told Mr and Mrs Roberts that Claire was seriously ill and in danger.³⁵⁵ One of the saddest and most frustrating aspects of all is that they were allowed to leave expecting to find improvement the next morning.
- 3.140 In his witness statement to the Inquiry, Mr Roberts explained that they did not know that Claire had a neurological illness and were unaware of concern about her condition.³⁵⁶ Indeed, he felt so comfortable that night that he was able to watch 'A Question of Sport' on television with his son.³⁵⁷
- 3.141 I am satisfied that the nurses no more recognised the danger of Claire's deteriorating condition than the doctors did and because the doctors did not inform the nurses of the seriousness of her illness, it would be unfair to criticise the nurses alone in this regard. As Staff Nurse Lorraine McCann,³⁵⁸ who was on duty at that time acknowledged, the failure to inform Mr and Mrs Roberts was a collective failure.³⁵⁹
- 3.142 However, as a matter of course and at the very least Mr and Mrs Roberts should have been told that:
- (i) Claire was very unwell.
 - (ii) Diagnoses was unclear.
 - (iii) Further investigations were necessary, and

³⁵⁵ 091-004-006 & WS-253-1 p.11-12

³⁵⁶ WS-253-1 p.11

³⁵⁷ WS-253-1 p.11

³⁵⁸ 310-003-005

³⁵⁹ Staff Nurse McCann T-30-10-12 p.90 line 2

(iv) Transfer to PICU might be necessary.

3.143 That no one even so much as suggested concern, let alone danger to Mr and Mrs Roberts is profoundly unsettling. Claire's death must have been made even harder to bear by the thought that they could have stayed with Claire. Fundamental failures in communication with families was one of the most repeated, basic, depressing and serious deficiencies encountered by this Inquiry.

Attendance of Dr Hughes at 21:30

3.144 Dr Hughes saw Claire again at about 21:30 when she gave her anti-viral medication.³⁶⁰ She also took blood for general testing and to assess levels of phenytoin.³⁶¹ These had to be checked before additional phenytoin could be given. She did not make a record of her examination. Whilst this was an omission on her part, it was of little consequence. Nonetheless, she did have time to re-write the prescription sheet detailing the drug regime.³⁶² With more experience, time and support she might have pieced together the record of attacks, GCS scores, observations and general presentation to appreciate that something was seriously wrong and to make contact with Dr Bartholome.

3.145 The nursing notes record that at 23:00 Claire was given an additional dose of phenytoin³⁶³ to add to the bolus overdose already given by Dr Stevenson. This was administered before the results of the blood tests were received at 23:30. These revealed a phenytoin level of 23.4 mg/l which was in excess of the therapeutic range of 10-20 mg/l.³⁶⁴ In other words, Claire had already received too much of a drug, experts suggest she should not have been given in the first place and then she was given some more.

³⁶⁰ 090-026-077

³⁶¹ Dr Hughes T-05-11-12 p.155 line 21

³⁶² 090-026-077

³⁶³ 090-040-138

³⁶⁴ 090-022-056

- 3.146 More importantly, the blood test results revealed that her sodium levels had fallen and were now dangerously low at 121mmol/L. Claire was suffering severe hyponatraemia.

Attendance by Dr Stewart at 23:30

- 3.147 Dr Stewart saw Claire at about 23:30. He was by then the only doctor covering the Children's Hospital at SHO level outside A&E and PICU. His record of examination reads:

"Na 121 K 3.3 Urea 2.9 Creat 33 Phenytoin 23.4mg/l (10-20)

Hyponatraemia - ? Fluid overload c̄ low Na fluids

? SIADH

Imp - ? Need for ↑ Na content in fluids

D/W Reg - ↓ Fluids to 2/3 of present value – 41mls/hr

*Send urine for osmolality"*³⁶⁵

- 3.148 This was an impressive analysis, particularly from an SHO with Dr Stewart's experience. Recognising that Claire was hyponatraemic, he suggested two causative mechanisms; one the type and volume of fluids under infusion and the other the Syndrome of Inappropriate Anti-Diuretic Hormone secretion ('SIADH'). His proposed response was first, to switch from Solution No. 18 to a fluid with a higher sodium content and secondly, to reduce the volume by a third.
- 3.149 He telephoned Dr Bartholome who directed him to reduce the fluids by a third but to continue with Solution No. 18. She also told him to give the next dose of phenytoin but to reduce the rate.³⁶⁶
- 3.150 It was thus that between 23:00 and 02:00, Claire received a further 56mls of Solution No.18 at about 18.5mls per hour, together with 7.6mls of 0.9% saline in conjunction with her midazolam infusion. In addition, she was

³⁶⁵ 090-022-056

³⁶⁶ Dr Stewart T-06-11-12 p.67

given 110mls of an unknown dilutant with the phenytoin infusion.³⁶⁷ Dr Scott-Jupp thought that the dilutant was probably 0.9% saline.³⁶⁸ These fluids amounted to a total of 173.5mls. Dr Scott-Jupp calculated that this was considerably more than the 41ml/hr intended and only slightly less than the rate as originally infused.³⁶⁹ He added that Claire also received about 133mls more than intended between 20:00 and 02:00 but considered it unlikely that this comparatively small excess would have made any significant difference.³⁷⁰

- 3.151 Dr Stewart believes that he informed Dr Bartholome about the drop in Claire's sodium levels, her GCS readings and the anti-convulsants administered. He fully expected her to come as soon as possible and to assume responsibility. Dr Stewart says that they did not however discuss moving Claire to PICU and then his duties called him elsewhere.³⁷¹

Involvement of Dr Bartholome

- 3.152 Dr Stewart did not re-visit Claire between 23:30 and 03:00 and Dr Bartholome did not go to Claire until about 03:00.³⁷² How can it possibly have been that Claire was not seen by a doctor during those critical 3½ hours? In part, it was due to chronic medical under-staffing at night³⁷³ and in part because Dr Bartholome could have done more. Her belief is that she must have been managing another emergency, most probably in A&E. That might very well have been the case but the expert consensus is that by 23:30 the time had most definitely come to call consultants and to contact PICU. Claire had been suffering sporadic attacks and her GCS scores and sodium levels were dangerously low. If Dr Bartholome was unable to see Claire then she should have called for consultant help or got Dr Stewart to make the call. Alternatively, she could have asked him to go

³⁶⁷ 090-038-135

³⁶⁸ 234-003-002

³⁶⁹ 234-003-002

³⁷⁰ 234-003-003

³⁷¹ Dr Stewart T-06-11-12 p.83 line 18 *et seq*

³⁷² 090-022-056

³⁷³ Dr Stewart T-06-11-12 p.39

back and check on Claire's condition or contact PICU. She did none of those things.

- 3.153 Dr Bartholome's failure to respond after 23:30 would be almost impossible to comprehend if she had been informed at the 17:00 handover as to exactly how ill Claire was. She cannot now recall the events of that night but I consider it most unlikely that she was informed about the seriousness of Claire's condition. Had she known how critical Claire was, she would have given priority to her care, most especially when she received Dr Stewart's report of deterioration.
- 3.154 The unavoidable truth is that Claire was deteriorating in plain sight of the doctors and nurses on Allen Ward. The signs were unambiguous but went unrecognised. I conclude that this arose, in part, from the failure of any single clinician to take primary responsibility for Claire's case. Dr Steen was not there and neither Dr Webb nor Dr Sands assumed overall charge or sought to secure Dr Steen's attendance or talk with Dr Bartholome. To make matters worse it would appear that there was no on-call paediatric consultant.
- 3.155 Leadership was absent from Claire's case and had been from the outset. No single experienced overview was brought to bear to correct, co-ordinate or make connections. None of the doctors treating Claire had individual 'ownership' of her case, none was motivated to push for EEG, CT or PICU and none imposed personal control over her care so as to ensure appropriate record keeping, regular observations or proper communication with Mr and Mrs Roberts.
- 3.156 There was no firm consensus about whether Claire could still have been saved at 23:30.³⁷⁴ However, and at the very least, the fall in her sodium levels could have been arrested by switching from Solution No. 18 and reducing the rate. Dr Stewart's plan to change the fluid and reduce the

³⁷⁴ 234-002-008 & 091-011-067

volume was preferable to Dr Bartholome's direction to continue with Solution No. 18 but at a lesser rate.

Respiratory arrest: 23rd October 1996

3.157 At 02:30, a nurse recorded that "*Slight tremor of right hand noted lasting few seconds. Breathing became laboured and grunting. Respiratory rate 20 per minute. O₂ saturations 97% - Claire stopped breathing.*"³⁷⁵ Dr Bartholome was contacted and attended with Claire at 03:00. She made her sole entry in the medical chart:

*"3AM Called to see. Had been stable when suddenly she had a respiratory arrest and developed fixed dilated pupils. When I saw her she was Cheyne-Stoking and requiring O₂ via face mask. Saturation with bagging in high 90s. Good volume pulse. I attempted to intubate – not successful. Anaesthetic colleague came and intubated her orally with 6.5 tube. Transferred to PICU."*³⁷⁶

3.158 Dr Bartholome explained that her entry is to be understood as being a part of what she would have told staff in PICU.³⁷⁷ They would also have seen Dr Stewart's entry at 23:30 together with the earlier entries. Her use of the word "*stable*" to describe Claire's condition prior to collapse make no sense whatsoever.

3.159 Dr Bartholome telephoned Mr and Mrs Roberts to tell them that Claire had breathing difficulties and to come to the hospital as quickly as possible. She did this at about 03:45 and it was her last input into Claire's case.

3.160 The expert consensus is that Claire could not have been saved after her collapse and confirms that there can be no criticism of how Claire was treated in PICU.

³⁷⁵ 090-040-138

³⁷⁶ 090-022-056

³⁷⁷ Dr Bartholome T-18-10-12 p.88-89

Transfer to PICU and Dr Steen's examination of Claire

3.161 Claire was transferred to PICU at 03:25 on Wednesday 23rd October.³⁷⁸

3.162 Dr Steen was contacted. She responded immediately and was with Claire shortly before 04:00. This was the first time she had seen Claire. I also believe that it was probably the first time she knew anything about Claire. She made the following entry in the records at 04:00 :

"9½-year-old girl c learning difficulties admitted 32 hours ago c ↓ level of consciousness.

SB Dr Webb Δ acute encephalopathy ? aetiology. Covered c acyclovir + cefotaxime. Loaded c phenytoin + valproate added in @ 17:00 hrs.

11pm – phenytoin level = 23.4. Na+ 121. K+ 3.3. Fluids restricted to 2/3rd maintenance. Obs otherwise stable.

@3am Reg asked to see because of resp difficulties. Cheyne-Stoke breathing – intubated + transferred to ICU.

At present intubated + ventilated. Has had some Midazolam but it is no longer running. Pupils fixed + dilated. Bilateral papilloedema L>R. No response to painful stimuli. BP- 90/65 HR = 100/min.

Plan-Mannitol stat.

Dopamine infusion.

*Urgent CT scan."*³⁷⁹

3.163 Dr Steen explained that she compiled this entry from the notes, from what she was told by the doctors and nurses and her examination.³⁸⁰ It is a significant entry but not an exhaustive re-listing of every issue and concern. There is specific reference to the "*acute encephalopathy*" as noted by Dr Webb but none to the encephalitis included in Dr Sands' earlier entry (and about which I have already expressed my view). Importantly she refers to

³⁷⁸ 090-040-138-139

³⁷⁹ 090-022-057

³⁸⁰ Dr Steen T-16-10-12 p.28

the low sodium levels and the restriction of fluids as noted by Dr Stewart.³⁸¹
She examined Claire for raised intra-cranial pressure.

Dr Webb's attendance at 04:40, 23rd October

- 3.164 It would appear that, in consequence of a call from Dr Steen, Dr Webb came to the hospital as well. His entry in the notes, made at 04:40 and immediately after Dr Steen's, records:

"Neurology

SIADH – hyponatraemia, hypoosmolality, cerebral oedema + coning following prolonged epileptic seizures

Pupils fixed + dilated following mannitol diuresis

No eye movements.

*→ For CT scan"*³⁸²

- 3.165 Dr Peter Kennedy,³⁸³ Registrar in Radiology, reported on the CT scan, which was performed at approximately 05:30.³⁸⁴ He noted severe cerebral oedema.³⁸⁵ Dr Webb recalled that at that point it was "*clear that Claire had sustained severe brain injury and was not going to survive.*"³⁸⁶

- 3.166 Claire did not recover. With the consent of her parents, ventilation was discontinued at 18:45 on 23rd October 1996³⁸⁷ and she died in PICU.

Brain stem death tests

- 3.167 As in Adam's case, there is an issue about the brain stem death tests. They were performed in Claire's case at 06:00 and 18:25 on 23rd October by Drs

³⁸¹ 090-022-057

³⁸² 090-022-057

³⁸³ 310-003-004

³⁸⁴ WS-167-1 p.2

³⁸⁵ 090-022-059

³⁸⁶ 090-053-168

³⁸⁷ 090-022-061

Steen and Webb and recorded on the standard 'Diagnosis of Brain Death' form.³⁸⁸

- 3.168 Dr Simon Haynes, Consultant Paediatric Anaesthetist, commented on the brain stem testing.³⁸⁹ He said, "*There has to be a certainty that there is no residual effect of any neuromuscular or sedative drugs or other intoxicating agents*" and "*then there has to be the exclusion of metabolic and biochemical causes of coma. And that exclusion has to be made before doctors making the test can go on and do the test.*"³⁹⁰
- 3.169 Dr Aronson considered that several of the anti-convulsant drugs administered to Claire could still have been having an effect even after 24 hours.³⁹¹ In the circumstances, it was necessary for both Drs Steen and Webb to carefully review Claire's recorded drug history and only to proceed to the brain stem death test when it was appropriate so to do. Additionally, even though Claire's sodium reading had risen to 129mmol/L by the time of the first test, it was still outside the normal range. Metabolic causes of coma could not therefore be completely excluded.
- 3.170 Notwithstanding, Dr Webb and Dr Steen determined that Claire fulfilled the criteria for brain stem death and signed the 'Diagnosis of Brain Death' form.³⁹² In particular, question 1(c) "*Could other drugs affecting ventilation or level of consciousness been responsible for her condition?*" was answered by them both in the negative.³⁹³ I think it is unlikely that these doctors could have been so confused by the slightly odd wording of this question to fail to understand it or its purpose. Dr Aronson was of the opinion that given that the phenytoin probably remained in Claire's system, question 1(c) could not properly have been answered in the negative.³⁹⁴ Question 1(f) then posed the question: "*Could patient's condition be due to*

³⁸⁸ 090-045-148

³⁸⁹ Dr Haynes T-03-05-12 p.106 to 112

³⁹⁰ Dr Haynes T-03-05-12 p.114 line 13-20

³⁹¹ 237-002-008 to 009

³⁹² 090-045-148

³⁹³ 090-045-148

³⁹⁴ Dr Aronson T-08-11-12 p.276 line 22

a metabolic/endocrine disorder?” This was also answered in the negative.³⁹⁵ The doctors made no reference to Claire’s hyponatraemia.

- 3.171 The protocol for certifying brain stem death requires strict adherence. Just as the protocol was not followed in Adam’s case, so too was there failure to comply in Claire’s case. I believe that it was inappropriate to start the tests before the effect of the phenytoin could be disregarded and incorrect to answer the questions as they did. It was not suggested that anything could have been done differently so as to affect the outcome but it was quite wrong for Dr Webb to record in his entry at 06:00 that Claire was “*under no sedating/paralysing medication*”³⁹⁶ when in all probability the drugs which he had prescribed the previous day were still in her system.
- 3.172 Dr Webb maintained that at the time of the tests he was unaware that Claire had been erroneously prescribed 120g of midazolam. I conclude therefore, that just as he may have failed to review Adam’s medical notes for his brain stem death test, so too did he fail to review Claire’s drug history. That such an error in prescription remained un-noted for so long further confirms that the drug record cannot have been subject to further or adequate review.
- 3.173 The ‘Diagnosis of Brain Death’ form concludes with the final question “*Is this a Coroner’s case*” which was answered in the negative and by Dr Steen alone.³⁹⁷

Discussions with Claire’s parents

- 3.174 Shortly after the CT scan confirmed Claire’s cerebral oedema, Drs Steen and Webb met with Claire’s parents. Mr Roberts recalled that Dr Steen informed him that Claire was brain dead and that “*everything possible had been done for Claire and nothing more could have been done.*”³⁹⁸ He remembered Dr Steen explaining that “*the virus from Claire’s stomach had*

³⁹⁵ 090-045-148

³⁹⁶ 090-022-058

³⁹⁷ 090-045-148

³⁹⁸ WS-253-1 p.14

spread and travelled into Claire's brain and caused a build-up of fluid."³⁹⁹

The Roberts family are emphatic that there was no mention of low sodium.

3.175 Mr and Mrs Roberts' evidence is supported by the Hospital Relative Counselling Record which noted that "*following CT scan Dr Steen and Dr Webb explained that Claire had swelling of the brain and could possibly be brain dead*" and when "*asked why her brain had swollen, it was explained it was probably caused by a virus.*"⁴⁰⁰

3.176 However, Dr Webb considered that this was wrong and did not accurately reflect their conversation. He stated that "*... if a "virus" was discussed it was probably on the basis of a theory that a virus may have triggered Claire's seizures and her brain oedema.*" Although he could not recall the detail of what was actually said about hyponatraemia and cerebral oedema, he believed that he "*would have indicated that the brain swelling was due to hyponatraemia*" and that he communicated his opinion as he had set it out in the medical notes,⁴⁰¹ namely "*SIADH- hyponatraemia, hypoosmolality; cerebral oedema + coning following prolonged epileptic seizure.*"⁴⁰²

3.177 Given the passage of time since 1996 and the traumatic events endured in the interim by Mr and Mrs Roberts, including the 2004 TV broadcast, the inquest and the police investigation, I do not assume that their evidence is necessarily always accurate. Dr Steen has suggested that she would have mentioned low sodium and that this might explain how Mr and Mrs Roberts identified a connection when they watched the documentary in 2004. Dr Steen believed furthermore that she would have mentioned low sodium in the context of SIADH rather than by reference to Solution No.18 because that was still a commonly used fluid at that time. However, neither Dr Steen nor Dr Webb made any note as to the advices given and the detail cannot now be recovered.

³⁹⁹ WS-253-1 p.14

⁴⁰⁰ 090-028-088

⁴⁰¹ 090-028-088 & WS-138-1 p.50-51 & p.55

⁴⁰² 090-002-057

3.178 Mr and Mrs Roberts were, as a matter of course, entitled to a straightforward explanation from Dr Steen as to the known causes of Claire's cerebral oedema. At that time all that was understood with any confidence was that hyponatraemia had probably contributed to the swelling of the brain. There is no good evidence that Dr Steen advised Claire's parents as to the role of hyponatraemia at that or indeed any other time. In the light of Dr Steen's subsequent failure to advise them as to the role of hyponatraemia, I conclude, on the balance of probabilities, that Mr and Mrs Roberts were not given an adequate or proper explanation as to what was known about the causes of Claire's death on 23rd October.

Involvement of the Coroner's Office

The legal duty to report

3.179 Claire's death was not referred to the Coroner. The Coroner's office was not notified of Claire's death until 2005. The relevant legislation in Northern Ireland, both then and now, is section 7 of the Coroner's Act (Northern Ireland) 1959 which provides that:

*"Every medical practitioner... who has reason to believe that the deceased person died, either directly or indirectly, as a result of violence or misadventure or by unfair means, or as a result of negligence or misconduct or malpractice on the part of others, or from any cause other than natural illness or disease for which he had been seen and treated by a registered medical practitioner within twenty eight days prior to his death, or in such circumstances as may require investigation (including death as the result of the administration of an anaesthetic) shall immediately notify the coroner within whose district the body of such deceased person is of the facts and circumstances of the death."*⁴⁰³

3.180 The following points emerge from that provision:

⁴⁰³ 170-001-008 & <http://www.legislation.gov.uk/apni/1959/15/section/7>

- (i) The duty to notify the Coroner is imposed on every medical practitioner and not just the named consultant. Accordingly, in Claire's case, it extended at the very least to Drs Steen and Webb.
- (ii) The death need only relate indirectly to any of the circumstances identified.
- (iii) The context for reporting a death includes not only negligence, misconduct or malpractice but also "*such circumstances as may require investigation.*"
- (iv) It is not only the death that is to be reported – but also "*the facts and circumstances*" of the death.
- (v) The report is to be made immediately.

Decision not to notify Coroner

- 3.181 It is necessary to set out the events which seemingly led to the decision not to report Claire's death to the Coroner.
- 3.182 By 04:00 on 23rd October, Claire was in reality, already dead. Quite apart from her family, this must have come as a shock to the doctors and nurses who were responsible for her care. It seems to have been completely unexpected – after all Claire had been at school on Monday and was dead by Wednesday. At 14:00 on Tuesday, Dr Webb had considered the option of a CT scan for the following day but had not felt the need to arrange it or an EEG more urgently. Both he and Dr Sands finished their duties by 18:00 and left the hospital in no doubt that Claire would be on Allen Ward the following morning. When Dr Steen and Dr Webb came into PICU in the early hours of 23rd October, they must have been asking how this could possibly have happened, whether there were matters to be investigated and whether or not her death raised questions about the care she had received on Allen Ward.

- 3.183 Instead, Dr Steen's evidence was that she was able to form so clear and confident a view as to the cause of Claire's death that she did not think it appropriate to contact the Coroner's office.⁴⁰⁴ Both she and Dr Webb conceded in their oral evidence that with hindsight they should have called the Coroner.⁴⁰⁵ I entirely agree that they should have but I do not accept that this is only apparent with the benefit of hindsight. There was not a single witness to the Inquiry who supported their decision not to contact the Coroner about Claire's death.
- 3.184 The decision is so questionable that it raises issues about the *bona fides* of Dr Steen in particular, but also of Dr Webb and others, because of their responsibility under Section 7. The Roberts family has come to believe that Claire's death was not notified to the Coroner in order to conceal the inadequacy of her treatment and the responsibility of the Trust for her death.⁴⁰⁶ If they are wrong, what was it in 1996, which allowed the doctors to think it unnecessary to contact the Coroner?
- 3.185 Dr Steen's evidence is that, in October 1996, she knew nothing about the death of Adam Strain in 1995 or anything about the outcome of his inquest four months before. Whilst this is very hard to believe, the shocking possibility remains that it may be true. If it is, it confirms that what happened in Adam's case was largely ignored in the Children's Hospital with the result that lessons were not learned beyond an extremely small group of people. Whilst it is to be recognised that there are obvious differences between Adam's case and Claire's, there were nonetheless sufficient lessons to be drawn in relation to the causation and early treatment of hyponatraemia in children to make it relevant for those caring for Claire.
- 3.186 On the morning of October 23rd, Dr Steen knew that Claire had suffered acute hyponatraemia and that this had been a contributory factor in the fatal cerebral oedema.⁴⁰⁷ Subsequently and with the benefit of hindsight,

⁴⁰⁴ Dr Steen T-18-12-12 p.56 line 24 & WS-143-1 p.73

⁴⁰⁵ Dr Webb T-03-12-12 p.232 line 25 & Dr Steen T-17-12-12 p.43 line 17

⁴⁰⁶ T-06-12-12 p.96

⁴⁰⁷ WS-143-1p.79

consultants and experts have expressed a range of opinion about what else may have been wrong with Claire but it is beyond dispute that hyponatraemia was identifiable and indeed identified on 23rd October as a factor in her death. The record contains Dr Stewart's query at 23:30, 22nd October about "*Hyponatraemia - ?Fluid overload [with] low Na fluids. ?SIADH,*"⁴⁰⁸ and Dr Steen noted Claire's hyponatraemia and fluid therapy at 04:00 on 23rd October as "*na + 121; fluids restricted to 2/3rd maintenance.*"⁴⁰⁹

- 3.187 Whilst Dr Steen was alert to the possibility of an excess infusion of hypotonic fluids, she could not then have formed any definite opinion in this regard. Indeed, the debate about the volume of fluid actually given Claire became very protracted and intense at the public hearings. I consider, that the conclusion to be drawn from the evidence is that there was indeed an excess of fluid, which on its own may not have been significant, but which became dangerous because Claire may have had SIADH causing retention of the fluids given intravenously.
- 3.188 SIADH was in the circumstances a matter for Dr Steen's consideration. It was a well-recognised medical complication arising when particular conditions affect the normal release of ADH. Such conditions include, amongst other things, infection, pain, stress and nausea. In such cases, a syndrome of inappropriate ADH can develop causing the kidneys to stop releasing fluids as normal resulting in a retention of fluids. In such a situation the infusion of low sodium IV fluids can only add to the volume of fluids retained and reduce the levels of sodium by dilution.
- 3.189 The consequence of not monitoring Claire's serum sodium levels, not understanding her fluid balance and not re-assessing her fluid regime was to permit the development of dilutional hyponatraemia. Even if Dr Steen did not arrive at such a conclusion at that time, she knew enough about the cerebral oedema and sodium levels and sufficient of the uncertainties and

⁴⁰⁸ 090-022-056 (for accuracy of transcription see WS-141-1 p.3)

⁴⁰⁹ 090-022-057

possibilities to understand that further investigation was most certainly indicated.

3.190 Further, and even if it is correct that Dr Steen was entirely unaware of Adam's death, Dr Webb was not. He had formally confirmed brain stem death in Adam on two occasions⁴¹⁰ and clearly understood the connection between dilutional hyponatraemia and cerebral oedema.⁴¹¹ He had read Adam's notes and provided the Coroner with a statement for inquest. Whilst he claimed to have "*no knowledge of the inquest findings in the case of Adam Strain.*"⁴¹² I found it hard to believe him. He appeared intent on distancing himself from Adam's case. He said that he doubted that he had received Dr George Murnaghan's⁴¹³ letter asking him for his statement about Adam⁴¹⁴ or that he received a written request to attend the pre-inquest consultation⁴¹⁵ or that a copy of Adam's post-mortem report was sent him⁴¹⁶ or that he was asked for additional comment in relation to the ongoing medical negligence claim.⁴¹⁷ I found this implausible.

3.191 Accordingly, I believe Claire's death must have come as a clear reminder to him of dilutional hyponatraemia, even if the cause was different. In his evidence, he suggested that in 1996 he did not realise that Claire had received excessive fluid. However, he had read the notes querying fluid overload and his own entry in the notes reveals a clear understanding of the underlying processes, namely "*SIADH, hyponatraemia, hypoosmolarity; cerebral oedema+coning following prolonged epileptic seizure*".⁴¹⁸

3.192 Just as Dr Webb sought to distance himself from any knowledge of Adam's case, he distanced himself from the decision not to refer Claire's death to the Coroner. On these issues, his evidence was likewise unconvincing.⁴¹⁹

⁴¹⁰ 058-004-009 & 058-035-139

⁴¹¹ Dr Webb T-03-12-12 p.246 line 3

⁴¹² WS-138-1 p.93

⁴¹³ 310-023-004

⁴¹⁴ Dr Webb T-03-12-12 p.259 line 25

⁴¹⁵ Dr Webb T-03-12-12 p.262 line 24

⁴¹⁶ Dr Webb T-03-12-12 p.264

⁴¹⁷ Dr Webb T-03-12-12 p.265 line 24

⁴¹⁸ 090-022-057

⁴¹⁹ WS-138-1 p.53 & Dr Webb T-03-12-12 p.232 *et seq*

He had made repeated efforts on Tuesday 22nd October to help Claire and had performed both brain stem death tests. Accordingly, it is most improbable that he should avoid discussion about whether the Coroner should be contacted.

- 3.193 Dr Webb's treatment of Claire was mostly for status epilepticus. He did not investigate other possibilities and without an EEG could not have been sure about his diagnosis of status epilepticus. By the time he left the hospital on Tuesday evening, he knew that Claire's response to the drug treatment was negligible. She then died overnight. In such circumstances, Dr Steen's conclusion that his unconfirmed diagnosis of status epilepticus was sufficiently evidenced as to leave nothing to raise with the Coroner is extraordinary and Dr Webb's failure to question it remarkable.
- 3.194 Neither Dr Webb nor Dr Steen addressed Claire's wholly unexpected deterioration from admission to collapse and both ignored the need to fully understand the mechanism whereby hyponatraemia might have developed. Neither seem to have questioned why there was no response to the treatment given and whether this might not indicate that the diagnosis was wrong. They seemingly failed to note or perhaps ignored the failings in the fluid therapy and the failing to repeat the blood test, either of which should have prompted referral to the Coroner. They also completely ignored, or failed to recognise, the lack of consultant input after Dr Webb's departure, the lack of medical attendance after Dr Stewart's intervention and the drug overdoses.
- 3.195 Dr Webb knew enough about Claire's case at that time to recognise that there may have been a problem in relation to her fluid and electrolyte management and to have appreciated that he could not explain with any confidence the cause of her SIADH.⁴²⁰ His failure in these circumstances, to notify the Coroner is hard to explain in professional terms. He was familiar with the process of a Coroner's inquest and had a duty under the legislation. On the balance of probabilities, I am forced to the conclusion

⁴²⁰ WS-138-1 p.47

that he did not refer Claire's death to the Coroner because of a reluctance to draw attention to possible failings in her treatment.

- 3.196 Drs Steen and Webb were wrong not to refer the death to the Coroner. Their decision was a breach of both statutory obligation and professional duty. It was, even by the standards of 1996, a gross error of judgement. Their reasons were hopelessly inadequate, their decision reached without proper reflection, and their evidence unconvincing.

Involvement of Dr McKaigue

- 3.197 One of those who treated Claire in PICU was Dr James McKaigue.⁴²¹ On the night of 22nd/23rd October, he was the on-call consultant paediatric anaesthetist and was contacted about Claire's condition. He examined Claire and reviewed her history. He noted at 07:10 that Claire's serum sodium was 121mmol/L "*presumably on basis of SIADH*" and that the "*CT scan shows severe cerebral oedema.*"⁴²²
- 3.198 Dr McKaigue claimed to have initiated a discussion about whether the Coroner should be informed or whether a death certificate could issue. It is to be recalled that he had an understanding of hyponatraemia, having been involved in Adam's case.⁴²³ However, Claire's case was different because she was thought to have encephalitis and status epilepticus in addition to hyponatraemia. These were indeed matters to be discussed and I accept that these conditions should have featured in any debate, but I do not accept that these diagnoses could have been accepted with any confidence at that time. In such circumstances, he should have ensured that Claire's death was reported to the Coroner.
- 3.199 However, Dr McKaigue concluded that the cause of Claire's death was known and had occurred naturally. He believed that she had status

⁴²¹ 310-003-003

⁴²² 090-022-058-060

⁴²³ He was also one of the joint authors of the RGHT statement submitted to the coroner at Adam Strain's inquest and made "*having regard to the information in the paper by Arieff et al (BMJ 1992)*" (011-014-107a & 060-014-025)

epilepticus and encephalitis and explained that Dr Steen had told him that these could bring on SIADH which could in turn cause cerebral oedema.⁴²⁴ For that reason he sensed no “*red flags*” indicating any necessity to notify Claire’s death to the Coroner. His approach ignored both the uncertainties and the very much more obvious conclusion that the cerebral oedema was caused by the hyponatraemia in the presence of SIADH and the administration of hypotonic solution and was therefore a death which could have been prevented.

- 3.200 Dr McKaigue’s position was further undermined by his own entry in the ‘PICU Coding Form’. There he made reference to hyponatraemia but not to status epilepticus or encephalitis.⁴²⁵ In all the circumstances, I consider that Dr McKaigue failed in his duty to ensure that Claire’s death was reported to the Coroner.

Involvement of Dr Robert Taylor

- 3.201 Dr Robert Taylor⁴²⁶ saw Claire in PICU at approximately 10:00 on 23rd October. He had more cause than most to be alert to the issues of dilutional hyponatraemia. Only four months had passed since the Coroner had conducted the inquest into the death of Adam Strain and Dr Taylor had signed a statement on behalf of the Trust “*having regard to the information in the paper by Arieff et al (BMJ 1992).*”⁴²⁷
- 3.202 He noted that Claire “*appears BS Dead informally. But only 7 hours post arrest. Na+129 (from 121).*”⁴²⁸ He may therefore be taken to have read the preceding entries in Claire’s medical notes and understood that hyponatraemia was probably responsible for the cerebral oedema and that issues of SIADH, fluid overload and fluid therapy were referenced. I find it hard to understand how he could not have wondered whether fluid and

⁴²⁴ Dr McKaigue T-17-10-12 p.220

⁴²⁵ 090-055-203

⁴²⁶ 310-003-004

⁴²⁷ 011-014-107a

011-011-074: Arieff A. I., Ayus J. C., Fraser C. L. Hyponatraemia and death or permanent brain damage in healthy children. BMJ 1992; 304 :1218

⁴²⁸ 090-022-061

electrolyte therapy had been correctly managed and whether notification to the Coroner was appropriate. Dr Taylor had no explanation beyond saying that it “... *didn’t strike a chord*...”⁴²⁹ I find that he too failed in his duty to notify the Coroner.

Certifying the cause of death

- 3.203 Dr Steen indicated that “*Once the serum sodium result of 121 was known, hyponatraemia would have been considered as a contributory factor in the cerebral oedema.*”⁴³⁰ However, when she completed the Medical Certificate of Cause of Death on 23rd October she certified that death was due to cerebral oedema secondary to status epilepticus.⁴³¹ This was despite the fact that the diagnosis of status epilepticus was unconfirmed in the absence of an EEG test. Furthermore, Dr Steen’s evidence that she did not include viral encephalitis in the death certificate because it was unconfirmed⁴³² only serves to emphasise the illogicality of her citing status epilepticus as a cause of death when it too was unconfirmed. The only confirmed diagnosis at that time was hyponatraemia but that, she specifically omitted from the death certificate.
- 3.204 Furthermore, and even if it had been appropriate to issue a Medical Certificate of Cause of Death, which it was not, Dr Steen may not have been qualified to sign it because she had not been directly involved in Claire’s care and accordingly lacked the necessary credentials⁴³³
- 3.205 Mr and Mrs Roberts were thus denied timely coronial investigation into Claire’s death and their suspicion of cover-up cannot be regarded as unreasonable. This made matters even worse for them.

⁴²⁹ Dr Taylor T-11-12-12p.77 line16

⁴³⁰ WS-143-1 p.79

⁴³¹ 090-022-061

⁴³² Dr Steen T-17-10-12 p.225 line 6

⁴³³ Article 25 of the Births and Deaths, Registration (Northern Ireland) Order 1976.

Brain only autopsy

Consent

- 3.206 On the evening of 23rd October, after the ‘Diagnosis of Brain Death’ form was completed but before Claire’s ventilation was discontinued, Dr Steen met with Mr and Mrs Roberts. She obtained their consent for a limited hospital post-mortem⁴³⁴ examination of Claire. The consent was signed by Mr Roberts and authorised a post-mortem examination restricted to the brain alone.⁴³⁵ This confirmed, in effect, that Claire’s death was not to be referred to the Coroner. Mr and Mrs Roberts are confident that Dr Steen told them at that time that a virus had caused a build-up of fluid on the brain and that the autopsy might identify the virus responsible.⁴³⁶ There was no mention of hyponatraemia.
- 3.207 The process of giving and taking a consent for post-mortem must be heart-rending and difficult but it was important that Mr and Mrs Roberts were given enough information to understand why the autopsy and its limitation were necessary and why the death did not need to be referred to the Coroner.
- 3.208 Mr Roberts recalls that he did not request any limitation to the post-mortem but that this was recommended by Dr Steen, who “*stated that there would be no need for an Inquest but the Hospital needed to carry out a brain only post-mortem.*”⁴³⁷ He described his “*understanding at that time was that doctors were aware of the reasons for Claire’s death, Dr Steen had explained that a virus had caused the fluid build-up around Claire’s brain. If I had been informed that there was any unknown or uncertainty regarding the cause of death then I would have consented to an Inquest.*”⁴³⁸ He said there were no discussions regarding the option of a full post-mortem.⁴³⁹

⁴³⁴ 090-022-061

⁴³⁵ 090-054-185

⁴³⁶ WS-253-1 p.15

⁴³⁷ WS-253-1 p.15

⁴³⁸ WS-253-1 p.15

⁴³⁹ WS-253-1 p.15

- 3.209 Dr Steen stated that she has “*no recollection of events but would assume I hoped to... determine if encephalitis was present... determine an underlying cause for seizures and developmental delay...*”⁴⁴⁰ Again, she made no record of the conversation or the reasons given.
- 3.210 Mr and Mrs Roberts were very clear in their evidence that nothing was said about the possibility of the post-mortem providing an explanation for Claire’s developmental delay. They stated that they would have wanted to know and it was definitely not raised.⁴⁴¹
- 3.211 Dr Steen advised that a limited post-mortem is most usually indicated when particular organs only are involved in the disease process and additional information as to cause of death, or underlying disorders, is to be obtained by examining those organs.⁴⁴² Accordingly, she said a post-mortem of the brain alone was appropriate in this case because the only additional benefit of a full post-mortem might have been the identification of an enterovirus⁴⁴³ from the content of the gut.⁴⁴⁴
- 3.212 I consider that a full post-mortem must not only allow positive identification of some factors but also the positive exclusion of others. Additionally, it might from the perspective of Dr Steen, have identified other non-brain related factors implicated in the suspected SIADH. A restriction of examination is a restriction of the potential for information. It seems that the Pathology Service was not consulted as to the limitation imposed upon the post-mortem.⁴⁴⁵ It was to subsequently note the consequence of limitation, stating that because “*as this was a brain only autopsy it is not possible to comment on other systemic pathology*”⁴⁴⁶
- 3.213 Dr Webb was unable to recall his input into the decision to limit the autopsy but stated that “*I believe I would have expected her post-mortem to have*

⁴⁴⁰ WS-143-1 p.72

⁴⁴¹ Mr and Mrs Roberts T-01-11-12 p.196 line 19 & WS-253-1 p.20-21

⁴⁴² WS-143-1 p.71

⁴⁴³ 310-007-003

⁴⁴⁴ WS-143-1 p.72 & Dr Steen T-17-10-12 p.190 line 5

⁴⁴⁵ WS-224-1 p.7

⁴⁴⁶ 090-003-005

been a full post-mortem."⁴⁴⁷ I share this view in light of the lack of certainty surrounding Claire's diagnoses at that time and the necessity to understand the reasons for her rapid and unexpected deterioration.

- 3.214 The advices given to Mr and Mrs Roberts were not recorded and the justification for pursuing a restricted hospital post-mortem was not documented. There was however no guidance to assist in this very important process. It is far from certain that Mr and Mrs Roberts were given sufficient information to allow them to give a fully considered consent to the post-mortem. That is regrettable.
- 3.215 That Dr Webb did not engage more in this process is surprising given both his involvement and his expectation that a full post-mortem might have been necessary. Yet again, he distanced himself and allowed Dr Steen to pursue her own course.

'Autopsy Request Form'

- 3.216 Dr Steen completed and signed the 'Autopsy Request Form' to be sent to the pathologist. It names the consultant as "*Dr Webb/Dr Steen*" and cites a clinical diagnosis of "*cerebral oedema 2° to status epilepticus ? underlying encephalitis.*" Dr Steen listed the clinical problems in order of importance as:

- "1 *Cerebral oedema.*
- 2 *Status epilepticus.*
- 3 *Inappropriate ADH secretion.*
- 4 *? viral encephalitis.*"⁴⁴⁸

- 3.217 Under "*history of present illness*", Dr Steen wrote:

"Well until 72 hours before admission. Cousin had vomiting and diarrhoea. She had a few loose stools and then 24 hours prior to admission started to vomit. Speech became slurred and she became increasingly drowsy. Felt

⁴⁴⁷ WS-138-1 p.91

⁴⁴⁸ 090-054-184

to have sub clinical seizures. Treated [with] rectal diazepam / IV phenytoin / IV valproate. Acyclovir + cefotaxime cover given. Serum Na+ dropped to 121 @ 23-30 hrs on 22-10-96. ?Inappropriate ADH secretion. Fluids restricted. Respiratory arrest 0300 23-10-96. Intubated + transferred. ICU – CT scan – cerebral oedema. Brain stem death criteria fulfilled @ 0600 + 18.15 hrs. Ventilation discontinued 18-45 hrs.”⁴⁴⁹

3.218 In the “*past medical history*” section she stated:

“Mental handicap

Seizures from 6 months – 4 years.”⁴⁵⁰

3.219 There was some criticism as to the accuracy of this undated form as completed by Dr Steen. It omits all reference to the treatment with midazolam (whether miscalculated or not) and remains silent as to the clinical diagnosis of hyponatraemia which was then thought a contributory factor to the cerebral oedema. Whilst the form does refer to sodium levels, suspected secretion of inappropriate ADH and restriction of fluids it fails to list hyponatraemia as a clinical problem or diagnosis. This is odd given the entries in the record made by Drs Stewart and Webb which both clearly cite hyponatraemia and the ‘Case Note Discharge Summary’ issued by PICU which recorded Claire’s death with a diagnosis including hyponatraemia.⁴⁵¹

3.220 My greater concern is that I believe that the form actually betrays the uncertainty that the consultants must have shared about the cause of death. Not only does it differ from the Death Certificate by including the clinical diagnosis of “? *Underlying encephalitis*”⁴⁵² but it expresses it in terms of a query. This uncertainty should have led to something more substantial than a request for a brain-only autopsy. It should, as a matter of course, have led to the Coroner. Again Dr Webb’s failure to involve himself in this

⁴⁴⁹ 090-054-183 to 184

⁴⁵⁰ 090-054-183

⁴⁵¹ 090-009-011

⁴⁵² 090-054-183

administrative process is as striking as Dr Steen's single-handed control of it.

Autopsy

- 3.221 The autopsy of the brain alone was carried out on 24th October by Dr Brian Herron⁴⁵³ who was then a senior registrar in neuropathology. The brain was cut on 28th November 1996 and the slides examined in January 1997. The final autopsy report was completed on 11th February 1997.⁴⁵⁴ In relation to matters arising from the autopsy, the expert evidence of Dr Waney Squier, Professor Brian Harding and Professor Sebastian Lucas was received.
- 3.222 In October 1996, the Neuropathology Service in Belfast comprised a team of three. It was headed by Dame Professor Ingrid Allen who was a leading figure in neuropathology within the United Kingdom and in addition to Dr Brian Herron, included at consultant level Dr Meenakshi Mirakhur,⁴⁵⁵ The service provided by these three specialists had been accredited in February 1996,⁴⁵⁶ a process which involved review of the Neuropathology Service to ensure that it met the standards of the time.
- 3.223 As the evidence unfolded from Drs Herron and Mirakhur and the three Inquiry experts, it became clear that the differences between them were limited. It is fair to acknowledge that the independent experts had significantly more time and opportunity to explore the issues in Claire's case than Drs Herron and Mirakhur had in 1996/7 when they were working in a hard-pressed service.
- 3.224 At the outset, they agreed that the purpose of an autopsy is to identify the cause of death. To that end, new cases are conventionally discussed by the neuropathology team who both welcome and expect discussion with the

⁴⁵³ 310-003-004

⁴⁵⁴ 090-003-003 (there is some question about this being the final report – it is neither signed or dated but for present purposes I will regard it as the final report).

⁴⁵⁵ 310-003-004

⁴⁵⁶ Dr Mirakhur T-30-11-12 p.24 line 9

clinical team. This can be useful before and after a post-mortem in order to help formulate opinion. In some cases, a draft autopsy report will be issued for discussion, to be finalised after clinical input.⁴⁵⁷

3.225 After a final report, there were then two further opportunities to discuss the case, namely:

- (i) The grand round which focussed on the learning and training issues emerging from cases such as Claire's. This would have been attended by the core neuroscience group including the pathologists and radiologists.⁴⁵⁸
- (ii) The audit/mortality meeting conducted by the paediatricians but which the pathologists might also attend. At such meetings, a number of cases were discussed. In the mid-1990s, such meetings were un-minuted at the behest of medical insurers who did not wish discussions to be recorded lest their insured be compromised.⁴⁵⁹

The significance of such discussions was the opportunity for those involved to question and probe how a disease or condition had developed, how a child was treated, how a death occurred and how things might be done better or differently in the future.

3.226 As outlined above, Dr Steen's 'Autopsy Request Form' identified four clinical problems.⁴⁶⁰ The evidence indicated the following in relation to each:

- (i) Cerebral oedema – this was clear to Drs Herron and Mirakhur and was confirmed by the Inquiry experts.⁴⁶¹

⁴⁵⁷ Dr Mirakhur T-30-11-12 p.10 line 2

⁴⁵⁸ Dr Mirakhur T-30-11-12 p.135 line 7

⁴⁵⁹ WS-156-2 p.6 & WS-224-4 p.5

⁴⁶⁰ 090-054-184

⁴⁶¹ Dr Mirakhur T-30-11-12 p.36 line 19 & Professor Lucas T-18-12-12 p.170 line 12

- (ii) Status epilepticus - the pathologists could make no finding because there was no EEG confirmation. The identification of status epilepticus was a matter for clinicians and not pathologists.
- (iii) Inappropriate ADH secretion – it was agreed in evidence that this could neither be proved or disproved at post-mortem even if it is a plausible diagnosis in the light of the cerebral oedema and hyponatraemia.⁴⁶²
- (iv) Viral encephalitis - Drs Herron and Mirakhur thought that there was mild inflammation of the brain perhaps justifying a 1 - 2 on a notional scale of 1 - 10.⁴⁶³ Such would indicate that there was some evidence of encephalitis, but only that. On looking at the same slides, Dr Squier and Professor Harding could not see this evidence at all. In any event, Drs Herron and Mirakhur agreed that for encephalitis to be identified as a factor contributing in any way to Claire's death, it would have to reach a minimum of 5 on such a scale.⁴⁶⁴ Since it did not do so, the effective result of the post-mortem was that encephalitis could not be confirmed as a cause of Claire's death.

3.227 In short, the only certain finding after the post-mortem was that Claire had cerebral oedema and hyponatraemia but this was already known. None of the three other clinical issues suggested by Dr Steen was established. In effect, the importance of the post-mortem was to exclude encephalitis as a cause of Claire's cerebral oedema. Unfortunately, the autopsy report as it was eventually drafted did not exclude encephalitis but allowed it as a possible diagnosis.

Autopsy report

3.228 Regrettably, the autopsy report⁴⁶⁵ repeats some of the factual error originating from Dr Steen's 'Autopsy Request Form', illustrating how easy it

⁴⁶² Dr Mirakhur T-30-11-12 p.36 line 2 & Dr Herron T-29-11-12 p.27 line 13

⁴⁶³ Dr Mirakhur T-30-11-12 p.138 line 18 & Dr Herron T-29-11-12 p.46 line 1

⁴⁶⁴ Dr Mirakhur T-30-11-12 p.38 line 3 & Dr Herron T-29-11-12 p.154 line 21

⁴⁶⁵ 090-003-003 *et seq*

is for a wrongly stated ‘fact’ to become validated by the process of repetition. It also introduced fresh error. Mr Roberts has indicated that the summary in Claire’s autopsy report is inaccurate in that:

- (i) It was wrong to state Claire was well until 72 hours before admission because she was well when she went to school on 21st October and it was only thereafter that she was noted to be unwell.⁴⁶⁶
- (ii) Claire’s cousin had a slight tummy upset, not the vomiting and diarrhoea as stated.⁴⁶⁷
- (iii) Claire did not have the same symptoms as her cousin nor the history of recent diarrhoea as noted. She did have one loose bowel movement but that was on the Friday.⁴⁶⁸
- (iv) Claire did not start to vomit 24 hours before admission; in fact, she did not start to vomit until 21st October.⁴⁶⁹
- (v) Claire did not have any seizures on 20th October.⁴⁷⁰

3.229 Nor, it should be emphasised, did Claire have the “*h/o epileptic seizures since 10 months of age*” as stated. Dr Squier was concerned with the comment that Claire had “*iatrogenic epilepsy since 10 months*”⁴⁷¹ as there was no evidence that she suffered any convulsions after the age of four (and her convulsions began at six months, not ten).⁴⁷² In addition, obvious error appears in the autopsy report revealing how little attention can have been paid to Claire’s medical chart. For example, the dates of admission and time of death are both incorrectly stated⁴⁷³ and no reference is made to Claire’s medication with midazolam.

⁴⁶⁶ WS-253-1 p.19

⁴⁶⁷ 091-003-004

⁴⁶⁸ WS-253-1 p.3

⁴⁶⁹ WS-253-1 p.3

⁴⁷⁰ 091-003-004 & 091-005-016

⁴⁷¹ 091-005-016

⁴⁷² 090-015-026

⁴⁷³ 090-022-050 to 061

- 3.230 Given that the autopsy was performed, in Dr Herron's words - "*to address the presence or absence of status epilepticus and encephalitis*"⁴⁷⁴ the erroneous introduction of an incorrect clinical history of diarrhoea and epilepsy is of concern. There can have been no check of the medical records against the 'Autopsy Report Form' and no discussion with the clinicians. It must be the responsibility of pathologists to gain familiarity with the case, satisfy themselves as to the information supplied and to seek assistance if necessary. Further, it should be the duty of the person preparing the report to sign it in order to confirm finality and authorship.⁴⁷⁵
- 3.231 The important part of the report is headed "*comment*" and states "*In summary, the features here are those of cerebral oedema with neuronal migrational defect and a low grade subacute meningoencephalitis [sic]. No other discrete lesion has been identified to explain epileptic seizures. The reaction in the meninges and cortex is suggestive of a viral aetiology, though some viral studies were negative during life and on post-mortem CSF. With the clinical history of diarrhoea and vomiting, this is a possibility though a metabolic cause cannot be entirely excluded. As this was a brain only autopsy, it is not possible to comment on other systemic pathology in the general organs. No other structural lesion in the brain like corpus callosal or other malformations were identified.*"⁴⁷⁶
- 3.232 In the absence of any meaningful discussion between pathologist and clinician, the reference to "*low grade subacute menin[g]oencephalitis*" is susceptible to misinterpretation. Drs Herron and Mirakhur were clear in their evidence that even on their interpretation of the results; they could not say that Claire had encephalitis, much less that it contributed to her death.⁴⁷⁷ The Inquiry experts queried whether there was any evidence of encephalitis at all and are firm in their view that it definitely did not contribute

⁴⁷⁴ WS-224-1 p.7

⁴⁷⁵ 236-007-056

⁴⁷⁶ 090-003-005

⁴⁷⁷ Dr Mirakhur T-30-11-12 p.138 line 18 & Dr Heron T-29-11-12 p.146 line 3

to death. Professor Lucas's interpretation of "*low grade*" was that it meant that it was not at all clear that encephalitis was present in Claire's brain.⁴⁷⁸

3.233 The question has arisen as to whether Drs Herron and Mirakhur drafted their autopsy report to obscure rather than inform. It would appear that:

- (i) They introduced erroneous clinical information into their Report suggesting a possible viral aetiology.
- (ii) They produced a potentially misleading conclusion by way of comment suggestive of encephalitis.
- (iii) They do not appear to have carried out the usual tests for the diagnosis of encephalitis.
- (iv) They did not attempt to explain the causation of the cerebral oedema or to have sought specialist opinion in that regard.
- (v) They do not appear to have read the medical chart or taken any steps to satisfy themselves as to the information they were given.
- (vi) They do not appear to have asked for discussion or clarification at any time to ensure that a full and accurate account had been obtained.
- (vii) They failed to take any steps to review the case with the clinicians in the light of their examination.
- (viii) They were slow to produce the Report, denying it the topicality which might have made audit more likely.
- (ix) They failed to sign the Report.
- (x) They experienced difficulty in attributing authorship of the report as and between themselves.

⁴⁷⁸ 239-002-012

- (xi) They failed to send a copy of the Report to the family GP.
- (xii) Notwithstanding their uncertainty as to the cause of an unexpected child death, they did not refer the matter to the Coroner.

3.234 Whilst their report does not compare favourably with that produced by Dr Armour⁴⁷⁹ in Adam Strain's rather more complex case, it must be acknowledged that none of the Experts doubted their motivation. Whilst mild criticism was expressed about shortcomings in the autopsy report, Professor Lucas considered that the report broadly followed the 1993 Royal College of Pathologists Guidelines for Post-Mortem Reports.⁴⁸⁰ He did however; identify the lack of clinico-pathological correlation as a major shortcoming and the one which would have allowed the further discussion and review which was so very necessary.

Clinico-pathological discussion and audit presentation

3.235 All the pathology witnesses agreed that after the preparation of a preliminary report, it is important for the pathologist and the clinicians to meet, especially in a case such as Claire's where only limited insight has been gained into the cause of death.⁴⁸¹ Unless and until there is such a meeting, it is unlikely that there can be any satisfactory explanation as to causation such as might be given the parents.

3.236 The consensus of expert opinion was, that at that time and on the basis of what was known and the low sodium reading, the only conclusion that could have been reached with any confidence was that Claire had suffered hyponatraemia and that had caused her cerebral oedema. Beyond that there was no clear explanation as to the cause of death, save to say that it was not encephalitis. Nor could the pathologists confirm that the cause was SIADH, although that was a plausible cause of the hyponatraemia.

⁴⁷⁹ 303-001-001

⁴⁸⁰ 306-072-001

⁴⁸¹ Dr Herron T-29-11-12 p.17 line 2 & Dr Mirakhur T-30-11-12 p.44 line 7

Professor Harding also believed that one could suggest some form of encephalopathy but not much more.⁴⁸²

3.237 In such circumstances, it is striking that the clinicians do not appear to have made any response whatsoever in follow-up to the autopsy report. I was told that the report was sent to both Drs Steen and Webb but neither pathologist could remember any contact from these doctors afterwards. What happened instead was that Dr Steen wrote to the family GP and Dr Webb wrote to Mr and Mrs Roberts. The autopsy report was sent to neither.

3.238 In this context it should be stated that Dr McKaigue recalled Dr Steen presenting Claire's case for discussion at an audit meeting but could not remember any lessons being learned. Nor could he recall who was there or whether the autopsy report was available.⁴⁸³ Whilst this may be accurate, it may also be quite mistaken because Drs O'Hare,⁴⁸⁴ Webb,⁴⁸⁵ Sands,⁴⁸⁶ and Bartholome⁴⁸⁷ could not remember and Dr Steen could not help on the issue.⁴⁸⁸ If such a meeting was held, it cannot possibly have been with either Dr Mirakhur or Dr Herron in attendance, because either of them could have corrected the impression given by their autopsy report that encephalitis had contributed to Claire's death. If Dr Steen did make an audit presentation and nothing was learned, one has to question the value of such a meeting. There is no other evidence that Claire's case was subject to audit or review and correspondence from the Directorate of Legal Services ('DLS') suggests that no such meeting took place.⁴⁸⁹

3.239 I can only conclude that these responses to Claire's death reveal, even on the most charitable interpretation, a want of curiosity about why Claire died

⁴⁸² Professor Harding T-05-12-12 p.167 line 8

⁴⁸³ Dr McKaigue T-12-12-12 p.40 line 4

⁴⁸⁴ Dr O'Hare T-18-10-12 p.184 line 19

⁴⁸⁵ Dr Webb T-03-12-12 p.273 line 23

⁴⁸⁶ Dr Sands T-18-12-12 p.151 line 1

⁴⁸⁷ Dr Bartholome T-18-10-12 p.97 line 23

⁴⁸⁸ Dr Steen T-17-12-12 p.15 line 4

⁴⁸⁹ 302-075b-001. Dr McKaigue's claim echoes his "*vague memory that Dr Hanrahan presented Lucy Crawford's case at an audit meeting*" (WS-302-3 p.3) which proved unfounded. (Dr Hanrahan T-05-06-13 p.225 line 13 *et seq*)

and a lack of determination to identify the cause of her death and discover if things could be improved for the future.

Correspondence relating to autopsy report

3.240 Dr Steen wrote on 6th March 1997 to the Roberts family GP as follows:

*“Claire’s post-mortem results are now available. The cerebral tissue showed abnormal neuronal migration, a problem which occurs usually during the second trimester of pregnancy and would explain Claire’s learning difficulties. Other changes were [sic] in keeping with a viral encephalomyelitis meningitis. Doctor Webb and myself have since seen Claire’s parents and discussed the post-mortem findings with them. They are obviously both finding this an extremely difficult and traumatic time but do not want any further professional counselling at present, however they know our doors [are] open and we will be happy to see them if they want to discuss things further with ourselves. Mr Roberts wanted a short summary of the post-mortem report which Dr Webb will send to him shortly. If there are any concerns at all please do not hesitate to contact us.”*⁴⁹⁰

3.241 Dr Webb wrote on 21st March 1997 to Mr and Mrs Roberts as follows:

*“My sincere condolences after the loss of your daughter Claire. In summary the findings were of swelling of the brain with evidence of a developmental brain abnormality (neuronal migration defect) and a low grade infection (meningoencephalitis). The reaction in the covering of the brain (meninges) and the brain itself (cortex) is suggestive of a viral cause. The clinical history of diarrhoea and vomiting would be in keeping with that. As this was a brain only autopsy it is not possible to comment on other abnormalities in the general organs. No other structural abnormality in the brain has been identified.”*⁴⁹¹

⁴⁹⁰ 090-002-002

⁴⁹¹ 090-001-001

3.242 Both letters suggest that Claire's death was caused by encephalitis. Such a suggestion is a misleading interpretation of the autopsy report and on the evidence before me is clearly wrong. Any discussion between the doctors and the pathologists would have confirmed that. Furthermore, status epilepticus, which is the only entry apart from cerebral oedema on the death certificate issued by Dr Steen, is entirely omitted from these explanations given to the family and their GP. This suggests that, rather than add their clinical expertise and assessment to the information provided by the pathologists, Drs Steen and Webb decided to abandon their previous analysis in order to rely solely on a highly suspect interpretation of the post-mortem report. Their letters make absolutely no reference to hyponatraemia nor how it may have played a part in Claire's death. In addition, for Drs Steen and Webb to so pointedly omit all reference to those expressions of uncertainty contained in the autopsy report suggests that they were keenly aware of those issues. Again, this was an opportunity to report Claire's death to the Coroner and for that very reason. Again, these doctors failed in their duty.

Meeting with Mr and Mrs Roberts

3.243 Drs Steen and Webb met Mr and Mrs Roberts in March 1997 after the autopsy report had been released. The report was not shared with them. Mr Roberts recalled being told that Claire's death had been caused by a virus but that it could not be said which.⁴⁹² Mrs Roberts recalls leaving the meeting deflated because they still knew so little and could not understand how a virus could have taken Claire so quickly.⁴⁹³ It was, however, a source of comfort to her and her husband that Dr Steen had said that everything possible had been done for Claire.⁴⁹⁴ That was false comfort. No one could possibly look at what happened and say that everything possible had been done.

⁴⁹² WS-253-1 p.17

⁴⁹³ Mr and Mrs Roberts T-13-12-12 p.86

⁴⁹⁴ WS-253-1 p.17

3.244 If Claire's parents are correct, they were not properly informed as to the cause of death, the autopsy report was misrepresented and information about hyponatraemia was withheld. There was no record made of the meeting and Dr Steen cannot remember what was said but has stated "*I think the low sodium was mentioned to Claire's family. We didn't use the word 'hyponatraemia' and we don't particularly now.*"⁴⁹⁵ I prefer the account given by Mr and Mrs Roberts because it appears consistent with the letters written by Dr Steen and Dr Webb. Mr and Mrs Roberts were denied that which was their right, namely basic information about the reasons for their daughter's death. Dr Steen and Dr Webb failed in their duty to inform.

Dr Steen

3.245 The evidence relating to the procedural steps taken after Claire's death by the doctors in the hospital reveals how Dr Steen in particular appeared to take the lead at each stage. She acted without apparent interference from colleagues or management control. That a lone doctor was able to administratively process an unexpected and problematic death without supervision or second opinion and so shield it from proper inquiry must be a matter for concern.

3.246 Dr Steen was able to:

- (i) Decide against referring Claire's death to the Coroner and to enter this decision in the 'Diagnosis of Brain Death' form without the formal collaboration of Dr Webb, her co-signatory, or opposition from Drs Webb, McKaigue or Taylor.⁴⁹⁶
- (ii) Enter a cause of death in the 'Medical Certificate of Cause of Death' without reference to hyponatraemia, which was a known and probable factor in the death and to cite instead the unproven status epilepticus.

⁴⁹⁵ Dr Steen T-17-10-12 p.122 line 22

⁴⁹⁶ 090-045-148

- (iii) Inform Mr and Mrs Roberts that a virus was the likely cause of Claire's brain swelling, without reference to hyponatraemia or the other matters, which might properly have described the problems in treatment.⁴⁹⁷
- (iv) Complete the 'Autopsy Request Form' so as to communicate an incorrect history of illness, give emphasis to an inaccurate background of viral infection, minimise the period of hospitalisation, omit reference to the overdose of midazolam and fail to list the known hyponatraemia as one of the four main clinical problems.⁴⁹⁸
- (v) Fail to make any report of the death or the circumstances of death to the paediatric clinical lead, the medical director, the director of nursing or any other governance representative of the Trust.
- (vi) Fail to liaise with the pathologists in relation to the autopsy report, whether to correct known error or to clarify opinion.
- (vii) Fail to investigate, review or, in all probability, present or discuss Claire's case at a mortality meeting, grand round or other opportunity.
- (viii) Fail to review her decision not to refer to the Coroner in the light of the autopsy report and the continuing lack of certainty in relation to cause of death.
- (ix) Meet with Mr and Mrs Roberts (with Dr Webb) and fail to explain the true import of the autopsy report and to once again propose a viral cause for death.⁴⁹⁹
- (x) Write to Mr and Mrs Roberts in similar terms so as to mislead and yet again deny them the information to which they were entitled.⁵⁰⁰

⁴⁹⁷ WS-253-1 p.15

⁴⁹⁸ 090-054-183 to 184

⁴⁹⁹ WS-253-1 p.17

⁵⁰⁰ 090-004-006

- (xi) Fail to keep any note or record detailing what was said to Mr and Mrs Roberts.

- 3.247 Such singular response to Claire's death is very hard to explain on any other basis than that Dr Steen set out to conceal what she knew about the likely cause of Claire's death.
- 3.248 To that extent, I am persuaded that a 'cover up' was attempted by Dr Steen and to the extent indicated above, by Dr Webb. However, I do not consider that the Trust was complicit in any such attempt. Indeed, it is to be noted that Claire's discharge from PICU was documented as being a death from, amongst other causes, hyponatraemia. That was communicated within days to Claire's own family GP. Her condition, correctly diagnosed as including hyponatraemia, was clinically coded and recorded by the Trust and made available for reference and research. None of the directors of the Trust had any knowledge of her death. Such circumstances cannot be said to reflect a 'cover up' by the Trust.

Events in 2004

Mr and Mrs Roberts seek a meeting

- 3.249 In 2004, the UTV documentary rekindled Mr and Mrs Roberts' anguish and their memories of events in the Children's Hospital. They watched the programme on 21st October. It focussed on hyponatraemia and the deaths of Adam, Lucy and Raychel. They were prompted to ring the Children's Hospital the next day. They received a return call from Dr Nicola Rooney⁵⁰¹ with whom they met on 25th October.
- 3.250 Dr (now Professor) Rooney is a clinical psychologist who was, in 2004, the Psychology Service Manager in the Royal Group of Hospitals. It had been decided in advance of the broadcast that she would take the lead in responding to any enquiries generated by the programme. This was a helpful and well-conceived plan. It ensured that families who made contact

⁵⁰¹ 310-023-003

had an experienced and senior professional available to them. She, in turn, had the standing within the Trust to help families gain the information they needed. She also had significant experience in working with bereaved parents.⁵⁰²

3.251 Dr Rooney made a note of their meeting on 25th October which, it has been agreed, is accurate.⁵⁰³ It records that Mr and Mrs Roberts outlined the circumstances of Claire's admission to the hospital and her death. Dr Rooney was struck by their description of how they had gone home on the Tuesday evening, thinking that Claire's worst day was over, only to receive the completely unexpected call from the hospital at about 03:30 on Wednesday morning.⁵⁰⁴

3.252 She said, "*alarm bells rang for me when they said that they had left*" because she recognised that Mr and Mrs Roberts were not parents who would have left their daughter had they known how serious her condition was.⁵⁰⁵

3.253 Dr Rooney's plan to follow up on the meeting was set out in her contemporaneous note:

"? Deterioration - ? Misdiagnosed

? Role of fluid management in her deterioration

Action: I will order Medical Notes✓

Discuss with M.McBride and H.Steen✓

Do PT journey✓

? Fluid mgt

*Will liaise with Mr & Mrs Roberts."*⁵⁰⁶

⁵⁰² WS-177-1 p.5

⁵⁰³ WS-177-1 p.14-17

⁵⁰⁴ Dr Rooney T-13-12-12 p.15 line 21

⁵⁰⁵ Dr Rooney T-13-12-12 p.15 line 21

⁵⁰⁶ WS-177-1 p.17

Involvement of Professor Young

- 3.254 Dr Rooney proceeded to brief Dr Michael McBride,⁵⁰⁷ the Medical Director.⁵⁰⁸ He in turn emailed Dr Steen and asked her to review the notes with the proviso that *“If there is any reason to suggest that fluid and electrolyte management may have been a factor in this case, then I would suggest that you ask Peter Crean as the Clinical Governance Lead, Prof Ian Young, Elaine and Brenda Creaney to carry out a case note review to determine whether this case needs to be referred to the Coroner.”*⁵⁰⁹
- 3.255 Dr McBride’s suggestion that a multi-disciplinary group perform a case note review was both sensible and timely. In the event, it seems Dr Steen did not involve those individuals but enlisted Dr Sands to assist. Dr McBride did not pursue his proposal for more formalised review but requested that Professor Ian Young,⁵¹⁰ Consultant in Clinical Biochemistry,⁵¹¹ review the records and advise as to whether hyponatraemia and fluid balance could have played a part in Claire’s death.⁵¹² Professor Young held joint appointments as an academic at Queen’s University, Belfast and as a clinician with the Royal Group of Hospitals Trust (‘RGHT’). He was eminently well-qualified to advise on this issue having significant expertise in hyponatraemia.
- 3.256 An issue arose about Professor Young’s independence because he was described to Mr and Mrs Roberts as being independent of the Trust. That was not correct in the sense that a person who is employed by a Trust cannot be regarded as being independent of that Trust. However, Professor Young was independent in the sense that he had no engagement with the Children’s Hospital, had not been involved in Claire’s care and had no previous involvement with the clinical team.

⁵⁰⁷ 310-023-004

⁵⁰⁸ WS-177-1 p.54

⁵⁰⁹ WS-177-1 p.54

⁵¹⁰ 310-023-003

⁵¹¹ Also known as Chemical Pathology

⁵¹² Professor Young T-10-12-12 p.63 line 10

- 3.257 More importantly, he demonstrated his independence at that stage by advising Dr McBride that hyponatraemia may have made a significant contribution to Claire's death.⁵¹³ He said that it did not take him long, maybe not even an hour, to reach this conclusion having reviewed the notes.⁵¹⁴
- 3.258 On 6th December 2004, there was an 08:30 meeting between Dr McBride, Professor Young and Dr Rooney to discuss the role of fluid management in Claire's death.⁵¹⁵ By that stage, Dr McBride had read Claire's medical records.⁵¹⁶ Later, at 14:00, Professor Young and Dr Rooney met Dr Steen. Professor Young gave Dr Steen his opinion. He reported that her views on fluid management were rather different to his and that she would only acknowledge as a possibility the relevance of hyponatraemia. She maintained that status epilepticus and viral encephalitis were more likely to have been the significant causes.⁵¹⁷ At that point, the only option was to finally notify the Coroner of Claire's death. That step was however, delayed until they could speak with Mr and Mrs Roberts.

Meeting with Mr and Mrs Roberts

- 3.259 On 7th December, a meeting was arranged for Mr and Mrs Roberts with Drs Steen, Sands and Rooney, and Professor Young. I make the following points about that meeting:
- (i) Professor Young said that he would have preferred to have met the Roberts family alone. That was because his role was limited to the issues of fluid management and the question of whether hyponatraemia was a factor in Claire's death. He was to have no input into discussions about Claire's "*clinical journey*."⁵¹⁸
 - (ii) It appears that a view was taken, that on balance, it might be better for Claire's parents to have a single stressful meeting with Professor

⁵¹³ 089-005-010

⁵¹⁴ Professor Young T-10-12-12 p.59 line 11

⁵¹⁵ WS-269-1 p.20

⁵¹⁶ 302-007-002

⁵¹⁷ Professor Young T-10-12-12 p.74 line 2

⁵¹⁸ 139-153-001

Young and the treating clinicians rather than separate stressful meetings.⁵¹⁹ I accept the legitimacy of that view.

- (iii) There is no reference in the minute of the meeting to the drug overdoses or the content of the medical record or autopsy report.⁵²⁰ Nor was any reference made to the inconsistency between Dr Steen's 'Medical Certificate of Cause of Death' citing status epilepticus and the letters from Drs Steen and Webb suggesting a viral cause for the death.
- (iv) There was no governance representation by or on behalf of Dr McBride or Dr Peter Crean,⁵²¹ the Clinical Governance Lead.

3.260 However, my main concern about the meeting is that there was no acknowledgement of any of the very many failings in care. In advance of the meeting, Dr Steen had taken time to prepare a document detailing Claire's treatment. That suggests that she had reviewed Claire's case and looked at it afresh. Any analysis of Claire's treatment would have revealed that she was not seen by a doctor between 23:30 on 22nd October and 03:00 on 23rd October. That was not mentioned to Mr and Mrs Roberts on 7th December 2004 any more than it was mentioned to them on 23rd October 1996. Moreover, whilst Dr Steen was able to tell this Inquiry that "*the minute we looked back at the case in 2004, in light of what we knew by 2004, it became very obvious that fluid mismanagement was a contributory factor to her underlying condition,*"⁵²² there was no acknowledgment at the meeting that Claire should have had a repeat blood test on the morning of 23rd October, even though Professor Young was already of the opinion that the "*monitoring of serum electrolytes did not occur with sufficient frequency given the severity of Claire's clinical condition.*"⁵²³ Dr Steen persisted with her explanation that "*viruses known as enterovirus can enter the body via*

⁵¹⁹ Professor Young T-10-12-12 p.71 line 15

⁵²⁰ 089-002-002

⁵²¹ 310-023-002

⁵²² Dr Steen T-17-10-12 p.143 line 15

⁵²³ WS-178-1 p.6

the stomach and then cause swelling of the brain."⁵²⁴ Furthermore, it was not even conceded (as queried by Claire's parents) that they should have been alerted to the seriousness of her condition before they left the hospital on Tuesday night. There are more examples but they all illustrate a lack of openness, especially on the part of Dr Steen.

3.261 That this was a very serious breach of duty and good faith becomes even more obvious when one considers that at that point Claire's death was about to be referred to the Coroner and Mr and Mrs Roberts had already indicated that they wished it referred to this Inquiry (which had been started some weeks before).

3.262 The Roberts' response to the meeting was a request for more information and answers to 10 specific questions.⁵²⁵ Their queries included issues such as:

- (i) The identity of the doctor co-ordinating Claire's treatment after 23:00.
- (ii) Why Claire's death was not reported to the Coroner.
- (iii) Why they were not told how ill Claire was.

They also raised detailed queries about fluid management, which showed how alert they were to this aspect of care. (In his evidence, Professor Young commented that when he saw this list he was amazed at how much they had taken in at the meeting).⁵²⁶ Their letter confirmed that they wished both the Coroner and this Inquiry to investigate Claire's death.

3.263 Formal notification of Claire's death was made to the Coroner on 16th December 2004.⁵²⁷ On 17th December 2004, Dr McBride wrote to Mr and Mrs Roberts "*Our medical case note review has suggested that there may have been a care management problem in relation to hyponatraemia and this may have significantly contributed to Claire's deterioration and*

⁵²⁴ WS-177-1 p.59

⁵²⁵ 089-003-006 to 007

⁵²⁶ Professor Young T-10-12-12 p.103 line 25

⁵²⁷ 140-074-001

death."⁵²⁸ (In this context "*care management problem*" is defined as "*actions or omissions by staff in the process of care.*")⁵²⁹

3.264 Dr Rooney then circulated the questions posed by Mr and Mrs Roberts to Professor Young, Mr Peter Walby⁵³⁰ of the Trust Litigation Office and Drs Steen, Sands and McBride.⁵³¹ On 12th January 2005, the Trust wrote to make its formal response to Mr and Mrs Roberts.⁵³² Although the letter was issued in Dr Rooney's name, it must largely have been the work of Dr Steen with contributions from Professor Young.⁵³³ Unfortunately, some of the content is highly questionable:

- (i) It states that the death was not referred to the Coroner in 1994 because the death was believed to be from viral encephalitis whereas in fact the death certificate issued cited cerebral oedema secondary to status epilepticus.
- (ii) It wrongly claims that a diagnosis of encephalitis was confirmed at post-mortem.
- (iii) It asserts that Dr Bartholome co-ordinated Claire's treatment after 23:00 whereas she did not actually attend upon her until 03:00 by which time it was too late.
- (iv) It ignores other matters completely e.g. it simply did not address the question as to why Mr and Mrs Roberts had not been told how ill Claire was on the Tuesday evening in consequence of which they left her.

3.265 The letter was inaccurate, evasive and unreliable. To make matters worse, it was not only sent to Mr and Mrs Roberts but was also forwarded to the Coroner⁵³⁴ who must have assumed that it represented the Trust's

⁵²⁸ 089-005-010

⁵²⁹ WS-061-1 p.4

⁵³⁰ 310-023-003

⁵³¹ WS-177-1 p.45

⁵³² 089-006-012

⁵³³ 139-139-001

⁵³⁴ 090-048-152

considered assessment of the issues he was to investigate. Whilst Dr Rooney was well qualified to liaise with the Roberts family, she was not at all qualified to sign the 12th January letter. It should have been the work of an informed clinician. In this context, Dr Steen had responsibility in relation to the 'care management problem' and could not therefore have been the author of the letter, Professor Young was supposed to be independent of the hospital and it would have been inappropriate for the letter to come from the Litigation Management Office. Accordingly, more thought should have been given to the identity of the hospital representative taking responsibility for the content of this important letter and indeed, because of his personal involvement and earlier correspondence, Dr McBride should have signed the letter himself.

Other Trust responses

3.266 I think it relevant to make the following further observations about what was and what was not done in the Trust in 2004/5:

- (i) The initial responses of Dr McBride and Dr Rooney were in my view, both appropriate and effective for handling enquiries from the public. My criticism about what the family was told or not told is largely directed at Dr Steen. I am entirely satisfied that not only did she know more than she was prepared to disclose but that she actively misrepresented matters to the family.
- (ii) Furthermore, Dr Steen was permitted to make the initial case note review and influence the format of subsequent review, notwithstanding that Dr McBride recognised the possibility that the acts and omissions of clinicians contributed to Claire's death. His failure to insist upon his initial suggestion of multi-professional involvement was regrettable. The consequent case review, meeting with family, and letter of explanation were all undermined by a narrowness of focus and the views of Dr Steen. Had Dr McBride directed a broader review then Claire's parents might have received

better answers to their questions and the Coroner might have been more accurately informed as to the issues.

- (iii) DHSSPS guidance was available to Dr McBride in 'Reporting and Follow-Up on Serious Adverse Incidents', ⁵³⁵ which very clearly advised that *"In those situations where a body considers that an independent review is appropriate, it is important that those who will be conducting it are seen to be completely independent. In addition such reviews should normally be conducted by a multi-professional team, rather than by one individual. It is also important that the Department is made aware of the review at the outset."*⁵³⁶
- (iv) The question arises as to whether the Trust should have instigated its own belated review of what had happened by activating its recently introduced procedures for the investigation of adverse clinical incidents by root-cause analysis?⁵³⁷ In normal circumstances, the clear answer to this question would be yes. However, Mr and Mrs Roberts were anxious for this Inquiry to investigate Claire's death in the same way that it was intended it should investigate the deaths of other children. Dr McBride's evidence was that he decided against an adverse incident review within the Trust because of the likelihood of this Inquiry investigating Claire's case.⁵³⁸ Notwithstanding that he might otherwise have become better informed as to the issues, I do not think that it is fair to criticise that decision, any more than it is fair to criticise the Trust for a delay in formally reporting Claire's case to the Department when the Coroner and this Inquiry had already become involved.

Inquest preliminaries

3.267 Claire's inquest was held in May 2006. The Trust had 17 months from the date of referral to prepare for it. There are aspects of the preparation which

⁵³⁵ 314-009-001 - Circular HSS (PPM) 06/04

⁵³⁶ 314-009-004

⁵³⁷ 302-096-004

⁵³⁸ WS-061-2 p.422

concern me. Witness statements were gathered by Mr Walby who had become an associate medical director in the Litigation Management Office of the Trust in 1998 upon the retirement of Dr George Murnaghan. He was a consultant ENT surgeon who assumed the hospital litigation management work in addition to his full-time clinical duties. The witness statements obtained by him were intended to form the basis of the formal inquest depositions. They were transcribed by Mr Walby's office onto Police Service of Northern Ireland ('PSNI') pro-forma witness statement sheets and then forwarded to the Coroner. The impression thus given was that the PSNI had been involved in obtaining them. Not only had the Police not been involved but the Trust was actually opposed to the closer involvement of the police in hospital inquests.⁵³⁹ It is for the Coronial Service to decide how to take this issue forward but I note that in autumn 2003, a person described by HM Coroner Mr John Leckey as a senior detective had expressed concern about the very limited role of the police in the investigation of hospital deaths.⁵⁴⁰ I share that concern.

3.268 This leads to a second issue. One of the witness statements came from Dr Webb who was, at that time, working in Dublin. Dr Webb made the following concession in the statement he sent to Mr Walby: "*I made the mistake of not seeking an Intensive Care placement for Claire before I left the hospital on the evening of October 22nd ...*"⁵⁴¹ In response Mr Walby deleted that part of the statement which referred to the "*mistake*" and returned it to Dr Webb⁵⁴² with the suggestion that it should read as follows: "*Although I did not seek an intensive care placement for Claire before I left the hospital on the evening of October 22 ...*"⁵⁴³

3.269 Mr Walby's suggested alternate wording was accepted by Dr Webb and became part of his formal deposition which was transcribed onto police paper and presented to the Coroner, who did not see the original

⁵³⁹ 129-006-001

⁵⁴⁰ 129-007-001

⁵⁴¹ 139-098-021

⁵⁴² 139-096-001

⁵⁴³ 139-098-021

statement.⁵⁴⁴ Mr Walby explained that he advanced his alternative to Dr Webb (who did not have to accept it) because, in his opinion, a witness statement should be factual and should not contain opinion or comment.⁵⁴⁵ This appears to me to be a difficult position to adopt. Dr Webb was not just an incidental witness to the death – he was both expert and the consultant paediatric neurologist who had been involved in the failed care of Claire.

3.270 Mr Walby said furthermore that he thought Dr Webb was being too harsh on himself.⁵⁴⁶ I do not share that opinion and do not think it for Mr Walby to judge. Since part of the purpose of an inquest is to identify things which have gone wrong so as to prevent recurrence, the Coroner is positively helped if an expert clinician suggests that treatment might have been better had he acted differently. I conclude that Mr Walby's intervention on this occasion was intended more to protect the Trust than to assist Dr Webb. It could not be said to have assisted the Coroner.

3.271 Mr Walby also provided the means whereby misleading information was supplied to the Coroner, namely Dr Rooney's letter.⁵⁴⁷ In addition, he forwarded a copy of the autopsy report to the Coroner, which also contained factual error originating from Dr Steen.⁵⁴⁸ Notwithstanding that Dr McBride took the view that a "*care management problem*" may have been implicated in Claire's death and that Dr Steen did not agree with this, Dr Steen was permitted to influence the information submitted to the Coroner and to edit and indeed approve Mr Walby's correspondence with the Coroner.⁵⁴⁹

3.272 There was potential for conflict between Mr Walby's job requirement, to "*assist H.M. Coroner with enquiries and the preparation of statements prior to inquests*" and at the same time to "*give advice and support to staff involved in... Coroner's cases.*"⁵⁵⁰ Mr Walby was in the unusually influential position where he could decide whether some witnesses provided

⁵⁴⁴ 139-095-001

⁵⁴⁵ Mr Walby T-12-12-12 p.133 line 2

⁵⁴⁶ Mr Walby T-12-12-12 p.134 line 12

⁵⁴⁷ 090-048-152

⁵⁴⁸ 089-004-008

⁵⁴⁹ WS-176-1 p.4 & 090-049-152 & 139-148-001

⁵⁵⁰ WS-176-1 p.14

statements to the Coroner or not and furthermore where he could and did, edit, correct and partially redraft their statements.⁵⁵¹ He was so placed that he could protect the interests of the Trust at a time when his duty was first and foremost to assist the Coroner. The Trust should not have allowed the potential for such conflict to arise.

- 3.273 My general view on this issue was shared by the Coroner, Mr Leckey, who helpfully gave evidence. It was very clear from what he said, as it is from any analysis of the coronial process, that the public interest is protected if evidence is given frankly. He said that all clinical staff “*have to be totally transparent... not only for me exercising a judicial function, but for the bereaved family.*”⁵⁵² It is only in this way that a Coroner can properly analyse and understand a death such as Claire’s, help answer the questions of the bereaved and assist in the process of learning from experience. It is therefore a matter of critical importance that all proper assistance be given the Coroner with the utmost candour and that all hospital staff engaged in this process regard that as their paramount objective.

Inquest

- 3.274 Unfortunately, there is no formal transcript of the oral evidence given at inquest. However, such notes and minutes as do exist, strongly suggest that neither Professor Young, nor Drs Webb, Sands or Steen explained to the Coroner that Claire’s hyponatraemia was related to fluid or electrolyte mismanagement.⁵⁵³
- 3.275 The failure to repeat the initial blood test was an issue of mismanagement, which had to be addressed by the Trust. This was apparent during preparation for inquest. When the Litigation Management office sent witness statements to Professor Young (on 7th April 2006) for comment,⁵⁵⁴ he drew attention to what he termed “*substantial issues*” in Dr Webb’s

⁵⁵¹ 139-096-001 & 139-106-001

⁵⁵² Mr Leckey T-25-06-13 p.83 line 12

⁵⁵³ 140-043-007 & 097-012-110

⁵⁵⁴ 139-043-001

statement – namely his recognition that there had been a failure to take a routine electrolyte sample on the morning after admission and that it was indeed the hyponatraemia which had led to the cerebral oedema. Professor Young indicated that these issues “*could certainly become significant at the inquest*”⁵⁵⁵

3.276 In this connection, Dr Webb had specifically conceded in his statement to the Coroner that he had misunderstood the Monday night blood test as being a blood test from the Tuesday morning⁵⁵⁶ and that had he not so misunderstood it, he would have directed an urgent repeat blood test at about 14:00 on Tuesday. Professor Young agreed that this is indeed what should have been done⁵⁵⁷ and even Drs Steen and Sands were both to agree that the blood test should have been repeated long before Tuesday night.⁵⁵⁸

3.277 However, I find little evidence that Professor Young brought this matter to the attention of the Coroner. Instead and having agreed that Claire had the potential for electrolyte imbalance, he advised the Coroner that “*a blood sample every 24 hours would be good clinical practice.*”⁵⁵⁹

3.278 I consider that it was misleading to suggest to the Coroner that a blood sample once a day in such circumstances would have been good clinical practice.⁵⁶⁰ Notwithstanding the practice in other cases, it was not good clinical practice in the case of a child on low sodium intravenous fluids, with a neurological history, a low level of consciousness, a low sodium reading, an unknown fluid balance, and in circumstances where she was not responding to treatment.

3.279 Although Professor Young understood that his role was “*to assist on the key issues being drawn out at the Inquest.*”⁵⁶¹ there appear nonetheless to

⁵⁵⁵ 139-042-001

⁵⁵⁶ 139-098-020

⁵⁵⁷ Professor Young T-10-12-12 p.208 line 13

⁵⁵⁸ Dr Sands T-19-10-12 p.110 line 21 & Dr Steen T-17-12-12 p.11 line 5

⁵⁵⁹ 091-010-060

⁵⁶⁰ 140-043-007

⁵⁶¹ Professor Young T-10-12-12 p.205 line 25

be other examples where Professor Young failed to draw key issues to the attention of the Coroner. While the Medical Director, Dr McBride, informed Mr and Mrs Roberts that Professor Young's "*review has suggested that there may have been a care management problem in relation to hyponatraemia and that this may have significantly contributed to Claire's deterioration and death*"⁵⁶² Professor Young flatly denied contributing to this particular assertion⁵⁶³ and advised the Coroner that the death was not one which necessarily would have had to have been reported to the Coroner in 1996 because of a lack of awareness of hyponatraemia at that time.⁵⁶⁴ He told the inquest that he did not believe that there were lessons to be learned from Claire's case⁵⁶⁵ and gave further reassurance that Claire's fluid management was in keeping with the recommendations of 1996.⁵⁶⁶

- 3.280 In the light of this evidence,⁵⁶⁷ I am of the view that Professor Young shifted from his initial independent role advising Dr McBride to one of protecting the hospital and its doctors.

Inquest verdict

- 3.281 Claire's condition, diagnosis and treatment were not straightforward matters in October 1996. She had a history from earliest childhood of seizures and developmental delay. The cause of these has never been established. When she was admitted to hospital on 21st October her sodium level was only a little low at 132mmol/L. Hospital induced hyponatraemia from excessive administration of low sodium fluids was not the cause of that reading and as various experts, including Professor Neville pointed out, low sodium levels are a feature of neurological conditions.⁵⁶⁸ It was entirely reasonable for the admitting doctors to suspect status epilepticus and/or an encephalopathy such as encephalitis. The expert view was that these were perfectly rational differential diagnoses.

⁵⁶² 139-145-001

⁵⁶³ 097-012-113

⁵⁶⁴ 140-043-004 & 097-012-112

⁵⁶⁵ 097-012-112 & 140-045-004

⁵⁶⁶ 097-012-113

⁵⁶⁷ 140-043-003 *et seq*, 097-012-111 *et seq* & 091-010-060 *et seq*

⁵⁶⁸ Professor Neville T- 01-11-12 p.163

However, on the basis of the very much fuller evidence now available, I conclude that the only definite, known and proven causes of Claire's death were cerebral oedema due to hyponatraemia.

3.282 The inquest finding as to the cause of death was made in the following terms:

"1 (a) Cerebral oedema

Due to

*(b) meningo-encephalitis, hyponatraemia due to excess ADH production and status epilepticus."*⁵⁶⁹

On the evidence before me, I believe that finding is wrong.

3.283 It is certainly possible, if not probable, that Claire suffered from some form of encephalopathy but it does not appear to have been encephalitis and that cause of death cannot be advanced any further. It is noted that the Coroner's final formulation does not refer to encephalopathy but rather to meningoencephalitis. It is also possible that she suffered from status epilepticus but that likewise remains unproven.

3.284 In reaching this view, I have taken into consideration the evidence which the Coroner received from two additional experts; Dr Robert Bingham, Consultant Paediatric Anaesthetist at the Hospital for Sick Children, Great Ormond Street, London,⁵⁷⁰ and Dr Ian Maconochie, Consultant in Paediatric A&E medicine at St Mary's Hospital, London.⁵⁷¹ They both agreed to frame Claire's death in the following terms:

"I (a) cerebral oedema

(b) encephalitis/encephalopathy and hyponatraemia...

*II status epilepticus."*⁵⁷²

⁵⁶⁹ 091-002-002

⁵⁷⁰ 091-006-023

⁵⁷¹ 139-090-001

⁵⁷² 091-007-028

3.285 However, analysis of their evidence to the Coroner reveals uncertainty about what happened. It indicates that they were attempting to explain what might have happened as opposed to stating what was known to have happened. I understand that it is not so unusual for autopsies or inquests to end with only partial identification of the cause of death. This may be unwelcome and unsettling for the family, and that is unfortunate, but in Claire's case nothing further can be confirmed.

Internal response to inquest verdict

3.286 A further disturbing feature of this matter is that even after the inquest was completed and the Coroner had delivered his verdict and circulated his written finding, Mr Walby appeared keen to emphasise that there had been no criticism of the Trust's care of Claire. In an e-mail of 5th May 2006, he wrote:

*"This inquest ended on 4 May 2006 with no criticism of the Trust's care of this patient."*⁵⁷³

On 16th June 2006, he wrote to the Trust's then solicitor to state:

*"Evidence given at the inquest was not critical of the fluid management."*⁵⁷⁴

3.287 I do not believe that all of the many mistakes revealed to this Inquiry could possibly have come as a surprise to Drs Steen, Webb or Sands at the time of the inquest. Against such a background, Mr Walby's comments about the absence of criticism have a jarring note of satisfaction when he should have been deeply troubled by what had happened. Indeed, by that time he had already decided that the electrolyte management had been so mishandled that he would have to try to settle any claim brought against the Trust in negligence.⁵⁷⁵ He appears to have been more concerned with the interests and reputation of the Trust than with the lessons to be learned.

⁵⁷³ 139-163-001

⁵⁷⁴ 140-013-001

⁵⁷⁵ Mr Walby T-11-12-12 p.168 line 7

Governance: reporting Claire's death within the Trust

- 3.288 Dr Elaine Hicks⁵⁷⁶ had been appointed Paediatric Clinical Lead in the Children's Hospital on 1st October 1996.⁵⁷⁷ Her evidence was that she was not informed about Claire's death in 1996.⁵⁷⁸ Nor was the death reported to the Director of Nursing⁵⁷⁹ Miss Elizabeth Duffin⁵⁸⁰ or to the Director of Medical Administration Dr George Murnaghan, who then had charge of risk management.⁵⁸¹ Dr Ian Carson,⁵⁸² who was the Medical Director of the Trust in 1996, was similarly unaware of Claire's death.⁵⁸³ In his evidence to the Inquiry, he agreed that there was "*sufficient happening in Claire's case*"⁵⁸⁴ to mean that it should have been brought to the attention of the clinical director as a starting point. He agreed that the system "*did not do justice to Claire*"⁵⁸⁵ and that "*more could have been done and more should have been done.*"⁵⁸⁶ If it is correct, as I believe it to be, that few children die in the Children's Hospital, apart from those with terminal conditions, the failure to report Claire's death to Dr Hicks in particular, is impossible to comprehend unless there was a recognition that mistakes had been made and attention should not be drawn to them.
- 3.289 I am compelled to the view that clinicians did not admit to error for the obvious reasons of self-protection and that this defensiveness amounted to concealment and deceit. Such can have no place in the Health Service but appear nonetheless to have become established in this the regional paediatric training hospital.
- 3.290 The failure to report repeats in part what happened in Adam's case. The Director of Medical Administration, Dr Murnaghan, was aware of Adam's case and of the Coroner's damning conclusion delivered only months

⁵⁷⁶ 310-023-005

⁵⁷⁷ WS-264-1 p.2

⁵⁷⁸ Dr Hicks T-11-12-12 p.53 line 16

⁵⁷⁹ WS-265-1 p.3

⁵⁸⁰ 310-023-004

⁵⁸¹ WS-273-1 p.3

⁵⁸² 310-023-004

⁵⁸³ WS-270-1 p.3

⁵⁸⁴ Dr Carson T-15-01-13 p.151 line 67

⁵⁸⁵ Dr Carson T-15-01-13 p.151 line 15

⁵⁸⁶ Dr Carson T-16-01-13 p.11 line 23

before. Just as he took no steps to extract lessons from Adam's death, he took no steps to ensure that subsequent unexpected and unexplained deaths in the Children's Hospital were reported within the Trust.

- 3.291 Mr William McKee,⁵⁸⁷ who was, at the relevant time the Chief Executive of the Trust, acknowledged failings in Claire's case.⁵⁸⁸ Notwithstanding that he was unable to describe the duty of a clinician to report the sudden and unexpected death of a child patient at that time; he believed *"that it should have gone up the chain as far as the Medical Director."*⁵⁸⁹ He confirmed that no notification of her death was made to him but said that this did not surprise *"because of the predominance of clinical independence justified through the heavy, or almost entire, reliance on professional self-regulation. That was the dominant paramount culture at the time."*⁵⁹⁰
- 3.292 However, it appears that Mr McKee did little to lead clinicians away from their paramount culture of self-regulation, even so far as to ensure reporting to the Medical Director, or to encourage their acceptance of the structures of accountability around which the Trust purported to operate. In Claire's case, the clinicians were left to determine amongst themselves whether there had been mismanagement and if so, what they might do about it. In practical terms the lack of effective risk management controls meant that the Trust Board did not know what was happening in the Children's Hospital and had accordingly no effective means of satisfying itself that its patients were safe. I find that this was a failure in both leadership and governance.
- 3.293 The inclination not to draw attention to the shortcomings in Claire's case was encouraged by underdeveloped internal controls, poor leadership and the complicity of medical colleagues. This meant that lessons were not learned, poor standards were tolerated, the coronial system was undermined and grieving parents were misled.

⁵⁸⁷ 310-023-004

⁵⁸⁸ Mr McKee T-17-01-13 p.107 line 8

⁵⁸⁹ Mr McKee T-17-01-13 p.119 line 23

⁵⁹⁰ Mr McKee T-17-01-13 p.120 line 12

Adam Strain and Claire Roberts

- 3.294 Mr and Mrs Roberts were initially alerted to the possibility that Claire had been the victim of fluid mismanagement by the UTV investigative revelation of the similarities between the other deaths. Evidence has now revealed other similarities not then suspected.
- 3.295 Both Claire and Adam died in the same ward of the Children's Hospital within 11 months of each other. Some of the same doctors were on duty for each. Dr Taylor had involvement with both and Dr Webb carried out the final brain stem death tests. Trust risk management systems remained unchanged and the same individuals were responsible for 'governance' within the Trust.
- 3.296 Claire's admission to the hospital was only 4 months after Adam's inquest and at a time when the medical negligence claim relating to his treatment and death was ongoing. It might be supposed that Adam's death and the Coroner's very critical finding would have prompted reflection and debate about how to respond. Seemingly it did not. Even though the consultant paediatric anaesthetists now understood Professor Arieff's guidance and, possibly, as Dr Bartholome explained "*the events surrounding this inquest had been known to me and to most of the doctors in the Children's Hospital*"⁵⁹¹ there was no formal response by the doctors. Their inactivity went unnoticed by a Trust Board uninterested in learning from mistakes.
- 3.297 The failure of Drs Murnaghan and Carson to exploit the opportunity for learning, obvious from the tragic circumstances of Adam's death, had consequences not only for fluid therapy but also for the response of 'governance', which was allowed to repeat its earlier failings. In Claire's case, as in Adam's, there was significant failure to report, investigate or review. Those who should have been informed and involved were bypassed. Parents were not informed about the part played by sodium in the avoidable hospital deaths of their children. The performance of clinicians

⁵⁹¹ Dr Bartholome T-18-10-12 p.4 line 11

was not assessed, referrals were not made to the General Medical Council ('GMC') and patient safety was potentially jeopardised.

- 3.298 The question must be asked, how could hospital 'governance' within the Trust be so weak as to allow this to happen?

Governance 1995-96

- 3.299 It is to be emphasised that the failure of those doctors involved in the care of Claire and Adam to properly report, review or candidly advise the parents, was both individual and collective. Such basic aspects of professional practice were matters of common sense and well known to doctors. They were enshrined in the GMC code and the long-standing obligations of membership of professional bodies. The duty to refer a death to the Coroner was a matter of statute and the requirement to audit was often a contractual obligation.⁵⁹²
- 3.300 Professional guidelines at that time gave clear advice on many of the key areas of deficiency highlighted in Claire's case e.g. audit,⁵⁹³ record keeping,⁵⁹⁴ retention of medical records,⁵⁹⁵ communication between the clinician, nurse, parent, and pathologist,⁵⁹⁶ drug prescription checking,⁵⁹⁷ consultant responsibility, the organisation of cover for patients, inter-consultant handover arrangements and supervision of junior doctors,⁵⁹⁸ nursing accountability⁵⁹⁹ honesty in professional practice,⁶⁰⁰ reporting clinical performance jeopardising patient safety to employer or regulatory authority⁶⁰¹ etc. Similarly and at the time of Adam's case extant guidance

⁵⁹² WS-129-1 p.39

⁵⁹³ 314-001-004 'Good Medical Practice Guidelines for Doctors' General Medical Council, October 1995

⁵⁹⁴ 202-002-052 'Standards for Records and Record-Keeping' UKCC, April 1993

314-001-004 'Good Medical Practice Guidelines for Doctors' General Medical Council, October 1995

⁵⁹⁵ WS-251-1p.9 'Retention of Medical Records' Circular HSS (083) 1/83

⁵⁹⁶ 314-003-001 'Guidelines for Professional Practice' UKCC, 1996

314-001-006 'Good Medical Practice Guidelines for Doctors' General Medical Council, October 1995

239-002-014 'Guidelines for Post-Mortem Reports' Royal College of Pathologists, August 1993

⁵⁹⁷ 214-005-001 'Standards for the Administration of Medicines' UKCC, 1992

⁵⁹⁸ 314-001-001 *et seq* 'Good Medical Practice Guidelines for Doctors' General Medical Council, October 1995

⁵⁹⁹ 202-002-063 'Code of Professional Conduct' UKCC, June 1992

⁶⁰⁰ 314-001-012 'Good Medical Practice Guidelines for Doctors' General Medical Council, October 1995

⁶⁰¹ 314-001-009 'Good Medical Practice Guidelines for Doctors' General Medical Council, October 1995

was available to prompt the reporting⁶⁰² and investigation⁶⁰³ of his most unexpected death.

- 3.301 The failure to follow applicable guidance in Adam's case and in Claire's was a professional failure. Failure to regulate compliance with guidelines was a failure of both the clinician and the systems of internal control.

Weakness in systems of clinical risk management and internal control

- 3.302 The early 1990s was a period of significant restructuring of hospital management. A new beginning was intended and guidance became available promoting clinical risk management and quality control procedures to support the previously self-regulating clinician.⁶⁰⁴ Hospital governance was not therefore a new concept in 1996. However, it took longer for the Trust to engage with it than might have been expected and financial constraint slowed its introduction. Despite knowledge of what should be done⁶⁰⁵ and the introduction of formalised management structures, the development of functioning governance systems proved difficult. It was not seemingly a developed part of the control of services within the Children's Hospital at the time of Adam's admission. Although formal Trust publications and annual reports boasted of systems of governance control and quality assurance, the evidence before the Inquiry confirmed that the opposite was often the case.⁶⁰⁶ The Children's Hospital was subject to very weak governance control.

⁶⁰² 306-117-013

⁶⁰³ 314-016-010

⁶⁰⁴ E.g.

1989: 'Working for Patients: Medical Audit Working Paper 6' DoH (HMSO Cmd. 555)

1990: 'A Guide to Consent for Examination and Treatment' NHS Management Executive.

1991: 'Welfare of Children and Young People in Hospital' DoH (314-004-001)

1992: Northern Ireland- 'Charter for Patients and Clients' HPSS (306-085-001)

1993: 'Risk Management in the NHS' Manual (211-003-001)

1994: 'Allitt Inquiry' Report into Children's Ward at Grantham & Kesteven General Hospital NHS (210- 003-038)

1995: Northern Ireland 'Patient Consent Handbook' HPSS (306-058-002)

1996: 'Complaints. Listening... Acting...Improving - Guidance on Implementation of the HPSS Complaints Procedure' HPSS Executive (314-016-001)

⁶⁰⁵ Dr Carson T-15-01-13 p.126

⁶⁰⁶ Dr Murnaghan T-25-06-12 p.17-18 & Dr Murnaghan T-25-06-12 p.71 line 12

- 3.303 It is hard upon initial examination to understand how this could have been so, given that structures of responsibility and accountability were apparently in place, with governance committees and coordinators assigned to act within directorates led by clinical leads reporting to a medical director in turn accountable to the Trust Board and Chief Executive. The Board was committed to act within its 'Code of Conduct and Accountability'⁶⁰⁷ to *"provide active leadership of the organisation within a framework of prudent and effective controls to enable risk to be assessed and managed"* and its Chief Executive, Mr McKee was the principal accountable officer.
- 3.304 The Trust appeared outwardly confident at that time about its systems of quality control. The Royal Hospitals Annual Report 1993-1994 recorded the development of *"an effective organisational framework for medical audit which supports and encourages changes in clinical practice as a natural part of organisation-wide quality assurance."*⁶⁰⁸ The Trust mission statement proclaimed the *"fundamental purpose in the Royal Trusts [is] to provide the highest quality cost-effective healthcare... through exceptional service to our patients..."*⁶⁰⁹
- 3.305 The Trust even produced a Health and Safety Policy⁶¹⁰ in 1993 purporting to create a Medical Risk Management Group under the Chairmanship of the Medical Director. It was to have assumed specific responsibility for untoward incident reporting (clinical), clinical audit, complaints and medical negligence issues⁶¹¹ and to have been accountable to the Chief Executive and the Trust Board. Dr Murnaghan however, described the policy as *"aspirational."*⁶¹² In fact, the Group simply did not exist. Mr McKee wrote in his introduction to the policy that *"This Policy has my commitment and I expect all employees to give their commitment too."*⁶¹³ However, the evidence was that in this regard Mr McKee not only failed to give his

⁶⁰⁷ 210-003-009 and 'Codes of Conduct and Accountability' Circular HSS (PDD)8/1994, DHSS

⁶⁰⁸ WS-061-2 p.58

⁶⁰⁹ WS-061-2 p.26

⁶¹⁰ Approved by Hospital Council (WS-061-2 p.232)

⁶¹¹ WS-061-2 p.241

⁶¹² Dr Murnaghan T-25-06-12 p.71 line 12

⁶¹³ WS-061-2 p.235

commitment but failed also to encourage or ensure the commitment of others.

3.306 In 1995-96, the Trust made application to the Kings Fund Organisational Audit ('KFOA') for accreditation.⁶¹⁴ This allowed an opportunity to compare standards and systems with independent criteria. The Chief Executive personally oversaw the application⁶¹⁵ and the Director of Nursing personally managed it.⁶¹⁶ All concerned must thus have become familiar with the Kings Fund criteria, which covered a range of best practice from communication with patients and record keeping to adverse incident recording and audit.⁶¹⁷

3.307 The application to the Kings Fund did not succeed in 1995.⁶¹⁸ This does not surprise. Evidence was given that up-to-date governance guidance published in England was not felt to apply because it wasn't local,⁶¹⁹ the Northern Ireland patient consent guidance⁶²⁰ failed to 'cascade' to clinicians as directed,⁶²¹ the introduction of clinical guidelines in the Children's Hospital lagged behind that in England undermining attempts to audit by reason of a lack of agreed standards. There was no obligation to report adverse clinical incidents beyond choosing to make an entry in a book⁶²² and no mechanism to ensure serious matters were reported to the Medical Director or Chief Executive in line with extant recommendation.⁶²³ This was in a context where no obligation was felt by the newly created Trust to report any adverse clinical incident to the Department.⁶²⁴ The Trust Board dealt with administrative issues almost to the exclusion of patient matters. The Board minutes for November 1995 - December 1996 contain only two

⁶¹⁴ 305-001-001

⁶¹⁵ 305-008-560

⁶¹⁶ WS-061-2 p.8

⁶¹⁷ 211-003-024

⁶¹⁸ 305-001-001

⁶¹⁹ WS-061-2 p.7&14 & Mr McKee T-17-01-13 p.44 line 7 & p.51 line 5

⁶²⁰ 306-058-002

⁶²¹ Professor Savage - 18-04-12 p.65 to 66

⁶²² WS-061-2 p.168

⁶²³ 210-003-038: EL(94)16 'Report of the Independent Inquiry into Deaths on the Childrens' Ward at Grantham & Kesteven General Hospital' NHS Executive 1994 (the 'Allitt Inquiry') - *"There must be quick route to ensure that serious matters... are reported in writing to the Chief Executive of the hospital... NHS Trust Boards should take steps immediately to ensure such arrangements are in place."*

⁶²⁴ WS-061-1 p.2

references to specific clinical cases.⁶²⁵ Most disturbingly, the Chief Executive stated that he operated at that time on the basis that neither he nor the Trust Board had any responsibility for the quality of healthcare given to patients in the hospital.⁶²⁶

3.308 In this regard, evidence was received as to the responsibility of Trusts for the quality of hospital care at that time. The almost unanimous view, which I accept, is that Trusts were responsible for the quality of clinical care prior to the creation of a statutory duty of care under the Health and Personal Social Services Quality Improvement and Regulation (Northern Ireland) Order 2003.⁶²⁷ Indeed it is hard to understand how there could have been any confusion given the explicit advice provided to Trusts by the Management Executive that “*the primary accountability of Trusts*” to their commissioning Health Boards is for the “... *quality and efficiency of the service they provide.*”⁶²⁸

3.309 Financial constraint,⁶²⁹ a lack of appetite for change, the failure of political engagement⁶³⁰ and time limitations were all suggested as explanations for the failure to progress governance in the Trust. It must ultimately have been a matter of leadership. The primary focus of the Chief Executive’s leadership of the Trust was on financial and administrative issues. The clinical leadership on the Board, comprising the Medical Director, Dr Carson and the Director of Nursing and Patient Services, Miss Duffin failed to champion clinical issues and the primary obligation to the patient was left largely to the clinician to discharge. The care provided was not however properly audited and the outcomes were not reviewed. The situation therefore prevailed that those accountable for the provision of appropriate standards of care were often ignorant as to the quality of care actually

⁶²⁵ 305-016-012 & 305-016-084

⁶²⁶ Mr McKee T-17-01-13 p.48 line 7

⁶²⁷ <http://www.legislation.gov.uk/nisi/2003/431/contents/made>

⁶²⁸ WS-062-1 p.528

⁶²⁹ WS-077-2 p.8

⁶³⁰ Dr Carson T-15-01-13 p.127 line 25

provided. Unscrutinised, some doctors and nurses became defensive to criticism, protective of reputation and tolerant of less-than-best practice.

- 3.310 The failure to enforce prevailing guidance in 1996 suggests an institutional complacency. That recommendations on hospital risk management were not adopted earlier or brought to bear on hospital performance can be attributed to a failure within Trust leadership.
- 3.311 That failing was not however, limited to the 1990's. DHSSPSNI serious adverse incident investigation and reporting guidance was inadequately followed in 2004 when Claire's case was brought to the Trust's attention. This suggests that clinical governance had not even then become fully operational. Notwithstanding, the Annual Report 2004-05 claimed: *"In line with good governance and our commitment to openness and transparency, the Royal Hospitals acknowledges to patients and the public when things go wrong and systematically ascertains what happened, how it happened and why, so that we can do all that is possible to ensure lessons are learned to prevent a re-occurrence."*⁶³¹ Trust practice had yet to honour Trust claims.

Aftermath

Litigation

- 3.312 This Inquiry heard evidence relating to Claire's treatment and death between 24th September 2012 and 19th December 2012. As the evidence unfolded, the full extent of what had gone wrong emerged. When Mr and Mrs Roberts gave evidence on 13th December, they confirmed that they had not intended bringing a claim for medical negligence against the Trust.⁶³² All they wanted, they said, was for the doctors to admit that they had made mistakes. In the words of Mrs Roberts:

⁶³¹ 302-096-004

⁶³² Mr and Mrs Roberts T-13-12-12 p.143 line 2

*“...everyone makes mistakes but all you have to do is hold your hands up.”*⁶³³

3.313 It is difficult to appreciate the depth of dismay that the Roberts family must have felt by the end of the oral hearings. The revelation of the full scope of error and everything associated with those errors must have left them bewildered and suspicious about how so many clinicians and experts could have missed so much in 1995/96, during the 2004/05 investigation, at inquest and during the police investigation that followed.

3.314 I assume that there must then have been a re-appraisal by Mr and Mrs Roberts of their attitude towards litigation, because on 26th September 2013, their solicitors sent a letter of claim to the Trust.⁶³⁴ On 16th October, the Trust replied through the DLS to indicate that while the Trust could mount a defence on unspecified legal grounds, it did not intend to do so. Instead, the Trust's position was stated as follows:

*“...We have obtained specific instructions from the Trust not to contest your clients' claim. The reason why this approach is being adopted is that the Trust acknowledges that there were shortcomings in the management of this patient and the Trust does not wish to in any way add to the distress of your clients by availing of any legitimate defences open to it in this action... Please also note that any offer of compensation in this case will be made in open correspondence as a means of demonstrating that the Trust is keen to deal with this matter in a wholly open and transparent manner.”*⁶³⁵

3.315 This development was referred to at the public hearing the next day. On behalf of the Roberts family, Mr Stephen Quinn QC welcomed this public acknowledgement of failing and implied admission of liability together with the apology offered by the doctors and staff who had treated Claire.⁶³⁶

⁶³³ Mr and Mrs Roberts T-13-12-12 p.142 line 12

⁶³⁴ 302-185-003

⁶³⁵ 302-185-001

⁶³⁶ T-17-10-13 p.4 line 19

3.316 I consider that this was entirely the correct position for the Trust to adopt. I have to note however, that the preliminary remarks in the letter of 16th October contain the following unnecessary observations:

*“We note that the Roberts family now wish to make a claim for damages arising out of the death of their daughter. We note that the initiation of such a claim somewhat contradicts the earlier assertions of the family that they were not interested in claiming compensation but were only interested in getting at the truth.”*⁶³⁷

3.317 The inclusion of such insinuation is regrettable. In all the circumstances of Claire’s treatment and death and all that had ensued in the following years, those unnecessary observations were inappropriate and insensitive. On 12th November 2013, Mr Colm Donaghy, Chief Executive and Dr Anthony Stevens, Medical Director on behalf of the Belfast Health and Social Care Trust, (which incorporates the former RGHT), addressed the public hearings. Mr Donaghy commenced his opening statement by saying:

*“Let me begin by categorically stating that the Belfast Trust, on behalf of the former Royal Hospitals Trust, regrets most sincerely the pain and suffering experienced by the families of Adam Strain, Claire Roberts, Lucy Crawford, Raychel Ferguson and Conor Mitchell and apologises for all the shortcomings in care at the Royal Hospitals that have been identified either prior to this inquiry or during the hearings... The abject sorrow and grief felt by the families, I know, has not lessened with the passing of time. In fact, I fully accept that it is as raw today as it was then, exacerbated by the actions of the three Trusts involved.”*⁶³⁸

3.318 Mr Donaghy then proceeded to acknowledge individual failings on the part of the Trust including the way in which the litigation had been handled. He said *“it is clear that... fluid management was poor... communication with the families was not sufficiently transparent, our medical and nursing staff missed the opportunity to reflect on what may have gone wrong... record*

⁶³⁷ 302-185-001

⁶³⁸ Mr Donaghy T-12-11-13 p.5 line 9-13

keeping was incomplete and our governance was not sufficiently developed or robust. I also accept that reflective clinical practice and candour... was clearly missing."⁶³⁹ He further accepted that he was "... aware through this Inquiry that how litigation has been handled by the Belfast Trust has added to the hurt and grief felt by the families... I wish to apologise unreservedly to the families for the unacceptable delay in the Belfast Trust accepting liability."⁶⁴⁰ After making his statement, Mr Donaghy and others from the Trust agreed to meet the families. As a result of those meetings, Mr Donaghy wrote to Mr and Mrs Roberts on 21st November 2013 to state that:

*"In relation to the letter from the Directorate of Legal Services, as I indicated to you on Friday, 15 November 2013, I believe that some of the wording in the letter is insensitive. I accept that your reason for pursuing Claire's case is to, as far as possible, ascertain the truth."*⁶⁴¹

3.319 Mr and Mrs Roberts were more than fully justified in that pursuit.

⁶³⁹ Mr Donaghy T-12-11-13 p.5 line 22 *et seq*

⁶⁴⁰ Mr Donaghy T-12-11-13 p.5, line 15

⁶⁴¹ 314-018-001

EVENTS FOLLOWING LUCY CRAWFORD'S DEATH

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Introduction and background

- 4.1 Lucy Crawford was born on 5th November 1998, the youngest of a family of three. She was admitted to the Erne Hospital Enniskillen on 12th April 2000, transferred the next day to the Royal Belfast Hospital for Sick Children ('RBHSC') and died on 14th April 2000.
- 4.2 Lucy's death was examined in the October 2004 UTV documentary '*When Hospitals Kill*'. It implicated hyponatraemia in her death and alleged a 'cover up.' Accordingly, Lucy's case fell within the original remit for consideration by this Inquiry.¹
- 4.3 The work of the Inquiry was stayed in 2005 to permit an investigation of her case by the Police Service of Northern Ireland ('PSNI'). Ultimately, the Public Prosecutions Service for Northern Ireland determined that there should be no prosecution. I was then contacted by Lucy's parents who informed me that for personal reasons they no longer wished Lucy's death to be investigated by the Inquiry. I reported the matter to the Minister who acceded to their wishes.
- 4.4 It was then urged upon me that any contemporaneous failure to acknowledge the relevance of hyponatraemia in Lucy's death could have influenced the lessons drawn from her death and might have contributed to the tragedy of Raychel's death 14 months later. After engaging in extensive consultation I decided in February 2010 that the terms of reference still required investigation into the aftermath of Lucy's death.
- 4.5 In this context, I considered the revised terms of reference required:

"an investigation into the events which followed Lucy's death such as the failure to identify the correct cause of death and the alleged Sperrin Lakeland cover up because they contributed, arguably, to the death of Raychel in Altnagelvin. This reflects the contention that had the circumstances of Lucy's death been identified correctly, and had lessons been learned from the way in which fluids were administered to her,

¹ 021-010-024 as published on 1st November 2004

defective fluid management would not have occurred so soon afterwards (only 14 months later) in Altnagelvin, a hospital within the same Western Health and Social Services Board area.”

- 4.6 Arising from this, the principal questions are whether the cause of Lucy’s death was clear at the outset; whether any of the participants knew or suspected that Lucy’s death was caused by mismanagement and if so, why this was not made known at the time. Further and in this context, whether there was a failure to ensure that the death was properly investigated and if so, why so?

Expert reports

- 4.7 In order to assist and advise, the Inquiry retained a number of experts. The experts were:
- (i) Dr Roderick MacFaul² (Consultant Paediatrician, retired) who provided expert comment on clinical and governance matters.³
 - (ii) Professor Gabriel Scally⁴ (Director of WHO Collaborating Centre of Healthy Urban Environments) who reported on the responsibilities of the Trusts and the Boards and the DHSSPS in Northern Ireland at the time of Lucy’s death.⁵
 - (iii) Professor Sebastian Lucas⁶ (Department of Histopathology, St. Thomas’ Hospital, London) who advised on issues arising from the autopsy.⁷
 - (iv) Dr Simon Haynes⁸ (Consultant in Paediatric Cardiothoracic Anaesthesia & Intensive Care, Freeman Hospital, Newcastle upon Tyne) who provided his opinion on Lucy’s fluid management.⁹

² 325-002-013
³ File 250
⁴ 325-002-013
⁵ File 251
⁶ 325-002-013
⁷ File 252
⁸ 306-081-009
⁹ File 253

4.8 The Inquiry and its experts also reviewed reports commissioned by the Crawford family, the Sperrin Lakeland Trust ('SLT') and the Coroner. These were provided by:

- (i) Dr Dewi Evans¹⁰ (Consultant Paediatrician, Singleton Hospital, Swansea), who was engaged by Lucy's parents in connection with the prosecution of a clinical negligence claim.
- (ii) Dr John Jenkins¹¹ (Senior Lecturer in Child Health and Consultant Paediatrician at Antrim Hospital), who reported to the Directorate of Legal Services on behalf of Sperrin Lakeland Trust ('SLT') in connection with defending the claim brought by Lucy's parents.
- (iii) Dr Edward Sumner¹² (Consultant Paediatric Anaesthetist at Great Ormond Street Children's Hospital), who provided the Coroner with an opinion for the purposes of inquest.

Schedules compiled by the Inquiry

4.9 To marshal and summarise the large volume of information received, a number of schedules, lists and chronologies were compiled:

- (i) List of persons involved, cross-referencing statements and summarising roles.¹³
- (ii) Schedule detailing Nomenclature & Grading of Doctors 1948 to 2012.¹⁴
- (iii) Schedule detailing Nomenclature & Grading of Nurses 1989 to 2012.¹⁵
- (iv) Chronology of clinical events.¹⁶

¹⁰ 325-002-013

¹¹ 325-002-013

¹² 325-002-013

¹³ 325-002-001

¹⁴ 303-003-048

¹⁵ 303-004-051

¹⁶ 325-003-001

(v) Consolidated Chronology: governance & lessons learned.¹⁷

(vi) Compendium Glossary of Medical Terms¹⁸

All of the above schedules, lists, chronologies and reports have been published on the Inquiry website in accordance with Inquiry protocol.

Cause of Death

4.10 The inquest into Lucy's death did not take place until February 2004, almost four years after her death. The verdict at inquest found that her death had been due to,

"I (a) Cerebral oedema (b) acute dilutional hyponatraemia (c) excess dilute fluid

*II. gastroenteritis."*¹⁹

4.11 Mr John Leckey, the Coroner for Greater Belfast found that:

"On 12 April 2000, the deceased, who was aged 17 months, was admitted to the Erne Hospital, Enniskillen with a history of poor oral intake, fever and vomiting. The vomiting was sufficient to have caused a degree of dehydration and she required intravenous fluid replacement therapy. It was believed she was suffering from gastroenteritis. Her condition did not improve and she collapsed at about 3.00 am on 13 April, developing thereafter decreased respiratory effort and fixed and dilated pupils. Whilst in a moribund state she was transferred by ambulance shortly after 6.00 am to the Royal Belfast Hospital for Sick Children. Her condition remained unchanged and after two sets of brain-stem tests were performed showing no signs of life, she was pronounced dead at 13.15 hours on 14 April. She had become dehydrated from the effects of vomiting and the development of diarrhoea whilst in the Erne Hospital and she had been given an excess volume of intravenous fluid to replace losses of electrolytes. The collapse which led to her death was a direct consequence of an inappropriate fluid

¹⁷ 325-004-001

¹⁸ 325-005-001

¹⁹ 013-034-130

replacement therapy in that the use of 0.18% saline to make up deficits from vomiting and diarrhoea was wrong, too much of it was given and there had been a failure to regulate the rate of infusion. This led to the development of dilutional hyponatraemia which in turn caused acute brain swelling and death. The errors in relation to the fluid replacement therapy were compounded by poor quality medical record keeping and confusion by the nursing staff as to the fluid regime prescribed.”

- 4.12 The findings of the Coroner were uncontroversial. Clinicians from the hospitals treating Lucy gave evidence at the inquest and accepted that the cause of the death was cerebral oedema due to hyponatraemia brought about in consequence of the infusion of excessive quantities of hypotonic fluid.²⁰ Why then did this consensus not emerge four years earlier and before Raychel was given inappropriate fluid therapy involving the same Solution No. 18, causing her to develop the same dilutional hyponatraemia within the same Western Health and Social Services Board (‘WHSSB’) area?

Lucy’s admission to Erne Hospital on 12th April 2000

- 4.13 Lucy was admitted to the Erne Hospital in Enniskillen on Wednesday 12th April 2000 at 19:30. She presented with a history of drowsiness and vomiting and was placed under the care of Consultant Paediatrician Dr Jarlath O’Donohoe.²¹ She was seen initially by the Senior House Officer (‘SHO’) in Paediatrics Dr Amer Ullah Malik.²² Dr Malik could not be contacted by the Inquiry after he provided an initial response to a request for a statement.²³

²⁰ Namely Dr Peter Crean (Consultant in Paediatric Anaesthesia and Intensive Care at the RBHS, Dr Thomas Auterson (Consultant Anaesthetist at the Erne Hospital), Dr Donncha Hanrahan (Consultant Paediatric Neurologist at the RBHSC and Dr John Jenkins (on behalf of the Sperrin Lakeland Trust).

²¹ 325-002-001

²² 325-002-001

²³ WS-285-1 p.1

Admitted by Dr Malik

- 4.14 Lucy's parents explained to Dr Malik that she had not been feeding well, had had fever and vomiting for 36 hours and been drowsy for 12 hours.²⁴ Dr Malik admitted Lucy and arranged for blood and urine tests. He considered her dehydrated and decided to administer IV fluids.
- 4.15 Lucy had no medical history to complicate her care. She presented with symptoms consistent with gastroenteritis causing her dehydration. Her admission was for the purposes of rehydration. Hers should have been a straightforward and routine admission.
- 4.16 Clinicians grade dehydration as mild, moderate or severe.²⁵ Severe dehydration carries the risk of shock. It is important to assess the dehydration to inform the fluid management. However, neither Dr Malik nor Dr O'Donohoe recorded their assessment. Indeed, it is unclear whether any formal assessment was made of Lucy's dehydration even though Dr O'Donohoe recalled that she had presented with a moderate dehydration.²⁶ Clearly, if an assessment was made it ought to have been recorded in her clinical notes. Dr MacFaul examined the records and concluded that Lucy had, at worst, moderate dehydration.²⁷ The evidence given at inquest by Drs Sumner²⁸ and Jenkins²⁹ agreed that she was mildly dehydrated.
- 4.17 Lucy's initial blood test sample was taken at 20:50 on 12th April 2000.³⁰ It revealed an elevated urea of 9.9mmol/L (a sign of dehydration³¹ and/or established shock³²) and a normal sodium reading of 137 mmol/L.

Attendance by Dr O'Donohoe and commencement on IV fluids

- 4.18 Upon admission Lucy was taking fluids orally and not therefore dependent upon intravenous ('IV') fluids. Between 21:00 and 22:00, she drank 50ml

²⁴ 027-009-020

²⁵ 250-003-021

²⁶ Dr O'Donohoe T-06-06-13 p.27 line 15

²⁷ 250-003-031

²⁸ 013-036-139

²⁹ 013-032-118

³⁰ 027-012-031

³¹ 250-003-021

³² 250-003-022

of juice and 100ml of Dioralyte.³³ Dr O'Donohoe said she drank enthusiastically.³⁴ She also passed a small amount of urine at 20:00.

- 4.19 Dr Malik was unable to insert the IV cannula³⁵ and Dr O'Donohoe was called³⁶ at about 21:00³⁷ (according to Dr Malik) or 21:30³⁸ (according to Dr O'Donohoe) to place the cannula in her arm. She was commenced on IV fluids between 22:30 and 23:00.

Intravenous fluid therapy

- 4.20 IV fluids are administered for various purposes:

- (i) As maintenance fluids to replenish normal ongoing losses from urine and insensible losses such as sweat.
- (ii) As replacement fluids to replace abnormal losses such as those suffered through vomiting or diarrhoea
- (iii) As resuscitation fluids in the management of circulatory failure whether in shock or when trying to prevent evolving shock.³⁹ This is commonly required when a patient is dehydrated.

Fluids received

- 4.21 Dr O'Donohoe claimed that he had intended that Lucy should receive a bolus of 100ml of normal saline in the first hour to be followed by Solution No.18 at 30ml per hour⁴⁰
- 4.22 However, it would appear that Lucy was given at least 400ml of Solution No.18 intravenously from 22:30/23:00 until she suffered a seizure at around 03:00. Her fluids were then changed to normal saline.

³³ 027-019-062

³⁴ Dr O'Donohoe T-06-06-13 p.26 line 6

³⁵ 027-017-058, 013-009-023

³⁶ 013-009-023, 013-018-066

³⁷ 013-009-023

³⁸ 115-051-001

³⁹ 250-003-030

⁴⁰ 027-010-024

4.23 Whilst Dr MacFaul described Lucy's fluid balance chart as "*confusing*"⁴¹ the following observations may be made with confidence:

- (i) It was acceptable practice at that time to administer a bolus of 100ml of normal saline as a replacement fluid followed by 30ml per hour of half normal (0.45%) saline or even Solution No. 18 as maintenance fluids.
- (ii) It was not appropriate to give Lucy a bolus of Solution No.18 as a replacement fluid for dehydration.⁴²
- (iii) It was not appropriate to give Lucy 100ml of any fluid after the first hour, and most certainly not Solution No. 18.
- (iv) If Dr O'Donohoe intended that Lucy should receive a bolus of 100ml of normal saline in the first hour to be followed by 30ml per hour of Solution No. 18 he ought to have communicated this in clear and certain terms to Dr Malik and the nursing staff and completed all the necessary documentation to that effect.
- (v) All fluids actually administered should have been accurately recorded so that there could be no misunderstanding as to what was received.

4.24 Dr O'Donohoe accepted that mistakes had been made in both the choice of Solution No. 18 and the rate at which it was administered. He stated that he had not intended Lucy to receive Solution No. 18 at a rate of 100 ml/hr and accepted that it was "*entirely inappropriate*."⁴³ He also accepted that he failed to ensure that his directions for Lucy were adequately understood.⁴⁴ His concessions are appropriate. However, there remained a dispute between him, the absent Dr Malik and Staff Nurse Brid Swift⁴⁵ as to the specifics of his fluid regime. This confirms the serious failure in both communication and record-keeping. However, given the limitations

⁴¹ 250-003-034

⁴² 250-003-030

⁴³ Dr O'Donohoe T-06-06-13 p.20 line 12

⁴⁴ Dr O'Donohoe T- 06-06-13 p.29 line 3

⁴⁵ 325-002-002

imposed by the terms of reference it is not appropriate for me to resolve this dispute between Dr O'Donohoe and his colleagues.

Infusion of normal saline

- 4.25 Having received an excessive volume of Solution No.18, Lucy suffered a seizure at approximately 02:55 on Thursday 13th April 2000.⁴⁶ Mrs Crawford called for help. Nurses arrived and Dr Malik attended soon afterwards. At around 03:20 Lucy suffered respiratory arrest and Dr Malik provided artificial respiration.⁴⁷
- 4.26 At the suggestion of Staff Nurse Thecla Jones,⁴⁸ Dr Malik changed the fluids⁴⁹ from Solution No.18 to normal saline. It would appear that he directed that this should run freely.⁵⁰ It is unclear how much normal saline was then given because the records are poor. Whereas Staff Nurse Siobhan MacNeill⁵¹ believed Lucy received 280mls,⁵² Dr Malik's note suggests that 500 mls had been administered in one hour⁵³ and the fluid balance chart indicates 810mls between 03:00 and 06:00.⁵⁴
- 4.27 Dr O'Donohoe was called and, if the records are correct, he arrived at 03:20.⁵⁵ He told the PSNI that he reduced the normal saline to 30ml per hour.⁵⁶ However, if he did, the change was not recorded and is contradicted by Staff Nurse MacNeill who stated that she administered the normal saline at 30 ml/hr from 04.50.⁵⁷ Moreover, the PICU fluid balance chart notes the reduction to 30ml/hr after 04:00.⁵⁸ To determine which, if any, of these accounts is accurate is academic because Lucy was already critically

⁴⁶ 027-010-024
⁴⁷ 027-017-057 & 027-010-024
⁴⁸ 325-002-002
⁴⁹ 115-014-002
⁵⁰ 115-014-002 & 027-017-057
⁵¹ 325-002-003
⁵² 115-016-002
⁵³ 027-010-024
⁵⁴ 027-025-076 & 115-014-002
⁵⁵ 027-010-022 & 027-010-024
⁵⁶ 115-051-002
⁵⁷ 115-016-002
⁵⁸ 027-025-076

overloaded with fluid. Furthermore and in all probability, she continued to receive too much fluid at too fast a rate even after her respiratory arrest.

- 4.28 Dr Thomas Auterson⁵⁹ (Consultant Anaesthetist) was contacted at 03:40 and arrived promptly to assist.⁶⁰ He observed Lucy's pupils to be fixed, dilated and unresponsive. He managed to intubate her but believes she was already beyond help. Nonetheless, he agreed with Dr O'Donohoe that she should be transferred to the Paediatric Intensive Care Unit ('PICU') at the RBHSC in case something more could be done for her. Lucy was then moved to intensive care for stabilisation and to await ambulance transfer to Belfast.

Sodium levels

- 4.29 Dr O'Donohoe ordered a repeat blood test⁶¹ and the results received at 04:26 indicate that her sodium level had fallen from 137mmol/l to 127mmol/l.⁶² Lucy, who had not been hyponatraemic on admission was suffering marked hyponatraemia after eight hours of hospital care. Disconcertingly the clinicians do not appear to have been curious as to why a moderately dehydrated patient should suffer a significant decline in her sodium level after her treatment had begun.
- 4.30 Whilst a sodium reading of 127mmol/l does not indicate dangerous hyponatraemia it should be noted that the saline solution prescribed by Dr Malik after her seizure would have raised her sodium levels and accordingly 127mmol/l is unlikely to have been her lowest reading.⁶³ Additionally, whilst a gradual decline from 137mmol/l to 127mmol/l over an extended period would probably have been manageable, the comparatively rapid decline suffered by Lucy was more dangerous.

⁵⁹ 325-002-002

⁶⁰ 013-007-020

⁶¹ 027-017-057

⁶² Result was timed at 04:26

⁶³ WS-278-1 p.10 & WS-302-2 p.3

Transfer to the Children's Hospital

- 4.31 Lucy was taken the 80 miles to the RBHSC and arrived soon after 08:00 on 13th April 2000. She was accompanied by Dr O'Donohoe and Staff Nurse MacNeill.
- 4.32 Upon arrival Dr O'Donohoe supplied the on-call Consultant Paediatric Anaesthetist Dr James McKaigue⁶⁴ with a short transfer letter⁶⁵ and a transfer form⁶⁶ detailing observations recorded en route.⁶⁷ However, the clinical records from the Erne Hospital together with her blood test results⁶⁸ and x-rays⁶⁹ were not provided.
- 4.33 Significantly, Dr O'Donohoe's transfer letter failed to refer to the results of the serum electrolyte tests⁷⁰ or to the type, rate and volume of the IV fluids administered.⁷¹ Such information was obviously relevant to the RBHSC clinicians who were taking over. Dr O'Donohoe explained that his was "*a brief note, written under very difficult circumstances*"⁷² and maintained that had circumstances been more favourable, his letter would have been more detailed.
- 4.34 I consider it regrettable that further detail was not given but do not take the view that this was an attempt to conceal medical error. Dr O'Donohoe was acting under stress in an emergency and in any event, the clinical notes were sent later by fax and Dr Auterson supplied the results of Lucy's repeat urea and electrolyte test.⁷³

⁶⁴ 325-002-004

⁶⁵ 061-014-038

⁶⁶ 061-015-040

⁶⁷ 061-016-041

⁶⁸ 027-012-031-032 (laboratory results showing the serum sodium levels of 137mmol/l and 127mmol/l respectively).

⁶⁹ 061-014-039 (Dr O'Donohoe's transfer letter) and 033-102-317 (Dr Auterson's statement to Mr Fee)

⁷⁰ 250-003-102 - para 533, Dr MacFaul has noted that it is not evident that Dr O'Donohoe informed PICU staff of the low blood sodium.

⁷¹ 250-003-102 - para 532, Dr MacFaul has identified the limited attention paid to Lucy's fluid management in the transfer letter.

⁷² Dr O'Donohoe T- 06-06-13 p.79 line 16

⁷³ 061-018-060 & 061-017-042

Admission to the Children's Hospital

- 4.35 Lucy was admitted to PICU under Dr Peter Crean⁷⁴ (Consultant in Paediatric Anaesthesia and Intensive Care). For reasons which are discussed in greater detail later in this chapter, this does not imply that Dr Crean was the lead clinician in respect of Lucy's care. In fact it was Dr Anthony Chisakuta⁷⁵ (Consultant in Paediatric Anaesthesia and Intensive Care) and Dr Donncha Hanrahan⁷⁶ (Consultant Paediatric Neurologist) who became most directly involved in her care. Dr McKaigue began an assessment of Lucy at 08:00 which was completed by Dr Chisakuta. Neither made any reference in their notes to Lucy's fluid regime at the Erne Hospital.
- 4.36 Lucy was then seen at 08:30⁷⁷ by SHO Dr Louise McLoughlin⁷⁸ and later on a ward round by Dr Caroline Stewart⁷⁹ (Registrar), Dr Dara O'Donoghue⁸⁰ (acting Registrar)⁸¹ and Dr Crean. Lucy's sodium level was recorded at 140mmol/l. Dr Crean noted that he was "*awaiting faxes of her notes from the Erne Hospital and she is to be reviewed by a Paediatric Neurologist this morning.*"⁸²
- 4.37 Dr Crean then made a telephone call to Dr O'Donohoe at the Erne Hospital to ask about Lucy's fluid therapy because he understood it to have been Solution No. 18 at 100ml/hr and naturally wanted clarification. This conversation must have taken place after Dr Crean received Lucy's Erne Hospital notes because they included the fluid balance chart. Dr O'Donohoe maintained that he told Dr Crean that he had directed "*a bolus of 100mls over 1 hour followed by 0.18% NaCl/Dextrose 4% at 30ml/hour.*"⁸³ Dr Crean does not remember the conversation.

⁷⁴ 325-002-005

⁷⁵ 325-002-004

⁷⁶ 325-002-005

⁷⁷ 061-018-058

⁷⁸ 325-002-004

⁷⁹ 325-002-005

⁸⁰ 325-002-006

⁸¹ 115-012-001

⁸² 061-018-065

⁸³ 027-010-024

- 4.38 Dr Crean then arranged for Lucy to be seen by Dr Hanrahan who saw her at 10:30⁸⁴ and recorded his differential diagnosis which included infection, haemorrhagic shock encephalopathy, metabolic disease and unrelated cerebral oedema.⁸⁵ He also noted that the *“findings would suggest that she shows no sign now of brainstem function.”*⁸⁶ Dr Hanrahan did not identify hyponatraemia or fluid overload as contributory to the cerebral oedema but did express some uncertainty by noting *“no cause clinically evident as yet.”*⁸⁷ He accepted that whilst he was aware of the fall in Lucy’s sodium levels from 137mmol/l to 127mmol/l, he did not regard this as either marked or significant.⁸⁸

Death

- 4.39 Dr Hanrahan directed neurological investigation to include a Computerised Tomography (‘CT’) scan and an Electroencephalography (‘EEG’). The scan revealed obliteration of the basal cisterns suggesting ‘coning’ and the EEG failed to register cerebral function.⁸⁹ He noted at 17:45 that her *“prognosis, in my opinion, is hopeless and indications are that she is brain dead.”*⁹⁰ He then recorded that Lucy’s parents were *“agreeable to her not being actively resuscitated”*⁹¹ should she deteriorate overnight. He made reference to the necessity to test for brain stem death and noted, *“If she succumbs, a PM would be desirable – coroner will have to be informed.”*⁹²
- 4.40 Dr Hanrahan expressed the opinion that Lucy was effectively *“brain dead on arrival in Belfast”*⁹³ but that the ‘sentinel event’ had occurred at the Erne Hospital.

⁸⁴ 061-018-060

⁸⁵ 061-018-063

⁸⁶ 061-018-063

⁸⁷ 061-018-063

⁸⁸ 116-026-005

⁸⁹ 061-032-098

⁹⁰ 061-018-065

⁹¹ 061-018-066

⁹² 061-018-066

⁹³ 013-025-093

4.41 Formal brain stem testing⁹⁴ permitted pronouncement of death at 13:15 on 14th April 2000.⁹⁵ Mrs Crawford recalled that she and her husband were told by Dr Hanrahan that they “*should seek answers from the Erne Hospital as to what happened to Lucy.*”⁹⁶ This conversation took place immediately after her death.

4.42 Dr Hanrahan then made contact with the Coroner’s Office. Significantly, it was decided that Lucy’s death did not require a Coroner’s post-mortem but that a hospital post-mortem would suffice to clarify the cause of death. A death certificate was subsequently issued, but before the final post-mortem report was available. This recorded Lucy’s death as having been caused by,

“*l(a). Cerebral oedema
(b). due to (or as a consequence of) dehydration
(c). due to (or as a consequence of) gastroenteritis.*”⁹⁷

4.43 The clear consensus of those from whom I received evidence was that the cause of Lucy’s death should not have been stated on the death certificate in these terms because it made no sense to certify that the cerebral oedema was due to or a consequence of dehydration.

Opinions as to cause of death: Dr Auterson

4.44 Dr Auterson stated that after Lucy’s death he reviewed the fluid balance chart and the sodium readings and concluded that “*hyponatraemia played a significant part in Lucy’s deterioration and death.*”⁹⁸ Indeed, he said that even when he was attending Lucy he reached the conclusion that she had been given too much of the wrong fluid and that this was the most likely cause of her hyponatraemia.⁹⁹ Dr Auterson confirmed that he had reached this view, which he characterised as a “*strong suspicion,*”¹⁰⁰ on the morning

⁹⁴ 061-019-070

⁹⁵ 061-018-068

⁹⁶ 013-022-079

⁹⁷ 013-008-022

⁹⁸ WS-274-1 p.4

⁹⁹ WS-274-1 p.5

¹⁰⁰ Dr Auterson T-31-05-13 p.128 line 1

of Lucy's deterioration¹⁰¹ and that he became more confident in this opinion in the days that followed.¹⁰²

4.45 Dr Auterson said that he discussed the case informally with his anaesthetic colleagues in the day or two after the death.¹⁰³ He spoke to Dr Matt Cody who agreed with his suspicion "*that probably it was a fluid-related problem*"¹⁰⁴ and he discussed the case with Dr William Holmes who "*did not disagree with [his] presumptive diagnosis*" implicating the fluid management.¹⁰⁵

4.46 Dr Auterson was carefully questioned about this account:

"Q. So... based on her neurological status, based upon the electrolyte results and taking into account the information you gleaned from the fluid balance chart, you recognised that fluids had caused the hyponatraemia and the hyponatraemia had caused the cerebral oedema?"

A. Yes.

Q. That was your working diagnosis?"

*A. Yes."*¹⁰⁶

4.47 It is a matter for concern that Dr Auterson did not volunteer this opinion when he made his statement for the Erne Hospital Review into Lucy's death.¹⁰⁷ He recognises that his failure to report these concerns to the Medical Director reflects badly upon him¹⁰⁸ and is something for which he may be legitimately criticised.¹⁰⁹ He explained that he did not articulate his view that the IV fluids were the likely cause of the hyponatraemia because he regarded that as "*an obvious conclusion.*"¹¹⁰

4.48 Dr Auterson said that he expected others to form the same view. Dr O'Donohoe attended with him after Lucy's collapse and was also aware of

¹⁰¹ Dr Auterson T-31-05-13 p.127 line 21

¹⁰² Dr Auterson T-31-05-13 p.136

¹⁰³ WS-274-1 p.5

¹⁰⁴ Dr Auterson T-31-05-13 p.156 line 23

¹⁰⁵ Dr Auterson T-31-05-13 p.157 line 15

¹⁰⁶ Dr Auterson T-31-05-13 p.124 line 10-25

¹⁰⁷ 033-102-316

¹⁰⁸ Dr Auterson T-31-05-13 p.154

¹⁰⁹ Dr Auterson T-31-05-13 p.163

¹¹⁰ WS-274-1 p.7

the repeat sodium results. According to Dr Auterson they had a brief discussion at that time acknowledging that Lucy may have received too much fluid.¹¹¹ He believed that Dr O'Donohoe was aware of his suspicions¹¹² and indeed recognised what had gone wrong at that time.¹¹³ He subsequently assumed that Dr O'Donohoe would address this at the Review¹¹⁴ and accordingly did not discuss the matter further. Dr Auterson said, *"Without seeming flippant, it's the elephant in the room. Why did nobody else come to this conclusion?"*¹¹⁵

- 4.49 Dr O'Donohoe was dismissive of Dr Auterson's evidence and in particular his claim to have understood so quickly that fluid mismanagement had triggered the sequence of events which led to the cerebral oedema.¹¹⁶ Dr O'Donohoe insisted that Dr Auterson had not raised this suggestion at the time and emphasised that if Dr Auterson believed that Lucy had collapsed due to hyponatraemia he might have tried to remedy the situation by administering concentrated hypertonic saline, which he did not.¹¹⁷ Dr O'Donohoe specifically rejected Dr Auterson's account that they had discussed fluid mismanagement at the time of the resuscitation.¹¹⁸
- 4.50 I accept that the evidence of Dr Auterson is unsatisfactory in some important respects. Why, if he had formed so strong a suspicion about what had gone wrong in Lucy's case, did he not voice that suspicion to others outside his circle of colleagues in the Anaesthetics Department? However, it must be noted that in this, his approach is consistent with what was done by others. Dr O'Donohoe's statement for the Review did not address the fluid mismanagement issues and Dr Malik did not address fluids at all.
- 4.51 Additionally, I consider that Dr Auterson was honest in describing how he formed his early suspicion that mismanagement was implicated in Lucy's hyponatraemia. He has accepted, properly in my view, that it is not to his

¹¹¹ Dr Auterson T-31-05-13 p.139 line1

¹¹² Dr Auterson T-31-05-13 p.165 line 12

¹¹³ Dr Auterson T-31-05-13 p.137 line 7

¹¹⁴ Dr Auterson T-31-05-13 p.136 line 21

¹¹⁵ Dr Auterson T-31-05-13 p.153 line 12

¹¹⁶ Dr O'Donohoe T-06-06-13 p.52-53

¹¹⁷ Dr O'Donohoe T-06-06-13 p.53

¹¹⁸ Dr O'Donohoe T-06-06-13 p.58

credit that he failed to communicate his suspicions at the time. This was a significant omission on his part because it acknowledged his failure to be straightforward and frank when that was his clear professional duty.¹¹⁹

4.52 I wish to emphasise that criticism is not confined to Dr Auterson alone. Whilst he, by his evidence, chose to expose himself to criticism, others have implausibly maintained that they had no misgivings about the fluid therapy. I conclude that there was a reluctance on the part of those responsible for Lucy's care in the Erne Hospital to speak out about what may have caused her death most probably because there was a suspicion that fluid mismanagement was responsible.

4.53 I do not accept that the cause of death could not have been established promptly and accurately. It was entirely possible to reach the conclusion of mismanagement in the immediate aftermath of Lucy's death. It could and should have been established almost immediately because Dr Auterson was not alone in forming this suspicion.

Dr Asghar's opinion

4.54 Dr Mohammed Asghar¹²⁰ was a paediatrician at the Erne Hospital who was not involved in Lucy's care. Nonetheless, it would appear that he interested himself in Lucy's clinical notes and may have spoken to others about the standard of care provided to her. He wrote to the Chief Executive of the SLT, Mr Hugh Mills¹²¹ on 5th June 2000 in the following terms:

"Lucy was admitted in the ward with a history of vomiting. The SHO could not put up the IV line so he called Dr O'Donohoe who was on call that night. Dr O'Donohoe examined the child and put up the IV line. The SHO then got busy with the other three admissions. Dr O'Donohoe told the nurse to give fluids at 100mls per hour. At three o'clock in the morning the child got a convulsion and went into respiratory arrest. She was later transferred to Belfast where she died. A P.M. revealed cerebral oedema. This child might

¹¹⁹ 315-002-009

¹²⁰ 320-002-004

¹²¹ 325-002-008

*have been given excess of fluids. All through the night fluids were running at 100mls per hour. After the child died in Belfast he made alterations in the chart. He wrote that he had ordered the fluids should be given as a bolus of 100mls and then at 30mls per hour. In fact, neither the SHO nor any of the nurses were told to give the fluids at 30ml per hour.”*¹²²

- 4.55 Dr Asghar had no difficulty in recognising mismanagement of the fluids and the possible link between excess fluid and the cerebral oedema. His curiosity and desire to do the right thing stand in commendable contrast to those of his colleagues.

Dr Chisakuta’s opinion

- 4.56 At the RBHSC Dr Chisakuta performed the brain stem death tests with Dr Hanrahan.¹²³ He gave evidence that *“throughout the course of [his] clinical involvement in Lucy’s care on 14th April 2000 [he] was giving consideration to the cause of her condition.”*¹²⁴

- 4.57 Dr Chisakuta could not say for certain that he was involved in discussion with Dr C Stewart prior to her entering her clinical diagnosis in the autopsy request form, namely *“dehydration and hyponatraemia, cerebral oedema, acute coning and brain stem death.”*¹²⁵ Nevertheless, he said that he probably would have agreed with that diagnosis because, *“From the medical clinical notes faxed to the PICU ... Lucy had clinical symptoms and signs of dehydration for which she was prescribed intravenous fluids.”*¹²⁶ He went on to explain:

“The serum sodium level was noted to have decreased from 137 mmol/l (measured at 8.30pm on 12/04/00)¹²⁷ to 127 mmol/l (measured around 3.20am on 13/04/00)¹²⁸ a condition referred to as hyponatraemia.

¹²² 032-090-175

¹²³ WS-283-1 p.2

¹²⁴ WS-283-1 p.6

¹²⁵ 061-022-073

¹²⁶ 061-017-044 to 046

¹²⁷ 061-017-049

¹²⁸ 061-017-050

During the stress of illness, the body produces a chemical called Anti-diuretic hormone, which causes the kidneys to retain the water. This also might have contributed to an increase in body water. In this situation, water tends to move from outside the cells into the cells causing them to swell up, a condition called oedema. When this happens to the brain cells, it is referred to as cerebral oedema.

Cerebral oedema can lead to coning and brain stem death.

*This sequence of events seems to me to fit Lucy's case so I speculate that if there was a discussion with Dr Stewart as has been suggested, that I would have been agreeing with her working pathogenesis."*¹²⁹

- 4.58 Dr Chisakuta accepted that the missing link in Dr C Stewart's description was an account of how Lucy could have gone from a state of dehydration to one in which she was suffering from hyponatraemia.¹³⁰ He said he would have wanted the fluid management problem to have been stated explicitly in the list of problems.¹³¹
- 4.59 In his evidence Dr Chisakuta was asked specifically whether at the time of Lucy's death he had any idea what the cause was. He told me that he knew that Lucy had died because her brain had coned due to the development of cerebral oedema and that while the cause of this "*could have been a combination of things*"¹³² he was aware that one of the possible factors was that "*she had lots of fluids in the other hospital.*"¹³³
- 4.60 Dr Chisakuta went on in his evidence to reiterate that he was "*conscious of the possibility that a possible or probable cause of Lucy's death was the volume of fluid that she had been given in the Erne.*"¹³⁴ He said that this concern about the standard of treatment Lucy received was in his mind from the 14th April 2000.¹³⁵

¹²⁹ WS-283-2 p.6

¹³⁰ Dr Chisakuta T-29-05-13 p.103 line 7

¹³¹ Dr Chisakuta T-29-05-13 p.105 line 2

¹³² Dr Chisakuta T-29-05-13 p.67 line 14

¹³³ Dr Chisakuta T-29-05-13 p.67 line 17

¹³⁴ Dr Chisakuta T-29-05-13 p.70 line 7

¹³⁵ Dr Chisakuta T-29-05-13 p.70-71

Dr Evans' opinion

4.61 Dr Evans was retained by solicitors acting on behalf of the Crawford family and asked to examine and report on the events leading to Lucy's death. He reported on 18th February 2001 that:

- (i) A combination of errors by clinicians at the Erne Hospital contributed significantly to Lucy's death.
- (ii) There was a failure to calculate the fluid replacement required by Lucy and document the results.
- (iii) There was a failure to give adequate instruction as to the type and volume of fluid indicated.
- (iv) The decision to use 0.18% NaCl ('Solution No. 18') was wrong, given the nature of Lucy's condition.
- (v) The decision to infuse Solution No. 18 at a rate of 100ml per hour was wrong.
- (vi) The decision to administer 500ml of 0.9% NaCl after her collapse was wrong.
- (vii) It is probable that the very significant change in her electrolytes was caused by the infusion of an excessive volume of dilute fluid and further that it could not be explained on the basis of "*some conjectural inappropriate ADH secretion.*"
- (viii) If Lucy had been managed according to the basic standards of district general hospital paediatric practice by deploying a bolus of isotonic intravenous solution (such as 0.9% NaCl or HAS) in a volume of 90ml-180ml, followed by 0.45% NaCl (with added potassium) at a rate of no more than 70ml/hr, she would not have developed cerebral oedema.¹³⁶

¹³⁶ 013-010-025 to 036

- 4.62 Dr Evans gave his opinion within a year of Lucy's death and within a short time of receiving her hospital notes. His views mirrored the findings which the Coroner was to reach at inquest some three years later. Dr Evans did not claim any particular expertise in the field of fluid management.

Dr Jenkins' opinion

- 4.63 The Directorate of Legal Services ('DLS'), on behalf of the SLT, commissioned a report from Dr Jenkins.¹³⁷ He concluded on 7th March 2002 that Lucy had been given the wrong fluids. Dr Jenkins was clear that she should have been given replacement fluid with higher sodium content than Solution No. 18. Ideally she should have been given normal saline. Acknowledging that "*it is always very difficult to understand an episode of sudden collapse,*" he expressed the opinion that the fall in Lucy's serum sodium and potassium "*raise[d] the question as to the fluid management in the period from insertion of the IV line at 2300 to the collapse at around 3.00am.*"¹³⁸

Dr Moira Stewart's opinion

- 4.64 In September 2000 the SLT requested the Royal College of Paediatrics and Child Health ('RCPCH') to conduct an external review into Dr O'Donohoe's competence and conduct.¹³⁹ The RCPCH nominated Consultant Paediatrician Dr Moira Stewart¹⁴⁰ to undertake this task.¹⁴¹
- 4.65 Dr M Stewart was asked to examine a number of cases in which Dr O'Donohoe had acted as Consultant. The focus of her review was the overall conduct and competence of Dr O'Donohoe. She was not asked to provide specific analysis of what had caused Lucy's death notwithstanding that part of her remit necessarily included Lucy's case. She was briefed

¹³⁷ 013-011-037

¹³⁸ 013-011-038

¹³⁹ 036a-009-016

¹⁴⁰ 325-002-010

¹⁴¹ 036a-010-019

with Lucy's medical notes, post-mortem report and a report provided the Trust by Dr Murray Quinn¹⁴² in connection with the Trust's internal Review.

4.66 Dr M Stewart's report was received in April 2001.¹⁴³ Whilst concern has been raised about possible delay by the RCPCH in presenting its report because it was published too late to be of assistance to those treating Raychel Ferguson in June 2001, I consider that Dr M Stewart is not to be faulted for the time she took to produce her report. This was difficult work and it was carried out with great diligence. She was asked to consider not only Dr O'Donohoe's competence in the context of Lucy's case but also in four other cases. She was obliged to devote appropriate time to each. There is no reasonable basis for suggesting that she ought to have produced a report prior to April 2001.

4.67 The report identified several possible explanations for Lucy's death including:

*"(ii) She had a seizure like episode due to underlying biochemical abnormality. Initial sodium was 137 mmol/L, and potassium 4.1 mmol/L at 10.30pm. At 3.00am, and after administration of 0.18% NaCl, the repeat sodium was 127, and potassium 2.5. Biochemical changes are often well tolerated and easily corrected with appropriate fluid replacement, although these results do show a change over a relatively short period of time."*¹⁴⁴

4.68 Dr M Stewart indicated that there were "*deficiencies in the prescription and recording of volumes of fluids*"¹⁴⁵ and emphasised that in cases of moderate or severe dehydration, the Advanced Paediatric Life Support ('APLS') guidelines specify the use of normal saline and not the low saline fluids given Lucy. In addition Dr M Stewart observed that even after collapse Lucy received 500mls of normal saline in one hour whereas the

¹⁴² 325-002-009

¹⁴³ 036a-022-039

¹⁴⁴ 036a-025-056

¹⁴⁵ 036a-026-060

appropriate volume should have been 20mg/kg.¹⁴⁶ In other words she considered that Lucy was also given an excessive volume of normal saline.

- 4.69 On 1st June 2001 Dr M Stewart met with Dr James Kelly,¹⁴⁷ the Medical Director of the SLT to discuss the report. His memorandum of their meeting noted that

*“Overall amount of fluids once started not a major problem but rate of change of electrolytes may have been responsible for the cerebral oedema. RVH ward guidelines would recommend N-Saline not 1/5th normal as the replacement fluid.”*¹⁴⁸

- 4.70 For her part, Dr M Stewart gave evidence that by the end of the meeting she had left Dr Kelly in no doubt that the likely cause of Lucy’s collapse was the fall in sodium levels caused by fluid mismanagement.¹⁴⁹ It was clear to me that Dr M. Stewart’s evidence was given with a confidence not apparent in her written report. As Dr Kelly maintained, at the meeting with him she only went so far as to say that fluid mismanagement leading to electrolyte derangement *could* have caused the terminal deterioration:

*“I think my understanding of it was that Dr Stewart’s telling me that 127, even in a child, you wouldn’t automatically expect a seizure, but the rate of change of electrolytes could have caused the seizure or likely caused the seizure. The issue for me was that did not go on to say, “This is clearly the cause of death or this is clearly the cause of very significant brain oedema.” That conversation didn’t follow from that...”*¹⁵⁰

- 4.71 On balance I am prepared to accept Dr Kelly’s evidence that Dr M. Stewart expressed her opinions with a measure of equivocation during their meeting. It was properly conceded on Dr M. Stewart’s behalf that *“she should have been more explicit as to how the hyponatraemia and the rate of change in electrolytes could have resulted from the high volume of*

¹⁴⁶ 036a-025-058

¹⁴⁷ 325-002-007

¹⁴⁸ 036a-027-067

¹⁴⁹ Dr M Stewart T-18-06-13 p.76 line 9

¹⁵⁰ Dr Kelly T-13-06-13 p.69 line 12

*Solution 18*¹⁵¹ Nevertheless, and whilst it appears that she did not express a definitive conclusion about the process leading to the cerebral oedema either in her report or in her discussions with Dr Kelly, I am satisfied that she did condemn Lucy's fluid regime.

- 4.72 Dr M. Stewart's conclusions reinforce my finding that the probable causes of Lucy's death were readily identifiable in the period immediately following her death. I conclude that not only could the Coroner's findings of 2004 have been made in 2000 had an inquest been conducted but that they were in fact reached with one degree of precision or another by Drs Auterson, Asghar, Chisakuta, Evans and M. Stewart.
- 4.73 Therefore, the question which must be asked is, why did an accurate assessment of the cause of Lucy's death not emerge at the outset whether at the Erne or at the RBHSC

Initial concerns expressed at the Erne Hospital

- 4.74 After Lucy had been transferred to the RBHSC Dr Crean made a telephone call to the Erne Hospital to clarify the detail of fluid management. He spoke to Dr O'Donohoe.¹⁵²
- 4.75 Dr O'Donohoe cannot remember the specific details of the conversation but accepts that it caused him to question whether Lucy had received the fluids he had intended for her.¹⁵³ He was prompted to check Lucy's notes to see what was recorded about her fluid therapy.¹⁵⁴ He discovered that Dr Crean was right to be concerned because the fluids given to Lucy before her collapse were recorded as having been infused at 100mls/hr.
- 4.76 It was in this context that he made the following retrospective entry in Lucy's notes:

"Yesterday Dr Peter Crean rang from PICU RBHSC to enquire what fluid regime Lucy had been on. I told him a bolus of 100mls over 1 hour followed

¹⁵¹ 400-034-007 - Submissions on behalf of Dr M Stewart

¹⁵² WS-292-1 p.5

¹⁵³ WS-278-1 p.4

¹⁵⁴ WS-278-1 p.5

by 0.18% NaCl/Dextrose 4% at 30 ml/hour. He said he thought that it had been NaCl 0.18%% Dextrose 4% at 100ml/hr. My recollection was of having said a bolus over 1 hour and 30ml/hour as above."¹⁵⁵

- 4.77 Dr O'Donohoe did not however make any contact with the RBHSC thereafter to confirm that Lucy had not been given the fluids intended or indeed to indicate any error. However, Dr Crean and others at RBHSC were already of the view that the fluids given were inappropriate.
- 4.78 Dr O'Donohoe did however report his concerns to his Medical Director Dr Kelly as a '*critical incident reporting*' on the 13th/14th April 2000.¹⁵⁶ He cannot now remember what he said to Dr Kelly but confirms that it related to the quantity of fluids given.¹⁵⁷ Dr Kelly recalled that Dr O'Donohoe indicated uncertainty about what had happened and raised several possibilities, including misdiagnosis, drug error and adverse drug reaction. Dr Kelly said that Dr O'Donohoe made it very clear to him that there had indeed been confusion in respect of fluids.¹⁵⁸
- 4.79 Additionally, Sister Etain Traynor¹⁵⁹ of the Erne Hospital, who had not been involved with Lucy's care, tried to find out what had happened. She checked the nursing record and fluid balance sheets and notwithstanding the "*minimal information recorded*"¹⁶⁰ approached the Clinical Services Manager Mrs Esther Millar¹⁶¹ to express her "*concerns that the IV fluids administered had (although not recorded or prescribed) may (sic) have contributed to the child's deterioration...*"¹⁶²
- 4.80 Sister Traynor said that she told Mrs Millar that if Lucy was given 100ml per hour for a number of hours then that would have been too much and "*may well have contributed to her collapse.*"¹⁶³ This was then reflected in the

¹⁵⁵ 027-010-024

¹⁵⁶ It is unclear from the evidence when precisely Dr O'Donohoe made his report to Dr Kelly. I note that in submissions on behalf of Dr Kelly the 13th April 2000 is put forward; submissions made on behalf of Dr O'Donohoe suggest the 14th April. In my view nothing of significance turns on this discrepancy.

¹⁵⁷ WS-278-1 p.6

¹⁵⁸ 116-043-003

¹⁵⁹ 325-002-003

¹⁶⁰ WS-310-1 p.3

¹⁶¹ 325-002-008

¹⁶² WS-310-1p.4

¹⁶³ Sister Traynor T-07-06-13 p.159 line 23

clinical incident report form compiled by Mrs Millar on 14 April 2000 which recorded, “*concern expressed about fluids prescribed/administered...*”¹⁶⁴

- 4.81 All of this confirms for me that very soon after Lucy’s death Dr O’Donohoe knew that there had been error with the fluids and that concerns were being expressed by others within the hospital.

Discussion with Mr and Mrs Crawford at the Erne Hospital

- 4.82 Mr and Mrs Crawford contacted Dr O’Donohoe and requested a meeting to discuss their daughter’s death.¹⁶⁵ They must have hoped to find out what had happened and why she died. They met in May 2000. It is not suggested that Dr O’Donohoe or the Trust sought to avoid such a meeting but there is no indication that anyone from the Trust actively pursued one.

- 4.83 Whilst it should have been the first step to giving Mr and Mrs Crawford a proper understanding of what had happened to Lucy, it was in fact a most unproductive meeting. Dr O’Donohoe arrived without Lucy’s medical notes. Whilst acknowledging that this was a failing he said in explanation that he had “*tried unsuccessfully to retrieve Lucy’s notes.*”¹⁶⁶

- 4.84 Mrs Crawford recalled how disappointing the meeting had been:

*“We asked him various questions surrounding Lucy’s death. He said ‘he did not know’ or ‘did not understand it.’ Dr O’Donohoe did not have Lucy’s notes with him. He said he had given them to Dr Kelly to check. We were left feeling totally deflated and in the dark surrounding the circumstances in which Lucy died.”*¹⁶⁷

- 4.85 Dr O’Donohoe accepted that he was unable to answer their questions, making it, even on his own admission, an unsatisfactory meeting.¹⁶⁸ He disputed the suggestion that he couldn’t answer the questions because he didn’t have access to the notes on the even more unsatisfactory basis that

¹⁶⁴ 036a-045-096

¹⁶⁵ WS-278-1 p.13

¹⁶⁶ WS-278-1 p.13

¹⁶⁷ 013-022-079

¹⁶⁸ Dr O’Donohoe T-06-06-13 p.166 line 11

even if he had had notes he still would not have been able to answer their questions.¹⁶⁹

4.86 Dr O'Donohoe's most unprofessional approach to meeting Mr and Mrs Crawford is confirmed by his failure to inform them about any mismanagement of the fluids or his telephone conversation with Dr Crean. That did not require access to Lucy's medical notes. Even if he did not then fully understand the part poor fluid management had played in Lucy's deterioration, a position about which I have some doubt, I consider that he had a clear obligation to admit that mistakes had been made and to assist Mr and Mrs Crawford to an eventual understanding of their significance. Dr O'Donohoe conceded that he ought to have told Lucy's parents about the fluids, if only to let them know that the intended Review process would have a focus as opposed to something that was "*undirected*."¹⁷⁰

4.87 However, Mr and Mrs Crawford are very clear that Dr O'Donohoe did not tell them that there would be a Review.¹⁷¹ Dr O'Donohoe maintains that he told them that he had "*asked Dr Kelly, as the Trust's Medical Director to look into the matter*."¹⁷² However he did accept that his choice of words may have been "*very unhelpful*" in actually describing the process of review.¹⁷³

4.88 The meeting with Lucy's parents was particularly unsatisfactory. Even, and perhaps most especially, at a first meeting they had the right to be told of the circumstances of their daughter's death and of the mismanagement of her fluid therapy. Dr O'Donohoe had a duty to explain fully what he knew to have happened.¹⁷⁴ They should furthermore have been advised explicitly about the Review of her case. That they were not so advised raises the concern that the issues were deliberately withheld so as to avoid blame and criticism.

¹⁶⁹ Dr O'Donohoe T-06-06-13 p.168 line 9-21

¹⁷⁰ Dr O'Donohoe T-06-06-13 p.169 line 6

¹⁷¹ 036c-017-042

¹⁷² Dr O'Donohoe T-06-06-13 p.168 line 16-17

¹⁷³ Dr O'Donohoe T-06-06-13 p.169 line 19

¹⁷⁴ 315-002-009 - GMC- Good Medical Practice (1998)

- 4.89 Mr and Mrs Crawford then went to see Dr Hanrahan at the RBHSC on 9th June and he in turn contacted Dr O'Donohoe to ask him to meet with them again. Dr O'Donohoe said that whilst he would arrange a further meeting, he would prefer to await the post-mortem report.¹⁷⁵
- 4.90 I accept that that was a sensible thing to do, particularly after the unsatisfactory first meeting. A delayed meeting would allow Dr O'Donohoe time to review Lucy's notes, consider the opinion of the pathologist and reflect upon the case in the light of his own direct involvement.
- 4.91 Regrettably, Dr O'Donohoe failed to make contact with the family to arrange a further meeting. He was unable to provide any explanation for this omission¹⁷⁶ but acknowledged that it was a failing on his part.¹⁷⁷ I consider that Dr O'Donohoe's refusal to tell Mr and Mrs Crawford what he knew and what they were entitled to know was inexcusable.
- 4.92 I do not underestimate how difficult such meetings must be for doctors, especially in the case of child death where there is no definitive explanation for the death. It must be even more difficult where clinical shortcomings are suspected. Nonetheless it remains vitally important that such meetings take place. Paragraph 18 of the contemporaneous General Medical Council ('GMC') code 'Good Medical Practice' required that where "*...a patient under 16 has died you must explain, to the best of your knowledge, the reasons for, and the circumstances of the death, to those with parental responsibility.*"¹⁷⁸
- 4.93 A recurrent theme of this Inquiry has been the determination expressed by parents to ensure that lessons are learned so that the mistakes which led to the death of their child cannot be repeated. I have reached the view that once the possibility of error is openly acknowledged by clinicians there remains nothing to conceal and learning is incentivised. It is clear to me that one of the main obstacles to learning in these cases has been the

¹⁷⁵ 061-018-069

¹⁷⁶ Dr O'Donohoe T-06-06-13 p.167

¹⁷⁷ 400-033-004 - Submissions made on behalf of Dr O'Donohoe

¹⁷⁸ 315-002-009

failure by clinicians and others to inform families of suspected mismanagement at the earliest opportunity.

Review

4.94 It was entirely appropriate that the SLT should establish a formal Review in order to examine what had happened to Lucy.

4.95 It is to be recognised that at that time governance arrangements in Northern Ireland hospitals were not well developed. Mr Eugene Fee¹⁷⁹ (Acute Services Manager, SLT) explained that formal clinical and social care governance was not implemented until late 2000.¹⁸⁰ Nonetheless, arrangements for adverse clinical incident reporting were in place and Dr Kelly lost no time in bringing the matter to the attention of the Trust Chief Executive Mr Mills, requesting that the case be investigated by a senior Review Team. The Review was to be co-ordinated by Mr Fee with the assistance of Dr Trevor Anderson¹⁸¹ (Clinical Director for Women and Children's Directorate).

4.96 The stated object of the Review was:

"...to trace the progression of Lucy's illness from her admission to the Erne Hospital and her treatment/interventions in order to try and establish whether:

There is any connection between our activities and actions and the progression and outcome of Lucy's condition

Whether or not there was any omission in our actions and treatments which may have influenced the progression and outcome of Lucy's condition

*Whether or not there are any features of our contribution to care in this case which may suggest the need for change in our approach to the care of patients within the Paediatric Department or wider hospital generally."*¹⁸²

¹⁷⁹ 325-002-008

¹⁸⁰ Mr Fee T-13-06-13 p.103 line 16

¹⁸¹ 325-002-008

¹⁸² 033-102-264

4.97 Mr Mills noted on 20th April 2000 that, *“Mr Fee advised that the patient’s notes recorded a comment from Dr O’Donoghoe (sic) that he was uncertain about the instructions he gave staff about the rate of flow of I.V. fluids. Child had been given 100mls per hour for 4 hours. He states he meant this to be 100mls per hour for the first hour and 30mls per hour thereafter. However, when child collapsed anaesthetic support had prescribed more fluids. Post mortem results indicated cerebral oedema. Mr Fee felt he required advice from a Paediatrician. I agreed I would arrange this...”*¹⁸³

4.98 In order to secure expert Paediatric opinion, Mr Mills contacted Dr Murray Quinn (Consultant Paediatrician, Altnagelvin Area Hospital) who agreed to look at Lucy’s notes and to provide advice.¹⁸⁴ Mr Fee then wrote to Dr Quinn on 21st April 2000 that:

“I would be grateful for your opinion on the range of issues discussed which would assist Dr Anderson and my initial review of events relating to Lucy’s care. These were:

- (i) The significance of the type and volume of fluid administered*
- (ii) The likely cause of the cerebral oedema*
- (iii) The likely cause of the change in the electrolyte balance i.e. was it likely to be caused by the type of fluids, the volume of fluids used, the diarrhoea or other factors.*

*I would also welcome any other observations in relation to Lucy’s condition and care you may feel is relevant at this stage.”*¹⁸⁵

4.99 Mr Fee informed Mr Mills that he had spoken with the medical and nursing staff¹⁸⁶ and had requested written statements from six individuals.¹⁸⁷ It was agreed that a health visitor would be asked to communicate with the Crawford family and inform them that the circumstances of Lucy’s death were being examined.

¹⁸³ 030-010-017

¹⁸⁴ 030-010-018

¹⁸⁵ 033-102-296

¹⁸⁶ 030-010-017

¹⁸⁷ 030-010-018

4.100 At that stage, the Review appeared well founded in that it was being led by a senior hospital manager with the assistance of the relevant Clinical Director, it had the support and interest of both the Trust's Medical Director and Chief Executive, it was commencing its investigation promptly and within days of the adverse incident, it had the expertise of an external Consultant Paediatrician and had access to all relevant clinical and nursing staff. Furthermore, on the face of it a channel of communication had been established with Lucy's parents.

4.101 Regrettably, the Review failed to establish that any error was implicated in the sequence of events leading to the death or even that there were any significant shortcomings in care. The Review report findings were remarkably inconclusive. They indicated that:

*"Lucy Crawford was admitted to the Children's Ward, Erne Hospital on 12 April 2000 at approximately 7.30pm having been referred by her General Practitioner. The history given was one of 2 days fever, vomiting and passing smelly urine. The General Practitioner's impression was that Lucy was possibly suffering from a urinary tract infection. The patient was examined by Dr Malik, Senior House Officer, Paediatrics, who made a provisional diagnosis of viral illness. She was admitted for investigation and administration of IV fluids. Lucy was considered to be no more or less ill than many children admitted to this department. Neither the post-mortem result or the independent medical report on Lucy Crawford, provided by Dr Quinn, can give an absolute explanation as to why Lucy's condition deteriorated rapidly, why she had an event described as a seizure at around 2.55am on 13 April 2000, or why cerebral oedema was present on examination at post-mortem."*¹⁸⁸

4.102 In assessing the quality of the Review I have taken into account the under developed state of clinical governance, the lack of support for the role of Medical Director, the lack of training in the process of review¹⁸⁹ and that the more developed investigation techniques of today were not then available.

¹⁸⁸ 033-102-265

¹⁸⁹ Dr R. MacFaul T-27-06-13 p.120 line 12

Method

- 4.103 The Review method was to consider Lucy's case notes and post-mortem, obtain written statements from the relevant staff, engage Dr Quinn, discuss matters with the Ward Sister, Infection Control Nurse and Dr Quinn and consider his written report.¹⁹⁰
- 4.104 There was, however, only limited commitment to gaining a detailed account of the facts of the case. Dr Quinn asked Dr Kelly and Mr Fee whether there *"could there have been earlier seizures resulting in hypoxia for 15-20 minutes prior to catastrophic seizure event?"*¹⁹¹ The reviewers did not engage with his questions. They blandly reported that *"with the exception of Nurse McCaffrey's report, little detailed descriptions of the event are recorded and no account appears to be in existence of the mother's description, who was present and discovered Lucy in this state."*¹⁹² Seemingly no one sought more detailed descriptions or asked Lucy's mother.
- 4.105 Dr Quinn received no further instructions and this may have hampered his ability to form necessary conclusions. He certainly expressed his uncertainty in relation to key issues:

"Did the child have a seizure or did she "cone" at 3.00am?"

*I feel it is very difficult to say what happened in and around this time. It is certainly possible that she had a seizure and may even have had a period of time when she was hypoxic before medical attention was drawn to the fact that she was unwell. However I cannot say that this is the case. It may be that mother informed the ward staff immediately she noted the problem but again this is not clear to me from the notes provided."*¹⁹³

- 4.106 The obvious failure to identify and examine key aspects of the incident inhibited findings on fluid management issues. The Review catalogued much that was then unclear and required investigation, noting for example

¹⁹⁰ 033-102-265

¹⁹¹ 036a-047-101

¹⁹² 033-102-266

¹⁹³ 036a-048-105

that “*There was no written prescription to define the intended volume. There was some confusion between the Consultant, Senior House Officer and Nurses concerned, in relation to the intended volume of fluid to be given intravenously. There is a discrepancy in the running total of the intravenous infusion of solution 18 for the last 2 hours. There is no record of the actual volume of normal saline given when commenced on a free flowing basis.*”¹⁹⁴

- 4.107 However, having raised these issues there appears to have been little attempt to address them. What was the confusion between the Consultant, the House Officer and the Nursing team? What was the discrepancy in the record of infusion of Solution No. 18, and how did this occur? How much normal saline was administered? What did the treating clinicians consider to be mistakes and what did they think were the implications? None of these questions was satisfactorily explored by the Review and I am bound to ask why, because there was every prospect of obtaining the answers had the reviewers pursued them.
- 4.108 Dr Anderson was keen to emphasise the distinction between ‘investigating’ and ‘reviewing’ a case¹⁹⁵ just as Mr Fee insisted that he was conducting a ‘review’ rather than ‘investigating’ a death. Their evidence suggested that neither was determined to pursue critical questions.
- 4.109 Dr Quinn had asked how much normal saline had been administered because had Lucy received 500ml “*this may have affected the level of cerebral oedema experienced at post mortem.*”¹⁹⁶ However, the information was not provided to the satisfaction of Dr Quinn, causing him to observe in his report that he was “*not certain how much normal saline was run in...*”¹⁹⁷ This was a failure Mr Fee could not explain. That the Review should respond to Dr Quinn’s query about the administration of normal saline in such a casual manner is symptomatic of the general lack of thoroughness. Notwithstanding that the Review ought to have focussed on fluid management matters, Mr Fee and Dr Anderson allowed some

¹⁹⁴ 033-102-266

¹⁹⁵ Mr Fee T-13-06-13 p.116 line 5

¹⁹⁶ 036a-048-106

¹⁹⁷ 033-102-273

participants to avoid all mention of fluids. Extraordinarily, the Review was actually characterised by a general failure to describe fluid management error and the potential implications.

- 4.110 The Review had sought from each clinician a “*factual account of the sequence of events from their perspective*.”¹⁹⁸ This was interpreted narrowly and the co-ordinators accepted what was submitted without demur or follow-up. There was an obvious absence of rigour and clinical curiosity. It is troubling that having knowingly commenced a review into the fluid and electrolyte management of a patient who had died, that they did not ask more questions about the management or appraise the evidence in order to identify the limited co-operation which they had received.
- 4.111 Clinicians should have been specifically requested to explain and justify the fluids given and to articulate any concerns. Dr Malik’s approach should have been challenged and Dr Auterson asked to address the issues more specifically. The clinicians should not have been permitted to avoid proper explanation. It is a matter of concern that the reviewers should tolerate rather than challenge Dr O’Donohoe’s avoidance of the issues. He was asked neither for detail nor explanation as to what had happened. This was unacceptable and illustrates how timidly Mr Fee and Dr Anderson approached the Review.
- 4.112 Mr Fee agreed that the failure of clinicians to engage with the Review “*stares out at you*” from their statements.¹⁹⁹ However, it was their responsibility to ensure that the clinicians did not evade the issues. The clinicians should have been pursued and required to provide answers. Mr Fee could not account for this failure²⁰⁰ but insisted that it was not in consequence of any deliberate decision.²⁰¹
- 4.113 Mr Fee and Dr Anderson were responsible for a Review which was inadequate. This was a failure of the individuals and of governance. They

¹⁹⁸ 033-102-285

¹⁹⁹ Mr Fee T-13-06-13 p.145 line 7-8

²⁰⁰ Mr Fee T-13-06-13 p.146 line 7

²⁰¹ Mr Fee T-14-06-13 p.37 line 17

were inexperienced and untrained in the conduct of reviews of this nature and they were not assisted by the clinicians involved. They were possibly deflected by the misleading conclusions of Dr Quinn. However this can afford them only partial mitigation. Lucy's death was caused by a glaring medical error and if Mr Fee and Dr Anderson had thought about it they would have recognised that the clinicians were consistent in avoiding this central issue, and it would appear, deliberately so.

Dr O'Donohoe's contribution to Review

- 4.114 In assessing Dr O'Donohoe's contribution to the Review I have had regard to the findings reached by the GMC that his acts or omissions were not in Lucy's best interests and fell below the standard to be expected of a reasonably competent physician.²⁰² The GMC determined that Dr O'Donohoe had failed to calculate an acceptable plan of fluid replacement and had failed to ensure that nursing staff knew of an adequate fluid replacement plan and a system for monitoring its progress. Moreover, the GMC concluded that the entry made in Lucy's notes by Dr O'Donohoe on the 14 April 2000 following his conversation with Dr Crean, was both "inaccurate and misleading." Furthermore, it was found that the fluid therapy which Dr O'Donohoe "claimed to have ordered" was not communicated properly to those administering the fluid and was in any event, inappropriate.
- 4.115 It has been said on Dr O'Donohoe's behalf that his role in the events following Lucy's death was "*of a very limited compass*" and that he was only involved with the aftermath "*to a comparatively limited degree*."²⁰³ I disagree with this analysis. Dr O'Donohoe could and should have played the central role in identifying the mismanagement in her care and in assisting the review to determine what it was that had caused her death. It is clear that he failed to fulfil that role.

²⁰² 163-005-001

²⁰³ 400-033-002 to 004 - para 7 & 25(4), Submissions made on behalf of Dr O'Donohoe

- 4.116 In his statement for the Review, Dr O'Donohoe rehearsed those fluids which he claimed to have directed Dr Malik to give Lucy, namely 100mls as a bolus over the first hour and then 30mls per hour thereafter.²⁰⁴ However, he knew very well that Lucy had not received those fluids. He had checked this issue after Dr Crean's telephone call and knew that Lucy had received Solution No. 18 at a rate of 100ml/hr until she suffered a seizure and that thereafter she had been given a large quantity of normal saline. He did not refer to these important matters in his statement. He knew that her fluid management was wrong and he avoided saying so.
- 4.117 Dr O'Donohoe, having stated that he could not remember why he did not particularise the fluids actually given,²⁰⁵ ventured to explain that he didn't know that Dr Anderson was conducting a Review on behalf of the Trust and that in any event Dr Anderson liked to receive short, factual reports.²⁰⁶ Ultimately, Dr O'Donohoe accepted in his evidence that his avoidance of all reference to fluid mismanagement in his statement was a failing and he expressed regret.²⁰⁷
- 4.118 It was said on Dr O'Donohoe's behalf that his mental and physical health had declined since the events in question and that his memory was in consequence impaired.²⁰⁸ While all of this may be so, I found his explanations implausible and bizarre. Dr O'Donohoe contended that at the time of Lucy's death it did not occur to him that her deterioration was "*a fluid balance issue*" although he accepted in retrospect that this is precisely what should have occurred to him at the time.²⁰⁹ He stressed that he did not think her repeat serum sodium level of 127mmol/l could be associated with "*such a profound catastrophic outcome.*"²¹⁰ In defence of his position Dr

²⁰⁴ 033-102-293

²⁰⁵ WS-278-1 p.8

²⁰⁶ Dr O'Donohoe T-06-06-13 p.148 line 1-8

²⁰⁷ 400-033-004 - Submissions made on behalf of Dr O'Donohoe

²⁰⁸ 400-033-002 - Submissions made on behalf of Dr O'Donohoe

²⁰⁹ Dr O'Donohoe T-06-06-13 p.13 – This position was consistent with his evidence before the General Medical Council by whom he was condemned for serious professional misconduct.

²¹⁰ Dr O'Donohoe T-06-06-13 p.100 line 8

O'Donohoe relied on the fact that the issues were not clarified by the post-mortem undertaken at the RBHSC.²¹¹

- 4.119 I do not consider that Dr O'Donohoe should necessarily have reached the initial conclusion that errors of fluid management caused the death. Rather, I believe that an experienced paediatrician with a developed understanding of this field of medicine should have suspected that fluid mismanagement could be implicated. Instead of engaging with the Review on this issue, he remained silent. This was unacceptable.

Dr Malik's contribution to the Review

- 4.120 Dr Malik submitted a statement for the Review²¹² but made no reference whatever to the fluids. His omission is extraordinary. His failure to engage was not challenged by those conducting the Review. At best, this was worryingly complacent.
- 4.121 Dr Malik had been present when Dr O'Donohoe gave his directions for Lucy's fluid management. So much is clear from Dr O'Donohoe²¹³ and Staff Nurse Swift.²¹⁴ However, Dr Malik stated that having admitted Lucy for "*administration of intravenous fluids*"²¹⁵ he was probably called away before Dr O'Donohoe directed Lucy's fluids.²¹⁶ Even if Dr O'Donohoe and Staff Nurse Swift are wrong and he was absent when the fluids were prescribed, Dr Malik nonetheless had the opportunity to identify the fluids because they were still running when he returned to see her at 03:00. I conclude that he knew what she had been given and ought to have said so in his statement.
- 4.122 Furthermore, Dr Malik's position that he "*did not mention the rate and volume of fluid actually received by Lucy as [he] was not the one who initiated the fluid regime*"²¹⁷ is disingenuous. The fact that Dr Malik did not

²¹¹ Dr O'Donohoe T-06-06-13 p.112 line 8

²¹² 033-102-281

²¹³ 033-102-293

²¹⁴ 033-102-295 & 033-102-290

²¹⁵ 033-102-281

²¹⁶ 033-102-281

²¹⁷ WS-285-1 p.9

initiate the pre-collapse fluids is irrelevant and merely avoids explanation of what he knew.

- 4.123 Dr Malik was likewise evasive in relation to the fluids administered after collapse. Staff Nurse Sally McManus²¹⁸ confirmed that Lucy's fluids were changed to normal saline with Dr Malik in attendance.²¹⁹ Accordingly, Dr Malik was probably responsible for that prescription and indeed he recorded the infusion of 500ml normal saline over 60 minutes.²²⁰ However, he chose not to mention it in his statement for the Review.
- 4.124 I consider that a remarkable and telling failure. The decision to discontinue Solution No. 18 and infuse as much normal saline as possible for an hour was a radical change in treatment and required clear explanation. Dr Malik ought to have particularised and justified the treatment he directed rather than omitting all reference to it.
- 4.125 Dr Malik said that he had only been asked to deal with his role in caring for Lucy and had not been asked for his view about the appropriateness of the treatment.²²¹ However I consider that it was his responsibility to inform the Review both about the treatment given and the reasons for that treatment. He was no mere bystander but an active participant.
- 4.126 Dr Malik said that he was reassured because his consultant Dr O'Donohoe had made the initial prescription and there were senior nurses present who would have challenged the treatment had they been concerned.²²² This is inconsistent with the explanation he gave to the GMC that *"...the nursing staff should not have started the fluid without written prescription; they should have been aware of the inappropriate amount of fluid regime and they should have queried it with me or the consultant."*²²³ His evidence and attitude confirms my suspicion that he was aware that the treatment

²¹⁸ 325-002-002

²¹⁹ 027-017-057

²²⁰ 027-010-024

²²¹ WS-285-1 p.10

²²² WS-285-1 p.10

²²³ WS-285-1 p.22

provided was open to criticism and that is why he was so unhelpful when asked to account for it.

- 4.127 In assessing Dr Malik's conduct, I take into account the fact that at the time of Lucy's death he was a relatively inexperienced paediatrician. His appointment to the Erne as an SHO appears to have been his first substantive appointment to a paediatric post in the UK.²²⁴ He did not give oral evidence and so his Inquiry witness statement could not be tested. Whilst I appreciate that it may have been difficult for him to travel from Pakistan, he made no application to be excused.
- 4.128 I conclude that Dr O'Donohoe and Dr Malik were aware that the fluid management was flawed. It is troubling that they should have deliberately avoided dealing with the issue for the Review. They disregarded their duty as doctors to co-operate fully with the Review and specifically not to withhold relevant information.²²⁵ They acted unprofessionally and by so doing undermined the critical process of review.

Dr Auterson's contribution to the Review

- 4.129 I have already reviewed Dr Auterson's engagement with the Review process.
- 4.130 He was at all times under a professional duty to make proper disclosure.²²⁶ In his evidence he admitted that he was ashamed by his failure to assist the Review but said that, "*There was no deliberate attempt on my part to conceal any facts. The fact that I did not mention fluid balance and possible errors on that in my report [for the Review], I can't explain it, it's a bad reflection on me.*"²²⁷
- 4.131 In many respects the motivation for Dr Auterson's silence is not the most important issue, but it does seem to me very likely indeed that he failed to

²²⁴ WS-285-1 p.18

²²⁵ 315-002-009 - GMC Good Medical Practice (1998)

²²⁶ 315-002-009

²²⁷ Dr Auterson T-31-05-13 p.153 line 23

inform management of Lucy's care because of a misplaced loyalty to colleagues.

Dr Murray Quinn's report for the Review

- 4.132 The decision to appoint an 'outside' Consultant Paediatrician to advise was sound in principle. However, Dr Quinn imposed limitations on his involvement. He did not wish to interview clinicians or meet the family. His was a paper exercise which involved examining the records, identifying issues, raising questions and attempting to draw conclusions. He was not asked for a formal medico-legal report. Such limitations were likely to reflect in the quality and completeness of his work.²²⁸ He maintained that the Trust knew what he was prepared to do and accepted his approach.²²⁹ This confirms the Trust's lack of ambition for the Review which undermined its prospects from the start.
- 4.133 Dr Quinn agreed that he was obliged to bring professional rigour to his task.²³⁰ His work may have been limited but he was to do it to the best of his professional ability. In the event, Dr Quinn was unable to identify the ultimate cause of the cerebral oedema.²³¹ That may have been understandable but his report made fundamental errors which served to mislead.
- 4.134 Dr Quinn was an experienced Consultant Paediatrician and the medical issues of gastroenteritis, dehydration, fluid and electrolyte therapy and cerebral oedema were all within his competence to analyse.²³² Nonetheless, errors appear in his report which individually and cumulatively gave the Trust reassurance when its clinicians ought to have been subject to criticism.
- 4.135 Dr Quinn categorised the use of Solution No. 18 to manage the fluids of a child with recent vomiting and diarrhoea as "*appropriate*."²³³ He later

²²⁸ Dr Quinn T-14-06-13 p.99 line 23

²²⁹ Dr Quinn T-14-06-13 p.99 line 14

²³⁰ Dr Quinn T-14-06-13 p.97-98

²³¹ 036a-048-106

²³² Dr Quinn T-14-06-13 p.109 line 19

²³³ 036a-048-104

acknowledged that this was wrong, explaining that he used “*this ‘appropriate’ term, which is maybe inappropriate, on the perception that the doctors in the Erne felt she wasn’t very sick, and therefore at that time were going to use fifth-normal saline for maintenance or mild dehydration.*”²³⁴

4.136 There are problems with this analysis because Dr Quinn knew from the notes that Dr O’Donohoe claimed to have intended a different fluid regime for Lucy not involving Solution No. 18 at 100ml/hr.²³⁵ Accordingly, Dr Quinn’s perception that the doctors thought her in a better state of health than she was, had no basis in fact. In any event, his report did not contain this explanation. If he believed that they used the wrong fluid because they underestimated the severity of her condition then it was his obligation to say so. He should not have engaged in an analysis on the basis that the doctors were correct in using Solution No. 18 when he recognised that this was in fact a mistake.

4.137 Dr Quinn accepted that Lucy had not been mildly dehydrated but was suffering dehydration in the order of 5%-10%. In such circumstances it was necessary to administer fluids containing more sodium than Solution No. 18.²³⁶ He should have made this observation and with force but did not. Dr Quinn sought unconvincingly to argue that it was at least possible that he could have told the Trust that the fluid should have been normal saline.²³⁷ However, the note of his meeting with Dr Kelly and Mr Fee on the 21 June 2000 clearly records him expressing a view that “*choice of fluid correct.*”²³⁸ Similarly, his report written the following day, described the choice of fluid as “*appropriate.*”²³⁹

4.138 Dr Quinn failed to adequately condemn the fluids given as excessive. Whilst he insisted that he had always taken the view that the volume of fluids administered “*was absolutely incorrect*”²⁴⁰ this does not emerge

²³⁴ Dr Quinn T-14-06-13 p.134-135

²³⁵ Dr Quinn T-14-06-13 p.121 line 19 & 027-010-024

²³⁶ Dr Quinn T-14-06-13 p.138 line 8

²³⁷ Dr Quinn T-14-06-13 p.148 line 10

²³⁸ 036a-047-101

²³⁹ 036a-048-104

²⁴⁰ Dr Quinn T-14-06-13 p.141 line 10

clearly from his report. It notes that Lucy received 100ml/hr of Solution No. 18 over a four hour period²⁴¹ but is silent as to whether Lucy's condition warranted the infusion of 100ml/hr. Moreover, Dr Kelly's note of their meeting on 21 June 2000 records Dr Quinn as indicating that "*fluid replacement 4 hours @ 100mls provided was greater than normal but not grossly excessive.*"²⁴² By contrast, Dr Quinn agreed in oral evidence that not only did Lucy receive the wrong fluid, but she received it at a rate (100ml/hr) which would only have been acceptable had she been much more dehydrated than he believed.²⁴³

4.139 Notwithstanding, that the volume of normal saline given was not clarified to Dr Quinn's satisfaction by the co-ordinators of the Review his working notes indicate that he was suspicious that 500ml had been administered.²⁴⁴ Regrettably, he did not use his report to highlight the basis for this justifiable concern, nor did he indicate that the infusion of such a volume could have contributed to the oedema. This was in strong contrast to the directness with which he gave his oral evidence when he described a volume of 500ml as "*massively excessive.*" He explained that running that volume into a sick child of Lucy's weight would place "*tremendous strain on the right side of the heart.*"²⁴⁵

4.140 Additionally, Dr Quinn reported that he would have been "*surprised*" if the volume of fluid given "*could have produced gross cerebral oedema causing coning.*"²⁴⁶ That this was his stated view is confirmed by Dr Kelly's note.²⁴⁷ Whilst Dr Quinn denied this,²⁴⁸ I am nonetheless satisfied that this was the impression given to Dr Kelly. In his discussions with the Trust as in his written report, Dr Quinn expressed himself in such a way as to mislead as to the appropriateness of the type and volume of fluids given and to

²⁴¹ 036a-048-104

²⁴² 036a-047-101

²⁴³ Dr Quinn T-14-06-13 p.173 line 19

²⁴⁴ WS-279-1 p.35

²⁴⁵ Dr Quinn T-14-06-13 p.126 line 17

²⁴⁶ 036a-048-105

²⁴⁷ 036a-047-101

²⁴⁸ Dr Quinn T-14-06-13 p.167 line 19

communicate a sense that the fluid therapy presented little cause for concern.

- 4.141 Dr Quinn also failed to recognise that because the normal saline was infused before the blood sample was taken, the serum sodium count could have been even lower than the 127mmol/l recorded. Whilst Dr Quinn admitted that he did not seek clarification in relation to the sequencing before writing his report,²⁴⁹ I received no adequate explanation from him as to why his written report should have so failed in analysis.

Criticisms of Dr Quinn

- 4.142 It has been suggested on Dr Quinn's behalf that it would be fair to criticise him for three errors only: describing the infusion of Solution No. 18 as "*appropriate*" because this was potentially misleading (albeit not intentionally so); for failing to state explicitly in his report that it was intended as a 'desk-top' review and not a medico-legal report; and for allowing himself to be persuaded to commit his thoughts to writing at all.²⁵⁰
- 4.143 I agree that these concessions were properly made, but there is an additional concern. Importantly, Dr Quinn failed to draw attention to what he knew to be a possibility, namely that the mismanagement of fluids could have caused the fatal cerebral oedema. In his defence Dr Quinn considered that he was not in a position to give an opinion on the likely cause of the cerebral oedema and coning because he had not been provided with all the necessary information.
- 4.144 Notwithstanding that Dr Quinn did not receive all the materials which would have been supplied to him had he been asked to conduct a detailed investigation and whilst accepting that Dr Quinn may not have been able to reach a definitive conclusion because he had not spoken to Lucy's mother, nursing staff or the clinicians involved, it is nonetheless clear, that he could have identified the poor fluid management and indicated that it could have

²⁴⁹ Dr Quinn T-14-06-13 p.117

²⁵⁰ 400-029-009 to 011 - Submissions on behalf of Dr Quinn

caused the cerebral oedema and coning.²⁵¹ He properly accepted that by omitting this from his report the Trust may have been falsely reassured.²⁵²

- 4.145 Dr MacFaul described Dr Quinn's report as "*wrong and misleading*." I agree with that view. Indeed, it is reasonable to conclude that the conclusions in his report about fluid management were directly contradicted in his oral evidence. I consider that his approach to the task demonstrated a reluctance to criticise other professional colleagues. This has been a recurring theme in this Inquiry. There were certainly deficiencies in the information supplied to him, but I take the view that he had sufficient information to be more critical of the treatment provided to Lucy, and that he ought to have alerted SLT to more problems than he did. He was keen to adopt a limited role and was insufficiently committed to his task to give the issues which confronted him the attention they deserved. He approached his obligation to report without due professionalism.

Independence of Dr Quinn

- 4.146 The appointment of Dr Quinn to assist with the Review has been questioned on the basis that he may have lacked the independence necessary to assess the issues with obvious detachment. It was of fundamental importance that he should express independent views without fear or favour and that there should be confidence that he was so doing.
- 4.147 Dr Quinn was at that time employed as a consultant in the Altnagelvin Area Hospital which was run, like the Erne Hospital, within the same WHSSB area. Additionally, Dr Quinn had previously provided paediatric services to the Erne Hospital and knew some of the clinicians who worked there including Drs Anderson and O'Donohoe. He knew Mr Mills both professionally and socially.
- 4.148 I am concerned there was no assessment by the Trust of the potential for conflict of interest.²⁵³ Dr Quinn was a very poor choice to conduct this work

²⁵¹ Dr Quinn T-14-06-13 p.150 & p.156 line 18 & p.154 line 22

²⁵² Dr Quinn T-14-06-13 p.163 line 22 & p.164 line 2

²⁵³ 162-002-006 - Dr Michael Durkin has commented that Dr Kelly, in his capacity as Medical Director, ought to have made such a record.

on behalf of Trust, not least because of his professional and social connections. The Trust is to be criticised for retaining an expert who was not transparently independent.

- 4.149 It is clear to me that Dr Quinn did not approach his task with the necessary degree of professional detachment. His familiarity with the organisation and the people who had retained him plainly influenced him. He has indicated that he was “*sweet talked*” into providing a written report for the Review against his better judgment.²⁵⁴ He should not have carried out this work on behalf of the Trust, and should not have been asked to do so.

Deployment of Dr Quinn’s Report by Sperrin Lakeland Trust

- 4.150 Mr Crawford made a formal complaint to the Trust on 22 September 2000 requesting that it investigate the “*inadequate and poor quality of care provided*.”²⁵⁵ He was entitled under the 1992 Patient’s Charter to expect that this would be dealt with quickly with a full investigation and written report to be issued within one month. Additionally, the Trust had been issued with Departmental guidance on handling complaints by the HPSS Executive in 1996.²⁵⁶ This emphasised as a “*key objective*” an approach which was honest and thorough.²⁵⁷

- 4.151 Mr Mills eventually made the Trust’s substantive response to Mr Crawford on 30 March 2001. He sought to reassure him that,

“the outcome of our review has not suggested that the care provided to Lucy was inadequate or of poor quality. As you will be aware, the Trust engaged an independent consultant, from another Trust, to review Lucy’s case notes and to advise us on this very question. We do however accept and acknowledge that the review has flagged up issues which the Trust will

²⁵⁴ In the UTV Insight documentary Dr Quinn used the term “*sweet talked*.” It was an unfortunate turn of phrase in this context. However, I note the submission made on Dr Quinn’s behalf that I should not place importance upon it. I agree that of itself, the use of the phrase does not assist me in coming to a determination in relation to whether his independence was compromised.

²⁵⁵ 015-014-114

²⁵⁶ 314-016-001 - Complaints: Listening...Acting...Improving. Guidance on Implementation of the HPSS Complaints Procedure.

²⁵⁷ 314-016-006

wish to address for the future. These include communication and written records, and are referred to in Mr Fee's report."²⁵⁸

- 4.152 The deliberate impression conveyed was that the independent expert's advice had established that there were no inadequacies in the care. Mr Mills did not tell Mr Crawford that the RCPCH had been asked to review Lucy's case as part of a broader appraisal of Dr O'Donohoe's competence. I am concerned that Mr and Mrs Crawford were encouraged to conclude that there had been a proper consideration of the issues surrounding their daughter's death and that the Trust was justified in defending the quality of care provided.
- 4.153 Mr Mills insisted that he was entitled to respond to the complaint in this way given what he knew at the time.²⁵⁹ He contended that it was only after engaging with the RCPCH, the litigation process and the inquest that the Trust could understand the inadequacy of the care.²⁶⁰
- 4.154 Nevertheless, there were problems with Mr Mills' decision to deploy Dr Quinn's report in response to Mr Crawford's complaint because it had not been commissioned or compiled for that purpose. Dr Quinn's report was a "*desk-top review*"²⁶¹ undertaken without detailed investigation for the purpose of "*highlighting issues rather than attempting to provide definite conclusions.*"²⁶²
- 4.155 Dr Quinn had very clearly not intended his report to be conclusive. It expressed uncertainties about whether Lucy had suffered a seizure, why she was floppy, what her mother had observed and even how much normal saline she had been given.²⁶³ Such statements as were obtained by Mr Fee and Dr Anderson were not shared with Dr Quinn. Dr Quinn had written that "*It is always difficult when simply working from medical and nursing records and also from not seeing the child to get an absolutely clear picture*

²⁵⁸ 015-034-146

²⁵⁹ Mr Mills T-17-06-13 p.143 line 21

²⁶⁰ Mr Mills T-17-06-13 p.144 line 2

²⁶¹ Dr Quinn T-14-06-13 p.106-107

²⁶² Dr Quinn T-14-06-13 p.102 line 17

²⁶³ 036a-048-105

*of what was happening...*²⁶⁴ His report raised more questions than it supplied answers.²⁶⁵ However, no such uncertainty was conveyed to Lucy's parents.

4.156 Furthermore, Dr Quinn's report did not absolve the Trust, and Mr Mills was wrong to suggest that it did not identify inadequacies in the care. Dr Quinn had "*questioned a lot of what had been done in terms of the record keeping and the IV fluids*"²⁶⁶ and for his part, Mr Fee was very properly prepared to accept that the failures identified by Dr Quinn's report were "*deficits in the quality of care provided to Lucy*."²⁶⁷

4.157 Mr Mills should not have suggested that Dr Quinn's report was an independent expert determination of the adequacy and quality of the care because it was not. It was misleading to suggest his reported view to Mr Crawford as an answer to the complaint. It was not. That the Trust chose not to furnish Mr Crawford with a copy of Dr Quinn's report compounds the obvious failure to respond with the openness and fairness expected of it by the Departmental guidance.²⁶⁸

Involvement of RBHSC and Mr and Mrs Crawford

4.158 Mr Fee acknowledged that there were no restrictions on how he or Dr Anderson should conduct their Review. Notwithstanding, the Review was markedly limited in the scope of its inquiry. Whilst the obvious first step would have been to approach the RBHSC for input²⁶⁹ this was not done and there is no good explanation as to why it was not done. Dr MacFaul believed it "*an outstanding deficit*" of the Erne Review process that the opinions of the RBHSC clinicians were not sought.²⁷⁰

4.159 Nor did the Trust formally notify Mr and Mrs Crawford of the Review process, invite them to participate in the Review or advise them as to the

²⁶⁴ 036a-048-106

²⁶⁵ 400-029-008 - Submissions on behalf of Dr Quinn

²⁶⁶ Dr Quinn T-14-06-13 p.181 line 8

²⁶⁷ WS-287-1 p.21

²⁶⁸ 314-016-018

²⁶⁹ Mr Fee T-13-06-13 p.149 line 1

²⁷⁰ 250-003-093

procedure and terms of reference. Dr Anderson²⁷¹ could not even recall any suggestion that they be involved in the Review process.²⁷² He accepted that Mrs Crawford should have been asked to participate.²⁷³ So too did Mr Fee²⁷⁴ and Dr Kelly.²⁷⁵ Mr Crawford did not even learn of the Review until almost four weeks after he had lodged his complaint.²⁷⁶

4.160 It could never have been a very meaningful Review without asking for Mr and Mrs Crawford's contribution. Lucy's parents had every right to be told that their child's death was to be investigated. In addition Mrs Crawford was a witness to key events. It is therefore remarkable that the final Review report should have expressed regret at the absence of an account of the seizure suffered by Lucy from Mrs Crawford.²⁷⁷ It should have been a straightforward matter to seek her input and it should have been done.

4.161 Dr Kelly, as Medical Director, was responsible for ensuring that the Review was effective and appropriate. His failure to ensure that the family was involved cannot be explained by reference to his inexperience in his role or by the demands of a busy professional life.²⁷⁸ Since the report of the Review referred explicitly to the absence of an account from Mrs Crawford, his failure to ensure that engagement defies common sense.

Report

4.162 At the conclusion of the Review it should have been obvious that it had failed to make clear findings. Whilst the conclusions ostensibly provided some reassurance, Dr Quinn's report left much to be investigated. Notwithstanding that it was clearly not too late to seek input from Mrs Crawford or to make a request for the opinion of the RBHSC clinicians,²⁷⁹ the report was finalised and published on 31st July 2000.

²⁷¹ WS-291-2 p.5

²⁷² Dr Anderson T-11-06-13 p.52 line 19

²⁷³ Mr Fee T-13-06-13 p.111-112

²⁷⁴ WS-287-1 p.16

²⁷⁵ Dr Kelly T-13-06-13 p.83 line 17

²⁷⁶ 015-020-121

²⁷⁷ 036a-053-125

²⁷⁸ 400-030-012 para 19-20 - Submissions made on behalf of Dr Kelly

²⁷⁹ 250-003-067

4.163 The Review report appears sanitised. It concluded that *“there was some confusion between the Consultant, Senior House Officer and nurses concerned in relation to the intended volume of fluid to be given intravenously.”*²⁸⁰ The problems were very much more profound than just volume or communication. It is accordingly a matter of concern that the findings of the Review were not shared or discussed with the clinicians in the Erne Hospital. Further error would then have been detected. If, for example, Dr Quinn’s report had been shown to Dr Auterson, he could have immediately pointed out the error in deeming the use of Solution No. 18 ‘appropriate.’

4.164 The Trust should have acknowledged the limitations of the Review and identified the need for further investigation. Mr Fee could not recall this being considered²⁸¹ but conceded, that with the benefit of hindsight, that he was,

*“... not now satisfied with the review we conducted or the conclusions we reached given the findings of the inquest. On reflection, we should have involved the family at the outset; the review should have been conducted using a more systematic approach such as a Root-Cause Analysis. The Team selected should probably have benefitted from the inclusion of a Paediatrician and an experienced paediatric nurse and perhaps the Medical Director. We probably relied too much on the external opinion without having the expertise to examine the opinion offered. The case should probably have been jointly reviewed or investigated by the two hospitals involved in Lucy’s care.”*²⁸²

4.165 Dr Anderson not only adopted this statement but said that he thought at the time that Dr Quinn’s conclusions were suspect but felt in no position to challenge them. He believed he discussed this with Mr Fee but Mr Fee had no recollection of this.²⁸³ Notwithstanding, the Trust regarded itself satisfied

²⁸⁰ 033-102-266

²⁸¹ Mr Fee T-14-06-13 p.44 line 19

²⁸² WS-287-1 p.20

²⁸³ Mr Fee T-14-06-13 p.46 line 21

with the work of the Review and answered Mr Crawford's complaint on that basis.

- 4.166 The Review report recommended that the family should be invited to a meeting to discuss its findings.²⁸⁴ However, the Trust did not send the report to the Crawfords but suggested instead that it would be shared with them at a meeting at which Trust officials would explain the findings.²⁸⁵ The Trust only finally shared the report in January 2001, six months after it had been finalised.
- 4.167 On the face of it the Trust wanted such a meeting in order to convey to the Crawfords a proper understanding of the Review's findings.²⁸⁶ However, I detect a determination on the part of the Trust to control the manner in which the family would receive and interpret the information to which they were entitled. This approach is confirmed by the fact that even when a copy of the report was finally made available, it was stripped of its recommendations together with the appendices and the report of Dr Quinn.²⁸⁷ There can be no justification for this and Mr Fee could offer no explanation.²⁸⁸
- 4.168 It was submitted on behalf of Dr Kelly that his failure to recognise the flawed nature of the Report at the time was in part understandable because he was reliant on the apparently conscientious work of Mr Fee and the appearance of the 67 page Review report complete with appendices and external paediatric opinion gave every impression of being comprehensive.²⁸⁹
- 4.169 I cannot accept this submission. Dr Kelly was the Trust Medical Director and had responsibility to ensure the adequacy of the Review. If Dr Kelly had adequately considered the Review report he could not have failed to recognise that it and the investigation were substandard. I accept that

²⁸⁴ 033-036-076

²⁸⁵ 015-019-119

²⁸⁶ 015-024-127

²⁸⁷ 015-028-133 to 136

²⁸⁸ Mr Fee T-14-06-13 p.71 line 17

²⁸⁹ I also note the reliance which Dr Kelly's legal advisors have placed on the report of Dr M.A. Durkin dated 22nd August 2011: 162-002-001. I have given full consideration to the opinions expressed by Dr Durkin.

serious adverse clinical incident reviews were not commonplace at that time but consider that there can be no excuse for a Medical Director who fails to recognise that obvious enquiries have not been made.

4.170 On one interpretation the Review was deliberately superficial and Dr Kelly knowingly accepted a flawed report because it helped to conceal the truth about what had happened to Lucy. That is not my conclusion. I do not believe that Dr Kelly conducted himself in that way. Rather, I accept that Dr Kelly, Mr Fee and Dr Anderson and the Trust took some steps to discover what had gone wrong. However, those steps were clearly not sufficient. They failed to uncover the glaring failures in the treatment of a girl who, apart from a minor ailment, was otherwise healthy, and who was rendered moribund as a result of that treatment a few hours after it was initiated. Nobody has suggested to the Inquiry that the cause of Lucy's death was difficult to discern. What was lacking was a willingness to involve the Crawford family and be open to the need to criticise those involved with Lucy's care.

4.171 I consider that Dr Kelly, on behalf of the Trust, presided over a process which was ineffective and which, as a consequence, failed to identify medical mismanagement in causing her death. He ought to have identified the need to initiate an external review to resolve the questions left unanswered by Dr Quinn. For those failures he is to be criticised.

Failure to disclose the findings of RCPCH Reports to Mr and Mrs Crawford

4.172 The initial failure of the SLT to be transparent and straightforward with Mr and Mrs Crawford was repeated when the Trust received the first RCPCH report which clearly challenged any perception that the care provided to Lucy was adequate. It was received by the Trust in late April 2001²⁹⁰ and dealt in part with Dr O'Donohoe's practice in the context of Lucy's treatment.

²⁹⁰ 036a-022-039

- 4.173 Dr M. Stewart reported “*deficiencies in the prescription and recording of volumes of fluids administered.*”²⁹¹ In particular she stressed that in cases of moderate or severe dehydration APLS guidelines recommended the use of normal saline and not Solution No. 18.²⁹² Her report also indicated that after collapse, Lucy was given an excessive volume of normal saline.
- 4.174 I consider that having received this report, the Trust was then subject to a continuing obligation to provide the family with this new information because it superseded both the Review findings and the response which Mr Mills had provided in answer to Mr Crawford’s complaint.
- 4.175 The RCPCH produced a second report for the Trust on the 7th August 2002.²⁹³ It went further than the first report to conclude that:
- “The prescription for the fluid therapy for LC was very poorly documented and it was not at all clear what fluid regime was being requested for this girl. With the benefit of hindsight there seems to be little doubt that this girl died from unrecognised hyponatraemia although at the time this was not so well recognised as at present.”*²⁹⁴
- 4.176 This was unequivocal external opinion that the hyponatraemia was a direct cause of death and that it was linked to the fluid regime.²⁹⁵ Dr Kelly regarded this as an advance on what was previously known, which was likewise acknowledged by Mr Mills.²⁹⁶ However, no one within the Trust sought to correct the view given to the Crawford family that Lucy had received an acceptable standard of care. All those who were involved on behalf of the Trust, particularly Dr Kelly and Mr Mills in this context, are to be criticised because all were under a duty to ensure that Mr and Mrs Crawford were not misled.

²⁹¹ 036a-025-060

²⁹² 036a-025-058

²⁹³ 035-021-074

²⁹⁴ 035-021-077

²⁹⁵ Dr Kelly T-13-06-13 p.77 line 19

²⁹⁶ Mr Mills T-17-06-13 p.163 line 22

- 4.177 As before, the report was not shared with Lucy's parents.²⁹⁷ Mr Mills explained that by the time the Trust received the RCPCH reports the family had commenced legal action against the Trust and that in this context he *"would have sought assurance that the reports were shared with the Trust's legal representatives for their advice."*²⁹⁸ There is no evidence that the Trust was advised against disclosing either report and indeed there are strong grounds for considering that the report should have been drawn to the attention of the Crawford's as part of the very process of litigation.
- 4.178 Accordingly, it seems likely that a decision was taken that the Crawford family should not see the reports. In addition, they were not disclosed to the Coroner and whilst it was argued that there was no legal duty to furnish the reports to the Coroner,²⁹⁹ I am left to consider the motivation for such deliberate non-disclosure to the next of kin. The obvious explanation is that they were deliberately withheld to keep from the Crawford family the known connection between medical mismanagement and the death of their daughter.
- 4.179 Mrs Crawford said that she and her husband *"were not listened to and sidelined in every way"* and that *"everyone was avoiding the most important issue, what happened to Lucy?"*³⁰⁰ Mr Mills, the Chief Executive of the Trust, was ultimately responsible for ensuring that there was a full and transparent engagement with Mr and Mrs Crawford. Regrettably, I must find that the Trust's engagement with them was reluctant, incomplete, defensive and misleading. The Chief Executive must bear responsibility for this failing.

Sperrin Lakeland Trust and the Western Health and Social Services Board

- 4.180 The SLT was directly accountable to the Department of Health and Social Services and Public Safety ('the Department') in respect of the provision

²⁹⁷ Dr Kelly T-13-06-13 p.80 line 14 - The accounts of Mr Mills and Dr Kelly suggest that a copy of the second report from the RCPCH was not even shared with the Western Health and Social Services Board, although in his evidence Dr Kelly recalled that he spoke to Dr McConnell and Mr Martin Bradley about the report in the context of achieving changes in the Paediatric Department of the Erne Hospital.

²⁹⁸ WS-293-1 p.18

²⁹⁹ 400-030-022 to 023 - Submissions made on behalf of Dr Kelly

³⁰⁰ 013-022-079

and management of services.³⁰¹ The main commissioner of those services was the WHSSB under a 'purchaser-provider' service agreement³⁰²

- 4.181 Whilst remaining accountable to the Department and with no accountability to the WHSSB in management terms, the Chief Executive of the Trust nevertheless continued to report to and discuss significant issues with the WHSSB because it required assurance that the services purchased were of appropriate quality. If problems arose in respect of those services, the WHSSB expected to be told. The WHSSB was thus able to exert influence over the Trust and require compliance with the terms of its service agreement which emphasised, amongst other things, the importance of effective clinical governance.³⁰³
- 4.182 It was in this context that Lucy's death was reported to the WHSSB. Dr William McConnell,³⁰⁴ then Board Director of Public Health, was informed on the day of Lucy's death.³⁰⁵ Mr Martin Bradley,³⁰⁶ then Chief Nursing Officer for the Board, met Mr Mills on 19th April and the death was discussed.³⁰⁷ Both Dr McConnell and Mr Bradley were responsible to Dr Thomas Frawley³⁰⁸ (General Manager, WHSSB) and he too was informed.³⁰⁹ The death became the subject of discussion at subsequent meetings between Trust and WHSSB officials.
- 4.183 Lucy's death was not, however, reported to the Department which was not notified until March 2003 when the Coroner informed Dr Henrietta Campbell,³¹⁰ the Chief Medical Officer ('CMO').³¹¹ The WHSSB expectation at the time was that the Trust would report such a serious clinical incident to both the Board and the Department.³¹² Mr Bradley considered a report to the Department was critical, because the

³⁰¹ 251-002-004

³⁰² WS-293-1 p.11

³⁰³ WS-308-1 p.67

³⁰⁴ 325-002-009

³⁰⁵ 030-010-017

³⁰⁶ 325-002-010

³⁰⁷ 030-010-017

³⁰⁸ 325-002-010

³⁰⁹ WS-308-1 p.9

³¹⁰ 337-001-002

³¹¹ 006-010-294

³¹² See, for example, the evidence of Mr Bradley T- 18-06-13 p. 112 line 7

*“Department also ultimately is in a better position [than the Board] to influence policy and to pick up on regional learning that needs to be implemented.”*³¹³ I accept this analysis.

- 4.184 Dr McConnell insisted that he advised Mr Mills to report Lucy’s death to the Department at that time, although the detail of his recollection was somewhat vague.³¹⁴ Mr Mills had no memory of this³¹⁵ and said that in any event at that time he would only have reported financial and strategic matters to the Department. He maintained that the Trust did not at that time report adverse clinical incidents to the Department and there was no expectation that it should.³¹⁶ He even questioned whether there was mechanism at that time to make such a report.
- 4.185 Indeed, there was then no designated reporting procedure by which Trusts might report serious adverse clinical incidents to the Department. Mr Bradley sympathised with Mr Mills and acknowledged that there was probably a lack of clear direction about how such matters could be reported.³¹⁷ However, I consider that it should have been natural to report to the Department. It did not make sense for the Trust to make a report to the WHSSB and not the Department because the Trust was directly accountable to the Department and that accountability was not solely limited to financial and strategic matters. Lucy’s death ought to have been reported to the Department in the same way as Raychel’s death was reported by Altnagelvin Hospital a year later.
- 4.186 The question arose as to whether the WHSSB had a responsibility to ensure that the Trust reported the death to the Department and to the Coroner.³¹⁸ I do not consider that it was any part of the Board’s duty to monitor the Trust so closely as to ensure that its experienced and well qualified health professionals performed routine reporting tasks.

³¹³ Mr Bradley T-18-06-13 p.113 line 20

³¹⁴ Dr McConnell T-19-06-13 p.30 line 12-14

³¹⁵ Mr Mills T-17-06-13 p.62 line 2-4

³¹⁶ Mr Mills T-17-06-13 p.54 line 1-15

³¹⁷ Mr Bradley T-18-06-13 p.115 line 1

³¹⁸ 251-002-007 to 008 & 015

- 4.187 The WHSSB did, however, recognise its responsibility to ensure that lessons were learned from adverse clinical incidents occurring within the undertakings of its service providers. Mr Bradley said that whilst the Board would not become involved in a clinical incident investigation it would certainly wish to consider any recommendations arising and if there were obvious problems it would have had a responsibility to raise those with the Trust.³¹⁹
- 4.188 Given that the Trust had reviewed the circumstances of Lucy's death, Dr Frawley expressed the view that the WHSSB should then have examined the outcome of that Review. He indicated that *"...where the investigation and its conclusions resulted in the preparation of a formal report, I would have had an expectation that the report would be shared with the Board in order to enable the Board to consider whether the Board needed to initiate any action in light of the report. In making such a judgment, I would seek the views of the relevant professional leads in the Board on whether the findings, conclusions and recommendations proposed by the Trust were a proportionate response to the incident that had been investigated."*³²⁰
- 4.189 It is unlikely that the Review report was forwarded on any formal basis to the WHSSB³²¹ but both Dr McConnell³²² and Mr Bradley³²³ informally obtained copies. Nevertheless the death and the Review findings ought to have come before the Board's Healthcare Committee for consideration.³²⁴
- 4.190 Dr McConnell accepted that he had a responsibility to bring known adverse clinical incidents to the attention of this Committee³²⁵ and he said that he would be *"amazed"* if that had not been done in this case.³²⁶ He said that he would generally have wanted to be reassured that a Trust had *"got to the bottom of a serious adverse incident"* and having done so he indicated

³¹⁹ Mr Bradley T-18-06-13 p.119 lines 14-17

³²⁰ WS-308-1 p.8

³²¹ WS-308-1 p.26

³²² WS-286-1 p.8

³²³ Mr Bradley T-18-06-13 p.131 line 11

³²⁴ Mr Bradley explained to me that the Healthcare Committee of the WHSSB was the appropriate mechanism within which a variety of professionals could meet to discuss the output from a Trust's review: Mr Bradley T-18-06-13 p.120 line 10

³²⁵ Dr McConnell T-19-06-13 p.7 line 14

³²⁶ Dr McConnell T-19-06-13 p.39 line 6

that he would have envisaged a role for the WHSSB in terms of reporting any lessons to other Trusts, other Boards and possibly to the Department.³²⁷

- 4.191 However, the Committee minutes make no reference to Lucy's case and there is no evidence to suggest that this important Committee ever discussed Lucy's death or its implications. Professor Scally considered it the responsibility of the WHSSB to point out "*significant deficiencies*" and that it was "*remiss of them*" not to do so in this case.³²⁸
- 4.192 Mr Bradley conceded that it was "*extraordinary*" that the WHSSB had not openly discussed the outcome of the Trust Review³²⁹ and properly acknowledged that the Board's handling of the report into Lucy's death was not "*its finest hour*."³³⁰
- 4.193 Such failure on the part of the WHSSB to ensure proper examination of the Review report was a serious neglect of its responsibilities. I consider that it is at least possible that had the report been deliberated upon in committee by experienced healthcare professionals they would have identified some of the most serious issues presented by Lucy's case and raised them, not only with the Trust, but with the Department.
- 4.194 Notwithstanding, the officers of the WHSSB were clearly concerned by Lucy's death. Mr Bradley visited the Paediatric Unit of the Erne Hospital to familiarise himself with where Lucy had been treated and subsequently worked with Directors of Nursing in the Board area to address some of the issues raised by Lucy's case including the importance of clinical records and the necessity to avoid ambiguity in prescribing.³³¹
- 4.195 Dr McConnell insisted that he discussed the Review report with Dr Kelly and told Dr Kelly that because the Review had failed to establish the cause of death, further work was necessary. Specifically, he claimed to have

³²⁷ Dr McConnell T-19-06-13 p.22 line 6

³²⁸ 251-002-011

³²⁹ Mr Bradley T-18-06-13 p.137 line 12

³³⁰ Mr Bradley T-18-06-13 p.148 line 13

³³¹ Mr Bradley T-18-06-13 p.144 line 24

recommended “a wider review” involving external independent experts³³² and indicated that Dr Kelly agreed with him and undertook to discuss it within the Trust.³³³ This indeed would have been sensible and appropriate.

- 4.196 Professor Scally expressed the view that the WHSSB should have exerted its influence over the Trust to ensure that it engaged with the RBHSC in order to establish an independent review of Lucy’s care with written terms of reference and appropriate expertise.³³⁴
- 4.197 However, the Trust instead chose to engage the RCPCH to review the general professional competence and conduct of Dr O’Donohoe. Whilst there was also good reason to commence such a review given broader concerns about Dr O’Donohoe’s practice, there was an equally pressing need to commission a specific investigation to address with precision the cause of Lucy’s death. In my view Dr McConnell should have done more to ensure that the Trust pursued further investigation of this kind.
- 4.198 Mr Bradley accepted that the WHSSB should have obtained the assurance of the Trust that further investigation would be undertaken to establish the cause of Lucy’s death.³³⁵ Dr McConnell and Mr Bradley, as the clinical professionals within the Board, should have ensured that the Trust was pressed to explain how this question was going to be addressed. Professor Scally considered that Dr McConnell (and indeed the Board in general) had “*significant positional and sapiential authority*” to advocate a thorough investigation of Lucy’s death.³³⁶
- 4.199 In addition, the WHSSB failed to hold the Trust to account for the procedural failings in its Review, the failure to gather relevant evidence, the failure to establish exactly what had happened and most especially the failure to identify mismanagement as a possible or probable cause of death. Furthermore, it ought to have considered whether Lucy’s death raised issues of more general application. Whilst I have no doubt that Dr

³³² WS-286-1 p.7

³³³ WS-286-2 p.5

³³⁴ 251-002-007-008 & 015

³³⁵ Mr Bradley T-18-06-13 p.141, line 22

³³⁶ 251-002-010

McConnell was troubled by the outcome of the Trust's Review, he failed to ensure that the Trust addressed the outstanding questions when he was in a position to do so.

- 4.200 The fact that the Board was not sent a copy of the second RCPCH Report³³⁷ was an additional failing on the part of the Trust. The first RCPCH report had been shared and Dr McConnell believed that he should certainly have received the second report³³⁸ but he had not even been informed that there was to be a second RCPCH review.³³⁹
- 4.201 Mr Mills recognised that the second RCPCH report contained new information and that the report ought properly to have been disclosed to the WHSSB.³⁴⁰ He could offer no explanation for this omission and appeared to accept that there could be no excuse for this failure. As I have also noted in connection with the Trust's failure to disclose this report to the Crawford family, it is impossible to escape the conclusion that the report was withheld from the WHSSB to conceal the connection between medical mismanagement and Lucy's death. Mr Mills is to be strongly criticised for this failure.

RBHSC: Consultant responsibility for Lucy's Care

- 4.202 Debate surrounded the question as to who had individual responsibility for Lucy's care after she was admitted to the RBHSC. She was documented as being admitted into the consultant care of Dr Crean³⁴¹ who saw Lucy at ward round soon after admission and spoke with her parents. He arranged for review by Paediatric Neurologist Dr Hanrahan and spoke with Dr O'Donohoe in the Erne Hospital about Lucy's fluid management upon receipt of her notes.
- 4.203 Dr Crean told me that whilst his name appears as Lucy's consultant on the admissions record, this was an administrative formality "*to designate a*

³³⁷ Dr McConnell T- 19-06-13 p.127 line 23

³³⁸ Dr McConnell T-19-06-13 p.130 line 24

³³⁹ Dr McConnell T- 19-06-13 p.128 line 25

³⁴⁰ Mr Mills T- 17-06-13 p.167 line 9

³⁴¹ 061-001-001

direct ICU admission” from another hospital.³⁴² He explained that notwithstanding that Lucy was jointly managed by the anaesthetists and Dr Hanrahan in PICU, the actions of Dr Hanrahan indicated to everyone that he was the consultant with actual charge of Lucy’s care.³⁴³ He conceded nonetheless that this ought to have been formalised with an entry in Lucy’s notes.³⁴⁴

4.204 Dr Hanrahan had been responsible for arranging the specialist neurological investigation and conducting the brain stem testing for death with Dr Chisakuta. Furthermore, after Lucy’s death Dr Hanrahan contacted the Coroner’s Office, arranged for the consent post-mortem and oversaw the certification of death. He communicated with Mr and Mrs Crawford.

4.205 For his part, Dr Hanrahan did not consider that he had been in charge. He took the view that the lead consultant was the paediatric intensive care consultant on duty at any particular time.³⁴⁵ On the day of Lucy’s admission that would have been Dr Crean, and on the following day Dr Chisakuta, although he admitted that he had not thought about it in that way at the time.³⁴⁶ Dr Hanrahan accepted that he had provided “*quite significant input*” but considered that Lucy’s care was jointly managed between himself and the “*intensivists*.”³⁴⁷ He insisted that at no time had he agreed to become lead consultant with responsibility for care.³⁴⁸

4.206 I consider this issue, from the perspective of this Inquiry’s terms of reference, to be something of an academic debate, though doubtless important in terms of clinical practice and hospital administration. I am told that things have changed in PICU and greater formality is now attached to the designation of patient specific lead consultants.³⁴⁹

³⁴² Dr Crean T-04-06-13 p.48 line 14

³⁴³ Dr Crean T-04-06-13 p.52 line 18-19

³⁴⁴ Dr Crean T-04-06-13 p.54 line 13-15

³⁴⁵ Dr Hanrahan T-05-06-13 p.17 line 2

³⁴⁶ Dr Hanrahan T-05-06-13 p.17 line 9

³⁴⁷ Dr Hanrahan T-05-06-13 p.18 line 23

³⁴⁸ Dr Hanrahan T-05-06-13 p.19 line 1-2

³⁴⁹ Dr Hanrahan T-05-06-13 p.15 line 16

- 4.207 In the event, Lucy was cared for by a team of specialist doctors comprising paediatric intensive care consultants, namely Dr Crean, Dr Chisakuta and to a lesser extent, Dr McKaigue, together with paediatric neurologist Dr Hanrahan who was assisted by his specialist registrar, Dr C. Stewart. The two disciplines worked together at the end of Lucy's life to perform brain stem testing. After confirmation of death, I consider that it was incumbent upon these same doctors to continue to work together to try to identify the cause of death, regardless of who might properly have been regarded as lead consultant.
- 4.208 In the event, Dr Hanrahan took the lead in managing important matters after Lucy's death. The opportunity existed to determine the cause of death. That was not, however, the responsibility of Dr Hanrahan alone. It is clear that there was a broader responsibility on the part of the clinical team and more generally within the RBHSC to discover the cause of death and determine whether there were any lessons to be learned.

RBHSC: Suspicions

- 4.209 The clinicians in the RBHSC quickly recognised inadequacies in the Erne Hospital fluid management. Dr Crean made the effort to contact Dr O'Donohoe because he was concerned, on the basis of Lucy's notes, as to how her fluids had been managed. It is likely that Dr Crean was aware that a child such as Lucy, suffering from fluid loss after a short but significant bout of gastroenteritis, should have been prescribed normal saline for replacement purposes and not large volumes of Solution No. 18. Indeed, at that time his colleagues were teaching students that hypotonic solutions should only be given for maintenance purposes, and never for replacement.³⁵⁰ Dr Crean said he was,

"...unable to recollect what my view was at that time. However, I anticipate that, on looking at the Erne fluid balance chart now, I would have had specific concerns regarding the administration of boluses of hypotonic fluids to children...The administration of large volumes of hypotonic solutions may

³⁵⁰ Dr Crean T-04 -06-13 p.24 line 5

produce very low concentrations of electrolytes, in particular sodium, leading to undesirable fluid shifts...A fluid deficit would normally have been replaced with normal saline."³⁵¹

4.210 I conclude that Dr Crean recognised, just as Dr Evans was to do, that the volume of hypotonic fluid given was wholly inappropriate and that Lucy had become hyponatraemic over a relatively short period of time. He would therefore probably have sensed that the fluid management was the cause of the hyponatraemia. It was disconcerting that Dr Crean should have given the impression during his evidence that at the time of treating Lucy he did not see very much wrong with how her fluids had been managed.³⁵² He explained that the use by paediatricians of a hypotonic solution (such as Solution No. 18) as a replacement therapy was "*a common fluid regimen that many of the paediatricians used at that time*" and one that he did not think he "*would have considered inappropriate for them.*"³⁵³

4.211 Dr Crean's evidence was inconsistent with what he knew to be the correct approach to fluid management in a case such as Lucy's, and inconsistent with his decision to make contact with Dr O'Donohoe.

4.212 Dr Crean also gave evidence that children were sometimes transferred to the RBHSC by paediatricians who were "*administering hypotonic solutions above maintenance*" and it was his practice and that of his colleagues to counsel them against the inappropriate administration of hypotonic fluids.³⁵⁴ Had he no such concerns about how paediatricians were using fluids he would not have engaged in such communication nor telephoned Dr O'Donohoe.

4.213 Accordingly, I have little doubt that Dr Crean was concerned when he understood the fluid therapy as administered by the Erne Hospital. His reservations would have been confirmed after talking to Dr O'Donohoe (if Dr O'Donohoe's record of their discussion is correct) because, as he

³⁵¹ WS-292-1 p.6

³⁵² Dr Crean T-04 -06-13 p.93 line 17

³⁵³ Dr Crean T-04 -06-13 p.92 line 12

³⁵⁴ Dr Crean T-04 -06-13 p.127 line 12

acknowledged himself, the fluids seemingly intended for Lucy (a bolus of 100ml followed by Solution No. 18 at 30ml/hr) made no more sense than the fluids actually given (Solution No. 18 at 100ml/hr).³⁵⁵ Nonetheless, no concern was recorded at the RBHSC about the fluid therapy.

4.214 Whilst I am satisfied that Dr Crean recognised that Lucy's fluids had been mismanaged, I do not find that he decided that this was significant in terms of her deterioration and death. He maintained that he "*would never have considered a problem with the fluids with sodium of 127 in 2000*"³⁵⁶ and relied on medical literature to indicate that the majority of children developing hyponatraemic encephalopathy had sodium levels of 120mmol/L or less.³⁵⁷ He emphasised that although it is now known that dilutional hyponatraemia deriving from fluid imbalance was the primary factor in causing Lucy's cerebral oedema that is not what he thought at the time.³⁵⁸

4.215 Dr MacFaul confirmed that, "*A blood sodium level at 127mmol/l was not usually regarded as causative of cerebral oedema in the year 2000 although many intensivists and some paediatric neurologists were aware that a rapid fall could make worse an acute encephalopathy whatever its cause. This was not necessarily widely known in paediatric practice.*"³⁵⁹ Furthermore, Dr MacFaul observed that "*less prominence*" was given in the literature at that time to the significance of rapidity in the fall of blood sodium to the development of acute encephalopathy.³⁶⁰

4.216 It is a function of the treating clinician to assist the Coroner. It is in this respect that Dr Crean and his colleagues could have done more. Whilst I accept that dilutional hyponatraemia need not have been cited unequivocally to the Coroner as the cause of death, it is surprising that it was not advanced as a possible cause.

³⁵⁵ Dr Crean T-04 -06-13 p.95 line 4

³⁵⁶ Dr Crean T-04 -06-13 p.103 line 20

³⁵⁷ WS-292-2 p.4-5

³⁵⁸ Dr Crean T-04 -06-13 p.100 line 2

³⁵⁹ 250-003-121

³⁶⁰ 250-003-123

4.217 Fluid management was acknowledged by Dr Crean as his “*core business*.”³⁶¹ I believe that he did not think carefully enough about the part played by fluid therapy in the cause of Lucy’s condition. Had he done so, I am satisfied that he would have suspected a possible connection between the fluid therapy and the fatal cerebral oedema. I am also satisfied that together with his colleagues in the RBHSC who cared for Lucy, Dr Crean did not want to be seen to be exposing to critical scrutiny, the mistakes which were made in the Erne Hospital.

RBHSC: Failure to adequately consider the evidence

4.218 It is a matter of concern that notwithstanding that Lucy’s Erne Hospital records contained all the information necessary to permit the RBHSC clinicians to conclude that her sodium levels had probably dropped even lower than the 127mmol/L recorded, this does not appear to have been recognised.

4.219 Dr Crean said that despite having read Lucy’s notes many times he only realised that those notes revealed this likelihood when he was actually giving evidence to the Inquiry³⁶² although he had previously been aware of the issue because it had been raised by Dr Sumner. He accepted that had clinicians recognised at the time that the serum sodium had probably been lower than 127mmol/L then dilutional hyponatraemia would have been identified “*as a more obvious cause of the development of cerebral oedema*.”³⁶³ He admitted that they “*did not fully consider the timing of the blood test taken around the time of her acute deterioration*.”³⁶⁴

4.220 For his part, Dr Hanrahan said that he only realised that Lucy’s second blood sample was taken after the infusion of normal saline when he discussed it with Dr O’Donohoe in December 2004. It was then, he explained, that “*everything [fell] into place*.”³⁶⁵

³⁶¹ Dr Crean T- 04 -06-13 p.26 line 14

³⁶² Dr Crean T-04 -06-13 p.115 line 23

³⁶³ WS-292-1 p.12

³⁶⁴ WS-292-1 p.12

³⁶⁵ Dr Hanrahan T- 05 -06-13 p.211 line 1

- 4.221 I consider the failure by senior RBHSC clinicians to adequately consider Lucy's notes so as to determine the sequence of testing and treatment to be unacceptable. Notwithstanding that it has been suggested that other experts also failed to draw this particular conclusion,³⁶⁶ the omission is particularly troubling because the relevant information is detailed on the very same page which recorded the excessive administration of normal saline.³⁶⁷ This note ought therefore to have been the subject of particular scrutiny, especially when those treating her were struggling to understand the cause of her condition.
- 4.222 Dr MacFaul observed that "*in the absence of any other satisfactory explanation for Lucy's death a review by RBHSC of the fluid management in the Erne hospital was justified*"³⁶⁸ and indeed this ought to have been conducted when considering referral to the Coroner.³⁶⁹ He characterised the failure to seek further explanation for Lucy's death as "*a significant failing*" and whilst acknowledging that it was understandable "*in the context of the knowledge at the time*" not to appreciate the significance of the sodium level and rate of change, he insisted that a fluids review would have concluded that Lucy was "*overloaded with fluid*" and that this "*had probably been contributory or causative.*"³⁷⁰
- 4.223 Dr Crean told me that he did not have the time to conduct a forensic investigation of the notes.³⁷¹ I do not accept that because he could have delegated this important task to a colleague. The same criticism applies to Dr Hanrahan, who may, because of the responsibilities he assumed after Lucy's death,³⁷² have been even more obligated to review the fluid management. Dr Hanrahan accepted that he could have been "*more*

³⁶⁶ It has been suggested in submissions on Dr Hanrahan's behalf (403-031-002) that even Dr Sumner "*proceeded on the basis that 127 was the base level for sodium.*" However, I take the view that this is incorrect. Dr Sumner considered Lucy's notes and found in his report for the Coroner (at 013-036-140) that "*it is possible that the serum sodium had been lower [than 127], but increased during the administration of this huge volume of saline.*" Regardless of whether the serum had been lower, and in my view it probably had been lower than 127 before the normal saline was administered, he believed that it was possible to explain the death on the basis of what he called a "*rapid and dramatic fall*" of sodium from 137 to 127 over the course of several hours.

³⁶⁷ Here, I am referring to the Erne Hospital nursing notes which had been forwarded to the Children's Hospital and which can be found at 061-017-050

³⁶⁸ 250-003-121

³⁶⁹ 250-003-121

³⁷⁰ 250-003-122

³⁷¹ Dr Crean T-04-06-13 p.112 line 17

³⁷² 250-003-121

*rigorous in questioning the timing of the sodium analysis in the Erne*³⁷³ and could indeed have identified the evidence suggesting a lower sodium level.³⁷⁴

RBHSC: Internal discussions

- 4.224 Dr Crean was not alone in recognising that Lucy's fluid therapy had not been properly managed. Dr C. Stewart recalled general agreement within the RBHSC that there had been mismanagement.³⁷⁵ She said that no one thought Lucy's fluid therapy appropriate and confirmed that this was recognised *"reasonably quickly in PICU."*³⁷⁶ However, Dr C. Stewart recalled that it was relatively common at that time to see children with low sodium³⁷⁷ and that the feeling amongst consultants was *"that they would have expected her sodium level to be much lower"* if it was going to cause cerebral oedema and collapse.³⁷⁸ In this regard her evidence was consistent with that of Dr Crean and Dr Hanrahan.
- 4.225 Dr Hanrahan told me that he was quite unaware of Dr Crean's conversation with Dr O'Donohoe on the morning of Lucy's transfer to the RBHSC.³⁷⁹ He said that whilst he was aware of the general view that Lucy's fluids had not been properly managed at the Erne,³⁸⁰ this did not cause him any great concern in the absence of a really low sodium reading.³⁸¹ At that time he said that he was *"fairly definite in [his] mind that this wasn't a fluid related problem..."*³⁸²
- 4.226 By contrast Dr Chisakuta admitted to having been concerned about the part fluid management may have played in Lucy's death³⁸³ but insisted that he was not sure about the cause of death. It was because of his uncertainty that he considered that the case ought to be reported to the Coroner. I am

³⁷³ Dr Hanrahan T-05-06-13 p.219 line 8

³⁷⁴ WS-289-1 p.26

³⁷⁵ Dr C Stewart T-29-05-13 p.177 line 6

³⁷⁶ Dr C Stewart T-29-05-13 p.171 line 24

³⁷⁷ WS-282-2 p.2

³⁷⁸ Dr C Stewart T-29-05-13 p.194 line 21

³⁷⁹ Dr Hanrahan T-05-06-13 p.44 line 23

³⁸⁰ Dr Hanrahan T-05-06-13 p.63 line 1

³⁸¹ Dr Hanrahan T-05-06-13 p.64 line 7

³⁸² Dr Hanrahan T-05-06-13 p.74 line 1

³⁸³ Dr Chisakuta T-29-05-13 p.67 line 18

entirely satisfied that Dr Chisakuta did consider Lucy's case in this way and do not find it surprising given the similar, if more confident conclusions reached independently by Drs Evans and Auterson.

4.227 It is disappointing therefore that Dr Chisakuta did not then raise his suspicions directly with his colleagues. He said he believed that Dr Crean had similar concerns³⁸⁴ and would be "*surprised*" if Dr Crean had not expressed them but could not actually remember him doing so.³⁸⁵ Whilst I am satisfied that Dr Crean had concerns about Lucy's fluid management and that it is likely that he discussed those concerns with his colleagues, I find no good evidence to suggest that Dr Crean expressed any view that the fluids were implicated in the death.

4.228 Additionally, Dr Chisakuta said that he discussed the death with Dr Hanrahan and the necessity that it be reported to the Coroner.³⁸⁶ Despite this, he acknowledged that he did not share with Dr Hanrahan his concern that poor fluid management had possibly been a cause of the cerebral oedema.³⁸⁷

4.229 Dr Hanrahan for his part recognised that he "*should have talked to a lot more people in a lot more detail*" about what had happened to cause Lucy's death³⁸⁸ and conceded that he "*should have investigated this more and the evidence may have been there if [he] had looked more carefully.*"³⁸⁹ I consider this concession appropriately made because he assumed the responsibility for contacting the Coroner's Office. His obligation was to inform the Coroner as to the facts and circumstances relevant to the death. It is unclear how he could have hoped to do so effectively without some investigation and the input of those senior colleagues with knowledge of Lucy's case.

³⁸⁴ Dr Chisakuta T-29-05-13 p.73 line 8

³⁸⁵ Dr Chisakuta T-29-05-13 p.91 line 2

³⁸⁶ Dr Chisakuta T-29-05-13 p.64-65

³⁸⁷ Dr Chisakuta T-29-05-13 p.71 line 10

³⁸⁸ Dr Hanrahan T-05-06-13 p.64 line 19

³⁸⁹ Dr Hanrahan T-05-06-13 p.75 line 12

- 4.230 The cause of Lucy's condition ought to have been the subject of urgent internal consideration by clinicians in the RBHSC on the day of her admission. Dr Crean's discussion with Dr O'Donohoe and his realisation that the fluid regime made no sense should have been the starting point for wider discussion. Her death ought to have made this a priority. Dr Crean should have told Dr Hanrahan about his conversation with Dr O'Donohoe and the significance of the fluid management errors could have been debated allowing Dr Chisakuta to ventilate his concerns. There might then have been agreement as to what further information could be obtained from the Erne Hospital, and precisely what the Coroner, the family, the Erne Hospital and RBHSC management should be told.
- 4.231 No such discussion took place. Lucy's death passed without appropriate thought or inquiry at Northern Ireland's only paediatric teaching hospital. Dr C. Stewart drafted a clinical diagnosis for the autopsy request form but such conversation as may have surrounded her formulation was no substitute for informed discussion about the cause of death. That there was an absence of a thorough multi-disciplinary discussion about Lucy's death has to be regarded as unacceptable.
- 4.232 It is a cause for real concern that experienced clinicians did not speak with each other about their reservations in such a case or even inform their own Medical Director. It has been suggested that because the treatment happened elsewhere they felt no pressing need for informed discussion or formal reporting within their own Trust. However none of the clinicians notified the SLT or the Crawford family GP either.

RBHSC: Discharge letter

- 4.233 The RBHSC did not issue a conventional discharge letter to either the GP or the referring Hospital.³⁹⁰ Dr MacFaul considered this omission unusual and referred to it as a "*significant deficiency*."³⁹¹ He indicated that the

³⁹⁰ Dr Chisakuta T-29 -05-13 p.117 line 22. Dr Chisakuta confirmed to me that the usual practice in 2000 was to issue a discharge letter to the patient's GP

³⁹¹ 250-003-117

discharge letter should have included some information about the patient's presentation and outlined the investigations, diagnosis and treatment.

- 4.234 Dr Chisakuta went further and said that in this instance it would have been appropriate to use the discharge letter to document concern about Lucy's treatment at the Erne.³⁹² Such would have enabled the GP to explain the position to Lucy's parents, support them in their bereavement and articulate matters of concern. Additionally, the discharge letter would have formally advised the SLT that there were concerns about the adequacy of Lucy's treatment.³⁹³
- 4.235 Dr Crean believed that it was essential to issue a discharge letter.³⁹⁴ He thought that an 'inpatient/outpatient advice note' had been sent by the RBHSC to Lucy's GP, although the evidence I received on this was very far from conclusive. In any event the advice note merely informed that the primary diagnosis was cerebral oedema with underlying viral gastroenteritis³⁹⁵ which Dr Crean accepted didn't "*give the whole story*."³⁹⁶
- 4.236 Dr Hanrahan confirmed that "*the responsible clinician*" usually wrote the discharge letter³⁹⁷ and would normally try to telephone the deceased patient's GP.³⁹⁸ Whilst he accepted that he ought to have telephoned the GP he suggested that the task could equally have been performed by one of the intensive care practitioners and may perhaps have fallen "*between two stools*."³⁹⁹
- 4.237 I consider that because Dr Hanrahan had been directly involved with Lucy's care at the end of her life, took the lead role in contacting the Coroner's Office, arranged the hospital post-mortem and oversaw the completion of the death certificate, he should also have telephoned the GP and assumed responsibility for drafting a suitably detailed discharge letter for the Erne

³⁹² Dr Chisakuta T-29 -05-13 p.118 line 3

³⁹³ 251-002-017

³⁹⁴ Dr Crean T-04 -06-13 p.143 line 8

³⁹⁵ 061-012-036

³⁹⁶ Dr Crean T-04-06-13, p.142 line 8

³⁹⁷ WS-289-2 p.6

³⁹⁸ Dr Hanrahan T-05 -06-13 p.164 line 8

³⁹⁹ Dr Hanrahan T-05 -06-13 p.164 line 9

Hospital and the GP. Alternatively, he could even have delegated this task to a suitably informed and qualified colleague.

- 4.238 The discharge letter was a critical communication and responsibility for the task ought to have been clear. That this routine task was not carried out is consistent with the other obvious failures by clinicians within the RBHSC to document, discuss and communicate their concern about how Lucy had been treated in the Erne Hospital. I cannot avoid the conclusion that the individual failures within the RBHSC to communicate that concern, cumulatively form a pattern of behaviour indicating reluctance to draw critical attention to the failures of other professional colleagues.

RBHSC: Failure to raise concerns directly with the Erne Hospital

- 4.239 The failure of clinicians at the RBHSC to communicate concerns about Lucy's treatment to Lucy's family doctor was matched by their failure to advise the Erne Hospital or the SLT. Dr Ian Carson,⁴⁰⁰ then Medical Director of the Royal Group of Hospitals Trust ('RGHT'), explained that he *"would have expected a consultant who had a patient referred to them to have had a continuing and an open communication with the referring consultant."*⁴⁰¹ He deemed this both a professional and an organisational expectation and thought it should have been relatively easy for the RBHSC to talk to the Erne about errors in the management of Lucy because it was not a case that had been badly managed in the RBHSC.⁴⁰²
- 4.240 Additionally, he considered that the RBHSC consultant in charge of Lucy's care should have advised him of any concerns. It would then have been appropriate for him (or the Chief Executive of the Trust) to write to the SLT to relay those concerns. He acknowledged that this *"probably should have been done."*⁴⁰³
- 4.241 Professor Scally also expressed the view that if staff at the RBHSC had any *"significant suspicion"* that *"Lucy's death was due to inadequate treatment"*

⁴⁰⁰ 325-002-009

⁴⁰¹ Dr Carson T-26 -06-13 p.27 line 13

⁴⁰² Dr Carson T-26 -06-13 p.32 line 5

⁴⁰³ Dr Carson T-26 -06-13 p.30 line 17

then there was an obligation to make a formal report to the SLT. He went on to explain *“that this expectation arises out of a general obligation in the case of a death that may have been caused by inadequate treatment and is reinforced by the RBHSC role as a regional centre of excellence.”*⁴⁰⁴

- 4.242 The evidence revealed that after Lucy was transferred from the Erne to the RBHSC there were in all five communications between the two hospitals.⁴⁰⁵ Significantly, in none of these interactions was the Erne asked to explain what had happened to Lucy or to justify its management of the case, and still less was it placed on formal notice of the concerns of medical mismanagement.
- 4.243 Dr Crean’s informal telephone contact with Dr O’Donohoe may nonetheless have caused him to draw Lucy’s case to the attention of Dr Kelly in order to prompt the Review at the Erne. However, I do not consider that Dr Crean’s conversation with Dr O’Donohoe satisfied the RBHSC obligation to formally report concerns in respect of the mismanagement of Lucy’s care. Dr Crean accepted that if the RBHSC was not going to investigate Lucy’s treatment because the problem had not been caused there, he should have satisfied himself that it was going to be properly investigated at the Erne.⁴⁰⁶
- 4.244 Asked why neither he or his colleagues informed the Erne Hospital that there were problems with Lucy’s care Dr Chisakuta said, *“I have no response to that”*⁴⁰⁷ which was at least an honest recognition that there was no good explanation for the failure. Both Dr McKaigue⁴⁰⁸ and Dr Hanrahan⁴⁰⁹ agreed that it should have been done. Dr Hanrahan went further and accepted that the matter should have been reported even if there was no consensus and even where there was no concern that the

⁴⁰⁴ 251-002-017

⁴⁰⁵ Dr Auterson contacted PICU on the 13 April relaying the results of the repeat blood tests, Dr Crean telephoned Dr O’Donohoe seeking clarification of the fluid regime, Dr Hanrahan telephoned Dr O’Donohoe advising that the Coroner had been informed and that a hospital post-mortem would be carried out with the consent of Mr and Mrs Crawford, an unidentified RBHSC clinician contacted the Erne Hospital on the 18th April 2000 to provide a verbal report in respect of the post-mortem and Dr Hanrahan telephoned Dr O’Donohoe again on 14th June 2000 to ask him to meet with Lucy’s parents again.

⁴⁰⁶ Dr Crean T-04 -06-13 p.150 line 6

⁴⁰⁷ Dr Chisakuta T-29 -05-13 p.116 line 9

⁴⁰⁸ Dr McKaigue T-30 -05-13 p.130-131

⁴⁰⁹ Dr Hanrahan T-05 -06-13 p.231-232

treatment had affected the outcome.⁴¹⁰ However, he said that he did not then know of the mechanism for making a report to a referring hospital.⁴¹¹ This admission reveals a surprising lack of knowledge on the part of an experienced, senior clinician.

4.245 Dr Crean acknowledged that when mistakes were made there was a tendency amongst clinicians to think that *“if I put my head above the parapet and say about this, they’ll shoot me for it.”*⁴¹² Nonetheless, Dr Crean denied that the silence of clinicians in the RBHSC amounted to a ‘cover-up’ and pointed to the fact that he had reported the circumstances of Raychel’s death to the Coroner the following year.⁴¹³ Whilst Dr Crean acted properly in respect of Raychel’s death, I consider that his failure and that of his colleagues to challenge the Erne about Lucy’s treatment was intentional so as not to draw wider attention to the clinical shortcomings in her treatment.

4.246 Dr Crean said that the RBHSC had no idea that the Erne Hospital was conducting a review. He explained that the *“crossover of information”* simply wasn’t there.⁴¹⁴ That neither hospital communicated with the other, only confirms for me that both hospitals were anxious to avoid scrutiny of the events which led to Lucy’s death, and had limited interest in gaining a full understanding of those events.

4.247 I consider that both the failure of the Erne Hospital and the RBHSC to communicate formally about Lucy’s case and the subsequent failure of the Erne to involve the RBHSC in its review, contributed to the overall failure to learn from her case and this may not have been without serious consequence.

RBHSC: Adverse Incident Reporting

4.248 No adverse incident report was made of Lucy’s death within the RBHSC or the RGHT. There was no formal requirement to do so at the time.

⁴¹⁰ Dr Hanrahan T-05 -06-13 p.232 line 3

⁴¹¹ Dr Hanrahan T-05 -06-13 p.233 line 9

⁴¹² Dr Crean T-04 -06-13 p.150 line 10

⁴¹³ Dr Crean T-04 -06-13 p.124 line 17

⁴¹⁴ Dr Crean T-04 -06-13 p.148 line 2

Notwithstanding, Dr Carson advised that in the event of a “*death or where a doctor’s practice is called into question or patients are put at risk, those are cases that quite definitely should have been referred to the Trust Medical Director*”⁴¹⁵ and the Clinical Director of Paediatrics.⁴¹⁶

4.249 A month after Lucy’s death the RGHT published its first adverse clinical incident reporting policy. Accordingly, and notwithstanding Dr Carson’s expectation of an informal notification, there can be no criticism of RBHSC clinicians for failing to make a policy compliant adverse incident report. Indeed, Dr MacFaul’s considered that the absence of an adverse incident report at the RBHSC “*was not unreasonable by the standards of the day.*”⁴¹⁷

4.250 Dr Crean suggested that even if the adverse incident reporting scheme had been operational at the time of Lucy’s death, it is unlikely that he would have made a report. He said that although he regarded the death as “*unexpected*” he did not then make the connection with the medical treatment given⁴¹⁸ and even if he had recognised that the medical treatment had caused or contributed to the death, the fact that she was treated in the Erne Hospital would not have prompted a report under the procedures.⁴¹⁹ Dr Chisakuta agreed.⁴²⁰

4.251 However, this was a death which was unexpected, and the cause of it was unknown. It was also a death which took place in circumstances where it was known that fluid therapy had been mismanaged. In failing to report such a death to their own medical or clinical directors the RBHSC clinicians repeated the pattern of non-reporting which so marked the RBHSC response to the deaths of Adam Strain and Claire Roberts. It had the effect of distancing those in positions of governance from suspicions of medical mismanagement and reducing the likelihood of a formalised response. This

⁴¹⁵ Dr Carson T-16-01-13 p.66 line 12

⁴¹⁶ Dr Carson T-16-01-13 p.67 line 11

⁴¹⁷ 250-003-007

⁴¹⁸ Dr Crean T-04 -06-13 p.146 line 15

⁴¹⁹ Dr Crean T-04 -06-13 p.147 line 2

⁴²⁰ WS-283-2 p.3

approach cannot have been accidental and had the consequence that there was a failure to adequately investigate and learn from Lucy's death.

Reporting the death to the Coroner's Office

- 4.252 The legal duty to report a death to the Coroner is imposed by section 7 of the Coroners Act (Northern Ireland) Act 1959⁴²¹ and requires “every *medical practitioner*” who “*has reason to believe*” that a person has died “*directly or indirectly*” from “*negligence*” or “*from any cause other than natural illness or disease...*” or in “*such circumstances as may require investigation*” to notify the Coroner “*of the facts and circumstances of the death.*”
- 4.253 Accordingly, the Erne clinicians were not absolved of responsibility to report Lucy's death just because the death occurred in the RBHSC. Nonetheless the normal practice in Northern Ireland was for a clinician at the hospital where a patient has died, to report the death to the Coroner.
- 4.254 The duty to report is a continuing one. Therefore, if at any stage after death a medical practitioner receives information giving rise to a ‘reason to believe’ then there is an obligation to notify the Coroner. Failure to make such a report is a criminal offence.
- 4.255 I should add that contact with the Coroner's Office need not necessarily be pursuant to the duty under the Coroners Act; contact could be made with the Coroner's Office in order to clarify whether a section 7 duty arises on the facts of any given case.⁴²²
- 4.256 Not only was there reason to believe that Lucy may have died as a result of negligence but there was also reason to believe that she may have died from a cause other than a natural illness or disease and in any event her death occurred in circumstances which clearly required investigation. It does not require the benefit of hindsight to conclude that it is obvious that

⁴²¹ <http://www.legislation.gov.uk/apni/1959/15/contents>

⁴²² I am referring here to the helpful submission made by Mr Nick Hanna QC on behalf of the Coroner: T-25-06-13 p.152-155

Lucy's death should have been formally reported to the Coroner pursuant to section 7.

- 4.257 Before Lucy died Dr Hanrahan had noted that *"if she succumb[s], a PM would be desirable – Coroner will have to be informed."*⁴²³ He explained that this was because, *"we didn't know what was going on"*⁴²⁴ and because *"Lucy had died within a short time of admission to hospital."*⁴²⁵ However, he said that in the event he contacted the Coroner's Office with an *"open mind"* in order to discuss whether formal reporting of the death was necessary.⁴²⁶
- 4.258 The evidence strongly suggests to me that when Dr Hanrahan contacted the Coroner's Office he did not do so in the belief that the circumstances of Lucy's death required him to make a formal report to the Coroner. Dr Hanrahan did not seemingly appreciate that a death in unusual and unexplained circumstances placed him under a duty to formally notify the Coroner. He was unfamiliar with his duty and had received no training in respect of his obligations.⁴²⁷
- 4.259 When Dr Hanrahan telephoned the Coroner's Office he was unable to speak to the Coroner but talked instead with Mrs Maureen Dennison⁴²⁸ who was a member of the Coroner's staff. In respect of the information supplied by Dr Hanrahan she recorded, *"Died 14.4.00 at RVH Childrens ICU. Gastro interitis (sic), dehydrated, brain swelling. Admitted Erin (sic) Hospital (2 days ago – transferred to RVH. Spoke to Dr Curtis."* The entry also noted *"D.C."* (Death Certificate).⁴²⁹
- 4.260 When questioned, Mrs Dennison thought that in all probability Dr Hanrahan was making a formal report pursuant to section 7 and not merely seeking guidance about whether it was necessary to make a report.⁴³⁰

⁴²³ 061-018-066

⁴²⁴ Dr Hanrahan T-05-06-13 p.89 line 17

⁴²⁵ WS-289-1 p.10

⁴²⁶ Dr Hanrahan T-05-06-13 p.101

⁴²⁷ Dr Hanrahan T-05-06-13 p.98-99

⁴²⁸ 325-002-007

⁴²⁹ 013-053a-290

⁴³⁰ Mrs Dennison T-24-06-13 p.51

- 4.261 H.M. Coroner, Mr John Leckey, explained that it was the practice in his office that where there was doubt about whether a death should be dealt with by issuing an immediate death certificate or by Coroner's post-mortem then *"the advice of a pathologist in the State Pathologist's Department would be sought."*⁴³¹ In such circumstances clarification *"could be provided by the reporting Medical Practitioner speaking direct to one of the pathologists or the pathologist making contact with the reporting Medical Practitioner."*⁴³² The Coroner's Office would then normally be advised as to the outcome of such discussions.
- 4.262 It was entirely proper that at that time the Coroner should have had an administrative procedure in place for dealing with enquiries from the medical profession. Most such enquiries are likely to have been straightforward and need not have troubled the Coroner directly. However, Dr Hanrahan's contact with the Coroner's Office would undoubtedly have benefitted from the Coroner's own direct involvement. I have no doubt that had the Coroner been spoken to by Dr Hanrahan he would have decided to investigate the death.
- 4.263 In the event, Mrs Dennison could not remember what efforts she made to contact the Coroner⁴³³ and instead spoke to Dr Michael Curtis⁴³⁴ (Assistant State Pathologist) *"to get advice about this death."*⁴³⁵ She could not however, recall any direct contact between Dr Hanrahan and Dr Curtis.
- 4.264 The record made by Mrs Dennison supports her presumption that she contacted Dr Curtis and that he advised that a death certificate could be issued.⁴³⁶ She believed that she would then have returned to Dr Hanrahan and relayed what Dr Curtis had said.⁴³⁷ She could not remember ever

⁴³¹ WS-277-1 p.3

⁴³² WS-277-2 p.4

⁴³³ WS 276-1 Page 4

⁴³⁴ 325-002-007

⁴³⁵ WS-276-1 p.4

⁴³⁶ WS-276-1 p.4

⁴³⁷ WS-276-1 p.5

having put a clinician directly in touch with a pathologist in such circumstances.⁴³⁸

- 4.265 Dr Curtis said that as Assistant State Pathologist he was “*infrequently*” called upon by the Coroner’s Office to provide informal medical advice in relation to the cause of a death. However, he could not recall Dr Hanrahan or any conversation with him.⁴³⁹ Furthermore, he could not recall ever having spoken to a reporting clinician in this type of situation.⁴⁴⁰ In these important respects his evidence was consistent with that of Mrs Dennison.
- 4.266 The communication with the Coroner’s Office was entered in Lucy’s notes by Dr C. Stewart: “*Coroner (Dr Curtis on behalf of coroners) contacted by Dr. Hanrahan – case discussed, coroners PM is not required, but hospital PM would be useful to establish cause of death + rule out another Δ ⁴⁴¹ Parents’ consent for PM ✓.*”⁴⁴²
- 4.267 This note could suggest that Dr Hanrahan discussed the case with Dr Curtis acting on behalf of the Coroner. Dr C. Stewart said she probably made the entry on the basis of what Dr Hanrahan told her.⁴⁴³ Dr Hanrahan could not recall his conversation with the Coroner’s Office⁴⁴⁴ but thought, on an interpretation of Dr Stewart’s note, that he must have discussed the death directly with Dr Curtis.⁴⁴⁵
- 4.268 I think it unlikely that Dr Hanrahan spoke directly to Dr Curtis. Both Dr Curtis and Mrs Dennison indicated it would have been unusual if the clinician and pathologist had been put in contact with each other through the Coroner’s Office and Mrs Dennison’s contemporaneous note strongly suggests it was she who spoke to Dr Curtis.
- 4.269 I am satisfied that Mrs Dennison did her conscientious best to convey to Dr Curtis the information Dr Hanrahan supplied to her and it is to be noted that

⁴³⁸ Mrs Dennison T-24-06-13 p.73 line 24

⁴³⁹ WS-275-1 p.5

⁴⁴⁰ Dr Curtis T-25-06-13 p.6-7

⁴⁴¹ Signifying Diagnosis.

⁴⁴² 061-018-067

⁴⁴³ Dr C Stewart T-29-05-13 p. 178 line 13

⁴⁴⁴ Dr Hanrahan T-05-06-13 p.100 line 7

⁴⁴⁵ 115-050-004

Dr Hanrahan did not even inform her about the known hyponatraemia which had been caused by clinical error. Whilst he accepted that this was a “*very important omission*”⁴⁴⁶ he sought to assure me that it was not deliberate. Taking into account the general failure to document let alone report the mismanagement of Lucy’s care despite the several opportunities available to him, I have struggled to find any good explanation for Dr Hanrahan’s omissions. Not surprisingly, Dr MacFaul was of the opinion that the hyponatraemia should have been reported.⁴⁴⁷

- 4.270 Furthermore, Dr Hanrahan did not convey his uncertainty as to the cause of death. Had he done so, it is probable that Mrs Dennison would have told Dr Curtis and he in turn would have advised referral to the Coroner. Dr Hanrahan accepted responsibility for a “*hopelessly incomplete report on Lucy’s death*.”⁴⁴⁸ He now recognises that the three conditions reported by him do not make sense as a cause of death and that he should have recognised that at the time.
- 4.271 Dr Hanrahan’s interaction with the Coroner’s Office was considered by the GMC who concluded that there was no evidence that he acted in bad faith or intentionally withheld information from the Coroner or Lucy Crawford’s parents as part of a deliberate cover-up. I agree that there is no clear evidence of bad faith on Dr Hanrahan’s part and I am persuaded that Dr Hanrahan’s decision to contact the Coroner’s Office at all indicates that he was not seeking to avoid coronial scrutiny of Lucy’s death altogether. However, having provided an incomplete account of the circumstances relevant to Lucy’s death to the Coroner’s Office, he must bear primary responsibility for the failure to subject the causes of Lucy’s death to appropriate scrutiny.
- 4.272 I am unable to determine from the evidence the actual advice provided by Dr Curtis excepting only that he probably advised that there was no impediment to issuing a death certificate. I am concerned, however, that

⁴⁴⁶ Dr Hanrahan T-05 -06-13 p.103 line 3

⁴⁴⁷ 250-003-139

⁴⁴⁸ Dr Hanrahan T-05 -06-13 p.106 line 14

Dr Curtis should have so advised without obtaining a better understanding of how the death had come about. Dr Curtis had limited expertise in paediatric cases and almost none in fluid management.⁴⁴⁹ He conceded that he would not have suspected fluid mismanagement in a cerebral oedema case unless he was specifically directed to it⁴⁵⁰ but maintained that had he been informed of hyponatraemia in the context of dehydration, he would have found that unusual and would have known to refer it to the Coroner.

- 4.273 Whilst I accept that Dr Curtis was doing his best to assist the Coroner's office and sought to advise appropriately, his approach was deficient. He should have insisted upon an explanation of the medical causes for death. Without a credible explanation it was inappropriate for him to advise that a death certificate could issue. Professor Lucas suggested that in the circumstances he should have inquired further into the causation of the brain oedema because whilst gastroenteritis can cause dehydration it cannot by itself lead to brain oedema.⁴⁵¹
- 4.274 In defence of his position, Dr Curtis emphasised that he did not appreciate that such reliance was being placed on his advice by the Coroner's Office.⁴⁵² Indeed, the situation should not have been allowed to arise since Dr Curtis and Mrs Dennison were not legally trained and therefore unqualified to advise Dr Hanrahan. It was not their responsibility to interrogate the information received in the context of the section 7 obligation.
- 4.275 Ultimately, Dr Hanrahan's interaction with the Coroner's Office resulted in him arranging for a consented post-mortem in order to clarify the cause of death, and a decision to issue a death certificate. It is a matter of concern that these actions took place without legal consideration or input from the Coroner. Whilst recognising that Dr Hanrahan did not provide Dr Curtis with a sufficient account of the circumstances relevant to Lucy's death, it

⁴⁴⁹ Dr Curtis T-25-06-13 p.7-8

⁴⁵⁰ Dr Curtis T-25-06-13 p.11 line 6-9

⁴⁵¹ 252-003-009

⁴⁵² Dr Curtis T-25-06-13 p.15-18

must nonetheless be observed that a lack of adequate procedure in the Coroner's Office was a vulnerability in the system which allowed the case to escape the Coroner's jurisdiction at that important point in time.⁴⁵³

Subsequent Coronial involvement

- 4.276 Soon after Lucy's death, Mr Stanley Millar,⁴⁵⁴ Chief Officer of the Western Health and Social Services Council, was asked by the Crawford family to advise and help them. On the basis of what he was able to learn, he became concerned about the death and enquired about an inquest but was told that an inquest was unnecessary.
- 4.277 Subsequently, when he became aware of the fluid management issues which led to the death of Raychel Ferguson, he wrote on 27th February 2003 to inform the Coroner Mr Leckey that, *"Lucy was taken ill on 12 April 2000 and was admitted by her GP into Erne Hospital Enniskillen with relatively minor condition of vomiting. A drip was set up and the family was assured Lucy would be home next morning. During the early hours of 13 April 2000 Lucy fainted and collapsed. She was transferred to the Royal Belfast Hospital for Sick Children on a life support system. On 14 April 2000 the life support was switched off. A post mortem was undertaken and a 'swollen brain with generalised oedema' was discovered."*⁴⁵⁵
- 4.278 Mr Millar also emphasised to the Coroner that Lucy's death was unexplained and asked whether an inquest into her death in 2000/01 might have generated recommendations which could have saved Raychel's life. It was this communication which finally notified the Coroner of Lucy's death and prompted the investigation which was to lead to her belated inquest.
- 4.279 There was little in what Mr Millar communicated to the Coroner in 2003 which could not have been communicated to him by Dr Hanrahan and his colleagues at the time of Lucy's death in 2000. That Mr Millar had no

⁴⁵³ The Coroner's Office now employs a full-time medical officer and no longer relies upon informal assistance from the State Pathologist's Office.

⁴⁵⁴ 325-002-011

⁴⁵⁵ 013-056-320

medical training only serves to emphasise the failings of the medical profession in this regard.

RBHSC: Hospital Post-Mortem

- 4.280 Dr Hanrahan obtained the consent of Mr and Mrs Crawford to the hospital post-mortem.⁴⁵⁶ Dr C. Stewart noted that a hospital post-mortem would “*be useful to establish cause of death*”⁴⁵⁷ confirming that these doctors were unaware that their inability to establish the cause of death was the very reason why they should not have been pursuing the hospital post-mortem.
- 4.281 Professor Lucas was clear that if a doctor is properly able to request a consented post-mortem then he must be able to write the death certificate: “*Consented autopsies only take place where the cause of death is natural and satisfactory for registration i.e. a coroner has not taken the case on under his jurisdiction.*”⁴⁵⁸ Dr Crean did not know that this was happening and was surprised that Lucy’s death did not become a Coroner’s case. Quite properly, he understood that unexplained deaths should inevitably lead to Coroner’s post-mortems.⁴⁵⁹ He advised that when he finds himself unable to write a death certificate, he knows that a Coroner’s post-mortem is necessary.⁴⁶⁰
- 4.282 The post-mortem was conducted by Dr Denis O’Hara⁴⁶¹ who was an experienced consultant paediatric pathologist. He was briefed with the autopsy request form⁴⁶² which appeared both reasonably detailed and accurate. It described Lucy’s short history of vomiting and diarrhoea, referred to the IV fluids and noted the seizure with fixed and dilated pupils. The clinical diagnosis given was “*dehydration + hyponatraemia cerebral oedema-> acute coning and brain stem death.*”

⁴⁵⁶ 013-031-114

⁴⁵⁷ 061-018-067

⁴⁵⁸ 252-003-010

⁴⁵⁹ Dr Crean T-04-06-13 p.136 line 15

⁴⁶⁰ Dr Crean T-04-06-13 p.131 line 23

⁴⁶¹ 325-002-006

⁴⁶² 061-022-073

- 4.283 Dr C. Stewart was responsible for formulating this clinical diagnosis.⁴⁶³ Whilst she made reference to the condition of hyponatraemia, she insisted that she had not thought that Lucy had suffered dilutional hyponatraemia.⁴⁶⁴ She explained that the clinical diagnosis defined the clinical problems and did not explain what had caused them.⁴⁶⁵ Importantly, Dr O'Hara was not informed that there was any concern in relation to the management of Lucy's fluids.
- 4.284 Dr Hanrahan considered that it was Dr C. Stewart's responsibility (as the practitioner to whom he had delegated completion of the autopsy request form) to ensure that Dr O'Hara had all relevant materials. At the time of giving her evidence, Dr C. Stewart was unsure of the procedures which had been in place.⁴⁶⁶ I find that as the senior clinician, it was Dr Hanrahan's responsibility to ensure that Dr O'Hara received every assistance. Dr Hanrahan reasoned that if the pathologist felt that he required further information he could have asked for it.⁴⁶⁷ That was very far from adequate.
- 4.285 Professor Lucas explained that in his experience the usual practice involved the relevant clinicians attending the mortuary to view some or all of the post-mortem and discussing the findings with the pathologist. He added, *"It is at [the] CPC [clinico-pathological correlation] that all the issues in a case are discussed and resolved, as far as they are resolvable (for not all deaths do have a completely satisfactory pathophysiological explanation). The clinical presentation, laboratory data, imaging, differential diagnosis, and the autopsy results are considered all together to determine what actually happened to the patient who died; and they consider what can be learned from the case for future practice."*⁴⁶⁸
- 4.286 The necessity for clinico-pathological discussion was clear in Lucy's case and a matter of common sense. I consider that it was a basic professional obligation to convene such a meeting but Dr Hanrahan said that it simply

⁴⁶³ Known as the working pathogenesis

⁴⁶⁴ WS-282-2 p.3

⁴⁶⁵ WS-282-2 p.4

⁴⁶⁶ Dr C Stewart T-29 -05-13 p.186 line 12

⁴⁶⁷ Dr Hanrahan T-05 -06-13 p.145 line 18

⁴⁶⁸ 252-003-012

didn't occur to him. Clinicians were invited to attend with the pathologist for a review on the day of the post-mortem but Dr O'Hara was informed that no one would be in attendance.⁴⁶⁹

- 4.287 It is difficult to avoid the conclusion that as well as failing to disclose to Dr O'Hara the known deficiencies in Lucy's care, the RBHSC clinicians who cared for Lucy were not motivated to engage with him to discover what had happened to her. Dr Hanrahan said that it was unlikely that he even read the post-mortem report⁴⁷⁰ and certainly could not remember doing so.⁴⁷¹ Dr Chisakuta conceded that although he had cared for Lucy and was concerned that there may have been failures at the Erne Hospital, he did not seek to read the final post-mortem report. He admitted that such an omission was embarrassing.⁴⁷² There is no evidence to suggest that Dr O'Hara's findings were given any clinical consideration. This does not reflect well on any of the clinicians involved.

Dr O'Hara's post-mortem findings

- 4.288 The post-mortem report dated 13th June 2000 is inconclusive.⁴⁷³ Dr O'Hara was unable to explain the cerebral oedema but concluded that the presence of a "*pneumonic lesion within the lungs [has] been important as the ultimate cause of death.*"⁴⁷⁴ He commented that bronchopneumonia was "*well developed and well established*" and speculated that it might have been present prior to the original disease presentation. He did not know, because he had not been told, that Lucy's chest had been x-rayed at the Erne Hospital and was clear.⁴⁷⁵
- 4.289 Whilst any criticism of the late Dr O'Hara must be tempered by the fact that he can no longer explain his approach and conclusions, Professor Lucas advised that it was likely that the pneumonia was acquired in consequence of ventilator support in intensive care. He considered that Dr O'Hara's

⁴⁶⁹ 061-022-075

⁴⁷⁰ WS-289-2 p.3

⁴⁷¹ Dr Hanrahan T-05 -06-13 p.200 line 13

⁴⁷² Dr Chisakuta T-29 -05-13 p.106 line 9

⁴⁷³ 061-009-016

⁴⁷⁴ 061-009-017

⁴⁷⁵ 027-010-023

“most important act” should have been to examine the laboratory records, note the chronology of abnormal electrolytes and correlate that with what had happened clinically. He believed that Dr O’Hara had attached too much significance to the presence of pneumonia and had not sufficiently thought the case through.⁴⁷⁶

4.290 Mr Leckey became concerned when he read Dr O’Hara’s post-mortem report in 2003. He noted that whilst Dr O’Hara found the ultimate cause of death to be an oedema of the brain, he had obviously failed to establish the cause of that oedema.⁴⁷⁷ This was therefore a death which required investigation and as an experienced pathologist Dr O’Hara ought to have known to notify the Coroner himself.⁴⁷⁸ Had he done so, Mr Leckey would have inevitably directed his own post-mortem.

4.291 Dr O’Hara responded to the Coroner’s concern by providing a supplementary report indicating *“two potential pathological processes that could impinge upon the brain”* namely hyponatraemia and bronchopneumonia and concluding that it was difficult to know *“what proportion of the cerebral oedema can be described to each of these processes.”*⁴⁷⁹ Such analysis merely emphasises the inadequacy of his first report which failed to consider the significance of the known presence of hyponatraemia. Responsibility for that does not, however, rest solely with Dr O’Hara. He did not receive the assistance he had every right to expect from the clinical team led by Dr Hanrahan which had neglected to brief him with basic materials and thereafter failed to engage with him in the search for answers.

4.292 Dr Hanrahan, having initiated the post-mortem process on the basis that he *“didn’t have a clue”* why Lucy had died,⁴⁸⁰ now accepts that when the post-mortem did not identify the cause of her death he then ought to have referred the matter back to the Coroner’s office.⁴⁸¹ He failed so to do. The

⁴⁷⁶ 252-003-004

⁴⁷⁷ Mr Leckey T-25-06-13 p.184-185

⁴⁷⁸ Mr Leckey T-25-06-13 p.185 line 6

⁴⁷⁹ 013-017-065

⁴⁸⁰ Dr Hanrahan T-05-06-13 p.152-153

⁴⁸¹ Dr Hanrahan T-05-06-13 p.196 line 15. This was likewise the conclusion of the General Medical Council.

GMC, when it examined this issue, counselled Dr Hanrahan to ensure that the Coroner is informed of the conclusions reached by any hospital post-mortem if such circumstances arose in the future.⁴⁸²

RBHSC: Completion of the Death Certificate

- 4.293 Before the final post-mortem report became available, Dr O'Donoghue issued a medical certificate of cause of death on the 4th May 2000 certifying that Lucy's death was due to:

"I (a). Cerebral oedema

(b). due to (or as a consequence of) dehydration

*(c). due to (or as a consequence of) gastroenteritis."*⁴⁸³

- 4.294 That the certificate was issued when there was continuing uncertainty about the cause of death is another matter of real concern.

- 4.295 Dr O'Donoghue was marginally involved in Lucy's care before her death, in that he administered a hormone to her.⁴⁸⁴ For that reason he considered himself legally competent to sign the death certificate. Even if it might be said that he was legally competent to perform this role, Dr O'Donoghue certainly had no independent knowledge or understanding of the cause of the fatal cerebral oedema. I am satisfied, given the legal significance of the process, that a certificate should not be signed by a doctor who has no independent understanding of the causes of death.

- 4.296 Dr O'Donoghue said that he spoke to Dr C. Stewart⁴⁸⁵ and possibly to an intensivist in PICU⁴⁸⁶ before issuing the death certificate. He considered Lucy's hospital notes and the anatomical summary prepared by Dr O'Hara⁴⁸⁷ but did not read the autopsy request form which made reference to the hyponatraemia.⁴⁸⁸ He then "*presented the available information*" to

⁴⁸² 403-029-005

⁴⁸³ 013-008-022

⁴⁸⁴ Dr O'Donoghue T-31-05-13 p.44 line 23

⁴⁸⁵ Dr O'Donoghue T-31-05-13 p.32 line 13 (See also the entry in Lucy's notes at 061-018-068)

⁴⁸⁶ Dr O'Donoghue T-31-05-13 p.40 line 6

⁴⁸⁷ Dr O'Donoghue T-31-05-13 p.31 line 14

⁴⁸⁸ Dr O'Donoghue T-31-05-13 p.34 line 9

Dr Hanrahan who advised him as to the causes of death.⁴⁸⁹ Dr O'Donoghue then entered into Lucy's notes those causes as advised by Dr Hanrahan and transcribed them on to the death certificate.⁴⁹⁰

- 4.297 It is inconceivable that Dr O'Donoghue would have completed the death certificate without the involvement of his more senior colleagues.⁴⁹¹ I consider that in reality the certificate was formulated by Dr Hanrahan. In reality, he had ownership of that certificate even if he did not sign it.
- 4.298 The formulation of the cause of death appearing on the death certificate has been recognised as a nonsense. The cerebral oedema causing Lucy's death was not due to dehydration. Both Dr MacFaul and Professor Lucas characterised the formulation as "*illogical*" because cerebral oedema cannot arise in consequence of dehydration.⁴⁹²
- 4.299 That was the consensus view. Dr Crean recalled that in 2003 when he first read the certificate, "*it didn't make any sense*"⁴⁹³ and Dr Taylor agreed that it was "*not a correct cause of death*."⁴⁹⁴ Dr Chisakuta also accepted that Lucy did not die as a result of dehydration⁴⁹⁵ and observed that the death certificate could only begin to make sense if it explained that it was the treatment for dehydration which had given rise to the cerebral oedema.⁴⁹⁶
- 4.300 Only Dr McKaigue really sought to defend the content of the death certificate. He claimed that dehydration was a cause of the death, albeit indirectly, and suggested that there was, in any event, insufficient space on the death certificate for the certifying doctor to refer to the fluid mismanagement. I consider such arguments to be wholly without merit and think it telling, in the circumstances, that Dr McKaigue should have sought to defend the indefensible.

⁴⁸⁹ Dr O'Donoghue T-31-05-13 p.57 line 15

⁴⁹⁰ Dr O'Donoghue T-31-05-13 p.60 line 20 (See also the entry in Lucy's notes at 061-018-068)

⁴⁹¹ Dr O'Donoghue T-31-05-13 p.32 line 19

⁴⁹² 252-003-011 & 250-003-007

⁴⁹³ Dr Crean T-04-06-13 p.131 line 20

⁴⁹⁴ Dr Taylor T-04-06-13 p.214 line 20

⁴⁹⁵ Dr Chisakuta T-29-05-13 p.113 line 4

⁴⁹⁶ Dr Chisakuta T-29-05-13 p.112 line 17

- 4.301 Dr O'Donoghue explained that he allowed himself to certify an illogical cause of death because he acted under the direction of Dr Hanrahan who identified causes which he recognised as appearing in Lucy's notes.⁴⁹⁷ Dr O'Donoghue accepted that, "...it is likely, if I had scrutinised it in greater detail... that it would have become apparent that that does not make physiological sense."⁴⁹⁸ Dr O'Donoghue's duty as a doctor was to take reasonable steps to verify the cause of death before he signed the certificate.⁴⁹⁹ He should have given his task more consideration and challenged Dr Hanrahan's thinking, awkward though it may have been to ask questions of a senior colleague.
- 4.302 However, Dr O'Donoghue considered that because Dr Hanrahan was in charge of Lucy's care, it was Dr Hanrahan who bore the responsibility to ensure that her death was properly certified.⁵⁰⁰ I consider that Dr O'Donoghue is correct in this analysis. It is to be recognised in this context that Dr Hanrahan authorised Dr O'Donoghue to issue the certificate before the cause of death was known, before Dr O'Hara produced his final post-mortem report⁵⁰¹ and when the death certificate should not have been issued.⁵⁰²
- 4.303 Dr Hanrahan conceded that he handled the death certificate "*extremely badly*."⁵⁰³ He admitted that the content of the certificate was "*illogical and unhelpful*"⁵⁰⁴ and "*did not reflect the true chain of events in Lucy's death*."⁵⁰⁵ He accepted that the presence of "*cerebral oedema was not due to dehydration, but rather to excessive rehydration leading to hyponatraemia*."⁵⁰⁶ Dr Hanrahan said that he allowed the certificate to

⁴⁹⁷ Dr O'Donoghue T-31-05-13 p.74 line 20

⁴⁹⁸ Dr O'Donoghue T-31-05-13 p.75 line 15

⁴⁹⁹ 315-002-019 - General Medical Council – Good Medical Practice (1998)

⁵⁰⁰ Dr O'Donoghue T-31-05-13 p.43 line 16

⁵⁰¹ 061-009-017

⁵⁰² Dr Hanrahan T-05-06-13 p.157 line 21

⁵⁰³ Dr Hanrahan T-05-06-13 p.156 line 17

⁵⁰⁴ Dr Hanrahan T-05-06-13 p.157 line 3

⁵⁰⁵ WS-289-1 p.26

⁵⁰⁶ WS-289-1 p.20

issue because he “*was over-focussed on being kind to the parents*” who could not make their funeral arrangements without the death certificate.⁵⁰⁷

- 4.304 I am concerned that not only was the certificate issued in the absence of clarity around the cause of death, but that it was issued with an incorrect cause of death. I am satisfied that Dr Hanrahan knowingly permitted an inaccurate description of the cause of death to appear on the death certificate. That this happened is a matter for the gravest concern and cannot be excused by what I accept was his genuine sympathy for the family or a desire to help them expedite the funeral arrangements.
- 4.305 In its consideration of this issue, the GMC concluded that the entry on the death certificate was “*consistent with the findings of the preliminary post-mortem report*” and that therefore “*Dr Hanrahan cannot be regarded as having misled the Coroner in this regard.*”⁵⁰⁸ I reject this analysis. A death certificate should not have been written on the basis of a preliminary post-mortem report, and still less should the cause of death have been certified as it was. As I have indicated, the hospital post-mortem process did not identify the cause of Lucy’s death and therefore her case should have been reported back to the Coroner. The effect of the certification was to mislead the Coroner.
- 4.306 Dr Hanrahan now recognises that his conduct in this respect was indefensible. Not only did it have the effect of concealing the true cause of Lucy’s death but it also prevented, at that point in time, the further investigation of the death through the Coroner’s Office which was so obviously required. Accordingly, the clinical mismanagement which caused the cerebral oedema remained hidden until Mr Millar’s helpful intervention three years later.

RBHSC: Communication with Lucy’s parents

- 4.307 Dr Hanrahan had indicated to Mr and Mrs Crawford, even before Lucy had died, that they would have to go back to the Erne and to Dr O’Donohoe to

⁵⁰⁷ Dr Hanrahan T-05-06-13 p.156 line 19

⁵⁰⁸ 403-029-005

find out what had happened.⁵⁰⁹ Dr Chisakuta indicated that had it been his duty to speak to Mr and Mrs Crawford he would have told them that her fluid management at the Erne Hospital may not have been appropriate and that there was a concern that this may have contributed to the development of cerebral oedema.⁵¹⁰ It is not thought that Dr Hanrahan told them about any particular concern.

4.308 Dr Hanrahan met again with Mr and Mrs Crawford on the 9th June 2000.⁵¹¹

It is commendable that he initiated a meeting and it would appear that he was genuinely concerned for them. He made a short note after the meeting to record that he had gone “*over the events around Lucy’s death and encouraged them to re-attend with Dr O’Donoghue (sic) to clarify events in the Erne...*”⁵¹² Importantly, whilst this does not record discussion about fluid mismanagement, it does indicate that Dr Hanrahan tried to help Mr and Mrs Crawford obtain a fuller account of what had happened. After the meeting he contacted Dr O’Donohoe and secured his agreement to see them again. It was not his fault that Dr O’Donohoe did not honour that agreement.

4.309 Dr Hanrahan was conscious at that time that whatever had gone wrong had happened at the Erne.⁵¹³ Doubtless it was for that reason that he considered that Dr O’Donohoe should be involved in providing an explanation.⁵¹⁴ In June 2000 Dr Hanrahan knew more than enough about Lucy’s treatment to be concerned about it.⁵¹⁵ He was aware that there was discussion within the RBHSC about the errors even if he did not understand the connection between the poor fluid management and the development of the cerebral oedema.⁵¹⁶ He acknowledged that he should have informed Mr and Mrs Crawford of those concerns.⁵¹⁷ He said that whilst he might

⁵⁰⁹ Dr C Stewart T-29-05-13 p.202 line20

⁵¹⁰ Dr Chisakuta T-29-05-13 p.80 line 8

⁵¹¹ 061-010-034

⁵¹² 061-018-069

⁵¹³ Dr Hanrahan T-05-06-13 p.182 line 24

⁵¹⁴ WS-289-1 p.15

⁵¹⁵ WS-289-1 p.15

⁵¹⁶ Dr Hanrahan T-05-06-13 p.178 -179

⁵¹⁷ Dr Hanrahan T-05-06-13 p.183 line 13

have told them there was some concern about how Lucy's fluids were managed he could not be sure.⁵¹⁸

4.310 Dr Chisakuta observed that if Mr Crawford had been given such information he would likely have mentioned it when he wrote his letter of complaint to the SLT, which he did not.⁵¹⁹ Furthermore, had Dr Hanrahan suggested medical error to the Crawfords they would have pursued the issue with Dr O'Donohoe which they did not. I consider the strong likelihood is that Dr Hanrahan failed in his duty to tell the family that the fluids had been poorly managed. The parents had a right to that information and Dr Hanrahan had a duty to impart it.⁵²⁰

4.311 Mrs Crawford has stated that Dr Hanrahan merely directed them back to the Erne for answers.⁵²¹ Any further meeting with Dr O'Donohoe must have seemed pointless. Responsibility for this further failure in transparency and communication is not Dr Hanrahan's alone. There was a collective failure by all the RBHSC clinicians who had cared for Lucy to determine that concerns relating to Lucy's treatment and death would be explained to her parents and to ensure that it was done. This reflected the like failure at the Erne Hospital.

RBHSC: Audit/Mortality meeting

4.312 Dr Carson maintained that whilst there was no formal auditing of death certificates at that time in the RBHSC,⁵²² every death was considered and discussed at a mortality section meeting of the Clinical Paediatric Audit.⁵²³

4.313 Dr Taylor was the Paediatric Audit Co-ordinator in 2000 and responsible for chairing the mortality section of the Audit meeting.⁵²⁴ He explained that the purpose of the mortality section was *"to discuss the child's death for*

⁵¹⁸ Dr Hanrahan T-05-06-13 p.182 line 8

⁵¹⁹ Dr Chisakuta T-29-05-13 p.95-96

⁵²⁰ 306-085-014 - GMC Good Medical Practice (1998) & 315-002-007 - rights recognised by the Charter for Patients and Clients (1992)

⁵²¹ 115-002-002

⁵²² Dr Carson T-26-06-13 p.44-45

⁵²³ Dr Carson T-26-06-13 p.22

⁵²⁴ WS-280-1 p.3

learning purposes among the clinicians present.”⁵²⁵ All agreed that this was the purpose, in order as Dr Hanrahan put it, “to try and learn lessons and to see should anything alternative have been done.”⁵²⁶

4.314 The meetings convened monthly and lasted about half a day.⁵²⁷ Normally more than one death was discussed at each meeting. The mortality discussions were un-minuted but this practice was not untypical of arrangements elsewhere at that time.

4.315 Dr McKaigue explained that such discussions were,

“... an opportunity to present the events surrounding the death of patients in the Children’s Hospital, primarily to a wider body of doctors (multi-disciplinary). Further, at that time there was a push within Audit circles to establish audit as a multi-professional process (nurses and professions allied to medicine). Before the presentation, the presenter would have had to collate and organise in a logical way the different strands pertaining to the case. Presentations were a way of announcing that a patient had died under the said circumstances and what the cause of death was thought to be. The death was not only being reviewed by the presenter but also by peers and other disciplines, who could bring a different perspective to aspects of the case. Implicit in this process was the opportunity to learn and reflect from listening to the presentation and ensuing discussion. Individuals would have had different learning experiences according to their specialty, previous knowledge and experience.

Presentations were oral and usually facilitated by using computerised slides or an overhead projector and sometimes X-rays were displayed. For some presentations, radiologists and pathologists made a contribution. Patient details were anonymised.

The presentation would have consisted of a history including differential diagnoses, investigations and their results, when death occurred, the cause

⁵²⁵ WS-280-1 p.3

⁵²⁶ Dr Hanrahan T-05-06-13 p.233 line 20

⁵²⁷ Dr Crean T-04-06-13 p.152 line 20

of death and whether or not the Coroner had been advised of the death. The follow-up with the patient's family was also described. In addition to the facts presented, there would have been commentary by the presenter to emphasise significant points/issues (as they saw them), put things into context and interpret results, if necessary.

Discussions around each presentation consisted of contributions from attendees reflecting their related experiences of similar cases, or making reference to a journal article or latest guideline, which they personally would recommend as being helpful.

Questions were asked by attendees to get more information where they felt detail was lacking or did not understand something. Suggestions were made to improve shortcomings if an attendee felt that was warranted. Occasionally, there were disagreements between attendees over expression of an opinion. A detailed minute of the presentation or discussion was not made.”⁵²⁸

4.316 Dr Taylor agreed that every child death should have been presented and discussed within the mortality section of the meeting. He would have expected Lucy's death to have been presented by the lead consultant and pathologist⁵²⁹ who would then have answered questions from the clinicians present. He explained that the purpose of the discussion was to “review” the settled position after a death rather than to conduct an “investigation.”⁵³⁰ He said that mortality meetings were not “passive” but that “serious matters were discussed” and those who attended could say “stop” and ask that further investigations be conducted.⁵³¹

4.317 Dr Crean acknowledged that Lucy's case ought to have provoked a serious discussion about the content of the death certificate. He contended that if Lucy's case had been discussed, “people would have been jumping up and down asking all sorts of questions” and saying “this doesn't make sense.”⁵³²

⁵²⁸ WS-302-3 p.2-3

⁵²⁹ WS-280-1 p.3

⁵³⁰ Dr Taylor T-11-12-12 P.118, line 10-13

⁵³¹ Dr Taylor T-04 -06-13 p.203-204

⁵³² Dr Crean T-04 -06-13 p.153 line 17

He considered that such discussion would very probably have led to further and better investigation and possibly a referral back to the Coroner.⁵³³

- 4.318 The Inquiry was informed Lucy's death was discussed at an Audit meeting on the 10th August 2000.⁵³⁴ That is all. It has not been suggested that discussion of the death triggered the kind of response which Dr Crean spoke about.
- 4.319 The evidence suggests that Dr Crean, Dr Chisakuta or Dr Hanrahan could each have been regarded as 'lead consultant' for Lucy within the RBHSC and each would have had the requisite knowledge to present her case at the Audit meeting. Both Dr Crean⁵³⁵ and Dr Chisakuta⁵³⁶ thought that Dr Hanrahan should have presented it. Dr Hanrahan did not accept that this was necessarily the case but recognised that there ought to have been a discussion to decide who should.⁵³⁷ I consider that Dr Hanrahan was best placed to make the presentation but that the other doctors were also perfectly capable of doing so. I deprecate the failure of Drs Crean, Chisakuta and Hanrahan to decide who should undertake this important task.
- 4.320 I have considered a three page document said to be relevant to the Clinical Paediatric Audit meeting of 10 August 2000.⁵³⁸ There is an attendance sheet dated 10th August 2000⁵³⁹ indicating the attendance of thirty four persons. Only one of the clinicians who had cared for Lucy attended and that was Dr McKaigue who only saw her briefly upon arrival and did not treat her thereafter. The names of Drs Crean, Chisakuta, Hanrahan and O'Hara are absent from the attendance sheet. No apology is recorded from any of these doctors in relation to non-attendance.

⁵³³ Dr Crean T-04 -06-13 p.154 line 23

⁵³⁴ 061-038-123

⁵³⁵ WS-292/2 p.7

⁵³⁶ Dr Chisakuta T-29 -05-13 p.114 line 10

⁵³⁷ Dr Hanrahan T-05 -06-13 p.225 line 18

⁵³⁸ 319-023-004

⁵³⁹ 319-023-003

- 4.321 There is then a document described as the ‘minutes’ of the Clinical Paediatric Audit for 10 August 2000⁵⁴⁰ which records that “*5 cases were presented and discussed*” in the mortality section of the meeting. Neither the cases discussed nor the names of the presenting clinicians are given. An additional document described as a “*redacted audit list*”⁵⁴¹ contains a spreadsheet noting Lucy’s name, date of death, department where treated, named consultant and name of the pathologist conducting post-mortem.
- 4.322 If Lucy’s death was discussed at the Audit meeting in August 2000 or indeed at any other time, I would have expected some evidence identifying the clinician(s) presenting her case. The attendance sheet does not indicate the attendance of anyone who could have given that presentation.
- 4.323 Dr Crean accepted that it is unlikely that he was in attendance. He explained that circumstances could have arisen such as an emergency to prevent him attending.⁵⁴² Dr Chisakuta told me that he was not present at the Audit meeting⁵⁴³ and did not know whether Lucy’s death was discussed.⁵⁴⁴ Dr Hanrahan conceded that he “*clearly wasn’t at it.*”⁵⁴⁵
- 4.324 Dr McKaigue was at the meeting and stated that whilst he could have spoken about Lucy’s condition at the time of admission he did not present her case.⁵⁴⁶ He had no memory of the meeting but did admit to what he described as a “*vague memory that Dr Hanrahan presented Lucy Crawford’s case at an audit meeting in the Children’s Hospital,*” but could not say when that meeting took place.⁵⁴⁷
- 4.325 Dr Taylor cast doubt on whether the meeting on 10th August 2000 included presentation of Lucy’s death, reasoning that as Chairman of the meeting he would not have permitted “*a case to be presented without at least two of the three major people involved.*” He stated that it “*defies logic to conclude*

⁵⁴⁰ 319-023-004

⁵⁴¹ 319-023-005

⁵⁴² Dr Crean T-04-06-13 p.152-153

⁵⁴³ WS-283-1 p.12

⁵⁴⁴ WS-283-1 p.12

⁵⁴⁵ Dr Hanrahan T-05-06-13 p.225 line 4

⁵⁴⁶ WS-302-3 p.3

⁵⁴⁷ c.f. Dr McKaigue’s evidence discussed at para 3.239

that her case was discussed at that meeting."⁵⁴⁸ Like Dr Taylor, I cannot understand how Lucy's death could have been presented at an Audit meeting in the absence of Drs Crean, Chisakuta, Hanrahan and/or O'Hara.⁵⁴⁹

- 4.326 I conclude therefore that the Audit meeting of 10th August 2000 did not consider Lucy's death. I received no evidence to suggest that her death was discussed at any subsequent Audit meeting. It is very unsatisfactory that no one could explain why her death was not discussed. However, Lucy's death was no more considered at an audit meeting than the deaths from dilutional hyponatraemia of Adam Strain and Claire Roberts. It is hard not to discern a pattern of avoidance given that some of the same clinicians were involved.
- 4.327 The mortality section of the Audit meeting provided real opportunity to concentrate on how Lucy had died, to query what had happened and to derive some learning from the tragedy. The failure to present Lucy's death must deepen concern that some clinicians at the RBHSC did not wish to focus on the question of how she had died.
- 4.328 If Dr Taylor was aware that the presentation of Lucy's death had not occurred he ought to have taken steps to ensure that this was addressed. While I am satisfied that Dr Taylor had no formal authority to compel a presentation if Drs Crean, Chisakuta, Hanrahan and O'Hara were unable or unwilling to do it, pressure could and should have been applied. The failure of these doctors to arrange for an audit discussion and the consequence of that failure is disturbing. Each of these doctors was responsible for that failure. This was a real opportunity to learn from the tragedy of Lucy's case, but it was squandered.
- 4.329 The failure to ensure the formal presentation and informed discussion of Lucy's death was the failure of individuals within a weak governance system. The fragility of the system allowed clinicians to avoid audit

⁵⁴⁸ Dr Taylor T-04 -06-13 p.208 line 23

⁵⁴⁹ Dr Taylor T-04 -06-13 p.40 line 12

presentation without fear of sanction. Dr Carson said he did not have the staff to deliver “*a robust governance arrangement.*”⁵⁵⁰ It did not require staffing to discuss Lucy’s death in this context, just a willingness to do so.

Concluding Remarks

- 4.330 Having reflected upon the evidence, I am of the view that the poor care which Lucy received was initially and deliberately concealed by clinicians at both the RBHSC and the Erne Hospital from the family, the Coroner and the pathologist who all should have been told of the suspected mismanagement of fluids.
- 4.331 The failure by senior clinicians to address the issue with appropriate candour suppressed the truth and inhibited proper examination of what had gone wrong. The motivations for this concealment may be multiple, but I count amongst them a determination to protect professional colleagues from having to confront their clinical errors.
- 4.332 As a result the opportunity to learn lessons was disregarded and critical learning was lost to clinicians delivering fluid therapy to other children in Northern Ireland. When Raychel came to be treated in the Altnagelvin Hospital fourteen months later, Solution No. 18 was still being used without appropriate guidance as to the risks.

⁵⁵⁰ Dr Carson T-26 -06-13 p.23 line 3

RAYCHEL FERGUSON

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Introduction

- 5.1 Raychel Ferguson was born on 4th February 1992,¹ the fourth child and only daughter of Raymond and Marie Ferguson. In June 2001 Raychel was a happy, healthy 9 year old child and in her P5 year at St Patrick's Primary School, Pennyburn, Derry.²
- 5.2 On Thursday 7th June 2001, Raychel went to school as usual. She was in good spirits and won a medal in her school sports.³ Later, at about 16:30 she began to complain of stomach ache.⁴ Nevertheless, she played in and around the family home and ate normally. However, she continued to complain and Mrs Ferguson eventually made up a bed for her on the sofa.⁵ Her primary concern at that time was not that Raychel was in pain, but that she looked grey.⁶
- 5.3 Things did not improve and Mrs Ferguson decided to take Raychel to the Altnagelvin Area Hospital ('Altnagelvin'). She put her in the car and set off, collecting Mr Ferguson on the way. They arrived at the hospital shortly after 19:00.⁷ Mr Ferguson thought Raychel looked grey and unwell.⁸ He carried her into the Accident and Emergency Department ('A&E').
- 5.4 Within 48 hours Raychel was to suffer brain death in consequence of hyponatraemia. In this chapter of the report, I set out my findings in relation to her case.

Expert reports

- 5.5 The Inquiry, in examining Raychel's case and guided by its advisors, engaged the following experts to advise:

¹ 012-025-135
² 012-025-135
³ Mrs Ferguson T-26-03-13 p.10 line 5
⁴ 012-025-135
⁵ 012-025-135
⁶ Mrs Ferguson T-26-03-13 p.12 line 9
⁷ 012-025-136
⁸ Mr Ferguson T-26-03-13 p.13 line 10

- (i) Dr Robert Scott-Jupp⁹ (Consultant Paediatrician, Salisbury District Hospital, England) who provided reports on paediatric and general medical issues.¹⁰
- (ii) Mr George Foster¹¹ (Consultant General Surgeon, Countess of Chester Hospital, and Grosvenor Nuffield Hospital) who provided reports on the role and responsibilities of the surgical staff.¹²
- (iii) Dr Simon Haynes¹³ (Consultant in Paediatric Cardiothoracic Anaesthesia and Intensive Care, Freeman Hospital, Newcastle upon Tyne) who reported on anaesthetic as well as general management issues.¹⁴
- (iv) Ms Sally Ramsay¹⁵ (Independent Childrens' Nursing Advisor) who advised on questions of nursing.¹⁶
- (v) Dr Wellesley St. C. Forbes¹⁷ (retired Consultant Neuroradiologist, formerly of Salford Royal Hospitals NHS Foundation Trust and Manchester University Children's Hospitals NHS Foundation Trust) who reported on the Computerised Tomography ('CT') scans.¹⁸
- (vi) Dr Fenella Kirkham¹⁹ (Professor of Paediatric Neurology, Institute of Child Health, London and Consultant Paediatric Neurologist Southampton General Hospital), who provided a report on neurological issues arising.²⁰

⁹ 312-003-006
¹⁰ File 222
¹¹ 312-003-006
¹² File 223
¹³ 312-003-006
¹⁴ File 220
¹⁵ 312-003-006
¹⁶ File 224
¹⁷ 312-003-006
¹⁸ File 225
¹⁹ 312-003-006
²⁰ File 221

- (vii) Professor Charles Swainson²¹ (retired Consultant Renal Physician and Medical Director of the Lothian NHS Board, Edinburgh) who advised on governance.²²

5.6 The Inquiry also had the benefit of expert reports commissioned by the Coroner, the Police Service of Northern Ireland ('PSNI') and Altnagelvin, from:

- (i) Dr Brian Herron²³ (Consultant Neuropathologist, Royal Group of Hospitals) who provided the Autopsy Report following post-mortem on 11th June 2001.²⁴
- (ii) Dr Clodagh Loughrey²⁵ (Consultant Chemical Pathologist, Belfast City Hospital) who reported on 24th October 2001.²⁶
- (iii) Dr Edward Sumner²⁷ (Consultant Paediatric Anaesthetist at Great Ormond Street Childrens' Hospital) who provided reports to the Coroner on 1st February 2002²⁸ and to the PSNI in September 2005.²⁹
- (iv) Ms Susan Chapman³⁰ (Nurse Consultant for acute and high dependency care at Great Ormond Street Childrens' Hospital) who reported to the PSNI on 24th September 2005.³¹
- (v) Dr John Jenkins³² (Senior Lecturer in Child Health and Consultant Paediatrician) who provided reports dated 12th November 2002,³³ 27th January 2003³⁴ and 30th January 2003³⁵ for Altnagelvin.

²¹ 328-001-006

²² File 226

²³ 312-003-006

²⁴ 014-005-006 *et seq*

²⁵ 312-003-006

²⁶ 014-006-014 *et seq*

²⁷ 312-003-007

²⁸ 012-001-001

²⁹ 098-081-235, 098-093-341 & 098-098-373

³⁰ 312-003-007

³¹ 098-092a-328

³² 328-001-006

³³ 317-009-002 *et seq*

³⁴ 160-215-002

³⁵ 022-004-010

- (vi) Dr Declan Warde³⁶ (Consultant Paediatric Anaesthetist, The Childrens' University Hospital, Dublin) who provided Altnagelvin with a report in January 2003.³⁷
- (vii) Mr John Orr³⁸ (Consultant Paediatric Surgeon, Royal Hospital for Sick Children, Edinburgh) who reported to Altnagelvin on the treatment given Raychel on 30th January 2013.³⁹

Schedules compiled by the Inquiry

5.7 In an attempt to summarise the very significant quantities of information received, the following schedules and charts were compiled:

- (i) Chronology of events (Clinical).⁴⁰
- (ii) Timeline of Raychel's treatment.⁴¹
- (iii) Chronology and Clinical Timeline post-collapse 9th June 2001.⁴²
- (iv) Table of Clinicians duty times 7th – 9th June 2001.⁴³
- (v) Schedule of Observations.⁴⁴
- (vi) Schedule of Persons (Clinical).⁴⁵
- (vii) Schedule of Persons (Governance).⁴⁶
- (viii) Schedule of nomenclature and grading of doctors 1948 – 2012.⁴⁷
- (ix) Schedule of nomenclature and grading of nurses 1948 – 2012.⁴⁸

³⁶ 328-001-006
³⁷ 317-009-006 *et seq*
³⁸ WS-320-1 p.3
³⁹ WS-320-1 p.2 *et seq*
⁴⁰ 312-004-001
⁴¹ 312-001-001
⁴² 312-013-001
⁴³ 312-006-001
⁴⁴ 312-009-001
⁴⁵ 312-003-001
⁴⁶ 328-001-001
⁴⁷ 303-003-048
⁴⁸ 303-004-051

- (x) Consolidated Chronology of 'Governance' and 'Lessons Learned'.⁴⁹
- (xi) Table of Nurses' training and experience.⁵⁰
- (xii) Table of Trainee Doctors' training and experience.⁵¹
- (xiii) Glossary of Medical Terms.⁵²

All of the above have been published on the Inquiry website.

Raychel in A&E

- 5.8 Raychel was seen in A&E at 20:05 by Senior House Officer ('SHO') Dr Barry Kelly.⁵³ Whilst he had limited paediatric experience,⁵⁴ his role was confined to examination and onward referral for surgical opinion. Dr Kelly has no recollection of his involvement⁵⁵ but did make a record of his examination in the medical notes.⁵⁶
- 5.9 He noted a history of sudden onset abdominal pain from about 16:30 and increasing thereafter. Nausea was noted with "*pain on urination*."⁵⁷ Pain was found to be maximal over 'McBurney's Point' with clinical signs of tenderness in the right iliac fossa. On the basis of these findings, Dr Kelly noted his suspicion as "*Appendicitis? Surgeons*."⁵⁸ He arranged for blood and urine tests, referred Raychel for surgical assessment, and gave her cyclimorph to ease pain.⁵⁹ This appears to have been effective as Mrs Ferguson thought her "*back to normal after the injection*."⁶⁰
- 5.10 The only potential criticism of Dr Kelly relates to the painkiller. Cyclimorph is so powerful a morphine based drug that it risks compromising

⁴⁹ 325-004-001

⁵⁰ 312-007-001

⁵¹ 312-008-001

⁵² 312-005-001

⁵³ 312-003-002

⁵⁴ Dr Kelly T-05-02-13 p.7 line 17

⁵⁵ Dr Kelly T-05-02-13 p.11 line 19

⁵⁶ 026-006-010

⁵⁷ 020-006-010

⁵⁸ 020-006-010

⁵⁹ 020-006-010

⁶⁰ WS-020-1 p.2

subsequent medical assessment by masking clinical signs.⁶¹ This can be relevant in the diagnosis of appendicitis because clinical findings are important.⁶²

- 5.11 Any criticism of Dr Kelly must be extremely limited. It is not suggested that Raychel should not have been given a painkiller. It would have been inhumane not to attempt pain relief. Rather he should have opted for milder analgesia.⁶³ Whilst it would have been better if Dr Kelly had not prescribed as he did, it would be unfair, given the extent of his experience and the available textbook guidance⁶⁴ to criticise him. In any event, he referred Raychel to another SHO who specialised in surgery and one who could, if necessary, contact a registrar or consultant.⁶⁵

Diagnosis and admission for appendectomy

- 5.12 Dr Ragai Makar⁶⁶ qualified as a doctor in Egypt in 1989. During the 1990s he gained experience in general surgery and emergency medicine and practiced as a registrar. He came to the UK in 1997 and worked almost exclusively in short-term posts as an SHO before moving to Altnagelvin in August 2000 as an SHO in general surgery. He was therefore more experienced than most SHOs, but his experience with children was limited.⁶⁷
- 5.13 Upon request, Dr Makar saw Raychel and examined her on Thursday evening. He noted, but did not time, his examination in the record.⁶⁸ He found tenderness at the right iliac fossa with guarding and mild rebound. He did not believe that the painkiller hindered his diagnosis.⁶⁹ He noted normal blood test results⁷⁰ and ordered a repeat urine test.⁷¹

⁶¹ 223-002-006

⁶² Dr Scott-Jupp T-20-03-13 p.6 line 9

⁶³ 223-003-004

⁶⁴ WS-254-1 p.4 & p.11

⁶⁵ WS-254-1 p.4

⁶⁶ 312-003-002

⁶⁷ WS-022-2 p.2

⁶⁸ 020-007-011 & 020-007-012

⁶⁹ Dr Makar T-06-02-13 p.167 line 13

⁷⁰ 020-022-045 (including sodium at 137mmol/L. Normal sodium range 135-145mmol/L)

⁷¹ 020-007-012

- 5.14 Dr Makar concluded that Raychel had “*acute appendicitis/obstructed appendix*”⁷² and obtained Mrs Ferguson’s written consent to surgery.⁷³ Raychel was admitted to Ward 6 at 21:41 to fast and receive fluids in preparation for an appendectomy.⁷⁴ Dr Makar was to perform the operation himself.
- 5.15 Altnagelvin had only one childrens’ ward, Ward 6. It served both surgical and medical patients. Surgical patients were children admitted in relation to surgery and medical patients were those otherwise admitted for paediatric treatment. The ward could accommodate 43 children⁷⁵ but on 8th June 2001, there were only 23.⁷⁶ The majority of patients would normally have been medical cases.⁷⁷ Paediatricians were employed on Ward 6 to care for the medical patients. However, because there were no paediatric surgeons at Altnagelvin, children were operated on by general hospital surgeons and cared for on Ward 6 by the general surgical staff. The nurses, some of whom were trained childrens’ nurses, cared for both the medical and the surgical patients.
- 5.16 The on-call surgical consultant for the night of 7th June was Mr Robert Gilliland.⁷⁸ He was not consulted about the decision to operate and, in all probability, remained unaware of Raychel’s admission until Sunday 10th June.⁷⁹ The fact that he was Raychel’s named consultant did not necessarily mean that he would see her.⁸⁰ Dr Scott-Jupp considered that his non-attendance “*by the standards of the time, was acceptable practice.*”⁸¹ He should, however, have been informed of her case because his responsibility was, as he accepted, to “*oversee the totality of the patient’s care.*”⁸²

⁷² 020-007-012

⁷³ 020-008-015

⁷⁴ 020-001-001

⁷⁵ Sister Millar T-28-08-13 p.111 line 8

⁷⁶ 316-011-001

⁷⁷ Staff Nurse Noble T-26-02-13 p.103 line 8

⁷⁸ 312-003-002

⁷⁹ WS-044-1 p.4

⁸⁰ Staff Nurse Noble T-27-02-13 p.27 line 9 & Mr Gilliland T-14-03-13 p.136 line 21

⁸¹ 222-005-005

⁸² WS-044-2 p.13

- 5.17 The Ferguson family “*believe to this day that Raychel’s operation should never have taken place.*”⁸³
- 5.18 There are significant issues about the decision to proceed to surgery including:
- (i) Whether Dr Makar’s examination of Raychel could have been affected by the cyclimorph.
 - (ii) Whether Dr Makar should have requested an urgent urinalysis in light of Dr Kelly’s note of “*pain on urination*” and a finding of “+1” protein because these might have been suggestive of urinary tract infection.⁸⁴
 - (iii) Whether, because the Fergusons insist that Raychel was not in obvious pain at that time (and it is noted that Dr Makar did not record complaint), the decision to operate was premature.
 - (iv) Whether Raychel could have been observed overnight pending re-assessment in the morning.
 - (v) Whether, given a disagreement between the Fergusons and Dr Makar as to the basis upon which Mrs Ferguson gave her consent to surgery, a valid consent was given.
- 5.19 Dr Makar did not consider that the pain relief given Raychel interfered with his diagnosis. His belief is supported by subsequent medical literature which suggests that “*morphine effectively reduces the intensity of pain among children with acute abdominal pain and morphine does not seem to impede the diagnosis of appendicitis.*”⁸⁵
- 5.20 Dr Scott-Jupp discounted the likelihood of a urinary tract infection on the basis of negative leukocyte and nitrate counts⁸⁶ and in any event, Mr Orr said that if “*the urine was sent off to the lab for microscopy and thereafter*

⁸³ Mrs Ferguson T-26-03-13 p.175 line 20

⁸⁴ 223-002-005 & WS-320-1 p.4

⁸⁵ WS-044-3 p.10

⁸⁶ Dr Scott-Jupp T-20-03-13 p.11 line 4 & 020-016-031-2

*culture... that culture will take two or three days.*⁸⁷ It is hard, therefore, to criticise failure to pursue the possibility of urinary tract infection.

- 5.21 I heard conflicting expert opinion about the decision to operate. Dr Scott-Jupp said that *“by today’s standards, a child such as Raychel presenting with those sorts of symptoms would be more likely to have been left overnight and reassessed in the morning... However, when that happens... they’re taking a risk and the risk is that the condition can develop very rapidly, the appendix can burst.”*⁸⁸
- 5.22 The surgeons, Mr Foster⁸⁹ and Mr Orr,⁹⁰ were of the view that it was premature to operate on the Thursday night given the available evidence⁹¹ and Mr Orr’s opinion is noteworthy because it was commissioned by the Western Health and Social Care Trust (‘WHSCT’).⁹² However, both Mr Gilliland and Dr Scott-Jupp challenged this view⁹³ and in terms, described an appendectomy in such circumstances as routine practice. Dr Haynes, while questioning the wisdom of proceeding so quickly to surgery⁹⁴ did point out that *“it was not an unusual scenario.”*⁹⁵
- 5.23 I have reservations about the decision to operate. However, given the conflicting expert evidence I do not formally criticise the decision. I am influenced in this regard by the generally accepted opinion that *“the conduct of the anaesthetic for Raychel’s appendicectomy appears to have been completely satisfactory and the appendicectomy operation carried out with due care and attention.”*⁹⁶ What went so catastrophically wrong in Raychel’s case was not the surgery but the way she was cared for afterwards.

⁸⁷ Mr Orr T-21-03-13 p.40 line 19

⁸⁸ Dr Scott-Jupp T-20-03-13 p.18 line 11

⁸⁹ 317-007-001

⁹⁰ WS-320-1 p.18

⁹¹ Mr Foster and Mr Orr T-21-03-13 p.45 line 15

⁹² As successor to the Trust responsible for Altnagelvin in 2001

⁹³ 222-004-002 & Dr Scott-Jupp T-20-03-13 p.15 line 16

⁹⁴ 220-002-008 & Dr Haynes T-22-03-13 p.7 line 24

⁹⁵ 220-002-008

⁹⁶ 220-002-005: the view of Dr Haynes

- 5.24 While I understand why the Fergusons and some experts believe that Raychel should not have undergone surgery, my focus in this report is on hyponatraemia-related deaths and accordingly I will concentrate on the management of Raychel's fluids after the surgery and what led to the development of hyponatraemia.
- 5.25 There are however, two related issues about which I am critical. The first was a failure within Altnagelvin to follow relevant clinical recommendations and the second was Dr Makar's failure to make it clear to Mr and Mrs Ferguson that it was his intention to operate on Raychel that night.

NCEPOD Recommendations

- 5.26 In 1989 the Royal College of Surgeons published a 'Report of the National Confidential Enquiry into Perioperative Deaths' ('NCEPOD').⁹⁷ It specifically recommended that *"no trainee should undertake any anaesthetic or surgical operation on a child of any age without consultation with their consultant."*⁹⁸ This was to ensure that senior clinicians became involved with the care of children in surgery.
- 5.27 The data upon which NCEPOD made its recommendations derived from hospitals throughout the UK including Altnagelvin.⁹⁹ NCEPOD was in part funded by the Department in Northern Ireland.¹⁰⁰ Mr Orr described its report as a widely circulated *"wake-up call"* to surgeons and anaesthetists managing children.¹⁰¹ He said that he would be both surprised and worried if the 1989 Recommendations had not been adopted in Altnagelvin by 2001.¹⁰² Mr Foster agreed.¹⁰³ However, Mr Gilliland explained that *"they were not standard practice in Altnagelvin in 2001 and [suspected] that they had not been implemented elsewhere within N. Ireland at that time."*¹⁰⁴ I found this strange, indeed given that the 1999 Report on Paediatric Surgical

⁹⁷ 210-003-156

⁹⁸ 223-002-052

⁹⁹ 210-003-346

¹⁰⁰ Dr Carson T-30-08-13 p.28 line 5

¹⁰¹ Mr Orr T-21-03-13 p.46 line 23 & p.47 line 9

¹⁰² Mr Orr T-21-03-13 p.53 lines 14-18

¹⁰³ Mr Foster T-21-03-13 p.54 line 21

¹⁰⁴ WS-044-3 p.3

Services in Northern Ireland recommended adherence to this particular NCEPOD guideline¹⁰⁵ and Mr Panesar FRCS of Altnagelvin served on the working group responsible for that Report.¹⁰⁶

- 5.28 However, some support was offered Mr Gilliland by Dr Scott-Jupp who observed that NCEPOD reports carry more weight now than they did in 2001.¹⁰⁷ While I am pleased that is so, the suggestion that they did not carry significant weight in 2001 is alarming given that Altnagelvin was a teaching hospital and their purpose was to improve the quality of care.
- 5.29 As a direct result of Altnagelvin's failure to adopt the 1989 NCEPOD recommendations less than best practice was tolerated. Whilst Dr Makar should have known about the report and its recommendations, it appears that none of his employers in Northern Ireland from 1997 to 2001 brought it to his attention. This was a major failing in health service governance in Northern Ireland and not just Altnagelvin.
- 5.30 I cannot conceive of any reason for not adopting the NCEPOD guidance. Even were there compelling reason not to adopt an individual recommendation, such could not justify a rejection of the whole. Consultants and healthcare managers must ensure adherence to as many of such recommendations as possible because they are best practice standards. This was particularly important at Altnagelvin because, being so far from the specialist Children's Hospital in Belfast, it had to ensure that appropriate practices were in place to manage paediatric emergencies.
- 5.31 Had the NCEPOD recommendations been implemented, Mr Gilliland would have been consulted about the plan to operate. He had the right to know. His view was however, that in any event and even with hindsight, it was appropriate for the operation to proceed.¹⁰⁸ Notwithstanding, he should have been contacted at the time. The Chief Executive, Mrs Stella

¹⁰⁵ 224-004-100 & 121

¹⁰⁶ 306-079-037

¹⁰⁷ Dr Scott-Jupp T-20-03-13 p.17 line 3

¹⁰⁸ WS-044-2 p.8

Burnside,¹⁰⁹ acknowledged this shortcoming and said how “*sincerely sorry*” she was that the recommendations had not been followed.¹¹⁰

Consent

- 5.32 My second criticism relates to Dr Makar. The clear evidence of Mr and Mrs Ferguson is that they signed the consent form¹¹¹ on the understanding that Raychel would only go to surgery if her condition deteriorated. They did not therefore believe that there had been a decision to operate¹¹² and accordingly did not stay long with Raychel before going home.
- 5.33 Dr Makar’s evidence is that their understanding was mistaken because he had already decided to operate and that this should have been clear to them. He suggested that their only uncertainty might have been as to whether the operation would start that night.¹¹³
- 5.34 I am entirely satisfied from the evidence of Mr and Mrs Ferguson and more particularly from their behaviour that they did not believe that Raychel was going straight to theatre otherwise they would have stayed with her. I also think that it quite likely that Dr Makar did decide to operate from the outset, as he said he did. He gave the anaesthetist the impression that it was an urgent case¹¹⁴ and suggested that surgery should commence at the earliest opportunity after appropriate fasting.¹¹⁵ He communicated as much to the theatre nurse.¹¹⁶ I therefore conclude that when Dr Makar obtained the written consent he had not expressed himself as clearly as he should nor had he confirmed with the Fergusons their understanding.
- 5.35 It is accepted by the Fergusons that Dr Makar did discuss risk, both in relation to general anaesthesia and the removal of the appendix.¹¹⁷ However, there is contention about how those risks were explained.

¹⁰⁹ 328-001-002

¹¹⁰ Mrs Burnside T-17-09-13 p.58 line 22

¹¹¹ 020-008-015 & Mr and Mrs Ferguson T-26-03-13 p.17 line 15

¹¹² Mr Ferguson T-26-03-13 p.17 line 15

¹¹³ Dr Makar T-06-02-13 p.142 line 21 & 022-084-215

¹¹⁴ Dr Makar T-06-02-13 p.137 line 1

¹¹⁵ 020-009-017

¹¹⁶ Staff Nurse McGrath T-26-02-13 p.25 line 20

¹¹⁷ Mr Ferguson T-26-03-13 p.19 line 20

Difference of understanding and recollection is not unusual, which is why Dr Makar should have ensured:

- (i) that Mr and Mrs Ferguson had an absolutely clear understanding of what was to happen to Raychel before consenting, and
- (ii) that he documented their discussion about consent in the medical record.¹¹⁸

5.36 It is not at all clear however, that Mr and Mrs Ferguson would have actually withheld their consent had they understood Raychel was to undergo immediate surgery. They might, however, have refused consent had they understood the alternative of overnight observation but given that Dr Makar had already made the decision to operate that was not an option.

5.37 The consequence of this criticism is limited because what was to go wrong on Friday 8th June and Saturday 9th June did not follow from Dr Makar's inadequate communication with Mr and Mrs Ferguson.

Dr Makar and Dr Zawislak

5.38 Notwithstanding that Dr Makar was unaware at the time of the NCEPOD Recommendations, he subsequently claimed to have proceeded to surgery only after he had made two telephone calls to the on-call Surgical Registrar Dr Waldermar Zawislak¹¹⁹ in order to obtain permission.¹²⁰

5.39 Dr Makar said that he made this contact because "*it [was] the appendix and I gave him the criteria I used to diagnose appendix and I felt it needed to be done before midnight.*"¹²¹ He said he also canvassed the alternative of delay until the morning¹²² but subsequently called Dr Zawislak to advise that he was proceeding to theatre that night.¹²³

¹¹⁸ WS-046-2 p.115 – In compliance with the Altnagelvin 'Policy on Consent to Examination or Treatment' (1996)

¹¹⁹ 312-003-002

¹²⁰ WS-022-2 p.19 & Dr Makar T-06-02-13 p.125 line 5

¹²¹ Dr Makar T-06-02-13 p.133 line 16

¹²² Dr Makar T-06-02-13 p.125 line 12

¹²³ Dr Makar T-06-02-13 p.125 line 23

5.40 However, Dr Zawislak disputed Dr Makar's evidence, maintaining:

- (i) He has no recollection whatever of being contacted by Dr Makar.¹²⁴
- (ii) He was entirely unaware of Dr Makar's suggestion until 2013.¹²⁵
- (iii) That had permission been given in the manner described it would have been recorded in the notes and it is not.¹²⁶
- (iv) His role as registrar did not involve granting permission to operate in uncomplicated cases¹²⁷ and especially not to a surgeon as experienced as Dr Makar.
- (v) Had Dr Makar sought his views, he would have examined Raychel himself and contacted the on-call consultant Mr Gilliland, which he did not.¹²⁸
- (vi) Otherwise the only reason he could suggest why Dr Makar might have telephoned him, was to let him know he would be in theatre and accordingly otherwise unavailable.¹²⁹

5.41 Dr Zawislak accepted that he may have received a telephone call from Dr Makar.¹³⁰ I believe that this could have happened, but even if it did, I prefer Dr Zawislak's explanation that any such call would have been to alert him to what Dr Makar intended to do rather than seek his permission. It could not therefore satisfy the NCEPOD recommendation for pre-surgery consultation.

Pre-operative fluids

5.42 Having decided to operate, Dr Makar prescribed intravenous fluids to be administered pre-operatively. His initial prescription¹³¹ was for the isotonic

¹²⁴ Dr Zawislak T-05-02-13 p.24 line 25

¹²⁵ Dr Zawislak T-05-02-13 p.80 line 20

¹²⁶ Dr Zawislak T-05-02-13 p.78 line 25

¹²⁷ Dr Zawislak T-05-02-13 p.65 line 9

¹²⁸ Dr Zawislak T-05-02-13 p.73 line 12

¹²⁹ Dr Zawislak T-05-02-13 p.65 line 24

¹³⁰ Dr Zawislak T-05-02-13 p.24 line 25

¹³¹ WS-022-2, p.5

solution known as Hartmann's.¹³² However, he changed this prescription to Solution No.18 after a discussion with Staff Nurse Ann Noble¹³³ because she assured him that Solution No.18 was the accepted IV fluid for use on Ward 6.¹³⁴ The evidence confirmed that Solution No.18 was the IV fluid of choice on Ward 6 and had been for at least 25 years.¹³⁵

5.43 He amended his prescription, not only because of ward practice,¹³⁶ but also because he knew that the anaesthetic team would, in any event, make separate prescription for fluids intra-operatively and direct Raychel's fluids thereafter.

5.44 I do not criticise either Dr Makar or Staff Nurse Noble in this regard. His prescription for Solution No.18 was only to assume significance much later and after surgery, when not only the choice of fluid but also the rate as prescribed was to prove important.

5.45 Rates were calculated with reference to patient weight using a set formula.¹³⁷ Dr Makar prescribed 80mls per hour¹³⁸ which was more than the 65mls indicated by formula¹³⁹ and more than was necessary even allowing for a possible deficit.¹⁴⁰ The excess was, however, of little consequence at that time because Raychel was to receive only 60mls before the anaesthetic team assumed responsibility for her fluids and changed the prescription.¹⁴¹

Nursing care plan

5.46 Upon Raychel's admission onto Ward 6 Staff Nurse Daphne Patterson¹⁴² downloaded a computerised pro-forma episodic care plan ('ECP') for Raychel's abdominal pain.¹⁴³ By so doing Staff Nurse Patterson

¹³² 312-005-020

¹³³ 312-003-004

¹³⁴ WS-049-2 p.5 & Nurse Noble T-26-02-13 p.167 line 24

¹³⁵ WS-056-3 p.21

¹³⁶ Dr Makar T-06-02-13 p.183 line 18

¹³⁷ Dr Makar T-06-02-13 p.176 line 10

¹³⁸ 020-019-038

¹³⁹ 220-002-004, 223-002-013 & 224-004-017

¹⁴⁰ WS-035-4 p.2

¹⁴¹ 021-061-146

¹⁴² 312-003-004

¹⁴³ 020-027-056

automatically became Raychel's nominal 'named nurse.'¹⁴⁴ The ECP was designed to be regularly updated and adjusted to a patient's ongoing needs in order to guide nursing care. It was used to communicate accumulated patient information in print-out form at handover.¹⁴⁵ In connection with Raychel's IV fluid therapy, the plan directed that nurses should:

- (i) "Observe/record urinary output"¹⁴⁶
- (ii) "Check the prescribed fluids, set rate & flow as prescribed, inspect infusion rate hourly, encourage oral fluids [and] record."¹⁴⁷
- (iii) "Encourage parental participation in care."¹⁴⁸

The operation

5.47 Mr and Mrs Ferguson, having left the hospital believing that Raychel would not have surgery unless her condition deteriorated, then received a call that the operation was to proceed.¹⁴⁹ They managed to return before Raychel was taken to theatre. They did not enquire further because "*it was a hospital, we thought they know best, so we just went with it.*"¹⁵⁰ Mrs Ferguson accompanied Raychel to the operating theatre with Staff Nurse Fiona Bryce.¹⁵¹ Raychel seemed "*a bit nervous.*"¹⁵² She was anaesthetised by Dr Vijay Gund¹⁵³ who was assisted in part by Dr Claire Jamison.¹⁵⁴ Dr Makar performed the operation.

5.48 Dr Vijay Gund was an SHO in anaesthesia and had started at Altnagelvin just four weeks before.¹⁵⁵ Dr Jamison was his senior¹⁵⁶ and about to

¹⁴⁴ Staff Nurse Patterson T-04-03-13 p.30 line 25 & Mrs Margaret Doherty T-09-09-13 p.119 line 17

¹⁴⁵ Staff Nurse Bryce T-04-03-13 p.171 line 5

¹⁴⁶ 020-027-063

¹⁴⁷ 020-027-059

¹⁴⁸ 020-027-056

¹⁴⁹ Staff Nurse Patterson T-04-03-13 p.40 line 9

¹⁵⁰ Mrs Ferguson T-26-03-13 p.26 line 16

¹⁵¹ 312-003-004 & WS-054-1 p.3

¹⁵² Staff Nurse Bryce T-04-03-13 p.152 line 19

¹⁵³ 312-003-002

¹⁵⁴ 312-003-002 & Dr Jamison T-07-02-13 p.79 line 17

¹⁵⁵ WS-023-2 p.2-3

¹⁵⁶ Dr Gund T-05-02-13 p.144 line 15

become a registrar. She attended because she was free to assist and not because her presence was necessary.¹⁵⁷

- 5.49 The 1989 NCEPOD Recommendations applied to anaesthetists as well as surgeons. However, neither Dr Gund nor Dr Jamison was aware of the recommendations¹⁵⁸ but neither thought the case so complex as to warrant discussion with a consultant before proceeding to surgery.¹⁵⁹ As with Dr Makar, my criticism relates not to the actions of these two trainee doctors but rather the failure within Altnagelvin to implement the 1989 recommendations.¹⁶⁰
- 5.50 The operation went smoothly, starting at 23:40 and finishing about 00:20. It was unusual but not improper for paediatric surgery to start so late.¹⁶¹
- 5.51 Raychel received IV Hartmann's solution intra-operatively. There is no record of precisely how much she received which is an obvious failing in the anaesthetic documentation but one not seemingly that unusual for the time.¹⁶² In addition, Dr Gund noted "*Hartmanns 1 L*"¹⁶³ which was a potentially misleading entry because it is most improbable that Raychel received a full litre of Hartmann's during surgery. It was thus that after Raychel's death, Dr Jamison was asked to and did make "*Retrospective note dated 13/6/01. Patient only received 200mls of noted fluids below when in theatre. Litre bag removed prior to leaving theatre.*"¹⁶⁴ This was signed by her and countersigned by Dr Geoff Nesbitt,¹⁶⁵ Consultant Anaesthetist and Clinical Director in Anaesthesia and Critical Care. Whilst this unusual entry aroused considerable suspicion, it must be recognised that it very obviously identifies itself as a retrospective note and is clearly

¹⁵⁷ WS-024-2 p.5

¹⁵⁸ Dr Gund T-05-02-13 p.147 line 11 & Dr Jamison T-07-02-13 p.61 line 5

¹⁵⁹ Dr Gund T-05-02-13 p.145 line 8 & p.146 line 7 & Dr Jamison T-07-02-13 p.60 line 2 & p.65 line 24

¹⁶⁰ Dr Jamison T-07-02-13 p.64 line 8

¹⁶¹ Staff Nurse McGrath T-26-02-13 p.29 line 16

¹⁶² Staff Nurse McGrath T-26-02-13 p.41 line 9

¹⁶³ 020-009-016

¹⁶⁴ 020-009-016

¹⁶⁵ 312-003-003

dated. It is also now accepted as being most probably correct by Dr Gund.¹⁶⁶

- 5.52 Even though Dr Gund should have kept a better record of the fluids infused, it was the view of Dr Haynes that “*the anaesthetic administered by Dr Gund (including the fluid administered during the operation) was entirely appropriate and cannot be faulted.*”¹⁶⁷
- 5.53 Raychel took a little longer than expected to regain consciousness after surgery¹⁶⁸ but was ready to be returned to the ward by about 01:30. Whilst not particularly unusual¹⁶⁹ this caused her parents concern because they had understood from Staff Nurse Bryce that the surgery would take about an hour.¹⁷⁰ Staff Nurse Bryce thought it most unlikely that she would have given any such indication.¹⁷¹ I do not believe it necessary to examine this misunderstanding. I accept that Staff Nurse Bryce was trying to be helpful to Mr and Mrs Ferguson.
- 5.54 Post-operatively Dr Makar recorded that the appendix was “*mildly congested*” with an “*intraluminal faecolith.*” Accordingly, whilst the appendix was not inflamed, it was not normal.
- 5.55 Dr Makar did not speak to the Fergusons after the operation. He conceded that, had circumstances permitted, it would have been good practice but because he was the sole SHO in a busy hospital, he may not have been able to manage it.¹⁷²

Post-operative fluids

- 5.56 After the operation and while Raychel was still in the recovery room Dr Gund gave his prescription for Raychel's initial post-operative fluids.¹⁷³ He prescribed Hartmann's Solution to continue at the same rate as pre-

¹⁶⁶ Dr Gund T-05-02-13 p.188 line 18

¹⁶⁷ 220-002-014

¹⁶⁸ 020-009-017

¹⁶⁹ Staff Nurse McGrath T-26-02-13 p.50 line 2 & Dr Haynes T-22-03-13 p.65 line 17

¹⁷⁰ 095-001-002 & Mrs Ferguson T-26-03-13 p.29 line 12

¹⁷¹ Staff Nurse Bryce T-04-03-13 p.155 line 1

¹⁷² Dr Makar 06-02-13 p.212 line 11

¹⁷³ 020-021-040

operatively, namely the over-prescribed 80mls per hour. He was then told by Dr Jamison and Staff Nurse Marian McGrath,¹⁷⁴ that post-operative fluids were not prescribed by the anaesthetist but were managed by the doctors on the ward.¹⁷⁵ Dr Gund, being new to the hospital, acquiesced and deleted his prescription for Hartmann's. I am certain that he did so because he was new and assumed such a practice could only be at the direction of a consultant and that a ward doctor would take active responsibility for the post-operative fluids. He now accepts that he ought to have made his views about post-operative fluids better known,¹⁷⁶ not least because he could not have known how long it would be before a ward doctor would see Raychel nor in any event how any such doctor could have appreciated her individual fluid requirements.¹⁷⁷

- 5.57 Staff Nurse McGrath remembered the discussion with Drs Gund and Jamison.¹⁷⁸ She recalled pointing out that normally the pre-operative fluid regime was resumed after surgery, and that while Dr Gund indicated that he preferred Hartmann's, Dr Jamison told him that Hartmann's was not used on Ward 6. Staff Nurse McGrath had no doubt that Raychel would receive Solution No. 18 on the ward¹⁷⁹ and that is what happened.
- 5.58 Dr Jamison does not recall exactly what she said to Dr Gund but accepted that she might have told him that prescriptions for Hartmann's were regularly cancelled on Ward 6 and the fluids thereafter managed by the doctors on the ward.¹⁸⁰ It is not therefore surprising that Dr Gund should have felt there was little point in prescribing and left the fluids for ward management.
- 5.59 Staff Nurse McGrath said that anaesthetists who were new to the hospital were often surprised by this convention but nothing was done.¹⁸¹ Dr Jamison, herself, had no concerns "*because No.18 was commonly used at*

¹⁷⁴ 312-003-004

¹⁷⁵ WS-023-1 p.2 & WS-023-2 p.5

¹⁷⁶ Dr Gund T-05-02-13 p.211 line 6

¹⁷⁷ Dr Gund T-05-02-13 p.209 line 23

¹⁷⁸ Staff Nurse McGrath T-26-02-13 p.52 line 15

¹⁷⁹ Staff Nurse McGrath T-26-02-13 p.54 line 21

¹⁸⁰ Dr Jamison T-07-02-13 p.115 line 4

¹⁸¹ Staff Nurse McGrath T-26-02-13 p.66 line 18 *et seq*

*that time in the ward which was a paediatric ward with experience in giving fluids to children.”*¹⁸² However, she would not have prescribed it herself¹⁸³ and nor does it seem would any other anaesthetist.¹⁸⁴

- 5.60 When asked why nurses challenged doctor’s decisions on fluids, Staff Nurse Noble explained that *“previous to that if a child had been on other fluids, we would have been asked by our nursing seniors why that particular fluid had been used and why we hadn’t highlighted it to the doctors that Solution No.18 was always used on the paediatric ward.”*¹⁸⁵
- 5.61 Whilst it was not inappropriate for nurses to advise doctors about ward practice,¹⁸⁶ the choice of fluids remained the responsibility of the doctor. It was disturbingly clear from the evidence that Ward 6 nurses had very little understanding of the importance of the type and rate of post-operative IV fluids¹⁸⁷ let alone the Syndrome of Inappropriate Antidiuretic Hormone secretion (‘SIADH’). They were ignorant as to the effect of administering Solution No.18 intravenously.¹⁸⁸ Such lack of understanding should have been obvious. The anaesthetists should never have relinquished responsibility for directing the immediate post-operative fluids for their patients.
- 5.62 Of equal concern is that not only was the fluid as prescribed pre-operatively followed post-operatively, but so too was the rate.¹⁸⁹ That created a problem for two reasons. First because Raychel’s pre-operative hourly rate was already excessive at 80mls and secondly, because it was generally held to be good practice to reduce fluids post-operatively by 20% to 30% to avoid the risks of SIADH.¹⁹⁰

¹⁸² Dr Jamison T-07-02-13 p.133 line 13

¹⁸³ Dr Jamison T-07-02-13 p.117 line 17

¹⁸⁴ Staff Nurse McGrath T-26-02-13 p.10 line 23

¹⁸⁵ Staff Nurse Noble T-26-02-13 p.168 line 17

¹⁸⁶ Miss Ramsay T-19-03-13 p.70 line 14

¹⁸⁷ Staff Nurse Noble T-26-02-13 p.204 line 2 & Sister Millar T-28-02-13 p.51 line 11

¹⁸⁸ Staff Nurse Noble T-26-02-13 p.135 line 9 & Sister Millar T-28-02-13 p.21 line 15

Staff Nurse Bryce T-04-03-13 p.128 line 23 & Staff Nurse McAuley T-05-03-13 p.50 line 24 & Staff Nurse Gilchrist T-11-03-13 p.47 line 9

¹⁸⁹ Staff Nurse Noble T-26-02-13 p.198 line 15 & p.174 line 15

¹⁹⁰ 223-002-013 & WS-320-1 p.7 & 220-002-196 & Dr Haynes T-22-03-13 p.47 line 2 & p.51 line 13

- 5.63 Upon Raychel's return to Ward 6 the anaesthetic team ceded control of Raychel's fluids.¹⁹¹ There was then no prescription or clinical protocol to guide the post-operative management of Raychel's fluid therapy.¹⁹² Without any reference to her post-operative needs, she was re-subjected to her pre-operative fluids.
- 5.64 Dr Haynes considered this "*completely unsatisfactory*"¹⁹³ and Mr Foster described it "*a rather bizarre protocol... it doesn't make anaesthetic or surgical sense.*"¹⁹⁴ Mr Gilliland said that he was "*not aware of [this practice] and it would appear none of my surgical colleagues were aware of it, nor indeed Dr Nesbitt,*"¹⁹⁵ Dr Raymond Fulton¹⁹⁶ was "*surprised*"¹⁹⁷ and Miss Irene Duddy,¹⁹⁸ Director of Nursing¹⁹⁹ said that "*unless someone had brought that to my attention I would not have been aware of it.*"²⁰⁰
- 5.65 The evidence revealed that there was no clear delegation of the responsibilities for administering IV fluids. Fluid therapy was undertaken by the surgical, paediatric and anaesthetic specialties in conjunction with the nursing staff without agreed responsibilities or appropriate supervision.²⁰¹ Dr McCord was left to describe his "*perception... that one specialty was doing one thing, another specialty was doing another, and likewise they thought that we were doing one thing*"²⁰² – "*the fact is that we thought it worked, but it evidently didn't.*"²⁰³
- 5.66 I am critical of these Altnagelvin practices. The expert evidence was that the universal practice elsewhere at that time was for the anaesthetist to prescribe the initial post-operative fluids, which would continue until review, most probably at ward round. That was because it was only the

¹⁹¹ Staff Nurse McGrath T-26-02-13 p.13 line 1

¹⁹² Dr Jamison T-07-02-13 p.108 line 9 & Staff Nurse Noble T-26-02-13 p.177 line 11

¹⁹³ Dr Haynes T-22-03-13 p.33 line 24

¹⁹⁴ Mr Foster T-21-03-13 p.80 line 15

¹⁹⁵ Mr Gilliland T-28-08-13 p.32 line 2

¹⁹⁶ 328-001-001

¹⁹⁷ Dr Fulton T-04-09-13 p.63 line 3

¹⁹⁸ 328-001-003

¹⁹⁹ WS-323-1 p.30

²⁰⁰ Miss Duddy T-29-08-13 p.78 line 9

²⁰¹ 220-002-015

²⁰² Dr McCord T-13-03-13 p.21 line 1

²⁰³ Dr McCord T-13-03-13 p.21 line 11

anaesthetist who could know what the fluid requirements were. That that was not the practice in Altnagelvin was wholly unacceptable. Nobody was able to explain the origin of this practice,²⁰⁴ although it is clear that it had been followed for many years.²⁰⁵ I suspect that it had no reasoned basis because it makes no sense. The fact that this practice continued unquestioned and for so long reveals an absence of system and control and raises the fundamental question as to whether any consultant - surgeon, anaesthetist or paediatrician – actually understood what was going on. It would indeed have been a miracle if Raychel had been the only child placed at risk.

- 5.67 However, neither the type nor the rate of fluid given at that time would have mattered very much had it not been for a catalogue of further failure on the Friday.

Raychel's return to Ward 6 and the ward round

- 5.68 Raychel was sleepy when returned to the ward, opening her eyes only briefly for her parents.²⁰⁶ They stayed with her until about 06:00 when Mrs Ferguson left.²⁰⁷
- 5.69 Mr Ferguson recalled Raychel waking at about 08:00 in relatively good form. Staff Nurse Patterson "*helped Raychel sit up in bed and... told Raychel and her dad, [that] she was doing very well.*"²⁰⁸ Mr Ferguson went to buy her a colouring book. Thereafter, and presumably while he was away, Raychel vomited shortly after 08:00.²⁰⁹
- 5.70 After that she was well enough to get out of bed and sit colouring. The intravenous drip attached to her arm was infusing Solution No.18 at 80ml/h.
- 5.71 The evidence indicates:

²⁰⁴ Mr Gilliland T-14-03-13 p.178 line 17

²⁰⁵ Staff Nurse McGrath T-26-02-13 p.65 line 19 & Sister Millar T-28-02-13 p.53 line 3

²⁰⁶ Mr and Mrs Ferguson T-26-03-13 p.31 line 7

²⁰⁷ Mrs Ferguson T-26-03-13 p.32 line 6

²⁰⁸ Staff Nurse Patterson T-04-03-13 p.76 line 15

²⁰⁹ Staff Nurse McAuley T-05-03-13 p.81 line 10

- (i) Raychel was the only child on the ward to have undergone surgery overnight.
- (ii) At approximately 08:00 – 08:30 Staff Nurse Noble made a hand-over of Ward 6 to Sister Elizabeth Millar.²¹⁰
- (iii) Sister Millar deployed Staff Nurse Michaela McAuley²¹¹ as Raychel's principal carer.
- (iv) Between 08:30 and 10:00 a surgical SHO Dr M H Zafar,²¹² conducted the morning ward round with Sister Millar. Usually the ward round would have been taken by a registrar²¹³ but on this occasion, because Raychel was the only surgical patient on Ward 6²¹⁴ Dr Zafar was assigned by the registrar to conduct the round.²¹⁵ Dr Zafar was on a 6 month placement at Altnagelvin and was dealing with paediatric patients for the first time.²¹⁶
- (v) There is uncertainty as to whether Dr Zafar was aware of the 08:00 vomit²¹⁷ but in any event and given Raychel's clear signs of recovery, Dr Zafar directed a routine and gradual reduction of intravenous fluids with staged encouragement to take fluids orally. Normally after an uncomplicated appendectomy, the reduction of IV fluids would start in the morning and continue into late afternoon or early evening with the expectation that a patient such as Raychel would "*increase her drinking during the day; walk a short distance, and possibly eat something light later in the day.*"²¹⁸ In the usual way, Raychel might then have been ready to go home on the Saturday or at the latest on Sunday. Indeed 80% of such children might have expected to be discharged within 48 hours.²¹⁹

²¹⁰ 312-003-004 & Sister Millar T-28-02-13 p.62 line 24

²¹¹ 312-003-005

²¹² 312-003-002

²¹³ Sister Millar T-28-02-13 p.109 line 7

²¹⁴ Dr Zafar T-01-03-13 p.184 line 24

²¹⁵ Dr Zafar T-01-03-13 p.183 line 2

²¹⁶ Dr Zafar T-01-03-13 p.108 line 15

²¹⁷ WS-025-1 p.3 & Sister Millar T-28-02-13 p.92 line 11

²¹⁸ 224-004-011

²¹⁹ Miss Ramsay T-19-03-13 p.19 line 14

- (vi) Sister Millar and her nurses were very familiar with such a plan for recovery.²²⁰
- (vii) Dr Zafar saw Raychel for no more than 5-10 minutes.²²¹ He did not concern himself with the rate or type of her IV fluids because she seemed well²²² and in any event he proposed to reduce her fluids and end her therapy.²²³ Accordingly, he made no new prescription for her fluids and they continued as before.
- (viii) Whilst it was comparatively unusual for Raychel to have been seen on a morning ward round by a SHO rather than a registrar,²²⁴ it did not then seem of particular significance given that there was no cause for concern on Friday morning and complications in such circumstances were rare.
- (ix) When Dr Zafar and Sister Millar were taking their leave of Raychel, Dr Makar arrived to enquire after her.²²⁵ This was both routine, lest there be complication and a courtesy. He spoke briefly to Mr Ferguson.
- (x) Dr Makar confirmed that "*Raychel was sitting up... she was pain free at that time.*"²²⁶
- (xi) Neither Sister Millar nor the doctors had any concerns at that time. In fact, Mr Ferguson telephoned his wife at about 09:30 and told her not to hurry to the hospital because Raychel was up and about.²²⁷

Underlying concerns

5.72 Underlying these apparently un-troubling circumstances were matters of real concern.

²²⁰ Sister Millar T-28-02-13 p.64 line 2

²²¹ Dr Zafar T-01-03-13 p.185 line 11

²²² Dr Zafar T-01-03-13 p.209 line 3

²²³ Dr Zafar T-12-03-13 p.206 line 14

²²⁴ Staff Nurse Noble T-26-02-13 p.189 line 2

²²⁵ Sister Millar T-28-02-13 p.106 line 21

²²⁶ Dr Makar T-13-03-13 p.174 line 20

²²⁷ Mr Ferguson T-26-03-13 p.35 line 12

- 5.73 The ward round was not taken by a consultant or a registrar but by a junior doctor with limited experience of children. Mr Foster found this concerning and “*entirely unsatisfactory and unsafe and evidence of disorganisation of the surgical services...*”²²⁸ Dr Haynes was of the view that the formal ward round should “*ideally [be] supervised directly by the responsible consultant.*”²²⁹
- 5.74 In addition, there was no formalised handover between the surgeon who performed the surgery and the surgeon who conducted the ward round. There was no continuity. They appear to have passed each other without conferring as to Raychel's fluid management. Had they done so, Dr Makar might have reconsidered the fluid therapy and the catastrophic outcome which was to ensue might have been avoided. Whilst neither Dr Makar nor Dr Zafar was aware of her fluid regime on the Friday morning, they each could have discovered it. That neither did was unacceptable.
- 5.75 This is to be understood in a context where the surgical patients on Ward 6 were cared for by the surgical team and not the paediatricians who were actually based on Ward 6.²³⁰ In practice, this meant that the surgical doctors might not always be available to their patients because they were elsewhere in the hospital.²³¹ Whilst such an arrangement was not unusual in district general hospitals it did pose risk and had given rise to nursing complaint.²³² This was an organisational shortcoming, which could keep surgical doctors from their patients and inhibit nurses from calling upon the medical doctors available on Ward 6.
- 5.76 Moreover, it was the most junior hospital surgical doctors who were relied upon for initial response to any summons in respect of the surgical patients on Ward 6. Mr Foster believed that “*junior house officers who had no experience of paediatrics should not have been first on call for surgical children.*”²³³ This was a further potential risk factor, not least because it was

²²⁸ 223-003-011

²²⁹ 220-002-008

²³⁰ Dr Johnston T-07-03-13 p.172 line 7

²³¹ Dr Zafar T-01-03-13 p.160 line 23 & Dr Scott-Jupp T-20-03-13 p.45 line 9

²³² Sister Millar T-01-03-13 p.60 line 19 & Dr McCord T-13-03-13 p.22 line 17

²³³ 223-003-013

these inexperienced doctors who had first oversight of the childrens' post-surgical fluid management.

- 5.77 Furthermore, significant differences had developed in the care given to the paediatric and surgical patients on Ward 6. Medical patients receiving IV infusion under the care of paediatricians were subject to routine blood tests every 24 hours.²³⁴ However, surgical patients were not. Accordingly, a child vomiting with gastroenteritis would have daily blood tests as a matter of course whereas a child who vomited after surgery would not. This was an alarming anomaly and it is not at all clear how or why this had arisen. Dr Haynes suggested that it “*occurred because of a lack of consultant ownership of the issue.*”²³⁵ Such a lack of organisational control of Ward 6 would have consequences for Raychel.
- 5.78 These were important matters of concern and each reveals not only underlying systemic weakness but also the lack of consultant leadership in the management of surgical patients on Ward 6.

Friday 8th June: nursing issues

Fluid balance chart

- 5.79 The importance of fluid balance should have been known to all nurses in 2001 having been taught for many years.²³⁶ It was the clear responsibility of nursing staff to enter relevant fluid information into the fluid balance chart. In 2001, this permitted the following to be recorded:
- (i) Type of fluid intake.
 - (ii) Amount of hourly fluid intake.
 - (iii) Type of output (i.e. vomit, urine etc.)
 - (iv) Amount of hourly fluid output.

²³⁴ Staff Nurse Noble T-27-02-13 p.129 line 4

²³⁵ 220-002-006

²³⁶ Professor Hanratty T-20-03-13 p.197 line 2

5.80 Fluid balance charts record information to guide fluid management. Accordingly and as Professor Hanratty observed “*measuring and recording intake and output [is] a very significant part of the continuing care of the patient.*”²³⁷ Had Raychel’s fluid balance chart been accurately compiled, it should have guided the nurses and doctors to an appreciation of what was happening to Raychel’s fluid balance in real time.

Recording fluid output

5.81 Some fluid information will always be imprecise. Unless the quantity of urine passed is actually measured, the entry can only really be “*PU*” (passed urine). The fluid output of a 9-year old girl toileted by her mother will go unrecorded unless the parent is advised to provide particulars. Mr and Mrs Ferguson were not so advised²³⁸ and, regrettably, even when such matters were brought to Sister Millar’s attention she neither noted nor investigated.²³⁹ Disturbingly she conceded that it was not always the practice on Ward 6 to record such an event.²⁴⁰ This was despite the requirement of the fluid balance chart and the specific direction of the ECP to “*observe/record urinary output.*”²⁴¹

5.82 Accordingly, neither the frequency nor quantity of urinary output was properly recorded. There is a single entry of “*PU*” timed at 10.00²⁴² but the Fergusons are sure that she also passed urine around noon and perhaps again in the early afternoon.²⁴³

5.83 Similarly, the quantification of vomit in the record is uncertain.²⁴⁴ A shorthand was devised on Ward 6 to record vomit quantity using the ‘+’ sign. Unfortunately this had not always been explained²⁴⁵ allowing nurses to interpret “*vomit ++*” as indicating anything from small to large.²⁴⁶

²³⁷ Professor Hanratty T-20-03-13 p.163 line 3

²³⁸ Staff Nurse Bryce T-05-03-13 p.39 line 12 & Mrs Ferguson T-26-03-13 p.78 line 23 & p.46 line 25

²³⁹ Sister Millar T-28-02-13 p.18 line 7 & p.115 line 3

²⁴⁰ Sister Millar T-28-02-13 p.80 line 4

²⁴¹ 020-027-063

²⁴² 020-018-037

²⁴³ Mrs Ferguson T-26-03-13 p.78 line 19

²⁴⁴ Staff Nurse Bryce T-04-03-13 p.169 line 24

²⁴⁵ Staff Nurse Patterson T-04-03-13 p.78 line 14

²⁴⁶ Sister Millar T-28-02-13 p.124 line 10 & Staff Nurse Bryce T-04-03-13 p.169 line 10

5.84 Imprecision as to quantity of output was not the only problem. Additionally and critically individual incidents of vomiting were not accurately recorded.

5.85 The fluid balance chart shows²⁴⁷:

- (i) “*Vomit*” around 08:00
- (ii) “*Large vomit*” around 10:00
- (iii) “*Vomited ++*” around 13:00
- (iv) “*Vomited ++*” around 15:00
- (v) “*Vomiting coffee grounds ++*” around 21:00
- (vi) “*Vomited small amount x 3*” around 22:00
- (vii) “*Small coffee ground vomit*” around 23:00.

5.86 I have no doubt that this record is incomplete. Evidence was given that Raychel vomited at about 18:00 but this was not recorded. Staff Nurse Sandra Gilchrist²⁴⁸ failed to note a vomit at about 20:30²⁴⁹ and additional vomit seen on pyjama top and pillowcase at 00:35 also went unrecorded.²⁵⁰ In addition, there were occasions when Raychel vomited into kidney dishes which were disposed of undocumented by the nursing staff.²⁵¹ Even allowing for some confusion as to timings, I am certain that the incidence of Raychel’s vomiting significantly exceeded that recorded in the fluid balance chart. Whilst I acknowledge the practical difficulties in accurately monitoring fluid balance, I can only agree with Staff Nurse McAuley that her “*documentation was poor.*”²⁵²

²⁴⁷ 020-018-037

²⁴⁸ 312-003-005

²⁴⁹ Staff Nurse Gilchrist T-11-03-13 p.66 line 22

²⁵⁰ Staff Nurse Gilchrist T-11-03-13 p.112 line 17

²⁵¹ WS-021-1 p.6-7 & Mrs Ferguson T-26-03-13 p.54 line 20

²⁵² Staff Nurse McAuley T-05-03-13 p.173 line 7

Recording fluid intake

- 5.87 The nursing staff did not seemingly attach particular importance to the fluid intake record either. Staff Nurse McAuley acknowledged that she had been aware that Raychel was “*taking sips*” and yet did not record them.²⁵³ Mr Ferguson recalled allowing Raychel some soft drink²⁵⁴ but this was not noted because he had not been told to tell the nurses.²⁵⁵ These particular omissions from the fluid chart are of little consequence given the minimal amounts involved but do highlight a nursing failure to advise the Fergusons as to the importance of fluid information.
- 5.88 Overall, there was a lack of due attention to fluid documentation. In consequence, the fluid balance chart could not have been relied upon to indicate Raychel’s fluid balance. This was a major deficiency in record-keeping and a significant failing in nursing for which Sister Millar was primarily responsible.

Repeated vomiting

- 5.89 Raychel’s fluid balance chart for 9th June records nine vomits in the 15 hours between 08:00 and 23:00. In addition there were, at the very least, three additional vomits. Whilst it was probably reasonable for the nurses to consider Raychel’s initial vomiting a normal post-operative response,²⁵⁶ this became an increasingly unlikely explanation as the day progressed. However, the nurses did not reconsider their initial perception and in the view of Mr Foster became “*locked into a mindset of what they expect to happen.*”²⁵⁷
- 5.90 As Mr Ferguson recalled “*every time Raychel vomited in the bowl, I would actually take it out and show it to them. And as far as I can remember... the only words... back, ‘its only natural. After an operation, she will be sick.*”²⁵⁸

²⁵³ Staff Nurse McAuley T-05-03-13 p.60 line 7

²⁵⁴ Mr Ferguson T-26-03-13 p.34 line 18

²⁵⁵ Mrs Ferguson T-26-03-13 p.53 line 4

²⁵⁶ Dr Scott-Jupp T-20-03-13 p.66 line 7

²⁵⁷ 223-002-017

²⁵⁸ Mr Ferguson T-26-03-13 p.54 line 3

- 5.91 Mr Orr said that *“alarm bells should have been ringing by lunchtime, if not after lunch, when there was the third vomit.”*²⁵⁹ Medical staff should then have been contacted. A doctor would then, according to Mr Orr, have taken *“blood for urea and electrolytes and... actively considered replacing the vomitus... with a solution such as normal saline and then altering the maintenance fluids as well.”*²⁶⁰ That would have saved Raychel.²⁶¹
- 5.92 The vomiting continued all day and the coffee ground vomiting which started at about 21:00²⁶² (or even earlier if Mr Ferguson is correct²⁶³) is a particularly disturbing feature. Mr Foster believed it an *“indication of significant or severe and prolonged vomiting and retching... it should have attracted serious attention as it is due to trauma to the gastric mucosa causing bleeding.”*²⁶⁴ Mr Orr considered it an alert *“to the fact that something unusual and abnormal is happening.”*²⁶⁵ Professor Mary Hanratty said that any coffee ground vomiting in a child should immediately prompt a nurse to contact an SHO.²⁶⁶
- 5.93 It did not however alarm the nurses on Ward 6. Staff Nurse Gilchrist, who noted this development *“thought maybe she had a wee tear when she was vomiting. That’s why it was all blood in it...”*²⁶⁷ She waited for another hour before she contacted a doctor. She simply did not think.
- 5.94 I must record that I reject emphatically the evidence given by Sister Millar²⁶⁸ and Staff Nurses Gilchrist,²⁶⁹ Noble²⁷⁰ and Roulston²⁷¹ that they considered that Raychel was suffering from conventional post-operative vomiting. I do not believe that they actually thought about it and that was the problem. Post-operative nausea and vomiting (‘PONV’) could not have explained

²⁵⁹ Mr Orr T-21-03-13 p.147 line 13

²⁶⁰ Mr Orr T-21-03-13 p.149 line 6

²⁶¹ Dr Scott-Jupp T-20-03-13 p.116 line 7

²⁶² 020-018-037

²⁶³ 095-005-018

²⁶⁴ 223-002-016

²⁶⁵ Mr Orr T-21-03-13 p.193 line 6

²⁶⁶ Professor Hanratty T-20-03-13 p.202 line 1

²⁶⁷ Staff Nurse Gilchrist T-11-03-13 p.75 line 1

²⁶⁸ WS-056-1 p.3

²⁶⁹ WS-053-2 p.6 & 098-293-771

²⁷⁰ WS-049-1 p.5

²⁷¹ 312-003-005 & WS-52-1 p.3

what was happening. Even if Raychel had suffered some post-operative vomiting, the overall frequency, duration and type of vomiting was of a very different order.

Failure to appreciate deterioration

5.95 It is a fundamental nursing task to monitor progress, identify deterioration and where necessary contact the doctor.²⁷² That requires ‘active’ observation.

5.96 Over the course of Friday, Raychel who had started her day contentedly colouring-in, became very ill. She stopped passing urine, became increasingly lethargic, vomited repeatedly, failed to respond to anti-emetics and vomited coffee grounds. She was very obviously not recovering as expected from her uncomplicated routine surgery.

5.97 Sister Millar has since acknowledged “*Raychel was... deteriorating earlier than we as nurses recognised.*”²⁷³ However, I heard evidence that Raychel’s condition was recognised, not just by family²⁷⁴ and friends,²⁷⁵ but also by strangers.²⁷⁶ I am struck by the contrast between the descriptions given by these witnesses and those proffered by the nurses.

5.98 I do not accept the nursing evidence that Raychel was well and presenting no real cause for concern²⁷⁷ and in this regard, I note the evidence of those nurses who sought retrospectively to diminish the importance of the vomiting.²⁷⁸ I believe that Staff Nurse McAuley must be wrong when she said that shortly before 20:00 she saw Raychel “*up and about, walking in the corridor*” and pointing things out to her brothers.²⁷⁹ On the balance of the evidence, I do not believe her to be correct.

²⁷² 224-002-021

²⁷³ Sister Millar T-01-03-13 p.83 line 5

²⁷⁴ 095-005-017 & 095-006-020 - Mrs Harrison

²⁷⁵ Mrs McCullagh (095-009-029)

²⁷⁶ 095-008-025 - Mr Stephen Duffy & 095-007-022 - Mrs Elaine Duffy

²⁷⁷ Staff Nurse McAuley T-05-03-13 p.189 line 14 & WS-056-1 p.4

²⁷⁸ Staff Nurse McAuley T-05-03-13 p.96 line 14 & Staff Nurse Gilchrist T-11-03-13 p.112 line 12 & p.87 line 23

²⁷⁹ WS-051-1 p.3 & Staff Nurse McAuley T-05-03-13 p.188 line 10

5.99 I also found disquieting the nurses' unquestioning belief that Raychel could come to no harm while on Solution No.18.²⁸⁰ That induced complacency.²⁸¹ I accept that because Solution No.18 was widely used, it was generally safe. I do not criticise the nurses for failing to appreciate that hyponatraemia was developing or even that her fluids were not replacing the sodium lost through vomiting. However, the nurses were obligated to monitor and respond. I find serious failure in each and every nurse caring for Raychel to:

- (i) Consider whether the care given was having the desired effect.
- (ii) Appreciate that her condition was deteriorating.
- (iii) Recognise that she was very ill.
- (iv) Understand that she needed the urgent attention of a capable doctor properly informed by nursing observation.

Accordingly, I criticise the nursing staff for failing to recognise and react to Raychel's illness.

Medical care: 8th June, post-ward round

5.100 In addition and over the course of Friday 8th June three junior doctors were involved in Raychel's care.

Dr Mary Butler

5.101 Dr Mary Butler²⁸² was a second year SHO with 4 months experience in paediatrics.²⁸³ She attended the daily ward round and covered the neonatal, special baby and day care units. She understood the management of fluids and electrolytes in children.²⁸⁴

²⁸⁰ Staff Nurse Roulston T-06-03-13 p.139 line 14 & Staff Nurse Noble T-26-02-13 p.205 line 10

²⁸¹ Staff Nurse Noble T-27-02-13 p.92 line 2 & p.133 line 9

²⁸² 312-003-002

²⁸³ Dr Butler T-11-03-13 p.3 line 5

²⁸⁴ Dr Butler T-11-03-13 p.9 line 21

5.102 Dr Butler's involvement with Raychel was brief. At around noon, she was on Ward 6 when Raychel's litre bag of Solution No.18 had almost emptied.²⁸⁵ She was asked by Staff Nurse McAuley to prescribe a replacement. She did so without investigating and probably without even seeing Raychel.²⁸⁶ She believes that she would have made some basic enquiries²⁸⁷ and if so, would probably have been told that according to the chart, Raychel had vomited twice.²⁸⁸ Such, she said, would not have caused her concern at that time.²⁸⁹ Had she been concerned, she would have contacted a surgical SHO or spoken to her paediatric registrar, which she did not.²⁹⁰

5.103 In the event Dr Butler assumed that the rate prescribed for the fluids had been properly calculated and accordingly issued a repeat prescription for Solution No.18.²⁹¹ She now recognises that she did so at a rate which was excessive and regrets that she did not double-check.²⁹² While Dr Butler could have been more pro-active, I believe it would be unduly severe to criticise her in the context of her response to a limited request on behalf of a patient who was not her own.

Dr Joseph Devlin

5.104 Dr Joseph Devlin²⁹³ was a Pre-Registration House Officer. He was in the first year of his first post-graduate post. In his first six months, he had undertaken very little paediatric work and in his second six months he could not remember any. He could hardly have had less paediatric experience.²⁹⁴ Mr Orr was of the firm opinion that such doctors required close supervision and support.²⁹⁵

²⁸⁵ Staff Nurse McAuley T-05-03-13 p.117 line 1

²⁸⁶ Staff Nurse McAuley T-05-03-13 p.120 line 6 & Dr Butler T-11-03-13 p.24 line 25

²⁸⁷ Dr Butler T-11-03-13 p.17 line 23

²⁸⁸ Sister Millar T-28-02-13 p.132 line 4

²⁸⁹ Dr Butler T-11-03-13 p.22 line 3

²⁹⁰ Dr Butler T-11-03-13 p.26 line 21

²⁹¹ 020-019-038 & Dr Butler T-11-03-13 p.30 line 4

²⁹² Dr Butler T-11-03-13 p.23 line 20

²⁹³ 312-003-002

²⁹⁴ Dr Devlin T-06-03-13 p.17 line 5

²⁹⁵ Mr Orr T-21-03-13 p.160 line 15

- 5.105 His involvement with Raychel appears to have been entirely unintended. Staff Nurse McAuley recalls that at about 15:00 she was alerted to Raychel's vomiting and, although not unduly concerned, thought it necessary to inform Sister Millar and contact a surgical JHO for an anti-emetic. Her evidence was that she tried repeatedly over the next 2-2½ hours to get a junior surgical doctor to come to Ward 6 but without success. Eventually Sister Millar saw Dr Devlin and directed that he be asked to "*give Raychel an anti-emetic.*"²⁹⁶
- 5.106 The Fergusons are sceptical that Staff Nurse McAuley made the efforts she described. They suspect that a doctor was only called after the vomit recorded at 17:00.²⁹⁷ I understand their scepticism; indeed how could a childrens' ward function, if a concerned and experienced nurse could not get hold of a junior doctor in over 2 hours?²⁹⁸ However extraordinary, and even in the absence of corroborative documentation²⁹⁹ I am inclined to believe Staff Nurse McAuley's evidence, which of itself must raise concerns about the provision of care to surgical patients on Ward 6. That was not the fault of Staff Nurse McAuley.
- 5.107 When Dr Devlin attended Raychel at 18:00, he was alone.³⁰⁰ That may have been unavoidable but it carried risk. A nurse should have attended with him because Raychel was not recovering as had been expected and he should have been told.³⁰¹ However, he was not and this very inexperienced doctor was left without any suggestion that there was much to worry about, apart from some vomiting³⁰² and on that basis, he gave the anti-emetic as indicated.³⁰³
- 5.108 As Dr Devlin explained "*I had absolute confidence... [in] my nursing colleagues ability to relay on any concerns to the oncoming doctor and I suppose at that time in my career I felt that the safety net would lie with the*

²⁹⁶ Sister Millar T-28-02-13 p.140 line 10 & Staff Nurse McAuley T-05-03-13 p.186 line 5

²⁹⁷ Mrs Ferguson T-26-03-13 p.71 line 7

²⁹⁸ Staff Nurse Noble T-27-02-13 p.64 line 14

²⁹⁹ Sister Millar T-28-02-13 p.145 line 5

³⁰⁰ Staff Nurse McAuley T-05-03-13 p.149 line 2

³⁰¹ Staff Nurse Roulston T-06-03-13 p.146 line 17 & Mr Foster T-21-03-13 p.164 line 5

³⁰² Dr Devlin T-06-03-13 p.64 line 5

³⁰³ 020-017-034

*senior staff... that systems... would be in place to prevent the tragic outcome...*³⁰⁴

- 5.109 Dr Devlin was the first doctor to see Raychel in almost 9 hours. He was inexperienced and had neither clinical guidelines, attendant nurses or the supervision of more senior clinicians to help him. That was unsafe. Dr Devlin recalled that Raychel vomited when he was with her³⁰⁵ but he did not understand what this might mean. He accepts that this should have been recorded but he thought this would be done by a nurse. It was not. With experience and hindsight, Dr Devlin accepts that he should have directed electrolyte tests. He also accepts that he should have recorded his intervention.
- 5.110 I have considered whether Dr Devlin should be criticised for his relative inaction. The expert evidence and his own evidence taken with that of other witnesses, including the nurses, persuades me that this would be unfair. Whilst he had an opportunity to help Raychel and did not, fault does not attach to the inexperienced Dr Devlin. He did what he was asked to do and moved on.
- 5.111 Dr Devlin believes that had he been called back to see Raychel four hours later, he might then have been more alert to her condition³⁰⁶ and would have been able to reassess. In terms, he was suggesting that the inexperienced doctor who is called to see a child once is at a major disadvantage. I think he is correct.
- 5.112 It is disturbing to record that after Dr Makar saw Raychel briefly on Friday morning, the only doctors to see her were JHOs and none of them saw her more than once. Raychel's deterioration was not observed over time by any one doctor.
- 5.113 It is the role of the nurse to monitor patient progress and communicate relevant observation to the junior doctor. Responsibility for management

³⁰⁴ Dr Devlin T-06-03-13 p.75 line 21

³⁰⁵ Dr Devlin T-06-03-13 p.61 line 4

³⁰⁶ Dr Devlin T-06-03-13 p.73 line 21

remains with the doctor who acts under the direction and supervision of more senior colleagues and the consultant. Unfortunately, Ward 6 was over reliant upon the services of very junior and inexperienced doctors and in Raychel's case, neither the nurses nor the senior surgical staff were supporting them. This was a deficiency in communication and system³⁰⁷ and carried risk.

Dr Michael Curran

- 5.114 Dr Michael Curran³⁰⁸ was a medical JHO³⁰⁹ with just 10 months experience and very little exposure to paediatric work.³¹⁰ Due to staff pressure, he was unexpectedly doing a locum in surgery on the Friday evening of 8th June and in contact with children for the first time in months.
- 5.115 Like Dr Devlin, he considered that his role as a JHO was task orientated. He performed specific duties delegated at ward round, such as carrying out blood tests, organising x-rays and preparing discharge letters.³¹¹ These tasks were performed at the behest of senior colleagues and the more experienced nurses.
- 5.116 Dr Curran had limited understanding of the risks posed by prolonged vomiting. He believed that the risk posed by vomiting and/or diarrhoea was dehydration and that the appropriate response was fluid replacement.³¹² He did not understand that prolonged vomiting depleted sodium levels³¹³ and was unsure of the causes of hyponatraemia.³¹⁴
- 5.117 Staff Nurse Gilchrist 'bleeped' Dr Curran at about 22:00³¹⁵ because of Raychel's continued vomiting and he attended. He could not recall any

³⁰⁷ Mr Orr T-21-03-13 p.135 line 15 & WS-320-1 p.15

³⁰⁸ 312-003-002

³⁰⁹ Mr Gilliland T-14-03-13 p.124 line 18

³¹⁰ Dr Curran T-07-03-13 p.5 line 20

³¹¹ Dr Curran T-07-03-13 p.36 line 15

³¹² Dr Curran T-07-03-13 p.33 line 24. n.b. The Ward 6 copy of Forfar & Arneil 'Textbook of Paediatrics' 1992 (321-004g-004) advised that in response to vomiting "*Electrolyte losses should be corrected.*"

³¹³ Dr Curran T-07-03-13 p.33 line 11

³¹⁴ Dr Curran T-07-03-13 p.29 line 10

³¹⁵ WS-053-1 p.3

particular conversation but believes he must have been told where to find Raychel and the medication he was to prescribe and administer.³¹⁶

5.118 Staff Nurse Gilchrist assumed that Dr Curran would assess Raychel.³¹⁷ However, she made no particular effort to speak to him³¹⁸ assuming “*he would have spoken to somebody*.”³¹⁹ In the circumstances, she should have prompted Dr Curran to assess Raychel, or at the very least shown him the fluid balance chart and informed him that the vomiting had not been controlled by the earlier anti-emetic. Staff Nurse Noble also had the opportunity to speak to Dr Curran.³²⁰

5.119 Mr Foster considered that “*Dr Curran and the nursing staff should have really been alarmed at this point*.”³²¹ Tragically they were not. Dr Curran’s attendance was to be the last opportunity for a doctor to respond to Raychel’s continuing deterioration. At that stage electrolyte testing would almost certainly have identified abnormally low sodium levels³²² and at 22:00 it may still have been possible to save her.³²³

5.120 Dr Curran is clear that he was not asked to assess Raychel’s condition and that no concern was expressed to him about coffee ground vomiting³²⁴ or deterioration.³²⁵ He said that had he been told of the coffee ground vomit or had he seen it recorded, he would have contacted an SHO immediately.³²⁶ He maintained that he was only asked to administer an anti-emetic which was a routine request.³²⁷ In that context, he believes that he would have performed only a very limited assessment. He would not have checked the fluid balance chart³²⁸ because he already knew she was vomiting. Accordingly, he prescribed and gave the anti-emetic, made an

³¹⁶ Staff Nurse Noble T-27-02-13 p.96 line 4 & Dr Curran T-07-03-13 p.55 line 6

³¹⁷ Staff Nurse Gilchrist T-11-03-13 p.93 line 1

³¹⁸ Staff Nurse Gilchrist T-11-03-13 p.95 line 15

³¹⁹ Staff Nurse Gilchrist T-11-03-13 p.110 line 23

³²⁰ Staff Nurse Noble T-27-02-13 p.132 line 14

³²¹ Mr Foster T-21-03-13 p.189 line 2

³²² Dr Scott-Jupp T-20-03-13 p.92 line 2 & Dr Haynes T-22-03-13 p.112 line 15

³²³ Dr Scott-Jupp T-20-03-13 p.116 line 7

³²⁴ Dr Curran T-07-03-13 p.76 line 22

³²⁵ Dr Curran T-07-03-13 p.63 line 3

³²⁶ Dr Curran T-07-03-13 p.76 line 13

³²⁷ Dr Curran T-07-03-13 p.56 line 20

³²⁸ Dr Curran T-07-03-13 p.75 line 11

entry in Raychel's drug record and left. He suggested that had the nurses been genuinely worried about Raychel, they would most certainly have informed him of their concerns and not just left out the anti-emetic for him, and in any event in such a situation he believed that they would have called someone rather more senior and experienced than he.³²⁹

- 5.121 Dr Curran is open to the criticism that, when asked to give an anti-emetic he neither read the notes in respect of the vomiting nor asked any questions. That was inadequate because the longer she vomited the more urgent did the need become to check her electrolytes. He did not know how long she had been vomiting³³⁰ or what had already been done about it.³³¹ The coffee ground vomit, which he accepts would have caused him concern, was recorded at 21:00 but he did not read the record. He did not know that her vomit was “++”³³² or that she had headaches. He conceded that would have been relevant.³³³ His obligation at 22:00 was greater than that imposed on Dr Devlin at 18:00 because Raychel's vomiting had continued and her failure to recover should have been even more obvious. Notwithstanding mitigating factors, including his own inexperience and the lack of nursing support, I criticise Dr Curran for not taking the care to recognise that the circumstances demanded more than just an anti-emetic. At the very least, the situation demanded the attendance of a more senior doctor.

Nursing communication

- 5.122 In considering how and why nursing staff failed to appreciate what was happening to Raychel, I consider the following deficiencies in communication to be relevant:
- (i) There was a failure to liaise properly with Mr and Mrs Ferguson whether to involve them in fluid management or to take advantage

³²⁹ Dr Curran T-07-03-13 p.92 line 3

³³⁰ Dr Curran T-07-03-13 p.65 line 5

³³¹ Dr Curran T-07-03-13 p.71 line 14

³³² 020-018-037

³³³ Dr Curran T-07-03-13 p.149 line 14

of their observations and opinions. Their input was not recorded, nor does it seem to have been taken seriously.

- (ii) Raychel's 'named nurse' was such a nurse "*in name only*"³³⁴ and did not communicate with the family. Whilst I can understand that the provision at all times of an informed named nurse³³⁵ is almost impossible, no real attempt was made to provide the channel of communication intended and Raychel was, in terms, denied her right to a named nurse under the Patient's Charter.³³⁶
- (iii) There was nursing failure to speak to Drs Devlin and Curran to provide or discuss appropriate information.
- (iv) Nurses failed to communicate adequately with each other especially at handover. When Staff Nurse Bryce came on duty at 19:45, she was not informed that Raychel was still vomiting.³³⁷ Such a failure to communicate verbally was important because nurses did not conventionally consult patient records at handover.³³⁸ It should be noted that in November 2000 an assessment of the quality of nursing on Ward 6 specifically identified as a "*negative*" the fact that "*the retiring and oncoming nurses in charge do not make walking rounds of the patients together.*"³³⁹ This was not seemingly addressed.
- (v) Even had nurses sought to rely upon the fluid balance chart, it would have been found wanting. Regrettably, inaccuracy in this important regard was an established feature on Ward 6. An audit in November 2000³⁴⁰ identified patients on Ward 6 with "*intake/output charts [which] had information missing (7 were incomplete out of 14).*"³⁴¹ This deficiency should have been attended to and before Raychel's

³³⁴ Mrs Margaret Doherty T-09-09-13 p.119 line 17

³³⁵ Mrs Margaret Doherty T-09-09-13 p.114 line 10

³³⁶ 306-085-010 & 317-042-001 & 321-068-005

³³⁷ WS-054-2 p.6

³³⁸ Staff Nurse McAuley T-05-03-13 p.68 line 6

³³⁹ WS-323-1 p.39

³⁴⁰ WS-323-1 p.42

³⁴¹ WS-323-1 p.45

admission.³⁴² It was not.³⁴³ Mrs Margaret Doherty,³⁴⁴ the Clinical Services Manager ('CSM') has since acknowledged that in this regard "*not sufficient was done and I should have stepped in.*"³⁴⁵

- (vi) Furthermore, the nursing notes could not have been relied upon. They failed to record the attendance of the three junior doctors on 8th June. Mr Foster concluded that "*more detailed records throughout the 8th would have assisted the nursing staff to detect an ongoing deterioration throughout the afternoon and evening of the 8th.*"³⁴⁶
- (vii) The ECP which was intended to communicate current care requirements was not updated. It neither referred to the continued vomiting³⁴⁷ nor indicated any need to monitor the effectiveness of anti-emetics. It did not therefore communicate the evolving situation as it was meant to. Staff Nurse Noble conceded that Raychel's care plan should have been individualised.³⁴⁸
- (viii) In addition, entries in the care plan were inaccurate. The ECP, when updated at about 17:00 by Staff Nurse McAuley for her 20:00 handover³⁴⁹ recorded "*observations appear satisfactory. Continues on PR flagyl. Vomit x 3 this am, but tolerating small amounts of water this evening.*"³⁵⁰ She later conceded that this was "*not right*"³⁵¹ because it ignored Raychel's afternoon vomiting and hinted at recovery on the basis of a largely non-existent fluid intake. On the basis of this information, Staff Nurse Gilchrist said she "*would have believed*" that Raychel's vomiting had been brought back under control.³⁵² It did not even suggest, let alone inform, the incoming night staff as to the problems that were developing.

³⁴² WS-323-1 p.42

³⁴³ Sister Millar T-28-08-13 p.120 line 14

³⁴⁴ 328-001-002

³⁴⁵ Mrs Margaret Doherty T-09-09-13 p.103 line 11

³⁴⁶ 223-003-002

³⁴⁷ 224-002-019

³⁴⁸ Staff Nurse Noble T-26-02-13 p.155 line 18

³⁴⁹ Staff Nurse Noble T-27-02-13 p.35 line 4

³⁵⁰ 020-027-064

³⁵¹ Staff Nurse McAuley T-05-03-13 p.172 line 21

³⁵² Staff Nurse Gilchrist T-11-03-13 p.63 line 8

- (ix) Nursing care plans had previously been the subject of a benchmarking exercise against other hospitals in 2000 which had identified *“problems... as a result of not individualising care plans”*³⁵³ and recommended that nurses be made *“aware of the need to update and change care plans when there is a change in treatment.”*³⁵⁴ Regrettably, this was not heeded any more than the internal 1999/2000 Nursing Record Audit which found a mere 44% compliance with individualisation of care plans.³⁵⁵

5.123 That no effective steps were taken to rectify such known deficiencies was a further and significant failing for which the Director of Nursing, Miss Duddy, must bear ultimate responsibility.

Events after 21:00 on 8th June

5.124 The development of coffee ground vomiting, which was noted in the fluid balance chart from 21:00, did not prompt consideration of the possible implications.

5.125 Raychel's vomiting intensified between 21:00 and 23:00 hours. Mr Ferguson was by then increasingly alarmed by Raychel's condition and *“told nurse Noble that Raychel was complaining of a sore head and was bright red in the face. Nurse Noble said she would come and give Raychel a paracetamol and did so a short time later...”*³⁵⁶ – *“She appeared to me to be laid back and not concerned at all about my daughter.”*³⁵⁷ Nurse Noble accepted that *“he told me the facts, yes... I just felt Raychel had had a particularly poor post-operative first day and that I would try and relieve the symptoms...”*³⁵⁸

5.126 At 21:15 Staff Nurse Gilchrist recorded of Raychel *“colour flushed → pale, vomiting ++ c/o headache”*³⁵⁹ and at about 21:30 hours, Mr Ferguson

³⁵³ WS-323-1 p.49

³⁵⁴ WS-323-1 p.50

³⁵⁵ 321-068-006

³⁵⁶ 095-005-019

³⁵⁷ WS-021-1 p.9

³⁵⁸ Staff Nurse Noble T-27-02-13 p.74 line 17

³⁵⁹ 020-015-029

telephoned his wife to voice his frustration and concern – “*she’s starting to throw up blood on the bed and they’re not listening to me at all.*”³⁶⁰ Nurse Noble recalled that “*Mr Ferguson did not express to me at that time how much he was concerned.*”³⁶¹ Staff Nurse Gilchrist could not “*agree that we weren’t taking her condition seriously... After her periods of vomiting I told him... that I was going to contact the surgical doctor to come and assess her. So, I was taking his concerns on board.*”³⁶² It was Dr Curran who attended but Mr Ferguson’s concerns were not communicated to him.

5.127 Mrs Ferguson returned at 22:00 to find Raychel very restless and with something trickling from the side of her mouth. The Fergusons now believe that she was beyond saving at that stage. In fact, they think she may have been beyond saving from about 17:00. It is not clear to me that their belief is medically correct³⁶³ but the experts agree that Raychel was, by that stage, increasingly threatened by an excessive infusion of hypotonic fluid in the context of SIADH and prolonged vomiting.

5.128 By that stage of the evening Raychel’s vomiting was clearly both severe and prolonged³⁶⁴ and yet, despite further vomiting at 23:00, and 00:35 on Saturday morning, the nurses still did not call a doctor. Dr Scott-Jupp was of the view that they should have.³⁶⁵ Staff Nurse Noble has accepted that with “*hindsight... yes, we probably should have called a doctor back to re-evaluate the effectiveness of the anti-emetic, but because the amounts were less... we thought things were settling down.*”³⁶⁶

5.129 Mr and Mrs Ferguson, who had spent all Friday at Raychel’s side, whether in turns or together, recall that they eventually left the hospital at about 00:40.³⁶⁷ They did so because they had been reassured by nursing staff that Raychel had settled and would sleep for the night.³⁶⁸ I am certain that

³⁶⁰ 095-002-007 & Mr Ferguson T-26-03-13 p.103 line 18

³⁶¹ Staff Nurse Noble T-27-02-13 p.74 line 14

³⁶² Staff Nurse Gilchrist T-11-03-13 p.82 line 2

³⁶³ Dr Haynes T-22-03-13 p.139 line 20

³⁶⁴ Mr Foster and Mr Orr T-21-03-13 p.197 line 21

³⁶⁵ Dr Scott-Jupp T-20-03-13 p.107 line 5

³⁶⁶ Staff Nurse Noble T-27-02-13 p.104 line 7 & Staff Nurse Gilchrist T-11-03-13 p.114 line 22

³⁶⁷ Mrs Ferguson T-26-03-13 p.116 line 2

³⁶⁸ Mr Ferguson T-26-03-13 p.115 line 3

the Fergusons would have stayed had they had even the slightest suspicion that Raychel was in danger. That they were allowed to leave was another failing in nursing.

5.130 Soon thereafter, Raychel became “*restless again*” and was possibly “*behaving funny, ? confused*.”³⁶⁹ This was reported to Staff Nurse Noble³⁷⁰ by Staff Nurse Bryce and although there is disagreement about the detail of this development, it nonetheless should have been taken seriously. In the circumstances, it should have prompted an immediate call for medical assistance. Instead, Staff Nurses Gilchrist and Bryce were asked to look after Raychel while Staff Nurse Noble took an extended tea break.³⁷¹ Raychel then vomited again. Staff Nurse Bryce described her as being “*a little unsettled*”³⁷² and took no action.

5.131 By then, over 24 hours had passed since surgery and Raychel was still vomiting. She had headaches, was flushed and unsettled. She had probably not passed urine for 12 hours and was still receiving Solution No.18 at 80mls per hour. As time progressed and as Raychel’s condition deteriorated, the deficiencies in nursing become ever more obvious and serious. Mrs Ferguson felt “*Raychel was dying slowly in front of us and not one person... was even concerned*.”³⁷³

Final collapse: 03:00 9th June

5.132 Professor Arieff had observed in 1992, that “*headache, nausea, emesis, weakness and lethargy are consistent symptoms of hyponatraemia in children. If the condition is allowed to go untreated there can follow an explosive onset of respiratory arrest, coma and transtentorial cerebral herniation*.”³⁷⁴

³⁶⁹ 316-085-013

³⁷⁰ 316-085-013

³⁷¹ Staff Nurse Noble T-27-08-13 p.169 line 3

³⁷² WS-054-1 p.3

³⁷³ Mrs Ferguson T-26-03-13 p.185 line 10

³⁷⁴ 220-002-204

- 5.133 At 03:00, Auxiliary Nurse Elizabeth Lynch³⁷⁵ alerted Staff Nurse Noble to the fact that Raychel was fitting.³⁷⁶ She was found in a tonic state lying in a left lateral position with her hands and feet tightly clenched. She had been incontinent of urine. Staff Nurse Noble immediately sought the help of the nearest doctor³⁷⁷ who was Dr Jeremy Johnston,³⁷⁸ a paediatric SHO on Ward 6.³⁷⁹ It was the first time he had been called upon to care for a paediatric surgical patient.³⁸⁰
- 5.134 Dr Johnston's intervention has been praised.³⁸¹ At that time, he had almost completed his three-year training as an SHO. Notwithstanding that he had only specialised in paediatrics since February 2001, he was very much more experienced than Drs Devlin or Curran.
- 5.135 Dr Johnston administered diazepam rectally and then intravenously.³⁸² This quieted the seizure but Raychel was unresponsive and oxygen was given. Her vital signs were assessed and in the absence of raised temperature, Dr Johnston became concerned that there might be a critical underlying cause.³⁸³ He astutely identified electrolyte abnormality as the principal differential diagnosis³⁸⁴ and directed a Urea & Electrolyte ('U&E') test. Approximately 30 hours had passed since Raychel's blood had last been tested.
- 5.136 Dr Johnston needed senior surgical assistance as a matter of urgency and asked Dr Curran to get it.³⁸⁵ Dr Curran contacted Dr Zafar,³⁸⁶ who said he would "*come as soon as possible*."³⁸⁷ Dr Johnston then awaited the senior surgical support, but it did not materialise. Dr Curran did not go beyond Dr Zafar to contact a registrar or consultant and just hoped that Dr Zafar would

³⁷⁵ 312-003-005

³⁷⁶ Staff Nurse Noble T-27-02-13 p.144 line 12

³⁷⁷ Staff Nurse Noble T-27-02-13 p.146 line 1 & WS-029-1 p.2

³⁷⁸ 312-003-003

³⁷⁹ 312-003-003

³⁸⁰ Dr Johnston T-07-03-13 p.177 line 4

³⁸¹ 223-002-022

³⁸² 012-013-014

³⁸³ Dr Johnston T-07-03-13 p.183 line 2

³⁸⁴ 020-007-013

³⁸⁵ WS-029-2 p.9

³⁸⁶ Dr Curran T-07-03-13 p.111 line 5

³⁸⁷ Dr Zafar T-12-03-13 p.166 line 12 & Dr Curran T-07-03-13 p.112 line 2

arrive.³⁸⁸ Dr Zafar contacted nobody and Dr Johnston was left to cope with this major clinical event by himself. In the meantime he concentrated on *“getting the ECG, chasing up blood results”*³⁸⁹ and maintaining her airway.

5.137 Staff Nurse Noble telephoned Mr and Mrs Ferguson at about 03:45.³⁹⁰ There is disagreement as to whether Staff Nurse Noble attempted contact earlier.³⁹¹ I am inclined to the Fergusons’ account and it is very clear that Mr Ferguson got to the hospital as soon as he could.

5.138 At about 04:00 hours, Dr Johnston was obliged to go and get a senior doctor himself. He found Dr Bernie Trainor,³⁹² the SHO in paediatrics, in the neonatal unit.³⁹³ Dr Johnston explained the situation and they swapped roles so that Dr Trainor could go to Raychel. It was then that the results of the blood test came back recording a sodium level of 119mmol/L.³⁹⁴ This was lower than Dr Trainor had ever seen.³⁹⁵ She asked for a repeat test because the result was so abnormal she felt it could be wrong.³⁹⁶ It only confirmed Raychel’s acute hyponatraemia.³⁹⁷

5.139 Raychel’s oxygen saturation levels were dipping. She was transferred to the treatment room. Dr Trainor telephoned the on-call consultant paediatrician, Dr Brian McCord³⁹⁸ who came as quickly as he could.³⁹⁹ Raychel suffered a respiratory arrest and Dr Aparna Date,⁴⁰⁰ anaesthetist, attended.⁴⁰¹ Raychel was intubated⁴⁰² and her fluids adjusted to restrict the rate and increase the sodium.⁴⁰³ Mr and Mrs Ferguson were with her.⁴⁰⁴

³⁸⁸ Dr Curran T-07-03-13 p.123 line 16

³⁸⁹ Dr Johnston T-07-03-13 p.209 line 24

³⁹⁰ 095-005-019

³⁹¹ Staff Nurse Noble T-27-02-13 p.152 line 11 & Mr Ferguson T-26-03-13 p.122 line 9

³⁹² 312-003-003

³⁹³ Dr Trainor T-12-03-13 p.41 line 2

³⁹⁴ 020-022-042

³⁹⁵ Dr Trainor T-12-03-13 p.56 line 10

³⁹⁶ Dr Trainor T-12-03-13 p.48 line 3

³⁹⁷ 020-015-024

³⁹⁸ 312-003-003 & 012-036-170

³⁹⁹ Dr McCord T-13-03-13 p.48 line 7

⁴⁰⁰ 312-003-003

⁴⁰¹ WS-031-1 p.2

⁴⁰² 020-023-048

⁴⁰³ 020-015-025

⁴⁰⁴ Dr Johnston T-07-03-13 p.220 line 15

CT scans

5.140 When Dr McCord examined Raychel at 05:00 on 9th June, her pupils were fixed and dilated.⁴⁰⁵ Her condition was almost certainly irretrievable.⁴⁰⁶ He noted “*marked electrolyte disturbance with profound hyponatraemia*”⁴⁰⁷ and arranged a CT scan.

5.141 Despite the extreme seriousness of the event, the on-call surgical consultant did not attend. Mr Foster was in no doubt that he should have⁴⁰⁸ and in no doubt that he should have been summonsed. Mr Orr agreed.⁴⁰⁹ However, Dr Naresh Kumar Bhalla,⁴¹⁰ the Surgical Registrar who was there, explained that he did not call his consultant surgeon because he thought it a metabolic or septic issue and not a surgical one.⁴¹¹ Notwithstanding that there was no specific call for surgical expertise at that time, I find the absence of the on-call surgical consultant very surprising. It was not only a remarkable detachment by the surgical team from their patient, but also from Mr and Mrs Ferguson who were seemingly ignored by them.

5.142 Indeed, Mr Foster thought “*the absence of a senior member of the surgical team must have been noticed by everybody*”⁴¹² and believed that a senior surgical doctor “*should have spoken to the family and appraised them of the fears and anxieties of the whole of the team.*”⁴¹³ However, it was left to Staff Nurse Noble and Dr Trainor to speak to Mr and Mrs Ferguson and advise them that Raychel was being stabilised, that further tests were being undertaken and that it was the anaesthetic team that was looking after her.⁴¹⁴

⁴⁰⁵ 012-036-171

⁴⁰⁶ 220-003-018 & Dr Trainor T-12-03-13 p.85 line 18 & Mr Foster T-21-03-13 p.229 line 7

⁴⁰⁷ 012-036-171

⁴⁰⁸ 223-002-026

⁴⁰⁹ WS-320-1 p.15

⁴¹⁰ 312-003-003

⁴¹¹ WS-034-2 p.5

⁴¹² Mr Foster T-21-03-13 p.215 line 3

⁴¹³ Mr Foster T-21-03-13 p.214 line 15

⁴¹⁴ Dr Trainor T-12-03-13 p.91 line 18

- 5.143 The CT scan was thought to suggest sub-arachnoid haemorrhage⁴¹⁵ with evidence of cerebral oedema. Dr Nesbitt, Consultant Anaesthetist arrived and discussed the scan via image linking with neurosurgeons at the Royal Victoria Hospital ('RVH'). They suggested that there was "*possibly a subdural empyema (an area of infection)*"⁴¹⁶ for which surgical intervention might have been possible.
- 5.144 Mrs Ferguson recalled Dr McCord telling them that Raychel's brain was clear and that if Raychel's sodium could be controlled "*that would be better.*"⁴¹⁷ It is not at all clear that Mrs Ferguson knew what sodium was⁴¹⁸ but nonetheless she drew reassurance from this and reacted to "*thank God, Raychel's brain is clear – she will be alright.*"⁴¹⁹ She now considers that it was wrong of Dr McCord to give her hope at that time. Dr McCord said he would not have intended to deliberately mislead⁴²⁰ but nor would he have wished to "*remove all hope.*"⁴²¹ He accepted that he might have allowed an undue expectation⁴²² for which he offered his apology.⁴²³
- 5.145 Mrs Ferguson remembered "*a doctor in ICU with a beard said that she was very seriously ill and that there was a lot of pressure inside her head and that they would operate to reduce the pressure.*"⁴²⁴ Raychel's aunt, Ms Kay Doherty⁴²⁵ "*felt this was the first bit of information that we were given as to Raychel's condition and as to what was going to happen to her...*"⁴²⁶ However, Mrs Ferguson also recalled "*a wee nurse coming up. When she put her hand on my knee and she said that she was so sorry and I remember saying to my sister, 'she's going on as if Raychel's dead.'*"⁴²⁷ No

⁴¹⁵ 020-015-026 & 021-065-155

⁴¹⁶ WS-035-1 p.2

⁴¹⁷ 012-028-146

⁴¹⁸ Ms Kay Doherty T-18-09-13 p.155 line 2

⁴¹⁹ WS-020-1 p.19

⁴²⁰ Dr McCord T-13-03-13 p.109 line 1

⁴²¹ Dr McCord T-13-03-13 p.121 line 15

⁴²² Dr McCord T-13-03-13 p.109 line 16

⁴²³ Dr McCord T-13-03-13 p.147 line 15

⁴²⁴ 012-028-146

⁴²⁵ 328-001-001

⁴²⁶ WS-326-1p.7

⁴²⁷ Mrs Ferguson T-26-03-13 p.136 line 5

one took responsibility for communication with the family at that dreadful time and Mrs Ferguson could only sense mixed messages.⁴²⁸

- 5.146 A second and enhanced CT scan was sought to exclude the possibility of sub-dural empyema and haemorrhage. It was performed at 08:51⁴²⁹ by Dr Cyril Morrison,⁴³⁰ Consultant Radiologist, who reported that “*a sub-dural empyema [is] excluded.*”⁴³¹ He discussed it with Dr Stephen McKinstry⁴³² of the RVH who considered that “*the changes were in keeping with generalised brain oedema (swelling due to increased fluid content) and that there was no evidence of haemorrhage.*”⁴³³
- 5.147 Mr Bhalla remembered “*I was there... we got the report that the second CT scan confirmed that it was cerebral oedema and there was no haematoma there*”⁴³⁴ - “*it was quite clear that she had got a very bad prognosis.*” It was understood that she would not survive.⁴³⁵
- 5.148 Dr Nesbitt did not, however, have quite the same understanding. Whilst he knew that empyema was excluded, he remained under the impression that a diagnosis of subarachnoid haemorrhage was possible⁴³⁶ and surgical intervention, an option.

Transfer to the RBHSC

- 5.149 The decision was taken at 09:10 to remove Raychel to Paediatric Intensive Care Unit (‘PICU’) in Belfast.⁴³⁷ Such a transfer was indicated whether subarachnoid haemorrhage was excluded or not because as Dr Bhalla recalled “*all of them said she needs intensive care, conservative management*”⁴³⁸ and the only ICU for children was in Belfast.⁴³⁹

⁴²⁸ Mrs Ferguson T-26-03-13 p.136 line 11

⁴²⁹ 020-026-055

⁴³⁰ 312-003-004

⁴³¹ 020-026-055

⁴³² 312-003-005

⁴³³ WS-037-1 p.2

⁴³⁴ Mr Bhalla T-14-03-13 p.45 line 20

⁴³⁵ Mr Bhalla T-14-03-13 p.46 line 19

⁴³⁶ Dr Nesbitt T-03-09-13 p.20 line 9 & p.25 line 20

⁴³⁷ 020-024-052

⁴³⁸ Mr Bhalla T-14-03-13 p.48 line 13

⁴³⁹ WS-035-2 p.21 & Dr Trainor T-12-03-13 p.94 line 11

- 5.150 However, Mrs Ferguson believed that a “*cover-up began on the morning Raychel was being transferred to the Royal. We now know the situation was hopeless... Altnagelvin just sent her to Belfast so that it could be recorded that Raychel died there; there was no hope for her.*”⁴⁴⁰
- 5.151 However, Mr Orr doubted that the consultants at Altnagelvin “*could be absolute in their opinion until they knew what the assessment was of Raychel in the Childrens’ Hospital*”⁴⁴¹ and as Dr Nesbitt recalled, she was sent to Belfast because “*neurosurgeons had asked that we transfer her to their care.*”⁴⁴² In such a situation, I can understand that no one would want to abandon hope.
- 5.152 Transfer documentation was initially prepared on behalf of Dr Nesbitt citing “*? Meningitis ? Encephalitis*” as the suggested diagnoses, and “*? sub-achnoid hae*”⁴⁴³ as the finding on investigation. Dr Trainor then drafted the referral letter for the Royal Belfast Hospital for Sick Children (‘RBHSC’) summarising known and relevant information. She detailed the treatment with Solution No.18, the IV infusion rate, Raychel’s repeated vomiting and the sudden drop in her sodium levels to 118mmol/L.
- 5.153 Raychel arrived at the RBHSC at 12:30. She was formally admitted under the care of Dr Peter Crean,⁴⁴⁴ Consultant in Paediatric Anaesthesia and Intensive Care. She had no purposeful movement.⁴⁴⁵ Her serum sodium level was then 130mmol/L⁴⁴⁶ and her diagnosis “*? Hyponatraemia.*” Dr Dara O’Donoghue⁴⁴⁷ assessed her as having “*coned with probably irreversible brain stem compromise.*”⁴⁴⁸ She was admitted for “*neurological assessment and further care.*”⁴⁴⁹

⁴⁴⁰ Mrs Ferguson T- 26-03-13 p.176-7

⁴⁴¹ Mr Orr T-21-03-13 p.228 line 23

⁴⁴² WS-035-2 p.21. See also Dr Crean T-11-09-13 p.32 line 11

⁴⁴³ 012-002-073

⁴⁴⁴ 312-003-005

⁴⁴⁵ 012-032-159

⁴⁴⁶ 012-032-159

⁴⁴⁷ 312-003-005

⁴⁴⁸ 063-009-023

⁴⁴⁹ 063-015-035

- 5.154 Distressingly, Mr and Mrs Ferguson travelled to Belfast believing that Raychel was to have surgery. They recall that when they arrived at the RBHSC Dr Nesbitt told them that Raychel had *“a good journey up and that there was plenty of movement, that’s a good sign.”*⁴⁵⁰ Kay Doherty also remembered him saying *“she’s in the best place.”*⁴⁵¹
- 5.155 The Ferguson family feel that they were misled and given further false hope by the transfer to Belfast and the encouraging reference to movement. Dr Nesbitt maintained however that *“the movements, which were evident prior to transfer, remained. I do not believe that I placed undue emphasis on these movements and there was no inference that there had been any recovery. It is very much regretted that Mr and Mrs Ferguson took this meaning.”*⁴⁵² At that stage, Raychel was still capable of reflex movement.⁴⁵³ I think it most unlikely that Dr Nesbitt could or would have misinterpreted this.⁴⁵⁴
- 5.156 I do not believe that there was any deliberate attempt to give the Ferguson family false hope. The transfer to Belfast alone may have done that. It is however clear that communication should have been better and more considered. Dr Nesbitt acknowledged this when he observed how the circumstances of that day emphasised for him *“the importance of effective communication with distraught family members.”*⁴⁵⁵ The question of who should have spoken to the Fergusons, when and in what terms, was not considered at that time. One consequence of this was that the relationship of trust between the Altnagelvin doctors and the Ferguson family was critically undermined.
- 5.157 By way of contrast, when Mr and Mrs Ferguson met with Drs Crean and Hanrahan⁴⁵⁶ at PICU they were told in clear terms that *“Raychel is critically ill and the outlook is very poor.”*⁴⁵⁷ This was recorded in the medical chart

⁴⁵⁰ Mr Ferguson T-26-03-13 p.148 line 13
⁴⁵¹ Ms Kay Doherty T-18-09-13 p.157 line 3
⁴⁵² WS-035-3 p.2
⁴⁵³ Dr Haynes T-22-03-13 p.152 line 6
⁴⁵⁴ Dr Haynes T-22-03-13 p.153 line 3
⁴⁵⁵ WS-035-3 p.3
⁴⁵⁶ 312-003-005
⁴⁵⁷ 063-009-021

and is confirmed by the counselling record.⁴⁵⁸ Dr O'Donoghue also met with the family. The Fergusons appreciated this straightforwardness and make no criticism of the way they were treated by the clinicians at the RBHSC.⁴⁵⁹ Mr Foster agrees and noted that Mr and Mrs Ferguson were treated with *"all possible care and sensitivity at the RBHSC."*⁴⁶⁰

5.158 Mrs Ferguson gave evidence that *"I don't remember whether it was Dr. Crean or Mr. Hanrahan, they kept going over about the vomiting, what kind of vomiting, how many vomits, what time was there blood in the vomit, they just kept repeating these questions... and... 'What's Altnagelvin trying to do here, pass the buck?'"*⁴⁶¹ and *"this should never have happened."*⁴⁶² Dr Hanrahan, however had no recollection of this and Dr Crean thought it most unlikely. He said *"the main thrust of what we were doing at that time was to take the family through a terrible journey."*⁴⁶³

5.159 Drs Crean and Hanrahan performed the first brain stem death test at 17:30 9th June and noted brain death.⁴⁶⁴ Their second test of 09:45 the following morning confirmed *"no evidence of brain function... she is brain dead."*⁴⁶⁵

5.160 Mr and Mrs Ferguson were advised that nothing could be done. With their consent and Raychel on her mother's knee⁴⁶⁶ and with her family beside her, ventilation support was discontinued at 11:35.⁴⁶⁷ Raychel was pronounced dead at 12:09, 10th June 2001.⁴⁶⁸

5.161 The Coroner's office was notified.⁴⁶⁹

⁴⁵⁸ 063-009-021 & 063-022-049

⁴⁵⁹ Mr and Mrs Ferguson T-26-03-13 p.160 *et seq*

⁴⁶⁰ 223-002-027

⁴⁶¹ Mrs Ferguson T-26-03-13 p.161 line 19 & p.162 line 11

⁴⁶² Mrs Ferguson T-26-03-13 p.164 line 10

⁴⁶³ Dr Crean T-11-09-13 p.24 line 20

⁴⁶⁴ 063-010-024 & 012-032-160

⁴⁶⁵ 063-012-024

⁴⁶⁶ Mrs Ferguson T-26-03-13 p.184 line 21

⁴⁶⁷ 063-016-040 & 063-017-042

⁴⁶⁸ 063-017-041

⁴⁶⁹ 063-012-026

Discharge advices

- 5.162 Altnagelvin was obliged to issue a formal hospital discharge letter and summary to Raychel's GP but this was not done. As before, this was a particular failing in documentary compliance which had been previously identified by audit⁴⁷⁰ but not addressed.
- 5.163 Nor did Mr Gilliland contact Raychel's GP,⁴⁷¹ despite the fact that he had previously "*telephoned quite a number of general practitioners about deaths of their patients.*"⁴⁷² He did not call her because "*Raychel had died elsewhere and I simply didn't think to do so.*"⁴⁷³ He did however tell her "*in casual conversation*" when they met at the supermarket.⁴⁷⁴
- 5.164 Further, and notwithstanding that Mr Gilliland recognised his responsibility for Raychel's care⁴⁷⁵ and his duty under the General Medical Council ('GMC') 'Good Medical Practice' code to "*explain, to the best of [his] knowledge, the reason for and the circumstances of the death to those with parental responsibility*"⁴⁷⁶ he made no contact with the Ferguson family because again he did not think to do so.⁴⁷⁷ He made no expression of condolence. Professor Swainson believed that Mr Gilliland should have met the family and within days.⁴⁷⁸ Such would have been proper and if properly done could have been helpful.
- 5.165 Irrespective of whether the RBHSC might also have been expected to give full discharge details to the family GP, it was most important in the circumstances that Altnagelvin itself advise the family doctor because the Fergusons might have needed support in their bereavement and the GP was likely to be involved.⁴⁷⁹

⁴⁷⁰ 321-068-004

⁴⁷¹ Mr Gilliland T-28-08-13 p.64 line 3 & p.64 line 3 & p.68 line 15

⁴⁷² Mr Gilliland T-28-08-13 p.97 line 13

⁴⁷³ Mr Gilliland T-28-08-13 p.97 line 17

⁴⁷⁴ Mr Gilliland T-28-08-13 p.64 line 9

⁴⁷⁵ Mr Gilliland T-14-03-13 p.217 line 25

⁴⁷⁶ Mr Gilliland T-28-08-13 p.81 line 1

⁴⁷⁷ Mr Gilliland T-14-03-13 p.83 line 4

⁴⁷⁸ Professor Swainson T-19-09-13 p.98 line 2

⁴⁷⁹ Professor Swainson T-19-09-13 p.45 line 3

Altnagelvin governance framework

- 5.166 The Altnagelvin Hospitals Health & Social Services Trust (the ‘Trust’) was created on 1st April 1996⁴⁸⁰ and made accountable to the Department of Health and Personal Social Services & Personal Safety, Northern Ireland (‘DHSSPSNI’ otherwise ‘the Department’).⁴⁸¹
- 5.167 The Trust’s main commissioner of services was the Western Health & Social Services Board (‘WHSSB’)⁴⁸² under a ‘purchaser-provider’ Service Agreement⁴⁸³ which required of it a commitment to a “*clinical governance programme [which] must include key elements such as processes for recording and deriving lessons from untoward incidents, complaints and claims; a risk management programme; effective clinical audit arrangements; evidence based medical practice and a supportive culture committed to the concept of life-long learning.*”⁴⁸⁴
- 5.168 Whilst the Trust operated independently of the WHSSB and without managerial accountability, it was nonetheless required to “*share details of its quality framework*” with the WHSSB⁴⁸⁵ and maintain liaison “*to ensure that the services it provides meet the needs of the resident population.*”⁴⁸⁶
- 5.169 Oversight was also given the Western Health & Social Services Council (‘WHSSC’) established to “*keep under review the operation of the health and personal services in its area and to make recommendations for the improvement of these services.*”⁴⁸⁷
- 5.170 The Trust was led by a Board of Executive and Non-Executive Directors. Mrs Burnside as Chief Executive was the “*accountable officer*”⁴⁸⁸ “*responsible for the management and leadership of the services provided*” and “*bore ultimate responsibility for the overall quality and quantity of the*

⁴⁸⁰ 321-004gj-008

⁴⁸¹ 321-004fa-001

⁴⁸² 321-004fa-001

⁴⁸³ 321-028-002 *et seq*

⁴⁸⁴ 321-028-004

⁴⁸⁵ 321-028-009

⁴⁸⁶ 321-004fa-002

⁴⁸⁷ WS-093-1 p.2

⁴⁸⁸ WS-046-1 p.3 & 321-050-002

services...”⁴⁸⁹ She was herself accountable to the Chairman of the Trust Board and to the WHSSB.⁴⁹⁰

- 5.171 There were two Executive Directors bearing particular responsibility for clinical matters, namely the Medical Director, Dr Fulton and Miss Duddy, Director of Nursing.
- 5.172 Dr Fulton was responsible for the efficiency of clinical services, audit and professional standards. His task was to facilitate communication between clinicians and management.⁴⁹¹ He monitored “*the quality of medical care*”,⁴⁹² investigated serious clinical incidents⁴⁹³ and advised the Trust Board on medical issues, complaints, appraisal of medical performance and medical issues arising from litigation.
- 5.173 Miss Duddy provided professional leadership for nursing and advised the Board on nursing matters. She and Dr Fulton were jointly accountable to the Board for the quality of care and overall risk management.⁴⁹⁴ Mrs Therese Brown,⁴⁹⁵ the Risk Management Co-ordinator (‘RMCO’) had responsibility for “*establishing systems for assessing, preventing and responding to [clinical] risk.*”⁴⁹⁶ The task of managing standards and guidelines and administering the audit team fell to the Clinical Effectiveness Co-ordinator, Mrs Anne Witherow.⁴⁹⁷
- 5.174 Responsibility for overseeing operational management lay with the Hospital Management Team⁴⁹⁸ comprising the Clinical Directors and Clinical Service Managers of the individual clinical directorates.⁴⁹⁹ The role of the Clinical Director was one of leadership within a directorate and included those “*issues relating to standards of care or poor performance.*”⁵⁰⁰ The CSM was

⁴⁸⁹ WS-046-2 p.8

⁴⁹⁰ WS-046-2 p.5

⁴⁹¹ 321-004gh-005-007

⁴⁹² WS-043-1 p.3

⁴⁹³ WS-043-1 p.3

⁴⁹⁴ WS-323-1 p.3

⁴⁹⁵ 328-001-002

⁴⁹⁶ WS-322-1 p.31

⁴⁹⁷ 328-001-003 & WS-322-1 p.5

⁴⁹⁸ 321-004gj-011

⁴⁹⁹ 321-004gj-011

⁵⁰⁰ WS-035-2 p.4

*“the practitioner responsible for day-to-day management of the directorate.”*⁵⁰¹

- 5.175 The Surgery and Critical Care Directorate was responsible for the provision of Raychel's surgical care and was under the clinical directorship of the late Mr Paul Bateson. Care for paediatric patients on Ward 6 was provided within the Women & Children's Care Directorate under the directorship of Dr Denis Martin⁵⁰² but was in reality directed by the CSM Mrs Margaret Doherty.⁵⁰³ Whilst she reported to Dr Martin she was accountable to the Director of Nursing. This was in contrast to the Clinical Directors who were both *“responsible and accountable to the lead Clinical Director.”*⁵⁰⁴

Altnagelvin clinical governance - June 2001

- 5.176 In April 2001 the Department, recognising that *“governance arrangements are already in place to ensure overall probity, transparency and adherence to public service values”*, published for consultation 'Best Practice Best Care' proposing a more formalised *“system of clinical and social care governance backed by a statutory duty of quality.”*⁵⁰⁵
- 5.177 In preparing to comply with this new statutory accountability for patient care,⁵⁰⁶ the Trust recorded in its Annual Report 1998-99 that *“a clinical governance strategy has been developed... which details the structures and processes required to ensure that patients will receive the highest quality of care with the best clinical outcomes.”*⁵⁰⁷
- 5.178 The Trust made a commitment to the success of clinical governance⁵⁰⁸ and by June 2001 claimed to have introduced a range of policy initiatives, including amongst others:

⁵⁰¹ 321-004-009

⁵⁰² 328-001-003

⁵⁰³ WS-336-1 p.26 & Sister Millar T-28-08-13 p.125 line 1 & 321-022-001

⁵⁰⁴ 321-004gd-001

⁵⁰⁵ WS-068-1 p.14: 'A Framework for Setting Standards, Delivering Services and Improving Monitoring and Regulation in the HPSS'

⁵⁰⁶ 'Clinical and Social Care Governance Circular' HSS (PPM) 10/2002

⁵⁰⁷ 321-004gi-044

⁵⁰⁸ 321-004fg-001

- (i) Proposed Strategy for Implementing Clinical Governance, September 1998.⁵⁰⁹
- (ii) Clinical Governance Committee, 1998-99.⁵¹⁰
- (iii) Clinical Governance 'Steering Group'.⁵¹¹
- (iv) Policy for Reporting of Clinical Incidents and Critical Incident Protocol, February 2000.⁵¹²
- (v) Procedure for appraisal of staff pursuant to DHSSPSNI consultation document⁵¹³ by 2000.⁵¹⁴
- (vi) Policy for the Management of Clinical Risk, including arrangements for the management of legal claims, October 1997.⁵¹⁵
- (vii) Clinical Negligence Scrutiny Committee.⁵¹⁶
- (viii) Clinical Incident Review Committee.⁵¹⁷
- (ix) Procedure for Handling Complaints, Enquiries and Commendations, May 1996.⁵¹⁸
- (x) Patients' Forum.⁵¹⁹
- (xi) Multi-disciplinary Clinical Audit Committee with Clinical Audit Co-ordinator and Clinical Effectiveness Co-ordinator, 1998-99.⁵²⁰
- (xii) Patient Case Note Standards, May 1996.⁵²¹

⁵⁰⁹ 321-004fg-001

⁵¹⁰ 321-004gj-042

⁵¹¹ 321-004gr-008

⁵¹² 321-004ff-001 & 022-109-338

⁵¹³ 321-004fi-001 - 'Confidence in the Future...On the Prevention, Recognition and Management of Poor Performance of doctors in Northern Ireland' 2000. Chief Executive Mrs Burnside served on the Working Group responsible for this development of these proposals.

⁵¹⁴ 321-004gj-044

⁵¹⁵ 321-004fd-001

⁵¹⁶ WS-323-1 p.14

⁵¹⁷ WS-323-1 p.14

⁵¹⁸ 321-004fb-001

⁵¹⁹ WS-323-1 p.14

⁵²⁰ 321-004gi-044

⁵²¹ 321-014c-001

(xiii) Regular appraisal for trainee doctors, 1997.⁵²²

(xiv) Junior Doctors' Handbook and a staff 'Hotline' to assist communication, 1998.⁵²³

(xv) Trust Scrutiny Committee.⁵²⁴

5.179 In addition, doctors were individually subject to wide ranging and long established codes of professional self-regulation, not least from the GMC, Royal Colleges and published guidance. Nurses were subject to the United Kingdom Central Council for Nursing, Midwifery and Health Visiting ('UKCC') 'Code of Professional Conduct'⁵²⁵ and standing guidelines for professional practice.⁵²⁶ Additionally within Altnagelvin, nurses were said to be subject to annual performance and training requirement appraisals,⁵²⁷ benchmarking exercises against best practice guidance,⁵²⁸ a "*cascade system of dissemination*" for external guidance,⁵²⁹ and auditing "*of nursing and medical records*."⁵³⁰

5.180 Notwithstanding that the Trust made application for the King's Fund Organisational Audit ('KFOA') accreditation in 1998,⁵³¹ achieved a number of charter standards and "*full CPA accreditation of all departments*" in 2001-02,⁵³² the extent to which policy and strategy was actually put into practice is uncertain.

5.181 It took time and money to integrate clinical governance into the hospital system and money was not always available.⁵³³ For Sister Millar in Ward 6, clinical governance in 2001 was "*very much in its infancy but we were striving to get our heads round it*."⁵³⁴ Altnagelvin did not publish a clinical

⁵²² WS-328-1 p.12

⁵²³ 321-004fk-001

⁵²⁴ 321-004fd-005

⁵²⁵ 202-002-058

⁵²⁶ 314-003-001

⁵²⁷ WS-323-1 p.8

⁵²⁸ WS-046-2 p.18 & WS-329-1 p.5

⁵²⁹ WS-323-1 p.19

⁵³⁰ WS-329-1 p.12

⁵³¹ 321-004fg-003

⁵³² 321-004gt-001

⁵³³ 317-006-004 & 316-006g-003

⁵³⁴ Sister Millar T-28-08-13 p.102 line 3

and social governance report until 2003 some 5 years after making public its strategy for implementing clinical governance.

- 5.182 Even though the evidence confirmed that the implementation of clinical governance was not so complete as was claimed, it is however clear, that at the time of Raychel's death, those within Altnagelvin who were charged with the governance response to her death, knew or ought to have known what constituted good practice.

Initial RBHSC response

- 5.183 On the day of Raychel's death, 'rumour' spread from the RBHSC that her fluids had been mismanaged.⁵³⁵ Sister Millar recalled "*a nurse in the intensive care in the Children's [Hospital] in Belfast said when Raychel arrived and there was handover, that she was on the wrong fluid.*"⁵³⁶ Mr Gilliland recalled "*discussion between our own medical staff and the doctors in the RBHSC about the probable cause of Raychel's death. I believe I was made aware of the discussions sometime on 11 June...*"⁵³⁷ and "*some of that discussion had been critical.*"⁵³⁸
- 5.184 By the Monday morning Mrs Burnside was also aware of Raychel's death. She recalled the "*'rumour' from PICU that the 'wrong fluids' had been used. This 'rumour' emerged from a nurse in PICU responding to an inquiry from Altnagelvin Ward Nurse on the child's state, on the Sunday.*"⁵³⁹
- 5.185 Inconsistency about the origin of the rumour is not surprising but does draw attention to the more important fact that the RBHSC did not inform Altnagelvin in writing that the "*wrong*" fluids had been used.
- 5.186 Professor Swainson, noting the absence of a formal RBHSC discharge summary for Altnagelvin, said he would have expected "*a full analysis of the cause(s) of the cerebral oedema and the role of acute hyponatraemia*

⁵³⁵ 021-020-041

⁵³⁶ Sister Millar T-01-03-13 p.64 line 23 & cf WS-344-1 p.3

⁵³⁷ WS-044-4 p.11

⁵³⁸ WS-044-4 p.11

⁵³⁹ 021-020-041

*in that. The evidence that Altnagelvin Trust heard only through an informal conversation between nurses is surprising and disturbing.”*⁵⁴⁰

- 5.187 Professor Scally also considered that there should have been formal communication because a professional obligation to do so arose when a death may have been caused by mismanagement. He believed this obligation was *“reinforced by the RBHSC role as a regional centre of excellence.”*⁵⁴¹ Dr Ian Carson,⁵⁴² then Medical Director of the Royal Group of Hospitals Trust (‘RGHT’), agreed that concerns should have been communicated.⁵⁴³ Professor Swainson believed it would have been proper for the complications of care to be communicated *“so that the doctors who referred [her could] understand what exactly has happened or at least... the Royal Belfast Hospital’s interpretation of that.”*⁵⁴⁴ However, Dr Crean said it was not the *“culture at the time. That’s not the way we did our business...”*⁵⁴⁵
- 5.188 The sole RBHSC communication was to Raychel’s GP and indicated only that Raychel had been *“transferred from Altnagelvin hospital with seizures/ hyponatraemia/cerebral oedema/fixed dilated pupils. Certified as dead on 10/6/01 @ 12:09 hours. For Coroner’s P.M.”*⁵⁴⁶ No reference was made to mismanagement.
- 5.189 Notwithstanding that the death was the subject of discussion within the RBHSC,⁵⁴⁷ Raychel’s death was not made the subject of a Critical Incident Report or Review, because as Dr Crean explained *“if an adverse event occurred in RBHSC and it was considered to have led to an unexpected death, then it would have been reported. However, I do not believe an event occurring in another hospital would have been reported.”*⁵⁴⁸ This was the same unacceptable explanation as was offered in respect of Lucy’s death

⁵⁴⁰ 226-002-010

⁵⁴¹ 251-002-017

⁵⁴² 328-001-004

⁵⁴³ Dr Carson T-30-08-13 p.19 line 25

⁵⁴⁴ Professor Swainson T-19-09-13 p.44 line 18

⁵⁴⁵ Dr Crean T-11-09-13 p.128 line 23

⁵⁴⁶ 317-041-001

⁵⁴⁷ Dr Taylor T-18-09-13 p.62 line 2

⁵⁴⁸ WS-038-3 p.6

occurring the previous year.⁵⁴⁹ Furthermore, it contravened RGHT's own Adverse Incident Reporting policy.⁵⁵⁰

- 5.190 Whilst there was a clear lack of full and formal communication and that is to be criticised, it must nonetheless be emphasised that the RBHSC immediately notified the Coroner of Raychel's death, informally communicated suspicion of mismanagement to both Altnagelvin and the Coroner⁵⁵¹ and subsequently discussed Raychel's case at an Audit Meeting on 10th April 2003.⁵⁵²

Altnagelvin's Critical Incident Review

- 5.191 Likewise, within Altnagelvin, there was no formal adverse incident report of Raychel's death. This was in contravention of the internal reporting policy *"that any clinical incident should be reported on the appropriate documentation."*⁵⁵³
- 5.192 However, Mrs Burnside immediately and very properly asked Dr Fulton *"to investigate this very serious event in [his] role as Medical Director."*⁵⁵⁴ To that end he, and Mrs Therese Brown the RMCO, decided to formally review Raychel's case in accordance with the Altnagelvin Critical Incident Protocol.⁵⁵⁵ This procedure was broadly based on recommendations extracted from a 'Clinical Governance' textbook by Myriam Lugon⁵⁵⁶ and developed by Dr Fulton,⁵⁵⁷ Mrs Brown⁵⁵⁸ and Miss Duddy.
- 5.193 Professor Swainson thought that it was *"in general a good protocol."*⁵⁵⁹ However, it has proved difficult to determine the extent to which it was actually followed because there is so little documentation. It might be thought that such a serious case involving numerous clinical witnesses and

⁵⁴⁹ Dr Crean T-04-06-13 p.147 line 24

⁵⁵⁰ WS-292-2 p.45 & 321-074-001

⁵⁵¹ 012-052c-275

⁵⁵² 063-037-095

⁵⁵³ 321-004ff-002

⁵⁵⁴ WS-043-1 p.3

⁵⁵⁵ 026-012-016

⁵⁵⁶ WS-043-1 p.2 1999 p.94-96 & Mrs Brown T-02-09-13 p.39 line 7

⁵⁵⁷ Dr Fulton T-04-09-13 p.22 line 18

⁵⁵⁸ Mrs Brown T-02-09-13 p.38 line 25

⁵⁵⁹ Professor Swainson T-19-09-13 p.73 line 14

multiple issues of fact would have generated copious documentation and opinion. However, that was not the case. Dr Fulton did not take notes⁵⁶⁰ and there is no written report of the review.

5.194 Notwithstanding, Dr Fulton immediately sought *“to form an accurate account of the events leading to Raychel’s death while it was clear in everyone’s memory. I was also keen to ascertain whether lessons could be learned so that a recurrence of this tragic event could be avoided.”*⁵⁶¹ He convened a critical incident review meeting for 12th June. Speed was important and Dr Fulton achieved it.

5.195 Dr Fulton initially assured this Inquiry that Mrs Brown contacted the relevant staff, who all agreed to attend⁵⁶² and that he noted those who attended and what they said.⁵⁶³ However, he has since recognised that not all relevant witnesses were contacted, that he made no record of those who did attend, that he did not note what was said and that, in terms, he has no reliable recollection of his review.⁵⁶⁴ It is however clear that *“only the staff present at the Critical Incident Meeting were interviewed...”*⁵⁶⁵ and absent from the Review were the surgeons Bhalla, Zafar and Zawislak,⁵⁶⁶ Drs Curran, Devlin,⁵⁶⁷ Gund,⁵⁶⁸ Jamison,⁵⁶⁹ Johnston,⁵⁷⁰ Trainor,⁵⁷¹ Butler,⁵⁷² Kelly,⁵⁷³ and Date,⁵⁷⁴ and Staff Nurses Patterson,⁵⁷⁵ McGrath,⁵⁷⁶ McAuley and Roulston.⁵⁷⁷

⁵⁶⁰ Dr Fulton T-04-09-13 p.49 line 2

⁵⁶¹ WS-043-1 p.4

⁵⁶² WS-043-1 p.4

⁵⁶³ WS-043-1 p.4

⁵⁶⁴ WS-043-2 p.1-3 & Staff Nurse Noble T-27-02-13 p.185 line 9

⁵⁶⁵ WS-043-3 p.11

⁵⁶⁶ Dr Zawislak T-05-02-13 p.85 line 17

⁵⁶⁷ Dr Devlin T-06-03-13 p.3 line 18

⁵⁶⁸ Dr Gund T-05-02-13 p.184 line 1

⁵⁶⁹ Dr Jamison T-07-02-13 p.95 line 17

⁵⁷⁰ Dr Johnston T-07-03-13 p.224 line 24

⁵⁷¹ Dr Trainor T-12-03-13 p.101 line 24

⁵⁷² Dr Butler T-11-03-13 p.35 line 14

⁵⁷³ WS-254-1 p.6

⁵⁷⁴ WS-031-2 p.6

⁵⁷⁵ Ms Patterson T-04-03-13 p.112 *et seq*

⁵⁷⁶ Staff Nurse McGrath T-26-02-13 p.94 line 13

⁵⁷⁷ Staff Nurse McAuley T-05-03-13 p.202 line 3 & Staff Nurse Roulston T-06-03-13 p.151 line 24

- 5.196 Further and notwithstanding the suggestion of criticism from the RBHSC,⁵⁷⁸ Mr Bateson, the Clinical Director of Surgery, did not attend the Critical Incident Review despite his responsibility for the surgical team treating Raychel. Nor was there any involvement from Dr Martin, the Clinical Director charged with leadership of the paediatric department.⁵⁷⁹ Miss Duddy, the Director of Nursing, did not attend the meeting or learn of Raychel's death until "*sometime after the critical incident meeting.*"⁵⁸⁰
- 5.197 Mr Gilliland did attend but did not contribute. He did not speak to his doctors,⁵⁸¹ review their performance,⁵⁸² or ensure their attendance at the Critical Incident Review. He said that he "*didn't think about doing that at the time, nor did [he] necessarily feel that it was [his] role to call the people to that meeting.*"⁵⁸³ However, Mrs Doherty, Mrs Witherow, and Staff Nurses Noble, Gilchrist and Bryce were present together with Sister Millar and Auxiliary Nurse Lynch.
- 5.198 Given the rumour that Raychel had been given the "*wrong*" fluid it is surprising that no input was sought or received from the RBHSC. There was no request for RBHSC notes and the Trust's solicitor was not invited to attend.⁵⁸⁴ This was however the first time a formal Critical Incident Review had been convened at Altnagelvin⁵⁸⁵ and as Professor Swainson observed "*to be fair to the people concerned, and to do that well, you do need a bit of experience.*"⁵⁸⁶

Critical Incident Review meeting

- 5.199 Dr Fulton said that "*from the start we knew why Raychel had died, we knew about the low sodium and the cerebral oedema. So to some extent we were working backwards.*"⁵⁸⁷ He recalled how "*subdued and shocked all the*

⁵⁷⁸ WS-044-4 p.11

⁵⁷⁹ Dr Fulton T-04-09-13 p.18 line 19 & WS-335-1 p.7

⁵⁸⁰ WS-323-1 p.23

⁵⁸¹ Mr Gilliland T-28-08-13 p.72 line 1 & p.69 line 2

⁵⁸² Mr Gilliland T-28-08-13 p.72 line 6

⁵⁸³ Mr Gilliland T-28-08-13 p.75 line 17

⁵⁸⁴ Mrs Brown T-02-09-13 p.49 line 7

⁵⁸⁵ Dr Fulton T-09-04-13 p.27 line 1

⁵⁸⁶ Professor Swainson T-19-09-13 p.83 line 14

⁵⁸⁷ Dr Fulton T-04-09-13 p.51 line 13

*nurses and doctors appeared at the start of the meeting. It was clear... that they regarded this as a very serious and highly unusual event.”*⁵⁸⁸ He stressed “*that the purpose of the meeting was to establish facts and not to blame individual staff members. This was the approach recommended for Critical Incident investigations to allow staff to give essential information in a non-judgmental atmosphere.*”⁵⁸⁹

- 5.200 The meeting was not minuted. Dr Fulton “*explained at the start of the meeting that Mrs Brown would take minutes. This caused anxiety and started a discussion about the need for legal advice before proceeding. I was concerned that this would delay the investigation.*”⁵⁹⁰ Accordingly, he chose to continue which was proper but I consider that the reluctance of those present to allow any record of the proceedings is indicative of defensiveness from the outset.

Fluids

- 5.201 In preparation for the review meeting Dr Nesbitt conducted some preliminary research and noted “*evidence relating to problems with low sodium containing solutions in children.*”⁵⁹¹ Some of the relevant medical literature was available at the meeting.⁵⁹²
- 5.202 Mr Makar recalled that “*most of the discussion was about the type of fluid*”⁵⁹³ and Dr Fulton recalled how “*Dr Nesbitt also felt a low sodium solution such as Solution 18 could be unsuitable for post-operative children as they were predisposed to hyponatraemia. However, he was aware that the use of Solution 18 was common practice in such situations in other hospitals in Northern Ireland. Dr Nesbitt offered to ring other hospitals in Northern Ireland to establish the current use of Solution 18.*”⁵⁹⁴

⁵⁸⁸ 095-011-049

⁵⁸⁹ WS-043-1 p.5

⁵⁹⁰ WS-043-3 p.11

⁵⁹¹ WS-035-2 p.13

⁵⁹² Dr Fulton T-04-09-13 p.72 line 7

⁵⁹³ Mr Makar T-13-03-13 p.190 line 1

⁵⁹⁴ WS-043-1 p.7

- 5.203 The review considered Raychel's notes and scrutinised the volume of IV fluids administered. There appears to have been consensus that mistakes had been made.⁵⁹⁵ Dr Fulton remembered that "*Dr Nesbitt reviewed the infusion rate of Solution 18 and felt it was too high for Raychel's weight.*"⁵⁹⁶ The retrospective and clarifying annotation of the record was made at this time by Drs Nesbitt and Jamison.

Electrolytes

- 5.204 Dr Fulton remembered that "*Sister Millar clearly stated that the blood electrolytes should have been checked in the afternoon because of the continued vomiting*"⁵⁹⁷ and that "*medical help should have been called earlier.*"⁵⁹⁸

Documentation

- 5.205 Sister Millar's "*main concern at that meeting was our failure in the documentation.*"⁵⁹⁹ She felt that the urinary output and the vomiting "*could have been better documented.*"⁶⁰⁰ Staff Nurse Noble recalled agreement in relation to this.⁶⁰¹

Vomiting

- 5.206 Dr Fulton stated that the nurses at the Review "*agreed that the vomiting was prolonged but not unusual after this type of surgery. They did not believe that the vomiting was excessive though they may not have witnessed all the vomit*"⁶⁰² Sister Millar recalled differences of opinion between the nurses as to how much Raychel had vomited, and "*there may have been a problem with the documentation of the vomit.*"⁶⁰³

⁵⁹⁵ Staff Nurse Noble T-27-02-13 p.168 line 8

⁵⁹⁶ WS-043-1 p.7

⁵⁹⁷ WS-043-3 p.15

⁵⁹⁸ Dr Fulton T-04-09-13 p.56 line 18

⁵⁹⁹ Sister Millar T-01-03-13 p.63 line 24

⁶⁰⁰ Sister Millar T-28-08-13 p.130 line 10

⁶⁰¹ Staff Nurse Noble T-27-02-13 p.191 line 18 & Staff Nurse Noble T-27-02-13 p.179 line 19

⁶⁰² WS-043-3 p.14

⁶⁰³ Sister Millar T-28-08-13 p.131 line 6

- 5.207 Dr Fulton found it *“hard to form a clear opinion of the volume of vomit... and the frequency”*⁶⁰⁴ not least because the nurses also indicated that *“the Ferguson family told them during 8 June that they... believed that Raychel’s vomiting was repeated and severe.”*⁶⁰⁵ Dr Fulton was therefore *“unable to reconcile the different views of the nurses and the family over the severity of the vomiting”*⁶⁰⁶ and could not *“appreciate which side was right.”*⁶⁰⁷
- 5.208 The review took no further steps to investigate the severity of the vomiting. It did not seek to interview the Ferguson family or the junior doctors and gave no consideration to the engagement of external experts.

Care of surgical patients on Ward 6

- 5.209 Sister Millar took the opportunity to emphasise that she *“had for some time been unhappy with... the system within the hospital for caring for surgical children.”*⁶⁰⁸ *“There was always a difficulty in getting doctors.”*⁶⁰⁹ It *“was my impression that there just weren’t enough.”*⁶¹⁰ *“I had spoken about this before.”*⁶¹¹
- 5.210 In addition, staff Nurse Noble suggested that the responsibility for overseeing fluid management should not rest with inexperienced JHOs⁶¹² because assisting such junior doctors placed additional burden on the nursing staff. Sister Millar expressed her view that it *“was totally unfair that the nurses had such responsibility for the surgical children. I felt it was unfair. I felt that we had to be the lead all the time in looking after the surgical children. We are nurses, we are not doctors. And whilst we do our very best, I don’t think we should be prompting doctors.”*⁶¹³ Dr Fulton could not

⁶⁰⁴ Dr Fulton T-04-09-13 p.53 line 14

⁶⁰⁵ WS-043-3 p.15

⁶⁰⁶ WS-043-3 p.15

⁶⁰⁷ Dr Fulton T-04-09-13 p.54 line 11

⁶⁰⁸ Sister Millar T-01-03-13 p.57 line 6

⁶⁰⁹ Sister Millar T-01-03-13 p.57 line 11

⁶¹⁰ Sister Millar T-01-03-13 p.59 line 24

⁶¹¹ Sister Millar T-01-03-13 p.60 line 19

⁶¹² Staff Nurse Noble T-27-02-13 p.175 line 20

⁶¹³ Sister Millar T-01-03-13 p.58 line 7

however recall this matter being raised with quite the force described by the nurses.⁶¹⁴

Informal review

5.211 At or about the same time and in an unrelated initiative, Mrs Margaret Doherty, the CSM, asked Sister Kathryn Little⁶¹⁵ to interview Staff Nurse Noble, review the patient notes and prepare a preliminary report.⁶¹⁶ Regrettably, this did not come to the attention of either Mrs Brown⁶¹⁷ or Dr Fulton⁶¹⁸ in time to be incorporated into the work of the formal review.⁶¹⁹ The CSM did not share it with Miss Duddy or pass on the information in her possession.⁶²⁰ Her investigation ended when she *“was told it was the Risk Management that were taking it over.”*⁶²¹

5.212 Professor Swainson considered that, at the same time and in the same way, the surgeons should have been internally reviewing the case for their own benefit and assisting Dr Fulton in his review.⁶²² It was, he said, a *“huge opportunity for learning.”*⁶²³ Neither Mr Bateson nor Mr Gilliland availed of the opportunity.

Action plan

5.213 In consequence of the review, Dr Fulton prepared and agreed a plan of action.⁶²⁴ He instituted a number of rapid and appropriate responses to address shortcomings recognised at review. It was decided:

- (i) To review the evidence about the use of Solution No.18 and to suggest change if indicated.⁶²⁵

⁶¹⁴ Dr Fulton T-04-09-13 p.64 line 6

⁶¹⁵ 328-001-003

⁶¹⁶ 316-085-009 & 316-085-011

⁶¹⁷ Mrs Brown T-02-09-13 p.74 line 13

⁶¹⁸ Dr Fulton T-04-09-13 p.40 line 6

⁶¹⁹ Mrs Brown T-02-09-13 p.74 line 14

⁶²⁰ Mrs Margaret Doherty T-09-09-13 p.77 line 16

⁶²¹ Mrs Margaret Doherty T-09-09-13 p.82 line 13

⁶²² Professor Swainson T-19-09-13 p.81 line 8

⁶²³ Professor Swainson T-19-09-13 p.76 line 18

⁶²⁴ 026-011-014

⁶²⁵ 022-108-336 & WS-035-2 p.33

- (ii) To display a wall chart detailing correct rates for IV infusion.
- (iii) To institute daily U&E assessments.
- (iv) To monitor and record all urinary and vomit output.⁶²⁶
- (v) To review the fluid balance documentation.
- (vi) To remove JHOs from the care of paediatric surgical patients.⁶²⁷
- (vii) To actively consider whether the anaesthetic team should assume responsibility for initial post-operative fluids.⁶²⁸

5.214 Despite the non-involvement of key personnel and the failure to make a record or produce a report, it should be recognised, as Dr Haynes did, that *“the Critical Incident Inquiry at Altnagelvin was convened at the first possible opportunity and... it is clear from the agreed action points... that the incident was treated with the utmost gravity...”*⁶²⁹ Mr Foster thought *“it was excellent that instant action was taken”* especially to remove JHOs from the care of paediatric surgical patients.⁶³⁰ The review was a timely response and did valuable work. It genuinely strove to prevent recurrence.

Systemic analysis

5.215 It has been noted that matters were not analysed in line with the then emerging methods of root-cause analysis. Professor Swainson advised that *“root cause analysis was a common methodology in Trusts in 2001 and does not appear to have been carried out.”*⁶³¹ It was not however common in Northern Ireland.

5.216 Dr McCord observed that Raychel’s death was caused by *“all the factors coming together.”*⁶³² This should have been apparent at the outset. In such circumstances and notwithstanding a lack of the precise skills necessary to

⁶²⁶ WS-043-3 p.15

⁶²⁷ Staff Nurse Noble T-27-02-13 p.125 line 5

⁶²⁸ WS-043-3 p.14 & Dr Makar T-13-03-13 p.192 line 1 & 026-005-006

⁶²⁹ 220-002-006

⁶³⁰ Mr Foster T-21-03-13 p.143 line 11

⁶³¹ 226-002-024

⁶³² Dr McCord T-13-03-13 p.143 line 22

perform root-cause analysis⁶³³ there could and should have been a broader consideration of the factors combining to permit the catastrophic outcome. Such might have included:

- (i) Communication between consultant and trainee at time of emergency admission and proposed operation.
- (ii) Supervision of junior doctors.
- (iii) Consultant responsibilities in respect of fluids.
- (iv) Communication between clinicians and parents.
- (v) Post-take ward round and consultant review.
- (vi) Appreciation of deterioration.
- (vii) Lines of communication when recovery plans do not go as expected.
- (viii) Implementation of external practice recommendations.
- (ix) Failure to address deficiencies identified by practice audit.
- (x) Concerns arising from aspects of nursing practice as outlined above at paragraph 5.122.
- (xi) Questions of overarching responsibility for paediatric surgical patients, their IV fluid therapy and the potential problems associated with adult surgeons providing part-time surgery for children.

5.217 I do not believe it would have been unreasonable for the Chief Executive, Mrs Stella Burnside, to expect some consideration of these matters given that she had herself contributed in May 2000 to the consultation document 'Confidence in the Future'⁶³⁴ which recommended that⁶³⁵:

⁶³³ Mrs Brown T-02-09-13 p.84 line 5

⁶³⁴ 321-004fi-001

⁶³⁵ 321-004fi-029

- (i) Senior doctors give clear guidance and supervision to junior doctors in training when tasks are delegated.
- (ii) Clear leadership roles and responsibilities be identified and established in clinical teams.
- (iii) Participation in clinical audit be made compulsory for all doctors.

With hindsight, Mrs Burnside regretted that she had not asked an external expert to join the review.⁶³⁶

Report of discontinuance of Solution No.18 at RBHSC

- 5.218 Dr Nesbitt having researched the medical literature, made enquiries about post-operative fluid management practice in other Northern Ireland hospitals. He reported to Dr Fulton and Mrs Brown on 14th June 2001 that at *“the Children’s Hospital anaesthetists have recently changed their practice and have moved away from No.18 Solution... to Hartmann’s Solution. This change occurred six months ago and followed several deaths involving No.18 Solution.”*⁶³⁷
- 5.219 The RVH records seemingly confirm a decline in the use of Solution No. 18 in the months prior to Raychel’s death.⁶³⁸ Dr Carson gave it as his understanding *“that a decision was taken by anaesthetists in the RBHSC to change their use of No.18 solution. This decision was taken at a local level within the RBHSC.”*⁶³⁹ He felt that in those circumstances *“there would be justification”* for informing other hospitals of this change.⁶⁴⁰
- 5.220 Dr Fulton was disappointed that the RBHSC had not informed Altnagelvin at the time about such an important matter of patient safety⁶⁴¹ and Dr Nesbitt believed that had Altnagelvin known of the RBHSC move towards

⁶³⁶ Mrs Burnside T-17-09-13 p.81 line 9

⁶³⁷ 022-102-317

⁶³⁸ 319-087a-001 & 319-087c-003 & 321-073-001

⁶³⁹ 326-003a-001

⁶⁴⁰ Dr Carson T-30-08-13 p.40 line 6

⁶⁴¹ Dr Fulton T-04-09-13 p.77 line 6 et seq

discontinuance of Solution No.18 at the time, they would have considered it *“a strong message and one we would have acted on”*⁶⁴²

5.221 Dr Elaine Hicks,⁶⁴³ Clinical Director of Paediatrics at RBHSC, whilst herself unable to recall any change in the use of Solution No.18⁶⁴⁴ did agree that it would be reasonable to criticise the RBHSC if, as the Regional Paediatric Centre, it had made a significant change in its practice and failed to advise other hospitals.⁶⁴⁵ However, it is to be recognised that there were no systems in place at that time to formally disseminate such information and the responsibility may not have been fully understood within the RBHSC. The matter might most appropriately have been made the subject of a report to the Department but no guidance was available and as Dr Crean said there was no *“culture at the time to do things like that.”*⁶⁴⁶

5.222 Although no explanation for this change was forthcoming from any source within the RBHSC, I am satisfied from the evidence that there was a move away from the use of Solution No.18 and for clinical reasons. Exactly what those reasons were is a matter of speculation.⁶⁴⁷ The catalyst may have been the publication in the British Medical Journal (‘BMJ’) of Halberthal’s article on the use of hypotonic solutions and hyponatraemia in March 2001.⁶⁴⁸ It was therefore a learning issue which should have been shared with other hospitals. That was in part the role of the RBHSC as the regional centre and a role which was subsequently acknowledged by the Department when it published its own guidelines on hyponatraemia.⁶⁴⁹

Written report

5.223 Altnagelvin’s critical incident protocol specified that *“the Chief Executive will be kept informed by the RMCO throughout the investigation.”*⁶⁵⁰ Dr Fulton and Mrs Brown gave the Chief Executive an oral briefing on the evening of

⁶⁴² WS-035-2 p.34

⁶⁴³ 328-001-004

⁶⁴⁴ WS-340-1 p.2

⁶⁴⁵ Dr Hicks T-07-06-13 p.43 line 12

⁶⁴⁶ Dr Crean T-11-09-13 p.68 line 14

⁶⁴⁷ 321-073-001 & WS-360-1 p.2 & Dr Taylor T-18-09-13 p.8 line 7

⁶⁴⁸ 036a-056-142 & Dr Taylor T-18-09-13 p.16 line 12

⁶⁴⁹ 077-005-008

⁶⁵⁰ 022-109-338

the Critical Incident Review.⁶⁵¹ There was no written summary of the case, or of the review or action plan, nor any briefing paper for the Chief Executive in preparation for her next Board meeting.⁶⁵² Whilst Mrs Brown did provide a written update for the Chief Executive on 9th July,⁶⁵³ I am struck by the general lack of documentation.

5.224 Having initiated the Critical Incident Review in the context of suspected clinical mismanagement, Mrs Burnside should have expected and required a critical incident report. She did not⁶⁵⁴ and despite the Critical Incident Protocol requirement,⁶⁵⁵ to “*provide the Chief Executive with a written report with conclusions and recommendations within an agreed timescale*”,⁶⁵⁶ none was offered her. Mrs Brown accepted that this “*should have been done*”⁶⁵⁷ and that it was her responsibility.⁶⁵⁸ Dr Fulton felt that in the circumstances he probably should have done it himself⁶⁵⁹ and accepted that this failure was a “*deficit*.”⁶⁶⁰ Remarkably, Mrs Burnside did not herself consult the protocol for guidance.⁶⁶¹ She fully acknowledged her failing in this regard.⁶⁶² I consider that this confirms a lack of commitment to the processes of clinical governance at that time. Nonetheless, Mrs Burnside said she “*felt fully informed...*”⁶⁶³

5.225 Subsequently however, she was to erroneously recount her “*clear understanding that the Critical Incident Review established that Raychel’s care and treatment were consistent with custom and practice*,”⁶⁶⁴ that “*an unusual or idiosyncratic response had precipitated the leading to the tragic death*”⁶⁶⁵ and that “*there were no indicators of persistent patterns of poor care to cause the alarm bells or to trigger an external review.*”⁶⁶⁶ I believe

⁶⁵¹ Dr Fulton T-04-09-13 p.70 line 5

⁶⁵² Mrs Brown T-02-09-13 p.106 line 17

⁶⁵³ 022-097-307

⁶⁵⁴ Mrs Burnside T-17-09-13 p.68 line 21

⁶⁵⁵ 022-109-338

⁶⁵⁶ 022-109-338

⁶⁵⁷ Mrs Brown T-02-09-13 p.83 line 14

⁶⁵⁸ Mrs Brown T-02-09-13 p.82 line 4

⁶⁵⁹ Dr Fulton T-04-09-13 p.10 line 3

⁶⁶⁰ Dr Fulton T-04-09-13 p.11 line 6

⁶⁶¹ Mrs Burnside T-17-09-13 p.84 line 10

⁶⁶² Mrs Burnside T-17-09-13 p.70 line 8

⁶⁶³ Mrs Burnside T-17-09-13 p.93 line 13

⁶⁶⁴ WS-046-2 p.14

⁶⁶⁵ WS-046-2 p.26

⁶⁶⁶ WS-046-2 p.25

that had an appropriate written report been submitted to the Chief Executive she could not have made such ill-informed statements.

- 5.226 The Director of Nursing was responsible for the implementation of the Critical Incident Protocol. However, she made no attempt to find out what had been learned at the Review,⁶⁶⁷ did not ask to see the statements of her nurses⁶⁶⁸ and took no steps to request a written report.⁶⁶⁹ Whilst she accepted criticism in this regard,⁶⁷⁰ she was unable to explain herself. Accordingly, Miss Duddy made no report on the nursing issues to the Chief Executive or the Board and was not in a position to reassure as to the nursing on Ward 6.⁶⁷¹ The Board meeting minutes for July 2001, which would have confirmed what was disclosed about Raychel's death are missing. Miss Duddy said she could "*only assume that someone got access to them and didn't replace them.*"⁶⁷² In such circumstances, I consider it unlikely that the Board could have been sufficiently informed to know whether the clinical services for children were safe or not.
- 5.227 Additionally, it is much to be regretted that at that time, no one thought to advise Mr and Mrs Ferguson as to the causes of their daughter's death or the findings at review. The clinical shortcomings and the agreed action plan were not explained. They should have been and such silence could not easily have been maintained had a written report been available. It is easy to understand how, in such circumstances, the failure to report in writing might be interpreted as defensive.
- 5.228 A written report would have been an effective channel of communication with the Ferguson family. Professor Swainson observed that "*in my experience over many, many years [families] have always said that what they are interested in is... what is being done to stop that happening again to anybody else... communicating with them broadly the lessons learned*

⁶⁶⁷ Miss Duddy T-29-08-13 p.49 line 9 & Mrs Margaret Doherty T-09-09-13 p.85 line 14

⁶⁶⁸ Miss Duddy T-29-08-13 p.47 line 25

⁶⁶⁹ Miss Duddy T-29-08-13 p.47 line 5

⁶⁷⁰ Miss Duddy T-29-08-13 p.56 line 21

⁶⁷¹ Miss Duddy T-29-08-13 p.76 line 16

⁶⁷² Miss Duddy T-29-08-13 p.62 line 5

*and what has been put in place... is a key piece of the interaction with the family.”*⁶⁷³

Actions: post-review

- 5.229 Professor Swainson also advised that *“a Critical Review would typically meet again after a few weeks to check that the agreed actions had been completed and begin the task in determining what went wrong.”*⁶⁷⁴ Dr Fulton agreed that this *“would have been a very good idea.”*⁶⁷⁵ However no such meeting took place nor indeed was there any surgical consideration of the issues whether at morbidity/mortality meetings or audit.⁶⁷⁶
- 5.230 Dr Fulton’s action plan was not however forgotten and work started on its implementation. Mrs Brown was able to give an ‘update report’ to Mrs Burnside on 9th July 2001 confirming daily U&E checks for post-operative children receiving IV fluids⁶⁷⁷ and display of a chart detailing IV infusion rates,⁶⁷⁸ confirmation was given that these matters had been brought to the attention of junior surgical doctors.
- 5.231 She also reported the decision to discontinue the use of Solution No.18 for paediatric surgical patients. This had not proved straightforward because *“one of the surgeons [was] not supporting this change”*⁶⁷⁹ on the basis that *“he saw no reason to change and was happy to use No.18 Solution.”*⁶⁸⁰ Further review of the medical literature ensued and then, with some reservation, Hartmann’s rather than Solution No.18 eventually became the post-operative fluid for paediatric surgical patients in Altnagelvin. This was the determined achievement of Dr Nesbitt and was to eventually result in the complete removal of Solution No.18 from Ward 6.⁶⁸¹ In this he was

⁶⁷³ Professor Swainson T-19-09-13 p.97 line 2

⁶⁷⁴ 226-002-023

⁶⁷⁵ Dr Fulton T-04-09-13 p.69 line 24

⁶⁷⁶ Miss Duddy T-29-08-13 p.109 line 23

⁶⁷⁷ 022-097-307

⁶⁷⁸ 026-009-010

⁶⁷⁹ 022-097-307

⁶⁸⁰ WS-035-2 p.30

⁶⁸¹ Dr Nesbitt T-03-09-13 p.228 line 19

ahead of his time. It was to take until December 2012 for the British National Formulary for Children⁶⁸² to follow suit.

- 5.232 The update report also recorded the work of the CSM, the Clinical Effectiveness Co-ordinator and some of the nursing staff in relation to fluid balance issues.⁶⁸³ They had agreed detailed matters relating to the management of fluids,⁶⁸⁴ fluid balance sheets, quantification of vomit volume and the necessity to encourage doctors to record and document.⁶⁸⁵
- 5.233 Additionally, they considered important organisational matters including the concern of “*nursing staff that surgeons are unable to give a commitment to children on Ward 6*” and made a request that “*paediatricians maintain overall responsibility for surgical children on Ward 6?*”⁶⁸⁶ The Director of Nursing took no part in these discussions.⁶⁸⁷ Dr Fulton “*didn’t call a meeting but in retrospect, I should have because that seemed to be raising an increasing concern.*”⁶⁸⁸ This confirms that the Critical Incident Review should indeed have reconvened to finish its work.

Arranging to meet Mr and Mrs Ferguson

- 5.234 Immediately after the Critical Incident Review, Mrs Burnside, having received her oral briefing and reviewed “*the issues and actions identified from the analysis*”⁶⁸⁹ and “*knowing the child should not have died*”⁶⁹⁰ and being conscious of a “*duty of care to the parents and family*”⁶⁹¹ wrote on 15th June 2001 to Mr and Mrs Ferguson to “*express to you my sincere sympathy following the death of your daughter Rachel [sic]. We are all deeply saddened and appreciate the loss you must be feeling. The medical and nursing staff who cared for Rachel would like to offer you both their sincere condolences and they would also like to offer you the opportunity*

⁶⁸² 311-048-001

⁶⁸³ 022-097-307

⁶⁸⁴ Mrs Margaret Doherty T-09-09-13 p.86 line 10

⁶⁸⁵ Sister Millar T-28-08-13 p.146 line 15

⁶⁸⁶ 022-097-307

⁶⁸⁷ Sister Millar T-28-08-13 p.160 line 12

⁶⁸⁸ Dr Fulton T-04-09-13 p.86 line 23 & Dr McCord T-13-03-13 p.22 line 17

⁶⁸⁹ 098-267-722

⁶⁹⁰ Mrs Burnside T-17-09-13 p.114 line 1

⁶⁹¹ 098-267-722

*to meet with them if you feel this would be of any help. If you wish me to arrange this for you please contact my department...*⁶⁹²

- 5.235 Mrs Burnside acknowledged that *“at the time I wrote the letter I really had very limited knowledge”*⁶⁹³ – *“but I did know that I would have to meet with the family because this family would want explanations.”*⁶⁹⁴ Professor Swainson considered it *“very good of the Chief Executive to take that lead in this particular circumstance.”*⁶⁹⁵
- 5.236 Mrs Ferguson remembers that *“as time went on, I was getting more annoyed because at this stage Raychel had died and was buried and we still did not know what had happened... We got the letter on the 15th, I remember phoning Altnagelvin, it was a while after that, and I wanted to have a meeting.”*⁶⁹⁶ The family quite simply *“wanted to know why Raychel had died.”*⁶⁹⁷
- 5.237 Contact was made and a meeting arranged for Monday 3rd September 2001 at the hospital. Mrs Burnside explained that *“it was our practice to be open with patients and their families if and when there was an untoward event.”*⁶⁹⁸ This was therefore the opportunity for Altnagelvin to openly and honestly explain the circumstances of Raychel’s death to her family.

Monday 3rd September meeting

- 5.238 The meeting took place and was minuted⁶⁹⁹ by Altnagelvin’s ‘Patient Advocate’ Mrs Anne Doherty.⁷⁰⁰ Her note has been accepted as reliable.⁷⁰¹ In attendance were Mrs Ferguson, her brother,⁷⁰² her sister Kay Doherty, Dr Ashenhurst, the family GP, a family friend and Ms Helen Quigley of the WHSSC. Mrs Burnside attended with Drs Nesbitt and McCord, Sister Millar

⁶⁹² 022-085-225

⁶⁹³ Mrs Burnside T-17-09-13 p.137 line 21

⁶⁹⁴ Mrs Burnside T-17-09-13 p.137 line 7

⁶⁹⁵ Professor Swainson T-19-09-13 p.103 line 11

⁶⁹⁶ Mrs Ferguson T-26-03-13 p.167 line 17

⁶⁹⁷ Ms Kay Doherty T-18-09-13 p.169 line 15

⁶⁹⁸ 098-267-724

⁶⁹⁹ 022-084-215

⁷⁰⁰ 328-001-002/ No relation to Kay Doherty

⁷⁰¹ Staff Nurse Bryce T-04-03-13 p.179 line 12

⁷⁰² Ms Kay Doherty T-18-09-13 p.167 line 14

and Staff Nurse Noble. Mrs Burnside explained it was the *“staff who had been involved in Raychel’s care and who wished to meet the family [who] attended the meeting.”*⁷⁰³

- 5.239 On this occasion the Patient Advocate was not representing the interests of the Ferguson family, nor was she present as an independent advocate but attended at the request of the Chief Executive *“to take minutes.”*⁷⁰⁴ Notwithstanding that Mrs Burnside intended her *“to make whatever notes [she] needed for her to be able to work with the family and support them in whatever way”*⁷⁰⁵ she gave her no instructions to that effect. Accordingly, Mrs Anne Doherty did not introduce herself then or at any time to the Ferguson family⁷⁰⁶ and made no contribution to the meeting.⁷⁰⁷ Subsequently she did not share her minutes with Mrs Ferguson⁷⁰⁸ but sent them directly to Drs Nesbitt and McCord and Sister Millar⁷⁰⁹ and showed them to the Chief Executive.⁷¹⁰ She did not support the family.
- 5.240 That was a mistake because as Professor Swainson observed *“given the importance, given the sensitivity, given the high emotional state of some of the people participating in that meeting particularly from the family’s perspective, the Patient Advocate had a very important role, particularly if she’d had a pre-meeting with the family because that would have enabled her in advance to understand what the family’s complaints, concerns and enquiries were. It would have enabled her to help them frame them in a way that the senior people at the meeting would understand.”*⁷¹¹
- 5.241 Notably absent from the meeting were Mr Gilliland and his surgical team. He had been invited to attend but declined on the basis that he had not treated Raychel and thought there was little he could do to ease Mrs Ferguson’s grief.⁷¹² In so doing he acted against the express advice of his

⁷⁰³ WS-046-1 p.6

⁷⁰⁴ WS-325-1 p.4 & 321-076-006

⁷⁰⁵ Mrs Burnside T-17-09-13 p.139 line 13

⁷⁰⁶ WS-326-1 p.5

⁷⁰⁷ Mrs Anne Doherty T-09-09-13 p.22 line 16

⁷⁰⁸ Mrs Anne Doherty T-09-09-13 p.24 line 22

⁷⁰⁹ 321-076-008

⁷¹⁰ WS-325-1p.4 & Mrs Anne Doherty T-09-09-13 p.34 line 2

⁷¹¹ Professor Swainson T-19-09-13 p.108 line 4

⁷¹² Mr Gilliland T-14-03-13 p.217 line 15

Medical Director, Dr Fulton.⁷¹³ Mr Gilliland explained that he *“didn’t think there was a particular surgical issue. I understand now... that there were surgical issues and that there were questions that the family wished to have answers... if they feel that I have let them down at that particular moment in time then I am very sorry.”*⁷¹⁴ Raychel was a surgical patient and suffered from inadequate surgical care. I consider that Mr Gilliland’s failure to attend was a failure of both professional duty and hospital governance.

5.242 Neither the Medical Director nor the Director of Nursing attended the meeting. No external expert or independent figure of authority was in attendance. None of the doctors responsible for treating Raychel before her collapse was present. The meeting convened without Raychel’s medical notes. Furthermore, Mrs Burnside had no record of the Critical Incident Review and claimed not to know that there was disagreement between her nurses and the family about the extent of Raychel’s vomiting.⁷¹⁵ The Chief Executive had neither prepared for nor been briefed for the meeting.

5.243 Nor were the other Altnagelvin representatives prepared.⁷¹⁶ Dr McCord recalled *“there was no agenda, no plan, no prior thought as to who was going to speak. The setting wasn’t good, we arranged ourselves... in a cold blue coloured room, it was an echoey Portakabin.”*⁷¹⁷ Sister Millar recalled she *“didn’t know why [she] was attending or what [she] was supposed to do.”*⁷¹⁸ Professor Swainson considered a *“pre-meeting would have been essential... a central part of the preparation.”*⁷¹⁹

5.244 Mrs Burnside said *“I look back now and think, why didn’t I postpone the meeting, why didn’t I structure it, why didn’t I see what state Mrs Ferguson was in, did we have all of the information that was available? All of those*

⁷¹³ Mr Gilliland T-28-08-13 p. 91 line 6

⁷¹⁴ Mr Gilliland T-14-03-13 p. 216-217

⁷¹⁵ Mrs Burnside T-17-09-13 p.145 line 18

⁷¹⁶ Mrs Burnside T-17-09-13 p.154 line 11

⁷¹⁷ Dr McCord T-10-09-13 p.183 line 1

⁷¹⁸ Sister Millar T-28-08-13 p.156 line 7

⁷¹⁹ Professor Swainson T-19-09-13 p.113 line 19

*are lessons that sadly I have learnt and sadly Mrs Ferguson has suffered with, and I'm profoundly sorry that that is so."*⁷²⁰

5.245 The meeting cannot have been easy for any of the participants and obviously required care and sensitivity on the part of Altnagelvin. It was necessary for them to effectively communicate the harsh facts of Raychel's death, meaningfully discuss failings in her care and at the same time support a deeply stressed family. Training and preparation for such a difficult meeting were essential.

5.246 A serious breakdown in communication and understanding seems to have occurred at the meeting because Mrs Ferguson recalled leaving *"the meeting totally confused, believing it to be pointless. I remember feeling a sense of Raychel being blamed for her own death or that we were in some way responsible."*⁷²¹ She said *"I look back on this meeting now with some disgust, anger and annoyance, to me it was just a beginning of a cover-up by Altnagelvin Hospital..."*⁷²² *"Even to this day I really do find it very hard not to get agitated and angry looking back at the behaviour of Altnagelvin at that meeting. Their behaviour was appalling as they knew, or must have known, full well what happened to Raychel by that stage."*⁷²³

5.247 This impression of the meeting was not however shared by Mrs Burnside who said that they met *"with the clear understanding that our hospital had not managed to care for that child in a way that would have prevented her dying."*⁷²⁴ She believed *"Mrs Ferguson was given our honest understanding of the issues..."*⁷²⁵ and recalled having offered *"explanations around the following issues, namely the process of Critical Incident Review, the research findings on post-operative reaction leading to hyponatraemia, our subsequent actions to prevent risk of recurrence, and the measures in place to monitor improvement."*⁷²⁶

⁷²⁰ Mrs Burnside T-17-09-13 p.160 line 5

⁷²¹ WS-020-1 p.20

⁷²² WS-020-1 p.20

⁷²³ WS-020-1 p.21

⁷²⁴ Mrs Burnside T-17-09-13 p.114 line 8

⁷²⁵ WS-046-2 p.27

⁷²⁶ WS-046-1 p.7

- 5.248 Sister Millar supported this account and said that Dr Nesbitt acknowledged deficiencies, was very sympathetic and gave an apology.⁷²⁷ She recalled a “very long account... *I thought it was very fair, I thought it was honest and I thought he was open.*”⁷²⁸ Dr Nesbitt agreed, thinking “*we had been open and honest and helpful*”⁷²⁹ and had “*a clear memory of discussing the reason why I thought Raychel had died... this was not recorded*”⁷³⁰ and Staff Nurse Noble specifically recalled “*Dr Nesbitt saying that she had got a little bit too much fluid.*”⁷³¹
- 5.249 However, the minute of the meeting records a very different conversation. It makes no reference to the Critical Incident Review, or of failings identified, actions taken or measures put in place. It records nothing about Altnagelvin’s “*subsequent actions to prevent risk of recurrence,*”⁷³² noting only that “*Mrs Burnside said... the hospital would look at things and see if there were ways of improving care.*”⁷³³
- 5.250 I found it telling that Raychel’s GP, Dr Ashenhurst, had “*no recollection of deficiencies in the care of Raychel being mentioned at the meeting by the representatives.*”⁷³⁴
- 5.251 Furthermore, I do not consider Sister Millar a reliable witness given that even after she had learned of the many failings in Raychel’s care, she continued to assert to this Inquiry her confidence that Raychel had “*received the highest standard of care from nursing staff in Ward 6*”⁷³⁵ and that she “*had been recovering very well on Friday the 8th.*”⁷³⁶
- 5.252 The minutes record some most unsatisfactory questions and answers:

⁷²⁷ Sister Millar T-01-03-13 p.79 line 23 *et seq*

⁷²⁸ Sister Millar T-01-03-13 p.82 line 19

⁷²⁹ Dr Nesbitt T-03-09-13 p.240 line 18

⁷³⁰ WS-035-2 p.24

⁷³¹ WS-049-4 p.13

⁷³² WS-046-1 p.7 & Mrs Burnside T-17-09-13 p.155 line 25

⁷³³ 022-084-221

⁷³⁴ WS-333-1 p.3

⁷³⁵ WS-056-1 p.9

⁷³⁶ WS-056-1 p.9

- (i) *“Why did the nurses not look about her when she was so sick and had a sore head? Dr Nesbitt said that on the day following surgery, the first post op. day, people can be sick and have a sore head.”*⁷³⁷
- (ii) *“Raychel was bringing up blood when she vomited why was this? Dr Nesbitt said that when you are vomiting the back of your throat can become irritated and can bleed.”*⁷³⁸
- (iii) *“Mrs Doherty asked what were Raychel’s sodium levels the first time they were done? What is routine? What checks do you do? Dr McCord said bloods are checked routinely on admission. 36 hours prior to this Raychel’s bloods were normal.”*⁷³⁹

5.253 No sincere attempt was made to answer the family’s reasonable questions about the evaluation of Raychel’s sodium levels or her therapy. The minutes record Dr Nesbitt’s questionable explanations⁷⁴⁰ that *“the reason why they were not done routinely is that it requires a needle into the vein to take the blood”*⁷⁴¹ and *“the fluids used are the standard across the country... nothing we were doing was unusual.”*⁷⁴² Such understanding Mrs Ferguson may have had as to what happened to her daughter cannot have been assisted. Indeed as her sister Kay Doherty concluded *“we had no more knowledge leaving than what we had when we went in.”*⁷⁴³

5.254 I am satisfied that the Altnagelvin representatives knew a very great deal more than they were prepared to tell the Ferguson family. Only weeks before Mrs Burnside had herself received background briefing on hyponatraemia and been informed that *“the problem today of dilutional hyponatraemia is well recognised...”*⁷⁴⁴

⁷³⁷ 022-084-217

⁷³⁸ 022-084-217

⁷³⁹ 022-084-220

⁷⁴⁰ 022-084-215

⁷⁴¹ 022-084-220

⁷⁴² 022-084-223

⁷⁴³ WS-326-1 p.6

⁷⁴⁴ 021-056-135

- 5.255 In addition and at about the same time as the meeting⁷⁴⁵ Dr Nesbitt was preparing a PowerPoint presentation about Raychel's case entitled "*Fatal Hyponatraemia following surgery*."⁷⁴⁶ In this he identified shortcomings in her treatment and in particular noted that she was a risk patient for SIADH,⁷⁴⁷ had received excessive maintenance fluids,⁷⁴⁸ that her fluid balance documentation was deficient⁷⁴⁹ and that there had been a failure to test her U&Es.⁷⁵⁰ In addition, he made reference to the British Medical Journal "*Lesson of the Week*" which had appeared only two months before Raychel's admission and specifically warned not to "*infuse a hypotonic solution if the plasma sodium concentration is less than 138mmol/L*."⁷⁵¹ These were matters which were not shared with Mrs Ferguson either at the meeting or indeed at any time thereafter as they could and should have been. Even Mrs Burnside "*perceived... that the family was concerned that we weren't telling everything*."⁷⁵²
- 5.256 Mrs Kay Doherty suggested to this Inquiry that "*if they had said openly, and told us... that they had a meeting and that they had discovered problems and they had found things weren't done right, that simple care was not given to Raychel... I don't think we'd all be sitting here today if they had been open and honest with us in that meeting*."⁷⁵³ Regrettably, the Altnagelvin approach demonstrated only limited understanding of what the meeting was really for and what the needs of the family were.
- 5.257 The meeting lasted one hour and fifteen minutes.⁷⁵⁴ Mrs Ferguson gave evidence that "*Dr McCord has told us personally that the meeting was a disaster*."⁷⁵⁵ Unsurprisingly, the Ferguson family did not seek any further meeting with the Chief Executive or the doctors and nurses of Altnagelvin.

⁷⁴⁵ Dr Nesbitt T-03-09-13 p.115 line 10

⁷⁴⁶ 095-010-046ag

⁷⁴⁷ 021-054-120

⁷⁴⁸ 021-054-128

⁷⁴⁹ 021-054-124

⁷⁵⁰ 021-054-124

⁷⁵¹ 070-023b-217

⁷⁵² Mrs Burnside T-17-09-13 p.163 line 11

⁷⁵³ Ms Kay Doherty T-18-09-13 p.184 line 11

⁷⁵⁴ 022-084-224

⁷⁵⁵ Mr and Mrs Ferguson T-26-03-13 p.177 line 14

5.258 Not only did the meeting achieve little that was useful but it actually gave rise to distrust, suspicion and anger, I attribute this to lack of preparation and transparency compounded by insensitivity and poor communication skills. Further, I conclude that relevant information was withheld from the Ferguson family. Such was a serious breach of trust and professional duty and violated Mrs Ferguson's right to know. Mrs Burnside was present, in charge and responsible.

The Ferguson family contact RBHSC

5.259 The Ferguson family, having failed to obtain the answers they wanted from Altnagelvin, sought a meeting with Dr Crean of the RBHSC. This prompted him to contact the Coroner on 11th October 2001 to emphasise that *"there was mismanagement of this case in the Altnagelvin Hospital... The fluid balance was the key to why her condition deteriorated – dilutional hyponatraemia."*⁷⁵⁶

5.260 It was very proper that Dr Crean should have brought this to the Coroner's attention. Nonetheless, there remains the question as to whether he should not also have brought it to the attention of Mr and Mrs Ferguson. He had been Raychel's admitting Consultant to the RBHSC, had joint care of her⁷⁵⁷ and should have felt a general professional obligation, as well as a duty, under paragraph 23 of the GMC's 'Good Medical Practice,' to tell them.⁷⁵⁸ However, the idea of a meeting was not pursued by the Fergusons and the opportunity was lost. It would be harsh to criticise in this regard but it is a matter which should have been considered.

Altnagelvin dissemination

5.261 By way of contrast to the way Altnagelvin communicated with the family, it made admirable, early and sustained efforts to bring her death and the risks

⁷⁵⁶ 012-052c-275

⁷⁵⁷ Dr Crean T-11-09-13 p.19 line 9

⁷⁵⁸ 314-014-012 & Dr Carson T-30-08-13 p.24 line 3

connected with the use of Solution No.18 to the attention of interested parties outside Altnagelvin.

- 5.262 On 18th June 2001, Dr Fulton attended a meeting of hospital Medical Directors in Belfast. It was chaired by Dr Carson, Medical Director of RGHT and Medical Advisor to the Chief Medical Officer ('CMO'). Before the meeting and in conversation with Dr Jim Kelly, Medical Director of the Erne Hospital⁷⁵⁹ Dr Fulton discovered that they had each in their respective hospitals experienced fluid balance problems associated with the use of Solution No.18 and that each had learnt from separate sources that Solution No.18 had been discontinued at the RBHSC.⁷⁶⁰
- 5.263 Dr Kelly believes, in this context, that he told Dr Fulton about the death of a child patient (Lucy Crawford). Dr Fulton is very clear that he did not.⁷⁶¹ The evidence does not convince that Dr Fulton knew about Lucy's case at that time and indeed none of his subsequent actions or communications suggest that he did.
- 5.264 Drs Fulton and Kelly decided that the matter should be raised at the meeting. Dr Fulton recalled how he then outlined the circumstances of Raychel's death and "*told the medical directors present at the meeting that in my opinion there was evidence that Solution 18 was hazardous in post-operative children*"⁷⁶² and "*that there should be regional guidelines.*"⁷⁶³ He recalled other anaesthetists at the meeting acknowledging some 'near misses' in this context.
- 5.265 The meeting was un-minuted and whilst Dr Fulton believes that he referred to the discontinuance of Solution No.18 at the RBHSC, Dr Carson has no such recollection and could "*nearly honestly say that was not raised with me.*"⁷⁶⁴ In any event, Dr Carson acted promptly upon the matter and almost

⁷⁵⁹ Dr Kelly T-13-06-13 p.23 et seq
⁷⁶⁰ Dr Fulton T-04-09-13 p.88 line 18
⁷⁶¹ Dr Fulton T-04-09-13 p.90 line 14
⁷⁶² 095-011-054
⁷⁶³ 012-039-179
⁷⁶⁴ Dr Carson T-30-08-13 p.81 line 10

immediately brought the issue of hyponatraemia and low saline solutions to the attention of Dr Henrietta Campbell, the CMO.

5.266 On 22nd June 2001 Dr Fulton telephoned Dr Campbell personally to inform *“her of circumstances of the death [and] suggested she should publicise the dangers of Hyponatraemia when using low saline solutions in surgical children. I said there was a need for regional guidelines. Dr Campbell suggested that CREST (Regional Guidelines Group) might do this.”*⁷⁶⁵

5.267 Dr Fulton also telephoned Mr Martin Bradley,⁷⁶⁶ Chief Nursing Officer of the Western Area Health Board and notified him of Raychel’s death.⁷⁶⁷

5.268 Additionally he made contact with Dr William McConnell,⁷⁶⁸ Director of Public Health WHSSB, about the case and forwarded the BMJ extracts about hyponatraemia. Dr McConnell in turn raised the matter at the next meeting of Northern Ireland’s Directors of Public Health on 2nd July 2001 in the presence of both the Chief and Deputy Chief Medical Officers. He described the *“recent death in Altnagelvin Hospital of a child due to Hyponatraemia caused by fluid imbalance. Current evidence shows that certain fluids are used incorrectly post operatively. It was agreed that guidelines should be issued to all units.”*⁷⁶⁹ Dr McConnell described this as *“the usual method at that time of raising professional or clinical concerns which had arisen at any one Board, but which potentially, had wider relevance.”*⁷⁷⁰

5.269 On 5th July 2001, Dr McConnell also wrote to his fellow Directors of Public Health enclosing Dr Fulton’s extracts from the BMJ and recommending that the matter be brought to the attention of paediatricians generally. Dr McConnell suggested that for *“more specific information... Dr Fulton would*

⁷⁶⁵ 012-039-180
⁷⁶⁶ 325-002-010
⁷⁶⁷ 095-011-055
⁷⁶⁸ 328-001-005
⁷⁶⁹ 320-080-005
⁷⁷⁰ WS-047-1 p.3

*be happy to discuss this with anyone.*⁷⁷¹ The issue was thus quickly and efficiently disseminated.

- 5.270 Dr Fulton kept his Chief Executive informed of these developments and she in turn reinforced his approach by writing to the CMO to emphasise her concern *“to ensure that an overview of the research evidence is being undertaken. I believe that this is a regional, as opposed to a local hospital issue, and would emphasise the need for a critical review of evidence. I would be extremely grateful if you would ensure that the whole of the medical fraternity learned of the shared lesson.”*⁷⁷² The CMO responded by setting up a working group to draft guidelines and indicated that Dr Nesbitt would be involved.
- 5.271 Taking the issue directly to the CMO was a central part of Altnagelvin’s alert to the medical profession about the risks of hyponatraemia and Solution No.18. They are to be praised particularly, because as Professor Swainson pointed out, *“there was no explicit duty on the Trust to communicate a rare fatal event to the Board or to the Department or more generally.”*⁷⁷³
- 5.272 These very public responses to Raychel’s death stand in disquieting contrast to the failure of the RGHT to share the information about dilutional hyponatraemia and Solution No.18 which had emerged from Adam’s inquest. It provides illustration of how rapid and widespread reporting of a clinical danger can stimulate rapid and meaningful response.

Chief Medical Officer’s Working Group on Hyponatraemia

- 5.273 Preparation of clinical guidelines did not normally come within the CMO’s remit⁷⁷⁴ but she made an exception for hyponatraemia and personally oversaw the process *“because of the level of concern expressed by people at Altnagelvin.”*⁷⁷⁵

⁷⁷¹ 022-094-303

⁷⁷² 022-093-301

⁷⁷³ 226-002-025

⁷⁷⁴ WS-075-2 p.5

⁷⁷⁵ WS-075-2 p.6

- 5.274 Her Working Group first met on 26th September 2001⁷⁷⁶ and drew on the specialism of Drs Taylor, Nesbitt, Loughrey, Crean and Jenkins, amongst others. These doctors had knowledge not only of hyponatraemia and of Raychel's case but also individually of at least some of the other cases being scrutinised by this Inquiry.⁷⁷⁷ Dr Nesbitt confirmed that "*Raychel was mentioned at the meeting because I kept on and on about it.*"⁷⁷⁸
- 5.275 The Working Group produced draft guidelines for the prevention of hyponatraemia in November 2001. However, the draft failed to address Dr Nesbitt's concern that Solution No.18 was of itself a major factor in children's post-operative hyponatraemia. Dr Nesbitt wrote again to the Chair of the Working Group to express disappointment that the guidance made no reference to Solution No.18 and asked "*what evidence do you need exactly. We had a child who died and for that reason I feel strongly that No.18 Solution is an inappropriate fluid to use...You can be sure that it will remain highlighted as a risk in any protocol produced by Altnagelvin Hospital.*"⁷⁷⁹ He was determined that "*Solution No.18 should be named and shamed.*"⁷⁸⁰
- 5.276 However, when the Department published its guidance on the 'Prevention of Hyponatraemia in Children' in March 2002⁷⁸¹ it provided general advices only and did not warn specifically against the use of Solution No.18. The guidelines acknowledged the regional role of the RBHSC by indicating that "*in the event of problems that cannot be resolved locally, help should be sought from Consultant Paediatricians/Anaesthetists at the PICU, RBHSC.*"⁷⁸²

⁷⁷⁶ 007-048-094

⁷⁷⁷ 328-003-001

⁷⁷⁸ Dr Nesbitt T-03-09-13 p.161 line 8

⁷⁷⁹ 007-003-005

⁷⁸⁰ Dr Nesbitt T-03-09-13 p.175 line 18

⁷⁸¹ 077-005-008

⁷⁸² 006-054-438

Post-mortem

5.277 Dr Brian Herron,⁷⁸³ Consultant Neuropathologist⁷⁸⁴ and Dr Al Husaini,⁷⁸⁵ Pathologist, conducted the post-mortem examination of Raychel at the request of the Coroner.⁷⁸⁶ They found diffuse cerebral oedema but no evidence of subarachnoid haemorrhage. They sought the additional opinion⁷⁸⁷ of Dr Clodagh Loughrey,⁷⁸⁸ Consultant Chemical Pathologist, as to the cause of Raychel's hyponatraemia.⁷⁸⁹

5.278 Incorporating her advices, Dr Herron then formally reported his opinion that the cause of death was cerebral oedema secondary to acute hyponatraemia.⁷⁹⁰ He attributed her "*low sodium*" to three factors as identified by Dr Loughrey,⁷⁹¹ namely:

- (i) Infusion of low sodium fluids post-operatively
- (ii) Profuse vomiting in post-operative period
- (iii) Secretion of anti-diuretic hormone.

Preparation for inquest

5.279 In the immediate aftermath of Raychel's death, it had been clearly understood within Altnagelvin that the Coroner had been notified and there were questions of mismanagement. It must have seemed probable that an inquest would be held. Notwithstanding the necessity to gather statements for Critical Incident Review, there was then an even more onerous obligation to obtain statements for inquest.

5.280 Doctors were bound by section 7 of the Coroner's Act (Northern Ireland) 1959 to notify the Coroner of the "*facts and circumstances*" of a death where the doctor had "*reason to believe that the person died, either directly or*

⁷⁸³ 312-003-006

⁷⁸⁴ 312-003-006

⁷⁸⁵ 328-001-004

⁷⁸⁶ 014-005-006

⁷⁸⁷ 014-005-009

⁷⁸⁸ 312-003-005

⁷⁸⁹ 012-063g-322

⁷⁹⁰ 014-005-013

⁷⁹¹ 022-070-179

indirectly as a result of...negligence... or in such circumstances as may require investigation.” Doctors were furthermore obligated by paragraph 32 of the GMC’s ‘Good Medical Practice’ code to “assist the Coroner... by offering all relevant information to an inquest.”⁷⁹²

- 5.281 Mrs Brown⁷⁹³ collected statements for inquest and, although untrained,⁷⁹⁴ guided Altnagelvin and its personnel through the coronial process. She assisted the Coroner in gathering evidence for inquest.⁷⁹⁵ She played a central role liaising with clinicians, solicitors, the Coroner and the Trust Board.⁷⁹⁶
- 5.282 Although Mrs Brown characterised herself as merely “a post-box in getting statements”⁷⁹⁷ she did in fact volunteer to the Coroner those she thought should provide statements and accordingly, had an input into who might give evidence. Additionally she checked the witness statements⁷⁹⁸ and suggested amendments⁷⁹⁹ allowing her an input into the evidence itself. She also forwarded statements to the Trust’s solicitors for approval.⁸⁰⁰
- 5.283 In the week following the Critical Incident Review Staff Nurse Noble and Sister Millar⁸⁰¹ submitted their written statements to Mrs Brown.⁸⁰² Remarkably neither nurse made any reference to the consensus reached at the Critical Incident Review that Raychel had been given too much fluid or that her electrolytes had gone unmeasured in the context of prolonged vomiting.⁸⁰³ Such omission is troubling but that it should pass unquestioned by Mrs Brown is a matter of real concern because she too had been involved with the review. It hints at an understanding that substandard

⁷⁹² 314-014-014 – Issued May 2001

⁷⁹³ WS-322-1 p.24

⁷⁹⁴ WS-322-1 p.23

⁷⁹⁵ WS-322-1 p.24

⁷⁹⁶ WS-322-1 p.24

⁷⁹⁷ Mrs Brown T-02-09-13 p.118 line 4

⁷⁹⁸ WS-322-1 p.24

⁷⁹⁹ Mrs Brown T-02-09-13 p.130 line 25

⁸⁰⁰ WS-322-1 p.24

⁸⁰¹ 022-100a-313

⁸⁰² 021-069-160

⁸⁰³ Sister Millar T-28-08-13 p.137 line 7

treatment might be discussed within the hospital but not volunteered in writing to outsiders.

- 5.284 Scrutiny of Staff Nurse Noble's statement bearing the date 14th June 2001 and intended for the Coroner⁸⁰⁴ reveals that small but significant changes have been made to her original statement also dated 14th June 2001.⁸⁰⁵ Whilst she offered no explanation for these amendments beyond the suggestion that they may have been made to improve readability, it is clear that her revisions serve to distance her nurses from the warning signals of Raychel's deterioration. This was consistent with a general reluctance within Altnagelvin to concede any shortcomings in writing. Mrs Brown did nothing to discourage this approach.
- 5.285 Indeed, it appears to have been a part of Mrs Brown's role to ensure that clinicians did not easily make personal admissions of error. The Altnagelvin 'Junior Doctors' Handbook' specifically directed that doctors should "*not release any report to the police or coroner without showing it first to the Trust RMCO. This is particularly important when the family of the deceased have employed a barrister to represent them in court, or if you feel that an allegation of medical negligence will be made in court.*"⁸⁰⁶
- 5.286 Dr McCord and Nurse Michaela Rice⁸⁰⁷ also provided statements in June 2001.⁸⁰⁸ Remarkably, no further statements were taken by Mrs Brown at that time, whether from the consultant responsible for Raychel's care or the doctors who had treated her before collapse.
- 5.287 The Coroner wrote to Mrs Brown on 17th October 2001 advising "*that questions must be asked regarding the management of this child whilst a patient at Altnagelvin Hospital... It would greatly assist me if you would arrange to let me have as soon as possible statements from all those concerned with the case...*"⁸⁰⁹ Three weeks passed before Mrs Brown

⁸⁰⁴ 012-008-100
⁸⁰⁵ Staff Nurse Noble T-27-08-13 p.151-56
⁸⁰⁶ 316-004a-026
⁸⁰⁷ 312-003-005
⁸⁰⁸ 022-104-319 & 022-099-311
⁸⁰⁹ 022-081-212

wrote to a small group of clinicians requesting statements with the reassurance that *“your report will be forwarded to our solicitor prior to release to the Coroner.”*⁸¹⁰ She chose not to ask those doctors who had attended upon Raychel on 8th June.⁸¹¹ The Coroner was thereafter obliged to repeatedly remind Mrs Brown on 29th November,⁸¹² on 5th December,⁸¹³ and 11th December 2001⁸¹⁴ to forward the statements. When Mrs Brown received a statement from Dr Johnston, on 21st December 2001,⁸¹⁵ she noted his reference to Drs Curran and Zafar and wrote *“I have not requested reports from these doctors, as they have not written in the notes.”*⁸¹⁶ I find it extraordinary that six months after Raychel’s death and the Critical Incident Review and even when confronted with a potentially controversial inquest that Mrs Brown should not have identified the clinicians involved. Dr Zafar was the most senior member of the surgical team to have seen Raychel on 8th June⁸¹⁷ and he saw her again after her collapse on 9th June. Had a documented review been undertaken or had Mrs Brown been genuinely motivated she would have known who the relevant clinicians were and would have already held statements from them.

5.288 On 25th January 2002, Mrs Brown purported to send nine witness statements to the Coroner⁸¹⁸ but her letter enclosing the nine statements went *“astray.”*⁸¹⁹ She did, however, forward her draft list of witnesses for the Coroner from which she omitted all the surgical doctors.

5.289 On 25th March 2002, Mrs Brown finally received Dr Zafar’s statement.⁸²⁰ It was not her fault that all he could contribute was that *“I saw Rachael [sic] Ferguson on 8th June 2001, who had appendectomy operation on 7th June*

⁸¹⁰ 022-079-207

⁸¹¹ Dr Devlin T-06-03-13 p.3 line 4 & Dr Curran T-07-03-13 p.1 line 18

⁸¹² 022-072-187

⁸¹³ 022-070-170

⁸¹⁴ 022-068-167

⁸¹⁵ 012-013-114

⁸¹⁶ 160-207-001

⁸¹⁷ 020-007-013

⁸¹⁸ 022-054-151

⁸¹⁹ 012-050g-246

⁸²⁰ 160-239-001

2001. *On my ward round she was free of pain and apyrexial, plane [sic] was to [sic] continuous observation.*"⁸²¹

5.290 The inquest was listed for 10th April 2002. It was not, however, until 6th March 2002 that a 'complete' set of Altnagelvin statements was forwarded to the Coroner.⁸²² The inquest hearing was adjourned.⁸²³ Mrs Brown wrote to Dr Zafar returning his "*draft statement. Please amend. I enclose a statement from Dr Johnston.*"⁸²⁴ Dr Zafar duly obliged adding a paragraph⁸²⁵ derived from Dr Johnston's statement⁸²⁶ which was then sent unsigned to the Coroner.⁸²⁷

5.291 The gathering of written statements for the Coroner lacked rigour and mirrored the collection of written evidence for Critical Incident Review. What was required was clear. That which was gathered in writing was not. I do not believe that was entirely accidental.

Altnagelvin writes to the Coroner

5.292 On 11th December 2001, the Coroner engaged Dr Edward Sumner to investigate Raychel's death on his behalf.⁸²⁸ Dr Sumner reported in February 2002 that Raychel had died from coning in consequence of cerebral oedema caused by hyponatraemia⁸²⁹ and that the "*hyponatraemia was caused by a combination of inadequate electrolyte replacement in the face of severe post-operative vomiting and the water retention always seen post-operatively from inappropriate secretion of ADH*"⁸³⁰ The Coroner forwarded this to Mrs Brown on 18 February 2002.⁸³¹

5.293 On 12th March 2002, Mrs Brown advised the Chief Executive that "*some of the clinical staff have come back and advised me that there are factual*

⁸²¹ 160-239-001

⁸²² 022-038-099

⁸²³ 021-001a-002

⁸²⁴ 021-001a-002

⁸²⁵ 021-059-143

⁸²⁶ 021-058-141

⁸²⁷ 022-023-064

⁸²⁸ 012-067u-365

⁸²⁹ 012-001-001

⁸³⁰ 012-001-005

⁸³¹ 160-197-001

inaccuracies in [Dr Sumner's] Report."⁸³² It is remarkable that not even in these circumstances did Mrs Burnside insist on a written report of her own Critical Incident Review.

5.294 Mrs Brown drew those claimed inaccuracies to the attention of the Trust solicitor,⁸³³ who then wrote to the Coroner on 29th March stating that "*the Trust has taken this tragic incident very seriously and has fully and promptly investigated this matter*"⁸³⁴ and "*fully accepts that the cause of death in this case was cerebral oedema due to hyponatraemia... It is also accepted that the vomiting experienced by the Deceased was a contributory factor in that it would have contributed to some extent to the net sodium loss from the extracellular fluid. Further, it is accepted that the use of Solution 18...in order to provide post-operative maintenance and replacement fluids was a contributory factor in bringing about a reduction in the concentration of sodium in the extracellular fluid.*"⁸³⁵

5.295 However, the solicitor then proceeded to very pointedly question Dr Sumner's opinion that Raychel had suffered very severe and prolonged vomiting. This had not been amongst those inaccuracies drawn to her attention by Mrs Brown. She wrote "*this conclusion is strongly disputed by the Trust. The nurses who were caring for the Deceased during the relevant period have been interviewed in detail about this matter and they are all of the opinion that the vomiting suffered by the Deceased was neither severe nor prolonged.*"⁸³⁶ She concluded her letter by claiming that "*the Trust wished me to bring these matters to your attention well in advance of the hearing of the inquest.*"⁸³⁷

5.296 Notwithstanding these assertions, Mrs Brown was very clear in her evidence that the nurses "*were never interviewed in detail.*"⁸³⁸ Furthermore, Sister Millar had "*no recollection of being separately interviewed*"⁸³⁹ and in

⁸³² 022-036-097

⁸³³ 160-183-001

⁸³⁴ 160-163-002

⁸³⁵ 160-163-001

⁸³⁶ 160-163-003

⁸³⁷ 160-163-004

⁸³⁸ Mrs Brown T-02-09-13 p.144 line 5

⁸³⁹ Sister Millar T-28-08-13 p.161 line 25

any event, Staff Nurse Noble considered Raychel's vomiting to have been both severe and prolonged.⁸⁴⁰ I conclude that in respect of this claim alone the letter was factually incorrect and had therefore, as Mrs Brown put it "*a potential to mislead.*"⁸⁴¹

5.297 The Chief Executive maintained that she had not seen the letter⁸⁴² and did not "*believe the Trust would have sanctioned the letter. I think the Trust would have briefed the legal advisor about their concerns and the legal advisor would have, within their expertise, laid out those concerns as they interpreted them.*"⁸⁴³ She said she took the "*dimmiest view*" of any intention to mislead.⁸⁴⁴ So do I, not least because the Ferguson family had received Mrs Burnside's personal assurances that they "*could have confidence that their concerns would be addressed thoroughly through the Coroner's court.*"⁸⁴⁵

5.298 The Coroner's response to Altnagelvin's solicitor's letter was terse: "*So far as the point you made regarding vomiting I have no objection to receiving evidence from any nurses who are in a position to give relevant evidence.*"⁸⁴⁶ The Coroner met with the Ferguson family on 3rd April 2002 and adjourned the inquest to allow them legal representation.⁸⁴⁷

5.299 Efforts were then made to gather evidence to corroborate the solicitor's assertions. Mrs Brown sought a statement from Staff Nurse Gilchrist in the following terms: "*Dr. Nesbitt and I met with the barrister yesterday. The barrister feels it is important that we counteract the comments made by Dr. Sumner, the independent expert in relation to the allegation of excess vomiting. To do this he feels it is important that we bring along the nursing staff. If nursing staff do not attend then it would be difficult for anyone to explain what is meant by the ++ in the notes. The Barrister is endeavouring to get permission from the Coroner for the nurses to attend. I require a*

⁸⁴⁰ Staff Nurse Noble T-27-02-13 p.172 line 6 & Staff Nurse Noble T-27-08-13 p.202 line 2

⁸⁴¹ Mrs Brown T-02-09-13 p.152 line 16

⁸⁴² Mrs Burnside T-17-09-13 p.192 line 5

⁸⁴³ Mrs Burnside T-17-09-13 p.240 line 22

⁸⁴⁴ Mrs Burnside T-17-09-13 p.192 line 8

⁸⁴⁵ WS-046-1 p.7

⁸⁴⁶ 022-026-069

⁸⁴⁷ 098-137-425

*statement from you on your involvement as soon as possible.*⁸⁴⁸ Staff Nurse Gilchrist duly supplied a statement,⁸⁴⁹ purporting to have been “*written on 10th June 2001*”⁸⁵⁰ confirming that she had not been concerned by Raychel’s vomiting because it was not unusual in post-operative children. However, when she came to give evidence to this Inquiry she accepted that “*Raychel’s vomiting was severe and prolonged.*”⁸⁵¹

Altnagelvin reviews progress and prepares for inquest

- 5.300 Dr Fulton having retired from his post as medical director, nonetheless arranged a pre-inquest meeting on 9th April 2002 with the Altnagelvin witnesses, namely Mr Gilliland and Drs Nesbitt, McCord and Makar.⁸⁵² On the same day he reviewed the implementation of his action plan.⁸⁵³ This was an important review and examined the plan in light of the Department’s Guidelines on Hyponatraemia⁸⁵⁴ and considered the availability of surgeons for paediatric patients and their responsibilities in respect of fluid therapy. It laid the basis for a new clinical protocol to be agreed in May 2002 between surgeons, anaesthetists and paediatricians in respect of paediatric IV fluid therapy.⁸⁵⁵ This was a local protocol of real value⁸⁵⁶ and provides demonstrable evidence of the sincerity of professional intent at Altnagelvin in almost everything except the open acceptance of error and the transparent provision of information and respect to the Ferguson family.
- 5.301 Meanwhile, Mrs Brown co-ordinated the Altnagelvin preparation for inquest.⁸⁵⁷ In addition to challenging any suggestion of a failure to respond to Raychel’s vomiting she started to bring together evidence to mitigate Altnagelvin’s position. To that end, Dr Fulton, having failed to prepare a written report of his Critical Incident Review for his Chief Executive, now provided a statement for the Coroner detailing his work investigating “*the*

⁸⁴⁸ 022-017-056

⁸⁴⁹ 098-293-771

⁸⁵⁰ Mrs Brown T-02-09-13 p.75 line 9 & Dr Fulton T-04-09-13 p.50 line 11

⁸⁵¹ Staff Nurse Gilchrist T-11-03-13 p.134 line 6

⁸⁵² 022-029-073

⁸⁵³ 026-002-002 & 022-092-299

⁸⁵⁴ 022-025a-068 & WS-046-2 p.132

⁸⁵⁵ 160-143-003

⁸⁵⁶ 021-052-113 & 021-050a-108 & 077-004-005

⁸⁵⁷ Dr Fulton T-04-09-13 p.108 line 7 & p.109 line 1

*circumstances of her death within the hospital and... recommendations for any action to prevent recurrence.*⁸⁵⁸ Although Dr Fulton was not on the list of witnesses, his statement was forwarded to the Coroner who was asked to confirm that he would be called to give evidence.⁸⁵⁹ The Coroner replied that *“so far as Dr. Fulton is concerned whilst it is not strictly necessary for him to give evidence, I can understand why the Trust might wish to put in evidence the response to the death of Rachel [sic].”*⁸⁶⁰ The Coroner thus allowed him to be called as a witness.

5.302 In addition, on 1st May 2002, Dr Nesbitt wrote to the CMO *“to know if any... guidance was issued by the Department of Health following the death of a child in the RBHSC which occurred some five years ago and whose death the Belfast Coroner investigated. I was unaware of the case and am somewhat at a loss to explain why. I would be grateful if you could furnish me with any details of that particular case for I believe that questions will be asked as to why we did not learn from what appears to have been a similar event.”*⁸⁶¹ The CMO responded by reassuring Dr Nesbitt that *“This Department was not made aware of the case at the time either by the Royal Victoria Hospital or the Coroner. We only became aware of that particular case when we began the work of developing guidelines following the death at Altnagelvin.”*⁸⁶²

5.303 Mrs Brown was then able to advise the Chief Executive that *“the positive aspects of the case are... the action taken following the death and again it is hoped that Dr. Fulton will be able to give evidence in relation to his actions following the tragic incident. The other positive note is the letter dated May of this year from Dr. Campbell to Dr. Nesbitt and the barrister is keen to*

⁸⁵⁸ 022-089-295

⁸⁵⁹ 012-070k-397

⁸⁶⁰ 160-106-001

⁸⁶¹ 022-091-298

⁸⁶² 022-090-297

*exploit this issue.*⁸⁶³ To that end Dr Nesbitt's letter to the CMO⁸⁶⁴ and her reply⁸⁶⁵ were sent directly to the Coroner himself.⁸⁶⁶

Altnagelvin commissions independent expert opinion

- 5.304 The inquest was re-listed for 26th November 2002.⁸⁶⁷ Counsel retained to act on behalf of the Trust directed that the Trust's solicitor obtain a report *"from an independent Consultant Paediatric Anaesthetist who should comment [on] management of this case, the contents of Dr. Sumner's report and the steps taken by the Trust following this incident to ensure that such an incident could not occur again..."*⁸⁶⁸
- 5.305 On 1st November 2002⁸⁶⁹ the Trust's solicitor sought the independent expert opinion, not of a consultant paediatric anaesthetist, but of Dr John G. Jenkins,⁸⁷⁰ who was a consultant paediatrician. He was nonetheless well qualified, being a member of the CMO's Working Group on Hyponatraemia⁸⁷¹ and the same expert who had some months before provided the same solicitors with a report on the care, treatment and death of Lucy Crawford.⁸⁷²
- 5.306 He was briefed with a full Schedule of Documents⁸⁷³ excepting only that Dr Fulton's Critical Incident Review plan was omitted⁸⁷⁴ and disturbingly a copy of Altnagelvin's 'draft press statement'⁸⁷⁵ for release after inquest, included. This statement asserted that *"it is important to be aware that the procedures and practices put into effect in the care of Raychel following her operation were the same as those used in all other area hospitals in Northern Ireland."* This inclusion was inexcusable in that not only was it known to be untrue but it blatantly suggested Altnagelvin's preferred opinion to the independent

⁸⁶³ 022-017-052

⁸⁶⁴ 022-091-298

⁸⁶⁵ 022-090-297

⁸⁶⁶ 012-070k-396

⁸⁶⁷ 012-056-286

⁸⁶⁸ 022-019-060

⁸⁶⁹ 172-002-001

⁸⁷⁰ 312-003-007

⁸⁷¹ WS-059-1 p.1

⁸⁷² 013-011-037

⁸⁷³ 172-002-002

⁸⁷⁴ Dr Jenkins T-10-09-13 p.131 line 13

⁸⁷⁵ 172-002-043

witness. Although this was Dr Jenkins' first experience of drafting a report for an inquest,⁸⁷⁶ he wisely "*didn't really take notice of it.*"⁸⁷⁷

5.307 Dr Jenkins' initial view was that Raychel's vomiting "*needed to be looked at in more detail as a particularly important aspect*"⁸⁷⁸ and "*an area which required clarification. Dr Sumner had reached a view which differed from that of the staff who'd been providing care, so... it was important that this was something which needed to be elucidated.*"⁸⁷⁹ Accordingly, he concluded his opinion dated 12th November 2002 by observing that "*while it was possible in retrospect to form the opinion reached by Dr. Sumner that Raychel must have suffered severe and prolonged vomiting, this does not seem to have been the assessment of her condition made by experienced staff at the relevant time*" and it was thus "*important that further details are obtained of relevant nursing and medical procedures and management in relation to fluid administration and post-operative monitoring of fluid intake, urine output and other losses such as vomiting. In particular information needs to be obtained regarding the local policy for post-operative fluid administration in children. Was the prescribed regime in this case in keeping with this guidance?*"⁸⁸⁰ However, no further information on these important matters was to be forthcoming to Dr Jenkins.⁸⁸¹

5.308 His opinion may not have been thought sufficient for Altnagelvin's purposes because on 3rd December 2002 another report was commissioned, this time from Dr Declan Warde,⁸⁸² of the Children's University Hospital Dublin who was a Consultant Paediatric Anaesthetist.⁸⁸³ Dr Warde, having agreed to "*attend the inquest hearing on behalf of the Trust*" was specifically asked to "*comment on the treatment provided and the issues raised by Dr. Sumner.*"⁸⁸⁴ The inquest was further adjourned to 5th February 2003.⁸⁸⁵

⁸⁷⁶ Dr Jenkins T-10-09-13 p.92 line 11

⁸⁷⁷ Dr Jenkins T-10-09-13 p.82 line 2

⁸⁷⁸ Dr Jenkins T-10-09-13 p.84 line 20

⁸⁷⁹ Dr Jenkins T-10-09-13 p.90 line 22

⁸⁸⁰ 022-010a-041

⁸⁸¹ Dr Jenkins T-10-09-13 p.91 line 12

⁸⁸² 312-003-007

⁸⁸³ 160-083-001

⁸⁸⁴ 160-083-001

⁸⁸⁵ 012-059-292

- 5.309 Dr Warde's report was received by the Trust solicitor on 19th January 2003.⁸⁸⁶ He gave it as his opinion that Raychel had *"died as a result of developing cerebral oedema secondary to acute hyponatraemia, which was itself caused by a combination of severe and protracted post-operative vomiting, SIADH and the administration of intravenous fluid with a low sodium content."*⁸⁸⁷ This was even less supportive of Altnagelvin's position than Dr Jenkins' opinion and flatly contradicted the contention that the vomiting was neither severe nor prolonged. The Report was sent to Dr Jenkins who was asked for *"any further comments which you have which might assist the Trust."*⁸⁸⁸ The wording of this request is regrettable because it was open to misinterpretation and in any event, Dr Jenkins' paramount responsibility was always to assist the Coroner.
- 5.310 Dr Jenkins commented on 27th January 2003 that *"Dr. Warde again makes reference to the significance of the vomiting. I pointed out in my report of 12th November 2002 the importance of seeking further information regarding the frequency and severity of Raychel's vomiting in the opinion of senior staff... I have also not been provided with any further details of relevant nursing and medical procedures and management in relation to fluid administration and post-operative monitoring of fluid intake, urine output and other losses such as vomiting."*⁸⁸⁹
- 5.311 On 28th January 2003, the Trust's solicitors informed Dr Warde that his services were not required at the inquest⁸⁹⁰ and Dr Jenkins' attendance for 5th February was confirmed.⁸⁹¹
- 5.312 Dr Jenkins then produced his third and final report dated 30th January 2003⁸⁹² from which he omitted much that he had been included in his earlier reports. All reference to Raychel's vomiting, the amount of fluid administered and his requests for further information was excised. He

⁸⁸⁶ 160-046-001
⁸⁸⁷ 022-006-023
⁸⁸⁸ 160-045-001
⁸⁸⁹ 022-004-013
⁸⁹⁰ 160-044-001
⁸⁹¹ 012-070b-386
⁸⁹² 022-004-010

made no mention of Dr Warde's report and concluded that "*having carefully studied the statements provided by the doctors and nurses involved in Raychel's care my opinion is that they acted in accordance with the established custom and practice in the Unit at that time.*"⁸⁹³

5.313 Dr Jenkins' "best guess" as to how this came about was "*that I was asked to re-format my report and to concentrate on the aspects of the development of guidance*"⁸⁹⁴ and accordingly, "*my third report, the report for the Coroner, was specifically addressing the broader issues.*"⁸⁹⁵ This was regrettable because an independent expert can never be truly independent if placed under direction. Dr Jenkins having been asked for "*an independent view re treatment for inquest hearing*"⁸⁹⁶ and having agreed to prepare a report on the matter⁸⁹⁷ was perhaps naive in the circumstances to consider that the Trust "*was within their rights to advise me as to what aspects of the matter I should provide a report on for the Coroner.*"⁸⁹⁸ It appears likely that 'editorial' control was exerted by lawyers representing Altnagelvin.⁸⁹⁹ Entitlement to legal privilege was asserted by Altnagelvin which frustratingly precluded any further investigation of this important matter.

5.314 It was Dr Jenkins' third report alone which was sent to the Coroner⁹⁰⁰ and subsequently incorporated into his deposition at inquest.⁹⁰¹ The Coroner was thus led to believe that the sole expert opinion held by Altnagelvin was Dr Jenkins' third report⁹⁰² and that represented the totality of his relevant opinion.

5.315 Dr Jenkins was able "*in retrospect*" to appreciate that it would have been "*very sensible*"⁹⁰³ to include his own observations where relevant for the

⁸⁹³ 022-004-011

⁸⁹⁴ Dr Jenkins T-10-09-13 p.106 line 11

⁸⁹⁵ Dr Jenkins T-10-09-13 p.108 line 11

⁸⁹⁶ 160-113-002

⁸⁹⁷ 172-002-001

⁸⁹⁸ Dr Jenkins T-10-09-13 p.104 line 2

⁸⁹⁹ Dr Jenkins T-10-09-13 p.114 line 22

⁹⁰⁰ 012-070b-386

⁹⁰¹ 012-030-153

⁹⁰² 012-070b-386

⁹⁰³ Dr Jenkins T-10-09-13 p.106 line 24

Coroner and recognised *“in retrospect that it would have been a more sensible thing”*⁹⁰⁴ not to omit comment previously considered relevant.

5.316 Significantly, the Trust did not share Dr Warde’s report with the Coroner either. Nor was it shared with the Ferguson family (or indeed later with the PSNI). The Coroner was not told that Altnagelvin was in possession of an opinion from a second consultant paediatric anaesthetist let alone one which supported Dr Sumner’s views. A decision must have been taken to withhold the report. Dr Nesbitt believes *“that this would have been a decision made by the Chief Executive”*⁹⁰⁵ but Mrs Burnside claimed *“no knowledge of why and how it did not go to the Coroner.”*⁹⁰⁶ Others said that this non-disclosure was upon the advice of the Altnagelvin’s legal advisors⁹⁰⁷ acting in liaison with Mrs Brown.⁹⁰⁸ It was not at all what the Coroner expected of them.⁹⁰⁹ Mr Leckey acknowledged that *“there may be an issue raised of privilege. What I would say is, are we not investigating in this case the death of a child and let’s not dwell on legal niceties first. We want to get to the truth.”*⁹¹⁰

5.317 Professor Swainson advised that *“the principle I would adhere to is that you make a full disclosure of whatever information you have because of two reasons. One is it helps the process, it can only be helpful. Secondly, if you don’t, it’ll come out later anyway... So my overriding principle is that in these circumstances your duty is to assist the Court, or whatever, as far as you are able. I have been advised by my solicitors previously not to either submit a report or submit it in a different form and I’ve been happy to discuss that, but I have never agreed to not submitting a report that was available that would have been of clear relevance to court proceedings.”*⁹¹¹

5.318 Had Altnagelvin been sincerely motivated to assist the Coroner it would undoubtedly have shared Dr Warde’s publicly funded expert opinion with

⁹⁰⁴ Dr Jenkins T-10-09-13 p.109 line 6

⁹⁰⁵ WS-035/2 p.31

⁹⁰⁶ Mrs Burnside T-17-09-13 p.164 line 5

⁹⁰⁷ Mrs Brown T-02-09-13 p.177 line 5 & Mrs Margaret Doherty T-09-09-13 p.43 *et seq*

⁹⁰⁸ Dr Fulton T-04-09-13 p.112 line10

⁹⁰⁹ Mr Leckey T-25-06-13 p.110 line 8 & p.109 line 23

⁹¹⁰ Mr Leckey T-25-06-12 p.109 line 23

⁹¹¹ Professor Swainson T-19-09-13 p.134 line 17

him, just as the Coroner shares with the public those expert opinions commissioned by him.⁹¹² It is hard to understand what public interest is served by withholding such a report. Notwithstanding that Altnagelvin was not legally obliged to submit Dr Warde's report – it is hard not to conclude that the wrong approach was taken.

- 5.319 The Altnagelvin preparation for inquest was calculated and defensive. I interpret the actions of those involved on behalf of Altnagelvin as having been primarily motivated by a misguided desire to avoid the risk of criticism and to portray the hospital in the best possible light. If a culture of defensiveness characterised the responses of the clinicians involved it also marked those engaged with this aspect of governance.
- 5.320 Additionally, I wish to record my disappointment that the Trust should have withheld documentation from this Inquiry on the basis of legal privilege. This has not assisted. It can only inflame suspicion of 'cover-up'. Whilst I fully recognise the Trust's legal right to assert privilege I do not necessarily consider it ethical. In this context, I am influenced by the contrast between Altnagelvin's promises of unqualified co-operation with the work of the Inquiry and the reality. In November 2004, the Trust issued a statement to the press assuring that "*Altnagelvin will co-operate fully and without equivocation with this Inquiry*"⁹¹³ and in addition Mrs Burnside wrote to me personally "*that Altnagelvin will give its fullest co-operation to the Inquiry team.*"⁹¹⁴ Lest there could have been any doubt the Trust solicitors then also wrote to the Ferguson family solicitor on 30th June 2005 to confirm "*it is our client's intention and duty to assist the Inquiry in every way possible and to participate fully in its investigations.*"⁹¹⁵ It is therefore a matter of regret that Altnagelvin should, for whatever reason, have failed to honour its pledges.

⁹¹² 012-070p-405

⁹¹³ 021-010-025

⁹¹⁴ 021-009-021

⁹¹⁵ 326-002-001

Inquest

- 5.321 The inquest into Raychel's death opened on 5th February 2003 before H.M. Coroner, Mr John Leckey,⁹¹⁶ and heard evidence over the course of 4 days from 16 witnesses including Mrs Ferguson. Whilst there is no formal transcript of the proceedings, a very full note was taken by the Trust's solicitor.⁹¹⁷ Expert evidence was received from Drs Herron, Sumner and Jenkins.
- 5.322 Dr Heron's autopsy findings were unchallenged and Dr Jenkins having listened to the evidence of Dr Sumner "*suddenly realised that Dr Sumner and indeed Dr Warde had evidence [918] to support their conclusions and I was content with that evidence.*"⁹¹⁹ Accordingly, he "*stated that he concurred with all the views expressed by Dr. Sumner.*"⁹²⁰ This was very proper, not least because the Coroner did not have the benefit of Dr Warde's evidence.
- 5.323 Furthermore, Dr Jenkins made reference in his evidence to the "*tragic death of two children in Northern Ireland*" from hyponatraemia.⁹²¹ This, which was an intended reference to Lucy Crawford's death, was misunderstood as a reference to Adam Strain, and Lucy's death remained unknown to the Coroner. This was unfortunate given that it was known to Altnagelvin's legal advisors.
- 5.324 No evidence was given by the doctors who had actually seen Raychel on Ward 6 on 8th June 2001. Evidence was, however, received from Drs Gund, Jamison, Johnston and Trainor who neither cared for Raychel on the ward nor attended the Critical Incident Review. Drs McCord, Nesbitt and Fulton together with Mr Gilliland did however give evidence.

⁹¹⁶ 328-001-005

⁹¹⁷ 160-010-001 *et seq*

⁹¹⁸ 160-010-015: i.e. the evidence relating to the abnormality of the electrolyte results which was interpreted as indicative that the vomiting must have been severe (Dr Jenkins T-10-09-13 p.116 line 6)

⁹¹⁹ Dr Jenkins T-10-09-13 p.117 line 7

⁹²⁰ 012-064-323

⁹²¹ 022-004-011

- 5.325 Mr Foster was concerned that two key members of the surgical team failed to attend.⁹²² Dr Makar was on leave and Dr Zafar was sitting exams.⁹²³ This was regrettable but consistent with the established detachment of the surgical team from the case. It did not however unduly concern the Coroner or prevent him from reaching a finding.⁹²⁴
- 5.326 Dr Nesbitt who was Altnagelvin's new Medical Director, was the most senior Trust representative at the inquest. He chose not to tell the Coroner about those deficiencies in treatment identified by him and described in his PowerPoint presentation. Whilst he conceded that there were no blood tests on 8th June⁹²⁵ he did not indicate that he regarded this as relevant or a failing. Whilst he steadfastly maintained that he "*did not withhold anything from the Coroner*"⁹²⁶ it is clear that he could have volunteered more. Whilst it may not have made any difference I am of the view that he could and should have proffered more information to the Coroner about what he knew to be relevant.
- 5.327 The Coroner was given the perspective of the surgical team by Mr Gilliland who gave evidence that he was "*not sure blood test should have been done as vomiting common and [Raychel was] being treated appropriately,*"⁹²⁷ that it was "*not commonplace to measure urine output in routine appendectomy*",⁹²⁸ that he "*would not expect a member of surgical team to be told child vomited*"⁹²⁹ and that Dr Curran, who had prescribed the second anti-emetic did not, as a junior, need to "*pass decision to a senior.*"⁹³⁰ Given what Mr Gilliland must have known about Dr Fulton's action plan to address the clinical failings identified at Critical Incident Review,⁹³¹ I consider his evidence to have been generally unhelpful and in some respects to have been misleading.

⁹²² 223-002-029

⁹²³ 223-002-029

⁹²⁴ 160-010-032

⁹²⁵ 160-010-038

⁹²⁶ Dr Nesbitt T-03-09-13 p.156 line 11

⁹²⁷ 160-010-041

⁹²⁸ 160-010-041

⁹²⁹ 160-010-042

⁹³⁰ 160-010-042

⁹³¹ Mr Gilliland T-14.03.13 p.164 line 11

- 5.328 Both Dr Nesbitt and Mr Gilliland were subject to the GMC obligation to “*assist the Coroner by... offering all relevant information to an inquest or inquiry into a patient’s death.*”⁹³² I do not believe that they honoured that obligation.
- 5.329 Sister Millar and Staff Nurses McAuley and Noble gave the nursing evidence. Sister Millar said the “*nurses [were] experienced, childrens’ trained*”,⁹³³ that Raychel’s case was not unusual,⁹³⁴ that she “*was happy she would be fine*”⁹³⁵ and she had “*seen many children vomit post-appendectomy... have seen patients vomit more.*”⁹³⁶ They agreed that Raychel’s vomiting had not been a cause for concern.
- 5.330 Sister Millar told the Coroner that the record of vomits was not unusual.⁹³⁷ She failed to mention that the fluid balance documentation was poor⁹³⁸ or that the Ferguson family had been concerned about its severity.⁹³⁹ Nor was the Coroner told that an internal Critical Incident Review had agreed that the vomiting was prolonged.
- 5.331 The Coroner was further led to believe by Sister Millar that junior surgical doctors were readily available for their surgical patients on Ward 6,⁹⁴⁰ notwithstanding that she had made their non-availability an issue at the Critical Incident Review.⁹⁴¹ Sister Millar accepted that she ought to “*have expanded*”⁹⁴² on these matters for the Coroner. I consider that her failure ‘to expand’ was disingenuous and a breach of her professional duty of truthfulness.⁹⁴³
- 5.332 Staff Nurse McAuley also gave evidence that Raychel’s vomiting was not unusual and had given her no cause for concern.⁹⁴⁴ Staff Nurse Noble told

⁹³² 314-014-014

⁹³³ 160-010-047

⁹³⁴ 160-010-047

⁹³⁵ 160-010-050

⁹³⁶ 160-010-051

⁹³⁷ 160-010-051

⁹³⁸ Sister Millar T-28-08-13 p.172 line 18

⁹³⁹ Sister Millar T-28-08-13 p.174 line 4

⁹⁴⁰ 160-010-050

⁹⁴¹ 022-097-038

⁹⁴² Sister Millar T-28-08-13 p.172 line 4

⁹⁴³ UKCC ‘Guidelines for Professional Practice’ (1996) 314-003-016

⁹⁴⁴ 160-010-051

the Coroner that she had nursed patients who had vomited more and that it was “*not unusual to have patients who vomited post-operatively.*”⁹⁴⁵

5.333 It is hard to conceive that these witnesses could have agreed one thing at Critical Incident Review and then said another at inquest had the Critical Incident Review been recorded and a report prepared.

5.334 Nonetheless, and having heard this evidence the Coroner seemed to have little difficulty in reaching the verdict that Raychel’s “*hyponatraemia was caused by combination of inadequate electrolyte replacement in the face of severe post-operative vomiting and water retention resulting from the inappropriate secretion of ADH (anti-diuretic hormone).*”⁹⁴⁶ He thus firmly rejected the Altnagelvin contention that the vomiting was “*neither severe nor prolonged*”⁹⁴⁷ and confirmed that the electrolyte replacement therapy was inadequate in the circumstances. It was a damning verdict on the care and treatment given Raychel at Altnagelvin.

RBHSC engagement with inquest

5.335 The RBHSC was also represented at the inquest and Dr Crean was its only witness. In preparation for the hearing Mr Brangam, its solicitor, wrote to Mr Walby of the RGHT Litigation Management Office that “*At first blush I cannot see how the Trust can be implicated in the tragic circumstances surrounding the treatment given to the child and the subsequent demise at RBHSC. Dr. Crean has indicated to me that the facts surrounding an earlier matter (Adam Strain deceased) were not on all fours with the present case, but, I believe, it would be prudent for you to speak directly with Dr. Ian Carson in relation to this matter, particularly, given it would appear that the Department has some knowledge of the circumstances surrounding this particular incident.*”⁹⁴⁸ Dr Carson was by then Deputy Chief Medical Officer.⁹⁴⁹

⁹⁴⁵ 160-010-055

⁹⁴⁶ 012-026-139-140

⁹⁴⁷ 160-163-003

⁹⁴⁸ 064-022-063

⁹⁴⁹ 306-088-002

- 5.336 The RGHT interest in distinguishing Raychel's case from Adam's might suggest that it considered itself vulnerable to the criticism that the cases were so similar that the lessons from Adam's case ought to have been applied to Raychel's. This mirrored Dr Nesbitt's concern that Altnagelvin should avoid criticism for having failed to learn from Adam's case.
- 5.337 Mr Walby advised the solicitor that he had "*spoken to Dr. Crean and he will stick to his brief at the Inquest...*"⁹⁵⁰ Dr Crean's evidence at the inquest dealt only with the facts of Raychel's case. He did not volunteer any criticism of Raychel's care nor make any connection with Lucy's case. He said it did not occur to him.⁹⁵¹
- 5.338 After the inquest Mr Brangam advised Mr Walby that "*I cross examined Dr. Sumner in relation to the Adam Strain case and I asked him to distinguish and differentiate between the two cases.*"⁹⁵² In the event the RBHSC was not criticised by the Coroner and Mr Walby thanked Mr Brangam "*very much for minding our back at this inquest.*"⁹⁵³

Altnagelvin's public response to inquest

- 5.339 Before the inquest, Altnagelvin had declined to provide any meaningful comment to the press on the basis that it was inappropriate at that time.⁹⁵⁴ Mrs Burnside told her Board that "*the Trust's only comment to any media inquiry will be to again offer our sympathy and regret to the family.*"⁹⁵⁵ However and inconsistently, Mrs Burnside also described how "*we did try to brief the media off the record, trying to give them information that would be helpful. None of that information was ever used in the media. And one does not want to be standing up saying 'this is our position' when what you're dealing with is a tragedy and absolute grief.*"⁹⁵⁶ This has parallels with the quiet briefing given to Dr Jenkins of Altnagelvin's press release and gives

⁹⁵⁰ 064-019-054

⁹⁵¹ Dr Crean T-11-09-13 p.99 line 5

⁹⁵² 064-016-050

⁹⁵³ 064-014-046

⁹⁵⁴ 023-002-002

⁹⁵⁵ 321-058-011

⁹⁵⁶ Mrs Burnside T-17-09-13 p.200 line 24

rise to the uncomfortable sense that Altnagelvin was attempting a ‘damage limitation’ exercise.

5.340 After the inquest, Altnagelvin nonetheless issued the press statement as previously drafted proclaiming it *“important to emphasise that the clinical practices used during Raychel’s care, following her operation, were at that time accepted practice in all other Area Hospitals in Northern Ireland.”*⁹⁵⁷

This failed to reflect the evidence. It ignored the Coroner’s finding of inadequate electrolyte replacement and contradicted Altnagelvin’s own review findings.

5.341 The press release was drafted by the Altnagelvin Communications Manager, Ms Marie Dunne⁹⁵⁸ who *“worked directly to the Chief Executive”*.⁹⁵⁹ The Chief Executive herself approved the press release.⁹⁶⁰ It is a matter of the gravest concern that a formal public communication issued in the name of a HSC Trust should mislead.

5.342 The Chief Executive had been very aware that Raychel’s inquest might *“attract substantial media attention”*⁹⁶¹ and her Communications Department circulated advice within the hospital entitled ‘Potential Media Questions (and some suggested answers) arising from the Raychel Ferguson inquest and our Statement.’ It included the following:

“How can the public be sure that there are no other ‘procedures and practices’ in Altnagelvin that might lead to this kind of tragedy happening again?”

Suggested answer - The public should be reassured that Altnagelvin practices in accordance with the highest professional standards as required by the various Royal Colleges in the United Kingdom. We constantly audit

⁹⁵⁷ 160-016-002

⁹⁵⁸ 328-001-003

⁹⁵⁹ WS-332-1 p.4

⁹⁶⁰ Mrs Burnside T-17-09-13 p.205 line 13

⁹⁶¹ 321-058-011

*our work against these standards and ensure we keep up to date with the new developments and new treatment options.”*⁹⁶²

5.343 Fortunately, the public was not given this particular ‘reassurance’ because the evidence received revealed a very different reality within Altnagelvin. The relevant Royal College of Surgeons NCEPOD guidance was either unknown or ignored⁹⁶³ and far from auditing compliance with NCEPOD recommendation, the evidence suggested that it was unlikely that the Clinical Audit Committee at Altnagelvin was aware of the NCEPOD report.⁹⁶⁴ I received evidence that Altnagelvin had no “*clear systems for ensuring compliance with relevant UK professional guidance,*”⁹⁶⁵ no central library where Royal College guidelines were stored or assessed,⁹⁶⁶ and “*no written protocols, guidelines, guidance or practice documents in relation to clinical audit.*”⁹⁶⁷ Like many of Altnagelvin’s claims to clinical governance activity, this was unfounded.⁹⁶⁸ This cannot have been unknown to Mrs Burnside.

5.344 Accordingly, the Communications Department, and by extension the Chief Executive,⁹⁶⁹ is open to the criticism of encouraging Trust employees to make public statements which mislead. The Chief Executive was, at all times, bound by the code of public service values⁹⁷⁰ requiring that “*public statements and reports issued by the Board should be clear, comprehensive and balanced, and should fully represent the facts.*”⁹⁷¹ Whilst public confidence in the Health Service is important, it must never be pursued without strict regard for the truth.

⁹⁶² 023-018-030

⁹⁶³ Miss Duddy T-29-08-13 p.107 line 11

⁹⁶⁴ Mrs Brown T-02-09-13 p.92 line 17

⁹⁶⁵ 226-002-015

⁹⁶⁶ 316-006e-002

⁹⁶⁷ 321-004f-004

⁹⁶⁸ Mrs Brown T-02-09-13 p.95 line 15

⁹⁶⁹ Miss Duddy T-29-08-13 p.114 line 24

⁹⁷⁰ Mrs Burnside T-17-09-13 p.7 line 6

⁹⁷¹ 306-096-004

Meeting with WHSSC

- 5.345 After the inquest the WHSSC formally sought a meeting with Altnagelvin in order to *“learn of the Altnagelvin perspective of the tragedy and... to be informed of the facts and to help members to restore public confidence, which I am informed has been damaged.”*⁹⁷² On 19th February 2003 Mr Stanley Millar,⁹⁷³ Chief Officer of the WHSSC and other members of the Council met with Mrs Burnside, Miss Duddy and Dr Nesbitt.⁹⁷⁴ It was noted that *“The Trust provided a copy of a press statement”*⁹⁷⁵ to the WHSSC. This was in fact the same misleading statement as released the previous week.⁹⁷⁶ Mrs Burnside was unable to give any satisfactory explanation for this.⁹⁷⁷ That it should be offered by the Chief Executive to the WHSSC gives rise to the profoundest disquiet.
- 5.346 Mrs Burnside maintained that the information given the WHSSC was *“full and frank”*⁹⁷⁸ and whilst Dr Nesbitt did provide his PowerPoint presentation⁹⁷⁹ explaining some of the shortcomings in Raychel’s case, Mrs Burnside nonetheless *“explained the outcome of the Coroner’s inquest which did not apportion blame to the Trust.”*⁹⁸⁰ This was sadly yet another misrepresentation.
- 5.347 I find in the approach of Altnagelvin, whether it be to Mr and Mrs Ferguson, the Coroner, the WHSSC or this Inquiry, a defensiveness and willingness to mislead. It came from the top as this meeting demonstrated. Mrs Burnside, the Chief Executive, was responsible and implicated. She is to be criticised.

⁹⁷² 014-012-022

⁹⁷³ 328-001-005

⁹⁷⁴ 014-016-028

⁹⁷⁵ 014-016-028

⁹⁷⁶ 023-003-003

⁹⁷⁷ Mrs Burnside T-17-09-13 p.217 line 21

⁹⁷⁸ Mrs Burnside T-17-09-13 p.219 line 13

⁹⁷⁹ 021-054-117

⁹⁸⁰ 014-016-028

Lucy Crawford

5.348 Mr Millar, having reflected upon what he had been told, wrote to the Coroner on 27th February 2003 about the death of Lucy Crawford: *“following the Raychel Ferguson Inquest I, with other members of the WHSSC, received a briefing on the events which led up to Raychel’s death. I was struck by the similarities in the two tragedies... I am left with two questions which you may be able to answer. (1) Are there direct parallels in the events leading up to the death of both girls? (2) Would an Inquest... in 2000/2001 have led to... recommendations from the....*⁹⁸¹ *Inquest being shared at an earlier date and a consequent saving of her life?”*⁹⁸² It is troubling that it should have been a lay person rather than a doctor who brought Lucy’s death to the attention of the Coroner.

5.349 The Coroner forwarded Mr Millar’s letter to the CMO⁹⁸³ and sought Dr Sumner’s opinion about Lucy’s case. The contribution made by the late Mr Millar was important and is to be praised.

Chief Medical Officer

5.350 In the aftermath of Raychel’s inquest Dr Campbell, the CMO gave media interviews, including one to UTV on 25th March 2004.⁹⁸⁴ In it she expressed regret for the tragedy of Lucy and Raychel’s deaths and said that *“the rarity of these two events was the abnormal reaction which is seen in a very few children in the normal application [of fluids].”*⁹⁸⁵ This was inconsistent with the Coroner’s finding.

5.351 Mr and Mrs Ferguson, already convinced that their daughter’s death would have been avoided but for a ‘cover up’ in Lucy’s case, then lodged a formal complaint about the CMO with the GMC on 6th November 2004.⁹⁸⁶ Amongst their grievances, they asserted⁹⁸⁷ that the CMO knew, or ought to

⁹⁸¹ Words omitted to convey clearly intended meaning

⁹⁸² 013-056-320

⁹⁸³ 006-010-294

⁹⁸⁴ 006-037-375

⁹⁸⁵ 006-037-377

⁹⁸⁶ 068-013-022

⁹⁸⁷ 068-013-022

have known, that the deaths of Lucy and Raychel were caused by the administration of the wrong type and volume of fluid and not by an “*abnormal reaction*”⁹⁸⁸ and that she had therefore misrepresented the facts to the media.

5.352 The CMO countered that she had been “*completely clear in both interviews that both deaths were preventable and hence clearly accepted by implication that they were caused by clinical mistakes*”⁹⁸⁹ and “*there was no intention on her part to mislead or misrepresent the facts.*”⁹⁹⁰

5.353 The GMC having heard the matter found that the CMO’s reference to an “*abnormal reaction*” was “*misleading*”⁹⁹¹ in that it “*appeared to contradict*” the Coroner’s finding, that the interviews were “*open to misinterpretation*” and that she had handled them “*inappropriately*”.⁹⁹² However, the panel found no evidence that the CMO had engaged in ‘cover-up’ or that her actions warranted a formal warning. She was invited to reflect upon the finding and the concerns of Mr and Mrs Ferguson. The complaint was closed.

Litigation

5.354 Altnagelvin had a Clinical Negligence Scrutiny Committee⁹⁹³ in 2001 and a policy deeming it “*extremely important that claims for negligence are managed appropriately to increase public confidence and respect.*”⁹⁹⁴ Clear guidance on claims management was then available to it, not least from the 1996 ‘HPSS Complaints Procedure’ which advised that “*where the Trust/Board accepts that there has been negligence a speedy settlement should be sought*”⁹⁹⁵ and the HPSS Protocol on Claims Handling⁹⁹⁶ which “*recommended that in each and every case where it is realised that defence*

⁹⁸⁸ 006-037-377

⁹⁸⁹ 104-026-519

⁹⁹⁰ 104-026-522

⁹⁹¹ 104-022-446

⁹⁹² 104-022-447

⁹⁹³ WS-323-1 p.14

⁹⁹⁴ 321-004fd-004

⁹⁹⁵ 314-016-017

⁹⁹⁶ 317-037-001

*will be difficult to sustain, consideration be given to admitting liability and attempting to reach settlement.”*⁹⁹⁷

5.355 From the outset, Altnagelvin thought it likely that the Fergusons would litigate.⁹⁹⁸ On 1st May 2003, Mr and Mrs Ferguson’s solicitors asserted by letter of claim *“our client’s instructions that the death of their daughter was occasioned by the negligence, breach of duty and/or breach of statutory duty... in or about the provision of medical treatment.”*⁹⁹⁹

5.356 Given the findings at critical incident review, the consensus of expert opinion, the Coroner’s damning verdict and Mrs Burnside’s view that Altnagelvin *“would be moving to settle this litigation at the soonest opportunity”*,¹⁰⁰⁰ I cannot understand why liability was not then accepted and settlement pursued.

5.357 However, Altnagelvin responded with a comprehensive denial of liability. It’s solicitor wrote to Mr and Mrs Ferguson’s solicitor to state in the clearest terms that Altnagelvin did *“not accept that it, or its staff, were negligent or that, if there was any failure to apply appropriate standards, that the failure caused or contributed to the death of Raychel Ferguson and therefore liability is denied.”*¹⁰⁰¹ This denial prompted the Fergusons to commence legal proceedings on 5th May 2004.¹⁰⁰²

5.358 Mrs Brown, by then promoted to Risk Management Director,¹⁰⁰³ again liaised with the Trust’s solicitor about Raychel’s case but did not seek any further information or advices.¹⁰⁰⁴ Nonetheless, complete denial remained Altnagelvin’s response to the Ferguson claim then and for the many years thereafter and even when confronted by the PSNI and the process of this Inquiry.

⁹⁹⁷ 317-037-010

⁹⁹⁸ WS-046-2 p.28 & Mrs Burnside T-17-09-13 p.224 line 14 & WS-043-3 p.11

⁹⁹⁹ 024-001-001

¹⁰⁰⁰ Mrs Burnside T-17-09-13 p.224 line 16

¹⁰⁰¹ 326-002-002

¹⁰⁰² 024-019-031

¹⁰⁰³ 024-002-002

¹⁰⁰⁴ Mrs Brown T-02-09-13 p.188 line 1

- 5.359 It is not therefore surprising that Mr and Mrs Ferguson should have become incensed by Altnagelvin's refusal to accept responsibility for their daughter's death.¹⁰⁰⁵ They thought it inexcusable¹⁰⁰⁶ and I agree. The hospital's response was unnecessary and caused additional anguish.
- 5.360 The Ferguson family had to listen to almost all the evidence given to this Inquiry before Altnagelvin finally conceded liability on 30th August 2013. A formal statement was then made that *"the Trust,¹⁰⁰⁷ having taken into account the evidence heard during this Inquiry, including independent expert evidence and the interim comments of the Chairman, formally admits liability. The Trust apologises unreservedly for Raychel's death and regrets any further hurt or distress that the delay in admitting liability has caused the family."*¹⁰⁰⁸ Whilst very welcome, admission did not have to await this Inquiry but could have been made ten years earlier.
- 5.361 In my view the denial of liability was unjustified, contrary to guidance, contrary to policy and the product of engrained defensiveness. It ran expressly counter to Altnagelvin's own publically expressed desire *"to encourage a culture of honesty and openness where mistakes and untoward incidents are identified quickly and dealt with in a positive and responsive way."*¹⁰⁰⁹ It is a good example of how failure by a Trust Board to follow the clear guidance given it can erode the confidence and respect necessary for the efficient functioning of the Health Service.
- 5.362 No explanation was given as to why liability was not accepted earlier. Given the widespread public interest in Raychel's case, whether at inquest, on TV, through the CMO or this Inquiry - the decision to deny liability must have been sanctioned by Mrs Burnside. As there was no basis upon which to contest the claim I can only conclude that the Trust repudiation of liability was made for tactical reasons. If so, the Trust was cynical in its disregard

¹⁰⁰⁵ Mr and Mrs Ferguson T-26-03-13 p.179 line 13 *et seq*

¹⁰⁰⁶ Mrs Ferguson T-26-03-13 p.179 line 16

¹⁰⁰⁷ By August 2013 Altnagelvin had been included within the new Western Health & Social Care Trust

¹⁰⁰⁸ Dr Carson T-30-08-13 p.1 *et seq*

¹⁰⁰⁹ 321-004fd-002

of Mr and Mrs Ferguson and acted in violation of the values of public service. Responsibility would lie with the Chief Executive.

Conclusion

- 5.363 The introduction of clinical governance was complex, time consuming and expensive.¹⁰¹⁰ Resources were limited and the hospital was stressed. Miss Duddy had multiple roles to fulfil and Dr Fulton was a part-time Medical Director. Notwithstanding that the implementation of clinical governance was at a comparatively early stage, the Altnagelvin Annual Reports¹⁰¹¹ and the Director of Nursing¹⁰¹² both confidently described a developed and functioning hospital clinical governance system at the time of Raychel's admission. The evidence convinced otherwise. The lack of functioning controls and the unstructured responses to Raychel's death do not substantiate the claims.
- 5.364 Neither the Clinical Governance Committee¹⁰¹³ nor the Risk Management and Standards Committee actually came into existence until after Raychel's death¹⁰¹⁴ and the Clinical Incident Committee met only quarterly.¹⁰¹⁵ It did not minute its transactions,¹⁰¹⁶ and did not review Raychel's case because it was defined as a critical incident rather than a clinical one.¹⁰¹⁷ Needless to say, there was no Committee for Critical Incidents.¹⁰¹⁸ The claims for clinical governance far exceeded the reality.
- 5.365 In consequence, clinical governance controls were weak. This was well demonstrated by the repeated failure to remedy deficiencies identified in bench-marking exercises, to implement external guidance or even adhere to internal protocols. Quality assurance had decidedly not been achieved

¹⁰¹⁰ Dr Carson T-30-08-13 p.5 line 18

¹⁰¹¹ 321-004gj-042

¹⁰¹² Miss Duddy T-29-08-13 p.11 line 20 *et seq* & p.87 line 7 & p.88 line 7

¹⁰¹³ 321-004gj-042

¹⁰¹⁴ Mrs Brown T-02-09-13 p.24 line 20 & p.23 line 9 & Dr Fulton T-04-09-13 p.2 line 5

¹⁰¹⁵ Mrs Brown T-02-09-13 p.14 line 3

¹⁰¹⁶ Mrs Brown T-02-09-13 p.14 line 13

¹⁰¹⁷ Mrs Brown T-02-09-13 p.17 line 20

¹⁰¹⁸ Mrs Brown T-02-09-13 p.20 line 9

at Altnagelvin. That was significant because such controls reveal frailties in a system before they can be revealed by tragedy.

- 5.366 At the same time, lax leadership and management problems characterised Altnagelvin's paediatric surgical service from the ward up. Miss Duddy visited Ward 6 only sporadically¹⁰¹⁹ and although she met with her Clinical Services Manager and Clinical Effectiveness Co-ordinator¹⁰²⁰ and believed that nursing issues would get to her and that she could assure the Trust Board as to nursing standards,¹⁰²¹ that was clearly not the case.
- 5.367 Nursing problems were not being addressed. Miss Duddy conceded that she was not even aware that her nurses had difficulties accessing surgical doctors "*until after the Critical Incident Review by which time the Medical Director was already dealing with the issue.*"¹⁰²² Her nurses had no opportunity for "*formal meeting between nursing staff, paediatric medical staff and surgical consultant staff*"¹⁰²³ in order to address issues of joint concern.¹⁰²⁴ The established management lines led them to the Clinical Services Manager and the Director of Nursing by-passing Dr Martin,¹⁰²⁵ the Clinical Director, the consultant paediatricians and most particularly the Clinical Director of Surgery. A line management disconnect existed which did not facilitate escalation of such matters directly to Dr Fulton and he remained unaware of the situation.¹⁰²⁶ This was a genuine systemic problem because "*the medical director must be confident that effective systems and effective clinical leadership are in place for each and every clinical service within the Trust.*"¹⁰²⁷
- 5.368 Lack of consultant engagement and control was well illustrated by the multi-disciplinary mismanagement of Raychel's fluid therapy. The obvious necessity was that all should understand their role and responsibility in each

¹⁰¹⁹ Miss Duddy T-29-08-13 p.20 line 6 & Sister Millar T-28-08-13 p.114 line 11

¹⁰²⁰ Miss Duddy T-29-08-13 p.17 line 18

¹⁰²¹ Miss Duddy T-29-08-13 p.17 line 23

¹⁰²² Miss Duddy T-29-08-13 p.26line 17

¹⁰²³ Mr Gilliland T-28-08-13 p.11 line 3

¹⁰²⁴ Mr Gilliland T-28-08-13 p.7 line 8

¹⁰²⁵ Mrs Burnside T-17-09-13 p.22 line 10

¹⁰²⁶ Dr Fulton T-04-09-13 p.16 line 14

¹⁰²⁷ 317-034-014 per Lugon

aspect of such patient care. That was a matter for the leadership of the responsible consultant¹⁰²⁸ as well as the consultants more generally. That was not given. That medical and surgical patients on Ward 6 should be subject to different blood test regimes points to a further obvious failure by the consultants to engage and give direction.

5.369 Weak leadership of the surgical team was revealed, not least by the complete absence of consultant or registrar from Raychel's care from admission to collapse, in circumstances where Mr Gilliland was largely unaware of the competence of his junior doctors and had no means of assessing the capability of the nurses upon whom his patients and doctors were so dependent.¹⁰²⁹

5.370 These and other shortcomings in clinical governance, leadership and consultant engagement permitted significant clinical vulnerabilities to develop. Cumulatively this allowed clinical error and increased the risk of catastrophic outcome. It is for these reasons that I do not believe that any single individual can be blamed for the tragedy of Raychel's death but rather that the responsibility for what happened is collective.

Concluding remarks

5.371 After Raychel's inquest the Coroner wrote to Dr Campbell on 11th February 2003¹⁰³⁰ to pass on Dr Sumner's praise for the Department's 'Guidance on the prevention of Hyponatraemia in Children' and his view that in this respect "*Northern Ireland was ahead of the rest of the UK.*" He expressed his hope that the guidance might be drawn to the attention of the CMOs for England and Wales, Scotland and the Republic of Ireland.

5.372 I have no doubt that the Department's guidelines may have saved lives and owe their existence, in no small measure, to the professional and responsive actions of Drs Fulton and Nesbitt.¹⁰³¹ As Professor Swainson recognised, theirs "*was a significant and highly commendable set of actions*

¹⁰²⁸ 314-014-015

¹⁰²⁹ Mr Gilliland T-28-08-13 p.20 line 14

¹⁰³⁰ 006-002-156

¹⁰³¹ Professor Swainson T-19-09-13 p.142 line 7

*which have improved considerably the quality of care across the province and reduced the risk of hyponatraemia.”*¹⁰³² The very fact that praise is so obviously due in this regard draws attention to the overall inconsistency of the governance response to Raychel’s death at Altnagelvin.

5.373 The timely Critical Incident Review and action plan together with the alert given the wider medical community as to the risks arising with Solution No.18 stand as good examples of clinical governance in action. However, there persisted an obdurate reluctance amongst clinicians to openly acknowledge specific failings in Raychel’s care, whether to her family, the Coroner or the public. That was wholly reprehensible. The inclination of clinicians to avoid criticism in this way conflicts with patient interest and must not be tolerated in the Health Service.

5.374 The proper approach should of course, and at all times have been, that which was suggested to Altnagelvin at the outset of its engagement with clinical governance, namely that *“the actions of the organisation must be transparent and if negligence is identified during the investigation, this should not be hidden as it will serve no purpose and undoubtedly these facts will come to light during the legal process.”*¹⁰³³

¹⁰³² 226-002-006

¹⁰³³ 317-034-004

CONOR MITCHELL

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Introduction

- 6.1 Conor Mitchell was born on 12th October 1987. When he was 6 months old he was diagnosed with cerebral palsy, which limited his physical development. He also had a history of mild epilepsy. He was described as extremely intelligent with a great enthusiasm for sports and games and a determination for independence.¹ In spite of his disability “*Conor was extremely healthy...*”²
- 6.2 On 27th April 2003 Conor became unwell and complained of a sore throat. He vomited, was lethargic and suffered periodic discomfort.³ He failed to recover and over the course of the next 10 days was managed at home with antibiotics prescribed by his GP.⁴
- 6.3 On 8th May 2003, Conor was seen by the family GP, Dr Doyle,⁵ who referred him to the Royal Belfast Hospital for Sick Children (‘RBHSC’).⁶ However Conor’s mother wanted him to be seen as soon as possible and took him to the Accident & Emergency Department (‘A&E’) of the Craigavon Area Hospital (‘Craigavon’).
- 6.4 On arrival Conor was examined⁷ by Senior House Officer (‘SHO’) Dr Suzie Budd,⁸ who took blood samples and, noting that he was pale, unresponsive and showing signs of dehydration⁹ gave him a bolus of IV fluids.¹⁰ Dr Budd then tried to refer Conor to the paediatric team but was advised that, because he was 15 years old, he was too old to be admitted to a paediatric ward.¹¹

¹ 087-001-003

² 087-001-002

³ 087-002-015 to 018

⁴ 087-002-015 to 018

⁵ 327-003-001

⁶ 088-002-022

⁷ 087-028-131

⁸ 327-003-003

⁹ 087-028-131

¹⁰ 087-029-133 & WS-352-1 p.7

¹¹ WS-357-1 p.4 - Dr Michael Smith described how the hospital followed the relevant guideline at the time in which the upper age limit was the day before the patient’s 14th birthday

- 6.5 Notwithstanding that he had the physiology of an 8 year old,¹² Conor was admitted for observation into the Medical Admissions Unit ('MAU')¹³ which was an adult ward. He was given further IV fluids.¹⁴
- 6.6 During the course of the afternoon and early evening, Conor's condition seemingly deteriorated and at 20:30 he suffered two seizures in quick succession and stopped breathing.¹⁵ Conor was intubated and ventilated and admitted to the Intensive Care Unit ('ICU').¹⁶ A Computerised Tomography ('CT') scan was performed.
- 6.7 At approximately 12:00 the following day, 9th May, Dr Charles McAllister,¹⁷ Consultant in charge of ICU, requested that Conor be transferred to the Paediatric Intensive Care Unit ('PICU') at the RBHSC.¹⁸ The transfer was accepted by Dr Anthony Chisakuta,¹⁹ the RBHSC Consultant Paediatric Anaesthetist who had also treated Lucy after her transfer from the Erne Hospital in April 2000.
- 6.8 Upon admission to PICU, Conor was examined by Dr James McKaigue,²⁰ Consultant Paediatric Anaesthetist. He was alert to the involvement of hyponatraemia in the deaths of Adam Strain and Claire Roberts and had had involvement with Lucy in April 2000. Thereafter, and on 12th May 2003, Conor was also examined by Dr Robert Taylor²¹ who by that time may be credited with significant expertise in hyponatraemia.
- 6.9 In light of the CT scan and findings on examination, brain stem death tests were conducted on 12th May 2003. There was no hope and the decision was taken to discontinue treatment. Conor was pronounced dead at 15:45.²²

¹² Dr Budd WS-352-1 p.6

¹³ 087-014-079

¹⁴ 087-015-082

¹⁵ 087-024-114

¹⁶ 087-024-115

¹⁷ 327-003-004

¹⁸ 087-043-181

¹⁹ 327-003-006

²⁰ 327-003-006 & 092-017-039

²¹ 092-017-057

²² 092-017-058

- 6.10 Formal notification of the death was made to the Coroner and after due investigation, the cause of Conor's death was found at inquest in June 2004 to have been:

"I (a) Brain stem failure.

(b) Cerebral oedema.

(c) Hypoxia, ischemia, seizures and infarction.

*II Cerebral palsy."*²³

Conor's Terms of Reference

- 6.11 Whilst hyponatraemia due to fluid mismanagement was not implicated in Conor's death, I added Conor's case to the remit of this Inquiry because of concern that his fluid therapy had not been managed in accordance with the Department of Health, Social Services & Patient Safety, Northern Ireland ('the Department') 'Guidance on the Prevention of Hyponatraemia in Children' (the 'Guidelines') issued only 14 months before.²⁴
- 6.12 The Minister authorised the inclusion of Conor's death within this Inquiry.²⁵ I explained in February 2010, that

"It is obviously a matter of concern if guidelines which have been introduced as a result of a previous death or deaths and which are aimed at avoiding similar events in the future, are not properly communicated to hospital staff and followed.

It is relevant to the investigation to be conducted by the Inquiry, whether and to what extent the guidelines were disseminated and followed in the period after they were published. Another matter of interest is whether the fact that Conor was being treated on an adult ward, rather than a children's ward, made any difference to the way in which it would appear that the guidelines were not followed.

²³ 087-057-221

²⁴ Progress Hearing T-30-05-08 p.6

²⁵ Progress Hearing T-30-05-08 9.6

Accordingly, the Inquiry will investigate the way in which the guidelines were circulated by the Department, the way in which they were made known to hospital staff and the steps, if any, which were taken to ensure that they were being followed. While this is an issue of general importance, it will be informed by an examination of the way in which the guidelines were introduced and followed in Craigavon Area Hospital in May 2003.”²⁶

- 6.13 Accordingly, in this chapter of the report, I examine Conor’s case with predominant focus on the extent to which the clinicians who cared for Conor at Craigavon complied with the published Guidelines. Other matters are dealt with for purposes of context only. I do so with reference to paragraph 4.2 of the List of Issues (excluding reference to the RBHSC), namely:

“Investigation into the care and treatment that Conor received in 2003 in relation to the management of fluid balance:

- (1) What understanding those who cared for and treated Conor had of fluid management issues raised by his condition.*
- (2) To what extent fluid management and record keeping was covered in the teaching/training of [those]... who treated Conor.*
- (3) To what extent the care and treatment which Conor received, both in Craigavon Hospital and the RBHSC, was consistent with the then teaching/training on fluid management and record keeping, in particular the Guidelines.*
- (4) Whether the fact that Conor was admitted to an adult ward was relevant to whether the Guidelines were adhered to.”*

- 6.14 I examine Conor’s fluid management at Craigavon from admission to respiratory arrest taking into account the procedures and advices set out in the Guidelines and consider whether Craigavon took appropriate steps to disseminate and implement the Guidelines into clinical practice. Unlike the other cases covered by this report, I do not make any findings as to the clinical aspects of care, save for fluid management and make no findings

²⁶ 327-004-001-002

as to the cause of death. While I am conscious that some other issues are very important to Conor's family (for example the issues of seizures and communication), I do not make any findings in respect of these matters.

- 6.15 It is be acknowledged at the outset that the Southern Health and Social Care Trust ('the Trust')²⁷ and some Craigavon doctors and managers, made relevant concessions at public hearings in October 2013 which proved of considerable assistance to the Inquiry. I commend the Trust and the clinicians for taking such a sensible and constructive approach before this Inquiry.

Expert reports

- 6.16 The Inquiry was guided by the expert reports received from Dr Robert Scott-Jupp,²⁸ Consultant Paediatrician at Salisbury District Hospital and dated 19th September 2013²⁹ and 11th October 2013.³⁰
- 6.17 The Inquiry also had the benefit of the report of Dr Edward Sumner (Consultant Paediatric Anaesthetist at Great Ormond Street Childrens' Hospital) who reported to the Coroner in November 2003.³¹

Schedules compiled by the Inquiry

- 6.18 In an attempt to summarise the significant quantities of information received, the following schedules and charts were compiled:
- (i) List of Persons involved in Conor's case.³²
 - (ii) Chronology of Events (Clinical).³³
 - (iii) Schedule of Guideline Requirements and Conor's Treatment.³⁴

²⁷ As successor to the former Craigavon Area Hospital Group Trust.

²⁸ 327-003-008

²⁹ 260-002-001

³⁰ 260-004-001

³¹ 087-056-213

³² 327-003-001

³³ 327-002-001

³⁴ 327-008-001

All of the above are available on the Inquiry website.

Guidelines on the Prevention of Hyponatraemia

- 6.19 I have commended Altnagelvin hospital for bringing the death of Raychel Ferguson and the risks connected with the use of Solution No.18 to the attention of interested parties across Northern Ireland. Their response led to the creation of the CMO's Working Group on Hyponatraemia and the production of the Guidelines. It may be useful to recall how this came about as context for Conor's case.
- 6.20 In June 2001 Dr Raymond Fulton, Medical Director at Altnagelvin, disclosed the circumstances of Raychel Ferguson's death to a meeting of Medical Directors³⁵ and suggested that there should be guidance to regulate fluid management in paediatric cases. He indicated that he considered Solution No.18 to be hazardous for use with post-operative children.³⁶ He also notified Dr Henrietta Campbell,³⁷ the Chief Medical Officer ('CMO') and reiterated his belief that regional guidelines were required.³⁸
- 6.21 The CMO sought background information and received Dr Taylor's paper 'Hyponatraemia in Children'³⁹ on 30th July 2001. She then directed her Deputy, Dr Paul Darragh⁴⁰ to assemble a Working Group to examine the issue of hyponatraemia in children and to make recommendations in relation to paediatric fluid management.⁴¹ Dr Darragh asked Dr Miriam McCarthy,⁴² Senior Medical Officer, to convene the Group⁴³ "*... to consider how best practice could be brought to bear on the problem and to explore whether further advice needs to be issued by the DHSS&PS at this time to the profession.*"⁴⁴

³⁵ 012-039-179

³⁶ 095-011-055

³⁷ 337-001-002

³⁸ 012-039-180

³⁹ 043-101-223

⁴⁰ 337-001-002

⁴¹ 075-082-329

⁴² 337-001-002

⁴³ WS-080-1 p.2

⁴⁴ 007-050-099

- 6.22 A number of highly experienced clinicians were then invited to attend an initial meeting on 26th September 2001 to be chaired by Dr Darragh.⁴⁵ It is to be noted that Dr Darrell Lowry,⁴⁶ Consultant Anaesthetist at Craigavon, was present.⁴⁷ It was agreed at that meeting that regional guidance was indeed required for paediatric fluid management and Drs Crean, Jenkins, McAloon and Loughrey undertook to draft the Guidelines.
- 6.23 Following further meetings involving the Department, Directors of Public Health, the Paediatric Anaesthetic Group, the Specialty Advisory Committees and the Clinical Resource Efficiency Support Team, the CMO published the Guidelines on 26th March 2002. They were drawn to the attention of a very wide range of practising clinicians and healthcare professionals in Northern Ireland, including medical and nursing directors and consultants⁴⁸ on the basis that *“Hyponatraemia can be extremely serious and has in the past few years been responsible for two deaths among children in Northern Ireland.”*⁴⁹
- 6.24 The CMO issued the Guidelines with the specific instruction that they be *“prominently displayed in all units that accommodate children”*⁵⁰ and that they should complement local protocols. Importantly, it was stressed that steps be taken to *“audit compliance with the guidance and locally developed protocols...”*⁵¹
- 6.25 Published in the form of an A2 sized poster,⁵² the Guidelines provided advice in relation to baseline assessment, fluid requirements, fluid therapy, monitoring and advice. In terms they required that:
- (i) Weight and serum sodium levels be measured and recorded before commencement of IV fluids.

⁴⁵ 007-048-094
⁴⁶ 327-003-004
⁴⁷ WS-350-1 p.4
⁴⁸ 007-001-001
⁴⁹ 007-001-001
⁵⁰ 007-001-002
⁵¹ 007-001-001
⁵² 007-003-004

- (ii) Fluid needs be assessed by a doctor competent in determining the fluid requirements of a child patient.
- (iii) Replacement fluids be considered and prescribed separately to reflect fluid loss, both in terms of volume and composition.
- (iv) Maintenance fluids be dictated by sodium, potassium and glucose requirements.
- (v) The clinical state of the patient be monitored and fluid balance assessed at least once every 12 hours and that biochemistry sampling be carried out at least once every day.
- (vi) Advice and clinical input be obtained from a senior member of medical staff.⁵³

6.26 It was unusual for the CMO to issue guidelines on clinical issues. Accordingly, it should have been very clear to healthcare trusts that particular attention should be paid to implementation.

6.27 Furthermore, and given that the CMO directed that the Guidelines be “*prominently displayed in all units that may accommodate children*”,⁵⁴ it was clear that each and every hospital should display the Guidelines in all areas, including A&E and adult wards, where children might receive treatment. It should have been obvious that it would not suffice to display the Guidelines in children’s wards alone and very evident that the Guidelines should be introduced to all clinical staff who might become engaged in the fluid management of children.

6.28 It is in this context that I examine how Craigavon responded to the publication of the Guidelines, what it did to implement them and how that was to influence the fluid therapy received by Conor.

⁵³ 007-003-004

⁵⁴ 007-001-001

Conor's Treatment at Craigavon

A&E

- 6.29 Upon admission to A&E Conor underwent routine blood tests and was prescribed intravenous fluids.⁵⁵ The fluids were documented on a fluid intake/output chart.⁵⁶
- 6.30 It was subsequently observed that he appeared to be having seizures.⁵⁷
- 6.31 Dr Scott-Jupp considered Conor's A&E fluid management with reference to the Guidelines. He considered that the requirements of the Guidelines had been complied with in respect of baseline assessment but expressed the following concerns about Conor's management in the A&E Department:
- (i) That it was unclear whether it was Conor's actual weight or an estimate that had been recorded.⁵⁸
 - (ii) That an arterial gas sample taken at 10:59 had been relied upon as an accurate indicator of Conor's sodium levels for the purposes of his fluid management, when such tests were known to be potentially unreliable.⁵⁹
 - (iii) That the fluids administered to Conor in A&E were given "*as a replacement not a resuscitation fluid*"⁶⁰ indicating confusion between resuscitation and replacement fluids.⁶¹
 - (iv) That normal saline ought to have been administered in compliance with the Guidelines when Conor was thought to be in shock⁶² (notwithstanding that he considered Hartmann's an acceptable fluid to use in the circumstances).⁶³

⁵⁵ 088-002-020
⁵⁶ 088-004-063
⁵⁷ 087-027-127
⁵⁸ 260-002-012
⁵⁹ 260-002-012
⁶⁰ 260-002-013
⁶¹ 260-002-015
⁶² 260-002-016
⁶³ 260-002-016

- (v) That Conor's "*clinical state, particularly his degree of dehydration, was not well monitored*" and that "*no attempt was made to quantify his urine output prior to his arrival at hospital.*"⁶⁴
- (vi) That the monitoring of Conor's clinical state did not adhere to the Guidelines in consequence of which there was "*failure to make a more accurate assessment of his state of hydration [which] could have led to either excessive or inadequate fluid replacement, or to replacement with fluid that contained an inappropriate electrolyte content.*"⁶⁵
- (vii) That Conor did not have his fluid requirements assessed by a Paediatrician and that none of the doctors attending Conor in A&E were "*likely to have had the necessary skills, particularly in assessing a disabled child.*"⁶⁶
- (viii) That "*neither the ED (emergency department) staff, nor the adult medical doctors who subsequently saw him, were best placed to manage his fluids after the immediate resuscitation.*"⁶⁷

6.32 Notwithstanding that the Trust rejected some of this criticism⁶⁸ I share Dr Scott-Jupp's concerns in respect of the management of Conor's fluids within A&E.

Admission to MAU

6.33 Dr Budd had tried to refer Conor to the Paediatric team⁶⁹ because she "*...considered that given that he had the physiological status of an 8 year old he would benefit from care under the specialist paediatric team. I intended him to be admitted there...*"⁷⁰ However, and notwithstanding

⁶⁴ 260-002-017
⁶⁵ 260-002-018
⁶⁶ 260-002-013
⁶⁷ 260-004-006
⁶⁸ 260-003-005
⁶⁹ 087-029-013
⁷⁰ WS-352-1 p.6

referral of this issue to the Paediatric Consultant, the Paediatric Admissions SHO declined to admit Conor because he was over 13 years of age.⁷¹

- 6.34 Conor was therefore transferred to MAU and prescribed antibiotic medication and further fluids.⁷² It is to be noted that Dr Catherine Quinn,⁷³ the Medical SHO, recognised that “... *My first fluid prescription (3 litre normal saline over 24 hours, or 125ml / hr) was based on a usual fluid regime for an adult patient. I did not make any additional calculations. This fluid prescription was not appropriate for Conor’s size. This was highlighted by Dr Murdock during his review and I subsequently changed the prescription to a reduced volume and infusion rate on his advice...*”⁷⁴
- 6.35 At that stage Conor’s mother Ms Mitchell expressed concern about Conor’s condition and made a request that he be transferred to the RBHSC.⁷⁵ In response Dr Marian Williams,⁷⁶ SHO, attended upon Conor at or about 20:30. She witnessed an episode of stiffening following by a prolonged seizure during which Conor stopped breathing.⁷⁷ An urgent CT scan was undertaken which was thought suggestive of subarachnoid haemorrhage. However, Dr Cooke, the Consultant Neurologist in the Royal Victoria Hospital (‘RVH’) who also saw the scan, did not consider surgical intervention to be indicated.⁷⁸
- 6.36 In the circumstances it is unsurprising that Conor’s mother should have expressed her unhappiness with the care given.⁷⁹ Dr Scott-Jupp examined the management of Conor’s fluids in MAU with reference to the Guidelines and notwithstanding that the baseline assessment was properly conducted, he made the following criticisms in relation to the care given in MAU:

⁷¹ WS-352-1 p.6

⁷² WS-356-1 p.4

⁷³ 327-003-005

⁷⁴ WS-356-1 p.5-6

⁷⁵ 087-002-020

⁷⁶ 327-003-006

⁷⁷ 087-035-164

⁷⁸ 088-004-055

⁷⁹ 087-001-008

- (i) It was clear that *“the formula given in the Guideline was not used to calculate his maintenance fluids.”*⁸⁰
- (ii) An adult medical SHO and Registrar were unlikely to have had the necessary skills to assess the fluid requirements of a disabled child.⁸¹
- (iii) There was a failure to distinguish between maintenance and replacement fluids.⁸²
- (iv) There was no estimate of fluid output and no calculation of estimated replacement requirement.⁸³ In particular *“the need for replacement fluids should have been assessed before the initial infusion was started and then again at intervals during the day by clinically assessing his state of hydration and his urine output.”*⁸⁴
- (v) There is uncertainty as to the volume of fluid actually received by Conor between 11:20 and 19:40.⁸⁵
- (vi) There was a failure to record the physical signs of dehydration.⁸⁶
- (vii) There was a failure to take urine samples for the purpose of osmolarity or biochemistry analysis so as to assess whether fluid replacement was required.⁸⁷
- (viii) The use of the antibiotic Ciproxin was inappropriate in the paediatric setting and contributed to Conor’s fluid load.⁸⁸
- (ix) The rationale for this prescription was undocumented.

⁸⁰ 260-002-013

⁸¹ 260-002-012 to 013

⁸² 260-002-013

⁸³ 260-002-015

⁸⁴ 260-002-014

⁸⁵ 260-002-014

⁸⁶ 260-002-017

⁸⁷ 260-002-018

⁸⁸ 260-004-005

- (x) There was failure to ensure that Conor was reviewed by a more senior member of staff, most particularly in order to determine whether Conor was experiencing seizure activity.⁸⁹

6.37 I share Dr Scott-Jupp's concern about Conor's fluid management in MAU. However it is important to note that Dr Scott-Jupp did not "*consider that inappropriate fluid management was a contribution to [Conor's] death.*"⁹⁰

Admission to the Intensive Care Unit and PICU

6.38 Conor was transferred to Craigavon ICU at 22:00. Dr McAllister⁹¹ assessed Conor's score on the Glasgow Coma Scale ('GCS') as 3/15, made a detailed examination and found almost no neurological response to stimulation.⁹² Conor's basic brain stem responses were tested and Dr Richard Brady,⁹³ SHO, recorded that "*all appearances are that this unfortunate young fellow is brain stem dead.*"⁹⁴

6.39 After additional neurological examination, consultation with Dr Anthony Chisakuta⁹⁵ at RBHSC and discussion with Conor's family, the decision was made to request Conor's transfer to PICU at the RBHSC⁹⁶ "*in view of weight and complex problems.*"⁹⁷

6.40 When Conor was admitted to PICU at 19:00 on 9th May 2003 it was noted that his neurological condition remained unchanged. It was then that the Paediatric Anaesthetists took the view that Conor "*cannot survive this episode.*"⁹⁸ At 15:15 the decision was made to discontinue treatment and Conor was pronounced dead at 15:45 on 12th May 2003.⁹⁹

⁸⁹ 260-002-018

⁹⁰ 260-004-005

⁹¹ 327-003-004

⁹² 088-004-055

⁹³ 327-003-003

⁹⁴ 088-004-056

⁹⁵ 325-002-004

⁹⁶ 088-004-057

⁹⁷ 088-004-059

⁹⁸ 092-017-057

⁹⁹ 092-017-058

Post-mortem and inquest

- 6.41 Dr Janice Bothwell,¹⁰⁰ RBHSC Consultant Paediatrician, reported Conor's death to the Coroner's Office with a clinical assessment of "*Brainstem dysfunction with cerebral oedema. Cause of cerebral Oedema related to (1) Viral illness (2) Over-rehydration/inapprop fluid management; (3) status epilepticus → causing hypoxia.*"¹⁰¹
- 6.42 The Coroner directed a post-mortem examination which was conducted by Dr Brian Herron¹⁰² (who had likewise performed the post-mortems on Claire Roberts and Raychel Ferguson) and once again sought the opinion of Dr Edward Sumner.¹⁰³ Dr Herron presented his autopsy report on 3rd March 2004 and concluded that death had been caused by cerebral oedema.¹⁰⁴ However, he expressed uncertainty as to the underlying cause of the cerebral oedema. He nonetheless suggested that the seizures may have been an important factor in the death.¹⁰⁵
- 6.43 The Coroner, Mr John Leckey, conducted an inquest on 9th June 2004 and found the cause of Conor's death to be:
- "I (a) Brain stem failure.*
- (b) Cerebral oedema.*
- (c) Hypoxia, ischemia, seizures and infarction.*
- II Cerebral palsy."*¹⁰⁶
- 6.44 It is relevant to note that Mr Leckey concluded that "*the fluid management at Craigavon Area Hospital was acceptable.*"¹⁰⁷ In this he was informed by Dr Sumner's evidence that the fluid management in Conor's case had indeed been "*acceptable.*"¹⁰⁸ However, and notwithstanding his evidence,

¹⁰⁰ 327-003-006
¹⁰¹ 087-137c-455
¹⁰² 327-003-007
¹⁰³ 327-003-008
¹⁰⁴ 087-055-204
¹⁰⁵ 087-055-204
¹⁰⁶ 087-057-221
¹⁰⁷ 087-057-223
¹⁰⁸ 087-038-173

Dr Sumner took the unusual post-inquest step of writing to the Coroner, the CMO and Dr John Jenkins¹⁰⁹ to express misgivings about Craigavon's approach to fluid management:

*"Having got home from Conor Mitchell's inquest, I feel I must communicate my great unease. This is the fourth inquest I have attended in Belfast where sub-optimal fluid management has been involved...There was no calculation of the degree of dehydration nor the fluid deficit and no calculation of the maintenance fluids for a 22kg child. You will see from the enclosed copy of the fluid charts that the first prescription is not even signed. In my opinion the initial rate of infusion was unnecessarily high... there was a lapse in infusion for some hours... The basis of these amounts makes no sense to me at all. There was no note of volumes or urine passed, even though it was collected and I could not even find a basic TPR chart...My overall impression from these cases is that the basics of fluid management are neither well understood, nor properly carried out."*¹¹⁰

- 6.45 It is therefore clear that there were significant failings in relation to Conor's fluid management. The fluid record did not adhere to the Guidelines, there was confusion in respect of both prescription and appropriate fluid and there was a failure to ensure that Conor was reviewed by senior staff.
- 6.46 It is surprising that both Dr Sumner and the Coroner should have described Conor's fluid management as "acceptable" when Conor's fluids were clearly not managed in accordance with the Guidelines. However, I accept that the concerns expressed by Dr Sumner in private correspondence, were his considered appraisal, upon reflection, of the treatment given to Conor at Craigavon.
- 6.47 Whilst recognising Dr Scott-Jupp's opinion that inappropriate fluid management did not contribute to Conor's death, I nonetheless find that the treatment failed to comply with the Guidelines. Notwithstanding that the Trust does not accept all the criticisms levelled by Dr Scott- Jupp, I conclude

¹⁰⁹ 327-003-007

¹¹⁰ 087-062i-247 to 248

that there was failure to assess Conor's degree of dehydration and a failure to calculate maintenance fluids. Additionally there is uncertainty as to the rate and duration of infusion and a failure to document urine output. In short, the basics of fluid management were neither well understood nor well performed by clinicians in A&E and MAU.

- 6.48 It must therefore be asked how the clinicians in Craigavon could have so failed in these respects.

Implementation of the Guidance on the Prevention of Hyponatraemia

- 6.49 The CMO wrote to Trust Chief Executives on 4th March 2004 “...to ask you to assure me that... these guidelines have been incorporated into clinical practice in your Trust and that their implementation has been monitored. I would welcome this assurance and ask you to respond in writing before 16th April.”¹¹¹ The Trust Medical Director, Dr Caroline Humphrey,¹¹² replied to the CMO on 7th April 2004 to assure her that “The guidance on the prevention and management of hyponatraemia in children was taken forward in Craigavon Area Hospital Group Trust by a group of senior clinicians including our Consultant Clinical Biochemist, a consultant representative from Accident & Emergency, two senior paediatricians and a consultant anaesthetist. The guidelines... have been adopted throughout the Trust including where children are treated by surgical teams.”¹¹³ Dr Humphrey also assured the CMO that the Guidelines were included in the induction given to junior doctors and had been subject to audit.¹¹⁴
- 6.50 Whilst the Trust has provided documentation to indicate that basic teaching was provided in relation to hyponatraemia and fluid management, no evidence has been forthcoming to indicate that anything was actually done in connection with the implementation of the Guidelines.¹¹⁵

¹¹¹ 007-067-137

¹¹² 327-003-004

¹¹³ 007-073-145

¹¹⁴ 007-073-145

¹¹⁵ 329-018-006

- 6.51 Rather, Dr Humphrey gave evidence that she was in fact unclear as to who was responsible for the implementation of the Guidelines and did not actually know what was done about them.¹¹⁶ In light of this evidence, her assurances to the CMO are a matter of serious concern, most especially given that the Trust has conceded that the Guidelines were not properly implemented at Craigavon.
- 6.52 Whilst the Trust attempted to suggest that Dr Humphrey had based her responses to the CMO “*on informal assurance mechanisms*”¹¹⁷ it is clear that there was no basis for such assurances and they should not have been given. Whilst the failure to implement the Guidelines was an abrogation of responsibility, the deliberate attempt to mislead the CMO was a grave breach of professional duty and a failure in public service.
- 6.53 It would appear that the Chief Executive Mr John Templeton,¹¹⁸ the Medical Director Dr William McCaughey,¹¹⁹ and the Directors of Nursing Ms Bridie Foy¹²⁰ and Mr John Mone,¹²¹ “*had the key responsibility for dissemination, implementation and monitoring of the guidelines.*”¹²² Dr McCaughey indicated “*that details of implementation were appropriately delegated*”¹²³ to “*Clinical Directors in all specialties.*”¹²⁴
- 6.54 He identified Dr Martina Hogan¹²⁵ as the consultant coordinating implementation within paediatrics.¹²⁶ Dr Hogan “*advised that Dr Bell initiated dissemination and implementation of Actions arising from the Guidelines...*”¹²⁷ Mr Ivan Sterling and Dr Jeff Lee, the Clinical Directors of A&E and MAU respectively¹²⁸ could not recall any direction about the

¹¹⁶ WS-354-1 p.6

¹¹⁷ 340-001-009

¹¹⁸ 327-003-008

¹¹⁹ 327-003-004

¹²⁰ 327-003-002

¹²¹ 327-003-003

¹²² 329-018-007

¹²³ WS-369-1 p.7

¹²⁴ WS-369-1 p.4

¹²⁵ 327-003-003

¹²⁶ WS-369-1 p.5

¹²⁷ 329-032a-001

¹²⁸ 329-032a-001 to 002

implementation of the Guidelines¹²⁹ and the Trust was “*unable to provide clarity on the units in which the 2002 Guidance was displayed...*”¹³⁰

6.55 It would however seem at least possible that the Guidelines were displayed because it is recorded¹³¹ that the Clinical Services Manager, Mrs Eileen O'Rourke¹³² asked Nursing Sisters to check whether the Guidelines posters were on display on each ward.¹³³ Unfortunately Mrs O'Rourke was unable to recall the response elicited and there is no record.¹³⁴

6.56 Irrespective of the Trust's subsequent acknowledgment of failings in this regard, the evidence reveals a confused detachment amongst senior staff in Craigavon as to what was to be done with the Guidelines:

- (i) Mr Templeton, the Chief Executive of the Trust, while conceding that he held a joint responsibility for implementing the Guidelines and that he was made aware of the Guidelines by the Medical Director, understood it to be managed “*under the direction of the Chief Medical Officer.*”¹³⁵
- (ii) Dr McCaughey could not recall where the Guidelines were displayed¹³⁶ or what was done to develop or introduce compliant protocols.¹³⁷
- (iii) Ms Foy, Director of Nursing, accepting that she had joint responsibility for the implementation of the Guidelines,¹³⁸ had no recollection of seeing the Guidelines¹³⁹ let alone taking any steps to implement them.¹⁴⁰

¹²⁹ 329-032a-001 to 002

¹³⁰ 329-018-007

¹³¹ 329-014-122

¹³² 327-003-007

¹³³ 329-014-122

¹³⁴ WS-370-1 p.4

¹³⁵ WS-371-1 p.3

¹³⁶ WS-369-1 p.6

¹³⁷ WS-369-1 p.6

¹³⁸ WS-367-1 p.6

¹³⁹ WS-367-1 p.4

¹⁴⁰ WS-367-1 p.5

- (iv) Mrs O'Rourke, the Clinical Services Manager, stated that she had *"no recall of receiving this information"*¹⁴¹ and could not remember if she *"forwarded the posters or whether they were sent to the Sisters from the Director..."*¹⁴²
- (v) Mr Mone told the Inquiry that he had no recollection of the Guidelines.¹⁴³

6.57 This was a failure in both individual and collective leadership.

Evidence of the clinicians and nurses

6.58 This unsatisfactory situation was confirmed by the evidence of the clinicians who cared for Conor in both A&E and MAU.

- (i) Dr Budd, who was responsible for providing Conor's initial intravenous fluids in A&E, told the Inquiry that she was not aware of the Guidelines at the time of Conor's admission.¹⁴⁴
- (ii) Dr Catherine Quinn, Medical SHO in MAU, said that she was not aware of the Guidelines before seeing Conor, was not aware of them on display in MAU and had received no formal training in the application of the Guidelines.¹⁴⁵
- (iii) Dr Andrew Murdock,¹⁴⁶ who as Specialist Registrar in Gastroenterology and General Internal Medicine had advised Dr Quinn in relation to managing Conor's intravenous fluids,¹⁴⁷ could not recall the Guidelines being brought to his attention or seeing the Guidelines on display in MAU or indeed in any other area of the hospital where he worked.¹⁴⁸

¹⁴¹ WS-370-1 p.3

¹⁴² WS-370-1 p.4

¹⁴³ WS-375-1 p.5

¹⁴⁴ WS-352-1 p.10

¹⁴⁵ WS-356-1 p.9

¹⁴⁶ 327-003-005

¹⁴⁷ 087-025-117

¹⁴⁸ WS-355-1 p.14-15

- (iv) Dr Marian Williams, SHO in Paediatrics who attended Conor, could not recall whether the Guidelines were brought to her attention at that time¹⁴⁹ or indeed if they were on display in MAU.¹⁵⁰
- (v) Sister Irene Brennan (née Dickey),¹⁵¹ the senior nurse on duty in MAU, acknowledged that the Guidelines were not followed in Conor's case because the nurses in MAU were unaware of their existence.¹⁵² They had not been brought to their attention¹⁵³ and were not on display.¹⁵⁴
- (vi) Staff Nurse Francis Lavery¹⁵⁵ who had been on duty, could not recall receiving any specific training in relation to the fluid management of paediatric patients.¹⁵⁶ He stated that the Guidelines were not brought to his attention before Conor's admission¹⁵⁷ and confirmed that they were not on display in MAU.¹⁵⁸
- (vii) Sister Lorna Cullen¹⁵⁹ was the Ward Sister in MAU. She had no involvement in Conor's case.¹⁶⁰ Notwithstanding that she was the Ward Sister, she stated that the Guidelines were not brought to her attention¹⁶¹ and were not displayed in MAU.¹⁶² Nor was she aware of any other location within the hospital where the poster was displayed.¹⁶³
- (viii) Staff Nurse Barbara Wilkinson¹⁶⁴ was on duty in MAU. She was unaware of the Guidelines at that time and did not recall receiving

¹⁴⁹ WS-358-1 p.5
¹⁵⁰ WS-358-1 p.7
¹⁵¹ 327-003-002
¹⁵² WS-353-1 p.13-14
¹⁵³ WS-353-1 p.12
¹⁵⁴ WS-353-1 p.13
¹⁵⁵ 327-003-002
¹⁵⁶ WS-351-1 p.6
¹⁵⁷ WS-351-1 p.10
¹⁵⁸ WS-351-1 p.12
¹⁵⁹ 327-003-002
¹⁶⁰ WS-374-1 p.4
¹⁶¹ WS-374-1 p.6
¹⁶² WS-374-1 p.7
¹⁶³ WS-374-1 p.8
¹⁶⁴ 327-003-003

any training as to their use or application¹⁶⁵ and confirmed that the poster was not on display.¹⁶⁶

- (ix) Staff Nurse Ruth Bullas¹⁶⁷ ¹⁶⁸ formally admitted Conor to MAU and likewise advised that she was unaware of the Guidelines at the time and could recall no training in respect of them.¹⁶⁹

6.59 The evidence is clear that the CMO's instruction that the Guidelines be disseminated, implemented and developed was ignored. This was wholly unacceptable and a significant failure on the part of Trust. The acting Medical Director Dr McCaughey, the Directors of Nursing Ms Foy and Mr Mone, and the Chief Executive, Mr Templeton were in post and responsible.

Decision to admit Conor to an adult ward

6.60 The decision to admit Conor onto an adult ward was the subject of debate. Dr Scott-Jupp was of the view that Conor should have been managed in a paediatric setting which would have benefited his treatment in that:

- (i) Greater attention might have been given to an early diagnosis of urinary tract infection.
- (ii) A different antibiotic requiring less fluid would probably have been prescribed.
- (iii) It is likely that he would have been treated throughout with normal saline.¹⁷⁰

6.61 Notwithstanding that the Trust took issue with Dr Scott-Jupp's view as to the appropriateness of Conor's admission onto an adult ward,¹⁷¹ Dr Scott-Jupp maintained that "*it should have been obvious to all concerned that this*

¹⁶⁵ WS-377-1 p.7

¹⁶⁶ WS-377-1 p.8

¹⁶⁷ 327-003-002

¹⁶⁸ Staff Nurse Bullas was subsequently removed from the nursing register by the Nursing and Midwifery Council following an upheld complaint raised by Ms Mitchell that she had failed to document concern about Conor's seizures or to escalate them to a senior member of staff.

¹⁶⁹ WS-376-1 p.8

¹⁷⁰ 260-004-006

¹⁷¹ 260-003-006

*was a very immature, child-like 15 year old.” He said he would “have expected greater flexibility both at Craigavon and in Belfast. I do not believe age cut-offs should have been so rigidly applied.”*¹⁷² It is not without relevance that despite his age RBHSC took account of his physiology and admitted Conor into PICU.¹⁷³

6.62 The unfortunate result was that Conor was treated in A&E and in MAU by doctors and nurses who were ignorant of the Guidelines, in consequence of which:

- (i) The management of Conor’s fluids, whilst not the cause of his deterioration or death, was non-compliant and sub-standard.
- (ii) The appropriate formula for calculating maintenance fluids was not used.
- (iii) Conor’s fluid output was neither measured nor recorded.
- (iv) The entries in the fluid record are unclear to the point that they obscure how much fluid Conor received and when.

6.63 However, it is to be noted that within the Paediatric Department, Dr Michael Smith¹⁷⁴ recalled that the Guidelines were displayed on the ward.¹⁷⁵ Dr Hogan stated that she was trained in the use and application of the Guidelines.¹⁷⁶ Dr Barbara Bell¹⁷⁷ said that she received a copy of the Guidelines and had personally ensured that they were clearly visible in all paediatric clinical areas.¹⁷⁸

6.64 Whilst there was uncertainty as to whether protocol was developed to complement the Guidelines as requested by the CMO,¹⁷⁹ it would nonetheless appear that a protocol for the management of intravenous fluids in children had been developed by Drs Smith and Lowry following

¹⁷² 260-002-021

¹⁷³ 088-004-073

¹⁷⁴ 327-003-006

¹⁷⁵ WS-357-1 p.10

¹⁷⁶ WS-368-1 p.5

¹⁷⁷ 327-003-003

¹⁷⁸ WS-364-1 p.4

¹⁷⁹ WS-354-1 p.11 & 329-018-006 & WS-369-1 p.6

Raychel Ferguson's death and before the Guidelines were published.¹⁸⁰ Their protocol emphasised the need to calculate maintenance fluids separately from replacement fluids and contained a table to aid the proper approach to fluid management.¹⁸¹

- 6.65 I can only therefore conclude that had Conor been admitted to the paediatric ward as Dr Budd intended, he may very well have been cared for by medical staff familiar with the Guidelines and received appropriate fluid therapy. There might also then have been better engagement with Conor's mother.
- 6.66 This was an inconsistency which effectively meant that different paediatric patients could receive different treatment in different parts of the same hospital with potentially different outcomes. Such variation in the potential for appropriate treatment within a major hospital is troubling. That such a situation could develop reveals dangerous systemic vulnerabilities for which the Chief Executive, Mr Templeton, must bear responsibility.

Serious Adverse Incident Procedure

- 6.67 Craigavon had policy and procedure in place in 2003 for adverse incident reporting. However, Conor's death was not reported as an adverse incident¹⁸² notwithstanding that the RBHSC reported both the fact of his death and the fluid mismanagement to the Coroner.
- 6.68 The decision not to report Conor's death as a Serious Adverse Incident ('SAI') was subsequently defended in correspondence by Dr Humphrey to Dr A.M. Telford, Director of Public Health, Southern Health and Social Services Board on the basis that fluid management issues were not in fact implicated in the cause of death.¹⁸³ Ignoring the fact that Conor's death was most unexpected and warranted investigation on that basis alone,

¹⁸⁰ 329-014-001 & WS-350-1 p.5

¹⁸¹ 329-014-004

¹⁸² 329-022-001

¹⁸³ 329-022-017

there was a failure to adequately review Ms Mitchell's express dissatisfaction and the uncertainties in clinical diagnosis.

- 6.69 Ms Mitchell continued to express her concern about the fluid management in correspondence with Mr Templeton in 2004 and 2005.¹⁸⁴ It was not until Conor's case was added to the work of this Inquiry that the Trust belatedly acknowledged that it "*can now be considered a serious adverse incident as defined in Circular HSS (PPM) 06/04.*"¹⁸⁵ This was an incident and a complaint which ought to have been thoroughly investigated. At the very least the Trust would then have been alerted to some of the many deficiencies now revealed.

Admissions by the Trust

- 6.70 The Trust properly issued the following apology in respect of its many failings in relation to the Guidelines:

"The Southern Health and Social Care Trust, which includes the legacy Craigavon Area Hospital Trust... accepts that the DHSSPS 2002 guidelines on the prevention of hyponatraemia in children were applicable to Conor Mitchell. The trust accepts that for various reasons, which will be the subject of this inquiry, the directions of the Chief Medical Officer as contained in these guidelines and accompanying correspondence were not properly implemented in the medical assessment unit or emergency department of Craigavon Area Hospital at this time and that staff in those areas were not made aware of or trained by the legacy trust in the implementation of these guidelines. We would contrast that situation with the Southern Trust's response to the DHSSPS 2007 guidelines. 'The trust accepts that throughout his course of management in Craigavon Area Hospital in 2003, it was the trust's responsibility to ensure the clinicians and nurses who were looking after Conor Mitchell had the guidelines in the forefront of their minds when treating him and the trust accepts that these clinicians and nurses should have had this guidance available to them when treating Conor.

¹⁸⁴ 329-022-021 to 033

¹⁸⁵ 329-022-018

Although there is nothing to indicate that the failure to comply with the guidelines resulted in Conor's death, the trust fully acknowledges its liability for the failures and shortcomings that occurred in the implementation of the DHSSPS 2002 guidelines on the prevention of hyponatraemia in children, both generally and specifically, in relation to Conor's care. The trust apologises to Conor's family for the failings referred to above and again offers our sincere sympathies to Conor's family."¹⁸⁶

- 6.71 The family welcomed this admission and apology¹⁸⁷ and hoped that it would avoid "*extensive investigations on certain issues*" by the Inquiry and result in savings in public funds.¹⁸⁸ It was agreed that the admissions rendered it unnecessary for the treating clinicians to give oral evidence.¹⁸⁹
- 6.72 Instead, I directed that the Trust provide written submissions detailing how and why it failed in Guidelines implementation and its omission to deal with the case as a SAI. In addition I sought particulars of those arrangements now in place in Craigavon to implement the Guidelines.
- 6.73 A paper was submitted by the Trust on 21st October 2013 indicating that:
- (i) "*There may have been a perception at the time of the dissemination of the 2002 Guidelines that the guidelines were not applicable to adult medicine and therefore appropriate dissemination and training in the guidelines was not highlighted...*"¹⁹⁰
 - (ii) "*Clear compliance and assurance processes should have been put in place to ensure that nurses and doctors in all areas where there was the potential for children to be treated were aware of and trained in the guidance.*"¹⁹¹

¹⁸⁶ T-17-10-13 p.6-7

¹⁸⁷ T-24-10-13 p.7

¹⁸⁸ T-17-10-13 p.7-8

¹⁸⁹ T-18-10-13 p.2

¹⁹⁰ 340-001-004

¹⁹¹ 340-001-004 to 005

- (iii) *“Assurance arrangements should have been agreed by both the Medical Director and Nursing Director...”*¹⁹²
- (iv) *“There appears to have been a breakdown in communication in relation to individual’s roles and responsibilities regarding the dissemination of the guidelines.”*¹⁹³
- (v) *“There appears to have been a perception by the Director of Nursing that it was the CSM’s responsibility to implement the guidelines... in the absence of a clear assurance framework there was confusion of roles and responsibilities between the Director of Nursing and the CSM.”*¹⁹⁴
- (vi) *“That the governance arrangements within the Trust had not matured sufficiently to ensure an integrated approach to Governance. This resulted in the risk that the guidelines would not be disseminated down both nursing and medical lines simultaneously.”*¹⁹⁵
- (vii) *“There is no documented evidence or audit trail to evidence that Paediatric nurses were trained specifically on the 2002 fluid management guidelines.”*¹⁹⁶
- (viii) *“In retrospect both Dr McCaughey and Dr Humphrey advised that they based their assurances [to the CMO] with regards to the implementation of the 2002 guidelines on informal assurance mechanisms.”*¹⁹⁷
- (ix) *“It is evident in hindsight that Conor’s case would meet the criteria for review as a SAI with respect to point 8 of Circular HSS (PPM) 06/04 Reporting and Follow up on Serious Adverse Incidents: Interim Guidance... Therefore in not reporting Conor’s case as an SAI at the*

¹⁹² 340-001-005

¹⁹³ 340-001-006

¹⁹⁴ 340-001-006 to 007

¹⁹⁵ 340-001-007

¹⁹⁶ 340-001-007

¹⁹⁷ 340-001-009

*time there was a lost opportunity to identify and share learning across the region.”*¹⁹⁸

6.74 On 23rd October 2013 I sought clarification on these submissions so as to confirm my interpretation of the Trust concessions.¹⁹⁹ At public hearing on 24th October 2013 it was furthermore accepted by the Trust that:

- (i) Clinicians in wards other than the paediatric ward were not made aware of or trained in the implementation of the Guidelines, including A&E and MAU where children would be treated.
- (ii) The Guidelines were not implemented within nursing practice in Craigavon, including paediatric nursing.
- (iii) That there was no basis for the Medical Director, Dr Humphrey, whether alone or with input from Mr McCaughey, to give assurance to the CMO that there had been implementation of the Guidelines at Craigavon.
- (iv) That a SAI investigation should have been conducted into the unexpected death of Conor under Circular HSS (PPM) 06/04 or the Trust’s own policy.²⁰⁰

Subsequent developments

6.75 The Trust approach was of assistance. The Mitchell family then responded and stated that they wanted *“to see measures put in place that will prevent similar tragedies occurring in the future...”*²⁰¹

6.76 It therefore became important to consider whether or not measures are now in place in Craigavon to ensure that paediatric fluid therapy is managed in accordance with the Guidelines.

¹⁹⁸ 340-001-010

¹⁹⁹ 340-008-001

²⁰⁰ T-24-10-13 p.19 line 21

²⁰¹ T-24-10-13 p.8 line 15

- 6.77 I was informed that the Guidelines were superseded in 2007 by guidelines deriving from the NPSA Patient Safety Alert 22.²⁰² The approach taken by the Trust in light of Safety Alert 22 was described as including the presentation of an action plan to the Trust Board, the creation of a Working Group led by the Medical Director, a training programme, compliance audits and an independent review of the Alert.²⁰³
- 6.78 On 30th October 2007 the Trust reported that Solution No.18 had been removed from general use in Craigavon and new fluid balance and prescription sheets were under consideration.²⁰⁴ A “*Hyponatraemia Meeting*” was held in January 2008 to consider how all 14-16 year old patients would receive treatment in accordance with the Guidelines irrespective of where they were treated.²⁰⁵ Audits to ensure compliance were carried out in October 2007²⁰⁶ and March 2008.²⁰⁷
- 6.79 The Trust also adopted a ‘Paediatric Intravenous Infusion Policy’ in October 2009 detailing the medical procedures for prescription, monitoring and review of intravenous infusions for children and young people²⁰⁸ together with nursing procedures for the administration of fluids. Guidance was given as to the recognition of hospital acquired hyponatraemia.²⁰⁹ In terms, the policy directed that nurses should consult the chart to satisfy themselves that prescriptions complied with the 2007 Guidelines before administering IV fluid and that they should carry out appropriate assessments, report changes in the child’s condition and provide handover briefings to incoming staff.
- 6.80 The policy also contained an ‘incident trigger’ list²¹⁰ with an associated reporting mechanism²¹¹ to alert clinicians to:

²⁰² 303-028-367
²⁰³ 329-020a-001
²⁰⁴ 329-020a-012
²⁰⁵ 329-020a-001
²⁰⁶ 329-020a-042
²⁰⁷ 329-020a-038
²⁰⁸ 329-020a-125
²⁰⁹ 329-020a-133
²¹⁰ 329-020a-145
²¹¹ 329-020a-146

- (i) Any episode of hospital acquired hyponatraemia in children receiving IV fluids.
 - (ii) Any failure to check electrolytes at least once in every 24 hours in children receiving intravenous fluids.
 - (iii) The use of any IV fluid other than as outlined in the 2007 Guidelines.
- 6.81 Mandatory training for all medical and nursing staff in the management of IV fluids for children and young people was also stipulated by the policy.²¹² The Inquiry has been provided with comprehensive documentation setting out these requirements. Moreover in relation to the clinical governance procedures set out in the policy, the evidence suggests that the Trust has undertaken audits every year since 2010 to assess compliance with the 2007 Guidelines²¹³ together with an “*Audit of Hyponatraemia*.”²¹⁴
- 6.82 The Trust advised that the audit results are shared within a multi-disciplinary team and discussed at clinical governance meetings.²¹⁵ This in conjunction with developing external guidance has led to additional changes in practice including:
- (i) The development and implementation of a revised fluid balance chart.
 - (ii) The development and implementation of guidelines for peri-operative fluid management in children to “*provide guidance and reduce the risk of harm associated with intravenous fluid administration to the paediatric patient in the peri-operative phase*.”²¹⁶
 - (iii) Further review of the paediatric intravenous infusion policy.

²¹² 329-020a-173

²¹³ 329-020a-004

²¹⁴ 329-020a-122

²¹⁵ 329-020a-008

²¹⁶ 329-020a-163

- 6.83 A Review of the Trust's 'Incident Management Policy' was completed in January 2013²¹⁷ and found *"clear guidance on incident reporting, investigation and the dissemination of learning from incidents and SAI's."*²¹⁸ Likewise, assurances were given that since April 2012 the Trust has had a procedure²¹⁹ *"in place to ensure the systematic and integrated approach for the implementation, monitoring and assurance of clinical standard and guidelines."*²²⁰
- 6.84 Accordingly, the Trust expressed the hope that it had been able *"... to demonstrate that they have reflected on their roles and responsibilities at this time and have identified and agreed on those factors which may have had an influence, or may have contributed to the failings in the dissemination and implementation of the guidelines in the Emergency Department and Medical Assessment Unit of CAH and furthermore the opportunities missed in the sharing of learning with regard these failings."*²²¹
- 6.85 On this basis I am of the view that the Trust has learned lessons and has implemented appropriate change in the years since Conor's tragic death.

Concluding remarks

- 6.86 Whilst I welcome the Trust concession that clear compliance and assurance processes in respect of the Guidelines should have been agreed and put into operation by the Medical Director and Nursing Directors, such concession cannot serve to avoid the just and appropriate criticism that Conor's treatment failed to comply with the Guidelines.
- 6.87 It is now acknowledged that there was a breakdown in communication between those in positions of governance as to their roles and responsibilities. This was a systemic failing for which the Chief Executive must bear responsibility.

²¹⁷ 340-001-012

²¹⁸ 340-001-012

²¹⁹ 304-001-003 & 340-005-001

²²⁰ 340-001-013

²²¹ 340-001-013

- 6.88 There was potentially dangerous variation in the care and treatment afforded young people admitted to Craigavon which was a serious systemic weakness.
- 6.89 The false assurance given the CMO that the Guidelines had been adopted and audited was a serious breach of professional duty and public service values.
- 6.90 Had the Trust conducted the SAI investigation of Conor's unexpected death, which it now accepts it should have done, it would have learned lessons to the benefit of all. That opportunity was lost.
- 6.91 Notwithstanding shortcomings and deficiency, the evidence as to policy, protocol, training, audit and review in the years since Conor's death, has provided some reassurance that lessons have been learned from this tragedy. Appropriate measures have been taken within Craigavon.

CONOR MITCHELL

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Introduction

- 6.1 Conor Mitchell was born on 12th October 1987. When he was 6 months old he was diagnosed with cerebral palsy, which limited his physical development. He also had a history of mild epilepsy. He was described as extremely intelligent with a great enthusiasm for sports and games and a determination for independence.¹ In spite of his disability “*Conor was extremely healthy...*”²
- 6.2 On 27th April 2003 Conor became unwell and complained of a sore throat. He vomited, was lethargic and suffered periodic discomfort.³ He failed to recover and over the course of the next 10 days was managed at home with antibiotics prescribed by his GP.⁴
- 6.3 On 8th May 2003, Conor was seen by the family GP, Dr Doyle,⁵ who referred him to the Royal Belfast Hospital for Sick Children (‘RBHSC’).⁶ However Conor’s mother wanted him to be seen as soon as possible and took him to the Accident & Emergency Department (‘A&E’) of the Craigavon Area Hospital (‘Craigavon’).
- 6.4 On arrival Conor was examined⁷ by Senior House Officer (‘SHO’) Dr Suzie Budd,⁸ who took blood samples and, noting that he was pale, unresponsive and showing signs of dehydration⁹ gave him a bolus of IV fluids.¹⁰ Dr Budd then tried to refer Conor to the paediatric team but was advised that, because he was 15 years old, he was too old to be admitted to a paediatric ward.¹¹

¹ 087-001-003

² 087-001-002

³ 087-002-015 to 018

⁴ 087-002-015 to 018

⁵ 327-003-001

⁶ 088-002-022

⁷ 087-028-131

⁸ 327-003-003

⁹ 087-028-131

¹⁰ 087-029-133 & WS-352-1 p.7

¹¹ WS-357-1 p.4 - Dr Michael Smith described how the hospital followed the relevant guideline at the time in which the upper age limit was the day before the patient’s 14th birthday

- 6.5 Notwithstanding that he had the physiology of an 8 year old,¹² Conor was admitted for observation into the Medical Admissions Unit ('MAU')¹³ which was an adult ward. He was given further IV fluids.¹⁴
- 6.6 During the course of the afternoon and early evening, Conor's condition seemingly deteriorated and at 20:30 he suffered two seizures in quick succession and stopped breathing.¹⁵ Conor was intubated and ventilated and admitted to the Intensive Care Unit ('ICU').¹⁶ A Computerised Tomography ('CT') scan was performed.
- 6.7 At approximately 12:00 the following day, 9th May, Dr Charles McAllister,¹⁷ Consultant in charge of ICU, requested that Conor be transferred to the Paediatric Intensive Care Unit ('PICU') at the RBHSC.¹⁸ The transfer was accepted by Dr Anthony Chisakuta,¹⁹ the RBHSC Consultant Paediatric Anaesthetist who had also treated Lucy after her transfer from the Erne Hospital in April 2000.
- 6.8 Upon admission to PICU, Conor was examined by Dr James McKaigue,²⁰ Consultant Paediatric Anaesthetist. He was alert to the involvement of hyponatraemia in the deaths of Adam Strain and Claire Roberts and had had involvement with Lucy in April 2000. Thereafter, and on 12th May 2003, Conor was also examined by Dr Robert Taylor²¹ who by that time may be credited with significant expertise in hyponatraemia.
- 6.9 In light of the CT scan and findings on examination, brain stem death tests were conducted on 12th May 2003. There was no hope and the decision was taken to discontinue treatment. Conor was pronounced dead at 15:45.²²

¹² Dr Budd WS-352-1 p.6

¹³ 087-014-079

¹⁴ 087-015-082

¹⁵ 087-024-114

¹⁶ 087-024-115

¹⁷ 327-003-004

¹⁸ 087-043-181

¹⁹ 327-003-006

²⁰ 327-003-006 & 092-017-039

²¹ 092-017-057

²² 092-017-058

- 6.10 Formal notification of the death was made to the Coroner and after due investigation, the cause of Conor's death was found at inquest in June 2004 to have been:

"I (a) Brain stem failure.

(b) Cerebral oedema.

(c) Hypoxia, ischemia, seizures and infarction.

*II Cerebral palsy."*²³

Conor's Terms of Reference

- 6.11 Whilst hyponatraemia due to fluid mismanagement was not implicated in Conor's death, I added Conor's case to the remit of this Inquiry because of concern that his fluid therapy had not been managed in accordance with the Department of Health, Social Services & Patient Safety, Northern Ireland ('the Department') 'Guidance on the Prevention of Hyponatraemia in Children' (the 'Guidelines') issued only 14 months before.²⁴
- 6.12 The Minister authorised the inclusion of Conor's death within this Inquiry.²⁵ I explained in February 2010, that

"It is obviously a matter of concern if guidelines which have been introduced as a result of a previous death or deaths and which are aimed at avoiding similar events in the future, are not properly communicated to hospital staff and followed.

It is relevant to the investigation to be conducted by the Inquiry, whether and to what extent the guidelines were disseminated and followed in the period after they were published. Another matter of interest is whether the fact that Conor was being treated on an adult ward, rather than a children's ward, made any difference to the way in which it would appear that the guidelines were not followed.

²³ 087-057-221

²⁴ Progress Hearing T-30-05-08 p.6

²⁵ Progress Hearing T-30-05-08 9.6

Accordingly, the Inquiry will investigate the way in which the guidelines were circulated by the Department, the way in which they were made known to hospital staff and the steps, if any, which were taken to ensure that they were being followed. While this is an issue of general importance, it will be informed by an examination of the way in which the guidelines were introduced and followed in Craigavon Area Hospital in May 2003.”²⁶

- 6.13 Accordingly, in this chapter of the report, I examine Conor’s case with predominant focus on the extent to which the clinicians who cared for Conor at Craigavon complied with the published Guidelines. Other matters are dealt with for purposes of context only. I do so with reference to paragraph 4.2 of the List of Issues (excluding reference to the RBHSC), namely:

“Investigation into the care and treatment that Conor received in 2003 in relation to the management of fluid balance:

- (1) What understanding those who cared for and treated Conor had of fluid management issues raised by his condition.*
- (2) To what extent fluid management and record keeping was covered in the teaching/training of [those]... who treated Conor.*
- (3) To what extent the care and treatment which Conor received, both in Craigavon Hospital and the RBHSC, was consistent with the then teaching/training on fluid management and record keeping, in particular the Guidelines.*
- (4) Whether the fact that Conor was admitted to an adult ward was relevant to whether the Guidelines were adhered to.”*

- 6.14 I examine Conor’s fluid management at Craigavon from admission to respiratory arrest taking into account the procedures and advices set out in the Guidelines and consider whether Craigavon took appropriate steps to disseminate and implement the Guidelines into clinical practice. Unlike the other cases covered by this report, I do not make any findings as to the clinical aspects of care, save for fluid management and make no findings

²⁶ 327-004-001-002

as to the cause of death. While I am conscious that some other issues are very important to Conor's family (for example the issues of seizures and communication), I do not make any findings in respect of these matters.

- 6.15 It is be acknowledged at the outset that the Southern Health and Social Care Trust ('the Trust')²⁷ and some Craigavon doctors and managers, made relevant concessions at public hearings in October 2013 which proved of considerable assistance to the Inquiry. I commend the Trust and the clinicians for taking such a sensible and constructive approach before this Inquiry.

Expert reports

- 6.16 The Inquiry was guided by the expert reports received from Dr Robert Scott-Jupp,²⁸ Consultant Paediatrician at Salisbury District Hospital and dated 19th September 2013²⁹ and 11th October 2013.³⁰
- 6.17 The Inquiry also had the benefit of the report of Dr Edward Sumner (Consultant Paediatric Anaesthetist at Great Ormond Street Childrens' Hospital) who reported to the Coroner in November 2003.³¹

Schedules compiled by the Inquiry

- 6.18 In an attempt to summarise the significant quantities of information received, the following schedules and charts were compiled:
- (i) List of Persons involved in Conor's case.³²
 - (ii) Chronology of Events (Clinical).³³
 - (iii) Schedule of Guideline Requirements and Conor's Treatment.³⁴

²⁷ As successor to the former Craigavon Area Hospital Group Trust.

²⁸ 327-003-008

²⁹ 260-002-001

³⁰ 260-004-001

³¹ 087-056-213

³² 327-003-001

³³ 327-002-001

³⁴ 327-008-001

All of the above are available on the Inquiry website.

Guidelines on the Prevention of Hyponatraemia

- 6.19 I have commended Altnagelvin hospital for bringing the death of Raychel Ferguson and the risks connected with the use of Solution No.18 to the attention of interested parties across Northern Ireland. Their response led to the creation of the CMO's Working Group on Hyponatraemia and the production of the Guidelines. It may be useful to recall how this came about as context for Conor's case.
- 6.20 In June 2001 Dr Raymond Fulton, Medical Director at Altnagelvin, disclosed the circumstances of Raychel Ferguson's death to a meeting of Medical Directors³⁵ and suggested that there should be guidance to regulate fluid management in paediatric cases. He indicated that he considered Solution No.18 to be hazardous for use with post-operative children.³⁶ He also notified Dr Henrietta Campbell,³⁷ the Chief Medical Officer ('CMO') and reiterated his belief that regional guidelines were required.³⁸
- 6.21 The CMO sought background information and received Dr Taylor's paper 'Hyponatraemia in Children'³⁹ on 30th July 2001. She then directed her Deputy, Dr Paul Darragh⁴⁰ to assemble a Working Group to examine the issue of hyponatraemia in children and to make recommendations in relation to paediatric fluid management.⁴¹ Dr Darragh asked Dr Miriam McCarthy,⁴² Senior Medical Officer, to convene the Group⁴³ "*... to consider how best practice could be brought to bear on the problem and to explore whether further advice needs to be issued by the DHSS&PS at this time to the profession.*"⁴⁴

³⁵ 012-039-179

³⁶ 095-011-055

³⁷ 337-001-002

³⁸ 012-039-180

³⁹ 043-101-223

⁴⁰ 337-001-002

⁴¹ 075-082-329

⁴² 337-001-002

⁴³ WS-080-1 p.2

⁴⁴ 007-050-099

- 6.22 A number of highly experienced clinicians were then invited to attend an initial meeting on 26th September 2001 to be chaired by Dr Darragh.⁴⁵ It is to be noted that Dr Darrell Lowry,⁴⁶ Consultant Anaesthetist at Craigavon, was present.⁴⁷ It was agreed at that meeting that regional guidance was indeed required for paediatric fluid management and Drs Crean, Jenkins, McAloon and Loughrey undertook to draft the Guidelines.
- 6.23 Following further meetings involving the Department, Directors of Public Health, the Paediatric Anaesthetic Group, the Specialty Advisory Committees and the Clinical Resource Efficiency Support Team, the CMO published the Guidelines on 26th March 2002. They were drawn to the attention of a very wide range of practising clinicians and healthcare professionals in Northern Ireland, including medical and nursing directors and consultants⁴⁸ on the basis that *“Hyponatraemia can be extremely serious and has in the past few years been responsible for two deaths among children in Northern Ireland.”*⁴⁹
- 6.24 The CMO issued the Guidelines with the specific instruction that they be *“prominently displayed in all units that accommodate children”*⁵⁰ and that they should complement local protocols. Importantly, it was stressed that steps be taken to *“audit compliance with the guidance and locally developed protocols...”*⁵¹
- 6.25 Published in the form of an A2 sized poster,⁵² the Guidelines provided advice in relation to baseline assessment, fluid requirements, fluid therapy, monitoring and advice. In terms they required that:
- (i) Weight and serum sodium levels be measured and recorded before commencement of IV fluids.

⁴⁵ 007-048-094
⁴⁶ 327-003-004
⁴⁷ WS-350-1 p.4
⁴⁸ 007-001-001
⁴⁹ 007-001-001
⁵⁰ 007-001-002
⁵¹ 007-001-001
⁵² 007-003-004

- (ii) Fluid needs be assessed by a doctor competent in determining the fluid requirements of a child patient.
- (iii) Replacement fluids be considered and prescribed separately to reflect fluid loss, both in terms of volume and composition.
- (iv) Maintenance fluids be dictated by sodium, potassium and glucose requirements.
- (v) The clinical state of the patient be monitored and fluid balance assessed at least once every 12 hours and that biochemistry sampling be carried out at least once every day.
- (vi) Advice and clinical input be obtained from a senior member of medical staff.⁵³

6.26 It was unusual for the CMO to issue guidelines on clinical issues. Accordingly, it should have been very clear to healthcare trusts that particular attention should be paid to implementation.

6.27 Furthermore, and given that the CMO directed that the Guidelines be “*prominently displayed in all units that may accommodate children*”,⁵⁴ it was clear that each and every hospital should display the Guidelines in all areas, including A&E and adult wards, where children might receive treatment. It should have been obvious that it would not suffice to display the Guidelines in children’s wards alone and very evident that the Guidelines should be introduced to all clinical staff who might become engaged in the fluid management of children.

6.28 It is in this context that I examine how Craigavon responded to the publication of the Guidelines, what it did to implement them and how that was to influence the fluid therapy received by Conor.

⁵³ 007-003-004

⁵⁴ 007-001-001

Conor's Treatment at Craigavon

A&E

- 6.29 Upon admission to A&E Conor underwent routine blood tests and was prescribed intravenous fluids.⁵⁵ The fluids were documented on a fluid intake/output chart.⁵⁶
- 6.30 It was subsequently observed that he appeared to be having seizures.⁵⁷
- 6.31 Dr Scott-Jupp considered Conor's A&E fluid management with reference to the Guidelines. He considered that the requirements of the Guidelines had been complied with in respect of baseline assessment but expressed the following concerns about Conor's management in the A&E Department:
- (i) That it was unclear whether it was Conor's actual weight or an estimate that had been recorded.⁵⁸
 - (ii) That an arterial gas sample taken at 10:59 had been relied upon as an accurate indicator of Conor's sodium levels for the purposes of his fluid management, when such tests were known to be potentially unreliable.⁵⁹
 - (iii) That the fluids administered to Conor in A&E were given "*as a replacement not a resuscitation fluid*"⁶⁰ indicating confusion between resuscitation and replacement fluids.⁶¹
 - (iv) That normal saline ought to have been administered in compliance with the Guidelines when Conor was thought to be in shock⁶² (notwithstanding that he considered Hartmann's an acceptable fluid to use in the circumstances).⁶³

⁵⁵ 088-002-020
⁵⁶ 088-004-063
⁵⁷ 087-027-127
⁵⁸ 260-002-012
⁵⁹ 260-002-012
⁶⁰ 260-002-013
⁶¹ 260-002-015
⁶² 260-002-016
⁶³ 260-002-016

- (v) That Conor's "*clinical state, particularly his degree of dehydration, was not well monitored*" and that "*no attempt was made to quantify his urine output prior to his arrival at hospital.*"⁶⁴
- (vi) That the monitoring of Conor's clinical state did not adhere to the Guidelines in consequence of which there was "*failure to make a more accurate assessment of his state of hydration [which] could have led to either excessive or inadequate fluid replacement, or to replacement with fluid that contained an inappropriate electrolyte content.*"⁶⁵
- (vii) That Conor did not have his fluid requirements assessed by a Paediatrician and that none of the doctors attending Conor in A&E were "*likely to have had the necessary skills, particularly in assessing a disabled child.*"⁶⁶
- (viii) That "*neither the ED (emergency department) staff, nor the adult medical doctors who subsequently saw him, were best placed to manage his fluids after the immediate resuscitation.*"⁶⁷

6.32 Notwithstanding that the Trust rejected some of this criticism⁶⁸ I share Dr Scott-Jupp's concerns in respect of the management of Conor's fluids within A&E.

Admission to MAU

6.33 Dr Budd had tried to refer Conor to the Paediatric team⁶⁹ because she "*...considered that given that he had the physiological status of an 8 year old he would benefit from care under the specialist paediatric team. I intended him to be admitted there...*"⁷⁰ However, and notwithstanding

⁶⁴ 260-002-017
⁶⁵ 260-002-018
⁶⁶ 260-002-013
⁶⁷ 260-004-006
⁶⁸ 260-003-005
⁶⁹ 087-029-013
⁷⁰ WS-352-1 p.6

referral of this issue to the Paediatric Consultant, the Paediatric Admissions SHO declined to admit Conor because he was over 13 years of age.⁷¹

- 6.34 Conor was therefore transferred to MAU and prescribed antibiotic medication and further fluids.⁷² It is to be noted that Dr Catherine Quinn,⁷³ the Medical SHO, recognised that “... *My first fluid prescription (3 litre normal saline over 24 hours, or 125ml / hr) was based on a usual fluid regime for an adult patient. I did not make any additional calculations. This fluid prescription was not appropriate for Conor’s size. This was highlighted by Dr Murdock during his review and I subsequently changed the prescription to a reduced volume and infusion rate on his advice...*”⁷⁴
- 6.35 At that stage Conor’s mother Ms Mitchell expressed concern about Conor’s condition and made a request that he be transferred to the RBHSC.⁷⁵ In response Dr Marian Williams,⁷⁶ SHO, attended upon Conor at or about 20:30. She witnessed an episode of stiffening following by a prolonged seizure during which Conor stopped breathing.⁷⁷ An urgent CT scan was undertaken which was thought suggestive of subarachnoid haemorrhage. However, Dr Cooke, the Consultant Neurologist in the Royal Victoria Hospital (‘RVH’) who also saw the scan, did not consider surgical intervention to be indicated.⁷⁸
- 6.36 In the circumstances it is unsurprising that Conor’s mother should have expressed her unhappiness with the care given.⁷⁹ Dr Scott-Jupp examined the management of Conor’s fluids in MAU with reference to the Guidelines and notwithstanding that the baseline assessment was properly conducted, he made the following criticisms in relation to the care given in MAU:

⁷¹ WS-352-1 p.6

⁷² WS-356-1 p.4

⁷³ 327-003-005

⁷⁴ WS-356-1 p.5-6

⁷⁵ 087-002-020

⁷⁶ 327-003-006

⁷⁷ 087-035-164

⁷⁸ 088-004-055

⁷⁹ 087-001-008

- (i) It was clear that *“the formula given in the Guideline was not used to calculate his maintenance fluids.”*⁸⁰
- (ii) An adult medical SHO and Registrar were unlikely to have had the necessary skills to assess the fluid requirements of a disabled child.⁸¹
- (iii) There was a failure to distinguish between maintenance and replacement fluids.⁸²
- (iv) There was no estimate of fluid output and no calculation of estimated replacement requirement.⁸³ In particular *“the need for replacement fluids should have been assessed before the initial infusion was started and then again at intervals during the day by clinically assessing his state of hydration and his urine output.”*⁸⁴
- (v) There is uncertainty as to the volume of fluid actually received by Conor between 11:20 and 19:40.⁸⁵
- (vi) There was a failure to record the physical signs of dehydration.⁸⁶
- (vii) There was a failure to take urine samples for the purpose of osmolarity or biochemistry analysis so as to assess whether fluid replacement was required.⁸⁷
- (viii) The use of the antibiotic Ciproxin was inappropriate in the paediatric setting and contributed to Conor’s fluid load.⁸⁸
- (ix) The rationale for this prescription was undocumented.

⁸⁰ 260-002-013
⁸¹ 260-002-012 to 013
⁸² 260-002-013
⁸³ 260-002-015
⁸⁴ 260-002-014
⁸⁵ 260-002-014
⁸⁶ 260-002-017
⁸⁷ 260-002-018
⁸⁸ 260-004-005

- (x) There was failure to ensure that Conor was reviewed by a more senior member of staff, most particularly in order to determine whether Conor was experiencing seizure activity.⁸⁹

6.37 I share Dr Scott-Jupp's concern about Conor's fluid management in MAU. However it is important to note that Dr Scott-Jupp did not "*consider that inappropriate fluid management was a contribution to [Conor's] death.*"⁹⁰

Admission to the Intensive Care Unit and PICU

6.38 Conor was transferred to Craigavon ICU at 22:00. Dr McAllister⁹¹ assessed Conor's score on the Glasgow Coma Scale ('GCS') as 3/15, made a detailed examination and found almost no neurological response to stimulation.⁹² Conor's basic brain stem responses were tested and Dr Richard Brady,⁹³ SHO, recorded that "*all appearances are that this unfortunate young fellow is brain stem dead.*"⁹⁴

6.39 After additional neurological examination, consultation with Dr Anthony Chisakuta⁹⁵ at RBHSC and discussion with Conor's family, the decision was made to request Conor's transfer to PICU at the RBHSC⁹⁶ "*in view of weight and complex problems.*"⁹⁷

6.40 When Conor was admitted to PICU at 19:00 on 9th May 2003 it was noted that his neurological condition remained unchanged. It was then that the Paediatric Anaesthetists took the view that Conor "*cannot survive this episode.*"⁹⁸ At 15:15 the decision was made to discontinue treatment and Conor was pronounced dead at 15:45 on 12th May 2003.⁹⁹

⁸⁹ 260-002-018

⁹⁰ 260-004-005

⁹¹ 327-003-004

⁹² 088-004-055

⁹³ 327-003-003

⁹⁴ 088-004-056

⁹⁵ 325-002-004

⁹⁶ 088-004-057

⁹⁷ 088-004-059

⁹⁸ 092-017-057

⁹⁹ 092-017-058

Post-mortem and inquest

- 6.41 Dr Janice Bothwell,¹⁰⁰ RBHSC Consultant Paediatrician, reported Conor's death to the Coroner's Office with a clinical assessment of "*Brainstem dysfunction with cerebral oedema. Cause of cerebral Oedema related to (1) Viral illness (2) Over-rehydration/inapprop fluid management; (3) status epilepticus → causing hypoxia.*"¹⁰¹
- 6.42 The Coroner directed a post-mortem examination which was conducted by Dr Brian Herron¹⁰² (who had likewise performed the post-mortems on Claire Roberts and Raychel Ferguson) and once again sought the opinion of Dr Edward Sumner.¹⁰³ Dr Herron presented his autopsy report on 3rd March 2004 and concluded that death had been caused by cerebral oedema.¹⁰⁴ However, he expressed uncertainty as to the underlying cause of the cerebral oedema. He nonetheless suggested that the seizures may have been an important factor in the death.¹⁰⁵
- 6.43 The Coroner, Mr John Leckey, conducted an inquest on 9th June 2004 and found the cause of Conor's death to be:
- "I (a) Brain stem failure.*
- (b) Cerebral oedema.*
- (c) Hypoxia, ischemia, seizures and infarction.*
- II Cerebral palsy."*¹⁰⁶
- 6.44 It is relevant to note that Mr Leckey concluded that "*the fluid management at Craigavon Area Hospital was acceptable.*"¹⁰⁷ In this he was informed by Dr Sumner's evidence that the fluid management in Conor's case had indeed been "*acceptable.*"¹⁰⁸ However, and notwithstanding his evidence,

¹⁰⁰ 327-003-006
¹⁰¹ 087-137c-455
¹⁰² 327-003-007
¹⁰³ 327-003-008
¹⁰⁴ 087-055-204
¹⁰⁵ 087-055-204
¹⁰⁶ 087-057-221
¹⁰⁷ 087-057-223
¹⁰⁸ 087-038-173

Dr Sumner took the unusual post-inquest step of writing to the Coroner, the CMO and Dr John Jenkins¹⁰⁹ to express misgivings about Craigavon's approach to fluid management:

*"Having got home from Conor Mitchell's inquest, I feel I must communicate my great unease. This is the fourth inquest I have attended in Belfast where sub-optimal fluid management has been involved...There was no calculation of the degree of dehydration nor the fluid deficit and no calculation of the maintenance fluids for a 22kg child. You will see from the enclosed copy of the fluid charts that the first prescription is not even signed. In my opinion the initial rate of infusion was unnecessarily high... there was a lapse in infusion for some hours... The basis of these amounts makes no sense to me at all. There was no note of volumes or urine passed, even though it was collected and I could not even find a basic TPR chart...My overall impression from these cases is that the basics of fluid management are neither well understood, nor properly carried out."*¹¹⁰

- 6.45 It is therefore clear that there were significant failings in relation to Conor's fluid management. The fluid record did not adhere to the Guidelines, there was confusion in respect of both prescription and appropriate fluid and there was a failure to ensure that Conor was reviewed by senior staff.
- 6.46 It is surprising that both Dr Sumner and the Coroner should have described Conor's fluid management as "*acceptable*" when Conor's fluids were clearly not managed in accordance with the Guidelines. However, I accept that the concerns expressed by Dr Sumner in private correspondence, were his considered appraisal, upon reflection, of the treatment given to Conor at Craigavon.
- 6.47 Whilst recognising Dr Scott-Jupp's opinion that inappropriate fluid management did not contribute to Conor's death, I nonetheless find that the treatment failed to comply with the Guidelines. Notwithstanding that the Trust does not accept all the criticisms levelled by Dr Scott- Jupp, I conclude

¹⁰⁹ 327-003-007

¹¹⁰ 087-062i-247 to 248

that there was failure to assess Conor's degree of dehydration and a failure to calculate maintenance fluids. Additionally there is uncertainty as to the rate and duration of infusion and a failure to document urine output. In short, the basics of fluid management were neither well understood nor well performed by clinicians in A&E and MAU.

- 6.48 It must therefore be asked how the clinicians in Craigavon could have so failed in these respects.

Implementation of the Guidance on the Prevention of Hyponatraemia

- 6.49 The CMO wrote to Trust Chief Executives on 4th March 2004 “...to ask you to assure me that... these guidelines have been incorporated into clinical practice in your Trust and that their implementation has been monitored. I would welcome this assurance and ask you to respond in writing before 16th April.”¹¹¹ The Trust Medical Director, Dr Caroline Humphrey,¹¹² replied to the CMO on 7th April 2004 to assure her that “The guidance on the prevention and management of hyponatraemia in children was taken forward in Craigavon Area Hospital Group Trust by a group of senior clinicians including our Consultant Clinical Biochemist, a consultant representative from Accident & Emergency, two senior paediatricians and a consultant anaesthetist. The guidelines... have been adopted throughout the Trust including where children are treated by surgical teams.”¹¹³ Dr Humphrey also assured the CMO that the Guidelines were included in the induction given to junior doctors and had been subject to audit.¹¹⁴
- 6.50 Whilst the Trust has provided documentation to indicate that basic teaching was provided in relation to hyponatraemia and fluid management, no evidence has been forthcoming to indicate that anything was actually done in connection with the implementation of the Guidelines.¹¹⁵

¹¹¹ 007-067-137

¹¹² 327-003-004

¹¹³ 007-073-145

¹¹⁴ 007-073-145

¹¹⁵ 329-018-006

- 6.51 Rather, Dr Humphrey gave evidence that she was in fact unclear as to who was responsible for the implementation of the Guidelines and did not actually know what was done about them.¹¹⁶ In light of this evidence, her assurances to the CMO are a matter of serious concern, most especially given that the Trust has conceded that the Guidelines were not properly implemented at Craigavon.
- 6.52 Whilst the Trust attempted to suggest that Dr Humphrey had based her responses to the CMO “*on informal assurance mechanisms*”¹¹⁷ it is clear that there was no basis for such assurances and they should not have been given. Whilst the failure to implement the Guidelines was an abrogation of responsibility, the deliberate attempt to mislead the CMO was a grave breach of professional duty and a failure in public service.
- 6.53 It would appear that the Chief Executive Mr John Templeton,¹¹⁸ the Medical Director Dr William McCaughey,¹¹⁹ and the Directors of Nursing Ms Bridie Foy¹²⁰ and Mr John Mone,¹²¹ “*had the key responsibility for dissemination, implementation and monitoring of the guidelines.*”¹²² Dr McCaughey indicated “*that details of implementation were appropriately delegated*”¹²³ to “*Clinical Directors in all specialties.*”¹²⁴
- 6.54 He identified Dr Martina Hogan¹²⁵ as the consultant coordinating implementation within paediatrics.¹²⁶ Dr Hogan “*advised that Dr Bell initiated dissemination and implementation of Actions arising from the Guidelines...*”¹²⁷ Mr Ivan Sterling and Dr Jeff Lee, the Clinical Directors of A&E and MAU respectively¹²⁸ could not recall any direction about the

¹¹⁶ WS-354-1 p.6

¹¹⁷ 340-001-009

¹¹⁸ 327-003-008

¹¹⁹ 327-003-004

¹²⁰ 327-003-002

¹²¹ 327-003-003

¹²² 329-018-007

¹²³ WS-369-1 p.7

¹²⁴ WS-369-1 p.4

¹²⁵ 327-003-003

¹²⁶ WS-369-1 p.5

¹²⁷ 329-032a-001

¹²⁸ 329-032a-001 to 002

implementation of the Guidelines¹²⁹ and the Trust was “*unable to provide clarity on the units in which the 2002 Guidance was displayed...*”¹³⁰

6.55 It would however seem at least possible that the Guidelines were displayed because it is recorded¹³¹ that the Clinical Services Manager, Mrs Eileen O'Rourke¹³² asked Nursing Sisters to check whether the Guidelines posters were on display on each ward.¹³³ Unfortunately Mrs O'Rourke was unable to recall the response elicited and there is no record.¹³⁴

6.56 Irrespective of the Trust's subsequent acknowledgment of failings in this regard, the evidence reveals a confused detachment amongst senior staff in Craigavon as to what was to be done with the Guidelines:

- (i) Mr Templeton, the Chief Executive of the Trust, while conceding that he held a joint responsibility for implementing the Guidelines and that he was made aware of the Guidelines by the Medical Director, understood it to be managed “*under the direction of the Chief Medical Officer.*”¹³⁵
- (ii) Dr McCaughey could not recall where the Guidelines were displayed¹³⁶ or what was done to develop or introduce compliant protocols.¹³⁷
- (iii) Ms Foy, Director of Nursing, accepting that she had joint responsibility for the implementation of the Guidelines,¹³⁸ had no recollection of seeing the Guidelines¹³⁹ let alone taking any steps to implement them.¹⁴⁰

¹²⁹ 329-032a-001 to 002

¹³⁰ 329-018-007

¹³¹ 329-014-122

¹³² 327-003-007

¹³³ 329-014-122

¹³⁴ WS-370-1 p.4

¹³⁵ WS-371-1 p.3

¹³⁶ WS-369-1 p.6

¹³⁷ WS-369-1 p.6

¹³⁸ WS-367-1 p.6

¹³⁹ WS-367-1 p.4

¹⁴⁰ WS-367-1 p.5

- (iv) Mrs O'Rourke, the Clinical Services Manager, stated that she had *"no recall of receiving this information"*¹⁴¹ and could not remember if she *"forwarded the posters or whether they were sent to the Sisters from the Director..."*¹⁴²
- (v) Mr Mone told the Inquiry that he had no recollection of the Guidelines.¹⁴³

6.57 This was a failure in both individual and collective leadership.

Evidence of the clinicians and nurses

6.58 This unsatisfactory situation was confirmed by the evidence of the clinicians who cared for Conor in both A&E and MAU.

- (i) Dr Budd, who was responsible for providing Conor's initial intravenous fluids in A&E, told the Inquiry that she was not aware of the Guidelines at the time of Conor's admission.¹⁴⁴
- (ii) Dr Catherine Quinn, Medical SHO in MAU, said that she was not aware of the Guidelines before seeing Conor, was not aware of them on display in MAU and had received no formal training in the application of the Guidelines.¹⁴⁵
- (iii) Dr Andrew Murdock,¹⁴⁶ who as Specialist Registrar in Gastroenterology and General Internal Medicine had advised Dr Quinn in relation to managing Conor's intravenous fluids,¹⁴⁷ could not recall the Guidelines being brought to his attention or seeing the Guidelines on display in MAU or indeed in any other area of the hospital where he worked.¹⁴⁸

¹⁴¹ WS-370-1 p.3

¹⁴² WS-370-1 p.4

¹⁴³ WS-375-1 p.5

¹⁴⁴ WS-352-1 p.10

¹⁴⁵ WS-356-1 p.9

¹⁴⁶ 327-003-005

¹⁴⁷ 087-025-117

¹⁴⁸ WS-355-1 p.14-15

- (iv) Dr Marian Williams, SHO in Paediatrics who attended Conor, could not recall whether the Guidelines were brought to her attention at that time¹⁴⁹ or indeed if they were on display in MAU.¹⁵⁰
- (v) Sister Irene Brennan (née Dickey),¹⁵¹ the senior nurse on duty in MAU, acknowledged that the Guidelines were not followed in Conor's case because the nurses in MAU were unaware of their existence.¹⁵² They had not been brought to their attention¹⁵³ and were not on display.¹⁵⁴
- (vi) Staff Nurse Francis Lavery¹⁵⁵ who had been on duty, could not recall receiving any specific training in relation to the fluid management of paediatric patients.¹⁵⁶ He stated that the Guidelines were not brought to his attention before Conor's admission¹⁵⁷ and confirmed that they were not on display in MAU.¹⁵⁸
- (vii) Sister Lorna Cullen¹⁵⁹ was the Ward Sister in MAU. She had no involvement in Conor's case.¹⁶⁰ Notwithstanding that she was the Ward Sister, she stated that the Guidelines were not brought to her attention¹⁶¹ and were not displayed in MAU.¹⁶² Nor was she aware of any other location within the hospital where the poster was displayed.¹⁶³
- (viii) Staff Nurse Barbara Wilkinson¹⁶⁴ was on duty in MAU. She was unaware of the Guidelines at that time and did not recall receiving

¹⁴⁹ WS-358-1 p.5
¹⁵⁰ WS-358-1 p.7
¹⁵¹ 327-003-002
¹⁵² WS-353-1 p.13-14
¹⁵³ WS-353-1 p.12
¹⁵⁴ WS-353-1 p.13
¹⁵⁵ 327-003-002
¹⁵⁶ WS-351-1 p.6
¹⁵⁷ WS-351-1 p.10
¹⁵⁸ WS-351-1 p.12
¹⁵⁹ 327-003-002
¹⁶⁰ WS-374-1 p.4
¹⁶¹ WS-374-1 p.6
¹⁶² WS-374-1 p.7
¹⁶³ WS-374-1 p.8
¹⁶⁴ 327-003-003

any training as to their use or application¹⁶⁵ and confirmed that the poster was not on display.¹⁶⁶

- (ix) Staff Nurse Ruth Bullas¹⁶⁷ ¹⁶⁸ formally admitted Conor to MAU and likewise advised that she was unaware of the Guidelines at the time and could recall no training in respect of them.¹⁶⁹

6.59 The evidence is clear that the CMO's instruction that the Guidelines be disseminated, implemented and developed was ignored. This was wholly unacceptable and a significant failure on the part of Trust. The acting Medical Director Dr McCaughey, the Directors of Nursing Ms Foy and Mr Mone, and the Chief Executive, Mr Templeton were in post and responsible.

Decision to admit Conor to an adult ward

6.60 The decision to admit Conor onto an adult ward was the subject of debate. Dr Scott-Jupp was of the view that Conor should have been managed in a paediatric setting which would have benefited his treatment in that:

- (i) Greater attention might have been given to an early diagnosis of urinary tract infection.
- (ii) A different antibiotic requiring less fluid would probably have been prescribed.
- (iii) It is likely that he would have been treated throughout with normal saline.¹⁷⁰

6.61 Notwithstanding that the Trust took issue with Dr Scott-Jupp's view as to the appropriateness of Conor's admission onto an adult ward,¹⁷¹ Dr Scott-Jupp maintained that "*it should have been obvious to all concerned that this*

¹⁶⁵ WS-377-1 p.7

¹⁶⁶ WS-377-1 p.8

¹⁶⁷ 327-003-002

¹⁶⁸ Staff Nurse Bullas was subsequently removed from the nursing register by the Nursing and Midwifery Council following an upheld complaint raised by Ms Mitchell that she had failed to document concern about Conor's seizures or to escalate them to a senior member of staff.

¹⁶⁹ WS-376-1 p.8

¹⁷⁰ 260-004-006

¹⁷¹ 260-003-006

was a very immature, child-like 15 year old.” He said he would “have expected greater flexibility both at Craigavon and in Belfast. I do not believe age cut-offs should have been so rigidly applied.”¹⁷² It is not without relevance that despite his age RBHSC took account of his physiology and admitted Conor into PICU.¹⁷³

6.62 The unfortunate result was that Conor was treated in A&E and in MAU by doctors and nurses who were ignorant of the Guidelines, in consequence of which:

- (i) The management of Conor’s fluids, whilst not the cause of his deterioration or death, was non-compliant and sub-standard.
- (ii) The appropriate formula for calculating maintenance fluids was not used.
- (iii) Conor’s fluid output was neither measured nor recorded.
- (iv) The entries in the fluid record are unclear to the point that they obscure how much fluid Conor received and when.

6.63 However, it is to be noted that within the Paediatric Department, Dr Michael Smith¹⁷⁴ recalled that the Guidelines were displayed on the ward.¹⁷⁵ Dr Hogan stated that she was trained in the use and application of the Guidelines.¹⁷⁶ Dr Barbara Bell¹⁷⁷ said that she received a copy of the Guidelines and had personally ensured that they were clearly visible in all paediatric clinical areas.¹⁷⁸

6.64 Whilst there was uncertainty as to whether protocol was developed to complement the Guidelines as requested by the CMO,¹⁷⁹ it would nonetheless appear that a protocol for the management of intravenous fluids in children had been developed by Drs Smith and Lowry following

¹⁷² 260-002-021

¹⁷³ 088-004-073

¹⁷⁴ 327-003-006

¹⁷⁵ WS-357-1 p.10

¹⁷⁶ WS-368-1 p.5

¹⁷⁷ 327-003-003

¹⁷⁸ WS-364-1 p.4

¹⁷⁹ WS-354-1 p.11 & 329-018-006 & WS-369-1 p.6

Raychel Ferguson's death and before the Guidelines were published.¹⁸⁰ Their protocol emphasised the need to calculate maintenance fluids separately from replacement fluids and contained a table to aid the proper approach to fluid management.¹⁸¹

- 6.65 I can only therefore conclude that had Conor been admitted to the paediatric ward as Dr Budd intended, he may very well have been cared for by medical staff familiar with the Guidelines and received appropriate fluid therapy. There might also then have been better engagement with Conor's mother.
- 6.66 This was an inconsistency which effectively meant that different paediatric patients could receive different treatment in different parts of the same hospital with potentially different outcomes. Such variation in the potential for appropriate treatment within a major hospital is troubling. That such a situation could develop reveals dangerous systemic vulnerabilities for which the Chief Executive, Mr Templeton, must bear responsibility.

Serious Adverse Incident Procedure

- 6.67 Craigavon had policy and procedure in place in 2003 for adverse incident reporting. However, Conor's death was not reported as an adverse incident¹⁸² notwithstanding that the RBHSC reported both the fact of his death and the fluid mismanagement to the Coroner.
- 6.68 The decision not to report Conor's death as a Serious Adverse Incident ('SAI') was subsequently defended in correspondence by Dr Humphrey to Dr A.M. Telford, Director of Public Health, Southern Health and Social Services Board on the basis that fluid management issues were not in fact implicated in the cause of death.¹⁸³ Ignoring the fact that Conor's death was most unexpected and warranted investigation on that basis alone,

¹⁸⁰ 329-014-001 & WS-350-1 p.5

¹⁸¹ 329-014-004

¹⁸² 329-022-001

¹⁸³ 329-022-017

there was a failure to adequately review Ms Mitchell's express dissatisfaction and the uncertainties in clinical diagnosis.

- 6.69 Ms Mitchell continued to express her concern about the fluid management in correspondence with Mr Templeton in 2004 and 2005.¹⁸⁴ It was not until Conor's case was added to the work of this Inquiry that the Trust belatedly acknowledged that it "*can now be considered a serious adverse incident as defined in Circular HSS (PPM) 06/04.*"¹⁸⁵ This was an incident and a complaint which ought to have been thoroughly investigated. At the very least the Trust would then have been alerted to some of the many deficiencies now revealed.

Admissions by the Trust

- 6.70 The Trust properly issued the following apology in respect of its many failings in relation to the Guidelines:

"The Southern Health and Social Care Trust, which includes the legacy Craigavon Area Hospital Trust... accepts that the DHSSPS 2002 guidelines on the prevention of hyponatraemia in children were applicable to Conor Mitchell. The trust accepts that for various reasons, which will be the subject of this inquiry, the directions of the Chief Medical Officer as contained in these guidelines and accompanying correspondence were not properly implemented in the medical assessment unit or emergency department of Craigavon Area Hospital at this time and that staff in those areas were not made aware of or trained by the legacy trust in the implementation of these guidelines. We would contrast that situation with the Southern Trust's response to the DHSSPS 2007 guidelines. 'The trust accepts that throughout his course of management in Craigavon Area Hospital in 2003, it was the trust's responsibility to ensure the clinicians and nurses who were looking after Conor Mitchell had the guidelines in the forefront of their minds when treating him and the trust accepts that these clinicians and nurses should have had this guidance available to them when treating Conor.

¹⁸⁴ 329-022-021 to 033

¹⁸⁵ 329-022-018

Although there is nothing to indicate that the failure to comply with the guidelines resulted in Conor's death, the trust fully acknowledges its liability for the failures and shortcomings that occurred in the implementation of the DHSSPS 2002 guidelines on the prevention of hyponatraemia in children, both generally and specifically, in relation to Conor's care. The trust apologises to Conor's family for the failings referred to above and again offers our sincere sympathies to Conor's family."¹⁸⁶

- 6.71 The family welcomed this admission and apology¹⁸⁷ and hoped that it would avoid "*extensive investigations on certain issues*" by the Inquiry and result in savings in public funds.¹⁸⁸ It was agreed that the admissions rendered it unnecessary for the treating clinicians to give oral evidence.¹⁸⁹
- 6.72 Instead, I directed that the Trust provide written submissions detailing how and why it failed in Guidelines implementation and its omission to deal with the case as a SAI. In addition I sought particulars of those arrangements now in place in Craigavon to implement the Guidelines.
- 6.73 A paper was submitted by the Trust on 21st October 2013 indicating that:
- (i) "*There may have been a perception at the time of the dissemination of the 2002 Guidelines that the guidelines were not applicable to adult medicine and therefore appropriate dissemination and training in the guidelines was not highlighted...*"¹⁹⁰
 - (ii) "*Clear compliance and assurance processes should have been put in place to ensure that nurses and doctors in all areas where there was the potential for children to be treated were aware of and trained in the guidance.*"¹⁹¹

¹⁸⁶ T-17-10-13 p.6-7

¹⁸⁷ T-24-10-13 p.7

¹⁸⁸ T-17-10-13 p.7-8

¹⁸⁹ T-18-10-13 p.2

¹⁹⁰ 340-001-004

¹⁹¹ 340-001-004 to 005

- (iii) *“Assurance arrangements should have been agreed by both the Medical Director and Nursing Director...”¹⁹²*
- (iv) *“There appears to have been a breakdown in communication in relation to individual’s roles and responsibilities regarding the dissemination of the guidelines.”¹⁹³*
- (v) *“There appears to have been a perception by the Director of Nursing that it was the CSM’s responsibility to implement the guidelines... in the absence of a clear assurance framework there was confusion of roles and responsibilities between the Director of Nursing and the CSM.”¹⁹⁴*
- (vi) *“That the governance arrangements within the Trust had not matured sufficiently to ensure an integrated approach to Governance. This resulted in the risk that the guidelines would not be disseminated down both nursing and medical lines simultaneously.”¹⁹⁵*
- (vii) *“There is no documented evidence or audit trail to evidence that Paediatric nurses were trained specifically on the 2002 fluid management guidelines.”¹⁹⁶*
- (viii) *“In retrospect both Dr McCaughey and Dr Humphrey advised that they based their assurances [to the CMO] with regards to the implementation of the 2002 guidelines on informal assurance mechanisms.”¹⁹⁷*
- (ix) *“It is evident in hindsight that Conor’s case would meet the criteria for review as a SAI with respect to point 8 of Circular HSS (PPM) 06/04 Reporting and Follow up on Serious Adverse Incidents: Interim Guidance... Therefore in not reporting Conor’s case as an SAI at the*

¹⁹² 340-001-005

¹⁹³ 340-001-006

¹⁹⁴ 340-001-006 to 007

¹⁹⁵ 340-001-007

¹⁹⁶ 340-001-007

¹⁹⁷ 340-001-009

*time there was a lost opportunity to identify and share learning across the region.”*¹⁹⁸

6.74 On 23rd October 2013 I sought clarification on these submissions so as to confirm my interpretation of the Trust concessions.¹⁹⁹ At public hearing on 24th October 2013 it was furthermore accepted by the Trust that:

- (i) Clinicians in wards other than the paediatric ward were not made aware of or trained in the implementation of the Guidelines, including A&E and MAU where children would be treated.
- (ii) The Guidelines were not implemented within nursing practice in Craigavon, including paediatric nursing.
- (iii) That there was no basis for the Medical Director, Dr Humphrey, whether alone or with input from Mr McCaughey, to give assurance to the CMO that there had been implementation of the Guidelines at Craigavon.
- (iv) That a SAI investigation should have been conducted into the unexpected death of Conor under Circular HSS (PPM) 06/04 or the Trust’s own policy.²⁰⁰

Subsequent developments

6.75 The Trust approach was of assistance. The Mitchell family then responded and stated that they wanted *“to see measures put in place that will prevent similar tragedies occurring in the future...”*²⁰¹

6.76 It therefore became important to consider whether or not measures are now in place in Craigavon to ensure that paediatric fluid therapy is managed in accordance with the Guidelines.

¹⁹⁸ 340-001-010

¹⁹⁹ 340-008-001

²⁰⁰ T-24-10-13 p.19 line 21

²⁰¹ T-24-10-13 p.8 line 15

- 6.77 I was informed that the Guidelines were superseded in 2007 by guidelines deriving from the NPSA Patient Safety Alert 22.²⁰² The approach taken by the Trust in light of Safety Alert 22 was described as including the presentation of an action plan to the Trust Board, the creation of a Working Group led by the Medical Director, a training programme, compliance audits and an independent review of the Alert.²⁰³
- 6.78 On 30th October 2007 the Trust reported that Solution No.18 had been removed from general use in Craigavon and new fluid balance and prescription sheets were under consideration.²⁰⁴ A “*Hyponatraemia Meeting*” was held in January 2008 to consider how all 14-16 year old patients would receive treatment in accordance with the Guidelines irrespective of where they were treated.²⁰⁵ Audits to ensure compliance were carried out in October 2007²⁰⁶ and March 2008.²⁰⁷
- 6.79 The Trust also adopted a ‘Paediatric Intravenous Infusion Policy’ in October 2009 detailing the medical procedures for prescription, monitoring and review of intravenous infusions for children and young people²⁰⁸ together with nursing procedures for the administration of fluids. Guidance was given as to the recognition of hospital acquired hyponatraemia.²⁰⁹ In terms, the policy directed that nurses should consult the chart to satisfy themselves that prescriptions complied with the 2007 Guidelines before administering IV fluid and that they should carry out appropriate assessments, report changes in the child’s condition and provide handover briefings to incoming staff.
- 6.80 The policy also contained an ‘incident trigger’ list²¹⁰ with an associated reporting mechanism²¹¹ to alert clinicians to:

²⁰² 303-028-367
²⁰³ 329-020a-001
²⁰⁴ 329-020a-012
²⁰⁵ 329-020a-001
²⁰⁶ 329-020a-042
²⁰⁷ 329-020a-038
²⁰⁸ 329-020a-125
²⁰⁹ 329-020a-133
²¹⁰ 329-020a-145
²¹¹ 329-020a-146

- (i) Any episode of hospital acquired hyponatraemia in children receiving IV fluids.
 - (ii) Any failure to check electrolytes at least once in every 24 hours in children receiving intravenous fluids.
 - (iii) The use of any IV fluid other than as outlined in the 2007 Guidelines.
- 6.81 Mandatory training for all medical and nursing staff in the management of IV fluids for children and young people was also stipulated by the policy.²¹² The Inquiry has been provided with comprehensive documentation setting out these requirements. Moreover in relation to the clinical governance procedures set out in the policy, the evidence suggests that the Trust has undertaken audits every year since 2010 to assess compliance with the 2007 Guidelines²¹³ together with an “*Audit of Hyponatraemia*.”²¹⁴
- 6.82 The Trust advised that the audit results are shared within a multi-disciplinary team and discussed at clinical governance meetings.²¹⁵ This in conjunction with developing external guidance has led to additional changes in practice including:
- (i) The development and implementation of a revised fluid balance chart.
 - (ii) The development and implementation of guidelines for peri-operative fluid management in children to “*provide guidance and reduce the risk of harm associated with intravenous fluid administration to the paediatric patient in the peri-operative phase*.”²¹⁶
 - (iii) Further review of the paediatric intravenous infusion policy.

²¹² 329-020a-173

²¹³ 329-020a-004

²¹⁴ 329-020a-122

²¹⁵ 329-020a-008

²¹⁶ 329-020a-163

- 6.83 A Review of the Trust's 'Incident Management Policy' was completed in January 2013²¹⁷ and found *"clear guidance on incident reporting, investigation and the dissemination of learning from incidents and SAI's."*²¹⁸ Likewise, assurances were given that since April 2012 the Trust has had a procedure²¹⁹ *"in place to ensure the systematic and integrated approach for the implementation, monitoring and assurance of clinical standard and guidelines."*²²⁰
- 6.84 Accordingly, the Trust expressed the hope that it had been able *"... to demonstrate that they have reflected on their roles and responsibilities at this time and have identified and agreed on those factors which may have had an influence, or may have contributed to the failings in the dissemination and implementation of the guidelines in the Emergency Department and Medical Assessment Unit of CAH and furthermore the opportunities missed in the sharing of learning with regard these failings."*²²¹
- 6.85 On this basis I am of the view that the Trust has learned lessons and has implemented appropriate change in the years since Conor's tragic death.

Concluding remarks

- 6.86 Whilst I welcome the Trust concession that clear compliance and assurance processes in respect of the Guidelines should have been agreed and put into operation by the Medical Director and Nursing Directors, such concession cannot serve to avoid the just and appropriate criticism that Conor's treatment failed to comply with the Guidelines.
- 6.87 It is now acknowledged that there was a breakdown in communication between those in positions of governance as to their roles and responsibilities. This was a systemic failing for which the Chief Executive must bear responsibility.

²¹⁷ 340-001-012

²¹⁸ 340-001-012

²¹⁹ 304-001-003 & 340-005-001

²²⁰ 340-001-013

²²¹ 340-001-013

- 6.88 There was potentially dangerous variation in the care and treatment afforded young people admitted to Craigavon which was a serious systemic weakness.
- 6.89 The false assurance given the CMO that the Guidelines had been adopted and audited was a serious breach of professional duty and public service values.
- 6.90 Had the Trust conducted the SAI investigation of Conor's unexpected death, which it now accepts it should have done, it would have learned lessons to the benefit of all. That opportunity was lost.
- 6.91 Notwithstanding shortcomings and deficiency, the evidence as to policy, protocol, training, audit and review in the years since Conor's death, has provided some reassurance that lessons have been learned from this tragedy. Appropriate measures have been taken within Craigavon.

THE DEPARTMENT OF HEALTH, SOCIAL SERVICES AND PUBLIC SAFETY FOR NORTHERN IRELAND

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Introduction

- 7.1 What happened immediately after Raychel's death illustrates what can be achieved when such a death is reported promptly. The Department responded quickly and decisively to analyse and issue guidelines. However the deaths of Adam, Claire and Lucy were not formally reported to the Department and it remained seemingly unaware of them at the time. So why did the Department fail to ensure that it was notified about such serious adverse incidents?

Expert reports

- 7.2 The Inquiry was guided by the reports of:
- (i) Professor Gabriel Scally¹ (Professor of Public Health and Planning, Director of WHO Collaborating Centre for Healthy Urban Environments, University of the West of England) who examined the responsibilities and accountabilities of HSC Trusts, Health Boards and the DHSSPS in Northern Ireland.²
 - (ii) Professor Charles Swainson³ (onetime Consultant Renal Physician and Medical Director, Lothian NHS Board, Edinburgh) who considered the issues of governance arising from Raychel Ferguson's case.⁴
 - (iii) Professor Aiden Mullan⁵ (former acting Chief Executive Officer and Director of Nursing and Clinical Governance, North Tees & Hartlepool NHS Trust) who provided advices on governance matters relating to Adam Strain.⁶
- 7.3 The Inquiry was also assisted by expert background papers received from:

¹ 337-001-005
² 341-002-001 & 341-003-001
³ 328-001-006
⁴ 226-002-001
⁵ 306-081-008
⁶ 210-003-001

- (i) Dr Jan Keeling⁷ (Paediatric Pathologist) on systems and procedures for disseminating information derived from post-mortem examinations.⁸
- (ii) Dr Bridget Dolan⁹ (Barrister and Assistant Deputy Coroner) on UK practice and procedure on the dissemination of information from inquests.¹⁰

Schedules compiled by the Inquiry

7.4 In an attempt to summarise all the information received, the following schedules were compiled:

- (i) List of persons involved.¹¹
- (ii) Chronology.¹²
- (iii) Structure of the Health Service in Northern Ireland (pre-2007).¹³
- (iv) HSC Trust areas in Northern Ireland.¹⁴
- (v) Commissioning structure for HSC services in Northern Ireland.¹⁵
- (vi) Membership of Chief Medical Officer's Working Group on Hyponatraemia.¹⁶

⁷ 306-081-010
⁸ 308-020-295
⁹ 306-081-010
¹⁰ 303-052-715
¹¹ 337-001-001
¹² 337-003-001
¹³ 303-039-505
¹⁴ 300-001-001
¹⁵ 303-040-506
¹⁶ 328-003-001

Department's responsibility for clinical services

- 7.5 At the time of the children's deaths, as now, the Department and the Minister bore ultimate responsibility and accountability for the healthcare provided to patients in Trust hospitals.¹⁷
- 7.6 Article 16(1) of the Health & Personal Social Services (Northern Ireland) Order 1972¹⁸ created 4 Health and Social Services Boards, namely the Northern, Southern, Eastern and Western. The Department made provision for and oversaw the Health Service through those four regional Boards. Subsequent re-structuring was undertaken, broadly following that in the rest of the UK, to re-constitute the Boards as commissioning bodies, responsible for assessing local requirements and purchasing healthcare and social services from the hospitals, which re-emerged as Trusts.
- 7.7 Article 10 of the Health and Personal Social Services (Northern Ireland) Order 1991¹⁹ created the new Health and Social Services Trusts to provide the health services. The Chair of each Trust was appointed by the Minister and was directly accountable to the Minister.²⁰ The Trusts were established as 'autonomous self-governing' bodies, independent of the Boards but with 'arms-length' accountability to the Department.
- 7.8 The Department described this re-ordering in 'HSS Trusts: A Working Guide,' 1991 noting that *"A key element of the changes is the introduction of HSS Trusts. They are hospitals and other units which are run by their own Boards of Directors; are independent of Health and Social Services Board Management; ... Trusts differ in one fundamental respect from directly managed units – they are operationally independent..."*
- 7.9 The understanding at the time was that, whilst standards of clinical care remained primarily the responsibility of consultants within the Trusts,²¹ the

¹⁷ 333-001-003 & 306-083-003

¹⁸ <https://www.legislation.gov.uk/nisi/1972/1265/contents>

¹⁹ <http://www.legislation.gov.uk/nisi/1991/194/contents/made>

²⁰ Mr Hunter T-04-11-13 p.50 line 2

²¹ WS-348-1 p.3

Trusts were accountable to the Boards and the Department retained a leadership role in respect of the whole Health Service.²²

- 7.10 The Department was responsible for articulating the directions of its Minister and the Permanent Secretary was accountable for the management and organisation of the Department. He was supported by the Departmental Board which included a Chief Medical Officer ('CMO'), a Chief Nursing Officer ('CNO') and his most senior officials. The Department formulated and implemented policy, allocated resources and established the context and objectives for the Health and Personal Social Services ('HPSS').
- 7.11 The CMO led the medical service within the Civil Service and was responsible for advising the Minister and the Department on matters relating to public health. The CMO from 1995-2006 was Dr Henrietta Campbell.²³ It was envisaged that she would provide a link between the Minister and the medical profession.²⁴ Ultimate responsibility for the Department lay with the Permanent Secretary.
- 7.12 The Department did not assume general operational responsibility in relation to the HPSS but did on occasion issue guidance and instruction for HSS Trusts. The Department created a Management Executive to oversee performance of the HSS Trusts.²⁵ One of the main objectives of the Management Executive was to ensure that standards were raised and quality improved in accordance with Departmental policy.²⁶ Until 2000 it was responsible for the communication of Departmental policy and instruction to the Trusts.
- 7.13 The relationship of accountability between the Management Executive and the Trusts was set out in an 'Accountability Framework for Trusts' (1993).²⁷ It indicated that whilst the "*primary accountability of Trusts is for the*

²² Mr Elliott T-05-11-13 p.70 line 16

²³ 337-001-002

²⁴ WS-075-2 p.2

²⁵ WS-062-2 p.3

²⁶ WS-002-2 p.3

²⁷ 323-001a-002 - Circular METL 2/93

*quantity, quality, efficiency of the service they provide*²⁸ (and this lay to the Boards) the Department was to retain “*ultimate legal responsibility for the functions and will wish to ensure that both Boards and Trusts are discharging their responsibilities.*”²⁹ In broad terms, the Department planned to appraise itself of patient care issues and hold the Trusts to account through their relationship with the Boards.³⁰ This was to be “*a light touch*” approach.³¹ However, the Management Executive retained a degree of direct management accountability in relation to the Trusts³² and reserved the right, in certain and exceptional circumstances (including those relating to patient care), to intervene in the affairs of a Trust.³³ In short, the Department was responsible for holding the whole system to account.³⁴

- 7.14 However, in respect of the specifics of Departmental monitoring of the performance of the Trusts, Professor Scally noted that the ‘Accountability Framework’ did not indicate any particular focus on patient care issues.³⁵ The question therefore arose as to how the Department ensured that the Trusts discharged their responsibilities in respect of the quality of healthcare and in particular why it did not know about the hospital related deaths from hyponatraemia in the very hospitals for which it was responsible? Accordingly, Professor Scally examined the question of how the Department knew what was going on in hospitals prior to 2003 in terms of the quality of care.³⁶

Serious Adverse Incident reporting to Department

- 7.15 Professor Scally advised that there was no requirement during the period under review for Boards or Trusts to notify the Department about “*potentially avoidable deaths or other instances of serious clinical failure.*”³⁷

²⁸ 323-001a-003

²⁹ 323-001a-003

³⁰ Mr Simpson T-08-11-13 p.6 line 20 & WS-349-1 p.5

³¹ WS-084-2 p.4

³² 306-083-003

³³ WS-348-1 p.14

³⁴ WS-348-1 p.4 & WS-308-1 p.11

³⁵ 341-002-002

³⁶ 341-002-002

³⁷ 341-002-004

Whilst there had hitherto been formal requests that hospitals report untoward incidents to their Board,³⁸ he noted that the *“changes in accountability that took place with the creation of Trusts altered the position whereby the Boards had been responsible for occurrences within their directly managed units. It appears that once hospitals became Trusts they ceased to report serious untoward incidents to the Boards.”*³⁹

- 7.16 Even though Trust lines of accountability remained initially to the Boards, there would appear to have been no attempt at that time to develop alternative replacement notification systems. Further and importantly, given that the Boards no longer received reports, no requirement was introduced to ensure reporting to the Department.⁴⁰ This was a vulnerability and not without consequence.
- 7.17 Professor Swainson considered it: *“regrettable in hindsight that there was not a clear framework that would have ensured that serious clinical incidents were reported by Trusts and disseminated to the other Trusts. Wide sharing of serious incidents can stimulate quicker and national efforts to reduce harm.”*⁴¹
- 7.18 This omission is to be seen in a context where functioning systems already existed to notify the Department of adverse incidents relating to equipment, supplies,⁴² food, buildings and plant⁴³ or affecting patients⁴⁴ in psychiatric or special care hospitals.⁴⁵ The Department was part funding⁴⁶ a number of national reporting systems for deaths including National Confidential Enquiry into Perioperative Deaths (‘NCEPOD’)⁴⁷ and systematically receiving reports of maternal deaths, stillbirths and deaths in infancy for

³⁸ 341-002-005

³⁹ 341-002-005

⁴⁰ 341-002-006

⁴¹ 226-002-010

⁴² WS-062-1 p.13 & 210-003-1132

⁴³ WS-062-1 p.13.

⁴⁴ WS-062-1 p.3

⁴⁵ WS-062-1 p.34

⁴⁶ WS-075-1 p.13 & p.32

⁴⁷ WS-062-1 p.3

inclusion in the UK Confidential Enquiry into Stillbirths and Deaths in Infancy.⁴⁸

- 7.19 However, the absence of any formal reporting requirements to the Department was, in the view of Mr Clive Gowdy (Permanent Secretary in the Department 1997-2005)⁴⁹ consistent with the intention that Trusts should operate with maximum freedom and autonomy.⁵⁰ Notwithstanding external developments, including the disturbing 1994 Report into the Deaths of Children in the Grantham and Kesteven General Hospital (the Beverley Allitt inquiry), which stressed that *“reports of serious untoward incidents to District and Regional Health Authorities should be made in writing and through a single channel which is known to all involved,”*⁵¹ nothing substantive was done.
- 7.20 By comparison, Regional Directors of the National Health Service Executive in England were directed in 1995 to establish notification systems for serious untoward incidents.⁵² The English regions, all of which were significantly larger than Northern Ireland, proceeded to put systems, albeit imperfect, into place. Within Northern Ireland, and notwithstanding that the Management Executive *“received a constant flow of documentation, particularly from England, in respect of initiatives that were being taken there,”*⁵³ the then Permanent Secretary Mr Alan Elliott⁵⁴ indicated that *“it didn’t occur to anyone to say that there should be a system.”*⁵⁵ Mr John Hunter,⁵⁶ Chief Executive of the HPSS Management Executive, was unable to advance any explanation as to why this was so.⁵⁷

⁴⁸ WS-075-1 p.13

⁴⁹ 337-001-001 & 323-027e-003

⁵⁰ WS-062-1 p.3

⁵¹ 341-002-007 & Mr Elliott T-05-11-13 p.21 line 14

⁵² 341-003-009

⁵³ Mr Hunter T-04-11-13 p.10 line 20 & p.27 line 5. Documentation included the ‘Risk Management in the NHS’ manual (1994) (211-003-001) recommending a comprehensive incident reporting system as the foundation of a good tracking system. This was forwarded by the Management Executive to the RGHT (Dr Carson T-16-01-13 p.4 to 5).

⁵⁴ 337-001-003

⁵⁵ Mr Elliott T-05-11-13 p.66 line 19

⁵⁶ 337-001-003

⁵⁷ Mr Hunter T-04-11-13 p.31 line 19

- 7.21 In 1998 the Department commissioned the consultants 'Healthcare Risk Resources International' to survey risk management in the HPSS.⁵⁸ Mr Gowdy recalled that it reported '*a general perception that there might have been a significant level of under-reporting of adverse incidents.*'⁵⁹ In the light of such intelligence, the Department could not safely assume that it would be informed of potentially serious patient care issues. Notwithstanding, it made no policy change and gave no direction for adverse incident reporting.
- 7.22 In 2000 the Department of Health ('DoH') in London published 'An Organisation with a Memory' specifically recommending more comprehensive systems for reporting and analysis of adverse events.⁶⁰ The Department did not follow suit but did publish for consultation 'Confidence in the Future' in relation to the problem of poor medical performance.⁶¹ It recommended, amongst other things, Serious Adverse Incidents ('SAI's') recording as an aid to the identification of the under-performing doctor. Additionally, the Department published for consultation 'Best Practice, Best Care' in 2001 noting in particular the necessity for "*a clear line of accountability from front line delivery back to the Executive*"⁶² and the requirement to monitor adverse events. Formal reporting requirements were not however introduced until 2004.⁶³
- 7.23 In the absence of a formal system, informal channels of communication were used. Trust Chief Executives and Clinical Directors could bring significant untoward clinical incidents to the attention of the CMO at any time.⁶⁴ Indeed, Raychel's death was reported in just such a way. It was in this context that Mr Gowdy said that he "*would certainly have expected the*

⁵⁸ 338-006-107

⁵⁹ WS-062-1 p.4 – "*The major deficiency relates to the very limited and therefore probably significant under-reporting of clinical incidents and near misses.*"

⁶⁰ Professor Scally noted that the NHS 1995 Regional serious untoward incident reporting scheme had informed the recommendations of 'An Organisation with a Memory'. (341-003-004).

⁶¹ 333-184-001

⁶² WS-068-1 p.49

⁶³ WS-062-1 p.321 - Circular HSS (PPM) 06/04. Professor Mullan pointed out that 'An Organisation with a Memory' referred to Department of Health guidance for untoward incident reporting in England issued in 1955, which was still current in 2000.(210-003-038).

⁶⁴ 010-023-150 & WS-075-1 p.3

*Trusts to have informed the Department of all of them.*⁶⁵ Moreover he “*assumed that the informal system was working effectively because [he] was being told of serious things*”⁶⁶ estimating that he had been informed of approximately two deaths during his eight years as Permanent Secretary.⁶⁷ Upon reflection he recognised that he had been “*lulled into a false sense of security by the fact that [he] was getting reports about serious incidents from some of the Chief Executives and chairs.*”⁶⁸ Both Mr Paul Simpson,⁶⁹ former Chief Executive of HSS Executive,⁷⁰ and Mr Gowdy accepted with hindsight that it was not an effective system.⁷¹

7.24 Dr Campbell acknowledged that the informal mechanisms of adverse incident reporting “*were found to be totally inadequate and recognised by myself as such in 1999.*”⁷² She fairly conceded that she could not “*defend the fact that it took until 2004 to put a proper system in place.*”⁷³ As Mr Gowdy observed “*you don’t know what you don’t know, so you need to have a system to find out.*”⁷⁴ The Department did not know, did not have a system and did not find out.

7.25 While Trusts and Boards were clearly accountable to the Department and the Department had a clear role in overseeing the functioning of the Health Service, Professor Scally nonetheless believed that the Trusts did not generally understand that the Department might have had an interest in the occurrence of these deaths.⁷⁵ It was not made clear. He concluded “*that there was no effective system in place in Northern Ireland prior to 2003 and ...no significant efforts had been made at any stage to develop comprehensive and effective notification systems. This would appear to be borne out by a briefing for the Minister prepared within the Department in*

⁶⁵ WS-062-2 p.10

⁶⁶ Mr Gowdy T-06-11-13 p.100 line 2

⁶⁷ Mr Gowdy T-06-11-13 p.96 line 19

⁶⁸ Mr Gowdy T-06-11-13 p.96 line 8

⁶⁹ 337-001-003

⁷⁰ Mr Simpson T-08-11-13 p.14 line 19

⁷¹ Mr Gowdy T-06-11-13 p.112 line 17

⁷² Dr Campbell T-07-11-13 p.62 line 3

⁷³ Dr Campbell T-07-11-13 p.74 line 4

⁷⁴ Mr Gowdy T-06-11-13 p.111 line 2

⁷⁵ 341-002-018 & Dr Jenkins T-10-09-13 p.73 line 25

2004. The opening sentence reads: *'There is no unified reporting of untoward incidents in the HPSS to the Department.'*⁷⁶ Indeed it was noted within the Department at that time that reporting of adverse incidents was *"patchy"* and the Minister was thought to be *"somewhat vulnerable to the accusation that the Department is not aware what is going on as regards serious incidents."*⁷⁷

- 7.26 I consider that in the circumstances it should have been obvious to the Permanent Secretary Mr Gowdy, his predecessor Mr Alan Elliott,⁷⁸ the Chief Executive of the Management Executive, the CMO and the other senior Departmental officials, that untoward clinical events were not being routinely reported to the Department. I do not understand how they could have thought otherwise. Professor Scally characterised the approach to adverse incident reporting as *"fragmented and incoherent"*⁷⁹ and the evidence confirmed that. In such circumstances it was foreseeable that hospital related child deaths might not be brought to the Department's attention. The Department appeared to proceed on the basis of 'hear no evil, see no evil'.

Other channels of information

- 7.27 It has to be recognised that even had a structured system of SAI reporting been in place, there is no absolute certainty that the deaths of Adam, Claire or Lucy would have been formally notified to the Department.
- 7.28 There were however other means whereby the Department might have hoped to gain some information about what was happening in Trust hospitals and to learn whether things were going wrong. Mr Elliott expected that the Department would have been informed of those deaths where

⁷⁶ 341-002-006

⁷⁷ 010-025-180

⁷⁸ Permanent Secretary 1987-1997

⁷⁹ 341-002-006

medical mismanagement was implicated, through complaints, inquests and legal action.⁸⁰ There were also other sources of information.

Complaints

- 7.29 The Department was clearly interested in complaints as part of its wider interest in Risk Management, not least because they could inform as to the nature of those risks. In 1992 the Government published 'The Citizen's Charter for Patients and Clients'⁸¹ setting out the standards of treatment to be expected from the HPSS and indicating what to do if those standards were not met. The section entitled 'If Things Go Wrong' outlined a patient complaints procedure and indicated that final referral lay to the Chief Executive of the HPSS Management Executive.⁸²
- 7.30 In 1995-1996 the Department published the HPSS Complaints Procedure⁸³ and followed it up with further 'Guidance on Handling HPSS Complaints.'⁸⁴ It reviewed the HPSS Complaints Procedure in 2002 and established a Regional Complaints Review Group.
- 7.31 Whilst Mr Crawford did attempt to invoke the HPSS Complaints Procedure in relation to Lucy, the system was not engaged in the cases of Adam, Claire or Raychel. Accordingly, and although the complaints procedure represented an important part of the Department's 'quality agenda', it was not always used and could not therefore have been relied upon to alert the Department to particular issues of patient safety.

Inquests

- 7.32 Dr Campbell expressed the view that the inquest system in Northern Ireland was "*another way of bringing into the open issues which are of concern*" and "*is one that I feel that people should have been using properly.*"⁸⁵

⁸⁰ WS-348-1 p.7

⁸¹ 306-085-001

⁸² 306-085-014

⁸³ 126-004-001

⁸⁴ 333-294-001

⁸⁵ 069a-033-084

However there was no formal mechanism to inform the Department about Coroner's findings in healthcare related inquests.⁸⁶ Nor were patient safety matters arising from inquests routinely notified to the Department or circulated to the HPSS.

- 7.33 This lack of procedure became evident at Adam's inquest. The Royal Group of Hospitals Trust ('RGHT') 'recommendations' which Mr Gowdy considered "*of such general application as to be of interest and significance to other hospitals likely to be treating young patients*"⁸⁷ and which he expected to be "*at least copied*" to the Department and "*ideally*" to have been the subject of prior discussion with the CMO, were not seen by the Department at all. There was no mechanism for communication, which was why, as the Coroner was later obliged to point out to Dr Campbell "*an inquest should not be seen as the means of disseminating medical knowledge.*"⁸⁸
- 7.34 That inquests were not used to gather or share information is to be regretted. Their value as a resource for learning was very clearly demonstrated in April 2005⁸⁹ by Dr Angela Jordan, Specialist Registrar in Public Health Medicine, when she presented an analysis of the "*key learning points*" deriving from the evidence given at the inquests of Adam, Raychel and Lucy.⁹⁰

Litigation

- 7.35 During the period under review claims administration was managed by individual Trusts and Boards. There was no centralised approach and the Department played no active role in the management of litigation or claims. The detail and outcome of individual cases was not collated by the Department and the potential for monitoring HPSS failings not exploited. Whilst the Department did issue a HPSS Protocol on Claims Handling⁹¹ this

⁸⁶ WS-062-1 p.4

⁸⁷ WS-062-1 p.10

⁸⁸ 006-004-282

⁸⁹ 320-126-114

⁹⁰ 320-126-124

⁹¹ 317-039-001 - Circular HSS (F) 20/98

did not stimulate much more than a “*few examples of a claims management policy*.”⁹² In 2002 the Northern Ireland Audit Office (‘NIAO’) published an assessment of the medical negligence system and expressed surprise at the absence of central collection of data.⁹³ When rather later, attempts were made to collect the information offered, difficulties were encountered and a Departmental memo of July 2005 records concern about “*the quality and accuracy of this data*.”⁹⁴ This did not therefore constitute a reliable channel of information.

Meetings

- 7.36 The Department held formal accountability reviews with the Boards⁹⁵ but not with the Trusts.⁹⁶ The CMO did however meet Trust Medical Directors on a regular basis⁹⁷ and there were other less formal discussions with Board and Trust officers.⁹⁸ Routine meetings were also held with organisational, educational and professional leaders including Directors of Public Health and representatives of the Health and Social Care Councils.⁹⁹ Dr Campbell described this as “*a fairly well trampled pathway in that the Directors of Public Health quite often brought issues to me of concern, not just of serious clinical incidents ...*”¹⁰⁰ The CNO used a ‘Nurse Leaders Network’ to communicate directly with senior nurses.¹⁰¹
- 7.37 Individual committees provided direct clinical advice to the Department.¹⁰² They included the Central Medical Advisory Committee (CMAC)¹⁰³ and the CMO’s Special Advisory Committees (SACs).¹⁰⁴ Their meetings mixed formal and informal business but did provide a useful means whereby

⁹² 127-004-098

⁹³ 341-002-009

⁹⁴ 330-108-006.

⁹⁵ WS-084-2 p.6 & WS-066/1 p.63

⁹⁶ WS-362-1 p.10-11

⁹⁷ 021-018-037

⁹⁸ WS-348-1 p.5 & Mr Hunter T-04-11-13 p.89

⁹⁹ WS-361-1 p.8

¹⁰⁰ Dr Campbell T-07-11-13 p.54 line 20

¹⁰¹ WS-082-2 p.13

¹⁰² 320-104-009

¹⁰³ Mr Hunter T-04-11-13 p.36 line 2

¹⁰⁴ Mr Hunter T-04-11-13 p.19 line 7 & 320-110-001

clinical information could pass from Trusts to Department.¹⁰⁵ However, they were unstructured and had no secretarial support. It was in the context of such a meeting that the initial report of Raychel's death was made.¹⁰⁶ Notwithstanding that the meeting enabled effective reporting in that case, the arrangement of committees and meetings failed to convey any hint to the Department of the other deaths from hyponatraemia.

Audit

- 7.38 The routine collection and systematic analysis of data by audit reveals incidents of note and is an invaluable source of information. The 1989 NCEPOD Report, which was part-funded by the Department, stressed the importance of information systems and audit for clinical quality assurance.¹⁰⁷ The Department recognised clinical audit as an integral part of a functioning healthcare system and emphasised the importance of clinical audit programmes in its Management Plans from 1995/96.¹⁰⁸ The Management Executive sought to encourage multi-professional audit.¹⁰⁹ However, in practice audit took a very long time to become established¹¹⁰ and Professor Scally noted the absence of a generalised culture of participation in structured systems of clinical audit.¹¹¹ Indeed, the evidence repeatedly revealed deficiencies in the systems of audit as implemented and little indication that the Department was receiving regular audit analysis.¹¹²

Other

- 7.39 The Department also received information directly from members of the public, elected representatives and special interest groups. The CMO was lobbied by practitioners in relation to specific issues¹¹³ and the Department

¹⁰⁵ 320-018-001 & Mr Elliott T-05-11-13 p.14 line 7

¹⁰⁶ Dr Fulton T-04-09-13 p.87 line 18

¹⁰⁷ 210-003-012

¹⁰⁸ 306-083-001

¹⁰⁹ 333-129-011

¹¹⁰ 320-067-007

¹¹¹ 341-002-016

¹¹² 320-067-007

¹¹³ WS-076-2 p.13

sought to be attentive to media coverage and public debate.¹¹⁴ There were also diverse Health Service statistics and confidential reports from whistle-blowers.¹¹⁵ However useful, these were random conduits of information.

Risk Management, Clinical Governance and the Statutory Duty of Quality

- 7.40 The absence of any reliable system whereby the Department might learn of catastrophic clinical mismanagement reflected the broader reality that care quality was not being adequately monitored in the hospitals themselves. Professor Scally observed that there is little *“to indicate that there was a firm expectation that either Health and Social Services Boards or Trusts would be subject to any systematic monitoring of the quality of care provided to patients or in respect of their handling of adverse clinical events.”*¹¹⁶
- 7.41 The HPSS ‘Charter for Patients and Clients’ published in 1992 contained the personal pledge of the Minister for Health and Social Services *“to all citizens that services in Northern Ireland will continue to match the very best available in the rest of the United Kingdom.”*¹¹⁷ During the 1990s and early 2000s the Department did act to promote risk management controls and clinical governance. In so doing it almost always followed, at some remove, the lead of the DoH in London. For example, the DoH published ‘Working for Patients’ in 1989 to introduce a comprehensive system of medical audit¹¹⁸ and in Northern Ireland, the HPSS Management Executive published its plans for audit in the Management Plan for 1995/6–1997/8.¹¹⁹
- 7.42 In 1997 the DoH published ‘The New NHS – Modern and Dependable’ introducing clinical governance to the rest of the UK. Within Northern Ireland, and notwithstanding the findings of ‘Healthcare Risk Resources International’¹²⁰ the Department did not move to introduce a system of

¹¹⁴ Mr Gowdy T-06-11-13 p.104 line 13

¹¹⁵ 403-019-001

¹¹⁶ 341-002-003

¹¹⁷ 306-085-003 & Mr Hunter T-04-11-13 p.22 line 20

¹¹⁸ 210-003-012

¹¹⁹ 306-083-001

¹²⁰ WS-062-1 p.4

clinical governance in Northern Ireland until 2001 when it published 'Best Practice, Best Care' for consultation. Whilst it did not then give any particulars, it did propose "*a system of clinical and social care governance, backed by a statutory duty of quality...*"¹²¹

- 7.43 In 2002 a NIAO report¹²² noted the limited progress actually achieved in the implementation of risk management¹²³ and indicated that "*We would therefore expect the department to be able to provide positive assurance of substantial progress in risk management within HPSS bodies by 2003 at the latest.*"¹²⁴ The Department sent out a circular requiring HPSS organisations to adopt the model of risk management used in Australia and New Zealand.¹²⁵
- 7.44 Early in 2003 the Department published 'Clinical and Social Care Governance: Guidelines for implementation.'¹²⁶ The Northern Ireland guidelines for clinical governance emerged some four years after their NHS counterpart.
- 7.45 In addition HPSS organisations became subject to the statutory duty of quality in April 2003. The introduction of the statutory duty was to allow Mr William McKee,¹²⁷ former Chief Executive of the RGHT to claim that as Chief Executive of a Trust Hospital he bore no responsibility for the quality of care in his hospital prior to the enactment of the statutory duty. He said that "*in 1993/1994... and subsequently for many years I was specifically not held responsible for clinical safety, clinical quality, clinical matters.*"¹²⁸ He maintained furthermore that the Board of the Trust had no such responsibility either¹²⁹ and that the Trust only became responsible for clinical quality when the statutory duty was enacted.¹³⁰

¹²¹ WS-068- p.14

¹²² 338-006-062

¹²³ Mr Gowdy T-06-11-13 p.48 line 1

¹²⁴ 338-006-091

¹²⁵ WS-075-1 p.56

¹²⁶ 306-119-001

¹²⁷ 306-081-006

¹²⁸ Mr McKee T-17-01-13 p.6 lines 1-4

¹²⁹ Mr McKee T-17-01-13 p.16 line 4

¹³⁰ Mr McKee T-17-01-13 p.7 line 13

- 7.46 Mr Gowdy was however most firmly of the view that both the Chief Executive and the Trusts were responsible for clinical care and clinical outcomes before the 2003 Order. He observed that “*the raison d’être of the Trusts concerned was to deliver effective clinical care to sick or injured people and it is rather difficult to see how they might argue that they had no interest in, or responsibility for, the quality of the service they were providing.*”¹³¹ He understood the legislation to formalise the existing position as set out by the Accountability Framework, namely that ‘*the primary accountability of Trusts is with the quantity, quality, efficiency of the service they provide*’.
- 7.47 As Senior Counsel for the Department put it “*we simply don’t accept that any person or anybody involved in the Health service can walk away and say ‘I have no responsibility*’.”¹³² I consider that self-evidently correct.
- 7.48 The introduction of clinical governance in Northern Ireland required an understanding of the arrangements already in place. To that end Deloitte & Touche were commissioned to evaluate existing clinical and social care governance.¹³³ Its report in 2003 identified a lack of both understanding and implementation of clinical and social care governance and noted in particular a lack of co-ordinated activity in relation to risk, risk registers and risk audits.¹³⁴ Mr Gowdy acknowledged that the report “*certainly would have suggested that we didn’t know enough about how they were progressing...*”¹³⁵ The consultants indicated that the position in Northern Ireland was comparable to that pertaining in England a few years before.
- 7.49 Whilst Professor Scally did recognise some positive and timely Trust activity in relation to the introduction of clinical governance, he nonetheless singled out the Department’s very clear leadership role and identified a departmental failure to provide the necessary impetus to progress clinical governance at anything other than a very slow pace. He observed that by

¹³¹ WS-062-2 p.4

¹³² David McMillen QC T-04-11-13 p.77 line 10

¹³³ WS-075-1 p.76

¹³⁴ WS-075-1 p.100

¹³⁵ Mr Gowdy T-06-11-13 p.79 line 4

2003 *“there was a significant gap between the progress in Northern Ireland and that achieved in England and Scotland”* and argued that *‘given the size of the province it would be a reasonable assumption that it would have been possible, if the will and competence had existed, to put in place within a short period of time a comprehensive clinical governance structure.’*¹³⁶

7.50 Mr Hunter acknowledged that the responsibility for *“driving those changes rested with the Department from the Minister down.”*¹³⁷ Dr Campbell accepted *“it as a corporate responsibility across the Department”*¹³⁸ and Mr Paul Simpson (from 1997 Chief Executive HSS Executive and Deputy Secretary HPSS Management Group) conceded that leadership within the Department could have been better.¹³⁹

7.51 Mr Gowdy maintained that *“there was no lack of will, there was no lack of direction. There was a very clear desire to move this agenda forward and, unfortunately, it didn’t happen and I find that disappointing.”*¹⁴⁰ The Department contended that comparisons with progress in England and Scotland were misleading and that there was no proper evidence base for such an exercise. It was suggested that because the Department was responsible for social care in addition to healthcare, that the extra responsibility made comparison inappropriate¹⁴¹ and furthermore, it advised that the alternation of direct rule with devolution in the 1990s and 2000s, had hindered progress.¹⁴²

7.52 Whilst I accept these broad distinctions and recognise constant financial constraint,¹⁴³ I do not accept that circumstances in Northern Ireland should have unduly delayed the implementation of systems to improve the quality of care, still less the introduction of reporting procedures whereby the Department might have learned what was happening in the hospitals for

¹³⁶ 341-002-023

¹³⁷ Mr Hunter T-04-11-13 p.92 line 25

¹³⁸ Dr Campbell T-07-11-13 p.12 line 9

¹³⁹ Mr Simpson T-08-11-13 p.24 line 12

¹⁴⁰ Mr Gowdy T-06-11-13 p.83 line 15

¹⁴¹ Mr Gowdy T-06-11-13 p.82 line 1

¹⁴² Mr Gowdy T-06-11-13 p.48 line 1 & Dr Campbell T-07-11-13 p.21 line 18

¹⁴³ Mr Gowdy T-06-11-13 p.72 line 20 & Mr Simpson T-08-11-13 p.18 line 22

which it was responsible.¹⁴⁴ I do not suggest that the Department should have introduced comprehensive SAI reporting in the mid-1990s, but do consider that the absence of any reliable means of learning about hospital related child deaths indicates a serious failure on the part of the Department.¹⁴⁵

Quality of Care

- 7.53 Departmental engagement with issues of quality of care appeared to lack constancy in terms of focus. Whilst the Department did, for example, issue important guidance in relation to standards and quality of healthcare, it did not maintain proper checks to ensure that its guidance was being heeded. Notwithstanding that the Department would request confirmation of compliance in respect of its more important guidance, Mr Gowdy indicated that many of the directions and guidelines issued “*were not subject to any specific monitoring.*”¹⁴⁶ The Department proceeded on the assumption that HPSS organisations would comply.
- 7.54 Such an assumption was unwise because the evidence disclosed failures to comply with Departmental guidance. Guidelines for Consent were issued on 6th October 1995 with explicit instruction that “*Health and Social Service Boards/HSS Trusts are asked to ensure that procedures are put in place to ensure the consent is obtained along the lines set out in the Handbook...*”¹⁴⁷ and that “*Boards/HSS Trusts ...confirm by 31 December 1995 that this has been done.*”¹⁴⁸ In this instance Mr Gowdy “*expected that it would have been followed up and followed up fairly quickly,*”¹⁴⁹ However, this specific direction was ignored by RGHT and almost five years passed before this important¹⁵⁰ guidance was adopted at RBHSC.¹⁵¹ The Department did not know because it had failed to follow-up either confirmation or

¹⁴⁴ Mr Hunter T-04-11-13 p.31 line 19 & Dr Campbell T-07-11-13 p.30 line 19

¹⁴⁵ Professor Dame Judith Hill T-04-11-13 p.140 line 24

¹⁴⁶ WS-062-2 p.11

¹⁴⁷ 305-002-003

¹⁴⁸ 305-002-004

¹⁴⁹ Mr Gowdy T-06-11-13 p.131 line 25

¹⁵⁰ Mr Hunter T-04-11-13 p.102 line 17

¹⁵¹ 210-003-022

implementation. Overall it was apparent that the Department did not accord particular priority to the quality of care in the Health Service.

- 7.55 Those charged with leadership within the Department were aware of the importance of quality of care and the DoH commitment to introduce clinical governance. To achieve such slow progress on such key government patient care policies indicates failure in Departmental leadership. The failure was corporate and so too is the responsibility.

Professor Scally's Conclusion

- 7.56 Overall, and in answer to the primary question, Professor Scally concluded that the *“Department had no effective means of knowing what was going on in hospitals prior to 2003 in terms of quality of care”* given the absence of:

“a. a culture of universal participation in a structured system of clinical audit,

b. a broad based system of surveillance and analysis of serious untoward incidents/adverse events,

c. quality of care as a major focus for the Department and its professional advisory systems, and

*d. the timely implementation of clinical governance from 1998 onwards...”*¹⁵²

Accordingly he did not find it surprising *“that the series of deaths from hyponatraemia did not come to the attention of the department in a systematic fashion.”*¹⁵³

Knowledge of the deaths

- 7.57 Whether by systematic means or otherwise, the deaths of all the children should have been reported. Mr Gowdy indicated that he would *“certainly”*

¹⁵² 341-002-019

¹⁵³ 341-002-019

have expected the Department to have been informed of them all¹⁵⁴ and Mr Colm Donaghy, Chief Executive of the Belfast Health and Social Care Trust, on behalf of the former RGHT, apologised for the lack of communication with the Department.¹⁵⁵

- 7.58 However, as the evidence unfolded, and despite Departmental denials, it became necessary to consider whether the Department might not in fact have known about the deaths of Adam, Claire and Lucy prior to Raychel's death in 2001.

Adam Strain

- 7.59 Just as Adam's death was not formally reported within the RGHT, it was not formally reported to the Department. The findings at inquest were not shared and there was no other obvious communication of information. The CMO stated that the "*Department was not made aware of the case at the time by either the RVH or the Coroner. We only became aware of that particular case when we began the work of developing guidelines following the death at Altnagelvin.*"¹⁵⁶ However, this assertion came to be questioned.
- 7.60 During Adam Strain's inquest on 21st June 1996 the RGHT provided the Coroner with draft 'Recommendations for the Prevention and Management of Hyponatraemia arising during Paediatric Surgery.'¹⁵⁷ They were drafted by Dr Joseph Gaston,¹⁵⁸ approved by Dr Peter Crean¹⁵⁹ and signed by Dr Robert Taylor.¹⁶⁰ Notwithstanding that they purported to indicate how such cases might be managed in the future,¹⁶¹ they were not circulated among other clinicians or submitted to the Department. Mr Gowdy observed that the references to hyponatraemia in the recommendations "*was of such general application as to be of interest and significance to other*

¹⁵⁴ WS-062-2 p.10

¹⁵⁵ Mr Donaghy T-12-11-13 p.6 line 13

¹⁵⁶ 006-002-117

¹⁵⁷ 060-018-036

¹⁵⁸ 306-081-003, 060-018-035 & WS-013-2 p.4

¹⁵⁹ 303-001-007 & 060-014-025

¹⁶⁰ 303-001-003 & 011-014-107a

¹⁶¹ 122-044-048

hospitals”¹⁶² and that he would have expected a copy to be sent to the Department because of the regional implication.

- 7.61 The CMO herself believed that had they been brought to her attention she would have regarded them as an appropriate matter for consideration by her Specialty Advisory Committees for Anaesthetics and Paediatrics.¹⁶³ In this connection it is to be noted that Drs Gaston, Crean and Taylor had all been one-time members of these committees¹⁶⁴ and Dr Crean accepted that the case for guidelines on fluid management and hyponatraemia would have been an appropriate matter for discussion.¹⁶⁵
- 7.62 I do not however consider it likely, given their earlier disinclination to share their recommendations, that they notified the Department’s SACs about Adam. The committees were not well suited for the purposes of such communication. Dr Miriam McCarthy¹⁶⁶ indicated the *“view among Departmental colleagues and SAC members was that the frequency of meetings (most were annual) meant the meetings were not designed to facilitate a response to the wide range of issues arising between meetings and for which alternative mechanisms were needed.”*¹⁶⁷
- 7.63 It also became apparent that Dr Gaston had involved the senior hospital anaesthetist, Dr Samuel Morrell Lyons,¹⁶⁸ in the aftermath of Adam’s death.¹⁶⁹ He was, amongst other things, Chairman of the Central Medical Advisory Committee of the Department.¹⁷⁰ Whilst this could speculatively be interpreted as some form of indirect ‘reporting’ to the Department, I do not believe that to have been the case. Dr Lyons had very little engagement with the facts of the case¹⁷¹ and there is nothing to suggest that he understood matters much beyond what Dr George Murnaghan¹⁷² and Dr

¹⁶² WS-062-2 p.10

¹⁶³ WS-075-2 p.8 & 320-110-001

¹⁶⁴ 075-076-287

¹⁶⁵ Dr Crean T-11-09-13 p.12 line 22

¹⁶⁶ 337-001-002

¹⁶⁷ WS-080-2 p.19

¹⁶⁸ 306-081-006

¹⁶⁹ Dr Gaston T-19-06-12 p.2 line 8

¹⁷⁰ 306-081-006 & 093-024-066

¹⁷¹ 093-024-067

¹⁷² 306-081-005

Gaston were telling him and there is no reason to suppose that they told him more than they told anyone else in a position of governance. I do not consider that the Department was thereby informed about Adam's case.

Claire Roberts

- 7.64 Claire's death was not formally reported to the Department until 28th March 2006¹⁷³ when the Trust reported it as a SAI pursuant to interim guidance HSS (PPM) 06/04.¹⁷⁴ Notwithstanding that the report could and should have been made in 2004, her case had already come within the scope of this Inquiry and the Department was therefore on notice. This was however another example of RGHT failure to follow guidance and Departmental failure to check that its requirements were being met.

Lucy Crawford

- 7.65 There is no evidence that Lucy's death was reported at the time to the Department. In February 2003 Mr Stanley Millar¹⁷⁵ Chief Officer of the WHSSC notified the Coroner of Lucy's death.¹⁷⁶ The Coroner copied Mr Millar's letter to the CMO on 3rd March.¹⁷⁷ The Department therefore maintained that it did not become aware of Lucy's case until March 2003.
- 7.66 However, Dr Campbell wrote an article about Lucy's death for the 'Irish News' on 21st May 2004 in which she stated that "*In fact, the Coroner referred Lucy's case to me as long ago as June 2001...*"¹⁷⁸ Whilst she quickly corrected this to read 'March 2003',¹⁷⁹ it nonetheless gave rise to suspicion that the Department was in possession of information earlier than claimed and at a date before the death had been properly explained to Lucy's parents.

¹⁷³ 322-070-003

¹⁷⁴ 322-070-001

¹⁷⁵ 325-002-011

¹⁷⁶ 013-056-320

¹⁷⁷ 006-010-294

¹⁷⁸ 004-010-154 – Dr Campbell made a similar assertion in an interview with UTV on 25-03-04 (006-037-376).

¹⁷⁹ 004-010-155

- 7.67 Relevant in this context was the suggestion by Dr William McConnell¹⁸⁰ that Mr Hugh Mills¹⁸¹ had telephoned the Department about Lucy.¹⁸² Mr Mills was very clear that he had not¹⁸³ and Dr McConnell could provide no further detail. Notwithstanding that Mr Thomas Frawley¹⁸⁴ of the WHSSB “*would have expected the Trust to notify the DHSSPS of an ‘untoward death’ such as that of Lucy Crawford*”¹⁸⁵ he did not believe that the Trust had reported Lucy’s death to the Department.¹⁸⁶ There is no evidence that any other member of the Sperrin Lakeland Trust’s senior management reported Lucy’s death and Mr Mills confirmed that the Trust’s review of the case was not drawn to the Department’s attention either.
- 7.68 It is difficult therefore to conclude that the Department was aware of either the facts or import of Lucy’s case before it was drawn to the Dr Campbell’s attention by the Coroner and the Coroner could not have done so before he himself was informed in February 2003. The fact that Dr Campbell had always been clear that it was the Coroner who informed her about Lucy and this had always been capable of corroboration, suggests to me that her statements were simply confused as to dates. She is unlikely to have known about Lucy in 2001.

Chief Medical Officer’s Working Group on Hyponatraemia

- 7.69 In 2001, Dr Ian Carson,¹⁸⁷ Medical Director of RGHT, was also serving as Special Advisor to the CMO.¹⁸⁸ It was in this capacity that he was informed on 18th June 2001 that Raychel had died of hyponatraemia and that her death was linked to fluid management with low saline solution.¹⁸⁹ He brought the matter to the immediate attention of Dr Campbell and

¹⁸⁰ 325-002-009

¹⁸¹ 325-002-008

¹⁸² WS-286-2p.4

¹⁸³ WS-293-3 p.3

¹⁸⁴ 325-002-010

¹⁸⁵ WS-308-1 p.14

¹⁸⁶ WS-308-1 p.21

¹⁸⁷ 306-081-004

¹⁸⁸ WS-077-3 p.1

¹⁸⁹ 012-039-179

suggested that in the circumstances, it might be appropriate to provide regional guidance.

7.70 On 27th July 2001 Dr Campbell sought background information and asked if there was “*anyone at RBHSC who could put together a short paper on this?*”¹⁹⁰ Dr Taylor was asked¹⁹¹ and his paper entitled ‘Hyponatraemia in Children’¹⁹² was e-mailed by Dr Carson to the CMO on 30th July 2001 with the observation that “*The problem today of ‘dilutional hyponatraemia’ is well recognised (See reference to BMJ Editorial). The anaesthetists in RBHSC would have approximately one referral from within the hospital per month. There was also a previous death approx. six years ago in a child from the Mid Ulster. Bob Taylor thinks that there have been 5-6 deaths over a 10 year period of children with seizures...*”¹⁹³

7.71 Dr Campbell was assisted within the Department by Senior Medical Officer Dr McCarthy.¹⁹⁴ She considered Dr Taylor’s briefing and thought it “*very helpful*”¹⁹⁵ but did not attempt to learn any more about the deaths referred to. Nor does it seem that Dr Campbell¹⁹⁶ or Dr Carson,¹⁹⁷ or anyone else in the Department asked any questions about the alarming numbers of deaths from dilutional hyponatraemia thus brought to their attention.

7.72 Dr Carson interpreted the deaths to have occurred in the UK, not least because “*if there’d been five or six deaths over a ten year period in the Royal Belfast Hospital for Sick Children, I would have known about it.*”¹⁹⁸ Taking account of the deaths now known and another referenced by Dr Taylor, it is possible that there were five deaths within ten years in RBHSC.¹⁹⁹ Notwithstanding, I fully accept that Dr Carson did not know about those deaths. In any event, the Department had clearly been informed that the

¹⁹⁰ WS-330-1 p.10

¹⁹¹ WS-330-1 p.10

¹⁹² 043-101-223

¹⁹³ 021-056-135

¹⁹⁴ WS-080-2 p.3

¹⁹⁵ WS-080-2 p.7

¹⁹⁶ Dr Campbell T-07-11-13 p.115 line 3

¹⁹⁷ WS-331-1 p.4 & Dr Carson T-30-08-13 p.98 line 7

¹⁹⁸ Dr Carson T-30-08-13 p.96 line 23

¹⁹⁹ Dr Carson T-30-08-13 p.98 line 11 *et seq*

problem of dilutional hyponatraemia was implicated in more than a single death in Northern Ireland.

- 7.73 Dr Campbell then gave direction that a Working Group should develop and provide guidelines for safe paediatric fluid management and the avoidance of hyponatraemia.²⁰⁰ On 14th August 2001 the task of co-ordinating production of the guidelines was delegated to Dr McCarthy.²⁰¹ It was, she indicated, *“a task and finish group established only to develop guidance on the prevention of hyponatraemia.”*²⁰²
- 7.74 The Working Group assembled on 26th September 2001²⁰³ and included a number of clinicians, familiar not only with hyponatraemia but also with some of the other deaths concerning this Inquiry, including Claire and Lucy.²⁰⁴ The question therefore arose as to whether their work within a Departmental group placed the Department on notice of the other deaths known to them. Of particular interest was whether group members discussed amongst themselves the deaths known to them. If they did, they might have been sharing information about the deaths of Claire and Lucy within a Departmental context which had not been disclosed to their grieving families or the Coroner and which would not be disclosed for some considerable time to come.
- 7.75 Of particular interest was the involvement of Drs Taylor, Nesbitt,²⁰⁵ Crean, Jenkins²⁰⁶ and Loughrey.²⁰⁷ Dr Taylor was more than fully aware of Adam’s case and had examined Claire in PICU.²⁰⁸ As Paediatric Audit Co-ordinator he may possibly have learned of Lucy’s death.²⁰⁹ Dr Crean treated both Lucy²¹⁰ and Raychel²¹¹ and was aware of the fluid issues in Adam’s case.²¹²

²⁰⁰ 075-082-329

²⁰¹ WS-080-1 p.2 & WS-075-1 p.6

²⁰² WS-080-2 p.5

²⁰³ 007-048-094

²⁰⁴ 328-003-001

²⁰⁵ 328-003-001

²⁰⁶ 328-003-001

²⁰⁷ 328-003-001

²⁰⁸ WS-157-1 p.2

²⁰⁹ 061-038-123

²¹⁰ 013-021-071

²¹¹ 012-032-159

²¹² 060-014-025

His name appears as Claire's Consultant in her Discharge Summary.²¹³ Dr Nesbitt not only knew about Raychel's case but had advised his Medical Director on 14th June 2001 of "... *several deaths involving No.18 Solution.*"²¹⁴ Dr Loughrey was the Chemical Pathologist who advised the Coroner about the cause of hyponatraemia in Raychel's case and Dr Jenkins was known for his particular interest in fluid and electrolyte management and was to be asked in February 2002 to provide expert opinion in Lucy's case.²¹⁵ Mr G Marshall FRCS was also included. He was from the Erne Hospital where Lucy had been treated.

- 7.76 When asked whether the Working Group considered the deaths of Adam, Claire or Lucy, the Department maintained that "*the CMO's Hyponatraemia Working Group was set up to develop guidance on the prevention of hyponatraemia and not to consider the case of any specific child.*"²¹⁶
- 7.77 Professor Swainson nonetheless considered that it would have been logical for the group to consider those deaths specifically known by group members to be due to hyponatraemia because he did not "*think you can divorce the context in which you are doing the work from the work itself. And I still think you'd want to test the assumptions and the conclusions you are coming to against your experience of those cases.*"²¹⁷
- 7.78 Further suspicion arose because Dr Jenkins told UTV that the Working Group had been set up after it was recognised that both Raychel and Lucy had died with hyponatraemia.²¹⁸ Dr Jenkins corrected himself, explaining that he had become confused as to when he had found out about the deaths and that he had not in fact known about Lucy's death at the time of his contribution to the Working Group.²¹⁹

²¹³ 090-009-011

²¹⁴ 022-102-317

²¹⁵ Dr Jenkins T-10-09-13 p.25 line 5

²¹⁶ 009-014-022

²¹⁷ Professor Swainson T-19-09-13 p.127 line 15

²¹⁸ 069a-056-181

²¹⁹ 074-016-071 & Dr Jenkins T-10-09-13 p.19 line 18

- 7.79 In preparation for the first meeting of the group, Dr Taylor prepared a presentation on “*Hyponatraemia in Children*”²²⁰ which he sent to the Department on 18th September 2001.²²¹ Dr McCarthy noted the content of the presentation.²²² It placed hyponatraemia in the context of the administration of excessive maintenance fluids²²³ and incorporated detailed information on the ‘Incidence of Hyponatraemia at RBHSC.’ Remarkably it omitted the deaths of Adam, Claire and Lucy. In the event, his presentation was not given, perhaps because, as Dr Taylor explained, his figures were based on incomplete data.²²⁴
- 7.80 The Deputy CMO Dr Paul Darragh²²⁵ chaired the first meeting of the Working Group on 26th September 2001.²²⁶ Dr Taylor described those patients most at risk and advised that it was “*a problem that has been present for many years.*”²²⁷ Dr McCarthy recalled “*Dr Taylor advising attendees of the increased identification of cases of hyponatraemia in the RBHSC, including 2 cases resulting in fatality.*”²²⁸
- 7.81 Dr Taylor undertook to report Raychel's case to the Medicines Control Agency (MCA).²²⁹ He wrote to the MCA on 23rd October that he was: “*conducting an audit of all infants and children admitted to the PICU with hyponatraemia. My initial results indicate at least two other deaths attributed to the use of 0.18NACL/4% glucose*”²³⁰ (emphasis added). This correspondence was then shared with Drs Jenkins, Nesbitt and McCarthy²³¹ and may thus have been the origin of Dr Jenkins' belief that the working group had been set up after the deaths of two children in Northern Ireland. If so, his confusion is then more readily understood.

²²⁰ 007-051-101

²²¹ 007-051-100

²²² WS-080-2 p.7

²²³ 007-051-106

²²⁴ Dr Taylor T-11-12-12 p.151 line 8

²²⁵ 337-001-002

²²⁶ 007-048-094

²²⁷ Dr Taylor T-18-09-13 p38 line 10

²²⁸ WS-080-2 p.13

²²⁹ WS-008-1p.18

²³⁰ 012-071e-412 nb emphasis added

²³¹ 007-032-059

- 7.82 Within the Department the correspondence “*would have been noted and filed.*”²³² Throughout work on the guidelines, Dr McCarthy regularly discussed progress with Dr Campbell, providing her with updates and drafts as appropriate.²³³
- 7.83 It is clear that Raychel’s death was discussed²³⁴ and whilst discussion of broader incidence may have been vague, it is also clear that the group knew that it was addressing a problem that extended beyond Raychel’s death alone.²³⁵ It is in this context that it might be thought to have been natural for individual members to discuss the overall incidence of deaths and compare and contrast the rather different cases of Adam and Raychel, and possibly also Claire and Lucy, to better understand the issues arising. Even Dr Campbell agreed that it “*would be unnatural for them not to put that into the pot.*”²³⁶ As Dr Darragh put it “*all doctors always talk about their individual experiences.*”²³⁷
- 7.84 In the event, Dr Darragh noted that “*given Dr Taylor’s presentation ...there were clearly likely to be other cases emerging but the important step of producing guidelines was the appropriate step to be taking at regional level at that time.*”²³⁸ Accordingly, it was agreed that simple guidelines were required and that in order to move quickly, a small sub-group would undertake the drafting of the guidelines together with an audit protocol.
- 7.85 Notwithstanding Dr Taylor’s contribution, he was not included in the drafting sub-group. Instead, Drs McCarthy, Jenkins and Crean met on 10th October 2001 with Dr Jarlath McAloon²³⁹ who was co-opted for additional paediatric perspective. The sub-group decided to proceed by way of e-mail communication as a “*virtual group*”²⁴⁰ in order “*to facilitate more rapid*

²³² Dr McCarthy T-31-10-13 p.46 line 14

²³³ WS-080-1 p.4

²³⁴ 001-078-270

²³⁵ Dr McCarthy T-31-10-13 p.12 line 17

²³⁶ Dr Campbell T-07-11-13 p.117 line 2

²³⁷ Dr Darragh T-30-10-13 p.158 line 17

²³⁸ WS-076-2 p.12

²³⁹ 337-001-004

²⁴⁰ WS-080-2 p.9

progress in developing the guidance."²⁴¹ This limited the scope for group discussion and indeed subsequent communication does not appear to have been general. As Dr McAloon recalled his "*responses were channelled through Dr McCarthy's office and I am not aware of who saw them.*"²⁴²

7.86 Dr McAloon considered that his role "*was to provide comments from the perspective of a general paediatrician who would be expected to implement the guidance once produced*"²⁴³ and recalled "*the initial face-to-face brainstorming meeting to help identify key components needing to be addressed in the guideline.*"²⁴⁴ Notwithstanding that Dr Jenkins "*regarded it as [his] responsibility to test the guidance against the knowledge that [he] had*"²⁴⁵ he did not expect others in the group to mention individual cases or test the draft against such cases.²⁴⁶ He acknowledged that "*it would have been easier, for doctors to have shared that type of information in a face-to-face meeting other than in e-mails.*"²⁴⁷ The focus, he said "*was on the guidelines, not on any individual case.*"²⁴⁸ The guidance was intended for the generalist junior doctor and not the specialist²⁴⁹ and accordingly the drafting group concentrated on the key general principles to be applied to all children receiving IV fluids.

7.87 Dr Crean thought that "*we probably were all drawing on our own expertise with children we had managed.*"²⁵⁰ It is to be noted that apart from Dr Crean, no other member of the drafting sub-group had managed any of the children known to have died. Notwithstanding that Dr Crean could have drawn on his own expertise, there is no indication that he shared his knowledge in respect of individual cases. Indeed, the evidence of Drs Jenkins,²⁵¹

²⁴¹ WS-082-2 p.9

²⁴² WS-363-1 p.8

²⁴³ WS-363-1 p.8

²⁴⁴ WS-363-1 p.9

²⁴⁵ Dr Jenkins T-10-09-13 p.27 line 8

²⁴⁶ Dr Jenkins T-10-09-13 p.71 line 15

²⁴⁷ Dr Jenkins T-10-09-13 p.32 line 11

²⁴⁸ Dr Jenkins T-10-09-13 p.72 line 7

²⁴⁹ Dr McCarthy T-31-10-13 p.34 line 22

²⁵⁰ Dr Crean - T-11-09-13 p.90 line 9

²⁵¹ Dr Jenkins T-10-09-13 p.71 line 15

Crean,²⁵² Nesbitt²⁵³ and Taylor²⁵⁴ agreed that the Working Group did not at any time discuss or consider the deaths of Adam, Claire or Lucy.

- 7.88 This does seem odd, not least because there were some within the group who were interested in other cases. On 30th November 2001 Dr Loughrey e-mailed Dr McCarthy to enquire whether she was aware of “*the death of a four year child in what sound like very similar circumstances in Northern Ireland in 1996.*”²⁵⁵ Dr McCarthy then discussed the cases of Adam and Raychel with the Coroner²⁵⁶ and received copies of Adam’s autopsy report and Dr Edward Sumner’s²⁵⁷ report which were relayed to Dr Campbell.²⁵⁸ There is however no reference to either Claire or Lucy in any of the extended threads of e-mail correspondence seen by this Inquiry.
- 7.89 Dr McCarthy circulated a “*final draft*” of the guidelines to the group on 7th November.²⁵⁹ Dr Loughrey expressed disappointment that it did not positively discourage the use of hypotonic fluids because she believed this was “*a major (if not the major) factor in the demise of the child in Altnagelvin*”²⁶⁰ Dr Crean did not agree, arguing that advice on specific IV fluids should not be given when “*there is not really any evidence to suggest that one solution is more or less harmful than another.*”²⁶¹ Dr Loughrey countered that she felt so strongly about referencing the risk associated with Solution No.18, that if it was not included, she would wish to be disassociated from the guidelines.²⁶² This was an issue that was discussed in detail²⁶³ and given the genuine disagreement it would seem to have presented an obvious opportunity to test the draft guidelines against known cases. Indeed, Dr McCarthy recognised that “*the patient’s illness, condition, age, post-op status and serum sodium all play a role in dictating*

²⁵² WS-038-3 p.8

²⁵³ Dr Nesbitt T-03-09-13 p.124 line 14

²⁵⁴ Dr Taylor T-18-09-13 p.130 line 15

²⁵⁵ 007-025-048

²⁵⁶ 006-056-440

²⁵⁷ 303-001-010

²⁵⁸ WS-075-1 p.3

²⁵⁹ WS-035-2 p.347

²⁶⁰ 007-025-048

²⁶¹ 007-014-029

²⁶² 007-013-027

²⁶³ WS-080/2 p.11

*the choice of fluid.*²⁶⁴ Whilst Dr Darragh conceded that this would have been both useful and obvious, it was seemingly not done.²⁶⁵ In this context, I consider it very likely that had the known deaths been referred to, then some reference would appear in at least one of the multiple threads of e-mail correspondence. However there is no such reference.

7.90 Dr McCarthy said that “*information on previous deaths was absolutely not shared in that group. When I now see what people knew, it is a surprise to me that that wasn’t, but that is the reality.*”²⁶⁶ Indeed she said she found it “*inexplicable more than anything*”.²⁶⁷

7.91 On the evidence before me I cannot therefore be persuaded that the Department can be fixed with notice of the deaths of Claire or Lucy in this context. A combination of urgency to complete the guidelines, the distancing effect of individual communication by e-mail, the obscuring effect of Dr Taylor’s purported ‘Incidence of Hyponatraemia at RBHSC’, Dr Crean’s silence and the busy professional lives of all concerned probably inhibited the sort of exchanges that might have been thought obvious. The absence of any evidence to the contrary supports this conclusion.

7.92 The Department issued its ‘Guidance on the Prevention of Hyponatraemia in Children’ in March 2002. Dr Campbell published it with her direction that “*Fluid protocols should be developed locally to compliment the Guidance and provide more specific direction to junior staff... It will be important to audit compliance with the Guidance and locally developed protocols and to learn from clinical experiences.*”²⁶⁸ The Working Group ceased to exist on publication²⁶⁹ and did not produce the “*audit protocol*” agreed at its first meeting. Nor did it offer any guidance as to how fluid protocols might be developed locally. Dr McCarthy thought that they “*would probably follow*

²⁶⁴ 012-062-314

²⁶⁵ Dr Darragh T-30-10-13 p.180 line 25

²⁶⁶ Dr McCarthy T-31-10-13 p25 line 17

²⁶⁷ Dr McCarthy T-31-10-13 p.75 line 21

²⁶⁸ 007-001-001

²⁶⁹ WS-080-2 p.6

*up in due course...*²⁷⁰ They did not and with hindsight that is a matter for regret.

- 7.93 Notwithstanding, it is to be recognised that the CMO's guidelines placed Northern Ireland, in the view of Dr Sumner, "*ahead of the rest of the UK*."²⁷¹ This was achieved with speed and efficiency. It was a significant achievement and properly worthy of praise because, as Professor Swainson observed, the guidelines "*have improved considerably the quality of care across the province and reduced the risk of Hyponatraemia*."²⁷²

Chief Medical Officer

- 7.94 Unfortunately, and undermining her important work in publishing the guidelines, Dr Campbell gave a series of extraordinary interviews to the media in the aftermath of the inquests into the deaths of Raychel and Lucy. Rather than communicating in order to inform and reassure, she made statements which so inflamed the suspicion and distrust of Mr and Mrs Ferguson and Mr & Mrs Slavin that they called for her resignation in December 2004.²⁷³ Such was Mr & Mrs Ferguson's disquiet at what she had said that they asserted that she was engaged in a cover-up and referred her conduct to the GMC.²⁷⁴
- 7.95 Transcripts of two BBC and two UTV interviews, together with another given to a journalist,²⁷⁵ reveal carelessness as to facts and an inappropriate defensiveness about clinical treatment. Whilst they mislead and are troubling in their lack of professionalism, they do not constitute a cover-up. In this regard it is to be emphasised that Dr Campbell made clear her view that "*the deaths of Lucy and Raychel may indeed have been entirely preventable*,"²⁷⁶ that "*if we'd had an early inquest into Lucy's death, then it*

²⁷⁰ Dr McCarthy T-31-10-13 p.79 line 13

²⁷¹ 006-002-156

²⁷² 226-002-006

²⁷³ 073-037-162

²⁷⁴ 068-013-022

²⁷⁵ To: Trevor Birney of UTV 17-02-03 (069A-033 078), To: Audrey Carville of BBC Radio Ulster Evening Extra 18-03-04 (034-151-407), To: Julian O'Neill of BBC Newsline 18-03-04 (023-020-044), To: Fearghal McKinney of UTV 'The Issue' 25-03-04 (006-037-375), To: Denzil McDaniel of 'The Impartial Reporter' 25-05-04 034-142-372.

²⁷⁶ 034-151-407

might have been that the death of Raychel might never have happened,”²⁷⁷ that “anybody reading those [Coroner’s] reports would say and agree with the coroner that the management of the fluids could have been much much better and that it was inadequate.”²⁷⁸

7.96 In addition she stated on the record that *“It’s quite clear that there was no process for the reporting of Lucy’s death to me, nor indeed the outcome of any investigation,”²⁷⁹ “I absolutely agree that if we had in place a system for the reporting of all ...untoward deaths, that we could have begun to learn lessons earlier”²⁸⁰ and “Our role as the Department is development of strategy and policy and a strategy and policy on proper investigation is what we need to do.”²⁸¹*

7.97 However and at the same time she repeatedly misinformed her interviewers and the public. She appeared intent on distancing the Health Service from responsibility and understating the known risks of hyponatraemia so as appear an apologist for much that had happened. That she repeatedly allowed herself to be exposed in this way for interview was an error of judgement and what she said is a cause for concern.

7.98 Amongst other things she claimed:

(i) *“...when untoward and rare events happen we need to find a way of learning from them. Now they only happen every 5 or every 10 years.”²⁸²* This can only have been invented. Not only was there no reliable system to inform her of such events, but an internal Departmental e-mail from the following year records Dr Campbell as estimating the *“numbers of serious untoward incident deaths reported to her...about 3-4 annually”²⁸³*

²⁷⁷ 023-020-045

²⁷⁸ 034-142-378

²⁷⁹ 034-142-387

²⁸⁰ 006-037-379

²⁸¹ 034-142-393

²⁸² 069A-033-078

²⁸³ 010-030-188

- (ii) That Adam “*was an entirely different clinical situation*”²⁸⁴ to Raychel – “*From what I know of the clinical details the case 7 years ago was of a child who was already very ill...I think it is important to recognise that in this case here we had a normal healthy child so therefore something had to be looked at...they needed to consider what measures needed to be put into place in order to prevent that happening again.*”²⁸⁵ The suggestions that Adam was a victim of his pre-existing condition and not blatant clinical error, that he was not sufficiently normal or that his case was less deserving of investigation in order to prevent recurrence are erroneous and insulting.
- (iii) “*with Lucy we saw the first case of what was a very rare occurrence written up in the medical journals only recently...*”²⁸⁶ Dr Campbell was fully aware of the earlier case of Adam, had been briefed with Professor Alan Arieff’s paper published 12 years before and had been advised by Dr Carson of the previous incidence of death.
- (iv) Speaking of Lucy and Raychel she said “*The rarity in this event and you do have to return to the medicine, the physiology behind these 2 events... was the abnormal reaction which is seen in a very few children to the normal application...*”²⁸⁷ Asked to comment on this assertion, Dr Dewi Evans²⁸⁸ indicated that the statement was wrong and it would worry him that it was made by the CMO for Northern Ireland.²⁸⁹
- (v) “*What we now know is, that the fluids which were given to Lucy were the ones that were being used in ordinary custom and practice throughout the whole of the National Health Service except for one or two practitioners who’d begun to recognise this issue of*

²⁸⁴ 069A-033-079

²⁸⁵ 069A-033-079

²⁸⁶ 006-037-375

²⁸⁷ 006-037-377

²⁸⁸ 325-002-013

²⁸⁹ ‘When Hospitals Kill’-UTV-‘Insight’- 21-10-04

hyponatraemia where the body goes through this abnormal response in just a very few cases and you begin to get oedema or swelling of the brain. Now in retrospect, and knowing all the evidence that has been published since Lucy's case and over the last four years, we now know that that condition exists, that it can happen, albeit in a very few patients..."²⁹⁰ Dr Campbell appeared to reject the Coroner's findings at inquest. Lucy's death resulted from clinical error not abnormal response. It was disingenuous of her to suggest that the excessive fluids given Lucy were standard because she was more than fully aware of the distinction between type and volume of fluid. It was misleading to assert that only one or two practitioners were alert to the issue, given that she knew Professor Arieff's paper had been published in the British Medical Journal.²⁹¹ Further and in any event it was quite wrong to characterise hyponatraemia as an abnormal response and dishonest to suggest that the condition was not known to exist in 2000.

- (vi) That this was not inadvertent error is clear from the CMO's repeated assertions that the mismanaged fluid therapy was somehow normal and the risks negligible "*...the fluids that we are talking about, that Lucy got, were in general use and ...one in 300 of children who were getting those fluids would develop hyponatraemia...and ten percent of those would go on to have a fatal reaction.*"²⁹²
- (vii) When asked whether an investigation or inquest should not have been held earlier in Lucy's case she said that "*the coroner did not feel at that time that an inquest was required...*"²⁹³ Later the same day she said that "*on looking back at the issues, I think if we'd had an early inquest into Lucy's death, then it might have been that the death of Raychel might never have happened...What the coroner*

²⁹⁰ 034-151-407

²⁹¹ In this regard it is informative to note that the connection between fluid mismanagement and dilutional hyponatraemia was made very quickly in each of the cases of Adam, Claire, Lucy and Raychel. Furthermore, in the cases of Claire and Lucy the diagnosis was made by doctors who had not yet attained consultant status.

²⁹² 034-142-377

²⁹³ 034-151-408

*has now agreed is that he will draw to our attention very early on those deaths about which he has concern.”*²⁹⁴ This suggested that the lack of a timely inquest was the responsibility of the Coroner rather than of the clinicians themselves and furthermore carried the implication that, but for the Coroner’s decision, Raychel might have lived. The Coroner immediately wrote to her and protested that *“in the interview you gave on BBC television you mentioned that the death of Raychel Ferguson could have been prevented if the full circumstances of the death of Lucy Crawford had been known sooner and you mentioned the desirability of there having been an earlier inquest into Lucy’s death. I believe the papers I have provided you with explain what happened when Lucy’s death was reported to my office and why a coroner’s post-mortem examination was not then ordered.”*²⁹⁵ Further and by way of additional information he added *“When he gave evidence in the inquests in to the deaths of Adam Strain, Raychel Ferguson and Lucy Crawford, Dr Sumner was at pains to state that his views on fluid management of children did not constitute ‘new’ medical knowledge.”*²⁹⁶

7.99 Dr Campbell has since indicated her deep regret for what she said and for causing the Ferguson family additional distress. She said that *“on reflection I realise -- I realised much after the interviews -- that some of the things that I said could have been misunderstood in terms of what I was trying to say. They were very poorly crafted.”*²⁹⁷ She accepted that she *“was ill-prepared”*²⁹⁸ and took *“full responsibility for saying things in a way which could have been misinterpreted. That was never my intention and it has cast a shadow over my life since.”*²⁹⁹

7.100 Dr Campbell’s approach bore many of the same characteristics as marred those meetings arranged by clinicians with Mr and Mrs Ferguson and Mr

²⁹⁴ 034-151-408 & 023-020-045

²⁹⁵ 006-004-282

²⁹⁶ 006-004-282

²⁹⁷ Dr Campbell T-07-11-13 p.165-166

²⁹⁸ Dr Campbell T-07-11-13 p.167 line 19

²⁹⁹ Dr Campbell T-07-11-13 p.168 line 2

and Mrs Roberts. Defensiveness continued even after mismanagement had been revealed and when inaccuracy and evasion could only exacerbate suspicion. Whilst such failures in communication may be ascribed to lack of preparation and a desire to deflect criticism, it must be stated that in my view they also proceed from arrogance and complacency. The CMO's public statements were a further manifestation of a culture which has revealed itself to this inquiry at every level of the Health Service.

CURRENT POSITION

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Introduction

- 8.1 In order to discover whether the many deficiencies uncovered by this Inquiry have been addressed, and to understand what the relevant statutory bodies have done and could still do to improve matters, I decided upon a different approach for inquiry. I convened forum sessions for opinion and discussion, with representatives from the Department of Health ('the Department'), the Belfast Health & Social Care Trust ('BHSCT'), the Health and Social Care Board ('HSCB'), the Public Health Agency ('PHA'), the Patient and Client Council ('PCC'), Action against Medical Accidents¹ ('AvMA') and others. Exchanges of opinion were encouraged from the evidence received, the agenda for discussion and questions arising. Participants were immune from criticism. Statutory bodies and others were asked for up-to-date position papers to detail current systems and problems. In particular, submissions were invited in respect of my more significant concerns, including the reporting and investigation of Serious Adverse Incidents ('SAI's'), the involvement of families, the handling of complaints and the introduction of a legally enforceable duty of candour. The responses and position papers received were shared with interested parties and are to be found on the Inquiry website.
- 8.2 Formulation of relevant recommendations is dependent upon an understanding of systems as they are today, notwithstanding that some problems appear constant. The Inquiry sought relevant up-to-date information and has attempted to note the changes occurring in the years since the deaths examined. Given the pace of procedural reform in the years since, this has been no easy task. For this reason this chapter of the Report is not to be understood as intending a comprehensive and up-to-the-minute account of the current position.
- 8.3 In Chapter 9 of this Report I set out my recommendations to strengthen and improve both practice and system. Although much has been achieved, much remains to be done. I recognise the obvious difficulties inherent in

¹ A UK charity offering independent advice and support to people affected by medical accidents.

translating recommendation into effective change and have come to believe that the best prospect for continued improvement rests with the focused involvement of families and a Health Service leadership which is zealous about learning from error.

- 8.4 Even brief analysis of this Report will reveal the recurrent themes so clearly marking the cases examined. I believe that the issues of competency in fluid management, honesty in reporting, professionalism in investigation, focus in leadership and respect for parental involvement to be the most obvious raised. They are also the most important because they are individually and collectively critical to learning from error.
- 8.5 Ultimate accountability for learning from error in the healthcare service rests with the Department and the Minister. The Department must ensure that, having issued standards, the policies of the 'arms-length' HSC organisations are compliant and quality assured. The key question is, as posed by Permanent Secretary Dr Andrew McCormick, "*How can we know if arms-length bodies are actually fulfilling the guidance and directions issued by the Department?*"² With so large and complex a system, quality assurance must come from active oversight, audit and review.
- 8.6 It is in this context that I have considered, in so far as I have been able, the steps taken by the Department and other statutory bodies to minimise the likelihood of recurrence. By drawing on the evidence received, weaknesses can be identified and recommendations made to further protect the patient interest. In this respect the evidence received and the frank views expressed during panel session discussions have been of real assistance.

Progress in hyponatraemia practice and guidance

- 8.7 In April 2007 the Department circulated 'Safety Alert 22' from the National Patient Safety Agency ('NPSA') about the risk of hyponatraemia to children receiving IV infusions.³ The removal of Solution No. 18 from general use

² Dr Andrew McCormick T-15-11-13 p.10 line 21

³ 330-167-001

was directed and warning posters placed in all paediatric units.⁴ Trusts were instructed to develop local protocol⁵ and audit their own compliance.⁶ Alert 22 guidance was then issued by the Department in September 2007 as 'Parenteral Fluid Therapy (1 month – 16 years): Initial Management guideline'.⁷ The BHSCT was able to confirm that Solution No 18 had been removed from all general areas where children were treated.⁸

8.8 The Regulation & Quality Improvement Authority ('RQIA') reviewed compliance with 'Safety Alert 22' in June 2008⁹ and found it wanting. It reviewed and reported again in May 2010 on the 'Implementation of recommended actions outlined within NPSA Alert 22 throughout HSC Trusts and independent hospitals in Northern Ireland'¹⁰ and concluded that compliance with Alert 22 had, by then, been substantially achieved and that there was good operational control of IV fluid administration to children. It concluded that clinicians were aware of the Guidelines and that nursing staff had received training in paediatric fluid administration. Notwithstanding, it made recommendations to consolidate progress. The Guidelines were amended in 2010¹¹ and the Department requested the Northern Ireland Medical & Dental Training Agency ('NIMDTA') provide the relevant training for medical undergraduates and junior doctors.¹²

8.9 There were also Guideline and Implementation Network ('GAIN')¹³ audits in 2012¹⁴ and 2014 measuring adherence with the IV fluid guidance developed from Alert 22.¹⁵ The 2012 report found that the IV fluids in use were compliant with recommendations even if some further improvement

⁴ 303-026-350

⁵ 330-135-002

⁶ 330-167-002

⁷ 303-059-817

⁸ 330-134-001

⁹ 303-058-776

¹⁰ 303-031-415

¹¹ 303-060-818 - Guidance on Parenteral Fluid Therapy for Children & Young Persons (Aged over 4 weeks and under 16 years)

¹² 330-152-003

¹³ GAIN was established as a partnership body of the Department in 2007. It works closely with the Department's Standards and Guidelines Quality Unit. It receives programme funding to conduct regional audits and where necessary produce local guidelines for the HSC.

¹⁴ 333-165-001

¹⁵ 303-060-818

was required to achieve 100% overall compliance. Progress was maintained in 2013 with a revised 'Regional Fluid Balance and Prescription Chart for Children and Adults' and the wall chart for 'Parenteral Fluid Therapy for Children and Adults (aged over 4 weeks and under 16 years)' was updated in September 2014.

- 8.10 GAIN conducted a follow-up audit in 2014 *"to examine whether the administration of IV Fluids to children and young people (aged over 4 weeks and under 16 years) is safe and meets quality standards."*¹⁶ Overall compliance was again found to have improved but adherence was not yet 100%. Nonetheless and importantly it found *"that the prescription of fluid type, particularly to those deemed to be at particular risk of developing hyponatraemia was always found to be appropriate..."*¹⁷ and that *"young people being cared for in an adult ward appear to have received the same standard of care as children being cared for in paediatric wards."*¹⁸
- 8.11 However, the report did make some recommendations concerning regularity of assessment and the proper completion of documentation. The HSCB/PHA then published further guidelines for use with the chart in 2015 and BHSCT issued its own 'Policy for recording fluid prescriptions and balance charts.'¹⁹
- 8.12 GAIN recommended additional hospital auditing of IV fluid management in children. To that end a Paediatric IV Fluid Audit Improvement Tool ('PIVFAIT') has now been devised and introduced to all HSC Trusts to provide local assurance in relation to the administration of IV fluids to children and young people.²⁰
- 8.13 National Institute for Health and Care Excellence ('NICE') has since published 'Clinical Guideline NG 29'²¹ for 'Intravenous fluid therapy for children and young people in hospital' which received the endorsement of

¹⁶ 403-011-009

¹⁷ 403-011-003

¹⁸ 403-011-006

¹⁹ 401-001an-001

²⁰ 401-001ao-001 & 404-001i-011

²¹ 404-001e-001

the Department in September 2017.²² The regional Fluid Balance and Prescription Chart for children and young people has now been revised in line with NG 29²³ and amended wall charts detailing parenteral fluid therapy for those aged over 4 weeks and under 16 years have been circulated for display in all areas where such patients are treated. Trusts have been requested to disseminate these charts and, given their regional importance, have been required to formally advise the Department as to anticipated dates of implementation and assure HSCB/PHA as to implementation. BHSCT intermittently updates its 'Policy for Recording Fluid Prescription and Balance Charts.' It is due for further review in 2018.

- 8.14 The Chief Medical Officer ('CMO') has requested the RQIA undertake 'a snapshot review/audit' of paediatric IV fluid practice. Such a review will examine the implementation of NG 29 together with the effectiveness of the wall-charts, Fluid Balance & Prescription Charts ('FB&PC's') and PIVFAIT. RQIA has indicated that the review "*will take place in spring 2018*".²⁴
- 8.15 This may be timely because, in November 2017 the RQIA published an 'Unannounced Hospital Inspection Report - Royal Belfast Hospital for Sick Children – 3-5 May 2017'.²⁵ Whilst generally reassuring it did identify some ongoing deficiencies. It specifically recommended that "*assurance audits should be carried out to ensure fluid balance charts are appropriately completed in line with best practice.*"²⁶ It also noted a lack of clear nursing leadership.²⁷
- 8.16 It is clear that very considerable professional attention has been devoted to protecting children undergoing fluid therapy and significant progress has been made. However, there can be no room for complacency because total patient safety cannot be assured. I consider that such therapy must therefore always be subject to scrutiny, which is why I recommend that all

²² 403-001-001 & 404-001k-001

²³ 403-001-006

²⁴ 404-002b-008

²⁵ 403-028-001

²⁶ 403-028-038

²⁷ 403-028-014

children's wards should have a senior lead nurse to provide the active leadership necessary to reinforce nursing standards and to audit and enforce compliance with guidance.

Training in fluid management and the prevention of hyponatraemia

- 8.17 In 2015 the HBSC/PHA assimilated all up-to-date regional IV fluid guidance and training packages into one document to ensure consistency in both competency assessment and training. The 'Competency Framework for Reducing the Risk of Hyponatraemia'²⁸ specifies that "*All prescribers caring for children are required to be competent in prescribing IV fluids appropriately and safely.*"²⁹ Competency in fluid management is reliant upon training.
- 8.18 Within Belfast, the current BH&SCT induction process for relevant trainee doctors requires that they provide "*evidence of completion of the BMJ Learning Module on Hyponatraemia.*"³⁰ The British Medical Journal ('BMJ') e-learning module 'Reducing the risk of Hyponatraemia when administering intravenous fluids to children'³¹ is designed to teach "*the dangers of hypotonic fluids in children, and how to diagnose and treat acute hyponatraemic encephalopathy*" and is based on the 2015 NICE guidelines. It usefully incorporates four clinical case studies referencing the regional paediatric fluid balance chart. Whether this training is sufficiently focussed on paediatric fluid prescribing has recently been questioned by foundation doctors at RBHSC.³² The RQIA has recommended that BH&SCT review and improve the induction programme to ensure training is appropriate.³³
- 8.19 Importantly present learning is available to all medical staff in Northern Ireland, just as most of the required training material is now available on-line. In terms of continuing professional education, the Competency Framework requires that "*all staff... should revisit the module, once every*

²⁸ 403-006-001 (reviewed September 2017)

²⁹ 403-006-006

³⁰ <http://www.belfasttrust.hscni.net/about/Inductionfortraineddoctors.htm> - Point 3

³¹ <http://learning.bmj.com/learning/module-intro/hyponatraemia.html?moduleId=5003260>

³² 403-028-019

³³ 403-028-020

three years as a minimum. Evidence of completion should be submitted... during annual appraisal."³⁴ Relevant training presentations are also posted on the BHSCCT intranet, including 'How to prescribe IV medicine infusions on a medicines kardex and/or daily fluid balance and prescription sheet'.

- 8.20 It is recognised that these programmes are for doctors in Northern Ireland as opposed to those clinicians who have trained outside the UK (as was the case with some doctors treating Raychel at Altnagelvin and both Raychel and Lucy at the Royal Belfast Hospital for Sick Children ('RBHSC')). The General Medical Council ('GMC') has sought to address this issue and continues to scrutinise the content and quality of induction and continuous professional development programmes.
- 8.21 With regard to the training of nurses in fluid management, Professor Hanratty found that the RQIA reviews brought focus to both training and practice. She noted a *"flurry of activity to include training and policy development...evident from the number of new documents and training materials during 2008/09. The universities have included sessions in pre-registration programmes. In-service training records demonstrate that nurse managers are requesting training sessions on the topic. Discussions with nurse managers indicate that there have been shared learning sessions on both hyponatraemia and record keeping attended by junior doctors and nurses."*³⁵
- 8.22 Professor Charlotte McArdle, the Chief Nursing Officer ('CNO'), stressed that training is now within the undergraduate programme and that the Northern Ireland Practice & Education Council for Nursing & Midwifery ('NIPEC') is conducting a quality assurance review of the paediatric fluid management training course. Within the Trusts, and as early as 2010, the Southern Health & Social Care Trust ('SHSCT') developed a nursing

³⁴ 403-006-005

³⁵ 308-004-086

Competency Framework 'For the Prescription, Administration, Monitoring and Review of IV Fluids for Children and Young People.'³⁶

- 8.23 There is additional ongoing education by way of induction programmes, shared learning and continuing professional development. BHSCT has introduced both an e-learning module and specific 'awareness' training for all RBHSC nursing staff, with a 'Hyponatraemia – How to complete a Paediatric Fluid Balance Chart'³⁷ module. It can be accessed on the BHSCT intranet. I would recommend that all Health & Social Care ('HSC') Trusts ensure that relevant nursing staff access such e-learning.
- 8.24 A repository of HSC resources relating to hyponatraemia has been made available on the PHA website at www.publichealth.hscni.net/directorate-nursing-and-allied-health-professions/nursing/central-repository-hsc-resources-relating.³⁸ This webpage brings together both regional and national guidance relating to hyponatraemia, including links to NPSA Patient Safety Alert 22, BMJ e-Learning module, competency framework, regional wall chart, FB&PC and associated training, RQIA reports, GAIN audit reports, NG29 and advice on how to prescribe IV medicines.

Some progress in matters of clinical relevance

- 8.25 Just as poor record keeping emerged as a recurrent theme in the cases examined by this Inquiry, so too was it identified as an issue in 5 out of 11 public healthcare Inquiries during the period 2003-08.³⁹ It was therefore very important that the CNO should have launched a 'Recording Care Project' ('the Project') to raise the standard of nursing records. The project has been extended to encompass all acute paediatric wards in Northern Ireland. Through a process of audit, benchmarking and professional review⁴⁰ the Project has successfully demonstrated improvement in specific areas of practice. In conjunction, NIPEC has actively supported

³⁶ 330-016-004

³⁷ 401-001an-003

³⁸ 401-002i-001

³⁹ 330-022-025

⁴⁰ 330-018-001

improvement and developed tools for audit. The Department has promoted benchmarking through its 'Essence of Care' programme. The Nursing and Midwifery Council ('NMC') issued updated and detailed guidance on 'Record Keeping' in 2010⁴¹ and the BHSC has since published 'Good Record Keeping – a Simple Guide' with Guideline posters.⁴²

- 8.26 Also of relevance is the recent development by the HSC Safety Forum (Paediatric Collaborative) of a standardised Physiological Early Warning Scores System ('PEWS') to assist in the early identification of deterioration in the child patient and to encourage the timely escalation of concern. A regional protocol has been agreed for its use.⁴³ The same collaborative has also worked with parent representatives to design a safety poster 'You Know Your Child Best' to encourage greater parental collaboration in care. In 2014 a small multi-disciplinary group within RBHSC instituted the practice of daily PICU Safety Briefings. This innovation has proved useful and the practice has now been adopted within other clinical areas of RBHSC including Allen Ward.
- 8.27 Notwithstanding, the RQIA unannounced inspection of RBHSC in 2017 found *"...completion of paediatric early warning scores was not always present. Robust systems to assure that best practice is followed are not in place and ...limited documented evidence of communication with parents..."*⁴⁴ Whilst improvement has been achieved, shortcomings in documentation and communication persist. Rigorous audit must become routine.
- 8.28 In developing its 'Strategy for Paediatric Healthcare Services (2016-2026)' the Department specifically recognised some important interdependencies between paediatric services and other healthcare services, for example access to laboratory and diagnostic services, anaesthetic services and intensive care.⁴⁵ Focus on interaction is important for patient safety and

⁴¹ 330-020-053

⁴² 401-001an-001

⁴³ 401-001s-001

⁴⁴ 403-028-014

⁴⁵ 403-020-013

the identification of systemic weakness. It is encouraging that it should inform strategy.

- 8.29 Importantly, the Department Strategy has also made it a Key Strategic Objective that “*every child who is admitted to a paediatric department should be seen by a paediatric practitioner at ST4⁴⁶ or equivalent (including advanced children’s nurse practitioner)⁴⁷ within four hours of admission and by a consultant within 24 hours of admission*”⁴⁸ It is Departmental intention that this very important objective be kept under review. I consider it should also be subject to routine audit.

Age appropriate care

- 8.30 In 2012 RQIA carried out a Baseline Assessment of the Care of Children under 18 Admitted to Adult Wards in Northern Ireland⁴⁹ and found that in 2009-2010, 3,933 children aged under 18 were cared for on adult wards. Whilst these patients were mostly adolescents and could, on occasion, be justifiably cared for in an adult setting, the figures are nonetheless disquieting given what was disclosed by Conor Mitchell’s case. The RQIA Report noted inconsistent age limits for admission onto paediatric wards and recommended regional agreement in this regard.
- 8.31 In 2012 HSCB issued guidelines on ‘Delivering Age Appropriate Care’⁵⁰ to ensure that children up to their sixteenth birthday would almost always “*be cared for in a paediatric environment.*”⁵¹ All HSC Trusts must satisfy the HSCB Director of Commissioning as to compliance with this important patient care requirement.⁵² However, difficulties have been experienced with physical infrastructure, staffing levels and the lack of available beds.⁵³ Some Trusts have indicated that they are ‘*working on it*’⁵⁴ and the RQIA has

⁴⁶ Assessment by ST4 or equivalent within 4 hours of admission means that in practical terms there should be a St4 practitioner or higher, resident in the hospital.

⁴⁷ Advanced nurse practitioner, staff grade or associate specialist doctor or doctor in training at ST4 or higher.

⁴⁸ 403-020-041

⁴⁹ 260-003g-001

⁵⁰ 401-001i-001

⁵¹ 401-001i-001

⁵² 401-001a-018

⁵³ 403-028-028

⁵⁴ 401-001a-018

suggested that BHSCT “*work with key stakeholders to address these issues*”.⁵⁵

- 8.32 There remains inconsistency between HSC Trusts as to the age limit for paediatric admission to hospital. The RBHSC admits children up to 13 years on to the paediatric medical/surgical wards and up to 14 years from the emergency department. Most other regional hospital paediatric units in Northern Ireland admit up to the 16th birthday. Recognising that some clinical conditions necessitate flexibility, the Department has now made it a key strategic objective within the Paediatric Strategy that “*Children (from birth up to 16th birthday) should usually be cared for by the paediatric team in paediatric settings, and those aged 16-17 years should be managed in age-appropriate settings within either paediatric or adult settings. In all cases, children and young people should have treatment and care delivered to them in an age-appropriate environment*”⁵⁶
- 8.33 The HSCB Commissioning plan for 2016-2017⁵⁷ requires that HSC Trusts make effective arrangements to ensure that children and young people receive age-appropriate care and that the regional upper age limit for paediatric services of 16th birthday is implemented. Trusts are required to demonstrate how the upper age limit of 16th birthday is actually operated in practice and those arrangements in place to ensure that children admitted to hospital up to their 16th birthday are cared for in an age-appropriate environment, by staff with paediatric expertise and with input from paediatricians where necessary.⁵⁸ The new Children’s Hospital to be built in Belfast is planned to provide care for children up to the age of 18 years.⁵⁹
- 8.34 This is an important patient safety issue and clearly not one that has been forgotten. HSCB and PHA have established forums with both professional and managerial representation to discuss just such issues arising in paediatric service provision. HSCB and HSC Trusts must continue to

⁵⁵ 401-028-029

⁵⁶ 403-020-036

⁵⁷ 403-021-001

⁵⁸ 403-021-053

⁵⁹ 403-020-014

pursue solutions. I recommend that HSC Trusts should publish their policy and arrangements for ensuring that children admitted to hospital are cared for in age-appropriate settings and the RQIA should review progress on implementation of the regional guidelines.

Importation of external guidance

- 8.35 Given the relative size of Northern Ireland it is important that it learns from the experience of other healthcare systems. To that end, the Department has maintained contact with the former NPSA and has arranged with the Health Care Quality Improvement Partnership to share in the Confidential Inquiries programme. In 2006 the Department introduced procedure to review and endorse healthcare guidance and patient safety alerts from NICE and NPSA.
- 8.36 External guidelines and NCEPOD Reports are received by the Department for consideration and the Department directs HSC Trusts to implement recommendations as appropriate and within stated periods. Confirmation of implementation is almost always required. In 2007, the CMO instituted the HSC Safety Forum to assist Trusts in the implementation of patient safety recommendations. It is for the HSCB to assess the implementation and provide assurance to the Department that the HSC Trusts have acted as required.⁶⁰
- 8.37 The Department created the Guideline and Audit Implementation Network ('GAIN') in 2007 by amalgamating CREST, the Regional Multi-Professional Audit Group and the Northern Ireland Regional Audit Advisory Committee. GAIN has an important scrutiny and quality improvement role through auditing. It promotes good practice by publishing the results and facilitating the implementation of regional guidelines. It also promotes operational standards not yet covered by NICE. Importantly, GAIN also trains HSC staff in clinical audit and systematic review.

⁶⁰ 401-002w-012

- 8.38 BHSCT also has a Standards and Guidelines Committee to ensure the timely implementation and monitoring of external guidance.⁶¹ It was this committee that responded to NPSA advice by issuing policy on ‘the administration of IV fluids to children aged from one month until the 16th birthday’.⁶² The BHSCT has also formed a Therapeutic Review Steering Group to audit compliance with NICE.⁶³ These systems ought to allow the BHSC Trust Board assurance that external guidelines are both implemented and monitored.
- 8.39 The Department identified external evidence of good practice as a “*key driver for change in paediatric healthcare service provision*”⁶⁴ in its ‘Strategy for Paediatric Healthcare Services Provided in Hospitals and in the Community (2016-2026)’⁶⁵ In November 2011 the Department announced the development of a ten-year strategy ‘Quality 2020’ to raise standards, measure improvement and transform culture. Coincidentally, much work has also recently been completed in England relevant to the ‘Quality 2020’ project which will prove of considerable assistance.⁶⁶
- 8.40 In October 2016 the Department launched a ten year ‘transformation’ programme ‘Health and Wellbeing 2026: Delivering Together’ which encompasses the concept of a Regional Improvement Institute.⁶⁷ A 12 month progress report on this initiative was published in October 2017.⁶⁸

⁶¹ 332-039-001

⁶² This was written by Drs Crean and Steen.

⁶³ 332-025-007

⁶⁴ 403-020-014

⁶⁵ 403-020-001

⁶⁶ [Care Quality Commission Briefing: Learning from serious incidents in NHS acute hospitals, June 2016;](#)
[Care Quality Commission Review: Learning, candour and accountability, December 2016](#)
[PHSO Review: Quality of NHS complaints investigations: Government response to the Committee's First Report of Session 2016-2017;](#)
[House of Commons Public Administration and Constitutional Affairs Committee: Will the NHS ever learn? Follow-up to PHSO report 'Learning from Mistakes' on the NHS in England, 31 January 2017;](#)
[National Quality Board: National Guidance on Learning from Deaths, first edition March 2017.](#)

⁶⁷ 404-002b-002

⁶⁸ 403-025-001

Serious Adverse Incidents

- 8.41 Consideration of the reporting and investigation of Serious Adverse Incidents ('SAIs') has been central to the work of this Inquiry.
- 8.42 The Department issued the first regional guidance for SAI management in 2004. This was consolidated by 'Reporting and Follow-up on Serious Adverse Incidents' in March 2006.⁶⁹ Further advices followed on 'How to Classify Adverse Incidents and Risk'⁷⁰ and additional procedure was then introduced to promote learning from SAIs⁷¹ and guidance with templates for incident investigation reports was published in September 2007.⁷² Individual trusts then introduced their own protocols.⁷³
- 8.43 Overall, Departmental strategy was set out in 'Safety First: A framework for sustainable Improvement in the HPSS' (2006)⁷⁴ which emphasised the objective of an open and fair culture within HPSS. The promotion of adverse incident reporting together with improved investigation and sharing of learning were accorded particular importance in this context.
- 8.44 In 2013 the Department published 'Investigating Patient or Client Safety Incidents' outlining the Memorandum of Understanding entered into with the Coroners Service and the Health and Safety Executive for Northern Ireland in relation to liaison arrangements for joint or simultaneous SAI investigations.⁷⁵
- 8.45 Responsibility for the management and follow-up of SAIs was transferred in 2010 from the Department to HSCB and PHA working collaboratively with RQIA. The HSCB/PHA became responsible for monitoring Trust responses to adverse incidents and providing assurance to the Department on the application of procedure. Importantly, it became responsible for ensuring that Trusts were implementing recommendations from SAI reviews. The

⁶⁹ 330-061-001

⁷⁰ 330-062-001

⁷¹ 330-063-001

⁷² 330-133-065

⁷³ 330-133-042

⁷⁴ 333-117-001

⁷⁵ 403-013-001

HSCB published an 'Assurance Framework' to formally articulate the quality assurance available to Trust Boards.

- 8.46 A regional system for the reporting of all SAIs to the HSCB was established and a 'Procedure for the Reporting and Follow-Up of SAIs' was issued by HSCB to all Trusts in 2010. It was reviewed and revised in 2013⁷⁶ and again in November 2016.⁷⁷ It remains under 'continuous review.' The Procedure outlines a process which, if followed, would answer many of the concerns raised by the findings of this Inquiry.
- 8.47 The Procedure and guidance are informed by the NPSA 'Being Open Framework' (2009) and the Health Service Executive 'Open Disclosure National Guidelines' (2013) and are expressly based on the principles of openness, responsibility to share learning and necessity to continually review both reporting and investigation. In order to provide regional consistency it provides clear procedures for reporting, reviewing and the implementation of learning. It sets out necessary definitions, roles and responsibilities. There are model SAI notification forms and forms for use in both 'interface' incidents⁷⁸ and 'never events'.⁷⁹ Criteria are given for proportionality in investigation and provision is made for the involvement of families and 'lay people'. There is guidance on post-incident debriefing, independence in investigation, root cause analysis, significant event audit, Datix coding forms, joint investigations and timescales. The form and content of an Incident Review Report and Action Plan are set out. Guidelines and checklists for engagement with families are appended. Completion of these checklists is mandatory. Advice is given on meeting a family after a death and examples of open communication are helpfully appended. The Guide for HSC Staff on 'Engagement/Communication with the Service User/Family/Carers following a serious adverse Incident' is attached and updated to November 2016.⁸⁰ Guidelines to ensure best

⁷⁶ 401-001au-001

⁷⁷ 403-003-001

⁷⁸ An incident which has occurred in one hospital but which is identified in another.

⁷⁹ <https://www.health-ni.gov.uk/sites/default/files/publications/health/HSC-SQSD-56-16.pdf>

⁸⁰ 403-003-075 - Developed by HSCB, PHA, PCC and RQIA

practice are given and truthfulness, timeliness and clarity are emphasised. Assistance for families is suggested and details are given of the help available from the PCC. An information leaflet designed to advise families about the SAI process is now available.⁸¹

- 8.48 The Procedure introduced the role of the HSCB 'Designated Review Officer' ('DRO') to oversee Trust SAI procedures, scrutinise findings and identify regional learning.⁸² The DRO, in the case of a child death where fluid mismanagement or nursing failure is suspected, would be a Consultant in Public Health who would work with a Nurse Consultant and a Pharmacist.⁸³ A new practice protocol for DROs was issued in April 2017.⁸⁴
- 8.49 The terms of reference for an investigation, timescales for reporting, extent of family involvement and identity of those investigating must all be agreed with the DRO. The DRO will then consider the SAI report and, if content with both investigation and recommendations, will formally conclude the SAI process. The DRO consults other relevant organisations including RQIA to ensure that reasonable action has been taken to reduce the risk of recurrence and that learning of broader implication has been disseminated. Thereafter further action is to be monitored by the Trust itself.
- 8.50 Workshops were organised to discuss implementation of the new SAI process attended by governance leads from HSCB/PHA, the six HSC Trusts and the Department.⁸⁵ HSCB also organise SAI follow-up exercises with checklists for systematic monitoring.
- 8.51 HSCB/PHA seeks to maintain focus on the central problem of learning from SAIs with a weekly HSCB Senior Management Team review of Trust SAI reports and healthcare related Coroner's reports. Regular and formal liaison is maintained with other relevant organisations including RQIA, NIMDTA and NIPEC. 'Learning Reports' on SAIs are published bi-

⁸¹ 401-001aa-001

⁸² 331-009-001

⁸³ 331-013-002

⁸⁴ <http://insight.hscb.hscni.net/information-for-designated-review-officers-dros/>

⁸⁵ 404-001j-007

annually.⁸⁶ The most senior level of management is involved so as to provide assurance. In an attempt to enhance learning from less serious incidents, a project within the 'Quality 2020' programme is examining different methods of sharing the analysis of investigation.⁸⁷

8.52 The Regional SAI Review Group considers individual SAI investigations and decides if further action is necessary. Specific advice can be given Trusts by way of a 'Learning Letter'. Notwithstanding "*judicious use*" of learning letters, the Review Group still "*issues around one learning letter a month.*"⁸⁸ Thereafter it requires appropriate assurance that the trust has acted as required.⁸⁹

8.53 SAIs, complaints and the reports of the regional SAI review group are considered by the HSCB/PHA Quality Safety and Experience Group which seeks to identify broader regional concerns. Although RQIA does not receive acute hospital SAI reports it does provide two members of the HSCB Regional Adverse Incident Steering Group which also reviews a selection of investigation reports to assure appropriate scrutiny of themes, trends, practice and learning. Thereafter, the Safety Quality and Alerts Team ('SQUAT') implements and quality assures the Alerts, Guidance and Learning Letters arising from SAIs.

8.54 HSCB/PHA have developed a newsletter, in addition to other channels of regional communication, to disseminate SAI learning to all levels of healthcare staff. 'Learning Matters' is accessible on line.⁹⁰ Learning is also shared through SAI regional training events, Trust SAI workshops, Regional Governance Leads workshops, good practice letters and the implementation of specific recommendations. HSCB also publishes standardised hospital mortality rates benchmarked against rates in

⁸⁶ 401-001n-001 & 404-001j-001

⁸⁷ 404-002b-001 – 'Testing methods to learn from adverse incidents.'

⁸⁸ Dr Carolyn Harper T-14-11-13 p.42 line 24

⁸⁹ Dr Carolyn Harper T-14-11-13 p.45 line 5

⁹⁰ The 5th edition of Learning Matters, April 2016 covered, amongst other topics, the Prescription of IV Fluids. http://www.publichealth.hscni.net/sites/default/files/Learning_Matters_Issue_5.pdf page 4

England. These would appear to indicate that death rates in Northern Ireland are comparable to or lower than those in England.

- 8.55 Whilst many of the deficiencies and vulnerabilities exposed in the course of this Inquiry have thus seemingly been addressed by changes in guidance, practice and procedure, it must nonetheless be observed, that the ultimate effectiveness of the learning derived from SAIs remains largely unknown.

HSC Trust SAI process

- 8.56 HSC Trusts have now developed individual protocols to guide reporting, review and learning from adverse incidents. All were found to be comparatively up-to-date when listed in the Regional Learning System Project Report in May 2015.⁹¹ Nonetheless there was clear disparity as and between the HSCT Trusts in relation to the breadth and depth of policy and guidance. Development of procedures for more uniform adoption across HSC Trusts was therefore recommended in the interests of regional consistency.⁹² The Department advised in November 2017 that “*work is ongoing to develop and agree regional adverse incident guidelines and procedures for adoption across the HSC.*”⁹³ I consider this to be work of great importance.
- 8.57 It is to be noted that BHSCCT procedures are both comprehensive and subject to oversight. The Trust approved its ‘Serious Adverse Incident Procedure’ in 2016.⁹⁴ Within the RBHSC every child death is to be assessed and in each instance of unexpected death, a SAI investigation is initiated and the families advised. The Trust in such circumstances will meet with the Medical Officer from the Coroner’s Office to examine the potential for shared learning and all such deaths are discussed at the monthly Morbidity and Mortality meeting. The Procedure provides for family input and feedback with opportunity given to discuss concerns and make contact with a bereavement co-ordinator. The BHSCCT Coroner Liaison

⁹¹ 401-002w-026

⁹² 401-002w-009

⁹³ 404-002b-002

⁹⁴ 401-001ab-001

Office collaborates with the Bereavement Co-ordinator to support families involved with inquests.

- 8.58 BHSCT has also set out a 'Board Assurance Framework'⁹⁵ incorporating SAI procedures, complaints, patient experience and the processes for the identification and dissemination of learning. It is encouraging that the Assurance framework specifically references "*the three landmark reports in 2013 on quality and safety in the NHS (Francis Report, Keogh Review and the Berwick Report) all recommended the development of an organisational culture which prioritises patients and quality care above all else...*"⁹⁶
- 8.59 The RBHSC has an Assurance Sub-Committee and a Governance Group reviewing SAIs, complaints, audit, quality improvement and policy. In addition BHSCT has established specific responsibility groups to consider, supervise and provide assurance. These include the SAI Group, Claims Review Group, Complaints Review Group, Outcomes Review Group, Standards and Guidelines Committee, Safety and Quality Steering Group, Safety Improvement Team, Strategic Group for Quality, Improvement and Development, Deteriorating Patient Group, External Reports Review Group, Patient and Public Involvement Group, Quality Improvement Strategy Group, Learning from Experience Steering Group, Patient and Client Experience Working Group and the Bereavement Fora.
- 8.60 The Department has instituted an 'Early Alert System' whereby Trusts can notify the Department directly of incidents for immediate attention. The Permanent Secretary said "*that happens quite regularly...that's normal practice now.*"⁹⁷
- 8.61 Importantly, I have now been assured that all deaths in the RBHSC are "*reviewed irrespective of whether there have been any concerns about the quality of care*"⁹⁸ Whilst ostensibly reassuring, it must be observed that the same was misleadingly claimed in relation to RBHSC at the time of the

⁹⁵ 401-001aw-001 (2016-17)

⁹⁶ 401-001aw-011

⁹⁷ Dr Andrew McCormick T-15-11-13 p.16 line 2

⁹⁸ Mr Colm Donaghy T-12-11-13 p.9 line 9

deaths of Adam, Claire and Lucy. Their deaths were not reviewed. Notwithstanding that review meetings are now minuted, they are not recorded.⁹⁹ Given the value of accurately recording clinical response to patient death and given the very modest cost, I would recommend that all such reviews be digitally recorded.

Adverse incident database

- 8.62 Each Trust maintains its own adverse incident database using DATIX risk management software to record and manage relevant information about incidents, claims, complaints, risks, alerts, inquests and requests. However, it was reported that even though the same software is used, different Datix adverse incident classification codes are employed by different HSC Trusts.¹⁰⁰ The resultant inconsistency in classification¹⁰¹ means that the system cannot constitute a conventional database or permit easy regional analysis.
- 8.63 The Department chairs a Regional Information Group which exercises oversight of data standards and has an ICT Implementation Plan.¹⁰² It has recognised that *“much remains to be done in order to have a truly connected and e-enabled service.”*¹⁰³ Presumably to that end and in response to the May 2015 recommendations of the ‘Regional Learning System Project Report’,¹⁰⁴ it has recently carried out a ‘scoping exercise’ to *“review and agree datasets, including classifications within services and then regionally to ensure consistency of reporting.”*¹⁰⁵
- 8.64 If it has not already done so, it should act with despatch to fully merge data and intelligence so as to permit scrutiny of overall performance and the identification of emerging patient safety issues. HSC organisations should synchronize electronic patient safety incident and risk management

⁹⁹ Mr Colm Donaghy T-12-11-13 p.69 line 7

¹⁰⁰ 401-001a-022

¹⁰¹ 323-037f-001

¹⁰² 403-020-052

¹⁰³ 403-020-052

¹⁰⁴ 401-002w-044

¹⁰⁵ 404-002b-002

software systems, codes and classifications to enable plain oversight of regional patient safety information.

Familiar problems

- 8.65 Notwithstanding that SAI reporting is mandatory, it would be unwise not to assume that there is still under-reporting. There are a number of obvious explanations for non-reporting, including failure to recognise the SAI, poor understanding of how and what to report and time pressures. However, individuals fear blame and the system is not proof against avoidance and manipulation. The SAI Procedure presents a number of critical decision making points open to 'subjective interpretation' and the exercise of 'discretion'. These include whether to report, who should investigate, what the investigation should pursue, the appropriate level of investigation and whether the level of investigation should be raised in response to evidence.
- 8.66 Notwithstanding considerable efforts to change hospital culture, familiar problems persist. For example the RQIA review of 2008 found *"little evidence of a reporting culture for incidents relating to intravenous fluids and hyponatraemia."*¹⁰⁶ The HSC Staff Survey of 2012 reported that *"only 42% of staff agree that their organisation does not blame or punish people involved in errors, near misses or incidents."*¹⁰⁷ The PAC reported that *"Whistle blowers still face real problems in speaking out ... a 'culture of fear' still exists in many parts of the HSC sector"*¹⁰⁸ The NIAO reported in 2014 that *"given the experience of the Turnaround Team in the Northern Trust and the RQIA inspection findings in the Belfast Trust, the culture within HSC bodies is still one of concern."*¹⁰⁹ The Regional Learning System Project Report of May 2015¹¹⁰ noted staff reporting *"that they would be concerned that there would be a risk to their professional reputation or registration as a result of reporting and that they might be blamed."* Indeed clinicians

¹⁰⁶ 303-030-382

¹⁰⁷ 403-016-064

¹⁰⁸ 403-018-006

¹⁰⁹ 403-016-067

¹¹⁰ 401-002w-001

themselves acknowledged in 2015 that “*When dealing with SAIs there is a culture of blame which needs to be changed.*”¹¹¹

8.67 In April 2014 the Minister, responding to criticism of the Health Service, instructed HSC Trusts to review their handling of all SAIs reported between 2009 and 2013. As a part of this ‘look-back exercise’ the Minister requested that the RQIA scrutinise each of those reviews. It did so and reported in December 2014.¹¹²

8.68 In general terms, its review was rigorous and its findings encouraging. However during the exercise, Trusts uncovered cases which should have been classified and reported as SAIs but which were not. Included was one death which required retrospective notification to the Coroner.¹¹³ Amongst other specific issues identified and relating to SAI management was difficulty experienced in obtaining independent expertise for the more complex investigations and staff who wished “*to examine potential legal issues with their advisors before becoming involved in an investigation.*”¹¹⁴ The RQIA report was provided to Sir Liam Donaldson to inform his subsequent review of HSC governance arrangements.

8.69 Current guidance indicates that an SAI investigation will take up to twelve weeks depending on the seriousness and complexity of the case. More significant cases reviewed by root cause analysis may take longer with the agreement of the DRO. HSCB advise that “*in most instances SAI reports will have been finalised by the time the Coroner investigation is underway. However, the timing of SAI reviews and Coroner investigations may mean that it is a draft SAI report that is available to the Coroner. Any future review of the SAI procedure will continue to emphasise timeframes.*”¹¹⁵

8.70 It is reassuring that there will continue to be an emphasis on timeframes because when investigative journalists¹¹⁶ filed a Freedom of Information

¹¹¹ 403-017-013

¹¹² 401-003b-001

¹¹³ 401-003e-044

¹¹⁴ 401-003e-039

¹¹⁵ 404-001a-004

¹¹⁶ <http://www.thedetail.tv/articles/healthcare-investigations-face-serious-delays>

request of HSC Trusts as to the “*longest time periods taken to complete SAls within their catchment areas?*” responses indicated that some SAI reviews by BH&SCT took up to 3 years to complete. Whilst the quality of investigation remains the paramount objective, timeliness is important for both learning and public confidence. The Department is aware that there is scope for improvement and has asked GAIN to advise on the basis of an “*examination of good practice on SAls (or SIs) elsewhere in the UK and internationally.*” Notwithstanding, it remains most probable that improved resources and training could improve the efficiency of investigation.

- 8.71 In order to obtain assurance that current SAI procedures are working, continuous audit and review is required of reporting, investigation, analysis and response. In order to measure the engagement of Trust Boards, the involvement of families and the effectiveness of remedial action, it will be necessary to monitor practice. Since late 2015 RQIA has conducted unannounced inspections of acute hospitals in order to assess the quality of services. The report of its 2017 inspection of RBHSC gives valuable insight. Such inspections are an important development and because I believe that there should be additional and increased external monitoring of the entire SAI process, I would propose that the scope and remit of the RQIA be extended to encompass this important work.

Adverse incident investigation

- 8.72 The work of this Inquiry has shown that vulnerabilities in patient care systems are more likely to be the cause of a SAI than individual error. For that reason, I consider that improvement in investigation would be meaningfully assisted by further and advanced training in Root Cause Analysis. This would intensify the search for the underlying and interconnected causes of adverse incidents rather than fuelling fears of individual blame.
- 8.73 Investigation is sensitive to human input and the oversight provided by individual DROs may not always be consistent. Accordingly the independence of investigators is essential to achieve satisfactory

investigation and ensure that it is seen as such. I consider that the most serious AIs should therefore be investigated by wholly independent teams from outside Northern Ireland because, as Dr Carson on behalf of RQIA observed, “*Northern Ireland is quite a small community, everybody has worked with everybody else at some stage or another..*”¹¹⁷ Mr Peter Walsh, Chief Executive of AvMA, thought that would add a “*tremendous amount to the process*”¹¹⁸ so that there could be “*no perception of, let alone real, conflict of interest.*”¹¹⁹ I agree and believe that it would engender public confidence in the findings. An investigation team, independent of individuals, Trusts, the HSCB and the Department, would be able to investigate all parts of the Northern Ireland healthcare system without any taint of conflict of interest. Such an approach might be pursued with the newly established Healthcare Safety Investigation Branch from England. Collaboration could prove instructive for all concerned.

- 8.74 The wisdom of involving families in review and investigation has been amply confirmed by evidence before this Inquiry. Parents are experts in respect of their own children and often close observers of the care given. Ms Slavin had real understanding of the nature of Adam’s renal problems, Mrs Crawford was an eye witness to a key event, Ms Mitchell was the first to voice concern about Conor,¹²⁰ Mr Roberts’ attention to detail identified an overdose and Mr and Mrs Ferguson could have accurately described the deterioration of their daughter’s condition. In addition, all could have given invaluable advice about how not to communicate. In terms of reviewing care and contributing to improved patient safety the value of their potential contribution was too obvious not to have been actively pursued.
- 8.75 Whilst I was assured by Dr Carolyn Harper, Executive Medical Director of PHA, that there is increasing involvement of families at all stages of the investigation process,¹²¹ I nonetheless make several recommendations to

¹¹⁷ Dr Carson T-13-11-13 p.17 line 3

¹¹⁸ Mr Peter Walsh T-11-11-13 p.82 line 16

¹¹⁹ Mr Peter Walsh T-11-11-13 p.83 line 22

¹²⁰ 087-002-020

¹²¹ Dr Harper T-14-11-13 p.46 line 5

ensure that families are accorded all proper respect and managed for the potential they offer. Indeed, some families may even wish to maintain involvement after the conclusion of an investigation in order to satisfy themselves fully that lessons have been learned. Such might make a further and valuable contribution.

Translation of learning into improvement

- 8.76 Systems designed to translate learning from SAIs into improved practice were said to have been strengthened in recent years. In 2012, the PHA advised the Department that all trusts had confirmed “*robust systems in place for the dissemination of learning from adverse incidents.*”¹²² However, what was wanting was reliable evidence about the current monitoring and effectiveness of these systems. This issue lies at the heart of the Inquiry’s work and the requirement of families to know that the tragedy of their child’s death cannot happen again.
- 8.77 In October 2012 the Northern Ireland Audit Office reported on ‘The Safety of Services Provided by Health and Social Care Trusts.’¹²³ It noted the absence of a monitoring system to collate patient safety information from across the HSC service and concluded that the regional sharing of ‘lessons learned’ was not as structured or as comprehensive as it could be. The Comptroller and Auditor General told the Northern Ireland Public Accounts Committee in November 2012 that “*the Department still lacks a reliable means of tracking the progress of health and social care services in improving the safety of those receiving care or in holding service providers accountable for minimising preventable harm.*”
- 8.78 Inability to demonstrate effective dissemination of learning from the SAI process is not a problem unique to Northern Ireland. The House of Commons Public Administration Select Committee received evidence in

¹²² 330-057-001

¹²³ 403-026-001

2014-15 that the “*failure to learn from incidents and disseminate lessons has been a longstanding weakness of the NHS.*”¹²⁴

- 8.79 In 2013 RBHSC attempted to address this issue by publishing a strategy indicating by means of flow-chart the distribution of relevant learning within the Children’s hospital. In 2016 BHSC introduced its ‘Policy for Sharing Learning’ particularising the communication of learning and providing templates for dissemination.¹²⁵ It encompasses learning from complaints, mortality reviews, audit, litigation and SAs. The SA Review Board provides evidence to the Assurance Committee that risks revealed by the process are addressed. Importantly the Policy describes a regional process for information sharing through HSCB as well as the Department and proposes a central repository of learning on the intranet.
- 8.80 The Department has commissioned two regional studies from GAIN¹²⁶ to specifically examine the learning extracted from SAs involving the death of a patient.¹²⁷ Both exercises are to be pursued in partnership with HSCB and the HSC Trusts.
- 8.81 I have sympathy with the busy clinician working in the pressurised Health Service who is expected to learn rapidly from the dissemination of guidance. Given that corrections to clinical care are not always straightforward or intuitive, it follows that clinicians may require time and space to consider, discuss and assimilate learning from SAs. I consider it proper that such should be provided within contracted hours.
- 8.82 In addition, Trusts do not appear to be obligated to provide assurance to the families of victims of clinical mismanagement that lessons have been learned or that that learning is practiced. It is in this context that the work of a Child Death Overview Panel could be important. Such a panel is comprised of individuals from a range of different organisations and professions. It specifically considers the anonymised details of death,

¹²⁴ 403-027-049

¹²⁵ 401-001at-001

¹²⁶ Now conjoined with RQIA.

¹²⁷ 401-003i-001

howsoever caused, to determine whether learning exists such as might prevent another death. The introduction of this process in Northern Ireland under the Safeguarding Board for Northern Ireland has proved problematic¹²⁸ and the Department and PHA may now assume responsibility.¹²⁹ This would enable additional oversight and the potential for additional assurance that lessons have indeed been learned.

- 8.83 Trusts should publish current policy on learning from SAI deaths (especially child deaths) and thereafter not only publish the detail of all such deaths but also what has been learned from them.

Family involvement

- 8.84 The Permanent Secretary said he believed *“very strongly that the best chance we have of securing sustained improvement is through very open involvement ...making it easier for patients and families to be...aware ...and to feedback views...”*¹³⁰ and the CNO, Professor McArdle, said *“... we all believe that the patient’s voice has to be front and centre in everything that we do.”*¹³¹
- 8.85 In 2009 the Department published standards for ‘Improving the Patient and Client Experience’ in an attempt to define appropriate respect, attitude, behaviour and communication. This was very necessary because, as the evidence confirmed, shortcomings in communication fuel suspicion.
- 8.86 BHSCT developed a ‘Being Open Policy – saying sorry when things go wrong’¹³² to encourage open disclosure to patients and families involved in adverse incidents. It emphasises that healthcare professionals must understand that good communication engenders trust and that openness is important. In December 2014 the policy was made available as an e-learning module. It advises on communication with patients and families and emphasises quick and open disclosure so that transparency is

¹²⁸ 404-002h-001 Jay Report 2016 – ‘A Review of the Safeguarding Board for Northern Ireland’

¹²⁹ 404-002b-004

¹³⁰ Dr Andrew McCormick T-15-11-13 p.72 line 5

¹³¹ Ms McArdle T-15-11-13 p.65 line 4

¹³² 332-027-001 & 401-001ad-001 - 2011/2014 and revised 2015

understood. Specific guidance is given for sharing information with additional advices on 'being open' in the event of a death. It carries links to the Ombudsman's 'Guidance on Issuing an Apology'. The Trust Board is charged with promoting both it and a policy known as 'Involving You' which seeks to enhance 'user' involvement.¹³³

- 8.87 Notwithstanding, difficulties continue to surround the problem of communication with patients and families in the context of SAls¹³⁴ and HSCB/PHA has produced further guidance (2015) in the form of a checklist to guide and monitor engagement with patients and families. Notwithstanding, it must be recognised that a list does not equip staff to manage difficult conversations with empathy and credibility. Successful interaction at times of distress is difficult, which is why training is critical to ensure the skills and awareness necessary to adequately inform a family and engage with it in the process of investigation and learning.
- 8.88 Whilst Dr Harper of PHA stressed that medical training has advanced in recent years *"particularly in the aspect of communication skills and interpersonal skills"*¹³⁵ and that communication training is now given all trainee clinicians, Dr Anthony Stevens, Medical Director of BHSCCT conceded that *"there are real areas particularly round engagement with families, where we recognise we've still got a great deal to do."*¹³⁶ It is in this context that I recommend that training in communication skills be accorded enhanced priority.
- 8.89 I believe that there is also scope for the experience of patients and families to be heard within the Department. I believe that this is a deficiency and one which should be addressed.

¹³³ 332-013-001

¹³⁴ 348-010d-001

¹³⁵ Dr Harper T-14-11-13 p.58 line 3

¹³⁶ Dr Stevens T-12-11-13 p.95 line 20

Complaints

- 8.90 In 2009 the Department issued 'Complaints in HSC: Standards & Guidelines for Resolution and Learning' to replace the 1996 HPSS Complaints Procedure and established a HSC Complaints Policy Liaison Group in 2011. Departmental policy now requires involvement of the complainant and encompasses advocacy services and staff training. Complainants can get independent advice from the PCC and are now advised of their right to refer their complaint to the Ombudsman.¹³⁷ The Department has tried to secure patient engagement through community exercises, such as '10,000 Voices' and 'Family and Friends Test.' Policy on complaints continues to evolve.
- 8.91 HSCB has sought to improve the content of feedback to complainants and has held annual 'Complaint Learning Events'¹³⁸ with 'patient-centred' advice for healthcare professionals coupled with specific guidance on communication and bereavement support. Learning materials are also available on the HSCB intranet and there is an Annual Complaints Report.¹³⁹
- 8.92 Actual complaints are used as the basis for learning. In one instance, a family complained about poor communication in the context of a relative's deterioration and death. In consequence the Trust provided specific training to the staff on the proper conduct of such difficult and timely conversations.¹⁴⁰ Mr John Compton, Chief Executive, of HSCB also described a seminar where patients recalled good and bad experiences for the benefit of clinicians which resulted in "*interplay between them and the staff about what would make it better*".¹⁴¹ These are important initiatives in

¹³⁷ Who, unlike his predecessor the NI Commissioner for Complaints, can now publically report the outcome of complaint investigation. Public Services Ombudsman Act (Northern Ireland) 2016 - <http://www.legislation.gov.uk/nia/2016/4/contents/enacted>

¹³⁸ 401-001b-001

¹³⁹ 401-001e-001 & 404-001c-001 & 404-001d-001

¹⁴⁰ 404-001c-009

¹⁴¹ Mr Compton T-14-11-13 p.31 line 17

feedback and learning and represent an approach which is obvious and should be encouraged.

- 8.93 The HSCB is responsible for reviewing HSC Trust response to complaints in order to identify trends. It makes regular performance reports to the Department. It advises on the numbers and categories of complaints together with response times and learning outcomes. HSCB reported on the 'Process for Evaluation of Complaints in HSC: Standards and Guidelines for Resolution and Learning' in 2011 and concluded that, whilst HSC organisations do learn from complaints, there is a need to advise staff and patients of that learning. The HSCB/PHA Annual Quality Report 2014-2015 noted that "*Service user feedback has demonstrated that further work is required to promote the visibility and accessibility of the Complaints Process.*"
- 8.94 HSCB subsequently produced an updated 'Policy for HSCB staff on the management of complaints' in April 2016. It set out revised standards and guidelines promoting accessibility, advocacy services, appropriate investigation, involvement of lay persons, independence of experts, opportunities for shared learning and speedier resolution. It provides flow-charts to detail procedures. The 2016 HSCB Policy explains that "*The operation and effectiveness of the HSC Complaints Procedure will be monitored continuously. A Regional Complaints Group...has been established and will meet on a quarterly basis to consider analysis of information pertaining to...HSC Trust complaints...the Regional Complaints Group will identify what learning should be cascaded regionally to ensure policies and practices are amended as a result of complaints.*"¹⁴² Auditing of complaints handling has been introduced.¹⁴³
- 8.95 The PCC is the main healthcare 'consumer' organisation in Northern Ireland. It has responsibility for representing the interests of the patient and for supporting public involvement in decisions about care. The PCC has no

¹⁴² 403-004-013 to 014

¹⁴³ 404-001c-005

power to investigate complaints but has a statutory duty to assist those who wish to make a complaint. It has a permanent seat at the monthly meetings of the HSCB board responsible for oversight of HSC complaints.¹⁴⁴ All HSC Trusts are required to publish annual reports on complaints and submit them to the PCC. The PCC also publishes an annual report on complaints. In 2015-16 it reported that *“families and carers do not feel that they are being kept adequately informed about the progress of their treatment and care”*.¹⁴⁵

- 8.96 The Northern Ireland Commissioner for Complaints¹⁴⁶ also reports annually and has recorded the growing numbers of healthcare related complaints. In 2014/15 he referred *“to an underlying issue in many complaints, being a breakdown in trust between the patient/family and the HSC organisation”*¹⁴⁷ and expressed concern that all but one of the complaints received by him of complaint mismanagement was upheld.¹⁴⁸
- 8.97 Independent Advocacy services have an important role in communication and in connecting the experience of patients and families to the improvement of care. The RQIA has included a Review of Advocacy Services for Children and Adults in its 2015-2018 review programme.¹⁴⁹
- 8.98 BHSCT introduced its ‘Policy and Procedure for the Management of Complaints and Compliments’ in 2010¹⁵⁰ indicating appropriate responses and time frames. A Complaints Review Group assured the investigation, analysis and follow-up from complaints. However, in order to more effectively involve the complainant and investigate the complaint, BHSCT introduced a largely revised ‘Policy and Procedure for the management of Comments, Concerns, Complaints & Compliments’ in 2017.¹⁵¹ Emphasis is placed on effective communication, with appropriate meetings, agreed

¹⁴⁴ Mr Compton T-14-11-13 p.9 line 9 & p.11 line 8

¹⁴⁵ 403-008-011

¹⁴⁶ Now the Ombudsman

¹⁴⁷ 401-001e-015

¹⁴⁸ 401-001e-016

¹⁴⁹ 401-003d-015

¹⁵⁰ 332-014-001

¹⁵¹ 404-003b-001

agendas and recording. Specific requirements are given as to roles and responsibilities, the complaint investigation process and the types of resolution possible and responses to be given. Not only is outcome monitored for pattern but it is also measured for efficiency, learning and complainant satisfaction.

- 8.99 Given the problems of trust and communication which still seem to undermine the investigation of complaints, Mr Walsh, urged me strongly to the view that there ought to be standards for complaint investigations which should include the early involvement of the family.¹⁵² I agree and consider that there should be a charter to particularise the rights of the family or patient in relation to complaints and further that those Trusts, which have not already published their responsibilities to families in respect of complaints, should do so now. Clarity about the process can only assist. Information encourages inclusion and families and patients should always be included in the investigation of patient safety issues.
- 8.100 Complaints present a valuable source of insight into patient safety problems and should be analysed as such. I am advised (as of November 2017) that *“the Department has commenced, in liaison with HSC Trusts, the piloting of the use of Healthcare Complaints Analysis Tool...for more meaningful analysis and comparison of data from complaints within and across Trusts.”*¹⁵³ This could prove of considerable benefit for both individual Trusts and regional learning.

The Duty of Candour

- 8.101 Of all the themes emerging from the evidence to this Inquiry, the most disquieting has been the repeated lack of honesty and openness with the families. In his report on the Mid Staffordshire NHS Foundation Trust Public Inquiry, Robert Francis QC found the same problem. In consequence, he recommended that a statutory duty of candour be imposed in situations where it was suspected or believed that death or serious injury had been

¹⁵² Mr Peter Walsh T-11-11-13 p.8

¹⁵³ 404-002b-003

caused to a patient by an act or omission of a healthcare organisation or its staff. He proposed that in such circumstances the patient or family should be informed of the incident and given an explanation. He believed furthermore that the duty of candour should be imposed on registered healthcare professionals, NHS healthcare organisations and private providers.

- 8.102 Since then there has been a prolonged debate as to whether those recommendations should be implemented in their entirety, whether the duty should apply to both individuals and organisations and exactly what the threshold definition of harm should be. In England a statutory duty has been enacted for organisations but not for individuals and in Wales the position has not progressed beyond White Paper proposals. In Scotland, a duty of candour will come into force in April 2018 but will differ from the English model in minor but significant respects.¹⁵⁴
- 8.103 In Northern Ireland, Jim Wells MLA (then Minister for the Department), informed the Assembly on 27th January 2015 that *“a statutory duty of candour will be introduced in Northern Ireland. There should be no ambiguity in respect of my expectation regarding the crucial elements of patient safety, which are openness and transparency.”*¹⁵⁵
- 8.104 The Department advised that in November 2017 it *“continues to develop policy to support the introduction of a statutory duty of candour in Northern Ireland. Initial comparisons of the approaches adopted in other jurisdictions and a workshop with HSC colleagues has highlighted a number of issues which require further consideration before we will be in a position to take our proposals to Minister, including definitions of harm, apologies etc. There is learning to be had from the experience of colleagues in other jurisdictions and we are examining the evidence presented during the associated Parliamentary sessions and the difficulties/successes of implementing their legislation to further inform our options. The Department will need to*

¹⁵⁴ <http://www.legislation.gov.uk/asp/2016/14/contents/enacted>

¹⁵⁵ <http://data.niassembly.gov.uk/HansardXml/plenary-27-01-2015.pdf> page 2

consider the introduction of a statutory duty that is straightforward and brings value to existing principles of openness and transparency and the individual duty of candour.”¹⁵⁶

- 8.105 Whilst the issues involved are not straightforward and there are matters for legitimate debate, the unfortunate truth to be drawn from this Inquiry is that there are too many people in the Health Service who place reputation before honesty and avoidance of blame before duty. All that is required is that people be told honestly what has happened and a legally enforceable duty of candour for individuals will not threaten those whose conduct is appropriate. The duty was not imposed upon clinicians in England on the basis that they are already placed under an ‘ethical duty’ of honesty by their professional organisations. I consider that such an argument would be stronger, had the evidence to this Inquiry not revealed obvious weakness in the call of ‘ethical duty’.
- 8.106 Whilst Mr Walsh did indicate some recent improvement in levels of openness towards families, he believed that that improvement had not been consistent. It is to encourage consistency in openness and to avoid any ambiguity in expectation that I endorse the Francis recommendations.¹⁵⁷ I recommend that a duty of candour attach to individuals as well as organisations in the event of death or serious harm and that criminal sanctions should apply.
- 8.107 It will be necessary to provide specific guidance on implementation and compliance. The duty should be entrenched by Trust Directors appointed with specific responsibility for candour. Procedures should be audited, not only by HSC Trusts but also by the RQIA. It will be necessary for a regulatory body, such as the RQIA, to undertake enforcement. There should be willingness to prosecute in cases of serious non-compliance.

¹⁵⁶ 404-002b-009

¹⁵⁷ Recommendations 181-183

Whistleblowing

8.108 Patient safety is the concern of everyone working in the Health Service and accordingly it must be the duty of everyone to raise patient safety concerns. However, because it has been found necessary to encourage whistleblowers, the Department has directed that Trusts develop policies enabling staff to raise concerns about questionable practice.¹⁵⁸ The RQIA issued guidance for whistleblowers and published its 'Review of Whistleblowing Arrangements in Health and Social Care in Northern Ireland' in September 2016.¹⁵⁹ It made eleven recommendations, seven of which the Department maintains "*are either fully implemented or on target to be implemented*" as at November 2017.¹⁶⁰ This impetus should be maintained. In every hospital there should be real or virtual individuals to whom concerns can be taken easily and without formality. There should be training and the system should be as responsive as possible.

Appraisal of clinical performance

8.109 The Department has developed procedures to address concerns about poor medical performance. 'Maintaining High Professional Standards' gives guidance for managing under-performance and allows Trusts access to the National Clinical Assessment Service. This complements recently introduced professional revalidation for practicing doctors.¹⁶¹ There is now a statutory duty¹⁶² to ensure that doctors undergo regular appraisal, that action is taken in respect of any lack of fitness to practice and that relevant concerns are referred to the GMC. The re-validation process became operational within the BHSCT by 2013 and has since been extended to the rest of Northern Ireland. It considers feedback from colleagues and feedback from patients.¹⁶³ The GMC has appointed a Liaison Advisor in Northern Ireland to assist with formal referrals to the GMC. Whilst the

¹⁵⁸ 403-019-001

¹⁵⁹ 401-003x-001

¹⁶⁰ 404-002b-003

¹⁶¹ 332-030-001

¹⁶² <http://www.legislation.gov.uk/nidsr/2010/9780337981302/body>

¹⁶³ Dr Michael McBride T-15-11-13 p.28 line 19

overall number of recent referrals has been too small to reveal trends, the procedure itself provides additional quality assurance.

- 8.110 Management of poor nursing performance is now also the subject of process and protocol.¹⁶⁴ Each Trust has disciplinary and capability procedures and can make referral to the NMC.¹⁶⁵ All nurses are required to undergo annual appraisal with their line manager.

Leadership

- 8.111 Evidence received by this Inquiry revealed numerous failings in leadership. These included failure to supervise nursing staff, consultant failure to direct care or give leadership in the event of unexpected death, failure of those in governance to demonstrate appropriate behaviour, failure of Directors of Nursing to provide visible leadership, failure of a HSC Trust Chief Executive to accept responsibility for the quality of care given children in his hospital and failure by the Department to hold the Health Service to account in respect of the quality of care or secure the timely introduction of clinical governance. Such attitudes and behaviours influence hospital cultures.
- 8.112 Building a culture where the natural response to error is to learn from it, is therefore very much the responsibility of leadership at every level. Change in culture will take time and expert leadership. Leadership has now been exercised by the Department in setting the direction of quality improvement. The Directors of each HSC Trust now have the major role to play in achieving the appropriate learning culture within each organisation. The best leadership is critical and there should be investment in the best.
- 8.113 The Permanent Secretary observed that “*leadership is not about position, it’s about behaviours that drive each individual to do the right thing all the time...*”¹⁶⁶ I believe that to achieve the ‘right thing’ that there should be visible leadership at every level of an organisation. Leaders at all levels and especially at Board level must not be inaccessible. They should do

¹⁶⁴ 332-033-004

¹⁶⁵ 332-038-001

¹⁶⁶ Dr Andrew McCormick T-15-11-13 p.99 line 7

more than appear on the occasional senior management 'walk-round'.¹⁶⁷ Senior managers should be observable to the 'front-line' encouraging learning and discouraging blame. They should welcome concerns and give feedback on improvement. They should demonstrate confidence in transparency by commending staff who speak out. They should communicate in the clearest terms that it is safe to raise concerns.

- 8.114 Clinical leadership should encourage those who care for patients to improve their care. Senior clinicians should be role models. They should challenge defensiveness and ensure that every opportunity for improvement is taken.
- 8.115 The BHSC has introduced a 'Clinical Engagement and Leadership' programme and a 'Leadership Attributes Framework.' The Department published a HSC Collective Leadership Strategy in October 2017.¹⁶⁸ Whilst such initiatives respect the broad importance of leadership, I believe that there is nonetheless a pressing necessity to strengthen leadership at each and every level. I recommend that improvement in leadership now be accorded the utmost priority.

Death certification

- 8.116 Both the Luce Review (2003) and the Shipman Inquiry (2003) considered issues of death investigation and certification and made recommendations for Northern Ireland. Recognising the problem of inaccuracy in certification,¹⁶⁹ the Department issued guidance for both completion of the Medical Certificate of Cause of Death ('MCCD') and notification to the Coroner in 2008. The Coroner's Service published a 'Best Practice' guide in 2009 and appointed a Medical Officer to assist the coroner in identifying issues of clinical concern. Notwithstanding, the senior Coroner had to ask

¹⁶⁷ 401-001ag-001

¹⁶⁸ 403-024-001

¹⁶⁹ 338-012-001

the Board and the CMO in 2014 to remind doctors of their duty to notify the coroner of all deaths which might be SAI related.¹⁷⁰

- 8.117 Within the BHSCT there was no systematic way of collecting details of MCCDs or notifications to the Coroner for the purposes of review. It was therefore difficult to assure that every death and certification had been clinically scrutinised. Accordingly, and at the instigation of the Department, a Death Certification Implementation Working Group was established to improve assurance of the certification process.
- 8.118 In 2016, the Department issued comprehensive, detailed and step-by-step guidance on the 'Child Death Reporting Process'¹⁷¹ and the BHSCT in turn adopted clear policy on 'Actions Following a Patient's death' with advice on what, when and how to report to the coroner. Updated training has been provided to all junior doctors to ensure a proper understanding of the responsibilities attaching to completion of the MCCD. Further training programmes are being developed. The MCCD has been re-designed to collect additional information enabling audit and improved assessment of medical compliance with statutory obligation.¹⁷²
- 8.119 In April 2017 the CMO then issued further guidance on reporting child deaths.¹⁷³ Child deaths in hospital are to be recorded by means of the Regional Mortality and Morbidity Review System ('RM&MRS')¹⁷⁴ which standardises procedures and permits review of all hospital deaths and death certificates.
- 8.120 The process means that all child deaths in hospital are recorded by means of a step-by-step computerised procedure on the RM&MRS. The consultant will particularise and certify the details as accurate. The system will generate the MCCD or a clinical summary where the death is to be referred to the coroner. The consultant must record all contact with the Coroner's

¹⁷⁰ 401-002d-001

¹⁷¹ 401-001av-001

¹⁷² 401-002b-017

¹⁷³ 404-002e-001

¹⁷⁴ 401-002h-001

Office and cite an identifying reference provided by the Coroner's Death Reporting Team. If the death meets SAI criteria the consultant must initiate the SAI process. The consultant must then forward the case to the designated Mortality and Morbidity ('M&M') lead for discussion and review at the next M&M meeting. SAI investigation reports will be listed for the next M&M meeting which will thus review all child deaths and any completed SAI investigations occurring since the previous meeting. The M&M lead will cause a multi-disciplinary review of the clinical history, cause of death, avoidable factors, discussions with the Coroner, lessons learned and actions required.

- 8.121 All child deaths must be reviewed within 12 weeks. This includes those deaths reported to the Police Service of Northern Ireland ('PSNI') or the Coroner as well as those investigated as an SAI or subject to post-mortem. This is to ensure that learning is disseminated as soon as possible. Should it appear to a M&M meeting that a case should be reported as a SAI or to the Coroner, then this must be done immediately. Only when the M&M has completed its review and each step of the process has been completed can a child death notification form issue. It is sent to the Trust governance team and/or audit unit and served on the HSCB/PHA.
- 8.122 The RM&MRS will thus routinely collect information from certificates, reports to the coroner, consultant reviews, mortality meetings, inquest findings, action plans, learning reports and other relevant sources.¹⁷⁵ The information will be consolidated and made available for scrutiny. The system provides a means to assure that the process of certification can be relied upon and that notifiable deaths are reported to the coroner. The information, if properly interpreted, should provide reasonable assurance to public and Trust board members alike, that such deaths in their hospitals as do result from unsafe care are identified, analysed and learned from.
- 8.123 Implementation of the system was complete by March 2017. In November 2017 there were reported to be *"over 150 teams across the 5 HSC Trust*

¹⁷⁵ 401-002r-006

hospitals using the system with a recording rate of over 80%”. HSC Trusts were said to be “establishing mechanisms to ensure they oversee/monitor outcomes from the M&M process.”¹⁷⁶ This is a most valuable development and its operation and effectiveness should be subject to regular internal and external audit.

- 8.124 Notwithstanding the advances inherent in this system, I would nonetheless recommend the appointment of an Independent Medical Examiner, at least until such time as the RM&MRS has proven its reliability. A Medical Examiner can reconsider the consultant input and the MCCD, and with full access to the medical records, can pursue queries with the certifying doctor and the family of the deceased. The Examiner can refer uncertain cases to the coroner for further investigation and assist in the important task of pattern recognition.

Issues of coronial involvement

- 8.125 A most important part of the Coroner’s role in relation to deaths associated with clinical mismanagement, is the power to alert relevant authority to the potential to prevent further fatality.¹⁷⁷ The Coroner can do this by way of a formal report made pursuant to Rule 23(2) of The Coroner’s (Practice and Procedure) Rules (Northern Ireland) 1963.
- 8.126 However, the Department advised that “... *there is no standardised approach to how [Rule 23] reports are made. In some cases correspondence is addressed to the Minister, on other occasions information is provided for the Chief Medical Officer or some other senior officials, and in some instances there is no mention that the referral is being made under Rule 23(2).*”¹⁷⁸ In recognition of the weaknesses of such an approach the Department indicated that it would seek agreement on standardising referral of Rule 23 Reports.

¹⁷⁶ 404-002b-006

¹⁷⁷ 303-052-715

¹⁷⁸ 401-002r-005

- 8.127 The Coronial Service has indicated that Rule 23 Reports are now sent to the Department with a requirement that it respond giving both proposed action and timetabling. Copies of the report and response are sent to other interested parties to stimulate appropriate action.¹⁷⁹ The Coroner will then seek assurance from the Department and HSC Trust that learning has indeed been, or will be, put into practice. This feedback is important. It was these channels of communication that the Coroner regretted were not available to him following the Inquest into Adam's death.
- 8.128 Furthermore, the Coronial Service has confirmed in that "*Work is underway to ensure that there is proper feedback and follow up to Rule 23 Reports taking account of best practice in other jurisdictions*".¹⁸⁰ Additionally, inquest findings which may have implications for health care are forwarded by the Coroner's Office to HSCB where they are reviewed through the SAI process. These procedures are detailed in HSCB 'Paper on communication Pathways between the Coroner's Office, PHA and HSCB.'¹⁸¹ Additional measures have been agreed enabling the Coroner's Medical Officer to notify healthcare authorities of emerging trends.

Disclosure of relevant documents to the Coroner

- 8.129 The right to assert entitlement to legal privilege in respect of certain documents and so withhold them from a coroner's investigation into a health care related death, highlights a tension between transparency and important legal principle. A coroner has no power to order the production of documents and HSC Trusts are under no general legal duty to disclose relevant expert opinions to the Coroner. This is notwithstanding obligation to assist the coroner and the fact that such reports are publically funded. Nor is a Trust under any duty to advise the Coroner that such experts could be called to give evidence at inquest. Furthermore, an organisational duty

¹⁷⁹ 401-004a-002

¹⁸⁰ 401-004a-002 August 2016

¹⁸¹ 401-001f-001

of candour might not necessarily obligate disclosure because it would relate to factual information rather than an expert expression of opinion.

- 8.130 Whilst the Department maintains “a *presumption in favour of disclosure as a matter of general principle, the matter of whether to claim privilege is one for a Trust to consider based on its own legal advice*,”¹⁸² the CMO nonetheless expressed the view that “*it should never be the case that we have information in relation to the circumstances and death of a patient which is not shared fully, frankly and openly with the coroner to inform and assist him in his investigations and determination of the cause of death*.”¹⁸³
- 8.131 BHSCT is said to share all such reports with the Coroner.¹⁸⁴ I believe that is the preferred approach. However, and in order to acknowledge the claims of both transparency and privilege, I would recommend that HSC Trusts claiming privilege in respect of a document relevant to the proceedings of an inquest, should inform the Coroner as to both the existence and nature of the document.
- 8.132 The Department should, in any event, issue guidance to HSC Trusts on the approach it would wish adopted.

Regular external review

- 8.133 Cumulatively, the measures introduced over recent years have very significantly reduced the risk of harm to children and young people receiving IV fluids. Additionally where a SAI does occur, there are greatly improved mechanisms to identify it, investigate it, learn from it and reduce the risk of recurrence. That so much has been done, taught and published and that so many more SAIs and complaints are reported, all confirm that the Health Service environment has most definitely been transformed since the period under review.

¹⁸² 333-342-011

¹⁸³ Dr Michael McBride T-15-11-13 p.79 line 14

¹⁸⁴ Mr Colm Donaghy T-12-11-13 p.81 line 20

- 8.134 Whilst I am able to conclude that lessons have been learnt, I cannot conclude that all risk of recurrence has been eliminated. Given that the provision of health care is an immense and complex task, I can only agree with Dr Carson when he observed “*one can never give full assurance that full compliance will ever be achieved.*”¹⁸⁵
- 8.135 Accordingly, it remains critical to keep building upon the very real progress made and to further undermine the remnant culture of clinical defensiveness. To that vital end, future progress should be subject to regular external review.

¹⁸⁵ Dr Carson T-13-11-13 p.47 line 10

RECOMMENDATIONS

9.1 The lessons of these sad cases must be learnt because it cannot be assumed that such tragedy could not happen again. Although much has been achieved, much remains to be done. These recommendations have been guided by the following principles:

- (i) That healthcare services exist to serve the patient.
- (ii) That quality of healthcare is dependent upon both clinical and non-clinical services.
- (iii) That the particular needs of children must be addressed.
- (iv) That leadership and candour must be accorded the utmost priority if the fullest learning is to be gained from error.
- (v) That progress should be subject to regular external review.

9.2 I believe that parents must be involved in the implementation of these recommendations. It is to be recognised that improvement cannot be achieved without expenditure. These recommendations have not been costed.

Recommendations

Candour

1. A statutory duty of candour should now be enacted in Northern Ireland so that:
 - (i) Every healthcare organisation **and** everyone working for them must be open and honest in all their dealings with patients and the public.
 - (ii) Where death or serious harm has been or may have been caused to a patient by an act or omission of the organisation or

its staff, the patient (or duly authorised representative) should be informed of the incident and given a full and honest explanation of the circumstances.

- (iii) Full and honest answers must be given to any question reasonably asked about treatment by a patient (or duly authorised representative).
 - (iv) Any statement made to a regulator or other individual acting pursuant to statutory duty must be truthful and not misleading by omission.
 - (v) Any public statement made by a healthcare organisation about its performance must be truthful and not misleading by omission.
 - (vi) Healthcare organisations who believe or suspect that treatment or care provided by it, has caused death or serious injury to a patient, must inform that patient (or duly authorised representative) as soon as is practicable and provide a full and honest explanation of the circumstances.
 - (vii) Registered clinicians and other registered healthcare professionals, who believe or suspect that treatment or care provided to a patient by or on behalf of any healthcare organisation by which they are employed has caused death or serious injury to the patient, must report their belief or suspicion to their employer as soon as is reasonably practicable.
2. Criminal liability should attach to breach of this duty and criminal liability should attach to obstruction of another in the performance of this duty.
 3. Unequivocal guidance should be issued by the Department to all Trusts and their legal advisors detailing what is expected of Trusts in order to meet the statutory duty.

4. Trusts should ensure that all healthcare professionals are made fully aware of the importance, meaning and implications of the duty of candour and its critical role in the provision of healthcare.
5. Trusts should review their contracts of employment, policies and guidance to ensure that, where relevant, they include and are consistent with the duty of candour.
6. Support and protection should be given to those who properly fulfil their duty of candour.
7. Trusts should monitor compliance and take disciplinary action against breach.
8. Regulation and Quality Improvement Authority ('RQIA') should review overall compliance and consideration should be given to granting it the power to prosecute in cases of serial non-compliance or serious and wilful deception.

Leadership

9. The highest priority should be accorded the development and improvement of leadership skills at every level of the health service including both executive and non-executive Board members.

Paediatric - clinical

10. Health and Social Care ('HSC') Trusts should publish policy and procedure for ensuring that children and young people are cared for in age-appropriate hospital settings.
11. There should be protocol to specify the information accompanying a patient on transfer from one hospital to another.
12. Senior paediatric medical staff should hold overall patient responsibility in children's wards accommodating both medical and surgical patients.

13. Foundation doctors should not be employed in children's wards.
14. The experience and competence of all clinicians caring for children in acute hospital settings should be assessed before employment.
15. A consultant fixed with responsibility for a child patient upon an unscheduled admission should be informed promptly of that responsibility and kept informed of the patient's condition, to ensure senior clinical involvement and leadership.
16. The names of both the consultant responsible and the accountable nurse should be prominently displayed at the bed in order that all can know who is in charge and responsible.
17. Any change in clinical accountability should be recorded in the notes.
18. The names of all on-call consultants should be prominently displayed in children's wards.
19. To ensure continuity, all children's wards should have an identifiable senior lead nurse with authority to whom all other nurses report. The lead nurse should understand the care plan relating to each patient, be visible to both patients and staff and be available to discuss concerns with parents. Such leadership is necessary to reinforce nursing standards and to audit and enforce compliance. The post should be provided in addition to current staffing levels.
20. Children's ward rounds should be led by a consultant and occur every morning and evening.
21. The accountable nurse should, insofar as is possible, attend at every interaction between a doctor and child patient.
22. Clinicians should respect parental knowledge and expertise in relation to a child's care needs and incorporate the same into their care plans.

23. The care plan should be available at the bed and the reasons for any change in treatment should be recorded.
24. All blood test results should state clearly when the sample was taken, when the test was performed and when the results were communicated and in addition serum sodium results should be recorded on the Fluid Balance Chart.
25. All instances of drug prescription and administration should be entered into the main clinical notes and paediatric pharmacists should monitor, query and, if necessary, correct prescriptions. In the event of correction the pharmacist should inform the prescribing clinician.
26. Clinical notes should always record discussions between clinicians and parents relating to patient care and between clinicians at handover or in respect of a change in care.
27. Electronic patient information systems should be developed to enable records of observation and intervention to become immediately accessible to all involved in care.
28. Consideration should be given to recording and/or emailing information and advices provided for the purpose of obtaining informed consent.
29. Record keeping should be subject to rigorous, routine and regular audit.
30. Confidential on-line opportunities for reporting clinical concerns should be developed, implemented and reviewed.

Serious Adverse Clinical Incident Reporting

31. Trusts should ensure that all healthcare professionals understand what is expected of them in relation to reporting Serious Adverse Incidents ('SAIs').
32. Failure to report an SAI should be a disciplinary offence.

Serious Adverse Clinical Incident Investigation

33. Compliance with investigation procedures should be the personal responsibility of the Trust Chief Executive.
34. The most serious adverse clinical incidents should be investigated by wholly independent investigators (i.e. an investigation unit from outside Northern Ireland) with authority to seize evidence and interview witnesses.
35. Failure to co-operate with investigation should be a disciplinary offence.
36. Trust employees who investigate and accident should not be involved with related Trust preparation for inquest or litigation.
37. Trusts should seek to maximise the involvement of families in SAI investigations and in particular:
 - (i) Trusts should publish a statement of patient and family rights in relation to all SAI processes including complaints.
 - (ii) Families should be given the opportunity to become involved in setting the terms of reference for an investigation.
 - (iii) Families should, if they so wish, engage with the investigation and receive feedback on progress.
 - (iv) A fully funded Patient Advocacy Service should be established, independent of individual Trusts, to assist families in the process. It should be allowed funded access to independent expert advice in complex cases.
 - (v) Families in cases of SAI related child death should be entitled to see relevant documentation, including all records, written communication between healthcare professionals and expert reports.

- (vi) All written Trust communication to parents or family after a SAI related child death should be signed or co-signed by the chief executive.
 - (vii) Families should be afforded the opportunity to respond to the findings of an investigation report and all such responses should be answered in writing.
 - (viii) Family GPs should, with family consent, receive copies of feedback provided.
 - (ix) Families should be formally advised of the lessons learned and the changes effected.
 - (x) Trusts should seek, and where appropriate act upon, feedback from families about adverse clinical incident handling and investigation.
38. Investigations should be subject to multi-disciplinary peer review.
39. Investigation teams should reconvene after an agreed period to assess both investigation and response.
40. Learning and trends identified in SAI investigations should inform programmes of clinical audit.
41. Trusts should publish the reports of all external investigations, subject to considerations of patient confidentiality.
42. In the event of new information emerging after finalisation of an investigation report or there being a change in conclusion, then the same should be shared promptly with families.

In the event of a Death related to a Serious Adverse Clinical Incident.

43. A deceased's family GP should be notified promptly as to the circumstances of death to enable support to be offered in bereavement.

44. Authorisation for any limitation of a post-mortem examination should be signed by two doctors acting with the written and informed consent of the family.
45. Check-list protocols should be developed to specify the documentation to be furnished to the pathologist conducting a hospital post-mortem.
46. Where possible, treating clinicians should attend for clinico-pathological discussions at the time of post-mortem examination and thereafter upon request.
47. In providing post-mortem reports pathologists should be under a duty to:
 - (i) Satisfy themselves, insofar as is practicable, as to the accuracy and completeness of the information briefed them.
 - (ii) Work in liaison with the clinicians involved.
 - (iii) Provide preliminary and final reports with expedition.
 - (iv) Sign the post-mortem report.
 - (v) Forward a copy of the post-mortem report to the family GP.
48. The proceedings of mortality meetings should be digitally recorded, the recording securely archived and an annual audit made of proceedings and procedures.
49. Where the care and treatment under review at a mortality meeting involves more than one hospital or Trust, video conferencing facilities should be provided and relevant professionals from all relevant organisations should, in so far as is practicable, engage with the meeting.
50. The Health and Social Care ('HSCB') should be notified promptly of all forthcoming healthcare related inquests by the Chief Executive of the Trust(s) involved.

51. Trust employees should not record or otherwise manage witness statements made by Trust staff and submitted to the Coroner's office.
52. Protocol should detail the duties and obligations of all healthcare employees in relation to healthcare related inquests.
53. In the event of a Trust asserting entitlement to legal privilege in respect of an expert report or other document relevant to the proceedings of an inquest, it should inform the Coroner as to the existence and nature of the document for which privilege is claimed.
54. Professional bereavement counselling for families should be made available and should fully co-ordinate bereavement information, follow-up service and facilitated access to family support groups.

Training and Learning

55. Trust Chairs and Non-Executive Board Members should be trained to scrutinise the performance of Executive Directors particularly in relation to patient safety objectives.
56. All Trust Board Members should receive induction training in their statutory duties.
57. Specific clinical training should always accompany the implementation of important clinical guidelines.
58. HSC Trusts should ensure that all nurses caring for children have facilitated access to e-learning on paediatric fluid management and hyponatraemia.
59. There should be training in the completion of the post-mortem examination request form.
60. There should be training in the communication of appropriate information and documentation to the Coroner's office.

61. Clinicians caring for children should be trained in effective communication with both parents and children.
62. Clinicians caring for children should be trained specifically in communication with parents following an adverse clinical incident, which training should include communication with grieving parents after a SAI death.
63. The practice of involving parents in care and the experience of parents and families should be routinely evaluated and the information used to inform training and improvement.
64. Parents should be involved in the preparation and provision of any such training programme.
65. Training in SAI investigation methods and procedures should be provided to those employed to investigate.
66. Clinicians should be afforded time to consider and assimilate learning feedback from SAI investigations and within contracted hours.
67. Should findings from investigation or review imply inadequacy in current programmes of medical or nursing education then the relevant teaching authority should be informed.
68. Information from clinical incident investigations, complaints, performance appraisal, inquests and litigation should be specifically assessed for potential use in training and retraining.

Trust Governance

69. Trusts should appoint and train Executive Directors with specific responsibility for:
 - (i) Issues of Candour.

- (ii) Child Healthcare.
 - (iii) Learning from SAI related patient deaths.
70. Effective measures should be taken to ensure that minutes of board and committee meetings are preserved.
 71. All Trust Boards should ensure that appropriate governance mechanisms are in place to assure the quality and safety of the healthcare services provided for children and young people.
 72. All Trust publications, media statements and press releases should comply with the requirement for candour and be monitored for accuracy by a nominated non-executive Director.
 73. General Medical Council ('GMC') 'Good Medical Practice' Code requirements should be incorporated into contracts of employment for doctors.
 74. Likewise, professional codes governing nurses and other healthcare professionals should be incorporated into contracts of employment.
 75. Notwithstanding referral to the GMC, or other professional body Trusts should treat breaches of professional codes and/or poor performance as disciplinary matters and deal with them independently of professional bodies.
 76. Clinical standards of care, such as patients might reasonably expect, should be published and made subject to regular audit.
 77. Trusts should appoint a compliance officer to ensure compliance with protocol and direction.
 78. Implementation of clinical guidelines should be documented and routinely audited.

79. Trusts should bring significant changes in clinical practice to the attention of the HSCB with expedition.
80. Trusts should ensure health care data is expertly analysed for patterns of poor performance and issues of patient safety.
81. Trusts should ensure that all internal reports, reviews and related commentaries touching upon SAI related deaths within the Trust are brought to the immediate attention of every Board member.
82. Each Trust should publish policy detailing how it will respond to and learn from SAI related patient deaths.
83. Each Trust should publish in its Annual Report, details of every SAI related patient death occurring in its care in the preceding year and particularise the learning gained therefrom.
84. All Trust Boards should consider the findings and recommendations of this Report and where appropriate amend practice and procedure.

Department

85. The Department should appoint a Deputy Chief Medical Officer with specific responsibility for children's healthcare.
86. The Department should expand both the remit and resources of the RQIA in order that it might (i) maintain oversight of the SAI process (ii) be strengthened in its capacity to investigate and review individual cases or groups of cases, and (iii) scrutinise adherence to duty of candour.
87. The Department should now institute the office of Independent Medical Examiner to scrutinise those hospital deaths not referred to the Coroner.
88. The Department should engage with other interested statutory organisations to review the merits of introducing a Child Death Overview Panel.

89. The Department should consider establishing an organisation to identify matters of patient concern and to communicate patient perspective directly to the Department.
90. The Department should develop protocol for the dissemination and implementation of important clinical guidance, to include:
 - (i) The naming of specific individuals fixed with responsibility for implementation and audit to ensure accountability.
 - (ii) The identification of specific training requirements necessary for effective implementation.
91. The Department, HBSC, PHA, RQIA and HSC Trusts should synchronise electronic patient safety incident and risk management software systems, codes and classifications to enable effective oversight and analysis of regional information.
92. The Department should review healthcare standards in light of the findings and recommendations of this report and make such changes as are necessary.
93. The Department should review Trust responses to the findings and recommendations of this Report.

Culture and Litigation

94. The interests of patient safety must prevail over the interests engaged in clinical negligence litigation. Such litigation can become an obstacle to openness. A government committee should examine whether clinical negligence litigation as it presently operates might be abolished or reformed and/or whether appropriate alternatives can be recommended.
95. Given that the public is entitled to expect appropriate transparency from a publically funded service, the Department should bring forward

protocol governing how and when legal privilege entitlement might properly be asserted by Trusts.

96. The Department should provide clear standards to govern the management of healthcare litigation by Trusts and the work of Trust employees and legal advisors in this connection should be audited.

APPENDICES

GLOSSARY OF ACRONYMS

ADH	Antidiuretic Hormone
Altnagelvin	Altnagelvin Area Hospital
AHHSST	Altnagelvin Area Hospitals Health and Social Services Trust
APLS	Advanced Paediatric Life Support
AS	Adam Strain
ASIS	Anterior Superior Iliac Spine
AST	Aspartate Aminotransferase
ATICS	Anaesthetics, Theatre and Intensive Care
A&E	Accident and Emergency
AvMA	Action against Medical Accidents
BCH	Belfast City Hospital
BHSCT	Belfast Health and Social Care Trust
BL	Barrister-at-Law
BMJ	British Medical Journal
BNF	British National Formulary
CBE	Commander of the Most Excellent Order of the British Empire
CAHGT	Craigavon Area Hospital Group (HSS) Trust
CGs	Clinical Guidelines
CIT	Cold Ischaemic Time
CM	Conor Mitchell
CMO	Chief Medical Officer

GLOSSARY OF ACRONYMS

CMV	Cytomegalovirus
CNO	Chief Nursing Officer
CNS	Central Nervous System
CPA	Care Programme Approach
CPP	Cerebral Perfusion Pressure
CR	Claire Roberts
CREST	Clinical Resource Efficiency Support Team
CRP	Creactive Protein
CSF	Cerebral Spinal Fluid
CSM	Clinical Services Manager
CT	Computerised Tomography
CVP	Central Venous Pressure
CVST	Cerebral Venous Sinus Thrombosis
Dept	Department
DHSSPS	Department of Health, Social Services and Public Safety (the Department)
DHSSPSNI	Department of Health, Social Services and Public Safety Northern Ireland
DLS	Directorate of Legal Services
DoH	Department of Health
DRO	Designated Review Officer
DSO	Departmental Solicitors Office

GLOSSARY OF ACRONYMS

ECP	Episodic Care Plan
EEG	Electroencephalography
ENT	Ear, Nose and Throat
FB&PCs	Fluid Balance and Prescription Charts
FRCS	Fellowship of the Royal Colleges of Surgeons
GAIN	Guidelines Audit and Implementation Network
GCS	Glasgow Coma Scale
GFR	Glomerular Filtration Rate
GP	General Practitioner
GMC	General Medical Council
HLA	Human Leucocyte Antigen
HM Coroner	Her Majesty's Coroner
HPPF	Human Plasma Protein Fraction
HPSS	Health and Personal Social Services
HSC	Health and Social Care
HSCB	Health and Social Care Board
HSC Trust	Health and Social Care Trust
HSE	Health Service Executive
ICP	Intracranial Pressure
ICT	Information and Communications Technology
ICU	Intensive Care Unit

GLOSSARY OF ACRONYMS

IHRD	Inquiry into Hyponatraemia-related Deaths
IV	Intravenous
JHO	Junior House Officer
JVP	Jugular Venous Pressure
KFOA	Kings Fund Organisational Audit
LC	Lucy Crawford
MAP	Mean Arterial Pressure
MAU	Medical Admissions Unit
MCA	Medicines Control Agency
MCCD	Medical Certificate of Cause of Death
Mmol/l	Millimoles per litre
MDU	Medical Defence Union
MRI	Magnetic Resonance Imaging
M&M	Mortality and Morbidity
NCP	Nursing Care Plan
NCEPOD	National Confidential Enquiry into Perioperative Deaths
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NIMDTA	Northern Ireland Medical and Dental Training Agency
NMC	Nursing and Midwifery Council
NPSA	National Patient Safety Agency

GLOSSARY OF ACRONYMS

OTC	Ornithine Transcarbamylase
PCC	Patient Client Council
PEWS	Physiological Early Warning Scores System
PHA	Public Health Agency
PICU	Paediatric Intensive Care Unit
PIVFAIT	Paediatric IV Fluid Audit Improvement Tool
PNS	Peripheral Nervous System
PONV	Post-Operative Nausea and Vomiting
PRES	Posterior Reversible Encephalopathy Syndrome
PSNI	Police Service for Northern Ireland
PU	Passed Urine
QC	Queens Counsel
RCA	Root Cause Analysis
RCP	Royal College of Physicians
RCPCH	Royal College of Paediatrics and Child Health
RBHSC	Royal Belfast Hospital for Sick Children
RDW	Red Cell Distribution Width
RF	Raychel Ferguson
RCPCH	Royal College of Paediatrics and Child Health
RGHT	Royal Group of Hospitals Trust
RMCO	Risk Management Co-Ordinator

GLOSSARY OF ACRONYMS

RM&MRS	Regional Mortality and Morbidity Review System
RQIA	Regulation and Quality Improvement Authority
RVH	Royal Victoria Hospital
SAC	Special Advisory Committees
SAI	Serious Adverse Incident
SHO	Senior House Officer
SIADH	Syndrome of Inappropriate Antidiuretic Hormone Secretion
SHSCT	Southern Health and Social Care Trust
S/N	Staff Nurse
SLT	Sperrin Lakeland Trust
SQUAT	Safety Quality and Alerts Team
STP	Sodium Thiopentone
UKCC	United Kingdom Central Council for Nursing, Midwifery and Health Visiting
UTI	Urinary Tract Infection
U&E	Urea and Electrolyte
WCC	White Cell Count
WHO	World Health Organisation
WHSC	Western Health and Social Care Trust
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ADVISORS, EXPERTS AND PEER REVIEWERS

Appointed Expert Advisors	
The late Dr Peter Booker	Consultant Paediatric Anaesthetist
Mr Grenville Kershaw	Consultant Health Service Governance and Management
Dr Harvey Marcovitch	Consultant Paediatrician
Ms Mary Whitty	Consultant Health Service Governance and Management
Ms Carol Williams	Nursing Consultant

Peer Reviewers	
Dr Desmond Bohn	Consultant Paediatric Anaesthetist
Dr Sharon Kinney	Consultant Paediatric Intensive Care Nursing

Experts Advising the Inquiry	
Dr Philip Anslow	Consultant Neuroradiologist
Dr Jeffrey Aronson	Consultant Pharmacologist
Professor Keith Cartwright	Consultant Clinical Microbiologist
Dr Malcolm Coulthard	Honorary Consultant Paediatric Nephrologist
Dr Wellesley St C Forbes	Consultant Neuroradiologist (retired)
Professor John Forsythe	Consultant Transplant Surgeon
Mr George Foster	Consultant General Surgeon

ADVISORS, EXPERTS AND PEER REVIEWERS

Experts Advising the Inquiry	
Dr Audrey Giles	Forensic Document Analyst
Professor Alan Glasper	Professor of Children's & Young Peoples Nursing
Professor Dr Peter Gross	Professor of Medicine and Nephrology
Professor Brian Harding	Consultant Paediatric Neuropathologist and Professor of Pathology & Laboratory Medicine
Dr Simon Haynes	Consultant in Paediatric Cardiothoracic Anaesthesia and Intensive Care
Professor Fenella Kirkham	Professor of Paediatric Neurology, Institute of Child Health
Mr Geoff Koffman	Consultant Transplant Surgeon
Dr Caren Landes	Consultant Paediatric Radiologist
Professor Sebastian Lucas	Professor of Clinical Histopathology and Consultant Histopathologist
Dr Roderick MacFaul	Consultant Paediatrician
Professor Aidan Mullan	Acting Chief Executive Officer and Director of Nursing and Clinical Governance
Professor Brian Neville	Consultant Paediatric Neurologist and Professor of Childhood Epilepsy
Mr Stephen Ramsden	Chief Executive Officer
Ms Sally Ramsay	Independent Children's Nursing Advisor
Professor Dr Dietz Rating	Consultant in Paediatric Neurology
Mr Keith Rigg	Consultant Transplant Surgeon
Professor Gabriel Scally	Professor of Public Health and Planning, Director of WHO Collaborating Centre for Healthy Urban Environments
Dr Robert Scott-Jupp	Consultant Paediatrician

ADVISORS, EXPERTS AND PEER REVIEWERS

Experts Advising the Inquiry	
Dr Waney Squier	Consultant Neuropathologist and Clinical Lecturer
Professor Charles Swainson	Consultant Renal Physician and Medical Director (retired)

Other Expert's Reports Considered	
Dr John Alexander	Consultant Anaesthetist
Professor Peter Jeremy Berry	Professor of Paediatric Pathology
Dr Robert Bingham	Consultant Paediatric Anaesthetist
Ms Susan Chapman	Nurse Consultant for Acute and High Dependency Care
Dr Dewi Evans	Consultant Paediatrician
Dr Brian Herron	Consultant Neuropathologist
Dr John Jenkins	Senior Lecturer in Child Health and Consultant Paediatrician
Dr Clodagh Loughrey	Consultant Chemical Pathologist
Dr Ian Maconochie	Consultant in Paediatric Accident and Emergency Medicine
Mr John Orr	Consultant Paediatric Surgeon
Professor Rupert Risdon	Consultant Forensic Paediatric Pathologist
Dr Edward Sumner	Consultant Paediatric Anaesthetist
Dr Declan Warde	Consultant Paediatric Anaesthetist

ADVISORS, EXPERTS AND PEER REVIEWERS

Experts who provided Background Papers to the Inquiry	
Professor Sir Alan Craft	Emeritus Professor of Child Health and Honorary Consultant Paediatrician
Dr Bridget Dolan	Barrister and Assistant Deputy Coroner
Professor Mary Hanratty	Director of Nursing and Midwifery Education (retired)
Dr Jan Keeling	Paediatric Pathologist
Dr Michael Ledwith	Expert in Teaching of Fluid Balance and Sodium Management in Northern Ireland

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Dr John Alexander	Consultant Anaesthetist BCH	AS	120
Dr Trevor Anderson	Clinical Director of Women and Children's Services Erne Hospital	LC	291
Dr Philip Anslow	Consultant Neuroradiologist	AS	
Dr Alison Armour	Senior Registrar Forensic Medicine State Pathologist's Department	AS	012
Dr Jeffrey Aronson	Consultant Pharmacologist	CR	
Dr Mohammed Asghar	Staff Grade Paediatrician Erne Hospital	LC	
Dr Elma Ashenhurst	Raychel Ferguson's GP	RF	333
Dr Thomas Auterson	Consultant Anaesthetist Erne Hospital	LC	274
Dr Brigitte Bartholome	Paediatric Registrar RBHSC	CR	142
Mr Paul Bateson (Deceased)	Clinical Director of Surgery	RF	
Ms Susan Beattie	Staff Nurse RBHSC	AS	118
Dr Barbara Ann Bell	Consultant Paediatrician CAH	CM	364
Mr Naresh Kumar Bhalla	Surgical Specialist Registrar Altnagelvin	RF	034
Dr Hoshang Bharucha	Consultant Pathologist RVH	AS	249
Dr Robert Bingham	Consultant Paediatric Anaesthetist	CR	
Dr Janice Bothwell	Paediatric Consultant RBHSC	CM	
Mrs Eleanor Boyce (nee Donaghy)	Transplant Co-ordinator BCH	AS	100

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Mr Martin Bradley	Director of Health Care & Chief Nurse WHSSB	LC	307
		RF	
Dr Richard Brady	SHO CAH	CM	
Mr George Brangam (Deceased)	Brangam Bagnall & Co Solicitor	AS	
		RF	
Ms Irene Brennan (nee Dickey)	Senior Nurse CAH	CM	353
Mr Stephen Brown	Consultant Paediatric Surgeon RBHSC & Ulster Hospital	AS	007
Mrs Therese Brown	Risk Management Co-ordinator AHHSST	RF	322
S/N Fiona Bryce	Staff Nurse Altnagelvin	RF	054
Dr Suzie Budd	Staff Grade Doctor CAH	CM	352
S/N Ruth Bullas	Staff Nurse CAH	CM	376
Mrs Stella Burnside	Chief Executive AHHSST	RF	046
Dr Mary Butler	SHO Paediatrics Altnagelvin	RF	026
Dr Henrietta Campbell	Chief Medical Officer, DHSSPS (Jan 1995 to Feb 2006)	AS	
		LC	
		RF	
		CM	
		Dept	075
Dr Rosalie Campbell	Locum Consultant Anaesthetist RBHSC	AS	117
Dr Ian Carson	Medical Director, RGHT & Chairman, RQIA (2006 to present)	AS	077
		CR	270
		RF	331
		LC	306
		Dept	077
		Current	077

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Dr Jacqueline Cartmill	SHO in Paediatrics RBHSC	AS	003
Ms Susan Chapman	Nurse Consultant for Acute and High Dependency Care	RF	
Dr Anthony Chisakuta	Consultant in Paediatric Anaesthesia & Intensive Care RBHSC	LC	283
		CM	
Dr Matt Cody	Consultant Anaesthetist Erne Hospital	LC	
Mr John Compton	Chief Executive HSCB (retired)	Current	
Mrs Patricia Conway	Staff Nurse RBHSC	AS	060
Dr Cooke	Consultant Neurologist RVH	CM	
Dr Dennis Coppel	Consultant in Paediatric Anaesthesia RVH	AS	
Dr Malcolm Coulthard	Honorary Consultant Paediatric Nephrologist	AS	
Mrs Mae Crawford	Lucy Crawford's Mother	LC	
		Current	
Mr Neville Crawford	Lucy Crawford's Father	LC	
Dr Peter Crean	Consultant in Paediatric Anaesthesia & Intensive Care RBHSC	AS	130
		CR	168
		LC	292
		RF	038
		Dept	
Mrs Lorna Cullen	Ward Manager CAH	CM	374
Dr Michael Curran	JHO Surgery Altnagelvin	RF	028
Dr Mike Curtis	Assistant State Pathologist State Pathologist's Office, Belfast	LC	275
Dr Paul Darragh	Deputy Chief Medical Officer DHSSPS	Dept	076
		CM	

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Dr Aparna Date	Specialist Registrar Altnagelvin	RF	031
Mrs Maureen Dennison	Administrative Staff Coroner's Office	LC	276
Dr Joseph Devlin	JHO Altnagelvin	RF	027
Mrs Margaret Doherty	Clinical Services Manager Paediatrics AHSST	RF	336
Mrs Anne Doherty	Patient Advocate AHSST	RF	325
Mrs Kay Doherty	Mrs Ferguson's sister	RF	326
Dr Bridget Dolan	Barrister and Assistant Deputy Coroner	Dept	
Mr Colm Donaghy	Chief Executive BHSCT	AS	
		CR	
		Dept	
Dr Doyle	GP, Moores Lane Surgery, Lurgan	CM	
Miss Irene Duddy	Director of Nursing AHSST	RF	323
Miss Elizabeth Duffin	Director of Nursing & Patient Services RGHT	AS	245
		CR	265
Mr Stephen Duffy	Visitor to Altnagelvin at time of Raychel's stay	RF	
Ms Elaine Duffy	Visitor to Altnagelvin at time of Raychel's stay	RF	
Mrs Marie Dunne	Communications Manager AHSST	RF	332
Mr Alan Elliott	Permanent Secretary, DHSSPS (Jul 1987 – Mar 1997)	Dept	348
Dr Dewi Evans	Consultant Paediatrician.	LC	
		Dept	

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Mr Eugene Fee	Director of Acute Hospital Services & Director of Nursing SLT	LC	287
Mr Raymond Ferguson	Raychel's father	RF	020
		Dept	
		Current	
Mrs Marie Ferguson	Raychel's mother	RF	021
		Dept	
		Current	
Professor John Forsythe	Consultant Transplant Surgeon	AS	
Mr George Foster	Consultant General Surgeon	RF	
Miss Bridie Foy	Deputy Director of Nursing CAH	CM	367
Dr Thomas Frawley	Area Manager WHSSB	LC	308
		Dept	
Dr Raymond Fulton	Medical Director AHHSST	RF	043
		CM	
Dr Joseph Gaston	Consultant Anaesthetist & Clinical Director of Anaesthesia, Theatres & Intensive Care RGHT	AS	013
		Dept	
Dr Colin Gaston	Consultant Paediatrician Ulster Hospital	CR	166
Dr Fiona Gibson (Deceased)	Consultant Anaesthetist Royal	AS	
S/N Sandra Gilchrist	Staff Nurse Ward 6 Altnagelvin	RF	053
Mr Robert Gilliland	Consultant Surgeon Altnagelvin	RF	044
Dr Audrey Giles	Giles Document Laboratory handwriting analysis Expert	CR	
Mr Clive Gowdy	Permanent Secretary, DHSSPS (Mar 1997 to Jul 2005)	AS	
		Dept	062

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Professor Dr Peter Gross	Professor of Medicine and Nephrology	AS	
Dr Vijay Kumar Gund	SHO Anaesthesia Altnagelvin	RF	023
Dr Donncha Hanrahan	Consultant Paediatric Neurologist RBHSC	LC	289
		RF	039
Professor Mary Hanratty	Director of Nursing and Midwifery Education (retired)	LC	
		RF	
		Current	
Professor Brian Harding	Consultant Paediatric Neuropathologist and Professor of Pathology & Laboratory Medicine	CR	
Dr Carolyn Harper	Executive Medical Director Public Health Agency	Current	
Ms Margaret Harrison	Raychel's godmother	RF	318
Dr Simon Haynes	Consultant in Paediatric Cardiothoracic Anaesthesia and Intensive Care	AS	
		CR	
		RF	
Dr Brian Herron	Senior Registrar Neuropathology RVH	CR	224
	Consultant Neuropathologist RVH	RF	041
		CM	
Dr Elaine Hicks	Consultant Paediatric Neurologist RBHSC	AS	244
		CR	264
		RF	340
Professor Dame Judith Hill	Chief Nursing Officer, DHSSPS (Sep 1995 - Feb 2005)	Dept	082
Dr Martina Hogan	Lead Clinician in Paediatrics CAH	CM	368
Dr William Holmes	Consultant Anaesthetist Erne Hospital	LC	
Dr Joanne Hughes	Paediatric SHO RBHSC	CR	140

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Dr Caroline Humphrey	Medical Director CAH	CM	354
Mr John Hunter	Chief Executive HPSS Management Executive (1990 – 1997)	Dept	349
Dr M Al-Husaini	Neuropathologist Royal Group of Hospitals	RF	
Dr Claire Jamison	SHO Anaesthesia Altnagelvin	RF	024
Dr John Jenkins	Consultant Paediatrician Antrim Area Hospital Senior Lecturer in Child Health QUB	RF	059
		LC	
		CM	
		Dept	
Dr Jeremy Johnston	SHO Paediatrics Altnagelvin	RF	029
Ms Thecla Jones	Staff Nurse Erne Hospital	LC	
Dr Angela Jordan	Specialist Registrar Public Health Medicine	Dept	
Ms Sara Jordan (nee Field)	Staff Nurse RBHSC	CR	148
Mr Patrick Keane	Consultant Urologist BCH	AS	006
Dr Jan Keeling	Paediatric Pathologist	Dept	
Dr Barry Kelly	SHO Altnagelvin	RF	254
Dr James Kelly	Medical Director SLT	LC	290
		RF	
Dr Peter Kennedy	Radiology Specialist Registrar RBHSC	CR	167
Professor Fenella Kirkham	Professor of Paediatric Neurology, Institute of Child Health	AS	
Mr Geoff Koffman	Consultant Transplant Surgeon	AS	
Mr Francis Lavery	Staff Nurse CAH	CM	351

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Mr John Leckey	HM Coroner for Greater Belfast	AS	091
		CR	
		RF	090
		LC	277
	Senior Coroner for NI	CM	
Dr Jeff Lee	Clinical Director CAH	CM	
Ms Kate Linskey	Staff Nurse RBHSC	CR	248
Miss Kathryn Little	Paediatrics Nursing Sister AHHSST	RF	345
Dr Clodagh Loughrey	Consultant Chemical Pathologist BCH	RF	045
		CM	
		Dept	
Dr Darrell Lowry	Consultant Anaesthetist SHSCT	CM	350
Professor Sebastian Lucas	Professor of Clinical Histopathology and Consultant Histopathologist	AS	
		CR	
		LC	
Ms Elizabeth Lynch	Nursing Auxiliary Altnagelvin	RF	055
Dr Samuel Morrell Lyons	Consultant Cardiac Anaesthetist RGHT	AS	
		Dept	
Dr Roderick MacFaul	Consultant Paediatrician	CR	
		LC	
Ms Siobhan MacNeill	Staff Nurse Erne Hospital	LC	
Dr Ian Maconochie	Consultant in Paediatric Accident and Emergency Medicine	CR	
Mr Ragai Reda Makar	SHO Surgery Altnagelvin	RF	022
Dr Amer Ullah Malik	SHO Paediatrics Erne Hospital	LC	285

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Mr G Marshall	Consultant Surgeon Erne Hospital	Dept	
Dr Denis Martin	Clinical Director Women & Children's Care AHHST	RF	335
Ms Margaret Mathewson	Theatre Staff Nurse RBHSC	AS	101
Dr Charles McAllister	Consultant CAH	CM	
Dr Jarlath McAloon	Consultant Paediatrician Antrim Area Hospital & Chair, Paediatric Fluid Therapy Working Group	CM	
		Dept	363
Professor Charlotte McArdle	Chief Nursing Officer, DHSSPS (Mar 2013 – to present)	Current	
S/N Michaela McAuley (nee Rice)	Staff Nurse Altnagelvin	RF	051
Dr Michael McBride	Medical Director RGHT (2002 – 2006)	CR	269
	CMO, DHSSPS (Sept 2006 – to present)	Current	
Ms Teresa McCaffrey	Staff Nurse Erne Hospital	LC	
Ms Lorraine McCann	Staff Nurse RBHSC	CR	151
Dr Miriam McCarthy	Senior Medical Officer, DHSSPS (Oct 1998 - Apr 2006)	Dept	080
		CM	
Dr William McCaughey	Consultant Anaesthetist & Medical Director CAH	CM	369
Dr William McConnell	Director of Public Health WHSSB	LC	286
		RF	
		Dept	
Dr Brian McCord	Consultant Paediatrician Altnagelvin	RF	032

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Dr Andrew McCormick	Permanent Secretary DHSSPS (Jul 2005 – Jun 2014)	Current	
Mrs Teresa McCullagh	Visitor to Altnagelvin at time of Raychel's stay	RF	319
S/N Marian McGrath	Theatre Nurse Altnagelvin	RF	050
Dr James Patrick McKaigue	Consultant Paediatric Anaesthetist RBHSC	AS	129
		CR	156
		LC	302
		CM	
Mr William McKee	Chief Executive RGHT	AS	061
		CR	271
		Dept	
Dr Stephen McKinstry	Consultant Neuroradiologist RGHT	RF	037
Mr Brian Francis McLaughlin	Chief Medical Technical Officer BHSCT	AS	109
Dr Louise McLoughlin	Paediatric SHO RBHSC	LC	
Ms Sally McManus	Staff Nurse Erne Hospital	LC	
Ms Geraldine McRandal	Staff Nurse RBHSC	CR	145
Sister Elizabeth Millar	Ward Sister Altnagelvin	RF	056
Mrs Esther Millar	Clinical Services Manager Erne Hospital	LC	312
Mr Stanley Millar	Chief Officer WHSSC	RF	093
		LC	
		Dept	
Mr Hugh Mills	Chief Executive SLT	LC	293
		Dept	
Dr Meenakshi Mirakhur	Consultant Neuropathologist RGHT	AS	223
		CR	247

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Ms Joanna Mitchell	Conor's mother	CM	
		Current	
Ms Judy Mitchell	Conor's grandmother	CM	
Mr John Mone	Director of Nursing CAH	CM	375
Dr Terence Montague	Senior Registrar Anaesthesia RBHSC	AS	009
Dr Cyril Morrison	Consultant Radiologist Altnagelvin	RF	036
Dr Connor Mulholland	Clinical Director - Paediatrics (Acting) RBHSC	AS	243
Professor Aidan Mullan	Acting Chief Executive Officer and Director of Nursing and Clinical Governance (former)	Dept	
Dr Andrew Murdock	Specialist Registrar CAH	CM	355
Dr George Murnaghan	Director of Medical Administration RGHT	AS	015
		CR	273
		Dept	
Mrs Heather Neill	Para-legal Assistant to Mr George Brangam Brangam Bagnall & Co	AS	260
Dr Geoff Nesbitt	Consultant Anaesthesia & Critical Care & Clinical Director Altnagelvin	RF	035
		Dept	
Professor Brian Neville	Consultant Paediatric Neurologist and Professor of Childhood Epilepsy	CR	
S/N Ann Noble	Staff Nurse Altnagelvin	RF	049
Mr John Orr	Consultant Paediatric Surgeon	RF	
Dr Mary O'Connor	Consultant Paediatric Nephrologist RBHSC	AS	014

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Dr Dara O'Donoghue	Clinical Fellow in Paediatric Intensive Care RBHSC	RF	040
	SHO / Acting Registrar in Paediatrics RBHSC	LC	284
Dr Jarlath O'Donohoe	Consultant Paediatrician Erne Hospital	LC	278
Dr Denis O'Hara (Deceased)	Consultant Paediatric Pathologist RGHT	AS	
		LC	
Dr Bernadette O'Hare	Specialist Paediatric Registrar RBHSC	CR	135
Mrs Eileen O'Rourke	Clinical Services Manager CAH	CM	370
Mr KJS Panesar	Consultant Surgeon	RF	
S/N Daphne Patterson	Staff Nurse Altnagelvin	RF	048
S/N Gillian Popplestone	Staff Nurse RBSHC	AS	010
Dr Janil Puthucheary	SHO RBHSC	CR	134
Ms Helen Quigley	WHSSC	RF	
Dr Murray Quinn	Consultant Paediatrician Altnagelvin	LC	279
Dr Catherine Quinn	SHO CAH	CM	356
Ms Sally Ramsay	Independent Children's Nursing Advisor	CR	
Mr Stephen Ramsden	Chief Executive Officer	AS	
Professor Dr Dietz Rating	Consultant in Paediatric Neurology	AS	
Mr Keith Rigg	Consultant Transplant Surgeon	AS	
Mr Alan Roberts	Claire's father	CR	253
		Dept	
		Current	

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Mrs Jennifer Roberts	Claire's mother	CR	257
		Dept	
Professor Nichola Rooney	Consultant Clinical Psychologist RBHSC	CR	177
Mrs Avril Roulston	Staff Nurse Altnagelvin	RF	052
Dr Andrew Sands	Paediatric Registrar RBHSC	CR	137
Professor Maurice Savage	Consultant Paediatric Nephrologist RBHSC Professor of Paediatrics QUB	AS	002
Dr Deirdre Savage	GP Castlereagh Medical Centre	CR	160
Professor Gabriel Scally	Professor of Public Health and Planning, Director of WHO Collaborating Centre for Healthy Urban Environments	LC	
		RF	
		Dept	
Dr Robert Scott-Jupp	Consultant Paediatrician	CR	
		RF	
		CM	
Mrs Joanne Sharratt (nee Clingham)	Paediatric Renal Nurse Co-ordinator RBHSC	AS	102
Mr Paul Simpson	Deputy Secretary, DHSSPS Former Chief Executive, HSS Executive	Dept	084
Mrs Debra Slavin	Adam's mother	AS	001
		Dept	
		Current	
Dr Michael Smith	Consultant Paediatrician CAH	CM	357
Dr Waney Squier	Consultant Neuropathologist and Clinical Lecturer	AS	
		CR	
Dr Heather Steen	Consultant Paediatrician RBHSC	CR	143
Mr Ivan Sterling	Clinical Director CAH	CM	

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Dr Anthony Stevens	Medical Director BHSCT	CR	
		Dept	
		Current	
Dr Roger Stevenson	Paediatric SHO RBHSC	CR	139
Dr Caroline Stewart	Specialist Registrar RBHSC	LC	282
Dr Moira Stewart	Consultant Paediatrician RCPCH	LC	298
Dr Neil Stewart	SHO RBHSC	CR	141
Dr Edward Sumner	Consultant Paediatric Anaesthetist	AS	
		LC	
		RF	
		CM	
		Dept	
Professor Charles Swainson	Consultant Renal Physician and Medical Director (retired)	RF	
		Dept	
Ms Bridget Swift	Staff Nurse Erne Hospital	LC	311
Dr Robert Taylor	Consultant Paediatric Anaesthetist RBHSC	AS	008
		CR	157
		LC	280
		RF	330
		CM	
		Dept	
Dr Anne Marie Telford	Director of Public Health SHSSB	CM	
Mr John Templeton	Chief Executive Officer CAHGT	CM	371
Dr Bernie Trainor	SHO Paediatrics Altnagelvin	RF	030
Ms Etain Traynor	Paediatric Ward Sister Erne Hospital	LC	310

PERSONS REFERRED TO IN THE REPORT

Name	Position	Chapter	Witness Statement Number
Dr Andrea Volprecht	Paediatric SHO RBHSC	CR	136
Mr Peter Walby	Associate Medical Director Litigation Management Office RGHT	CR	176
		RF	341
Mr Peter Walsh	Chief Executive AvMA	Current	
Dr Declan Warde	Consultant Paediatric Anaesthetist	RF	
Dr David Webb	Consultant Paediatric Neurologist RBHSC	AS	107
		CR	138
S/N Barbara Wilkinson	Staff Nurse CAH	CM	377
Dr Marian Williams	SHO CAH	CM	358
Mr John James Wilson	Chief Medical Technical Officer RGHT	AS	110
Mrs Anne Witherow	Clinical Effectiveness Co-ordinator Altnagelvin	RF	329
Professor Ian Young	Professor of Medicine, QUB Consultant in Clinical Biochemistry & Director of Research & Development BHSCT	CR	178
Mr Muhammad Zafar	SHO Altnagelvin	RF	025
Mr Waldemar Zawislak	Surgical Registrar Altnagelvin	RF	314

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Dr John Alexander	WS-120-1
	WS-120-2
	WS-120-3
Dr Gareth Allen	WS-033-1
	WS-033-2
Mr John Allen	WS-067-1
Mrs Karen A Allen	WS-213-1
Miss Nicola Allen	WS-221-1
Dr Kuki Anand	WS-347-1
Dr Trevor Anderson	WS-291-1
	WS-291-2
Dr Alison Armour	WS-012-1
	WS-012-2
	WS-012-3
	WS-012-4
Dr Elma Ashenhurst	WS-333-1
Dr Thomas Auterson	WS-274-1
	WS-274-2
Dr Brigitte Bartholome	WS-142-1
	WS-142-2
Mr Evan Bates	WS-266-1
Mrs Susan Beattie	WS-118-1
Dr Amit Bedi	WS-192-1
Dr Barbara Ann Bell	WS-364-1
Professor Peter Jeremy Berry	WS-018-1
	WS-018-2

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Dr Naresh Kumar Bhalla	WS-034-1
	WS-034-2
Dr Sanapla Bhanumurthy	WS-119-1
Dr Chitra Bharucha	WS-229-1
Dr Hoshang Bharucha	WS-249-1
Dr Meenakshi Bhat	WS-116-1
Mr Jonathon Bill	WS-068-1
Ms Tracy Blue	WS-161-1
Dr Andrew Boon	WS-321-1
	WS-321-2
Mr Victor Boston	WS-011-1
	WS-011-2
	WS-011-3
Ms Eleanor Donaghy (nee Boyce)	WS-100-1
	WS-100-2
	WS-100-3
	WS-100-4
	WS-100-5
Ms Karen Boyd (nee Taylor)	WS-150-1
Mr Martin Bradley	WS-307-1
Dr Sarah Branch	WS-179-1
Mrs Irene Brennan (nee Dickey)	WS-353-1
Mr Stephen Brown	WS-007-1
	WS-007-2
	WS-007-3
	WS-007-4
	WS-007-5

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mrs Therese Brown	WS-322-1
Mr Andrew Browne	WS-072-1
S/N Fiona Bryce	WS-054-1
	WS-054-2
Dr Suzi Budd	WS-352-1
S/N Ruth Bullas	WS-376-1
Dr Helen Bunting	WS-197-1
Mrs Stella Burnside	WS-046-1
	WS-046-2
Dr Mary Butler	WS-026-1
	WS-026-2
Dr Henrietta Campbell	WS-075-1
	WS-075-2
	WS-075-3
Dr Rosalie Campbell	WS-117-1
	WS-117-2
Dr Ian Carson	WS-077-1
	WS-077-2
	WS-077-3
	WS-077-4
	WS-270-1
	WS-306-1
	WS-306-2
	WS-331-1
Mr Gerry Carson	WS-267-1
Dr Jacqueline Cartmill	WS-003-1
	WS-003-2
	WS-003-3

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mrs Helen Chambers	WS-300-1
Dr Anna Chillingworth	WS-365-1
Dr Anthony Chisakuta	WS-283-1
	WS-283-2
	WS-283-3
Mrs K M Chivers	WS-211-1
Dr R C N Clarke	WS-155-1
Mr Gordon Clarke	WS-268-1
Mr John Cole	WS-086-1
Ms Angela Colhoun	WS-303-1
Mr Gerry Collins	WS-069-1
Dr Fiona Connolly	WS-196-1
Mrs Patricia Conway	WS-060-1
	WS-060-2
	WS-060-3
Miss Mary A Coogan	WS-206-1
Dr Peter Crean	WS-038-1
	WS-038-2
	WS-038-3
	WS-130-1
	WS-168-1
	WS-168-2
	WS-168-3
	WS-292-1
	WS-292-2
Mrs Lorna Cullen	WS-374-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Ms Dympna Curley	WS-299-1
Dr Michael Curran	WS-028-1
	WS-028-2
Dr Mike Curtis	WS-275-1
	WS-275-2
Dr Paul Darragh	WS-076-1
	WS-076-2
Dr Aparna Date	WS-031-1
	WS-031-2
Dr Jonathan Davis	WS-366-1
Mr Peter Deazley	WS-074-1
Mrs Maureen Dennison	WS-276-1
Dr Joseph Devlin	WS-027-1
	WS-027-2
Mrs Deborah Dines	WS-112-1
Mr Kevin Doherty	WS-313-1
Mrs Ann Doherty	WS-325-1
Mrs Kay Doherty	WS-326-1
Mrs Margaret Doherty	WS-336-1
S/N Margaret Dooher	WS-344-1
Mrs Rosaleen Dowdall	WS-215-1
Mrs Katherine Dowdie (nee Knaggs)	WS-103-1
	WS-103-2
Miss Irene Duddy	WS-323-1
Miss Elizabeth Duffin	WS-245-1
	WS-265-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mr William Dukelow	WS-372-1
Mrs Clare L Dunn	WS-218-1
Mrs Marie Dunne	WS-332-1
Dr Leslie Dyer	WS-235-1
Mr Alan Elliott	WS-348-1
Mr Eugene Fee	WS-287-1
	WS-287-2
Mrs Marie Ferguson	WS-020-1
Mr Raymond Ferguson	WS-021-1
Miss Bridie Foy	WS-367-1
	WS-367-2
Dr Thomas Frawley	WS-308-1
Dr Raymond Fulton	WS-043-1
	WS-043-2
	WS-043-3
Mr David Galloway	WS-066-1
Dr Caroline Gannon	WS-281-1
	WS-281-2
	WS-281-3
Dr Philip Gardiner	WS-328-1
Dr Joe Gaston	WS-013-1
	WS-013-2
Dr Colin Gaston	WS-166-1
Mrs E Gawley	WS-216-1
S/N Sandra Gilchrist	WS-053-1
	WS-053-2

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mr Robert Gilliland	WS-044-1
	WS-044-2
	WS-044-3
	WS-044-4
Dr Helen Gilliland	WS-190-1
Mrs J M Gilmour	WS-208-1
Mr Clive Gowdy	WS-062-1
	WS-062-2
Mr Brian Grzymek	WS-361-1
Dr Vijay Kumar Gund	WS-023-1
	WS-023-2
Ms Cathy Hall	WS-104-1
	WS-104-2
Mrs L Hall	WS-220-1
Mr Andrew Hamilton	WS-070-1
Dr Donncha Hanrahan	WS-039-1
	WS-039-2
	WS-289-1
	WS-289-2
Mrs Margaret Harrison	WS-318-1
Dr Brian Herron	WS-041-1
	WS-224-1
	WS-224-2
	WS-224-3
	WS-224-4
Dr Marie Hickey	WS-200-1
Dr Elaine Hicks	WS-244-1
	WS-264-1
	WS-338-1
	WS-340-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mr Don Hill	WS-063-1
Professor Dame Judith Hill	WS-082-1
	WS-082-2
Mr David Hill	WS-181-1
Dr Martina Hogan	WS-368-1
Mr John Hood	WS-246-1
Mrs C A Huddleson	WS-209-1
Dr Joanne Hughes	WS-140-1
Dr Caroline Humphrey	WS-354-1
Mrs M B Humphries	WS-207-1
Miss Maria B Hunt	WS-219-1
Mr John Hunter	WS-349-1
Dr Joan Hutchinson	WS-327-1
Ms Elizabeth Jackson	WS-144-1
Ms Margaret Jackson	WS-262-1
	WS-272-1
Mrs Karin Jackson	WS-297-1
Dr Claire Jamison	WS-024-1
	WS-024-2
Dr John Jenkins	WS-059-1
	WS-059-2
Dr Jeremy Johnston	WS-029-1
	WS-029-2
Professor Patrick Johnston (deceased)	WS-256-1
Ms Sara Jordan (nee Field)	WS-148-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mr Patrick Keane	WS-006-1
	WS-006-2
	WS-006-3
Dr Michaeline Kelly	WS-201-1
Dr Barry Kelly	WS-254-1
Dr James Kelly	WS-290-1
	WS-290-2
Dr Peter Kennedy	WS-167-1
Dr Catherine Kerr	WS-193-1
Dr Bhuvaraha Krishnamurthy	WS-204-1
Dr Manisha Kumar	WS-205-1
Dr Jayne Larkin	WS-097-1
Mr Francis Lavery	WS-351-1
Mr John Leckey	WS-090-1
	WS-091-1
	WS-091-2
	WS-277-1
	WS-277-2
Ms Kate Linskey	WS-248-1
Miss Kathryn Little	WS-345-1
Dr Paul Loan	WS-360-1
Miss Audrey Lockhead	WS-226-1
Dr Clodagh Loughery	WS-045-1
Dr Darrell Lowry	WS-350-1
	WS-350-2
Dr Stephen Luney	WS-186-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Ms Elizabeth Lynch	WS-055-1
	WS-055-2
Ms Denise Lynd	WS-296-1
Dr Jeremy David Lyons	WS-188-1
Mr A & Mrs M Magill	WS-259-1
Dr Peter Maguire	WS-202-1
Dr Ragai Reda Makar	WS-022-1
	WS-022-2
	WS-022-3
Mrs Angela M Malcolmson	WS-214-1
Dr Amer Ullah Malik	WS-285-1
Dr Margaret Mark	WS-081-1
Mr Paul Martin	WS-085-1
Mrs Dorothy Martin	WS-183-1
Dr Denis Martin	WS-335-1
Ms Margaret Mathewson	WS-101-1
	WS-101-2
	WS-101-3
	WS-101-4
Ms Barbara Maxwell	WS-146-1
Dr Jarlath McAloon	WS-363-1
Dr John McAteer	WS-203-1
S/N Michaela McAuley (nee Rice)	WS-051-1
	WS-051-2
Dr Michael McBride	WS-269-1
	WS-269-2
Dr Michael McBrien	WS-194-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mr William McCallion	WS-232-1
	WS-232-2
Mr Noel McCann	WS-065-1
Ms Lorraine McCann	WS-151-1
Dr Miriam McCarthy	WS-080-1
	WS-080-2
Dr William McCaughey	WS-369-1
Mrs Elisabeth V McClure	WS-212-1
Dr B McConnell	WS-047-1
Dr William McConnell	WS-286-1
	WS-286-2
Dr Brian McCord	WS-032-1
	WS-032-2
	WS-032-3
	WS-032-4
Mrs Teresa McCullagh	WS-319-1
S/N Marian McGrath	WS-050-1
	WS-050-2
Mr John McGrath	WS-362-1
Dr James Patrick McKaigue	WS-129-1
	WS-156-1
	WS-156-2
	WS-156-3
	WS-302-1
	WS-302-2
	WS-302-3

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mr William McKee	WS-061-1
	WS-061-2
	WS-271-1
Mrs Mary McKenna	WS-346-1
Dr Stephen McKinstry	WS-037-1
Dr Charles McKinstry	WS-111-1
	WS-111-2
	WS-111-3
	WS-111-4
Dr Jean McKnight	WS-114-1
Mr Brian Francis McLaughlin	WS-109-1
	WS-109-2
Mrs Frances J McMahon	WS-210-1
Mrs Deirdre McMullan	WS-182-1
Dr David McNamee	WS-189-1
Ms Geraldine McRandal	WS-145-1
Dr Thomas Melaugh	WS-334-1
Sister Elizabeth Millar	WS-056-1
	WS-056-2
	WS-056-3
Mrs Esther Millar	WS-312-1
Mr Stanley Millar	WS-093-1
Mr Hugh Mills	WS-293-1
	WS-293-2
	WS-293-3
Dr Meenakshi Mirakhur	WS-223-1
	WS-247-1
	WS-247-2

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Dr David Mitchell	WS-230-1
Dr Glenda Mock	WS-078-1
Mr John Mone	WS-375-1
Ms Barbara Money Penny	WS-304-1
Dr Terence Montague	WS-009-1
	WS-009-2
	WS-009-3
Dr Cyril Morrison	WS-036-1
Dr Norman Morrow	WS-079-1
	WS-079-2
Mr Kevin Mulhern	WS-089-1
Dr Connor Mulholland	WS-243-1
	WS-243-2
Dr Andrew Murdock	WS-355-1
Dr George Murnaghan	WS-015-1
	WS-015-2
	WS-273-1
Mrs Catherine Murphy	WS-005-1
	WS-005-2
	WS-005-3
	WS-005-4
	WS-005-5
Ms Rachel Murphy	WS-152-1
Mrs Heather Neill	WS-260-1
Dr Geoff Nesbitt	WS-035-1
	WS-035-2
	WS-035-3
	WS-035-4
Mr G S Nesbitt	WS-252-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
S/N Ann Noble	WS-049-1
	WS-049-2
	WS-049-3
	WS-049-4
Dr Mary O'Connor	WS-014-1
	WS-014-2
	WS-014-3
	WS-014-4
Dr Dara O'Donoghue	WS-040-1
	WS-040-2
	WS-284-1
	WS-284-2
Dr Jarlath O'Donohoe	WS-278-1
	WS-278-2
Dr John O'Hanlon	WS-187-1
Dr Bernadette O'Hare	WS-135-1
	WS-135-2
Dr Sean O'Hare	WS-295-1
Dr John O'Hare	WS-343-1
Dr D O'Neill	WS-004-1
	WS-004-2
	WS-004-3
Dr Hugh O'Neill	WS-191-1
Mrs Eileen O'Rourke	WS-370-1
Mr John Orr	WS-320-1
Dr Michael Parker	WS-324-1
S/N Daphne Patterson	WS-048-1
	WS-048-2
Dr Lionel Paxton	WS-185-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Ms Angela Pollock	WS-225-1
	WS-225-2
S/N Gillian Popplestone	WS-010-1
	WS-010-2
	WS-010-3
Dr Tracey Power	WS-064-1
Dr Janil Puthucheary	WS-134-1
Dr Murray Quinn	WS-279-1
	WS-279-2
Dr Catherine Quinn	WS-356-1
Mr Francis Rice	WS-083-1
Ms Bridget Rippley (nee O’Rawe)	WS-309-1
Professor Risdon	WS-098-1
Mr Alan Roberts	WS-253-1
	WS-253-2
Mrs Jennifer Roberts	WS-257-1
	WS-257-2
Mr W & Mrs E Roberts	WS-258-1
Miss Y Rodgers (nee Bradley)	WS-222-1
Professor Nichola Rooney	WS-177-1
Ms Sandra Ross	WS-153-1
Mrs Avril Roulston	WS-052-1
	WS-052-2
Mr Tommy Ryan	WS-125-1
	WS-125-2
	WS-125-3
Dr Andrew Sands	WS-137-1
	WS-137-2
	WS-137-3

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Professor Maurice Savage	WS-002-1
	WS-002-2
	WS-002-3
	WS-002-4
	WS-002-5
Dr Deirdre Savage	WS-160-1
Dr Abdusamea Shabani	WS-231-1
Mr Colm Shannon	WS-088-1
Dr Peter Sharpe	WS-359-1
Mrs Joanne Sharratt (nee Clingham)	WS-102-1
	WS-102-2
Mr Peter Shaw	WS-106-1
	WS-106-2
	WS-106-3
Dr Michael Shields	WS-301-1
Mr Paul Simpson	WS-084-1
	WS-084-2
Mrs Debra Slavin	WS-001-1
	WS-001-2
	WS-001-3
Dr Michael Smith	WS-357-1
	WS-357-2
Mrs F Smyth	WS-217-1
Ms Suzanne Spence	WS-159-1
	WS-159-2
Dr Michael Stafford	WS-234-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Dr Heather Steen	WS-143-1
	WS-143-2
	WS-143-3
	WS-143-4
Dr Roger Stevenson	WS-139-1
	WS-139-2
	WS-139-3
Dr Caroline Stewart	WS-282-1
	WS-282-2
Dr Moria Stewart	WS-298-1
	WS-298-2
	WS-298-3
Dr Neil Stewart	WS-141-1
	WS-141-2
Mr R J Stewart	WS-228-1
Mr Dean Sullivan	WS-071-1
Dr Edward Sumner	WS-019-1
	WS-057-1
Dr Louise Sweeney	WS-242-1
Ms Bridget Swift	WS-311-1
Dr Robert Taylor	WS-008-1
	WS-008-2
	WS-008-3
	WS-008-4
	WS-008-5
	WS-008-6
	WS-008-7
	WS-008-8
	WS-157-1
	WS-157-2
	WS-280-1
	WS-280-2
	WS-330-1
Mr John Templeton	WS-371-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Mrs Glenda Thompson	WS-236-1
Dr Bernie Trainor	WS-030-1
	WS-030-2
Dr Etain Traynor	WS-310-1
	WS-310-2
Dr John Trinder	WS-199-1
Dr Andrea Volprecht	WS-136-1
Mr Peter Walby	WS-176-1
	WS-176-2
	WS-176-3
	WS-176-4
	WS-341-1
	WS-341-2
	WS-341-3
Dr Declan Warde	WS-339-1
Dr David Webb	WS-107-1
	WS-107-2
	WS-138-1
	WS-138-2
	WS-138-3
	WS-138-4
	WS-138-5
Dr David Wheeler	WS-180-1
Ms Margaret Wilkin	WS-154-1
S/N Barbara Wilkinson	WS-377-1
Mr Noel Williams	WS-251-1
	WS-251-2
Mr Danny Williams	WS-294-1

PERSONS WHO PROVIDED WITNESS STATEMENTS

Name	Witness Statement Number
Dr Marian Williams	WS-358-1
Mrs Doreen Wilson	WS-087-1
Mr John James Wilson	WS-110-1
	WS-110-2
Mrs Anne Witherow	WS-329-1
Dr Donald Wright	WS-198-1
Professor Ian Young	WS-178-1
	WS-178-2
	WS-178-3
	WS-178-4
	WS-178-5
	WS-178-6
	WS-342-1
	WS-342-2
Mr Muhammad H Zafar	WS-025-1
	WS-025-2
Mr Waldermar Zawislak	WS-314-1

WITNESSES WHO GAVE ORAL EVIDENCE

Name	Oral Hearing Date	Case evidence heard in
Dr Trevor Anderson	11-Jun-2013	LC
Dr Alison Armour	13-Jun-2012	AS
Dr Jeffery Aronson	08-Nov-2012	CR
Dr Thomas Auterson	31-May-2013	LC
Dr Brigitte Bartholome	18-Oct-2012	CR
Dr Kumar Naresh Bhalla	14-Mar-2013	RF
Mr Michael Bloomfield	14-Nov-2013	Current
Mrs Eleanor Boyce (nee Donaghy)	27-Apr-2012	AS
Ms Karen Boyd (nee Taylor)	29-Oct-2012	CR
Mr Martin Bradley	18-Jun-2013	LC
Mr Stephen Brown	01-May-2012	AS
	20-Jun-2012	
	07-Sep-2012	
Ms Therese Brown	02-Sep-2013	RF
Ms Fiona Bryce	04-Mar-2013	RF
	05-Mar-2013	
Mrs Stella Burnside	17-Sep-2013	RF
Dr Mary Butler	11-Mar-2013	RF
Dr Henrietta Campbell	07-Nov-2013	Dept
Dr Rosalie Campbell	17-May-2012	AS
Dr Ian Carson	15-Jan-2013	AS
	16-Jan-2013	CR
	11-Jun-2013	LC
	26-Jun-2013	
	30-Aug-2013	RF
	13-Nov-2013	Current
Dr Jacqueline Cartmill	18-May-2012	AS
Professor Keith Cartwright	07-Nov-2012	CR
Dr Anthony Chisakuta	29-May-2013	LC
Mr John Compton	14-Nov-2013	Current
Mrs Patricia Conway	30-Apr-2012	AS

WITNESSES WHO GAVE ORAL EVIDENCE

Name	Oral Hearing Date	Case evidence heard in
Dr Malcolm Coulthard	08-May-2012	AS
	09-May-2012	AS
Dr Peter Crean	20-Jun-2012	AS
	04-Jun-2013	LC
	11-Sep-2013	RF
Ms Brenda Creaney	12-Nov-2013	Current
Dr Michael Curran	07-Mar-2013	RF
Dr Mike Curtis	25-Jun-2013	LC
Dr Paul Darragh	30-Oct-2013	Dept
Mrs Maureen Dennison	24-Jun-2013	LC
Dr Joe Devlin	06-Mar-2013	RF
Ms Ann Doherty	09-Sep-2013	RF
Mrs Kay Doherty	18-Sep-2013	RF
Mr Kevin Doherty	24-Jun-2013	LC
Mrs Margaret Doherty	09-Sep-2013	RF
Mr Colm Donaghy	12-Nov-2013	Current
Ms Irene Duddy	29-Aug-2013	RF
Ms Elizabeth Duffin	26-Jun-2012	AS
	10-Dec-2012	CR
Mr Alan Elliott	05-Nov-2013	Dept
Mr Eugene Fee	13-Jun-2013	LC
	14-Jun-2013	
Mr & Mrs Ferguson	26-Mar-2013	RF
Professor John Forsythe & Mr Keith Rigg	03-May-2012	AS
	04-May-2012	
Dr George Foster	21-Mar-2013	RF
Dr Thomas Frawley	20-Jun-2013	LC
Dr Raymond Fulton	04-Sep-2013	RF
Dr Caroline Gannon	02-Jul-2013	LC
Dr Joseph Gaston	18-Jun-2012	AS
	19-Jun-2012	
	11-Sep-2012	
Ms Sandra Gilchrist	11-Mar-2013	RF

WITNESSES WHO GAVE ORAL EVIDENCE

Name	Oral Hearing Date	Case evidence heard in
Mr Robert Gilliland	14-Mar-2013	RF
	28-Aug-2013	
Mr Clive Gowdy	06-Nov-2013	Dept
Professor Peter Gross	09-May-2012	AS
Dr Kumar Vijay Gund	05-Feb-2013	RF
Dr Donncha Hanrahan	05-Jun-2013	LC
Professor Brian Harding	05-Dec-2012	CR
Dr Carolyn Harper	14-Nov-2013	Current
Dr Simon Haynes	02-May-2012	AS
	03-May-2012	
	22-Mar-2013	RF
Professor Mary Hanratty	20-Mar-2013	RF
Dr Brian Herron	29-Nov-2012	CR
Dr Elaine Hicks	11-Dec-2012	CR
	07-Jun-2013	LC
Mr David Hill	15-May-2012	AS
Professor Dame Judith Hill	04-Nov-2013	Dept
Mrs Mary Hinds	14-Nov-2013	Current
Dr Joanne Hughes	05-Nov-2012	CR
Ms Maeve Hully	11-Nov-2013	Current
Mr John Hunter	04-Nov-2013	Dept
Dr Paul Jackson	12-Nov-2013	Current
Ms Margaret Jackson	06-Dec-2012	CR
Dr Claire Jamison	07-Feb-2013	RF
Dr John Jenkins	10-Sep-2013	RF
Dr Jeremy Johnston	07-Mar-2013	RF
Ms Sara Jordan (nee Field)	29-Oct-2012	CR
Dr Barry Kelly	05-Feb-2013	RF
Dr James Kelly	12-Jun-2013	LC
	13-Jun-2013	
Professor Fenella Kirkham & Professor Dr Dietz Rating	14-Jan-2013	AS
	15-Jan-2013	
Mr Geoff Koffman	16-May-2012	AS

WITNESSES WHO GAVE ORAL EVIDENCE

Name	Oral Hearing Date	Case evidence heard in
Mr Patrick Keane	23-Apr-2012	AS
	24-Apr-2012	
	26-Apr-2012	
	07-Sep-2012	
	10-Sep-2012	
Mr John Leckey	25-Jun-2013	LC
Ms Kate Linskey	30-Oct-2012	CR
Professor Sebastian Lucas	18-Dec-2012	CR
Dr Roderick MacFaul	13-Nov-2012	CR
	14-Nov-2012	
	19-Dec-2012	
	27-Jun-2013	LC
Dr Ragai Reda Makar	06-Feb-2013	RF
	13-Mar-2013	
Mrs Margaret Matthewson	30-Apr-2012	AS
	11-Sep-2012	
Mr Hugh Mills	17-Jun-2013	LC
Ms Elizabeth Millar	28-Feb-2013	RF
	01-Mar-2013	
	28-Aug-2013	
Ms Meenakshi Mirakhur	12-Jun-2012	AS
	30-Nov-2012	CR
Dr Terence Montague	11-May-2012	AS
Dr Norman Morrow	05-Nov-2013	Dept
Dr Connor Mulholland	21-Jun-2012	AS
Professor Aidan Mullan	17-Jan-2013	AS
Dr George Murnaghan	25-Jun-2012	AS
	11-Sep-2012	
	12-Dec-2012	CR
Ms Catherine Murphy	27-Apr-2012	AS
Ms Barbara Maxwell	30-Oct-2012	CR
Professor Charlotte McArdle	15-Nov-2013	Current
Ms Michaela McAuley (nee Rice)	05-Mar-2013	RF

WITNESSES WHO GAVE ORAL EVIDENCE

Name	Oral Hearing Date	Case evidence heard in
Dr Michael McBride	17-Dec-2012	CR
	15-Nov-2013	Current
Mr William McCallion	11-May-2012	AS
Ms Lorraine McCann	30-Oct-2012	CR
Dr Miriam McCarthy	31-Oct-2013	Dept
Dr William McConnell	19-Jun-2013	LC
Dr Brian McCord	13-Mar-2013	RF
	10-Sep-2013	
Mr Andrew McCormick	15-Nov-2013	Current
Ms Marian McGrath	26-Feb-2013	RF
Dr James Patrick McKaigue	12-Dec-2012	CR
	30-May-2013	LC
Mr William McKee	17-Jan-2013	AS & CR
Ms Geraldine McRandal	29-Oct-2012	CR
Mrs Heather Neill	06-Sep-2012	AS
Dr Geoff Nesbitt	03-Sep-2013	RF
Professor Brian Neville	01-Nov-2012	CR
	05-Nov-2012	
	04-Dec-2012	
Ms Ann Noble	26-Feb-2013	RF
	27-Feb-2013	
	27-Aug-2013	
Dr Mary O'Connor	25-Apr-2012	AS
	20-Jun-2012	
Dr Dara O'Donoghue	31-May-2013	LC
Dr Jarlath O'Donohoe	06-Jun-2013	LC
Dr Bernadette O'Hare	18-Oct-2012	CR
Dr Donagh O'Neill	15-May-2012	AS
Mr John Orr	21-Mar-2013	RF
Ms Daphne Patterson	04-Mar-2013	RF
Ms Angela Pollock	30-Oct-2012	CR
Mrs Gillian Popplestone	30-Apr-2012	AS
	11-Sep-2012	

WITNESSES WHO GAVE ORAL EVIDENCE

Name	Oral Hearing Date	Case evidence heard in
Dr Murray Quinn	14-Jun-2013	LC
Ms Sally Ramsay	08-Nov-2012	CR
	19-Mar-2013	RF
Professor Dr Dietz Rating & Professor Fenella Kirkham	14-Jan-2013	AS
	15-Jan-2013	
Professor Risdon	03-May-2012	AS
Mr Keith Rigg & Professor John Forsythe	03-May-2012	AS
	04-May-2012	
Mr & Mrs Roberts	31-Oct-2012	CR
	01-Nov-2012	
	12-Dec-2012	
Professor Nichola Rooney	13-Dec-2012	CR
Mrs Avril Roulston	06-Mar-2013	RF
Dr Andrew Sands	19-Oct-2012	CR
	18-Dec-2012	
Professor Maurice Savage	17-Apr-2012	AS
	18-Apr-2012	
	22-Jun-2012	
	10-Sep-2012	
Professor Gabriel Scally	01-Jul-2013	LC
Dr Robert Scott-Jupp	12-Nov-2012	CR
	04-Dec-2012	
	20-Mar-2013	RF
Mrs Joanne Sharratt (nee Clingham)	27-Apr-2012	AS
Mr Peter Shaw	17-May-2012	AS
Mr Paul Simpson	08-Nov-2013	Dept
Dr Mike Smith	24-Oct-2013	CM
Dr Waney Squier	12-Jun-2012	AS
	05-Dec-2012	CR

WITNESSES WHO GAVE ORAL EVIDENCE

Name	Oral Hearing Date	Case evidence heard in
Dr Heather Steen	15-Oct-2012	CR
	16-Oct-2012	
	17-Oct-2012	
	17-Dec-2012	
	18-Dec-2012	
Dr Anthony Stevens	12-Nov-2013	Current
Dr Roger Stevenson	15-Oct-2012	CR
	16-Oct-2012	
Dr Caroline Stewart	29-May-2013	LC
Dr Moira Stewart	18-Jun-2013	LC
Dr Neil Stewart	06-Nov-2012	CR
Professor Charles Swainson	19-Sep-2013	RF
Dr Robert Taylor	19-Apr-2012	AS
	20-Apr-2012	
	21-Jun-2012	
	06-Sep-2012	
	11-Dec-2012	CR
	04-Jun-2013	LC
	18-Sep-2013	RF
Dr Bernie Trainor	12-Mar-2013	RF
Dr Etain Traynor	07-Jun-2013	LC
Dr Andrea Volprecht	01-Nov-2012	CR
Mr Peter Walby	11-Dec-2012	CR
	12-Dec-2012	
Mr Peter Walsh	11-Nov-2013	Current
Dr David Webb	30-Nov-2012	AS
	03-Dec-2012	CR
Mr Noel Williams	22-Jun-2012	AS
Professor Ian Young	10-Dec-2012	CR
Dr Muhammad H Zafar	01-Mar-2013	RF
	12-Mar-2013	
Mr Waldermar Zawislak	05-Feb-2013	RF

PERSONS AND ORGANISATIONS GRANTED INTERESTED PARTY STATUS

Adam Strain
Dr Alison Armour
BHSCT
Mr Stephen Brown
Dr Ian Carson
Dr Joseph Gaston
Mr Patrick Keane
Dr Terence Montague
Ms Catherine Murphy
Mr George Murnaghan
Mr William McKee
Dr Mary O'Connor
Professor Maurice Savage
Ms Debra Slavin
Dr Robert Taylor

Claire Roberts
Dr Brigitte Bartholome
BHSCT
Dr Ian Carson
Ms Elizabeth Duffin
Ms Elaine Hicks

PERSONS AND ORGANISATIONS GRANTED INTERESTED PARTY STATUS

Claire Roberts
Ms Margaret Jackson
Ms Sara Jordan
Mr George Murnaghan
Dr Michael McBride
Ms Lorraine McCann
Dr James McKaigue
Mr William McKee
Ms Geraldine McRandal
Dr Bernie O'Hare
Ms Angela Pollock
Mr & Mrs Alan Roberts
Professor Nichola Rooney
Dr Andrew Sands
Dr Heather Steen
Dr Roger Stevenson
Dr Robert Taylor
Mr Peter Walby
Dr David Webb
Professor Ian Young

PERSONS AND ORGANISATIONS GRANTED INTERESTED PARTY STATUS

Events Following Lucy Crawford's Death
Dr Trevor Anderson
Dr Thomas Auterson
BHSCT
Mr Martin Bradley
Dr Ian Carson
Dr Anthony Chisakuta
Dr Peter Crean
Dr Mike Curtis
Dr Thomas Frawley
Dr Donncha Hanrahan
HSCB
Dr James Kelly
Mr John Leckey
Dr James McKaigue
Dr Dara O'Donoghue
Dr Jarlath O'Donohoe
Dr Murray Quinn
Dr Caroline Stewart
Dr Moira Stewart
Dr Robert Taylor
Ms Etain Traynor
WHSCB

PERSONS AND ORGANISATIONS GRANTED INTERESTED PARTY STATUS

Events Following Lucy Crawford's Death
WHSCCT

Raychel Ferguson
Dr Naresh K Bhalla
BHSCT
Ms Therese Brown
Ms Fiona Bryce
Ms Stella Burnside
Dr Mary Butler
Dr Ian Carson
Dr Peter Crean
Dr Michael Curran
Dr Joseph Devlin
Ms Anne Doherty
Ms Margaret Doherty
Ms Irene Duddy
Mr & Mrs Raymond Ferguson
Dr Raymond Fulton
Ms Sandra Gilchrist
Dr Robert Gilliland
Dr Claire Jamison

PERSONS AND ORGANISATIONS GRANTED INTERESTED PARTY STATUS

Raychel Ferguson
Dr John Jenkins
Dr Jeremy Johnston
Dr Barry Kelly
Ms Elizabeth Lynch
Ms Elizabeth Millar
Ms Michaela McAuley
Dr Brian McCord
Ms Marian McGrath
Dr Geoff Nesbitt
Ms Ann Noble
Ms Daphne Patterson
Ms Avril Roulston
Dr Robert Taylor
Dr Bernie Trainor
WH SCT

Conor Mitchell
Ms Irene Brennan
Dr Suzie Budd
Ms Ruth Bullas
Ms Bridie Foy

PERSONS AND ORGANISATIONS GRANTED INTERESTED PARTY STATUS

Conor Mitchell
Dr Caroline Humphrey
Dr Jeff Lee
Ms Joanna Mitchell
Mr John Mone
Dr Andrew Murdock
Dr William McCaughey
Mrs Eileen O'Rourke
Dr Caroline Quinn
Mr Ivan Sterling
Mr John Templeton
Mrs Barbara Wilkinson

DHSSPS
Dr Henrietta Campbell
Dr Ian Carson
DHSSPS
Mr Clive Gowdy
Mr John Hunter
Dr Norman Morrow
Mr Paul Simpson

SCHEDULES COMPILED BY THE INQUIRY

Adam Strain
Chronology of events (clinical)
List of persons – clinical
Schedule detailing experience of the anaesthetists and surgeons involved
Schedule of anaesthetic nurses and trainee anaesthetists involved
Schedule detailing education and training of doctors involved
Table detailing education & training of nurses involved
Chronology of hospital management and governance
List of persons – governance
Chronology relating to draft recommendations submitted to the Coroner
Summaries of Inquiry expert opinion as to contributory factors to death, given before and after Newcastle-upon-Tyne meeting of experts (March 2012)
Glossary of Medical Terms

Claire Roberts
List of Persons – Clinical
List of Persons – Governance
Chronology of Events - Clinical
Chronology of Hospital Management and Governance
Timeline of Treatment
Schedule of Consultant Responsibility (22 nd - 23 rd October 1996)
Schedule of Medication
Schedule of Fluid and Medication Input
Timeline of Over-lapping Medication

SCHEDULES COMPILED BY THE INQUIRY

Claire Roberts
Schedules of Expert Views on Cause of Death & Cerebral Oedema
Schedule of Glasgow Coma Scale ('GCS') scores (22 nd October 1996)
Schedule of Recorded Sodium Levels (21 st - 23 rd October 1996)
Schedule of Blood Cell Counts (21 st -24 th October 1996)
Cerebral Oedema Flow Chart
Glossary of Medical Terms

Events following Lucy Crawford's death
List of persons involved
Schedule detailing Nomenclature & Grading of Doctors 1948 to 2012
Schedule detailing Nomenclature & Grading of Nurses 1989 to 2012
Chronology of Clinical Events
Consolidated Chronology: Governance and Lessons Learned
Compendium Glossary of Medical Terms

Raychel Ferguson
Chronology of Clinical Events
Timeline of Treatment
Chronology and Clinical Timeline Post-Collapse 9 th June 2001
Table of Clinicians duty times 7 th – 9 th June 2001
Schedule of Observations
List of persons – Clinical

SCHEDULES COMPILED BY THE INQUIRY

Raychel Ferguson
List of persons – Governance
Schedule detailing Nomenclature & Grading of Doctors 1948 to 2012
Schedule detailing Nomenclature & Grading of Nurses 1989 to 2012
Consolidated Chronology: Governance and Lessons Learned
Table of Nurses' training and experience
Table of Trainee Doctors' training and experience
Compendium Glossary of Medical Terms

Conor Mitchell
List of persons – Clinical
Chronology of Clinical Events
Schedule of Guideline Requirements and Conor's Treatment

Department of Health
List of Persons
Departmental Chronology
Structure of The Health Service in Northern Ireland (pre-2007)
HSC Trust Areas in Northern Ireland
Commissioning structure for HSC Services in Northern Ireland
Membership of Chief Medical Officer's Working Group on Hyponatraemia

LEGAL REPRESENTATIVES

Adam Strain		
Interested Party	Solicitor	Counsel
Dr Alison Armour	Carson McDowell	Mr G Boyle
BHSCT	DLS	Mr G McAlinden QC Mr M Lavery BL
Mr Stephen Brown	Kennedys	Ms L Woods
Dr Ian Carson	McKinty Wright	Mr T McGleenan QC
Dr Joseph Gaston	McKinty Wright	Mr T McGleenan QC
Mr Patrick Keane	Carson McDowell	Mr R Millar BL
Dr Terence Montague	Carson McDowell	Mr D Dunlop
Ms Catherine Murphy	Campbell Fitzpatrick	Mr C Campbell BL
Dr Mary O'Connor	Kennedys	Mr D Bradly
Professor Maurice Savage	Kennedys	Mr M Fortune
Ms Debra Slavin	Hunter Associates	Mr S Quinn QC Mr D McBrien BL
Dr Robert Taylor	BTO	Mr M Uberoi

Claire Roberts		
Interested Party	Solicitor	Counsel
Dr Brigitte Bartholome	Carson McDowell	Mr S Green
BHSCT	DLS	Mr G McAlinden QC Mr M Lavery BL
Dr Ian Carson	McKinty Wright	Mr T McGleenan QC
Ms Sara Jordan (nee Field)	Campbell Fitzpatrick	Mr C Campbell BL

LEGAL REPRESENTATIVES

Claire Roberts		
Interested Party	Solicitor	Counsel
Ms Lorraine McCann	Campbell Fitzpatrick	Mr C Campbell BL
Ms Geraldine McRandal	Campbell Fitzpatrick	Mr C Campbell BL
Dr Bernie O'Hare	Tughans	Ms L Woods Mr P Fernando
Ms Angela Pollock	Campbell Fitzpatrick	Mr C Campbell BL
Mr & Mrs Alan Roberts	Ferguson & Co	Mr S Quinn QC Mr M McCrea BL
Dr Andrew Sands	Carson McDowell	Mr S Green
Dr Heather Steen	Kennedys	Mr M Fortune
Dr Roger Stevenson	Carson McDowell	Mr J Counsell
Dr Robert Taylor	BTO	Mr M Uberoi
Dr David Webb	Tughans	Mr C Sephton QC Ms M O'Rourke QC

Events following Lucy Crawford's Death		
Interested Party	Solicitor	Counsel
Dr Trevor Anderson	McKinty Wright	Mr T McGleenan QC
BHSCT	DLS	Mr G McAlinden QC Mr M Lavery BL
Dr Ian Carson	McKinty Wright	Mr T McGleenan QC
Dr Mike Curtis	BTO	Mr J Leonard
Dr Donncha Hanrahan	McKinty Wright	Mr T McGleenan QC
HSCB	DLS	Mr B Lockhart QC Mr M Lavery BL

LEGAL REPRESENTATIVES

Events following Lucy Crawford's Death		
Interested Party	Solicitor	Counsel
Dr James Kelly	Carson McDowell	Mr S Green
Dr Jarlath O'Donohoe	Kennedys	Mr M Hayton QC Mr M Fortune
Dr Murray Quinn	Carson McDowell	Mr J Counsel
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Raychel Ferguson		
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Ms Fiona Bryce	Campbell Fitzpatrick	Mr C Campbell BL
Mr & Mrs Raymond Ferguson	Desmond J Doherty	Mr M Topolski QC Mr S Quinn QC Mr J Coyle BL
Ms Sandra Gilchrist	Campbell Fitzpatrick	Mr C Campbell BL
Dr John Jenkins	Carson McDowell	Ms K Gollop
Ms Elizabeth Lynch	Campbell Fitzpatrick	Mr C Campbell BL
Ms Elizabeth Millar	Campbell Fitzpatrick	Mr C Campbell BL
Ms Michaela McAuley (nee Rice)	Campbell Fitzpatrick	Mr C Campbell BL
Ms Marian McGrath	Thompson McClure	Mr M Egan BL

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GLOSSARY OF MEDICAL TERMS

Term	Definition
Ablation	The removal of material from the surface of an object by vaporization, chipping, or other erosive process.
Abnormal cerebral venous drainage	Blood is drained from the brain through a network of veins & venous sinuses ('lakes'). Much of the blood eventually drains into the jugular veins. Blockage of a jugular vein, for example because of thrombosis after previous cannulation, results in blood finding alternative pathways.
Acetylcholine	A chemical neurotransmitter in both the peripheral nervous system (PNS) and central nervous system (CNS), facilitating the passage of the electrical potential across the gap between contiguous nerve fibres.
Acute tubular necrosis	The kidney consists of about a million microscopic units, each consisting of a glomerulus – a tuft of tiny blood vessels and a tubule – a hollow tube carrying the fluid filtered from blood which will go to make up urine. An event causing disruption and death of the cells lining the tubules and which leads to kidney failure has been termed acute tubular necrosis, although the term is now regarded as archaic.
Acyclovir or Aciclovir	An antiviral drug with specific activity against Herpes virus. Due to relative freedom from side effects, it may be used in treating unexplained neurological ('brain') disease in case virus is responsible.
Adalat	A tablet form of the drug, nifedipine. It is used in the treatment of high blood pressure & in the prevention of angina.
Adenosine	A nucleoside comprising a molecule of adenine attached to a ribose sugar molecule. Adenosine plays an important role in biochemical processes, such as energy transfer.
Adhesion	The abnormal union of two normally separate tissues.
Adrenals	The glands on top of the kidneys that produce four different hormones.
Adventitia	The outermost connective tissue covering of any organ, vessel, or other structure.
Aetiology	The cause or origin of a disease.
Agglutination	Adherence of small bodies in a fluid.
Agonist	A chemical that binds to a receptor of a cell and causes a response in that cell. Agonists often mimic the action of a naturally occurring substance.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Albumin	A protein soluble in water and present in all body tissue (egg-white is mostly albumin). Albumin in the blood is important in maintaining oncotic pressure. Albumin preparations can be given intravenously to boost blood volume when dangerously low.
Ambulatory	Designed for or available to patients who are not bedridden.
Aminoacidopathy	Disorders due to a defective enzymatic step in the metabolic pathway of one or more amino acids or in a protein mediator necessary for the transport of certain amino acids in or out of cells.
Ammon's horn sclerosis	The most common type of neuropathological damage seen in individuals with temporal lobe epilepsy. This type of neuron cell loss, primarily in the hippocampus, can be observed in approximately 65% of people suffering from this epilepsy.
Ammonia	A colourless pungent gas consisting of nitrogen and hydrogen. Ammonia is a cerebrototoxicant and a high level in the blood causes a degenerative brain lesion. High blood levels of ammonia can occur in a number of diseases of the liver, in portacaval shunts, urea poisoning and liver dysfunction.
Amnesia	A condition in which memory is lost.
Amylase	Any of a group of proteins found in saliva and pancreatic juice and which assist in the conversion of starch to sugar.
Anaemia	A decrease in haemoglobin, the red pigment in blood which carries oxygen to tissues and carries away carbon dioxide.
Anaphylaxis	A serious allergic reaction that is rapid in onset and may cause death.
Anastomosis	The surgical connection of two structures, eg connections between blood vessels or between other tubular structures such as intestine.
Anatomical	Pertaining to anatomy or to the structure of the body.
Angiography	A medical imaging technique using an intravenous dye to visualize the inside, or lumen, of arteries, veins or heart.
Anoxia	An extreme form of hypoxia or "low oxygen".
Antecubital fossa	The triangular cavity at the front of the elbow that contains a tendon of the biceps muscle, the median nerve and the brachial artery.
Anterior superior iliac spine (ASIS)	The hip bones located towards the front of the body.
Antidiuretic hormone (ADH)	Also known as vasopressin, a chemical hormone produced by the hypothalamus at the base of the brain. One of its effects is to inhibit the production of urine by stimulating the kidney tubules to reabsorb some of the water otherwise destined to be passed as urine.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Anti-rejection therapy	The use of certain drugs after transplantation to prevent rejection of the transplanted organ.
Anuria	Failure to produce urine, generally due to kidney failure. Production of an abnormally low volume of urine is termed oliguria.
Aorta	The largest artery in the body – arising out of the left ventricle of the heart, arching leftwards and backwards through the chest to lie alongside the backbone. It exits the chest through a gap in the diaphragm muscle and continues along the spine until it splits into the two common iliac arteries at the level of the umbilicus. Through its branches it provides arterial blood to all the organs of the body.
Apnoea	Cessation of breathing.
Apoptosis	The process of genetically programmed cell death.
Appendicectomy (American English: Appendectomy)	The surgical removal of the appendix. This procedure is normally performed as an emergency intervention when a patient is suffering from inflammation of the appendix (appendicitis).
Apyrexia	Having normal human body temperature.
Aquaporins	The proteins embedded in the cell membrane which regulate the flow of water.
Aqueous solutions	Solutions containing material dissolved in water.
Arachidonic acid	A polyunsaturated fatty acid present in the membranes of body cells.
Arginine vasopressin	A synthetic form of ADH, used in the treatment of diabetes insipidus (a condition where the patient does not produce his or her own ADH).
Artefact	A false object or test result, eg when faulty preparation of a specimen for microscopic examination allows contamination and a misleading result.
Artefactual	Of or relating to an error in perception of information.
Arterial anastomosis	The surgical joining together of two arteries (or one artery that has been severed).
Arterial blood pressure	The pressure on the blood flowing through arteries. It is conventionally described by two figures eg 120/70, where the 120 is the pressure at maximum contraction of the heart ventricles (systolic pressure) and the 70 the pressure at the moment of greatest relaxation (diastolic pressure).
Arterial line	A hollow tube passed through the skin into an artery in order to sample blood, measure pressure and/or deliver injectable material.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Ascites	The accumulation of fluid in the abdominal cavity.
Aspartate aminotransferase (AST)	An enzyme normally present in body serum and other tissue, particularly in that of the heart and liver.
Aspiration	The removal of a gas or fluid by suction.
Astrocyte	The star-shaped glial cells in the brain and spinal cord which perform many functions including repair of the brain and spinal cord.
Ataxic	The loss of ability to coordinate muscle movement.
Atracurium	A muscle relaxant of short to intermediate duration used by anaesthetists in surgery or intensive care. It assists intubation and artificial ventilation. It is used to relax stomach muscles and the diaphragm to permit surgery within the abdominal cavity.
Atrophy	A wasting away of an organ or part or a failure to grow to normal size in consequence of disease.
Atropine	A drug, prepared originally from the plant Belladonna, which relaxes muscles not under conscious control, particularly those of the intestines, bladder and stomach. It also reduces the production of saliva and sweat. It was used as premedication before an anaesthetic but is now rarely used for that purpose. It increases heart rate so may be used to oppose certain other anaesthetic drugs having the opposite effect.
Augmentin	A brand of the antibiotic co-amoxiclav. It combines amoxicillin, a derivative of penicillin and clavulinic acid which enhances its effectiveness. It can be given by injection or by mouth.
Autopsy	A post mortem assessment or examination of the body to determine the cause of death.
Axon	A long, slender projection of a nerve cell, or neuron, that conducts electrical impulses away from the neuron's cell body or soma.
Azathioprine	A drug prescribed to transplant recipients to inhibit rejection of the transplanted tissue. It is one of a group of drugs called immunosuppressants.
Basal cistern	A wide cavity where the arachnoid (a layer of membranes that contain the central nervous system) extends between the two temporal lobes.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Basal ganglia	A group of cell collections (nuclei) in the brain. Situated at the base of the forebrain and strongly connected with the cerebral cortex, thalamus and other brain areas, they are associated with a variety of functions, including voluntary motor control and procedural learning.
Baxter's solution	Solutions used in peritoneal dialysis.
Bergman glia	See Glial.
Bilateral fundal haemorrhages	Fundal haemorrhage is a sign of trauma or damage to the blood vessels at the back of the eye. It is indicative of a lack of oxygen or a catastrophic fall in blood pressure. Bilateral means 'on both sides of the body.'
Bilateral Papilloedema	Swelling of the optic discs and diagnostic of severe raised intracranial pressure
Bilateral reimplanation of ureters	Ureters are the muscular tubes, one on each side of the body, which carry urine from the kidney to the bladder. When a kidney is transplanted, its ureters have to be sewn into the recipient's bladder or reimplanted.
Blood gas analyser	A device used to measure the partial pressures of oxygen and carbon dioxide in a blood sample. It also measures the acidity of blood and gives an indication of the concentrations of electrolytes (chemicals such as sodium) and haemoglobin. It is often used as a 'near-patient' device as well as in laboratory use.
Blood groups	The four main groups are O, A, B and AB
Bolus	A single dose given rapidly, most usually referred to in intravenous use.
Bone profile	A blood test analysing chemicals and providing information about the quality of bones. Important in the treatment of renal failure where calcium loss occurs.
Boyd's equation	A rapid method of calculating body surface area from height and weight and read from a chart. Surface area is often used to calculate drug dosage, especially in children.
Brachiocephalic vein	A vein which supplies blood to the right arm, head and neck.
Brain-stem death	Brain damage causing irreversible loss of brain function and rendering the individual incapable of life without the aid of a ventilator.
Brain stem death test	A series of tests performed by two doctors, some hours apart, to confirm brain stem death.

GLOSSARY OF MEDICAL TERMS

Term	Definition
British National Formulary (BNF)	A publication of the British Medical Association & Royal Pharmaceutical Society of Great Britain listing all drugs available for use and detailing the licensed reasons for use, side-effects, contraindications, dosages and methods of administration.
Bronchiolitis	Inflammation of the bronchioles.
Bronchopneumonia	Inflammation of the lungs.
Broviac line	An intravenous catheter most often used for the administration of medication and the withdrawal of blood for analysis. Broviac lines may remain in place for extended periods and are used when long-term intravenous access is required.
Bulbar function	The function of the cranial nerves IX, X, XI and XII.
Calcification	The deposit of calcium salts in the body tissue, normally the bones and teeth.
Cannula	A short, narrow hollow tube which can be inserted into a blood vessel and used to take samples or deliver medication. If a cannula becomes dislodged allowing fluids to escape and enter tissue outside a blood vessel, then it must be removed and replaced.
Capillary	The terminal vessels uniting the arterial with the venous systems of the body.
Capillary refill	The rate at which blood refills empty capillaries. It may be measured by holding the hand higher than the heart and pressing the soft pad of a finger until it turns white and noting the time to re-colour once pressure is released. Normal capillary refill time (crt) is less than 2 seconds.
Cardiac arrest	A sudden cessation of cardiac function resulting in loss of effective circulation.
Cardiac resuscitation	An emergency procedure involving external cardiac massage and artificial respiration in an attempt to restore circulation of the blood and so prevent death or brain damage from lack of oxygen.
Cardiomegaly	A medical condition wherein the heart is enlarged.
Carina	The point of division of the main airway.
Carotid artery	One of two paired arteries (left and right) supplying the head and neck with oxygenated blood.
Catarrh	A disorder of inflammation of the mucous membranes.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Catecholamines	Molecules with a nucleus consisting of benzene with two hydroxyl side groups and a side-chain amine. They include dopamine and the “fight-or-flight” hormone adrenaline released in response to stress.
Catheter	Hollow tubes, longer than cannulas, which are inserted into the body, eg cardiac catheters which are passed along a vein into the heart, suprapubic catheters which are inserted above the pubic bone into the bladder to drain urine, urethral catheters passed into the urethra, ureteric catheters which are passed from the bladder up the ureters to inject material or sample urine from the kidney.
Cefotaxime sodium (Claforan)	An antibiotic used in the treatment of infections of the respiratory tract.
Central nervous system (CNS)	The brain and spinal cord.
Central venous line	A cannula or catheter passed into a large vein, often in the neck and threaded up into the vena cava, the major vein draining into the heart. The line can be used to judge heart and circulation function by measuring pressures.
Central venous pressure (CVP)	A measure of the pressure of blood in one of the main veins draining into the heart (superior or inferior vena cava). It is measured through a central venous line and is affected by various factors, including whether or not the circulation requires more fluid for the heart to pump blood effectively or whether the circulation is overloaded. An understanding of CVP is of value to anaesthetists in adjusting intravenous fluid replacement.
Cerebellar tonsil	A rounded lobule on the under surface of each cerebellar hemisphere.
Cerebellum	A region of the brain having an important role in motor control and cognitive function.
Cerebral	Of or relating to the brain or cerebrum.
Cerebral autoregulation	An adaptive mechanism that plays an important role in maintaining an appropriate blood pressure within vessels supplying brain tissue.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Cerebral oedema	An excess of fluid within and around brain cells. It has many causes, including infections such as meningitis, a prolonged epileptic fit or starvation of the brain's oxygen supply. It can result from Hyponatraemia. Because the brain is within a rigid skull, any increase in its volume in consequence of oedema causes increased pressure on the brain which in turn, restricts the amount of venous blood draining from the brain and further increases the oedema. The eventual result is that parts of the brain are forced by the pressure down through the foramen magnum, the hole in the base of the skull, impairing blood supply to the brainstem and leading to loss of control over the heart, blood pressure and breathing. Sudden death may result.
Cerebral palsy	An umbrella term encompassing a group of non-progressive, non-contagious motor conditions which cause physical disability in human development.
Cerebral perfusion pressure (CPP)	The net pressure gradient causing blood flow to the brain (brain perfusion).
Cerebral venous sinus thrombosis (CVST)	A rare form of stroke that results from thrombosis (a blood clot) of the dural venous sinuses, which drain blood from the brain. Symptoms may include headache, abnormal vision, any of the symptoms of stroke and seizures. Intracranial pressure may rise causing papilloedema (swelling of the optic disc).
Cerebrospinal fluid (CSF)	A clear, colourless, body fluid, that occupies the subarachnoid space and the ventricular system around and inside the brain and spinal cord. In essence, the brain "floats" in it.
Cerebrovascular disease	A group of conditions affecting the circulation of blood to the brain.
Cervical cord	That part of the spinal cord situate in the neck.
Chemoreceptor	A sensory receptor that converts chemical signals into electrical potential. In more general terms, chemoreceptors detect certain chemical stimuli in the environment.
Cheyne-Stokes respiration	An abnormal pattern of breathing characterized by progressively deeper and sometimes faster breathing, followed by a gradual decline and then a temporary stop called an apnea. The pattern is repeated with each cycle taking between 30 seconds and 2 minutes.
Chiari malformation	A malformation of the brain consisting of a downward displacement of the cerebellar tonsils through the foramen magnum (the opening at the base of the skull).
Cingulate gyrus	A part of the brain situate in the medial aspect of the cerebral cortex and considered part of the limbic lobe.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Circle of Willis	A circle of arteries supplying blood to the brain and named after Thomas Willis (1621–1675), an English physician.
Circulating nurse ('runner')	An operating theatre nurse who is not 'scrubbed up' and can therefore handle non-sterile material unlike the operating surgeons or the scrub nurse. The circulating nurse has many tasks, including weighing discarded swabs to assess blood loss, the connection of replacement fluid to drips and fetching equipment. The circulating nurse can also assess or measure the amount of blood or other fluids draining from catheters etc.
Circulatory arrest	An alternative phrase for 'cardiac arrest'.
Circulatory resuscitation	See 'cardiac resuscitation'.
Cirrhosis	A consequence of chronic liver disease characterized by replacement of liver tissue by fibrosis, scar tissue and nodules leading to loss of liver function.
Claforan	An antibiotic used in the treatment of severe infection of the lung, throat, ear or urinary tract.
Clonus	A succession of intermittent muscular contractions and relaxations usually resulting from a sustained stretching stimulus and often a sign of brain or spinal cord disease.
Clotting	The formation of a jellylike substance within a blood vessel causing a stoppage of the blood flow, also called coagulation.
Coagulation screen	A standard set of blood tests performed in a haematology laboratory to detect abnormality in the blood clotting system.
Cockcroft-Gault formula	A method of calculating creatinine clearance (see below) from the blood creatinine level and the individual patient's age, height and weight.
Cogwheel rigidity	The tension in a muscle which gives way in little jerks when the muscle is passively stretched.
Cold ischaemic time ('CIT')	Ischaemia means a deficient blood supply which can lead to cell damage. If a tissue is kept cold, it can withstand ischaemia for longer than at body temperature. It is therefore important when performing a transplant operation to keep the donor organ cold. The cold ischaemic time is relevant in assessing the viability of a donor organ. The CIT is calculated from the time of removal from the donor to time of insertion into the recipient and anastomosis of the arteries.
Colloid	A substance evenly and microscopically dispersed throughout another substance.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Coma	A profound state of unconsciousness associated with depressed cerebral activity from which the individual cannot be aroused.
Common iliac arteries	Two large arteries originating from the aortic bifurcation at the level of the 4 th lumbar vertebra.
Common iliac vein	The left and right common iliac veins lie on either side of the pelvis, and meet in the lower back, at the level of the fifth lumbar vertebra, to form the inferior vena cava, the main vein returning blood from the legs & lower trunk to the heart.
Co-morbidity	The presence of one or more disorders (or diseases) in addition to a primary disease or disorder or the effect of such additional disorders or diseases.
Congenital	Existing at or dating from birth.
Congenital nephrotic syndrome	A generic term for several conditions characterised by abnormally functioning glomeruli in the kidneys and which are present at birth.
Congenital obstructive uropathy	Any condition present at birth in which drainage of urine from the kidney is obstructed at a point between the kidney pelvis and urethra.
Coning/coned (Otherwise known as 'transforaminal herniation')	A shorthand term used to describe the downward displacement of the brain stem into the foramen magnum (the hole in the base of the skull). It is caused by raised intracranial pressure and can kill.
Contractile Proteins	The proteins responsible for the contraction of muscle tissue.
Convulsion	An involuntary contraction or series of contractions of the voluntary muscles, also called a seizure.
Corpus callosum	A wide, flat bundle of neural fibres beneath the cortex connecting the left and right cerebral hemispheres and facilitating inter-hemispheric communication.
Cortex	The tissues forming the outer part of an organ e.g. the cerebral cortex of the brain.
Cranial	Adjective relating to the cranium or skull.
C-reactive protein (CRP)	A globulin found in the blood in some cases of inflammation.
Creatinine	A product of protein which can be measured in blood and urine. The higher the blood creatinine (and the lower the urinary creatinine) the poorer the kidney function. By calculating the 'creatinine clearance' a measure of kidney function can be obtained.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Cross-matching	A method of comparing a patient's blood or tissue with that of a potential donor to ensure organ compatibility.
Crystalloid	A substance that in solution can pass through a semipermeable membrane and be crystallized. The physical opposite of a crystalloid is a colloid, which does not dissolve and does not form true solutions.
CT (computerised tomography) scan	An imaging technique relying on a computerised analysis of multiple x-rays, taken at different levels and reconstructed to depict a two- or three-dimensional image.
Cushing response	A physiological nervous system response to increased intracranial pressure (ICP) resulting in widening pulse pressure, irregular breathing and a reduction of the heart rate. It is usually seen in the terminal stages of acute head injury and may indicate imminent brain herniation.
Cyanosis	The appearance of a blue or purple coloration of the skin or mucous membranes due to reduced oxygen levels within the tissues close to the skin surface.
Cyclase	An enzyme that catalyses a chemical reaction to form a compound.
Cycles of dialysis	In peritoneal dialysis, fluid is run into the peritoneal cavity (inside of the abdomen) left for a time and then run out again. The process is repeated with each repetition being referred to as a cycle.
Cyclimorph	Medication containing morphine and cyclizine. Morphine belongs to a group of strong painkilling medicines called opioids and cyclizine is an anti-sickness medicine.
Cyclizine	An antihistamine drug used to treat nausea, vomiting and dizziness.
Cyclosporine	An immunosuppressant drug used in organ transplantation to prevent rejection.
Cystatin C	A protein which when measured in a blood sample provides an accurate assessment of kidney function.
Cytology	The medical and scientific study of cells.
Cytomegalovirus (CMV) titre	A common virus but one which rarely causes disease in healthy people. It is, however, potentially dangerous for those whose immune system is not working well, either from disease or the use of immunosuppressive drugs eg those who have received transplants. To determine if a transplant donor or recipient has been infected, the concentration of antibody to the virus can be measured. This is called CMV titre.
Cytoscopy	An examination of the inside of the bladder and urethra.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Decerebrate movement	The cerebrum is the part of the brain controlling all voluntary activity. If the cerebrum is not functioning adequately as a result of disease, toxin, seizures etc. characteristic muscle spasms can result in movement of an individual, intermittently or continuously into abnormal posture.
Decompensation	Inability of the heart to maintain adequate circulation, manifested by difficulty in breathing, venous engorgement and oedema.
Deep white matter	Brain tissue composed of myelin-coated nerve cell fibres. White matter carries information between the nerve cells in the brain and the spinal cord. The inner portion of the cerebrum is composed of white matter.
Dehydration	A deficiency of fluid in the body caused by insufficient intake, excessive output or both. Minor degrees of dehydration are common in illness and may be of no consequence. However an increase in dehydration, especially in combination with abnormality of blood chemistry (eg high or low sodium) may result in a deterioration of various body functions.
Dentate nucleus	The largest single structure linking the cerebellum to the rest of the brain. It is located within the deep white matter of each cerebellar hemisphere.
Desmopressin acetate/DDAVP	A drug used to regulate urine production.
Dextrose	An alternative term for 'glucose'.
Dextrostix	A blood test used to measure levels of sugar in the bloodstream.
Dialysate	A fluid used for peritoneal dialysis (see Cycles).
Diastole	The period of time when the heart fills with blood after systole (contraction).
Diazepam (Diazemuls)	A benzodiazepine (psychoactive) drug commonly used in the treatment of anxiety, insomnia and seizures. Diazepam can be administered as a slow intravenous injection or as a continuous intravenous ('IV') infusion.
Diencephalon lesion	Any tissue abnormality in that part of the brain which includes the thalamus.
Diffuse oedema	Oedema is an abnormal accumulation of fluid within the body. It can be localised or involve the whole body.
Dilutional hyponatraemia	See hyponatraemia

GLOSSARY OF MEDICAL TERMS

Term	Definition
Dioralyte	A proprietary powder containing glucose and salts in concentrations which, when dissolved in water, represent the best way of restoring by mouth fluids lost through diarrhoea, vomiting etc.
Disseminated intravascular coagulation (DIC)	A medical condition which develops when the normal balance between bleeding and clotting is disturbed.
Distension	The state of being distended or swollen.
Diuresis	Urine production as an aspect of fluid balance.
Dopamine	A drug used in resuscitation and intensive care and given by IV infusion. It is a heart stimulant and in low doses may increase the blood supply to vital organs by dilating blood vessels.
Double or triple lumen line	A cannula or catheter with two or three separate channels allowing separate routes for sampling, measurement and drug delivery.
Dura mater or dura	The outermost of the three layers of the meninges surrounding the brain and spinal cord.
Dysplasia	An abnormality in the development of tissue or an entire organ.
Dysplastic kidneys	Kidneys containing abnormal tissue. The condition arises before birth and the kidneys are often very small and function poorly.
Dysuria	Painful or difficult urination.
Effacement	The shortening or thinning of a tissue.
Electroencephalography (EEG)	The recording of electrical activity across the scalp.
Electrolytes	The elements of the common salts in blood ie sodium, potassium, chloride and bicarbonate.
Embolus	Any detached travelling intravascular mass carried by circulation, which is capable of clogging arterial capillary beds.
Emesis	Vomiting.
Encephalitis	The inflammation or infection of the brain usually caused by a viral or bacterial infection.
Encephalopathy	Brain disease, damage, or malfunction. Encephalopathy can present a very broad spectrum of symptoms ranging from memory loss or subtle personality change to dementia, seizures, coma or death.
Endonucleases	The enzymes that cleave the bond within a polynucleotide chain.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Endoscopy	An examination inside the body using an endoscope, an instrument used to examine the interior of a hollow organ or cavity of the body. Unlike most other medical imaging devices, endoscopes are inserted directly into the organ.
Endothelium	The thin layer of cells that line the interior surface of blood and lymphatic vessels.
Endotracheal tube	A catheter that is inserted into the trachea for the primary purpose of establishing and maintaining a patent airway.
Enteral Feeding	The act of giving a patient a liquid, low residue food through a naso- or oro-gastric feeding tube.
Enteroviruses	A family of viruses which tend to invade the central nervous system through the gut.
Eosinophilic	The staining of certain tissues or cells, after they have been washed with eosin, a dye.
Epidemiology	That branch of medicine dealing with the study of the causes, distribution and control of disease within populations.
Epidural	A form of regional analgesia involving an injection of drugs through a catheter placed into the epidural space.
Epilepsy	A recurrent and paroxysmal disorder of sudden onset and spontaneous cessation caused by occasional, sudden, excessive, rapid and local discharge of nerve cells in the grey matter (cortex) of the brain.
Epileptogenic	Capable of producing epileptic seizures.
Erythrocyte	A red blood cell.
Erythropoietin	The hormone that regulates red blood cell production.
Excitotoxicity	The pathological process by which nerve cells are killed by excessive stimulation by neurotransmitters such as glutamate.
Expiration	The movement of air out of the bronchial tubes and through the airways. Breathing out.
External iliac artery	Each of the two common iliac arteries (see above) divide into two in order to form the external iliac arteries which run from the lower back to the groin where they continue as femoral arteries.
Extracellular fluid	The fluid outside body cells. That within blood vessels is intravascular and the remainder is interstitial.
Extra-ocular	Relating to the six muscles that control the movements of the eye.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Extraperitoneal procedure	An operation in which the peritoneal cavity is not entered. The peritoneum is a membrane which envelopes the inner surface of the abdomen.
Exudation	The process by which some of the constituents of blood pass slowly through the walls of small blood vessels in the course of inflammation.
Faecolith	A hard mass of faecal matter.
Femoral artery	A general term for the large arteries in the thigh.
Fentanyl	A potent, synthetic narcotic analgesic with a rapid onset and short duration of action.
Fibrinogen	A soluble plasma glycoprotein, synthesised by the liver, which is converted into fibrin during blood coagulation.
Fixed, dilated pupils	The pupils of the eyes contract and dilate in response to light and the distance of focus. Severe damage to the brain stem results in a failure in these responses and the pupils remain large.
Fixing of the brain	The process by which the brain is treated in a solution of formalin for up to two weeks in order to assist neuropathological examination.
Flumazenil	A medicine used to reverse the effects of benzodiazepines after sedation, general anesthesia or overdose.
Fluoroscopy	An imaging technique commonly used to obtain real-time moving x-ray images of internal body structures.
Foley catheter	A flexible tube passed through the urethra and into the bladder.
Foramen magnum	A large hole in the base of the skull. It where the brainstem merges into the upper part of the spinal cord.
Fractional excretion rate	A rate calculated as the proportion of sodium passing through the kidney and filtered into the urine. It is useful in evaluating acute kidney failure.
Free radicals	Where radicals are atoms, molecules, or ions with unpaired electrons or an open shell configuration, free radicals may have positive, negative, or zero charge. With some exceptions, the unpaired electrons cause radicals to be highly chemically reactive.
Free water	The theoretical proportion of water in blood or urine which can be recognised or calculated as containing no dissolved solutes.
Frontal white matter	The nerve fibres within the frontal lobe of the brain.
Full blood picture	A laboratory blood test to determine the proportions of all the components of blood.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Fundoplication	Suturing the fundus of the stomach around the gastroesophageal junction to treat gastroesophageal reflux. It can be performed by open surgery or laparoscopy.
Fundoscopy	A test permitting examination of the inside the fundus of the eye and other structures using an ophthalmoscope (or funduscope).
Fundus	The place on the retina opposite the pupil through which nerve fibres and blood vessels traverse the retina.
Ganglion	A biological tissue mass, most commonly a mass of nerve cell bodies.
Gastroenteritis	Infection or irritation of the digestive tract.
Gastroesophageal reflux disease	The chronic symptoms of or mucosal damage caused by stomach acid rising from the stomach into the oesophagus.
Gastrointestinal losses	The loss of fluid and electrolytes from the gut, usually by the production of faeces or, in abnormal circumstances, by vomiting and/or diarrhoea.
Gastro-intestinal tract	The tubular passage of mucous membrane extending from the mouth to the anus.
Gastrostomy tube & button	A plastic tube inserted through the wall of the abdomen into the stomach for feeding. The tube ends at a flat disc sewn onto the abdomen (the button) to which a feeding tube can be attached.
Gentamycin	An antibiotic, given by intravenous or intramuscular injection, used in the treatment of significant infection by certain bacteria, such as pseudomonas and klebsiella.
Glasgow Coma Score	An internationally accepted measure of consciousness, the lower the score the lower the level of consciousness.
Glial	The non-neuronal cells that provide support and protection for neurons in the brain and for those neurons in other parts of the nervous system such as in the autonomous nervous system.
Gliososis	The proliferation of astrocytes in damaged areas of the central nervous system.
Glomerular filtration rate (GFR)	The rate at which the kidneys filter out fluid free from fats, protein or cells is termed the GFR and is a measure of the adequacy of kidney function.
Glomerulus	One of the 2 million filtering units in the kidney into which blood comes into contact.
Glutamate	Alternative word for glutamic acid which is a non-essential amino acid. In neuroscience, glutamate is an important neurotransmitter and plays an important role in learning and memory.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Glycolysis	The metabolic pathway converting glucose into pyruvate (an organic acid).
Glycopyrrolate	An atropine-like drug used to increase heart rate, commonly to oppose the action of certain other anaesthetic drugs which have the opposite effect.
Grey matter	A major component of the central nervous system, consisting of neuronal cell bodies, in contrast to white matter, which does not.
Guarding	A sign often detected during an examination for physical pain whereby the patient involuntarily contracts muscles.
Gyrus	A ridge on the cerebral cortex. It is generally surrounded by one or more sulci.
Haematemesis	The vomiting of blood.
Haematocrit	A measure of the proportion of blood which is solid (that is consisting of blood cells) and liquid (plasma) and determined by spinning a small blood sample in a centrifuge. It is used as a crude measure of hydration.
Haematoma	A localised collection of blood outside the blood vessels, usually in liquid form within the tissue. This distinguishes it from an ecchymosis, which is the spread of blood under the skin in a thin layer, commonly called a bruise.
Haemodynamics	The study of the forces and physical mechanisms concerned with the circulation of the blood.
Haemoglobin	The red pigment in blood which carries oxygen to tissues and takes away carbon dioxide.
Haemoptysis	The coughing up of blood or bloody sputum from the lungs or airway.
Haemorrhage	The escape of blood from any blood vessels, normally in response to trauma.
Haemorrhagic shock	Shock resulting from reduction of the volume of blood in the body due to haemorrhage.
Hagen–Poiseuille equation	A physical law providing the pressure drop for a fluid flowing through a long cylindrical pipe. The assumptions of the equation are that the flow is laminar, viscous and incompressible and the flow is through a constant circular cross-section which is substantially longer than its diameter.
Halothane	An inhalational general anaesthetic.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Hand ventilated	The artificial ventilation produced by squeezing a rubber bag connected to a mask or tube delivering air and/or oxygen to a patient.
Hartmann's solution	An intravenous solution containing sodium chloride (salt), sodium lactate, potassium & calcium chloride. The sodium concentration is similar to that of the blood.
Hepatocyte	A cell of the main tissue of the liver.
Hepsal (Heparin sodium)	A flushing solution used to maintain the patency and prevent blockages within intravenous devices.
Herniation and compression of the brain stem	See coning.
Herpes	Any one of several viral diseases causing the eruption of small blister like vesicles on the skin or mucous membranes.
Heterogeneous	Relating to lack of uniformity of or within a substance. Its opposite is homogeneous, where there is uniformity in composition or character.
Heterozygous	The two different genes controlling a specified inherited trait.
Hindbrain	That part of the brain which includes the medulla, pons and cerebellum.
Hippocampus	A major component of the brain. It belongs to the limbic system and plays important roles in the consolidation of information from short-term memory to long-term memory.
Histological slides	Thin slices of tissue applied to a microscopic slide which are then viewed through a microscope.
Histology	The microscopic study of tissue and organs at the cellular level.
Histopathology	The microscopic examination of tissue in order to detect the manifestations of disease.
Homeostasis	The property of a system that regulates its internal environment to maintain a stable, constant condition.
Homocysteine	A non-protein amino acid.
Human leucocyte antigen (HLA)	Complex antigens, being proteins capable of inciting an immune reaction and found in most tissues of the body, are important in determining organ transplant compatibility. Incompatibility between donor and recipient HLA can cause rejection.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Human plasma protein fraction (HPPF)	A mixture of albumin, other proteins and saline used in the emergency treatment of bleeding until replacement donor blood becomes available.
Hydrolysis	A chemical reaction during which molecules of water are split.
Hyperammonaemia	An abnormally high level of ammonia in the blood.
Hypercapnia	Also known as hypercarbia, a condition where there is excess carbon dioxide (CO ₂) dissolved in the blood.
Hypercarbia	See Hypercapnia above.
Hypercoagulability	An abnormality of blood coagulation that increases the risk of thrombosis (blood clots in blood vessels).
Hyperkalemia	The condition in which the concentration of the electrolyte potassium (K ⁺) in the blood is elevated.
Hypernatraemia	A concentration of sodium in the blood which is higher than normal. It is caused either by excessive salt intake or by water loss in excess of that of salt.
Hypertension	A state of raised blood pressure.
Hypertonic infusion	The delivery of an intravenous fluid which has a higher osmotic pressure than blood. Osmotic pressure develops when there are more molecules on one side of a semi-permeable membrane, such as a cell wall, than the other. The result is that water tends to flow through the membrane into the more concentrated solution until the concentrations are equal on both sides of the membrane.
Hypertonicity	The state of being hypertonic or having extreme muscular or arterial tension.
Hypervolemia (fluid overload)	The condition of an excess of fluid in the blood.
Hypocapnia	The presence of abnormally low levels of carbon dioxide in blood.
Hypoglycemia	A state produced by a lower than normal level of blood glucose.
Hypokalaemia	The condition of below normal levels of potassium in the blood serum.
Hyponatraemia	A serum concentration of sodium below the normal range which may be produced by dilution of the blood, excessive water retention, excessive sodium loss or occasionally inadequate salt intake.
Hypothalamus	The part of the fore-brain containing nerve centres for the regulation of vital processes e.g. body temperature and sexual function.
Hypothermia	A core body temperature of less than 35 degree Celsius.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Hypotonic	A solution which has a greater osmotic pressure than another.
Hypovolaemia	A reduction in the volume of circulating blood causing the body to compensate by increasing the heart rate in order to pump more blood and by contracting small blood vessels to divert flow to major vessels and vital organs. Ultimately, this 'compensation' cannot be maintained and the patient goes into shock.
Hypoxia	A reduction in the amount of oxygen available in the body so as to adversely affect normal vital organ function (typically used with reference to the brain).
Hypoxic damage	The damage caused to any organ by the effect of hypoxia (see above).
Hypsarrhythmia	An abnormal pattern seen on EEG and frequently encountered in cases of infantile spasm. Diagnostic of status epilepticus.
Iatrogenic	Induced by a physician.
Idiopathic	An adjective to indicate that which <i>arises spontaneously</i> or <i>from an obscure or unknown cause</i> .
Ileus	An intestinal obstruction causing colic, vomiting and constipation.
Iliac fossa	The internal concavity of the iliac bone of the pelvis. It contains within it organs such as the ilium, caecum and appendix. The right iliac fossa is the most common site of pain and tenderness in acute appendicitis.
Infarcted	Tissue that has died through failure of its blood (and therefore oxygen) supply.
Infusion	The intravenous or subcutaneous injection of one of a variety of solutions used in the treatment of dehydration and/or electrolyte imbalance or as a vehicle for medication.
Ingestion	The oral taking of substances into the body.
Intercurrent	A disease or condition affecting a person already suffering from something else.
Insensible losses	Fluids lost as sweat, in the breath or in the normal stool.
Inspiration	The movement of air from the external environment through the air ways and into the alveoli of the lungs (breathing in).
Interstitial fluid	See extracellular fluid.
Intestinal colick	Associated with severe abdominal pain.
Intracellular fluid	See extracellular fluid.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Intracerebral	Occurring or situated within the cerebrum.
Intracranial	Within the skull.
Intracranial hypertension	Abnormally high blood pressure within the skull.
Intracranial pressure (ICP)	The pressure inside the skull and thus within the brain tissue and cerebrospinal fluid (CSF).
Intraluminal	Within the space of an object or structure.
Intraperitoneal space	See extraperitoneal.
Intrauterine	Of or related to the uterus.
Intravascular	Of or relating to the blood vessels.
Intravenous	Inside a vein.
Intubated	The introduction of a tube (endotracheal or ET tube) through the mouth or nose and into the larynx in order to provide an airway when resuscitating or artificially ventilating a patient.
Ion	An atom or molecule in which the total number of electrons is not equal to the total number of protons, giving it a net positive or negative electrical charge.
Ipsilateral cranial nerve	The cranial nerve which is on the same side as another structure.
Ischaemia	A restriction in blood supply, generally due to factors in the blood vessels, with resultant damage or dysfunction of tissue.
Ischaemic-hypoxic damage	A brain injury resulting from reduction in blood flow (ischaemia) & lack of oxygen (hypoxia). It is usually caused by cardiac arrest or profound hypotension.
Isotonic solution	A solution with broadly the same osmolar pressure (and thus the same sodium concentration) as blood plasma.
Jugular vein	Any of several large veins of the neck which drain blood from the head.
Jugular venous pressure	The indirectly observed venous pressure wave occurring in the external jugular veins of the neck.
Ketones	Poisonous acidic chemicals produced by the body when fat instead of glucose is burned for energy.
Lactic acidosis	A physiological condition characterized by low pH in body tissues and blood accompanied by an accumulation of lactate.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Laminar	Flat.
Laparotomy	The surgical opening of the abdomen.
Leigh's disease	A rare neurometabolic disorder affecting the central nervous system and characterized by movement disorders.
Leucocytes	White blood cells
Leukoaraiosis	Nonspecific changes in the cerebral white matter.
Leukoencephalopathy	Any of a group of diseases affecting the white matter of the brain.
Ligation	The creation of a ligature or suture typically tied around a vessel to seal it off.
Liver function test	Any one of several tests used to evaluate various functions of the liver, including metabolism, storage, filtration and excretion.
Lumbar	The region of the back lying lateral to the lumbar vertebrae.
Lumbar epidural	The placement of a cannula into the epidural space (near but outside the spinal cord) through which drugs can be delivered to produce anaesthesia of the lower part of the body without necessarily having to render the patient unconscious.
Lumen line	A line inserted into a tubular structure, such as an artery or intestine.
Lymph nodes	The swellings which occur at various points in the lymphatic system through which lymph (a watery fluid derived from blood and absorbed food material) drains.
Macrophages	Those cells whose role it is to engulf and digest cellular debris and pathogens.
Macroscopic	Observable by the naked eye.
Macular rash	A skin eruption where the lesions are flat and less than 1cm in diameter.
Maintenance rate	The IV fluid rate which provides for ongoing and insensible losses in a patient who is not dehydrated and not suffering other abnormal body fluid loss. It is calculated by reference to weight or body surface area.
Major surgery	(a) A surgical operation within the abdominal, pelvic, cranial, or thoracic cavities. (b) A procedure which constitutes a hazard to life or the function of an organ or of tissue. (c) Any surgical procedure that involves general anaesthesia or respiratory assistance.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Mallory Weiss tear	A small tear in the distal oesophageal mucosa.
Mammillary bodies	A pair of small round bodies, located on the undersurface of the brain and forming part of the limbic system.
Mannitol	An osmotic diuretic being a solution of very high molecular weight and designed to provoke rapid excretion of free water through the kidney when given intravenously. It is used in emergency treatment of cerebral oedema and raised intracranial pressure.
McBurney's point	A site of extreme sensitivity in acute appendicitis and situated in the normal area of the appendix.
Mean Arterial Pressure (MAP)	The average arterial blood pressure in an individual during a single cardiac cycle.
Measles	An infection caused by a virus giving rise to a characteristic skin rash known as an exanthem.
Mediastinum ('mediastinal')	A non-delineated group of structures in the thorax and surrounded by loose connective tissue.
Medulla oblongata	The lower half of the brainstem.
Medullary	Of or relating to the medulla (inner core) of any body part or organ.
Medullary Cystic (kidney disease)	An inherited kidney disorder characterized by cysts in both kidneys and tubulointerstitial sclerosis, leading to end-stage renal disease.
Membrane pump	A diaphragm pump.
Meninges	The three membranes that envelop the brain and spinal cord.
Meningitis	An infection or inflammation of the meninges (see above).
Meningococcal	Of or relating to the meningococcus bacterium, which causes cerebrospinal meningitis.
Meningoencephalitis	A condition which simultaneously both resembles meningitis, which is an infection or inflammation of the meninges and encephalitis, which is an infection or inflammation of the brain.
Mesenchyme	A type of undifferentiated loose connective tissue. The term mesenchyme refers to the morphology of embryonic cells.
Mesenteric adenitis	Inflammation of any of the several folds of the peritoneum which connect the intestines to the dorsal wall.
Metabolic acidosis	A pH imbalance in which the body has accumulated excess acid and has inadequate bicarbonate to neutralize it.
Metabolic coupling	The transfer between tissue cells in contact of low molecular weight metabolites such as amino acids.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Metabolic disease	Any of the diseases or disorders that disrupt normal metabolism ie the process of converting food to energy on a cellular level.
Metabolic regulation	The process of metabolism which allows organisms to respond and interact with their environment.
Metabolism	The chemical reactions occurring in living organisms to sustain life.
Methylprednisolone	A synthetic drug typically used for its anti-inflammatory effects.
Microbiology	The branch of biology concerned with the study of microorganisms, including bacteria and viruses.
Microglia	A type of cell that is the resident of the brain and spinal cord and acts as the first and main form of active immune defence in the central nervous system.
Microvascular	Of or relating to the small blood vessels.
Midazolam	A short-acting drug in the benzodiazepine (psychoactive) class used in the treatment of acute seizures, insomnia for inducing sedation before medical procedures.
Mitochondrion (plural mitochondria)	A membrane-enclosed organelle found in most eukaryotic cells. Mitochondria are sometimes described as "cellular power plants" because they generate adenosine triphosphate (ATP) which is used as a source of chemical energy.
Mmol/l	Millimoles per litre. A millimole is one thousandth of a mole. A mole is the amount of any substance that contains 60,000,000,000,000,000,000,000 molecules or atoms.
Monro-Kellie principle	The hypothesis that the cranial compartment is incompressible and the volume inside the cranium is fixed. The cranium and its constituents (blood, CSF, & brain tissue) create a state of volume equilibrium so that any increase in volume of one of the cranial constituents must be compensated by a decrease in the volume of another.
Multivariate	Of or relating to a number of different variations.
Mumps	An acute inflammatory contagious disease caused by a paramyxovirus and characterized by swelling of the salivary glands and sometimes also of the pancreas, ovaries or testes.
Myelin	An electrically insulating material that forms a layer or myelin sheath, usually around only the axon of a neuron. It is essential for the proper functioning of the nervous system.
Myelinolysis	A neurological disease caused by severe damage of the myelin sheath.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Myogenic	Of or giving rise to the formation of muscle tissue.
Na ⁺ and K ⁺ electrodes	The parts of a piece of laboratory apparatus which measure concentrations of sodium (Na ⁺) and potassium (K ⁺).
Nail bed stimuli	Pressure to the nail bed provokes pain. An individual's response depends upon brain function, so the test is used to assess the severity of coma.
Necrosis	The premature death of cells and living tissue, caused by factors external to the cell or tissue.
Neonatal	Of or relating to the first 28 days of an infant's life.
Neonate	Refers to an infant in the first 28 days after birth.
Neostigmine	A drug used by anaesthetists to reverse the action of certain muscle relaxants (e.g. atracurium). It acts within a minute of being injected intravenously and lasts 20-30 minutes. It is used at the end of an operation to enhance recovery.
Nephrogenic diabetes insipidus	A condition in which the kidney is unable to respond to the hormone vasopressin (ADH). Patients cannot retain water so are at risk of dehydration. It is usually congenital and is characterised by excessive passage of urine (polyuria) and thirst (polydipsia) leading to episodes of hypernatraemia, dehydration, fever, constipation and vomiting.
Nephrology	The branch of medicine concerned with the study and management of kidney disease.
Nephrons	The 2 million individual microscopic filtering units of the kidneys which consist of glomeruli and tubules.
Nephrostogram	A radiograph of the kidney after a contrast agent has been administered through a nephrostomy tube.
Nephrostomy	An artificial opening created between the kidney and the skin which allows for the drainage of urine directly from the upper part of the urinary system.
Neuroblastoma	A malignant growth comprising embryonic nerve cells.
Neuroimaging	Non-invasive methods of visualizing the central nervous system, especially the brain, by various imaging modalities.
Neurology	The branch of medical practice concerned with the study of the nervous system and its disorders.
Neuromuscular	Of or relating to nerves and muscles.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Neuromuscular blockade	The process by which drugs are delivered to induce temporary muscle paralysis. Always given in conjunction with drugs to induce sleep and prevent pain.
Neuron	An electrically excitable cell that processes and transmits information by electrical and chemical signalling.
Neuronal migration defect (or disorder)	A congenital brain abnormality caused by the abnormal migration of neurons in the developing brain and nervous system.
Neurones	Also known as a nerve cell, this is a basic cellular building block of the nervous system which contains billions of neurones.
Neuropathology	The study of diseased nervous system tissue, usually conducted by small surgical biopsies or brain autopsy.
Neuropathy	Damage to nerves of the peripheral nervous system.
Neuropeptides	Any of several types of molecules found in brain tissue, composed of short chains of amino acids including endorphins and vasopressin.
Neuroradiology	The branch of radiology concerned with diagnosing diseases of the nervous system.
Neurosurgery	Any surgery involving the brain, spinal cord or peripheral nerves.
Neutrophils	White blood cells with cytoplasmic granules that consume harmful bacteria, fungi and other foreign materials.
Nifedipine	A medicine used to lower hypertension and treat angina (chest pain).
Non-convulsive / non-fitting Status Epilepticus	A series of rapidly repeating seizures without convulsive motor activity. Consciousness is not regained between seizures.
Non-pulsatile	The term 'pulsatile' indicates a state of rhythmic pulsation e.g. the heart beat. A non-pulsatile wave form implies interruption to the expected rhythm pattern.
Norepinephrine	Also called noradrenaline it is a molecule with multiple roles including those of hormone and a neurotransmitter.
Normotensive	Of or relating to normal values of blood pressure.
Nuclei	The control centre of a cell containing the cell's chromosomal DNA.
Nucleolysis	The process by which the nucleus of a displaced intervertebral disc is dissolved by disease.
Nutrison	A nutritional supplement containing protein, carbohydrates, fats, vitamins & minerals which provides 750 kilocalories per 500 mls.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Obstetrics	The branch of medicine concerned with pregnancy and childbirth, including the study of the physiologic and pathologic function of the female reproductive tract & the care of the mother and foetus throughout pregnancy, childbirth and the recuperative period following delivery.
Obstructive uropathy	A condition in which the flow of urine is blocked, causing it to back up and injure one or both kidneys.
Occipital horn syndrome	A deficiency in copper excretion causing skeletal deformity.
Occipital lobe	The visual processing centres situated at the back of the cerebral hemispheres of the brain.
Oedema or Oedematous	The excessive accumulation of serous fluid in the intercellular spaces of tissue.
Oliguria	A significant reduction from normal in the volume of urine passed.
Ondanestron	An antiemetic for the treatment of nausea and vomiting.
Opioid	A psychoactive chemical that works by binding to opioid receptors providing pain relief.
Orchidopexy	A surgical procedure to move an undescended testicle into the scrotum and permanently fix it there.
Organelle	A specialised part of a cell with a specific function and usually separately enclosed within its own lipid bilayer.
Organic acid	An acid containing one or more carbon atoms.
Organic aciduria	Excessive excretion of one or more organic acids in the urine.
Ornithine transcarbamylase (OTC) deficiency	A rare metabolic urea-cycle disorder. The urea cycle is a series of five liver enzymes that rid the body of ammonia. When one of these enzymes is missing or deficient, ammonia accumulates in the blood and travels to the brain, causing coma, brain damage and death.
Osmolality	A measure of the osmoles (the number of moles of a chemical compound that contribute to a solution's osmotic pressure) of solute per kilogram of solvent (osmol/kg or Osm/kg).
Osmolarity	Osmolarity is an estimation of the osmolar concentration of plasma and is proportional to the number of particles per litre of solution; it is expressed as mmol/L.
Osmosis	The passage of water molecules through a semi-permeable membrane such as a cell wall. This occurs when one fluid contains fewer molecules of dissolved solids than the other.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Osmotic disequilibrium syndrome	Where the osmotic equilibrium normally present between two fluid compartments is no longer present.
Osmotic fluid shift	The movement of water across a semi permeable membrane which has the result of tending to equalise the osmotic pressure across the membrane.
Osmotic myelinolysis	A neurological disease caused by severe damage to the myelin sheath of nerve cells in the brainstem.
Osmotic oedema	Oedema caused through osmosis.
Otic	Of or relating to, or located near to, the ear.
Oxidative	Alternative term for redox- which describes all chemical reactions in which atoms have their oxidation state changed.
Oxygen saturation	Oxygen is carried in the blood bound to haemoglobin. If all the available haemoglobin is attached to oxygen then that represents 100% saturation. If the patient is deprived of oxygen so that blood mixes with arterial blood, then the saturation will fall. Saturation is normally above 95% and offers a guide to the adequacy of a patient's oxygenation.
Oxygenation	Saturation with oxygen.
Pancreatitis	Inflammation of the pancreas.
Papilloedema	Swelling of the optic disc due to raised intra-cranial pressure.
Paraventricular	Alongside a ventricle..
Paravertebral plexus	A network of nerves creating a nerve trunk travelling along the length of the vertebral column.
Parenchymal	The bulk of a substance.
Parenteral	Taken into the body or administered in a manner other than through the digestive tract eg intravenous or intramuscular injection.
Parietal	Anything pertaining to the wall of a cavity.
Pathogenesis	The mechanism by which a disease is caused.
Pathology	The science of the causation and effect of disease.
Pathophysiology	The physiological processes associated with disease or injury.
PCO ₂	An abbreviation for the partial pressure of carbon dioxide. It is commonly measured in blood to determine the adequacy of respiration.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Peduncle	A stem, through which a mass of tissue is attached to a body eg cerebral peduncles.
Peptides	Short polymers of amino acid monomers linked by peptide bonds. They are distinguished from proteins on the basis of size, typically containing less than 50 monomer units.
Percutaneous nephrolithotomy	A surgical procedure to remove stones from the kidney by way of a small puncture incision.
Perfusion	The transfer of fluid through a tissue eg blood through a kidney.
Peribronchial thickening	The build-up of excess fluid or mucus in the small airway passages of the lung causing localized lung collapse.
Perinatal	The period immediately before and after birth.
Peripheral perfusion	The amount of blood circulating in small arteries, arterioles and capillaries. If the circulation is placed under stress and insufficient blood is pumped then these small blood vessels close down in order to preserve blood supply to vital organs.
Perirenal fat	A structure between the renal fascia and renal capsule of the kidney.
Perisylvian Syndrome	An extremely rare neurological disorder characterized by partial paralysis of muscles on both sides of the face, tongue, jaws and throat giving rise to difficulties in speaking, swallowing and/or epilepsy.
Peritoneal dialysis	Dialysis is an intervention whereby surplus fluid and waste in the blood is removed, should the kidneys be unable to perform this task.
Peritoneal dialysis catheter	A plastic tube inserted through skin and muscle into the peritoneal cavity. Dialysis takes place through this catheter.
Peritoneal dialysis cyclor PAC-X	A machine which automatically performs the cycles of peritoneal dialysis allowing patients to undergo treatment overnight and so reducing interference with daytime activity.
Peritonitis	Inflammation of the peritoneum.
Periumbilical	Located near the central area of the abdomen
Perivascular	The periphery of the circulatory system and typically the blood vessels.
pH	A measure of the acidity or basicity of an aqueous solution. Pure water is said to be neutral, with a pH close to 7.0 at 25 °C (77 °F). Solutions with a pH less than 7 are said to be acidic and solutions with a pH greater than 7 are basic or alkaline. Blood pH is a guide to cell functioning.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Phenotype	An individual's characteristics as determined by the interaction between his genotype and the environment.
Phenytoin sodium	A commonly used antiepileptic.
Phonology	The discipline of linguistics concerned with speaking.
Physiological	Pertaining to the normal functioning of an organ as governed by the interaction between its physical and chemical conditions.
Pial	Of or relating to the pia mater or pia, the delicate innermost layer of the meninges (the membranes surrounding the brain & spinal cord).
Plantar reflex	A reflex elicited when the sole of the foot is stimulated with a blunt instrument. Whilst normally a downward response, an upward movement may indicate disease of the brain or spinal cord.
Pneumonic	Pertaining to pneumonia, an infection of the lung.
Pneumothorax	Each lung is coated with a membrane (pleura) which is continuous over the inner surface of the chest (thorax). As the lungs expand & contract with breathing, the two layers of the pleura slide over each other and there is no real space between them. If the lung is punctured air enters this potential space and because it is under pressure, the lung under it collapses. This is termed pneumothorax (<i>'air in the chest cavity'</i>).
Polyuria/Polyuric	The production of an excessive amount of urine as seen with chronic renal failure, diabetes mellitus or diabetes insipidus.
Pons in toto	A portion of the hindbrain connecting the cerebral cortex to the medulla oblongata. It also serves as a communications and coordination centre between the two hemispheres of the brain.
Post-mortem	An examination of the dead body to determine the cause of death.
Posterior cranial fossa	A part of the intracranial cavity, located between the foramen magnum and tentorium cerebelli containing the brainstem and cerebellum.
Posterior reversible encephalopathy syndrome (PRES)	A syndrome characterised by headache, confusion, seizures and visual loss. It may occur in consequence of a number of causes.
Postictal Acute Encephalopathy	A sudden degenerative disease of the brain which appears post-seizure.
Post-ictal	Following a seizure
Prednisone (prednisolone)	A potent steroid medication given by mouth for its anti-inflammatory and/or immunosuppressive properties. The intravenous version is methylprednisolone.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Prodrome	An early symptom (or set of symptoms) which might indicate the onset of a specific disease before more definite symptoms occur.
Prolene	A synthetic suture used for skin closure and general soft tissue approximation and ligation.
Prophylactic	Any medical or public health procedure undertaken to prevent, rather than treat a disease.
Protease	Any enzyme that conducts proteolysis ie the protein catabolism by hydrolysis of the peptide bonds linking amino acids together in the chain of the protein.
Proteinuria	The presence of excessive amounts of protein in the urine.
Pseudolaminar necrosis	The uncontrolled death of cells in the cerebral cortex of the brain. It is seen in the context of cerebral hypoxic-ischemic insults e.g. strokes.
Pulmonary	Of, relating to, or affecting the lungs.
Pulmonary interstitial Oedema	An oedema caused when the capacity of the lymphatics to drain the interstitial fluid is exceeded.
Pulmonary oedema	The presence of excessive fluid within the lung tissue.
Purkinje cells	A class of neurons located in the cerebellar cortex.
Pyelogram	A procedure for obtaining x-ray images of the urinary tract. A radio-opaque medium is injected into a vein and when excreted by the kidneys it shows on x-rays. Any abnormality in the structure or foreign body is outlined by the dye.
Pyknosis	The irreversible condensation of the nucleus of a cell undergoing necrosis
Pyloric stenosis	A narrowing of the passage between the stomach and the small intestine. The condition affecting infants during the first weeks of life can be surgically corrected.
Pyrexia (or fever)	A fever characterised by an elevation of temperature above the normal range of 36.5–37.5°C.
Pyruvic acid	An organic acid having an important role in several metabolic pathways.
Radial artery	The artery that arises from the brachial artery at the level of the neck of the radius. It is felt in the wrist as ‘the pulse.’
Radiology	A medical specialty employing the use of imaging to both diagnose and treat disease.
Raised intracranial pressure	See cerebral oedema

GLOSSARY OF MEDICAL TERMS

Term	Definition
Rarefaction	The reduction of a medium's density or the opposite of compression.
Rebound	A reverse response occurring upon withdrawal of a stimulus.
Rebound tenderness	A clinical sign detectable upon physical examination of the abdomen. It refers to pain upon <i>removal</i> of pressure rather than the <i>application</i> of pressure to the abdomen.
Recannalise	The process of restoring flow to or reuniting an interrupted bodily tube e.g. an artery.
Red blood cells (erythrocytes)	Bi-concave non-nucleated cells containing the red pigment haemoglobin which carries oxygen and carbon dioxide between the lungs and the body tissues.
Red cell distribution width (RDW)	A measure of the variation in size of red blood cells.
Rehydration	The process of restoring water balance to the body tissues and fluids. Rehydration can be by oral intake or by the intravenous infusion of fluids.
Renal	Relating to the kidney.
Renal & extra renal losses	Fluid leaving the body as urine is renal loss and all other losses (sweat, vapour in breath, fluid in faeces etc) are extrarenal.
Renal arteries	The vessels which emerge from the aorta to supply blood to the kidneys. Sometimes there is more than one such artery leading to each kidney.
Renal dysplasia	See dysplastic kidneys
Renal tubule	See acute tubular necrosis.
Reperfusion	Damage to tissue caused when blood supply returns to tissue after a period of ischemia or lack of oxygen. The absence of oxygen and nutrients from blood during the ischemic period creates a condition whereby the restoration of circulation results in inflammation and oxidative damage.
Replacement rate (for IV fluids)	In the calculation of intravenous fluid rates it is usual to replace abnormal losses already experienced, for example by vomiting; to allow for the normal fluids required by the body and to make up for continuing abnormal losses, for example by diarrhoea. These are respectively, replacement, maintenance and continuing losses.
Respiratory arrest	The cessation of breathing.
Respiratory pressure waves	The component of a pulsatile pressure wave provoked by the lungs expanding and contracting.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Respiratory rate	The rate at which air passes into and out of the lungs. This occurs 18 times a minute in a healthy adult at rest.
Resuscitation	Methods of revival for a patient in cardiac or respiratory failure.
Reticular formation	That part of the brain concerned with the waking/sleeping cycle and the filtering of incoming stimuli.
Retromandibular vein	A vein formed by the union of the superficial temporal and maxillary veins which descends in the substance of the parotid gland beneath the facial nerve.
Reye's syndrome	A metabolic disorder principally affecting the liver and brain, marked by the rapid development of life-threatening neurological symptoms.
Right & left fundi	A fundus (pleural fundi) usually refers the interior surface of the eye opposite the lens and includes the retina and optic disc. It can be viewed through an ophthalmoscope.
Rotavirus	A genus of viruses of the family Reoviridae having a wheel-like appearance and causing acute infantile gastroenteritis and diarrhoea.
Routes of Medication	The method by which medication is administered to a patient eg <i>Topical</i> where a substance is applied to a localized area of the body, <i>Oral</i> being through the mouth or <i>Per Rectum</i> , through the rectum.
Salaam attacks (or infantile spasms)	A rare type of epilepsy usually starting in the first eight months of life.
Schwartz formula	A method of calculating glomerular filtration rate (see above) in a child with reference to blood levels of creatinine and height.
Sclerosis	A hardening of tissue or other anatomical features.
Scoliosis	A condition in which there is curvature of the spine.
Scrub nurse	An operating theatre nurse who has access to the instruments and the exposed parts of the body ('the operative field'). Accordingly and in order to be sterile, they 'scrub' their hands and arms prior to surgery, wear a sterile gown and gloves and are masked. They may not touch any unsterile area during the procedure.
Sentinel Event	Any unanticipated event in a healthcare setting resulting in death or serious physical or psychological injury to a patient which is unrelated to the natural course of illness.
Sepsis	A bacterial infection in the bloodstream or body tissues.
Septicaemia	A systemic disease caused by the multiplication of microorganisms in the blood. Also called blood poisoning or septic fever.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Serology	The scientific study of blood serum and other bodily fluids. Used in practice to refer to the diagnostic identification of antibodies in the serum.
Sickle cell disease	A group of inherited blood disorders characterized by chronic anaemia, acute episodes of limb or joint pain and occurring with complications due to associated organ and tissue damage.
Sodium chloride 0.18% / dextrose 4%	A solution for IV use containing 30 mmol/litre of sodium and chloride or one-fifth of the concentration in 'natural body fluids' such as blood.
Sodium measurement (mmol/litre)	The concentration of sodium in solution is expressed as the number of milliosmoles in each litre (mOsmol/L). An osmole is a unit used to define chemicals which can contribute to osmosis and represents the number of osmotically active particles which, when dissolved in 22.4 L of solvent at 0 degrees Centigrade, exert an osmotic pressure of 1 atmosphere. A milliosmole is 1/1000 of an osmole.
Sodium thiopentone (STP)	A rapid-onset short-acting drug used to induce general anaesthesia.
Sodium valproate	An anti-convulsive drug.
Sphenopalatine artery	An artery of the head.
Status epilepticus	Repeated epileptic fits without return to consciousness in between. Breathing stops between each fit and the body is deprived of oxygen causing damage to the brain.
Stenosis	An abnormal narrowing in a blood vessel or other tubular organ or structure.
Stereomicroscope	An optical microscope, often referred to as the "light microscope" to magnify small samples.
Sternomastoid	A paired muscle in the superficial layers of the anterior portion of the neck. It acts to flex and rotate the head.
STP	Abbreviation of sodium thiopentone, a drug used to induce anaesthesia intravenously. Also an acronym for Standard Temperature & Pressure.
Striatum	A subcortical part of the forebrain.
Stroke	The sudden and localised death of brain cells due to inadequate blood flow.
Subacute	A description applied to a disease, the duration of which persists between the acute and chronic.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Subarachnoid	The space within the brain between the arachnoid membrane and the pia mater (the delicate innermost layer of the meninges).
Subclavian	The area beneath the clavicle (collar bone).
Subclinical	Without clinical presentation
Subcutaneous	Any part of the body found beneath the skin.
Sub-dural empyema	An intracranial focal collection of purulent material located between the dura mater and the arachnoid mater
Subependymal zone	The cell layer surrounding the lateral ventricles in the brain.
Subpial	Within the space of the brain that separates the pia from the underlying neural tissue.
Subventricular	A paired brain structure situated throughout the lateral walls of the lateral ventricles of the brain.
Sulci	Depressions or fissures in the surface of an organ, especially the brain.
Superior sagittal sinus	A space located within the head along the attached margin of falx cerebri. It allows blood to drain from the lateral aspects of anterior cerebral hemispheres to the confluence of sinuses.
Supraorbital	The region immediately above the eye sockets.
Suprapubic	Relates to the abdomen in its lower part, immediately above the pubic bones.
Suprapubic catheter	See Catheter
Surgical cut-down	A minor surgical procedure whereby a small incision is made in the skin and the underlying tissues are separated so as to expose a blood vessel and so enable the insertion of a cannula into the vessel.
Synapse	A junctional structure in the nervous system that permits a neuron to pass an electrical or chemical signal to another cell.
Syncope	A short loss of consciousness caused by a temporary lack of oxygen in the brain.
Syncytium	A multinucleate cell which can result from multiple cell fusions of uninuclear cells (i.e. cells with a single nucleus).

GLOSSARY OF MEDICAL TERMS

Term	Definition
Syndrome of inappropriate antidiuretic hormone secretion (SIADH)	The Antidiuretic hormone (ADH) is produced by the pituitary gland and has the effect of inhibiting urine production and causing water retention. It is released in response to a range of stimuli including damage to the brain, lung disease, individual drugs, surgery, trauma and in relation to certain glandular disorders. The effect of a SIADH is retention of fluid leading to falls in blood osmolality and blood sodium levels relative to the amount of water present. This will result in dilutional hyponatraemia.
Syntax	The study of the principles and rules for constructing phrases and sentences in natural languages. The term <i>syntax</i> is also used to refer directly to the rules and principles that govern the sentence structure of language.
Tachypnoea	Rapid breathing.
Temporal	Referring or relating to the muscles, bone or blood vessels around the temple.
Tentorium	The internal framework of supporting tissue within the skull formed by ingrowths of the exoskeleton.
Tetraplegic	Paralysis of all four limbs, also known as quadriplegic.
Thalamus	One of two masses of grey matter (brain cells or neurons) lying on either side of the third ventricle of the brain. Important for sensory impulses.
Theatre runner	See Circulating Nurse.
Thoracic	Relating to the chest.
Thromboembolism	A clot in the blood that blocks a blood vessel.
Thrombosis	The formation of a blood clot within the vessels or heart.
Titre	The concentration of a substance in a solution or the strength of such a substance determined by titration.
Tonic	Characterised by continuous tension or contraction of muscles, as a convulsion or spasm.
Tonsillectomy	The surgical removal of the tonsils.
Torsion	Where a cord or vessel twists thereby cutting off blood supply to a particular area of the body.
Toxicology	The scientific study of poisons, their detection, effects and methods of counteraction.
Toxin	A poison, especially a protein or conjugated protein produced by certain animals, higher plants and pathogenic bacteria.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Trachea	The medical term for 'windpipe'.
Transducer	Any part of the body which converts one form of energy into another.
Transuretero-ureterostomy	A ureterostomy is a surgical operation in which the ureter is brought to the body surface to drain, often because of an obstruction in its lower part or in the bladder. If the operation is performed through an endoscope passed through the urethra and bladder into the ureter it is a transureteric operation.
Trigeminal nerve (the fifth cranial nerve)	A nerve containing both sensory and motor fibres. It is responsible for sensation in the face and certain motor functions such as biting, chewing and swallowing.
Tympanometry	An examination used to test the condition of the middle ear and the mobility of the eardrum and/or the conduction bones by creating variations of air pressure in the ear canal.
Uncal	Pertaining to the uncus, being the hook-like anterior end of the hippocampal gyrus on the temporal lobe of the brain.
Upper respiratory infection	Any infection of the upper respiratory tract.
Upregulation	The increase of a cellular component.
Uraemia	The illness accompanying kidney failure (also called renal failure), confirmed by an increase in blood urea, a nitrogenous waste product associated with the failure of this organ.
Urea	A crystalline substance of the chemical formula $\text{CO}(\text{NH}_2)_2$, derived from protein. It is the chief waste product discharged from the body in the urine.
Urea cycle defect	A disorder caused by a deficiency of one of the enzymes in the urea cycle responsible for removing ammonia from the blood stream.
Ureteric catheter	See Catheter
Ureteric stents	A semi rigid hollow tube which can be placed in a hollow organ, such as the ureter so as to bypass or prevent obstruction.
Ureterostomy	The creation of a stoma (a new, artificial outlet) for a ureter or kidney. The procedure is performed to divert the flow of urine away from the bladder when the bladder is absent or not functioning.
Ureters	The tubes which carry urine from the kidneys to the bladder.
Urethral catheter	See Catheter
Urethral valve	An obstructing membrane in the posterior male urethra occurring as an abnormality in development.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Urinalysis	A contraction of urine analysis, or tests for pH (acidity) or the presence of protein, sugar or ketones.
Urinary tract	The passage from the pelvis of the kidney through the ureters, bladder and urethra to the external urinary opening.
Urinary tract infection (UTI)	An infection of one or more structures in the urinary system.
Uropathy	A disease of the urinary system.
Vacuolation	A small cavity in the cytoplasm of a cell, bound by a single membrane and containing water, food, or metabolic waste.
Valium	See 'diazepam'.
Vancomycin	An antibiotic infused intravenously in the treatment of serious infections.
Varicella	A highly infectious viral disease, known commonly as chickenpox.
Vascular	Relating to the blood vessels.
Vascular anastomosis	Connecting two blood vessels (or the cut ends of one vessel) together.
Vasoconstriction	The narrowing of the blood vessels resulting from contraction of the muscular wall of the vessels.
Vasodilation	The widening of blood vessels resulting from relaxation of smooth muscle cells within the vessel walls.
Vasopressin	A hormone secreted by the posterior lobe of the pituitary gland that acts to constrict blood vessels and raise blood pressure. It reduces the excretion of urine and is also called antidiuretic hormone.
Vena cava (pl. venae cavae)	Two large vessels which open into the right atrium of the heart and return venous blood from the whole body (except the lungs). That which drains vessels from the head, neck and upper limbs is called the superior vena cava and that draining from the trunk and lower limbs is the inferior vena cava.
Venous blood	The blood found in the veins.
Venous sinus	A large vein or channel for the circulation of venous blood.
Ventilation	A procedure, usually carried out in an intensive care unit, by which a device called a 'ventilator' takes over a patient's breathing.
Ventilatory support	Breathing assistance to enable sufficient air entry into their lungs, commonly achieved by the use of a mechanical ventilator delivering oxygen and air through an endotracheal tube.

GLOSSARY OF MEDICAL TERMS

Term	Definition
Ventricle	The pumping chambers of the heart.
Ventricular system	A set of structures containing cerebrospinal fluid in the brain. It is continuous with the central canal of the spinal cord.
Vesicoureteral reflux	An abnormal movement of urine from the bladder into ureters or kidneys.
Vessel occlusion	A blockage in a blood vessel usually with a clot. An occluded vessel creates eddies in the normally laminar flow of blood currents.
Virology	The study of viruses and viral diseases.
Viscosity	A measure of the resistance of a fluid deformed by either shear or tensile stress, but commonly and for fluids only, viscosity is descriptive of "thickness" or "internal friction".
Vitreous humour	The clear gel that fills the space between the lens and the retina of the eyeball.
Voltarol (diclofenac)	A proprietary brand of non-steroidal anti-inflammatory drug taken to reduce inflammation and as an analgesic to reduce pain.
White blood cells (leucocytes)	The cells within the blood which contain no haemoglobin and are therefore colourless. They are important in the prevention and response to infection.
White cell count (WCC)	A blood test which determines the number of white blood cells in a blood sample.
Zeroing	A monitor such as that measuring central venous pressure (CVP) is conventionally operated so that zero represents the level of the right atrium, the chamber into which the venae cavae return blood. Should that level change, for example if the bed or trolley on which the patient lies is raised or lowered, then the device has to be adjusted or rezeroed to maintain the zero point.

INQUIRY COSTS

Area of Expenditure	Total
Inquiry Legal Team	4,718,361
Inquiry Administration	1,993,385
Families Legal Costs	2,558,596
Oral Hearing ICT Costs	1,066,689
Accommodation	1,674,702
Other Costs	1,802,835
Total	13,814,568¹

¹ These figures include estimates to the end of December 2017. There will be further expenditure by the Inquiry after publication to include winding up costs and placing the Inquiry record with the Public Records Office of Northern Ireland.