CONSOLIDATED CHRONOLOGY: 'GOVERNANCE' AND 'LESSONS LEARNED'

Adam, Claire, Lucy, Raychel and Conor

SCHEDULE 1: Before Adam's admission

Date	Events	Reference	Other Developments
October 1983		London: HMSO	Publication of NHS Management Inquiry (1983) Report (the Griffiths Report)
04.06.1984		Press release no.84/ 173, 4 June	Publication of Department of Health & Social Security (1984) Griffiths Report: Health Authorities to Identify Managers
June 1986		Ref: 220-002-260	Publication of 'Hyponatraemia, convulsions, respiratory arrest, and permanent brain damage after elective surgery in healthy women' (Arieff & Allen) the New England Journal of Medicine Vol.314
January 1989		Department of Health, London	Publication of DoH's White Paper: 'Working for Patients' and 'Working for Patients: Medical Audit Working Paper No.6 - both setting out plans for a comprehensive system of medical audit.
1989		Department of Health, London HC (1989) 20	Health Service Management: Preservation, Protection & Destruction of Records: Responsibility of Health Authorities under the Public Records Act
1990		Department of Health, London HC (1990) 22	Circulation of Guide to Consent for Examination or Treatment.
1990		Royal College of Surgeons of England	Guidelines for Clinicians on Medical Records & Notes
May 1990		NCEPOD	Report of the Confidential Enquiry into Peri-operative Deaths (1990)
1991		HMSO (Department of Health)	Publication of Welfare of Children and Young People in Hospital (1991).
1991/1992			Publication of Report of the National Confidential Enquiry into Peri-operative Deaths (1991/1992)
1992			Publication of the Cadbury Report by Committee on the Financial Aspects of Corporate Governance and Gee & Co – setting new standards for corporate governance and accountability. The recommendations were accepted for the NHS in the codes of conduct on accountability to which all non-executives subscribed and which formed the foundation on which the probity of NHS Boards has rested since 1994
March 1992		Northern Ireland Health and Personal Social Services Ref: WS-062/1, p.328	Circulation of: A Charter for Patients and Clients.

Date	Events	Reference	Other Developments
May 1992			Arieff et al publish 'Hyponatraemia and death or permanent brain damage in healthy children' BMJ, Vol. 304, May 1992 (Ref: 220-02-201).
28.07.1992		NHS Management Executive SG (1992) 32	Patient Consent to Examination or Treatment
1993		British Medical Association	Medical Ethics Today: Its Practice and Philosophy – providing the pre-requisites for Valid Consent
1993		UKCC	Standards for Records and Record Keeping
1993		NHS Executive Department of Health, London	Risk Management in the NHS
21.12.1993		NHS Management Executive EL(93) 113	Publication of Improving Clinical Effectiveness[1].
1994		Allitt Inquiry: Independent Inquiry relating to deaths and injuries on the children's ward at Grantham and Kesteven General Hospital. London: HMSO, 1994	Report of the Allitt Inquiry: *"there must be a quick route to ensure that serious matters… are reported in writing to the Chief Executive of the hospital, and in the case of directly managed units, to the District Health Authority".*
1994		Department of Health & Social Services HSS-(PDD) 8/1994	Code of Conduct and Accountability
1994		Royal College of Surgeons of England	Guidelines for Clinicians on Medical Records & Notes
1994		Ref: 320-004-001	Central Medical Advisory Committee ("CMAC") meeting held on 23.02.94 and discusses 'NCEPOD'; clinical standards; and the 'clerking in of patients by house officers on-call out of hours' as a problem to be highlighted to the Minister
27.07.1994		Ref: WS-062/1, p.13	Publication of guidance for Reporting Adverse Incidents and Reactions, and Defective Products relating to Medical and Non-Medical Equipment, by the Management Executive.
June 1994		Royal College of Anaesthetists	Clinical Audit & Quality of Practice in Anaesthesia
December 1994		No.8, Nuffield Institute for Health	Publication of Bulletin on the Effectiveness of Health Service Interventions for Decision-makers: Implementing Clinical Practice Guidelines: Can guidelines be used to improve clinical practice?
1995			Circulation of British Association of Paediatric Surgeons- A Guide for Purchasers and Providers of Paediatric Surgical Services (revised

[1] The response to this circular was the subject of a Report following a study over April 1994-July 1997: 'Improving Clinical Effectiveness; The Development of Clinical Guidelines in the West Midlands'- Honigsbaum & Ham.

Date	Events	Reference	Other Developments
			ed. 1995).
1995		Audit Commission	Setting the Records Straight, A Study of Hospital Health Records
1995		TP6/95	Circulation of Management of Formal & Informal Complaints[2]
1995		Ref: WS-066/1, p.28	HPSS Management Plan 1995/96 to 1997/98 including the following under 'Best Practice' it states: *"Providers need to continue to focus on improvement in standards of practice"* and *"Specifically units should ensure that there is a clear policy on: clinical audit as part of a programme to improve all aspects of service quality, not just clinical outcomes".*
March 1995		Ref: WS-062/1, p.346	Publication of Letter from Chief Executive of Health & Personal Social Services Northern Ireland to inter alia Chief Executives of Trusts & Boards enclosing: Explanatory Booklet setting out the Management Executive response to 'Being Heard'- Wilson Review Committee's Report on NHS complaints procedure.
June 1995		Royal College of Surgeons of England	Royal College of Surgeons of England issue Guidelines to Clinical Audit in Surgical Practice issued in June 1995 …
October 1995		GMC Ref: 314-001-001	Publication by GMC of Good Medical Practice- Guidance for Doctors- *"all doctors must work with colleagues to monitor and improve the quality of healthcare".*
06.10.1995		Ref: 305-002-003 HSS(GHS)2/95, pgs.4-23	Circulation of A Guide to Consent for Examination or Treatment, circulated by the Management Executive of the Chief Executive.

SCHEDULE 2: Adam's death at the RBHSC

Date & Time	Events (Adam-related)	Reference	Other Developments
28.11.1995 09:10	Second brain stem test carried out by Dr. David Webb with Dr. Mary O'Connor present. He records that the brain stem death criteria are fulfilled Adam's mother wishes to discuss organ donation. Coroner advises against organ donation 'in view of medico-legal reasons'[3]	Ref: 058-004-009; Ref: 058-035-142 Ref: 058-035-142; Ref: 058-004-009	
?[4]	3 photographs are taken of Adam	Ref: 093-005-007	
09:30	Constable Stephen Tester is informed of Adam's death. He records that he was made aware of the circumstances surrounding Adam's death by Dr. Maurice Savage and that life had been pronounced extinct at about 09:00 by Dr. David Webb	Ref: 011-008-024	

[2] This was the Trust's policy for complaints at the relevant time.
[3] Subsequently this decision was reversed
[4] Time as yet unknown

Date & Time	Events (Adam-related)	Reference	Other Developments
11:15	Adam's body is identified to Constable Tester by Dr. Maurice Savage in the presence of Adam's mother	Ref: 011-008-024	
11:30	Ventilatory support is withdrawn from Adam with his other's consent and in her presence	Ref: 058-035-142; Ref: 011-015-109	
	Fluids and monitors are discontinued and all lines are removed in accordance with Dr. Maurice Savage's instructions	Ref: 058-035-142; Ref: 011-015-109	
13:00	Nursing observations are discontinued	Ref: 058-038-164	
	A further photograph is taken of Adam	Ref: 093-005-007	
	Note is prepared by Dr. Maurice Savage on Adam, which he copies to Dr George Murnaghan and Dr. Robert Taylor. It provides a summary of his direct involvement and includes: *"His serum electrolytes, haemoglobin and coagulation were satisfactory. H.B. 15.5g/dl, Na 139, K 3.6, Urea 16.8, Ca.2.54, Albumin 40, Prothrobin time 12.3. His chest was clear on examination. B.P. 108/56. He was apyrexial. There were no signs of infection. His night gastrostomy feeds are normally 1.5l of Nutrizon. On anaesthetic advice this was changed to clear fluid which was stopped two hours pre op. This meant he had 900mls of Dioralyte overnight"*	Ref: 059-066-153	
	Dr. Maurice Savage reports Adam's death to the Coroner as being 'totally unexpected'	Ref: 011-025-125	
	An Autopsy Request form is signed by Dr. Robert Taylor in which he records that Adam arrived in theatre with a 300mls fluid deficit and that there was excessive bleeding throughout the surgery at the end of which Adam was found to have fixed and dilated pupils. He also records: (i) chest x-ray showing pulmonary interstitial oedema; (ii) CT-scan showing gross cerebral oedema, – obliteration of the ventricles; (iii) serum sodium falling to 119mmol/l. The clinical diagnosis is recorded as: *"osmotic disequilibrium syndrome"*; (iv) further fluid administration due to the on-going blood loss and the poor vascular supply of the donor kidney. He records the clinical problems in order of their importance as: (i) renal transplant – donor organ in the right iliac fossa; and (ii) cerebral/pulmonary interstitial oedema	Ref: WS-012/1, p.19	
	Coroner orders a post-mortem		
29.11.1995	Siemens Patient Monitor, Model 1281 is reported faulty (dim display) – this is the CVP monitor that was used in Adam's transplant surgery. It is removed by John McKirgan of Siemens and a 'demo unit' is left in its place	Ref: 094-210-1001 & Ref: 094-210-999	
14:00	Constable Tester identifies Adam's body to Dr. Alison Armour	Ref: 011-008-024	
14.40	Post-mortem examination is carried out by Dr. Alison Armour who reports her principal findings to the Coroner as cerebral oedema and states that a completed report will follow [after the examination of the brain following 'fixing of the brain']. Histological slides are taken by Dr. Alison Armour from (a) lungs (b) larynx (c) liver (d) kidney (e) transplanted kidney (f) spleen (g) lymph nodes (h) brain (i) spinal cord	Ref: 094-114-321 Ref: 011-010-035	

Date & Time	Events (Adam-related)	Reference	Other Developments
	Dr. Alison Armour telephones the Coroner to say that she is 'mystified' as to why Adam had died and the Coroner records that conversation as: *"He*[sic] *findings at autopsy were the grossest cerebral oedema she had ever seen. She said the brain was pressing right up to the dura".* Following the Coroner's query over 'hypoxia-anoxia', Dr. Alison Armour agreed that there might be an anaesthetic problem i.e.: *"… it could either be something to do with the anaesthesia or the anaesthetic equipment … [she] had also discussed the case with the anaesthetist Dr. Bob Taylor. Both she and he were mystified about what had happened"*	Ref: 011-025-125	
30.11.1995	The Coroner notifies Dr. George Murnaghan that he will be holding an Inquest and seeking an independent medical/anaesthetic report from Dr. John Alexander		
	The Coroner writes to Dr. John Alexander asking him to prepare an anaesthetic report on Adam's case for use at the Inquest. He states that Dr. Alison Armour informed him that she found gross cerebral oedema, the worst she had ever seen in an autopsy on a child. He identified the clinicians involved as Dr. Robert Taylor and Messrs. Stephen Brown and Patrick Keane. He also stated: *"… the child was healthy and considered to be an ideal candidate for transplant surgery. No complications were anticipated."*	Ref: 011-018-116	
	The Coroner writes to Dr. George Murnaghan confirming that Dr. John Alexander had agreed to provide an anaesthetic report for the Inquest and seeking statements from the clinicians involved as soon as possible. It also stated: *"it would be useful to have a statement from the technician responsible for the equipment in theatre confirming that it was functioning properly. The statement should cover the frequency of checks and whether such checks were carried out before and after surgery in this instance"*	Ref: 059-073-166	
	The Coroner writes to Mrs. Susan Young seeking a statement from: *"Mr. Keane fully detailing his part in the surgery and commenting as to whether it progressed uneventfully or otherwise"*	Ref: 011-020-119	
	Letter from Dr. Robert Taylor to Dr. George Murnaghan explaining his position, including: *"The pulse rate, CVP and arterial blood pressure gave me no cause for concern throughout the case, and a blood gas at 09.30am confirmed good oxygenation and no sign of acidosis or any indication of problems. In view of the CVP, heart rate and BP I did not consider the fluids to be either excessive or restrictive. Indeed I regarded the fluids to be appropriate and discussed this with other doctors present in the theatre"*	Ref: 059-067-155	
02.12.1995	Siemens Patient Monitor, Model 1281 is returned to the Department by John McKirgan where it is left 'on test'	Ref: 094-210-1000 & Ref: 094-210-999	
	Dr. Alison Armour telephoned the Coroner to say	Ref: 011-025-125	

Date & Time	Events (Adam-related)	Reference	Other Developments
	that *"she was becoming ever more convinced that there was a question mark against the equipment"*		
02.12.1995	Dr Fiona Gibson visits the operating theatre suite of the RBHSC at the request of Drs George Murnaghan and Joe Gaston to discuss with Dr Robert Taylor three patients (including Adam Strain) whose post-mortem examination had been brought to the attention of the Coroner. She was accompanied by Mr. John Wilson and Mr. Brian McLaughlin, both Senior Technical officers, on the site who carried out checks into the ventilators and other equipment in the theatre.	Ref: 059-065-132	
December 1995	The report of Messrs. Wilson & McLaughlin (signed by John Wilson only) stated that: *"Siemens Patient Monitor, Model 1281, Serial No. (This monitor is currently out for repair – new display screen is being fitted and a loan monitor is in use) …* *The Anaesthetist using the machine is also expected to sign the log before commencing the list but this does not happen on most occasions. A reason for this omission should be requested"* and referred to the*: "protocols and monitoring procedures set up within the RBHSC's Theatres"* Brian McLaughlin confirmed that the Siemens monitor that was present was functioning within specification. However, John Wilson "*cannot confirm that the Siemens Patient Monitor [he] tested was the specific monitor used in any specific operation*." Brian McLaughlin also states this, though he says: "*These monitors are not easily moved and are not routinely replaced unless they are defective. Therefore I would say from my experience it is very likely the monitor which we examined on 2nd December 1995 was the monitor used in theatre on 27th November 1995 unless records show that a monitor was removed from theatre RBHSC after 27th November 1995 and before 2nd December 1995*". In addition, there was "*a very remote possibility*" of a gas mismatch.	Ref: 011-028-147 Ref: 093-028-076 & Ref: 093-027-072	
03.12.1995	Meeting of the Coroner, Dr. George Murnaghan, Dr. Joe Gaston and Dr. Samuel Lyons at which Dr. Lyons suggested that it was important to have another paediatric anaesthetic opinion apart from Dr. John Alexander as he did not have extensive paediatric experience Dr. Joe Gaston's opinion at the time was that "*the learning from this case was primarily in paediatrics, however it was very limited in general anaesthetics due to the unique nature of Adam's case" and that "in routine cases in general anaesthetics, Consultant Anaesthetists in the Royal Hospitals should have been able to prevent the development of hyponatraemia"*	Ref: 011-027-128 & Ref: 093-024-066 Ref: 093-023-065; Ref: 093-024-066 & Ref: 093-025-068	
04.12.1995	Report of Dr Fiona Gibson, which states: *"The technical checks demonstrated a high degree of vigilance in this area, found nothing at fault in relation to the cases in question but identified a problem relating to pin indexing which the whole hospital will now address"* and "*The Protocols for monitoring, anaesthetic set-up and drug administration in this area are among the best on the Royal Hospitals site"*[5] Dr Gibson acknowledges Wilson and McLaughlin's finding of a possible pin problem, but states *"having*	Ref: 011-005-017 Ref: 093-026-069	

[5] It has since been confirmed by the Trust that it is their belief that "*the Protocols referred to by Dr Gibson did not exist in written form"* (Ref: 305-014-604)

Date & Time	Events (Adam-related)	Reference	Other Developments
	examined the anaesthetic record that there was no mismatch of gases during the operation."		
06.12.1995	Letter from PSNI to the Coroner attaching Form 19 in respect of Adam's death, with the request that he *"inform this office if an inquest is necessary in order that an inquest file may be prepared"*	Ref: 011-022-121 & Ref: 011-022-122	
	Memo from Dr George Murnaghan to Drs. Savage, Taylor, Gaston and Webb and to Messrs. Brown and Wilson – advising that the Coroner is seeking statements from the clinicians involved as soon as possible. It also referred to the Coroner's request for: *"a detailed statement from the anaesthetic technical staff about the equipment used during the surgery and anaesthesia"* and stated *"This has been arranged"*	Ref: 059-071-164	
	Siemens Patient Monitor, Model 1281 is returned to service from having been in the Department 'on test'	Ref: 094-210-1000 & Ref: 094-210-999	
07.12.1995	Dr. Armour also showed certain, unidentified, histology *"slides etc"* to Dr. O'Hara and Dr. Bharucha	Ref: 011-025-125	
08.12.1995	Letter from Dr. Alison Armour to Professor Crane and copied to the Coroner, Dr. George Murnaghan, Mr. Calvin Spence of the BMA and the Medical Protection Society. She explained that she had dealt with Adam's case and was: *"… willing to attend any meeting about this case, including a meeting with clinicians, administrative staff, HM Coroner and whoever else wishes to attend. As I was the pathologist who carried out the autopsy I feel my opinion on the case is relevant to such a meeting and as such the case could be discussed in full"[sic]*	Ref: 011-023-123	
	Following discussions with Dr. Alison Armour and Dr. George Murnaghan (over the period 1st December to 8th December 1995), the Coroner informed Dr. George Murnaghan that it: *"appeared imperative that the equipment was now independently examined"*.	Ref: 011-025-125	
	Dr. Murnaghan telephones the Coroner from Dr. O'Hara's office and there is a conversation between the Coroner and Dr. O'Hara, following which it is agreed that the equipment should be independently examined.	Ref: 011-025-126	
11.12.1995	Dr. Fiona Gibson sends her report to Dr. George Murnaghan apologising for him not receiving the report last week: *"Please find it enclosed – I hope it is appropriate"*	Ref: 059-065-151	
December 1995	Letter from Mr. Patrick Keane to Susan Young in which he very briefly describes the progress of Adam's surgery. He acknowledged the surgery was technically difficult and stated: *"the kidney was successfully put into to the child and perfused quite well initially and started to produce urine. At the end of the procedure it was obvious that the kidney was not perfusing as well as it had initially done but this is by no means unusual in renal transplantation. The whole operating procedure … about 3 hours. I was informed later on that day that the child had severe cerebral oedema and that he was probably brain dead. In summary, therefore, the operation was difficult but a successful result was achieved at the end of the procedure"*	Ref: 059-056-133	
December	Coroner telephones Dr. Edward Sumner who agreed	Ref: 011-027-128	

Date & Time	Events (Adam-related)	Reference	Other Developments
1995	to provide an opinion for the Inquest		
13.12.95	Letter from the Coroner to Dr. Alison Armour advising her of his meeting on 3rd December 1995 with Drs. Murnaghan, Gaston and Lyons during which they expressed the view that *"the death had nothing to do with anaesthetics"* and agreed that it is *"an immensely complex case"*. The letter also states that Drs. Gaston and Lyons felt there was a need for the opinion of a Paediatric Anaesthetist and that Dr. Edward Sumner had agreed to provide an opinion. He also states that he had the impression from something said by Dr. Denis O'Hara that the findings of 'gross cerebral oedema' could be explained by the time Adam was on the ventilator. The letter concludes by passing on Dr. Edward Sumner's request that: *"he be sent copies of all the notes – everything you have"*	Ref: 011-027-128	
14.12.1995	Letter from Dr. David Webb to Dr George Murnaghan describing his involvement with Adam from 7.30pm on 27th November 1995. He stated that his examination at that time indicated brain stem death: *"I noted he had severe extensive bilateral fundal haemorrahages suggestive of acute raised intercranial pressure. I reviewed his CT scan which showed diffused generalised cerebral oedema with obliteration of the basal cisterns fulfilling the radiological criteria for coning … My impression was that he had suffered severe acute cerebral oedema which was likely to have occurred on the basis of osmotic disequilibrium causing a sudden fluid shift"*	Ref: 059-061-147	
15.12.1995	The undated 'Report on Equipment Used During Untoward Incidents in the Operating Theatres, RBHSC' of Messrs. Wilson & McLaughlin (signed by John Wilson only) is received by the Coroner from Dr. George Murnaghan. It states that: *"Siemens Patient Monitor, Model 1281, Serial No. (This monitor is currently out for repair – new display screen is being fitted and a loan monitor is in use) …* *The Anaesthetist using the machine is also expected to sign the log before commencing the list but this does not happen on most occasions. A reason for this omission should be requested"* and referred to the*: "protocols and monitoring procedures set up within the RBHSC's Theatres"* Brian McLaughlin confirmed that the Siemens monitor that was present was functioning within specification. However, John Wilson "*cannot confirm that the Siemens Patient Monitor [he] tested was the specific monitor used in any specific operation*." [In fact it was not the correct equipment] Brian McLaughlin also states that, though he says: "*These monitors are not easily moved and are not routinely replaced unless they are defective. Therefore I would say from my experience it is very likely the monitor which we examined on 2nd December 1995 was the monitor used in theatre on 27th November 1995 unless records show that a monitor was removed from theatre RBHSC after 27th November 1995 and before 2nd December 1995*". In addition, there was "*a very remote possibility*" of a gas mismatch.	Ref: 011-028-147 Ref: 093-028-076 & Ref: 093-027-072	
20.12.1995	Letter from Stephen Brown to Dr George Murnaghan briefly describing his prior involvement with Adam in 1991 and then the transplant surgery, which he	Ref: 059-060-146	

Date & Time	Events (Adam-related)	Reference	Other Developments
	described as *"technically difficult"*. He also said that : *"at no stage during the operation was I conscious of any problem with his general condition"* and that *"The profusion of the kidney was satisfactory although at no stage did it produce any urine"*.		
	Letter from Dr. Alison Armour to Dr. Edward Sumner, enclosing: (i) original hospital notes [but not the full 10 files]; (ii) 2 reports from Dr. Robert Taylor as the Consultant Anaesthetist involved; (iii) a report from Dr. Maurice Savage as Adam's Consultant Paediatric Nephrologist; and (iv) equipment check report of Messrs. Wilson and McLaughlin. She also summarised the main features of the case including that: (i) Adam was fed via a gastrostomy button which included a night feed of 1,500mls; (ii) the operation produced a little more bleeding than expected and technically was a little more difficult because Adam was well nourished (over weight?); (iii) Adam did not wake up and an urgent CT scan showed gross cerebral oedema with the brain bulging through the dura	Ref: 011-028-130	
22.12.1995	Letter from Dr. Alison Armour to Professor Jeremy Berry, enclosing: (i) Adam's notes; (ii) report of Consultant Anaesthetist (Dr. Edward Sumner); (iii) report of Consultant Paediatric Nephrologist (Dr. Maurice Savage); (iv) equipment check report of Messrs. Wilson and McLaughlin; (v) histological slides The histological slides that were taken from (a) lungs (b) larynx (c) liver (d) kidney (e) transplanted kidney (f) spleen (g) lymph nodes are also provided to Professor Berry Dr. Armour summarised the main features of the case including that: (i) Adam was fed via a gastrostomy button which included a night feed of 1,500mls; (ii) the operation produced a little more bleeding than expected and technically was a little more difficult because Adam was well nourished (over weight?); (iii) Adam did not wake up and an urgent CT scan showed gross cerebral oedema (weight of unfixed brain '1,320gms'). Professor Jeremy Berry is asked him to look at the slides and provide the Coroner with his expert opinion.	Ref: 011-029-151	
1996		Ref: 314-003-001	UKCC 'Guidelines for Professional Practice' produced
03.01.1996	Letter from the Coroner to Dr. Edward Sumner referring to the letter from Dr. Alison Armour and confirming that he wished him to provide a Report for Adam's Inquest	Ref: 011-031-163	
	Letter from the Coroner to Professor Berry referring to the letter from Dr. Alison Armour and confirming that he wished him to provide a Report for Adam's Inquest	Ref: 011-032-164	
	Letter from Dr. Alexander to the Coroner enclosing his Report on Adam. He claims that there is 'very little available information concerning dilutional hyponatraemia (low serum sodium) in children)'. He refers to Arrieff's paper: 'Hyponatraemia and death or permanent brain damage in healthy children' referring to how: "…	Ref: 011-030-153	

Date & Time	Events (Adam-related)	Reference	Other Developments
	generally healthy children with symptomatic hyponatraemia (101-123mmol/l) can abruptly develop respiratory arrest and either die or develop permanent brain damage". He summarises his opinion as: *"The complex metabolic and fluid requirements of this child having major surgery led to the administration of a large volume of hypotonic (0.18%) saline which produced a dilutional hyponatraemia and subsequent cerebral oedema … Dr. Taylor is to be commended on the detailed notes and records he kept throughout the anaesthetic".*		
04.01.1996	Meeting between Adam's mother and the Coroner during which she informs him that, amongst other things, there are 10 files of medical notes for Adam and she queries whether they have all been made available to the experts	Ref: 011-033-165	
	Coroner speaks to Dr. Alison Armour who states that she had not sent all 10 files to the experts due to the large number. The Coroner suggests that she write to the experts advising of the files and stating that they could be accessed through Dr. George Murnaghan, which she agreed to do	Ref: 011-033-165	
05.01.1996	The Coroner sends Dr. John Alexander's report to Adam's mother	Ref: 011-034-166	
	The Coroner sends Dr. John Alexander's report to Dr. Alison Armour	Ref: 011-034-167	
	The Coroner sends Dr. John Alexander's report to Dr. George Murnaghan, passing on the query of Adam's mother as to whether Dr. Maurice Savage would help explain the expert reports to her	Ref: 011-034-168	
09.01.1996	The Coroner speaks to Dr. Maurice Savage who agrees to interpret the expert medical reports for Adam's mother	Ref: 011-039-171	
10.01.1996		NHS Executive (1996)	Publication of Promoting Clinical Effectiveness: A framework for action in and through the NHS
12.01.1996	Adam's brain is cut following fixing. Dr. Alison Armour takes blocks from the brain: (a) Right frontal white matter, (b) left cingulated gyrus, (c) left basal ganglia, (d) right and left hippocampus, (e) left occipital lobe, (f) cerebellum, (g) pons in toto, (h) thalamus. The brain was photographed sequentially. Blocks were taken from the cervical cord as follows: (a) cervical, (b) thoracic, (c) lumbar. Dr. Alison Armour states in her Report on Autopsy that the slides from the brain and spinal cord were shown to Dr. Meenakshi Mirakhur for a second opinion	Ref: 011-010-039	
22.01.1996	Expert Report on Adam from Dr Edward Sumner (Consultant Paediatric Anaesthetist at Great Ormond Street) engaged by the Coroner. He concluded that: *"I believe that on the balance of probabilities Adam's gross cerebral oedema was caused by the acute onset of hyponatraemia (see reference) from the excess administration of fluids containing only very small amounts of sodium (dextrose-saline and plasma) …"*	Ref: 059-054-109	

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26.01.1996	Letter from Corner to Dr. Edward Sumner enclosing a copy of Dr. John Alexander's report and commenting: *"Dr. Alexander would not claim to have any significant paediatric experience. What is interesting is that his view as to the cause of death is essentially the same as your own … he refers to the same article from the BMJ as you do"*	Ref: 011-044-177	
	Coroner sends Dr. Edward Sumner's report to Dr. George Murnaghan, together with the article to which it refers	Ref: 011-045-178	
	Coroner sends Dr. Edward Sumner's report to Dr. John Alexander, together with the article to which it refers	Ref: 011-046-179	
	Coroner sends Dr. Edward Sumner's report to Ms. Strain	Ref: 011-047-180	
	Coroner sends Dr. Edward Sumner's Report to Dr. Alison Armour Alexander, together with the article to which it refers	Ref: 011-048-181	
02.02.1996	Note from Dr Robert Taylor to Dr George Murnaghan commenting on Dr Sumner's Report and criticising his reliance on Arieff's 1992 BMJ paper as seriously flawed since Adam's kidneys were polyuric and, therefore, would not respond to ADH to cause water retention. He summed up the position as: *"Apparently then the whole discussion of Adam's management comes down to the fluids given ie type and quantity. I obviously agree with the two experts that for a healthy normal child such fluids* ***may be excessive.*** *However, both have failed to comprehend the physiological differences in this case and have used dubious scientific argument in an attempt to explain cerebral oedema. In Adam's case, where the urine output of his native kidneys had to be maintained, deficits had to be replaced and extra fluids had to be given to provide the donor organ with adequate function, the type and volume of fluids were appropriate."*	Ref: 059-053-108	
07.02.1996	Dr. George Murnaghan faxes Dr Robert Taylor's note of 2nd February 1996 to Dr Alison Armour: *"on the understanding that the contents are for your personal information and as a background briefing,* ***in order to assist in coming to your conclusions in this difficult matter.****"*	Ref: 059-052-107	
12.02.1996		Ref: WS-062/1, p.468 BP3050/95	Letter from Chief Executive of Health & Personal Social Services Northern Ireland to inter alia Chief Executives of Trusts & Boards providing: 'Guidance for staff on relations with the public and the media'
March 1996		Ref: WS-062/1, p.351	Publication of Guidance on Implementation of the HPSS Complaints Procedure.
25.03.1996	Letter from Professor Jeremy Berry to the Coroner enclosing his Report with the comment: *"I am unable to throw any light on the cause of this child's death. I suspect the answer lies in precise details of his clinical management and the examination of his brain … I doubt this kidney would ever have functioned"*	Ref: 011-053-187	
27.03.1996	Letter from the Coroner to Ms. Strain enclosing Professor Peter Berry's Report	Ref: 011-055-190	

Date & Time	Events (Adam-related)	Reference	Other Developments
	Letter from the Coroner to Dr. Murnaghan enclosing Professor Peter Berry's Report	Ref: 011-056-191	
22.04.1996	Letter from the Coroner to Dr. John Alexander enclosing a copy of the post-mortem report on Adam	Ref: 011-060-195	
	Letter from the Coroner to Ms. Strain enclosing a copy of the post-mortem report on Adam	Ref: 011-061-196	
	Letter from the Coroner to Dr. George Murnaghan enclosing a copy of the post-mortem report on Adam	Ref: 011-062-197	
24.04.1996	Dr Alison Armour's Report on Autopsy, which concluded that the cause of Adam's death was: *"1(a) Cerebral Oedema due to (b) dilutional hyponatraemia and impaired cerebral perfusion during renal transplant operation for chronic renal failure"* *(Emphasis added)* The Report also stated: *"It is known that that a condition called dilutional hyponatraemia can cause rapid and gross cerebral oedema. There is no doubt in this case that the sodium was low during the operation. A study revealed that in children undergoing operations there was a substantial extra renal loss of electrolytes and with a minimal positive balance of hypotonic fluid could lead to fatal hyponatraemia. This study however must be taken in context as it refers to healthy children undergoing operations like tonsillectomies. Thus they had normally functioning kidneys which was not the situation in this case"*	Ref: 011-010-034	
25.04.1996	Letter from Francis Hanna & Company (Solicitors for Adam's mother) to the Royal indicating a potential claim and seeking his medical notes and records	Ref: 060-022a-042	
01.05.1996	Letter from Mr. Patrick Keane to Dr. George Murnaghan correcting the figure for blood loss given in the Report on Autopsy as 1500cc, on the basis that it would have constituted almost Adam's entire blood volume and would have been a massive loss. He stated that it should have been 1500cc of fluid loss *"which contained blood, peritoneal fluid and urine"*	Ref: 059-036-070	
08.05.1996	Letter from Dr. Robert Taylor to Dr. George Murnaghan criticising the Report on Autopsy on an number of grounds, including: (i) the statement that *"most of the … fluids given … were … sodium chloride 38mmol/L"* as factually incorrect and prejudicial; (ii) the suggestion that there was any impaired cerebral perfusion on the basis of a lack of evidence since intracranial pressure was not monitored; (iii) the lack of any *"premorbid nor postmorbid evidence that excessive volumes of fluid were administered which produced dilutional hyponatraemia"* *"I believe it is 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"*	Ref: 059-036-072	
09.05.1996	Letter from Brangam & Bagnall & Co to Dr. George Murnaghan seeking further information from the clinicians as to: *"strengths and weaknesses (if any) of the care provided for Adam"*	Ref: 060-022-041	
13.05.1996	Letter from Mr. Patrick Keane to Dr. George Murnaghan in response to a request for a letter on *"strengths and weaknesses in Adam's case"*. He stated: *"As far as I was concerned the Anaesthetic on a very difficult patient went ahead without any problems. The surgery whilst difficult was finally completed in a satisfactory manner"*	Ref: 059-034-067	

Date & Time	Events (Adam-related)	Reference	Other Developments
28.05.1996	Letter from Ms. Strain to the Coroner pointing out an error in Dr. Alison Armour's post-mortem Report: *"Adam was only fed 600mls during the day not 900mls … he was fed 2100mls in total per day, which was less than he received in his 5 hours of surgery"*	Ref: 011-076-211	
29.05.1996	Letter from Coroner to Dr. Alison Armour enclosing a letter dated 28th May 1996 from Adam's mother pointing out an error in the Report on Autopsy in that: *"Adam was only fed 600mls during the day not 900mls as stated by Dr Armour"* and that *"he was fed 2100mls in total per day, which was less than he received in his five hours of surgery"*	Ref: 011-077-212 & Ref: 011-076-211	
30.05.1996	Letter from Brangam Bagnall & Co to Dr. George Murnaghan advising that the matter is likely to proceed to litigation and referring to having: *"identified a number of issues which are likely to be capable of creating difficulties for us at the Inquest"* and the fact that *"the clinicians, and in particular, Dr. Taylor will be closely examined in relation to the issues flagged up by Dr. Sumner"*. Also: *"The essential issue of course relates to the fluids which were given to the child, and I know that with retrospect, Mr Savage feels the child may have received excessive fluids"*	Ref: 059-020-046	
30.05.1996	Letter from Dr. George Murnaghan to Brangam Bagnall & Co: (i) advising that he will be having further discussions with Dr. Robert Taylor about the *"various potential problems that may arise at Inquest"*; (ii) that he will probably consult with Dr. Joe Gaston also; and (iii) suggesting a further meeting with Drs. Taylor and Savage	Ref: 059-027-058	
03.06.1996	Reply from Dr. Alison Armour to the letter of 29th May 1996 from the Coroner stating: *"The figures regarding Adam's fluid management were provided by the medical staff involved in his care. My opinion on the cause of death stays the same regardless of whether he received 600mls or 900mls of fluid. It is not just the volume of fluid he received but the type. The fact that his sodium level was low intra-operatively is the critical point"*	Ref: 011-079-214	
05.06.1996	Letter from the Coroner to Ms. Strain enclosing the response of 3rd June 1996 from Dr. Alison Armour	Ref: 011-080-215	
June 1996	Note from Dr. Robert Taylor to Mr. George Brangam of Brangam Bagnall & Co dealing with Adam's fluid administration and explaining: *"Adam's kidneys had lost the ability to concentrate urine (polyuria) so they were unresponsive to ADH (anti-diuretic hormone). Therefore the dilutional hyponatraemia discussed in the paper by Arieff could not have occurred in this case … After the transplanted kidney failed to function I was very concerned that despite my best calculations and estimate of the losses I had not given sufficient fluid!"*	Ref: 059-004-007	
07.06.1996	Letter from Brangam Bagnall & Co to Dr. George Murnaghan dealing with areas of concern and the *"veiled criticisms"* in Dr. Edward Sumner's Report. He made it clear that the target of the Coroner's interest was likely to be on Adam's anaesthetic management. He sought assistance from Dr. Taylor on a number of matters, including: *"… instructions … from Dr. Taylor and if he has any difficulties in relation to accepting that cause of death [from the Report on Autopsy], then perhaps he would let me have a note of same"*	Ref: 059-014-038	

Date & Time	Events (Adam-related)	Reference	Other Developments
	Memorandum from Dr. George Murnaghan to Drs. Robert Taylor, Maurice Savage and Joe Gaston: (i) providing a copy of the letter dated 7th June 1996 from Brangam Bagnall & Co; (ii) making arrangements for a response; (iii) also making arrangements for Dr. Robert Taylor to conduct a viewing for the *"two Georges"* [Mr. George Brangam and Dr. George Murnaghan] of the operating theatre to view the monitoring equipment and associated tubings etc	Ref: 059-009-027	
	Note from Dr. Robert Taylor to Mr. George Brangam of Brangam Bagnall & Co dealing with Dr. Edward Sumner's comments on thiopentone and steroids for 'brain protection' and conceding that they have a dubious role in brain protection whilst also acknowledging that he did not administer them for that reason	Ref: 059-009-028	
10.06.1996	Letter from Dr. Maurice Savage to Dr. George Murnaghan commenting on Dr. Edward Sumner's Report, advising that: (i) Adam received 2100mls per day which was administered during the day in 2 boluses of 300mls each with the balance of 1500mls being by continuous gastrostomy infusion over the night; (ii) Adam had an overnight deficit of some 600mls to be made up at a rate that depended upon the speed with which one wanted to 'catch up'; (iii) claiming that it would have been possible to check Adam's electrolytes was venous access was achieved in theatre.	Ref: 059-003-005	
18.06.1996	Adam's Inquest – commencement of the evidence Inquest into Adam's death opened and evidence from Constable Tester, Ms. Strain, Dr. Alison Armour, Dr. Edward Sumner, Dr. John Alexander, Mr. Patrick Keane Inquest adjourns to 21st June 1996	Ref: 011-016-114 Ref: 011-008-024, Ref: 011-009-025, Ref: 011-010-030, Ref: 011-011-042, Ref: 011-012-079, Ref: 011-013-093	
19.06.1996	Draft Statement for the Royal prepared by Dr. Joe Gaston, refers to the Arieff paper and *"a number of renal transplants complicated by hyponatraemia leading to death in 10 (reported May 1996)"* In the light of that the draft Statement makes *"recommendations for the prevention and management of hyponatraemia arising during paediatric surgery"*: *1. Major surgery in patients with a potential for electrolyte imbalance should have a full blood picture (which includes haematocrit value) and an electrolyte measurement performed 2 hourly or more frequently if indicated by the patient's clinical condition.* *2. A serum sodium value of less than 128mmol/L indicates that hyponatraemia is present and requires intervention by the anaesthetist. A value of 123mmol/L or less indicates the onset of profound hyponatraemia and must be managed immediately.* *3. The operating theatre must have access to timely reports of the full blood picture and electrolytes to allow rapid intervention by the anaesthetist, when indicated"* *(Emphasis added)* A subsequent version of the Draft Statement (finalised in consultation with Consultant Anaesthetists Dr. Robert Taylor, Dr. McKaigue and with the subsequent	Ref: 060-018-036 Ref: 060-014-025	DLS have confirmed the following by a letter to the Inquiry (Ref: 305-020-001): 1. Recommendations were drawn up for the prevention and management of hyponatraemia by those anaesthetists who would be involved in major paediatric surgical procedures. 2. The recommendations at Ref: 060-018-036 may be considered substantive in that they were drawn up by the only anaesthetists in NI who were performing such work. 3. There would have been no necessity or requirement to circulate the recommendations outside RBHSC or the Royal Hospitals Trust and the Trust did not do so.

Date & Time	Events (Adam-related)	Reference	Other Developments
	approval of Dr P Crean) is faxed by Dr. George Murnaghan to Brangam Bagnall & Co.[6] It refers to the: *"rare circumstances encountered in the Adam Strain case, and having regard to the information contained in the paper by Arieff et al (BMJ 1992) and additionally having regard to information which has recently come to notice that perhaps there may have been nine other cases in the United Kingdom involving hyponatraemia which led to death in patients undergoing renal transplantation"*[7] It also states: *"that the future management of patients undergoing paediatric surgery will be carefully monitored and re-appraised having regard to this information which is now available.* *In particular all patients undergoing major surgery who have a potential for electrolyte imbalance will be carefully monitored according to their clinical needs and where necessary intensive monitoring intensive monitoring of the electrolyte values will be undertaken. Furthermore, the now known complications of hyponatraemia in some of these cases will continue to be assessed in each patient, and all anaesthetic staff will be made aware of these particular phenomenon and advised to act appropriately.* *The Trust will continue to use its best endeavours to ensure that operating theatres are afforded access to full laboratory facilities to achieve timely receipt of reports on full blood pictures and electrolyte values thereby assisting rapid anaesthetic intervention when indicated"*		
20.06.1996	A 'marked up' in manuscript[8] further revised version of the draft Statement is faxed back from Brangam Bagnall & Co to Dr. George Murnaghan, which states: *"that ~~the~~ in future management of patients undergoing major paediatric surgery with potential electrolyte imbalance will be carefully monitored and re-appraised having regard to this information which is now available.* *~~In particular~~ all patients undergoing major paediatric surgery who have a potential for electrolyte imbalance will be carefully monitored according to their clinical needs and where necessary intensive monitoring intensive monitoring of the electrolyte values will be undertaken. Furthermore, the now known complications of hyponatraemia in some of these cases will continue to be assessed in each patient, and all anaesthetic staff will be made aware of these particular phenomen~~ona~~ and advised to act appropriately.* *The Trust will continue to use its best endeavours to ensure that operating theatres are afforded access to full laboratory facilities to achieve timely receipt of reports on full blood pictures~~~~ and electrolyte values thereby assisting rapid anaesthetic intervention when indicated"*	Ref: 060-019-037 & Ref: 060-019-038	
	Letter from Dr. Sumner to the Coroner advising of a paper submitted for publication of 'Paediatric Anaesthesia' on a case on dilutional hyponatraemia, which he intended to publish and have Professor Arieff write an editorial: *"The Journal has a wide readership worldwide so should go some way towards enlightening people on this rare (?) occurrence"*	Ref: 011-082-217	
21.06.1996	A final version of the draft Statement is faxed at 13:06 from Brangam Bagnall & Co to Dr. George Murnaghan, which states:	Ref: 059-008-024 & Ref: 059-008-025	DLS have confirmed the following by a letter to the Inquiry (Ref: 305-020-001):

6 At that time Brangam Bagnall & Co were acting for the Royal in the clinical negligence claim by Adam's family

7 The source of this information is the Deposition of Dr Maurice Savage (Ref: 011-015-113), who claims that he has *"discovered"* it but that the cases have not been published but told to him *"verbally"*.

8 The deletions are shown struck through and the additions are shown as underlined

Date & Time	Events (Adam-related)	Reference	Other Developments
	"In the light of the rare circumstances encountered in the Adam Strain case, and having regard to the information contained in the paper by Arieff et al (BMJ 1992) and additionally having regard to information which has recently come to notice that perhaps there may have been nine other cases in the United Kingdom involving hyponatraemia which led to death in patients undergoing renal transplantation, the Royal Hospitals Trust wish to make it known that: *in future all patients undergoing major paediatric surgery who have a potential for electrolyte imbalance will be carefully monitored according to their clinical needs, and where necessary, intensive monitoring intensive monitoring of their electrolyte values will be undertaken. Furthermore, the now known complications of hyponatraemia in some of these cases will continue to be assessed in each patient, and all anaesthetic staff will be made aware of these particular phenomena and advised to act appropriately.* *The Trust will continue to use its best endeavours to ensure that operating theatres are afforded access to full laboratory facilities to achieve timely receipt of reports on full blood pictures and electrolyte values thereby assisting rapid anaesthetic intervention when indicated"*		1. This draft statement was prepared as a laymen's version of the recommendations at Ref: 061-018-036 by the Trust's management in conjunction with the Trust's solicitor. 2. Its last version on file remains labelled draft and its sole purpose was to inform the media. It was forwarded to the Trust's Director of Corporate Affairs on 21.06.95 in anticipation of media interest at the conclusion of the Inquest.
	Adam's Inquest – continuation of the evidence: Evidence from Dr. Taylor and Dr. Savage. During his evidence Dr. Robert Taylor produced a further statement identified as 'C5', which is identical to the draft statement faxed by Brangam Bagnall & Co to Dr George Murnaghan on 21st June 1996[9]	Ref: 011-014-096 & Ref: 011-015-109 Ref: 011-014-107a for 'C5'	.
	Verdict on Inquest: *"Cause of death:* *I(A) Cerebral Oedema* *due to* *(B) Dilutional hyponatraemia and impaired cerebral perfusion during renal transplant operation for chronic renal failure (congenital obstructive uropathy)* *Findings:* *The onset of cerebral oedema was caused by the acute onset of hyponatraemia from the excess administration of fluids containing only small amounts of sodium and this was exacerbated by blood loss and possibly the overnight dialysis and the obstruction of the venous drainage to the head"*	Ref: 011-016-114	
22.06.1996		Ref: 069A-102-423	Report in the 'Belfast Telegraph' which states: *"In a statement the Trust said it is taking action in the light of the rare circumstances encountered in Adam's case and because of new information.* *In future all patients undergoing paediatric surgery who potentially have an imbalance in salt levels will be carefully checked.* *The Trust said that where necessary intensive monitoring will be undertaken and all anaesthetists will be made aware of the possible complications"*

SCHEDULE 3: Claire's death at RBHSC

[9] See Ref: 059-008-024 (for fax sheet) & Ref: 059-008-025 (for the draft statement) NB Dr George Murnaghan's Inquiry Witness Statement goes further than that Draft Statement: *"This statement indicated that all paediatric anaesthetic staff within the Trust would be made aware of the particular phenomena associated with electrolyte imbalance, the need for careful monitoring and in particular the monitoring of their electrolyte balance"* (Ref: 018)

Date	Event (Claire related)	Reference	Other Developments
23.10.1996	Staff Nurse Margaret Wilkinson recorded in Claire's medical notes and records that a second brainstem test was carried out between 2.00pm and 6.15pm	Ref: 090-027-085	
	Dr. Heather Steen (Consultant Paediatrician) records in Claire's notes that: *"Discussed …parents – agree that ventilation should be withdrawn* *Consent for limited pm [post-mortem] given"*	Ref: 090-022-061	
	Diagnosis of Brain Death form completed by Dr. David Webb (Consultant Paediatric Neurologist) as doctor (1) and Dr. Heather Steen as doctor (2). It stated that the time of the second brain stem test was taken at 6.25pm and recorded: *"Is this a Coroner's case? No"*	Ref: 090-045-148	
	Staff Nurse Margaret Wilkinson recorded in Claire's medical notes and records that: *"Deceased 6.15pm* *Death certificate issued* *For PM in am. Consent signed"*	Ref: 090-027-085	
	Case Note Discharge Summary is signed by Dr. Mannam (SHO, Royal), which records that ventilation was withdrawn from Claire "*after discussion with parents at 18.45"* and: *"Principal diagnosis: Cerebral Oedema* *Other diagnosis: Staus epilepticus* *Other diagnosis: Hyponatraemia"*	Ref: 090-009-011	
	Mr. Alan Roberts states that Dr. Heather Steen stated to him "*on 23 October 1996 at approximately 19:00 that there would be 'no need' for an inquest."*	Ref: 091-004-007	
	Limited (brain only) post-mortem examination by Dr. Brian Herron (Pathologist). The provisional anatomical summary of which was: *"History of acute encephalopathy, brain to be examined after fixation"*	Ref: 090-005-007	
01.11.1996	ICU Discharge Summary signed by Dr. Mannam, recording a diagnosis of "*respiratory arrest"*	Ref: 090-006-008	
08.11.1996	Monthly Paediatric Directorate Audit at which Claire's case was presented along with 3 others	Letters from DLS: 24.11.2010 & 10.01.2011	
11.11.1996	Dr. Andrew Sands meets with Mr. and Mrs. Roberts on the ward to explain "*as far as [he] was able, the course of events…"*	Ref: 090-022-061, Ref: 091-009-056	
13.11.1996		Ref: WS-062/1, p.481	Letter to CMO (Sir Kenneth Calman) providing the agreement of: (i) British Association of Medical managers, (ii) Central Consultants and Specialist Committee of the BMA, (iii) national Association of Health Authorities & Trusts, (iv) NHS Trust Federation on the implementation of: "*Maintaining Medical Excellence"*, including that the job description of the Medical Director should bear responsibility for:

Date	Event (Claire related)	Reference	Other Developments
			"ensuring that procedures are put in place and made known to all doctors employed by the trust… for reporting a colleague doctor… when they have concerns that their conduct, performance or health might be a threat to patients [and] investigating and taking appropriate action".
18.11.1996	Letter from Dr. Heather Steen to Mr. and Mrs. Roberts informing them that she would be happy to meet with them and discuss any queries that they might have. She also informed them that the post-mortem results would not be available until after Christmas and warned them that they may not enable her to answer all their queries.	Ref: 090-004-006	
10.12.1996	Anaesthetic record keeping in Adam's case reviewed at an Audit meeting	Ref: WS-077/1, p.2	
10.01.1997		Ref: WS-062/1, p.480 HSS(MD)3/97	Letter from the Dr. Henrietta Campbell (CMO) to Chief Executives of Trusts and Medical Directors asking them to put into effect the agreement in the letter of 13th November 1996 to Sir Kenneth Calman
11.02.1997	The Autopsy Report by Dr. Brian Herron stated that the fixed brain weighed 1606g, that there was *"symmetrical brain swelling with effacement of gyi"* and that on *"sectioning of the brain the presence of diffuse brain swelling is confirmed". (Emphasis added)* The Report commented that the features of Claire's brain were: *"those of cerebral oedema with neuronal migrational defect and a low grade subacute meninoencephalitis … 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 [central spinal fluid]. With the clinical history of diarrhoea and vomiting, this is a possibility though a metabolic cause cannot be entirely excluded"*	Ref: 090-003-003 Ref: 090-003-005	
06.03.1997	Letter from Dr. Heather Steen to Dr. McMillin (Claire's GP) advising of Claire's post-mortem results: *"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 in keeping with a viral encephalomyelitis meningitis"* The letter also advised that she and Dr. David Webb had seen Mr. and Mrs. Roberts and discussed the post-mortem findings with them.	Ref: 090-002-002	
19.03.1997	Letter from Brangam Bagnall & Co to Dr George Murnaghan (Medical Director) stating in relation to Adam that: *"I believe from a liability point of view, this case [Adam's] cannot be defended"*	Ref: 060-016-031	
21.03.1997	Letter from Dr. David Webb to Mr. and Mrs. Roberts providing a summary of the post-mortem findings: *"… the findings were of swelling of the brain with evidence of developmental brain abnormality (neuronal migration*	Ref: 089-001-001	

Date	Event (Claire related)	Reference	Other Developments
	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 generals organs."[10]		
08.04.1997	Litigation brought by Adam's mother is respect of his death is settled without admission of liability and with the inclusion of a confidentiality clause	Ref: 060-0115-028	
May 1997		Ref: 238-002-072	Paediatric Medical Guidelines: RBHSC (1st edition), with contributions from: Drs. Bartholome (Claire), Hicks (Adam, Claire & Conor), O'Connor (Adam), Savage (Adam), Steen (Claire), Webb (Adam & Claire) The topics include: 'Vomiting' (under General), 'Headache' (under Neurology), 'Acute renal failure' (under Renal). There is no specific reference to hyponatraemia but under 'Vomiting' there is reference to raised intracranial pressure as a possible cause (p.13) and to U+E as investigations to consider. Whilst under management of renal failure there is reference to the restriction of fluids and to cerebral oedema in relation to indications for dialysis (p.116)
May 1997		Ref: WS-012/1, p.8	Alison Armour's article is published in the BMJ: 'Dilutional hyponatraemia: a cause of massive fatal intraoperative cerebral oedema in a child undergoing renal transplantation' [i.e. Adam]
09.05.1997	Memorandum of Dr George Murnaghan to Drs. Savage, Webb and Taylor and Messrs. Keane and Brown advising them that Adam's case had settled but that: *"From a liability position the case could not be defended"*	Ref: 060-010-015	
October 1997		Ref: 321-004fd-001	Altnagelvin Trust produce a 'Policy for Management of Clinical Risk'
December 1997		Department of Health, London	Publication of White Paper The New NHS- Modern Dependable, DH, introducing the concept of Clinical Governance.
1998		GMC Ref: 315-002-001	Good Medical Practice
30.04.1998		Department of Health & Social Services	'Fit for the Future'- Consultation paper about the future of the health and personal social services in Northern Ireland.
September 1998		Ref: 321-004g-001	Altnagelvin Trust produce it's 'Proposed Strategy for Implementing Clinical Governance'
25.11.1998		Ref: 320-035-007	NI CMAC meeting held on 25.11.98 and discusses the 'review of paediatric surgery' and the CMO's

[10] Note: Claire's parents do not accept that Claire was suffering with diarrhoea when she was taken to hospital – she had one loose motion.

Date	Event (Claire related)	Reference	Other Developments
			view that greater specialisation was required to maintain skills in surgery & anaesthesia; and 'clinical quality & clinical governance'
December 1998		Ref: WS-062/1, p.4	The Department commissions Healthcare Risk Resources International consultants to undertake a survey of risk management in all HPSS organisation. The terms of reference for the survey were to determine the level of application of RM practices within these organisations. Incident reporting was one of the items included in the survey.
1999		Publication of HSC 1999/053	Record-Managing Records in NHS Trusts and Health Authorities – this rendered Chief Executives and senior managers are personally accountable for record management.
1999		Ref: WS-066/1, p.54	Publication of HPSS Management Plan 1999/00-2001/02.
1999		Ref: WS-062/1, p.4	Risk management report – good level of awareness of the need to develop rigorous systems for risk management ("RM") and a good level of compliance with the requirements for RM. However, there was a general perception that there might have been a significant level of under-reporting of adverse incidents. The survey provided each of the organisations with an assessment of their position against the average performance on each of the factors covered in the survey. Department initiated work on the development of a regional RM strategy.
February 1999		Effective Health Care Bulletin Vol.5, No.1	NHS Centre for Reviews & Dissemination: 'Getting Evidence into Practice', which summarises the results of systematic reviews of different dissemination and implementation interventions
February 1999		Department of Health, London HSC 1999/033	A First Class Service: Quality in the New NHS
09.02.99		Ref: 093-035 (appended to PSNI interview)	Dr. Robert Taylor invites a number of colleagues (including Consultant Anaesthetists and Consultant Paediatricians) to convene meetings regarding the Clinical Implications and implementation of the recent *"Framework for the Future"* document for Paediatric ICU – in particular he wished to consult widely on agreed guidelines for admission, initial management and transfer of critically ill infants and children
01.04.99			National Institute for Clinical Excellence (NICE) established for England & Wales
17.11.99		NCEPOD	The 1999 Report of the National

Date	Event (Claire related)	Reference	Other Developments
			Confidentiality Enquiry into Perioperative Deaths is published compiled from data from 1st April 1997 – 31st March 1998, with the following findings in relation to fluid management: *"•<u>Fluid imbalance can contribute to serious postoperative morbidity and mortality</u>.* *•Fluid imbalance is more likely in the elderly who may have renal impairment or other comorbidity.* *•<u>Accurate monitoring, early recognition and appropriate treatment of fluid balance are essential</u>.* *•Fluid management should be accorded the same status as drug prescription.* *•Training in fluid management, for medical and nursing staff, is required to increase awareness and spread good practice.* *•There is a fundamental need for improved postoperative care facilities" ('Key Points, p.68, emphasis added)* See also: *"• The documentation on fluid charts was often poor.* *• <u>Doctors and nurses of all grades need to understand the clinical importance, and ensure the accurate recording, of fluid intake and output</u>.* *• Multidisciplinary review of the problem and development of good local working practices is required.* *• Fluid charts are important documents that need to be retained and appropriately filed for future reference." ('Key Points, p.84, emphasis added)*
14.01.2000		Ref: WS-062/1, p.474	Circulation of The Public Interest Disclosure (Northern Ireland) Order 1998- Whistleblowing in the HPSS.
07.02.2000		Ref: 320-073-001	Meeting of the Directors of DPH/DHSS held on 07.02.00 and discuss 'regional reports on services for acutely ill children and paediatric surgical services' including problems out of hours and rural hospitals
February 2000		Ref: 321-004ff-001	Altnagelvin Trust produces a 'Policy for Reporting Clinical Incidents'
April 2000		Ref: WS-062/1, p.404	Publication of Guidance on Handling HPSS Complaints: Hospital and Community Health and Social Services.

SCHEDULE 4: Lucy's death at the RBHSC

Date & Time	Events (Lucy-related)	Reference	Other Developments
13.04.2000 Aprox. 06:45	Lucy transferred to the Royal from the Erne Hospital by ambulance with Dr. Jarleth O'Donohoe	Ref: 061-014-038 Ref: 142-004-002	

Date & Time	Events (Lucy-related)	Reference	Other Developments
	(Consultant Paediatrician, Erne Hospital) and ICU nurse.[11] Dr. Jarleth O'Donohoe provided manual ventilation with an Ambu Bag.[12]		
	Transfer letter from Dr. Jarlath O'Donohoe to Dr. McKaigue (Consultant Paediatric Anaesthetist, PICU at the Royal) thanking him for taking Lucy and providing a brief history. Including her serum sodium results of 137mmol/l and urea at 9.9 on initial investigation and: *"She responded (O2 sats) to bagging and was intubated [around] 04:00 … her pupils were fixed and dilated from 03:30 when I first looked at her"*[13]	Ref: 061-014-038	
08:30	History is taken by Dr. Louise McLoughlin (PICU SHO on call), recording: ▪ Unresponsive, fixed & dilated pupils ▪ Results of initial tests at the Erne: WBC 15.0, Na 137, Urea 9.9 ▪ Previous day – temp, poor intake & vomiting, occ. Sips. Also – 3 hrs to get IV access, fluids started at 22:30 ▪ Diarrhoea – watery & profuse ▪ 03:00 – erratic breathing, diazepam ▪ 03:30 – pupils fixed and dilated, intubated, mannitol and covered for sepsis Registrar examines – no papilloedema[14] Erne notes are requested	Ref: 061-018-058 Ref: 061-018-059	
08:40[15]	Lucy is recorded as being admitted to PICU under Dr. Peter Crean	Ref: 061-013-037	
Untimed	Dr. Crean's ward round records that he was awaiting Lucy's notes to be faxed from the Erne and she is to be reviewed by a Paediatric Neurologist (Dr. Hanrahan)	Ref: 061-018-065	
Approx. 09:00	Dr. Auterson contacts RBHSC to advise the result of the repeat U+E at 127mmol/L	Ref: 061-018-060	
09:00	Fluid balance sheet is started for Lucy and normal saline is administered by IV	Ref: 061-002-002 (fluid balance) Ref: 061-002-004 (prescription)	
09:51	Lucy's notes (15 pgs) are faxed from the Erne to the Royal,[16] including: ▪ GP referral sheet indicating *"not drinking"*, *"needs fluids"* albeit *"mucosa moist"* and weight ▪ Paediatric admission at 19:30 showing *"vomiting 36 hours"*, *"capillary refill >2 seconds"*, *"weight 9.14kg"* ▪ Clinical notes showing: (i) taking of bloods for U+E at 19:30, (ii) untimed results of sodium at 137mmol/L and protein ++, (iii) IV line inserted at about 23:00, (iv) fit at 03:00 prior to which there	Ref: 061-017-042, Ref: 061-017-057	

[11] Lucy is described as cold by the nurse (SN Sally McManus? – see Sister Edmondson's PSNI statement, [Ref: 115-019-001]) to Ambulance Control [Ref: 019-004-006]

[12] SN Siobhan Ann McNeill also refers in her PSNI statement to she and Dr. Jarlath O'Donohoe bagging Lucy alternately for the entirety of the trip to the Royal ie for about 2 hours [Ref: 115-015-002]

[13] NB: See the Erne Hospital nursing notes for Lucy which refer to bagging being commenced at 3,20am on 13th April 2000 by Dr. Malik [Ref: 061-017-050] and continuing after Dr. Jarlath O'Donohoe's 2 attempts at intubation. The note records good SaO2 levels maintained in the 90s. It also records bagging continuing after the insertion of the ET tube [Ref: 061-017-051] and good saturation being maintained in the 90s

[14] See the reports of the Inquiry's experts Dr. Squier (Adam and Claire) and Professor Kirkham (Adam and Raychel)

[15] NB the nursing note shows a history being taken at 08:00 [Ref: 061-025-081]

[16] The following were NOT sent to the RBHSC: (i) chemistry reports including the 2 showing time of the sample for the 137mmol/L result (Ref: 027-012-031) and the one showing the 127mmol/L (Ref: 027-012-032), (ii) ICU evaluation sheet (Ref: 027-015-038); (iii) ICU fluid balance charts (Ref: 027-025-076), (iv) ICU nursing care plan (Ref: 027-016-039)

Date & Time	Events (Lucy-related)	Reference	Other Developments
	had been diarrhoea, (v) ventilatory support, diazepam and large stool, (vi) Dr. O'Donohoe attends at about 03:20 by which time .9% sodium has been given over the past 60 mins, (viii) capillary refill < 2 seconds at about 03:30, (viii) untimed sodium result of 127mmol/L, (ix) transferred to adult ICU at 04:40 for transfer to RBHSC following discussion with Dr. McKaigue ▪ Nursing notes showing: (i) urine specimen at 21:00 showing protein at ++++, (ii) Dr. O'Donohoe attended at 22:00 and blood taken, (iii) IV sol.18 started at 22:30 at 100mls/hr, (iv) large vomit at 00:15 and IV fluids remaining at 100mls/hr , (v) large bowel motion at 02:30, (vi) Lucy rigid at 02:55, (vii) at 03:00 oxygen therapy , twitching, rectal diazepam and large watery stool, IV fluids changed to .9% saline *"run freely into IV line"*, (viii) decreased respiratory effort noted, bagging and repeat U+E ordered at 03:20 ▪ Daily Fluid Balance chart showing: (i) sol.18 starting at 23:00 after 50mls juice at 21:00 and 100mls Dioralyte at 22:00, (ii) 300mls normal saline at 03:00 ▪ Observation Sheet		
14:00	CT scan *"shows obliteration of the basel cisterns suggesting that she has coned"*	Ref: 061-018-065	
14.04.00 09:00	Negative first brain stem viability test	Ref: 061-018-066	
10:30	Negative second brain stem viability test	Ref: 061-018-066	
Approx 11:30	Dr. Donncha Hanrahan (Consultant Paediatric Neurologist, Royal) reported Lucy's death to the Coroner's office[17] and discussed the case with Dr Mike Curtis (Assistant State Pathologist): *"Coroner (Dr. Curtis on behalf of Coroners) contacted by Dr. Hanrahan – case discussed"* She was advised that: *"Coroner's PM is <u>not</u> required but hospital PM would be <u>useful to establish cause of death</u> + rule out other Δ* [diagnoses] *Parents consent for PM"* (emphasis added)	Ref: 061-018-067 (Lucy's medical notes & records)	
13:15	Lucy is pronounced dead		
	Dr. Stewart speaks to Dr. O'Hara (Pathologist) and records: (i) autopsy form, (ii) consent (written) by parents, (iii) heart to be retrieved for heart valve donation	Ref: 061-018-068	
14.04.2000	Dr. Jarlath O'Donohoe (Consultant Paediatrician) records in Lucy's Erne Hospital notes that: *"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 by 0.18% NaCl/Dextrose 4% at 30mls/hour. He said he thought that it had been NaCl 0.18% Dextrose 4% at 100mls/hour. My recollection was of having said a bolus over 1 hour and 30mls/hour as above"* He also records that Lucy had had 50mls orally and that he gave her 100mls while waiting for the EMLA cream and his calculation of her fluids at 30mls an	Ref: 027-010-024 Ref: 027-010-025	

[17] NB: Dr. Hanrahan had earlier advised Lucy's parents of likely events given the brain stem test results: *"I reviewed Lucy again that evening, at 17.45, and I felt that her prognosis was hopeless. I discussed it with her parents, who were agreeable to her not being actively resuscitated in the event of acute deterioration. I mentioned at that stage that if she succumbed that a post mortem would be desirable and that a Coroner would have to be informed"* (Ref: 013-002-003).

Date & Time	Events (Lucy-related)	Reference	Other Developments
	hour on the basis that maintenance is 1000mls but that she has had 150mls orally and a bolus of 100mls. Additionally he records that he discussed Lucy's fluids with Dr. Auterson immediately before Lucy's transfer to the RBHSC and he thought 40mls/hr		
14.04.2000	Dr. Jarlath O'Donohoe notifies Dr Kelly (Medical Director, Erne Hospital) of Lucy's death and the circumstances around her stay at the Erne Hospital	Ref: 072-004-192 & Ref: 075-013-055	
14.04.2000	Dr. Jim Kelly (Medical Director, Sperrin Lakeland Trust) advises Hugh Mills (Chief Executive, Sperrin Lakeland Trust) of adverse incident re Lucy at 09:00: *"He advised that there could be a situation where the wrong drug or incorrect dose/level of fluids may have been prescribed"* Dr. Kelly also requests a full review	Ref: 030-010-017 & Ref: 036b-058-094 Ref: 030-007-012	
14.04.2000	Dr. Kelly requests Eugene Fee (Director of Acute Hospital Services, Erne Hospital) to establish a review of Lucy's care at the Erne Hospital	Ref: 030-003-005	
14.04.2000	Eugene Fee agrees to jointly coordinate, with Dr. William Anderson (Clinical Director of Women & Children's Services, Erne Hospital), the review of Lucy's care at the Erne Hospital. A briefing of Sperrin Lakeland Trust states that: *"The review included; a case note review; review of written comment from staff involved in Lucy's care; discussions with other relevant staff; an external opinion on specific clinical matters from Dr. M. Quinn, Consultant Paediatrician, Altnagelvin Trust"*	Ref: 030-003-005	
16:15	Erne telephone through to ICU at RBHSC lab results showing "rotavirus detected"	Ref: 027-011-027 and Ref: 061-018-067	
	The Autopsy Request Form was completed by Dr. Caroline Stewart who recorded the clinical diagnosis as: *"Dehydration + <u>hyponatraemia</u> Cerebral oedema →acute coning + brain stem death"*[18] *(emphasis added)*	Ref: 061-022-073	
14.04.2000	Coroner's Office record of Dr. Hanrahan's notification of Lucy's death, which states: *"Died 14.4.00 at RVH Childrens ICU Gastro interitis[sic] Dehydrated Brain Swelling Admitted Erne Hospital 2 days ago – transferred to RVH Spoken to D. Curtis"*	Ref: 013-053-290	
14.04.2000	Post mortem on Lucy carried out by Dr. Denis O'Hara (Consultant Pathologist, Royal)	Ref: 062-048-114	
14.04.2000	Clinical Incident Report completed by Sister Ester Millar at the Erne recording a *"Concern expressed about fluids prescribed/administered"* and a report from the Royal to the ward via Dr. O'Donohoe that *"child was clinically dead but still on mechanical ventilation"*	Ref: 036a-045-096	
17.04.2000	Action taken on the Clinical Incident Report is	Ref: 036a-045-097	

[18] NB: The Coroner states in his PSNI statement of 25th January 2005 that *"my office was subsequently advised that a death certificate would be issued giving gastroenteritis as the cause of death. As far as I was concerned this was a natural death"*.

Date & Time	Events (Lucy-related)	Reference	Other Developments
	recorded by Sister Esther Millar as *"Discussed with Dr. Anderson (Anaesthetist involved in Lucy's case) and Eugene Fee – case for review by Senior Team"*		
17.04.2000	Provisional Post mortem Report on Lucy by Dr. Denis O'Hara (Consultant Pathologist, Royal), which recorded *"patchy pulmonary congestion, pulmonary oedema"*, together with: *"Swollen brain with generalised oedema, brain to be further described following fixation"*	Ref: 062-048-121 & Ref: 061-012-036	
17.04.2000	Royal's Inpatient/Outpatient Advice Note signed by Dr. Dara O'Donohoe (SHO, acting Paediatric Registrar, Royal) recording the investigations carried out on Lucy and the results as *"CT brain – Cerebral Oedema + coning"* together with the diagnosis as: *"Primary diagnosis:* *Cerebral Oedema* *Underlying conditions and co-morbidities:* *Viral gastroenteritis"*	Ref: 072-002-159	
18.04.2000	Post mortem verbal report given to Erne Hospital. *"R… gastroenteritis cerebral oedema"*	Ref: 015-012-079b	
18.04.2000	Eugene Fee informed Nurse McCaffery that he and Dr. Anderson would be carrying out a review of Lucy's time at the Erne Hospital	Ref: 033-102-302	
18.04.2000	Eugene Fee informed Sister McManus that he and Dr. Anderson would be carrying out a review of Lucy's time at the Erne Hospital	Ref: 033-102-299	
18.04.2000	Eugene Fee informed Staff Nurse MacNeill that he and Dr. Anderson would be carrying out a review of Lucy's time at the Erne Hospital	Ref: 033-102-297	
18.04.2000	Eugene Fee provided Hugh Mills with an update of his discussions with nursing and medical staff and that he was to meet with Dr. Anderson on 19th April 2000	Ref: 030-010-017	
19.04.2000	Eugene Fee and Dr. Anderson met to review Lucy's case notes and agreed the following action plan: (i) Dr. O'Donohoe, Dr. Malik, Sister Edmunson, Staff Nurse McManus, Nurse McCaffery, Staff Nurse MacNeill and Dr. Auterson (Consultant Anaesthetist) to be asked to provide a factual account of the sequence of events from their perspective; (ii) Case notes to be made available for reference; (iii) Dr. Anderson to speak to Dr. O'Donohoe and request that he share with the staff (in confidence) the verbal report of the cause of death received (iv) Arrangements to be made to share information with Lucy's parents (v) Eugene Fee to establish the nature of Rota virus infection (vi) *"Dr. Anderson and Mr. Fee would need an external expert Paediatric opinion on the management of Lucy's care"*	Ref: 033-102-285	
19.04.2000	Meeting between Hugh Mills and Martin Bradley (Chief Nurse at the Western Health and Social Services Board), during which Hugh Mills *"advised him of the issues"*. Dr. William McConnell informed Hugh Mills that	Ref: 030-010-017 Ref: 030-010-017	

Date & Time	Events (Lucy-related)	Reference	Other Developments
	the circumstances of Lucy's death were still *"being examined"*		
20.04.2000	Eugene Fee informed Hugh Mills that Lucy's notes recorded a comment: *"from Dr. O'Donoughoe[sic] that he was uncertain about the instructions he gave staff about the flow of IV 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."* Eugene Fee informed Hugh Mills that he felt he required advice from a Paediatrician. Hugh Mills agreed to arrange it and inquired whether Dr. Jarlath O'Donohoe should continue to see and treat patients. Eugene Fee advised him that they thought he should continue Hugh Mills asked Dr. Murray Quinn to provide a report	Ref: 030-010-017	
21.04.2000	Draft 'Setting Out' Review	Ref: 033-102-285	
21.04.2000	Letter from Eugene Fee to Nurse McCaffery, following on from their conversation on 18th April 2000, and confirming that he and Dr. Anderson would be carrying out a review of Lucy's time at the Erne Hospital to *"try and gain a clearer understanding of Lucy's deterioration and identify if there are any lessons to be learnt"* He asked that she provide *"a factual account of the sequence of events, in relation to Lucy's care"* in which she was involved	Ref: 033-102-302	
21.04.2000	Letter from Eugene Fee to Sister McManus, following on from their conversation on 18th April 2000, and confirming that he and Dr. Anderson would be carrying out a review of Lucy's time at the Erne Hospital to *"try and gain a clearer understanding of Lucy's deterioration and identify if there are any lessons to be learnt"* He asked that she provide *"a factual account of the sequence of events, in relation to Lucy's care"* in which she was involved and particularly her *"comments on a range of issues around the prescription and administration of intravenous fluids"*	Ref: 033-102-299	
21.04.2000	Letter from Eugene Fee to Staff Nurse MacNeill, following on from their conversation on 18th April 2000, and confirming that he and Dr. Anderson would be carrying out a review of Lucy's time at the Erne Hospital to *"try and gain a clearer understanding of Lucy's deterioration and identify if there are any lessons to be learnt"* He asked that she provide *"a factual account of the sequence of events, in relation to Lucy's care"* in which she was involved	Ref: 033-102-297	
21.04.2000	Hugh Mills asked Eugene Fee to contact Dr. Quinn to *"advise him of the main issues we need to examine and forward case notes to him"* and to *"ensure that Dr. O'Donoughoe[sic] is advised he is aware of involvement of Dr. Quinn"* Hugh Mills rang Dr. McConnell and left a message	Ref: 030-010-018	

Date & Time	Events (Lucy-related)	Reference	Other Developments
	to advise him that Dr. Quinn had been requested to provide the Trust with advice on the case		
21.04.2000	Letter from Eugene Fee to Dr. Quinn seeking his opinion on: *"range of issues discussed which would assist Dr. Anderson and my initial review of events relating to Lucy's care* *These were:* *1. The significance of the type and volume of fluid administered* *2. The likely cause of the cerebral oedema* *3. The likely cause of the change in the electrolyte balance ie was it likely to be caused by the type of fluids, the volume of fluids used, the diarrhoea or other factors* *… any other observation in relation to Lucy's condition and care which you may feel is relevant at this stage"* *(Emphasis added)*	Ref: 006-023-336 & Ref: 075-013-050	
27.04.2000	Eugene Fee confirmed to Hugh Mills that he had spoken with Dr. Quinn	Ref: 030-010-018	
27.04.2000	Eugene Fee spoke with Sister Traynor and Staff Nurse Swift about Lucy. The note of the discussion records Sister Traynor as saying that "there did not appear to be evidence of overload of fluids" and Nurse Swift as saying: *"they were advised to administer 100ml per hour until Lucy had produced urine"* Nurse Swift agreed to provide a report	Ref: 033-102-295	
27.04.2000	Eugene Fee spoke with Staff Nurse McManus who confirmed that *"she had no direct involvement in the administration or recording of fluids to Lucy"*	Ref: 033-102-295	
27.04.2000	Report prepared for Eugene Fee by Staff Nurse MacNeill on Lucy: 'Erne Hospital; Night Duty- 7.45pm 12 April 2000 – 8.00am 13 April 2000'	Ref: 033-102-283	
27.04.2000	Letter from Staff Nurse MacNeill to Eugene Fee providing her account of events in relation to Lucy's case: 'Erne Hospital; Night Duty- 7.45pm 12 April 2000 – 8.00am 13 April 2000'	Ref: 033-102-284	
27.04.2000	Report prepared for Eugene Fee by Nurse McCaffery on Lucy	Ref: 033-102-289	
May 2000		Ref: WS-062/1, p.4	In England, CMO published "An Organisation with a Memory" on issues of patient safety and the standards of performance
02.05.2000	Eugene Fee spoke with Dr. Murray Quinn who provided feedback, the notes of their telephone conversation record: *"Issues:* *1. Difficult to get a complete picture of the child* *2. Type of fluids appeared appropriate. The amount given would be dependent upon the level of dehydration but would expect up to 80ml per hour* *3. When the fluids are divided over the length of stay the child received approximately 80ml per hour* *4. There is no clear instruction on the volume of fluids … nor the volume for normal saline* *5. the volume taken over the 7 hour period appears reasonable*	Ref: 033-102-287	

Date & Time	Events (Lucy-related)	Reference	Other Developments
	6. … 7. *Did the child have a seizure or was it rigid, a symptom of coning* 8. … 9. … 10. *How much normal saline was run in?* 11. *If 500ml was given this may have affected the level of cerebral oedema experienced at post-mortem"* *(Emphasis added)*		
03.05.2000	Report of Dr. Jarlath O'Donohoe for Eugene Fee titled 'Re: Lucy Crawford, Erne Hospital Number: 123000'. It stated: *"I was next called at approximately 03.00 because Lucy had had what sounded like a convulsion. My initial presumption was that this was a febrile convulsion. However, since she showed no signs of recovering by the time I arrived and since there was a history of profuse diarrhoea I took a specimen for repeat urea and electrolytes. This showed that the sodium had fallen to 127, a level at which hyponatraemic convulsion is rare" (Emphasis added)*	Ref: 033-102-293	
03.05.2000	Letter from Dr. Jarlath O'Donohoe to Dr. Trevor Anderson (Clinical Director, Womens & Childrens' Directorate, Erne Hospital) enclosing his report: Re: Lucy Crawford, Erne Hospital Number: 123000'	Ref: 033-102-292	
04.05.2000	Note in Lucy's medical notes and records recording that Dr. Dara O'Donoghoe had spoken to Dr. Stewart about waiting for Lucy's post-mortem results. It also records that he had spoken to Dr. Hanrahan and that the cause of death was: 1. Cerebral Oedema 2. Dehydration 3. Gastroenteritis Dr Dara O'Donoghue signs death certificate for Lucy showing cause of death as *"1a cerebral oedema; due to (or as a consequence of)* *b dehydration; due to (or as a consequence of)* *c gastroenteritis"* On the reverse of the certificate, in panel A, in answer to the question: *"Will you be in a position to give further information for a more precise statistical classification eg as a result of a post-mortem or other reasons"* Dr O'Donoghue answers *"Yes"*	Ref: 061-018-068 Ref: 13-008-022 Ref: to be inserted	
04.05.2000	Meeting between Hugh Mills and Dr. Kelly, the notes of which record at item4: *"Untoward Death –* *Dr. O'Donohoe - JK [Dr. Jim Kelly] worried about Clinical investigation could be a possibility if initiated by the Coroner* *? Date with family* *Reports awaited* *Meeting – Trevor [Dr. Trevor Anderson], Jim [Dr. Jim Kelly], Eugene [Eugene Fee] + Murray Quinn to consider + report on the circumstances"* Dr. Kelly advised that he was asking for a report on the tests carried out in connection with the post mortem Typed minutes of the meeting record; *"Reviewed mechanisms of investigation of case. The initial review by Dr Murray Quinn with the suggestion of perhaps a review meeting with E Fee/Trevor Anderson/M Quinn and J Kelly. Discuss concerns in relation to Dr*	Ref: 030-052-070 & Ref: 030-010-018 Ref: 319-031b-002	

Date & Time	Events (Lucy-related)	Reference	Other Developments
	O'Donohoe's response."		
05.05.2000	Letter from Dr. Malik (SHO in Paediatrics, Erne Hospital) to Mrs. Millar (Clinical Services Manager, Erne Hospital) providing an account of his involvement in Lucy's care	Ref: 033-102-281	
05.05.2000	Meeting between Stanley Millar and Mr. and Mrs. Crawford during which the following was noted as being commented upon: *"Did Lucy die in Erne? …* *Dr O'Donaghue said something about "Sodium levels"* *The Crawfords noted gastro-enteritis was talked about before any tests confirmed it"*	Ref: 015-001-001 (Notes)	
05.05.2000	Mr. and Mrs. Crawford met with Dr. Jarlath O'Donohoe to discuss what had happened A briefing prepared by Dr. Miriam McCarthy (Senior Medical Officer) noted the meeting of the Crawfords and Dr. Jarlath O'Donohoe and recorded: *"It does not appear that [it] … went well"*	Ref: 075-013-034 Ref: 075-013-034	
05.05.2000	Eugene Fee advised Hugh Mills that Dr. Jarlath O'Donohoe had met with Mr. and Mrs. Crawford	Ref: 030-010-018	
??.05.2000	Report of Staff Nurse Swift's for Eugene Fee providing her account of what happened on the night of 12th April 2000 in respect of Lucy	Ref: 033-102-280	
08.05.2000	Mr Frawley (General Manager WHSSB) emails Dr McConnell (Director of Public Health WHSSB) and Mr Bradley ((Chief Nursing Officer WHSSB) re "Untoward Infant Death". "*I think it is important that we get some definitive advice and I would be grateful if you would keep me apprised."*	Ref: 318-051-001	
11.05.2000	Dr. Quinn provided verbal advice "*that fluids may not have been excessive"*	Ref: 030-010-018	
15.05.2000	Letter from Dr. Jim Kelly to William McConnell (Director of Public Health, Western Health and Social Services Board)[19] advising him in respect of Lucy and 'untoward incidents' that: *"In line with our arrangements towards Clinical Governance, all untoward incidents, major and minor are immediately reviewed … immediately upon the … [Lucy] untoward incident occurring, Dr. O'Donohoe, Consultant Paediatirican contacted me to appraise me of the events. As a result, I have initiated an investigation and this is currently being led by Eugene Fee, Acute Services Director and Trevor Anderson, Clinical Director for Obstetrics, Gynaecology and Child Health"* *…* *There are a number of concerns in relation to this untoward incident.* *1. The absences of a clear diagnosis and pathophysiological mechanism for death* *2. There are concerns in relation to the rate of fluid replacement at the Erne, essentially the regime for a shocked infant was continued longer than the anticipated two hours* *3. There is an issue in relation to delayed venous access by the SHO's* *…* *Notes of the case, including report of events have been*	Ref: 036a-046-098	

[19] NB: This letter is in reply to William McConnell's *"enquiry for updated information"*.

Date & Time	Events (Lucy-related)	Reference	Other Developments
	forwarded to Murray Quinn for consideration and advice. Whilst we have not received any written report, his initial comments are that the fluid regime was probably irrelevant and the cause of death is still not clearly established and encephalitis and other causes remain a significant possibility. *Next stage is full analysis of the investigation report from Dr. Anderson and Eugene Fee with a planned review meeting on the case with Murray Quinn"*(Emphasis added)		
16. 05.2000	Dr Hanrahan wrote to Mr and Mrs Crawford offering a meeting to discuss Lucy… "*it might be wiser to wait until I get the formal report of Lucy's post mortem, which I do not have to hand as yet*".	Ref: 061-010-034	
26.05.2000	Eugene Fee advised Hugh Mills that he was awaiting the written report from Dr. Quinn and *"information on the tests carried out at Post Mortem"*	Ref: 030-010-019	
05.06.2000	Letter from Dr. Muhammad Ashgar (Paediatrician, equivalent to Registrar, Erne Hospital) to Hugh Mills dealing with *"harassment at work and the incompetence of Dr. O'Donohoe"* and specifically in relation to Lucy: *"Dr. O'Donohoe told the nurses 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 PM revealed cerebral oedema. This child might 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 additions in the chart. He wrote that he had ordered that the fluids should be given as a bolus of 100mls and then 30mls per hour. In fact, neither the SHO [Dr. Malik] nor any of the nurses were told to give the fluids at 30mls per hour"* (Emphasis added)	Ref: 032-090-175 Ref: 032-090-176	
08.06.2000	Letter from Hugh Mills to Dr. Ashgar responding to his letter alleging clinical competence on the part of Dr. Jarleth O'Donohoe and advising him that: *"I have requested Dr. Jim Kelly, Medical Director, to commence a review of Dr. O'Donohoe's clinical work to ensure these matters are fully examined"*	Ref: 032-089-173	
09.06.2000	Dr. Donncha Hanrahan (Consultant Paediatric Neurologist, Royal) recorded in Lucy's notes at the Royal that Mr. and Mrs Crawford met with Dr. Jarlath O'Donohoe		
12.06.2000	Dr Kelly and Mr Fee meet Dr O'Donohoe re the complaint of Dr Asghar. Dr Kelly advises that *"on the competence issues an initial review of the cases would be sought and thereafter external opinion sought."*	Ref: 036a-101-217	
13.06.2000	Final Post mortem Report on Lucy, which recorded *"Extensive bilateral bronchopneumonia"* and *"Swollen brain with generalised oedema and early necrosis"*. The commentary states: *"The autopsy also revealed an extensive bronchopneumonia. This was well developed and well established and certainly gives the impression of having been present for some 24 hours at least … The changes seen in the brain are consistent with an acute hypoxic insult and there is no evidence of any underlying infective congenital or structural abnormality of the brain tissue"*	Ref: 062-048-114	

Date & Time	Events (Lucy-related)	Reference	Other Developments
14.06.2000	Meeting between Hugh Mills and Clive Gowdy[20]	Ref: 030-009-016	
16.06.2000	Meeting between Dr. Jarlath O'Donohoe and Dr. Hanrahan to discuss the post-mortem Report on Lucy	Ref: 033-102-261	
16.06.2000[21]	Meeting at the Royal of Dr. Denis O'Hara, Stanley Millar and the Crawfords for Dr. O'Hara to explain the outcome of the Post mortem that he had performed. The notes of the meeting record the following issues as having been discussed: ▪ *"The PM was not under the Coroner's Act* ▪ *The cause of death is less frequent than in years past and would not be common* ▪ *Lucy probably died in Erne …* ▪ *Dehydration was an important factor* ▪ *Children can 'crash' very quickly due to dehydration and delay in getting in fluids could be crucial …* ▪ *Dr. O'Hara conducted the PM at the request of Dr. Hanrahan …"* (Emphasis added)	Ref: 015-006-031	
21.06.2000	Meeting between Dr. Murray Quinn (Consultant Paediatrician, Altagelvin Hospital), Dr. Kelly and Eugene Fee during which Dr. Quinn provided his opinion on the notes and the post-mortem Report on Lucy: *"Choice of fluid correct* *Resuscitation volume higher than normal* *…* *Fluid replacement 4 hours @ 100mls provided was greater than normal but not grossly excessive.* *Dr. Quinn does not feel that the extra fluids caused the brain problem ... choice of fluid by anaesthetist was reasonable but volume high … Did significant coning occur and when? …* *Reviewing the PM report Dr. Quinn feels it does not help us piece together why this child died.* *There was Roravirus present to cause the diarrhoea but this does not appear to have been very significant* *…* *Dr. Kelly asked is there an issue of incompetence – should consideration be given to temporary suspension. Dr. Quinn stated that he saw no reason for suspension. The issues raised by the case are more about recording fluid prescriptions carefully and ensuring clarity of instruction"* (Emphasis added)	Ref: 030-007-012 & Ref: 036a-047-101	
22.06.2000	Dr. Murray Quinn provides his review of Lucy's care to Eugene Fee. His finding on 'fluids' was: *"She was treated with Solution 18 which would be appropriate. On looking at the volume of fluids over the 7 hour period between admission and 3.00am when she had the possible seizure she got a total of 550mls. This would include 150mls oral and 400mls i.v. as the intravenous drip was running at 100mls/hr over a 4 hour period. Calculating the amounts over that period of time this would be about 80mls/hr. I have calculated the rates of fluid requirements. If she was not dehydrated she would have required 45mls/hr. If she was 5% dehydrated it would have worked out at 60mls/hr and 10% dehydration works out at 80mls/hr. I would therefore be surprised if those volumes of fluid could have produced gross cerebral oedema causing coning."* (Emphasis added)	Ref: 071-017-304 & Ref: 075-013-051	
23.06.2000	Meeting between Dr. Jim Kelly and Staff Nurse	Ref: 036a-007-013	

[20] NB: Inquiry Witness Statement of Clive Gowdy at WS-062/1, p.2 when he states he only became aware of Lucy's death in February 2004 through Dr Ian Carson

[21] There is also a note in Hugh Mills' files showing 'Key Dates' including a reference to "16.06.00 JO'D had informal meeting with Dr. Hanrahan, Paediatrician in Belfast and discussed the PM report" (Ref: 030-007-012). Dr. Hanrahan claims to have no memory of it and does not think that it is correct (WS-289/2, p.7)

Date & Time	Events (Lucy-related)	Reference	Other Developments
	Trainer to discuss the issues raised by: (a) Lucy's case and (b) the work of Dr. Jarlath O'Donohoe. The notes record that Staff Nurse Trainor noted that: *"Dr. Quinn felt it was unlikely that the fluid regime prescribed or the initial management of the child contributed to the death"*. They also recorded her as stating that Dr. O'Donohoe is *"'extremely smart, at times unconventional and inflexible but he is not unsafe or incompetent' Sr. Trainor did not think that he needed to be suspended"*		
28.06.2000	Meeting between Dr. Jim Kelly and Dr. Jarlath O'Donohoe during which feedback was given on Dr. Murray Quinn's report	Ref: 030-007-012 Ref: 033-102-261	
05.07.2000	First draft of the Report by Eugene Fee: 'The Review of Lucy Crawford's Case' is sent by him to Trevor Anderson	Ref: 033-102-260	
10.07.2000	Review Report sent by Eugene Fee is considered by Dr. Anderson	Ref: 030-007-012	
17.07.2000	Letter from Trevor Anderson to Eugene Fee commenting on 'The Review of Lucy Crawford's Case' and stating: *"I found the report by Dr. Quinn, whilst being helpful in the sense that it ruled out any obvious mis-management on the part of our medical/nursing staff at the hospital, was also evidence of the fact that there was no clearly obvious explanation …* *Certain lessons can be learned … the most obvious of these is:* *(1) the need for prescribed orders to be clearly documented and signed* *(2) the importance for standard protocols to be readily available in the ward against which treatment can be compared"* The letter also stated: *"There was also a <u>mistake in the calculation of the ongoing cumulative fluid which the patient received</u>. This would be understandable it had occurred after the emergency at 3 o'clock but in fact the inaccuracies precede that emergency"* (Emphasis added)	Ref: 033-102-262 Ref: 036a-050-112	
19.07.2000	Meeting between Stanley Millar and the Crawfords during which Lucy's case notes from the Erne were examined and the Crawfords completed a request for Lucy's case notes from the Royal	Ref: 015-009-034	
19.07.2000	Mr. Crawford writes to the Royal requesting Lucy's *"entire case notes"*	Ref: 015-010-035	
25.07.2000	Meeting between Hugh Mills and Dr. Kelly, the notes of which record that: (i) Professional conduct – *"will be a case to answer but evidence strong community wide but weak from hospital"* (ii) *"Competence – formal report from M. Quinn. Adverse report being finalised … Dr. Quinn 'not incompetent'"* (iii) *"Nothing to suspend him [Dr. Jarlath O'Donohoe] now. No case. Now proceeding with assessment "* (iv) *"Report from Maura Stewart next few weeks (Regional Adviser)"*	Ref: 030-050-064	
31.07.2000	Final Report of Eugene Fee and Dr. Trevor Anderson, 'Report re: The Review of Lucy Crawford's Case', the purpose of which is stated as to try and establish:	Ref: 030-007-012 Ref: 036a-053-123	

Date & Time	Events (Lucy-related)	Reference	Other Developments
	"(a) [Whether] There is any connection between our activities and actions and … Lucy's condition *(b) Whether or not there was any omission … which may have influenced … Lucy's condition* *© Whether or not there are any features of … care in this case which may suggest the need for change … within the Paediatric Department or wider hospital generally"* *(Emphasis added)* The Review stated: *"Dr. Quinn is of the view that the intravenous solution used and the total volume of fluid intake [mixture of oral fluids and IV of solution 18], when spread over the 7½ hour period, would be within the accepted range and has expressed his surprise if those volumes of fluid could have produced gross cerebral oedema causing coning.* *There is 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 records of the actual volume of normal saline given when commenced on a free flowing basis."* (Emphasis added) The recommendations included: *"(a) the need for prescribed orders to be clearly documented and signed by the prescriber* *(b) the importance for standard protocols to be readily available in the ward against which treatment can be compared"* (Emphasis added)	Ref: 036a-053-125 Ref: 036a-053-127	
10.08.2000	Clinical Paediatric Audit meeting at RBHSC, chaired by Dr Robert Taylor, at which Lucy's case was presented and discussed	Ref: 319-023-004 to 319-023-005	
14.09.2000	Letter from Dr. Jim Kelly to Patricia Hamilton (Secretary, Royal College of Paediatrics & Child Health) seeking assistance in handling *"an issue that concerns professional conduct and competency"*. Background information was given, concluding with: *"I did not feel that a precautionary suspension [of Dr. Jarlath O'Donohoe] was required at this stage, and this action was supported by the Senior Medical and Nursing staff within Paediatrics. I did however feel the nature of the concerns raised, both in terms of non-fulfilment of contract and the clinical mismanagement of individual cases, required an outside paediatric opinion be sought."*	Ref: 036a-009-016	
22.09.2000	Letter from Mr. Crawford to Betty O'Rawe (Director of Corporate Affairs, Sperrin Lakeland Health & Social Trust) advising that he wished to invoke the Formal Complaints Procedure concerning: *"the inadequate and poor quality care provided to my daughter Lucy following her admission to the Erne Hospital on Wednesday 12 April 2000 and prior to her transfer to Royal Belfast Hospital for Sick Children on 13 April 2000"*	Ref: 072-004-179	
October 2000		Ref: WS-062/1, p.4	Department published "Confidence in the Future – for Patients and for Doctors", a consultation document dealing with the prevention,

Date & Time	Events (Lucy-related)	Reference	Other Developments
			recognition and management of poor performance by doctors.
02.10.2000	Letter from Bridget O'Rawe to Lucy's father advising that she had shared his letter of 22nd September 2000 with Eugene Fee (Director of Acute Hospital Services, Sperrin Lakeland Health & Social Trust) and noting that Stanley Millar (Chief Officer, Western Health and Social Services Council) is to act on his behalf	Ref: 072-004-181	
09.10.2000	Meeting between Hugh Mills and Dr. Kelly, the notes of which record that: (i) Dr. Kelly had written to Pat Hamilton (Secretary for the Health Services for the Royal Colleges of Paediatricians; (ii) Dr. Moira Stewart had advised and recognised the difficulties for handling locally; (iii) Dr. Kelly was awaiting a response; (iv) Dr. Jarlath O'Donohoe and Dr. Anderson were due to meet the Crawfords but the meeting had not taken place; (v) the Crawfords had lodged a complaint through Stanley Millar; (vi) Dr. Ashgar was awaiting a response from the 'harassment group'	Ref: 030-048-061	
09.11.2000	Letter from Patricia Hamilton to Dr. Jim Kelly confirming their telephone conversation on the external review and advising that the College would address the issue of specific instances of professional competency (so not harassment or contractual obligations). The letter went on to advise that: (i) Dr. Moira Stewart would be the nominated College representative to carry out the review (ii) Written information about the cases is to be provided to her and she will visit the Erne Hospital to carry out interviews (iii) If she needs specialist advice, she will discuss whether it is to be provided internally or externally	Ref: 036a-010-019	
11.10.2000	Letter from Hugh Mills (Chief Executive, Sperrin Lakeland Health & Social Trust) to Stanley Millar offering a meeting with Lucy's parents, the purpose of which would be to: *"share with Lucy's parents our findings of the review we have carried out. This review was initiated by us in the event of Lucy's passing"*	Ref: 072-004-184	
November 2000		Ref: WS-062/1, p.4	Northern Ireland Defect and Investigation Centre became the Northern Ireland Adverse Incident Centre
01.11.2000	Letter from Lucy's father to Bridget O'Rawe expressing surprise that a review has been completed: *"At no stage were we contacted for our input into any review. We are also surprised at the suggestion that this review was initiated by the Trust and certainly we had never been notified that any review was being undertaken …* *Given that the review has already been completed we would ask that the Trust provide us with a copy of the review and findings for our consideration in advance of any meeting"*	Ref: 072-004-186	

Date & Time	Events (Lucy-related)	Reference	Other Developments
10.11.2000	Letter from Bridget O'Rawe to Stanley Millar asking him if, in his role as advocate for the Crawford family, he could encourage them to attend a meeting	Ref: 072-004-187	
22.11.2000	Letter from Bridget O'Rawe to Lucy's father seeking to clarify the process in relation to the clinical review: *"This process is one which has been introduced by the Trust in the last 2 years or so and is in the main undertaken where there has been a sudden unexpected death or where the clinicians and professionals involved identified unusual complications or difficulties arising during the management of a patient's care. This process is undertaken as an internal review by the Trust and in this instance does not tend to involve members of the patient's family. However, such reviews are undertaken with the intention that the outcome and any lessons learnt would be shared with all professional staff and, at the same time, the opportunity taken to share the outcome with relatives or members of the family or, indeed, the patient, if that is relevant"* (Emphasis added) The letter also sought to persuade Lucy's parents to attend a meeting: *"I note your request for a copy of the Trust's review report. In the context of the purpose of the meeting, as I have described, it would be a genuine concern that reading the documentation in isolation, could be unhelpful. Our desire therefore is to … talk yourself and Mrs Crawford through the report."* (Emphasis added)	Ref: 072-004-189	
27.11.2000	E-mail from Bridget O'Rawe to Eugene Fee advising him that the Crawfords wish to see some sort of summary of the Review on Lucy	Ref: 033-097-252	
??	Report of the 'Review of the late Lucy Crawford Case' into the care and progress of Lucy's condition carried out by Dr Anderson (Clinical Director, Women & Children's Directorate) and Eugene Fee, which had involved inter alia *"a discussion with Dr Quinn"* (Consultant Paediatrician, Altnagelvin Hospital). The Report stated that: *"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 … Dr Quinn is of the view that the intravenous solution used and the total volume of fluid intake, when spread over the 7½ hour period, would be within the accepted range and has expressed his surprise if those volumes of fluid could have produced gross cerebral oedema causing coning."* (Emphasis added)	Ref: 006-001-037 Ref: 006-001-036	
12.12.2000		Ref: 320-120-001	SAC (General Surgery) meeting held on 12.12.00 and discussion on paediatric surgery & concern from Altnagelvin on maintaining surgical skills with inadequate volume
2001		Ref: 314-014-001	GMC 'Good Medical Practice' issued
January 2001		Ref: WS-062/1, p.4	Royal Liverpool Children's Inquiry Report published

Date & Time	Events (Lucy-related)	Reference	Other Developments
09.01.2011	E-mail from Bridget O'Rawe to Eugene Fee seeking a summary of the Review on Lucy for the Crawfords to hopefully facilitate a meeting	Ref: 033-094-249	
10.01.2001	Letter from Michael MacCrossan (on behalf of High Mills Chief Executive, Sperrin Lakeland Health & Social Care Trust) to Lucy's father enclosing the 'Review of the late Lucy Crawford Case' carried out by Dr Anderson and Eugene Fee *"as an initial step"* in the formal complaints process	Ref: 072-004-191	
19.01.2001	Letter from Stanley Millar to Mr. Crawford suggesting that they both accept the offer to discuss the Review with Erne Hospital Staff	Ref: 015-031-143	
25.01.2001	Letter from Dr. Moira Stewart (Consultant Paediatrician/Senior Lecture in Child Health at Queen's University) to Dr. Jim Kelly referring to the letter from Patricia Hamilton (Secretary of Royal College of Paediatrics and Child Health) to him on the 'external review' of the professional competence of Dr. Jarlath O'Donohoe. The letter stated: *"I think it would be helpful if I had an opportunity to go through the relevant case notes before meeting with the individuals involved … It may be necessary to ask a Paediatric Specialist for a opinion in one or more of the cases, should that case fall within the remit of a recognised sub-speciality"*	Ref: 036a-015-030	
08.03.2001		Ref: WS-066/1, p.111	Circulation of Priorities for Action 2001/2002 to the Health and Personal Social Services
16.03.2001	Letter from Mr. Crawford to Hugh Mills (Chief Executive, Sperrin Lakeland Health & Social Care Trust) expressing his disappointment in the Report enclosed with the letter of 10th January 2010, which he had *"hoped would be an open and frank analysis of the events on the 12th and 13th April, 2000"*.	Ref: 072-002-044	
16.03.2001	Letter from Mr. Crawford to Hugh Mills (Chief Executive, Sperrin Lakeland Health & Social Care Trust) seeking a specific response by 31st March 2001 to his letter of complaint 22nd September 2000 by which he complained about the *"inadequate and poor quality care* provided to my daughter Lucy following her admission to Erne Hospital on Wednesday 12 April 2000"	Ref: 015-032-144	
30.03.2001	Letter from Hugh Mills to Mr. Crawford responding to his letter of 16th March 2001: *"Turning specifically to the point made in your most recent correspondence, 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."* (Emphasis added) The letter invited the Crawfords to a meeting.	Ref: 072-004-197	
31.03.2001		Ref: 006-002-242	Clinical Review Lesson of the Week published in the BMJ: 'Acute hyponatraemia in children admitted to hospital: retrospective analysis of factors contributing to its development and resolution'; Halberthal, Halperin & Bohn:

Date & Time	Events (Lucy-related)	Reference	Other Developments
			"Do not infuse a hypotonic solution if the plasma sodium concentration is less than 138 mmol/L"
April 2001		Ref: WS-062/1, p.4	DHSSPS(NI) publishes Consultation Paper: 'Best Practice – Best Care: A framework for setting standards, delivering services and improving monitoring and regulation in the HPSS' Department of Health in England produces *"Building a Safer NHS for Patients"*
April 2001		Ref: Circular HSS(PPM) 06/04	The Safety in Health and Social Care Steering Group is established in response to the 'Best Practice – Best Care' consultation paper. Its remit was to develop a strategic approach to the reporting, recording and investigation of adverse incidents and near misses and the promotion of good practice to minimise risk. A part of its work was to undertake an evaluation of the effectiveness of systems used to identify and manage adverse incidents and near misses
April 2001		Ref: 317-030-001	Circular HSS (TC8) 3/01 introduces appraisal of consultant staff in Northern Ireland
April 2001			Paper presented to the Association of Surgeons of Great Britain and Ireland, in Birmingham on: 'Peri-operative fluid and electrolyte management: a survey of consultant surgeons in the UK'
26.04.2001	Letter from Dr. Moira Stewart to Dr. Jim Kelly advising that she considered the clinical notes and records of the 4 cases (including that of Lucy) and enclosing her reports, which she hoped would be of *"assistance in your decision as to how best to move forward"*	Ref: 032-021-034	
26.04.2001	Royal College of Paediatrics & Child Health Review by Dr. Moira Stewart on 4 clinical cases involving Dr. Jarlath O'Donohoe. The section on Lucy stated that: (i) it was based upon: (a) an examination of the nursing and medical records from the Erne Hospital; (b) the post mortem report; (c) the medical report from Dr. Murray Quinn (ii) the volume of fluids given was not excessive (iii) there was a *"debate"* about the most appropriate fluid to use (ie for 'replacement' and for 'maintenance') The Review on Lucy concluded: *"This little girl was admitted to the Erne Hospital in April 2000 and had a respiratory arrest 8 hours later, from which she never regained consciousness. Subsequent results indicate that she had gastroenteritis due to rotavirus (she may also have had bronchopneumonia). Initial investigations indicate that she was quite ill on admission, with a degree of circulatory failure. There was a delay in implementing fluid resuscitation and there are deficiencies in the prescription and recording of volumes of fluids administered. The subsequent events which*	Ref: 032-025-052 Ref: 032-025-052	

Date & Time	Events (Lucy-related)	Reference	Other Developments
	occurred about 8 hours after admission were likely to have been preterminal and on the basis of cerebral oedema and coning." (Emphasis added)		
27.04.2001	Letter before action from Murnaghan & Fee (Solicitors for the Crawfords) to Sperrin Lakeland Health & Social Care Trust in respect of Lucy's death	Ref: 072-002-047	
01.06.2001	Note of a meeting with Dr. Moira Stewart, which recorded the following questions and answers: *"Q1. Was the delay to IV fluids significant? Was there sufficient attention to fluid balance?* *Q2. Was it reasonable to push oral fluids in the first hours of admission?* *…* *Q4. Should a urea of 9.9 given rise to major concerns. It corrected to 4.9 within hours.* *Q5. Do you really think that the electrolyte changes caused the seizure?* *A1 – Capillary refill time, raised urea and C02 level point to circulatory failure. IV fluids were indicated earlier. Overall amount of fluids once started not a major problem but the 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 fluids.* *Other issues – Was this child bagged with mask for ~ 1 hour (?anaesthetist involvement)"* The conclusion was: *"There is insufficient sub-optimal practice to justify referral to GMC… Monitor, develop further work on guidelines and protocols and link with paediatrics at Altnagelvin advised"*	Ref: 036a-027-066	

SCHEDULE 5: Raychel's death at the RBHSC

Date	Events (Raychel-related)	Reference	Other Developments
10.06.2001	Raychel's death at RBHSC		
11.06.2001	Police Report Concerning Death completed	Ref: 012-049-236	
11.06.2001	Autopsy on Raychel performed by Drs. Al-Husaini and Herron,[22] which found: (i) diffuse swelling with effacement of sulci and flattening of gyri; (ii) diffuse cerebral oedema (iii) diffuse hypoxic ischaemic necrosis due to perfusion failure	Ref: 006-002-172	
12.06.2001	Dr Raymond Fulton (then Medical Director of Altnagelvin Hospitals Health & Social Services Trust) set up a 'Critical Incident Enquiry' involving all relevant clinical staff to establish the clinical facts	Ref: 006-002-235 & Ref: 006-002-238	
12.06.2001	Hospital Management Team meeting held in Altnagelvin	Ref: 316-006g-007	
12.06.2001	Statement provided by Dr. Brian McCord	Ref: 022-104-319	
12.06.2001	Notice stating: *"From now onwards 12/6/01 all surgical patients (including orthopaedic) are to have IV Hartmans solution All post-operative children on IV Hartmans solution are*	Ref: 021-056-136	

[22] NB. Dr. Brian Herron also performed the limited brain autopsy on Claire

Date	Events (Raychel-related)	Reference	Other Developments
	to have daily electrolytes & 6 hourly B.M's *Medical patients to continue on solution 18 or unless prescribed otherwise by doctor"*		
13.06.2001			DHSS, 'An Organisation with a Memory': Report of an Expert Group on Learning from Adverse Incidents in the NHS, chaired by the CMO: *"There is evidence that 'safety cultures', where open reporting and balanced analysis are encouraged in principle and by example, can have a positive and quantifiable impact on the performance of organisations. 'Blame cultures' on the other hand can encourage people to* ***cover up errors for fear of retribution and act against the identification of the true causes of failure, because they focus heavily on individual actions and largely ignore the role of underlying systems****. The culture of the NHS still errs too much towards the latter;* *Reporting systems are vital in providing a core of sound, representative information on which to base analysis and recommendations. Experience in other sectors demonstrates the value of* ***systematic approaches to recording and reporting adverse events and the merits of quarrying information on 'near misses' as well as events which actually result in harm****. The NHS does not compare well with best practice in either of these areas."*
13.06.2001	Agreed action following the 'Critical Incident' meeting on 12th June 2001(signed off by Medical Director Dr. Fulton), including: (i) Review evidence for use of routine post-operative low electrolyte IV and suggest changes if indicated – no change in use of solution no.18 until the review; (ii) Arrange daily U&E on all post-operative children receiving IV infusion on Ward 6; (iii) Inform surgical junior staff to assess these results promptly; (iv) All urinary output to be measured and recorded while IV infusion in progress ; (v) A chart for IV fluid infusion rates to be displayed on Ward 6 to guide junior medical staff; (vi) Review fluid balance documentation used on Ward 6.	Ref: 022-108-336	
14.06.2001	Dr. Nesbitt (Clinical Director for Anaesthetics at Altnagelvin) wrote to Dr Raymond Fulton (Medical Director) advising that he had contacted several hospitals (including the Royal) on their use of solution no.18 and that the Royal had changed its practice about 6 months ago 'following several deaths involving No.18 solution' *"To summarise: Altnagelvin Hospital has followed what is widespread and accepted policy of using No.18 solution for postoperative fluids. There is evidence to show that this policy is potentially unsafe in certain children who have undergone a surgical procedure. The Children's Hospital has ceased to use it and Craigavon is trying to*	Ref: 022-102-317	

Date	Events (Raychel-related)	Reference	Other Developments
	effect a change in this direction"[23]		
14.06.2001	Staff Nurse Noble issues statement to Ms. Therese Brown *("Risk Assessment Manager")*	Ref: 022-101-314	
15.06.2001	Statement from Sister Millar	Ref: 022-100a-313	
15.06.2001	Stella Burnside (Chief Executive of Altnagelvin) wrote to the Ferguson family offering her condolences and a meeting	Ref: 023-021-048	
18.06.2001	Dr. Raymond Fulton meets with Ian Carson and the Medical Directors of other Trusts to discuss Raychel's death – agreement a need for regional guidelines.[24]	Ref: 075-002-005 & Ref: 006-002-238	
21.06.2001		Ref: 036a-055-141	Dr. J. Kelly (Medical Director, Sperrin Lakeland Trust) writes to all Consultant Paediatricians and Staff Grades informing them of the death of Raychel Ferguson, and seeking a review of its use of Solution 18.
22.06.2001	CMO states she was informed of Raychel's death by Dr Ian Carson shortly after the meeting of 18.06.2001. She was certainly telephoned by Dr Raymond Fulton on 22nd June 2001.	Ref: WS-075/1, p.2 & Ref: 006-002-238	
26.06.2001	Statement received from Nurse McCauley (nee Rice)	Ref: 021-067-158)	
26.06.2001		Ref: WS-008/1	Meeting of 'Sick Children Liaison Group', attended by amongst others: Dr Robert Taylor (Royal), Dr Miriam McCarthy (for CMO), Dr Bell (Craigavon) and Dr Morrow (Altnagelvin). The minutes of the meeting show that Dr Robert Taylor: *"presented several papers which indicated the potential problems with the use of hyptonic fluids in children"* and: *"Work to take place on agreed guidelines from the Department of Health on this subject"*
27.06.2001	Letter from Dr. Jim Kelly to Dr. William McConnell (Director of Public Health, Western Health & Social Services Board) enclosing the Report from 'Royal College of Paediatricians' in respect of Dr. Jarlath O'Donohoe's competence together with: (i) Dr. Moira Stewart's comments; and (ii) notes of a follow-up meeting and questions. The letter advised that the information had been shared with the Chief Executive of the Trust.	Ref: 036a-028-069	
29.06.2001	Note by Stanley Millar of his meeting with the Crawfords on 29th June 2001 during which Mr. Crawford: (i) expressed his disappointment in the very slow progress in investigating his complaint; (ii) was scathing of Sperrin Lakeland's Trust's inability to provide a written report in response to his complaint; explained that he was not pursuing the complaint's procedure but had instructed his solicitor to instigate proceedings	Ref: 015-037-150	
July 2001		Ref: WS-062/1, p.4	'Learning from Bristol: the Report of the Public Inquiry into Children's Heart Surgery at the Bristol Royal Infirmary (1984-1995)'

[23] NB.: The letter also states that Anaesthetists in Craigavon had been trying to change the fluid regime to Hartman's postoperatively but had met resistance in the paediatric wards where they have followed a medical protocol.

[24] NB. No minutes of meeting. This was a regular meeting of Medical Directors at Castle Buildings – CMO would normally chair it (Ref: 095-011-054)

Date	Events (Raychel-related)	Reference	Other Developments
July 2001		Ref: WS-062/1, p.6	National Patient Safety Agency formed
02.07.2001	Meeting of Directors of Public Health/DHSSP Dr. William McConnell advises meeting (attended by CMO) of a recent death in Altnagelvin Hospital of a child due to hyponatraemia caused by fluid imbalance [Raychel Ferguson]. The minutes record *"Current evidence shows that certain fluids are used incorrectly post operatively. It was agreed that guidelines should be issued to all units"* This was raised by Dr. William McConnell under aob and not by CMO	Ref: 075-081-327 Ref: 320-080-005	Meeting of the Directors of DPH/DHSS held on 02.07.01 discuss 'Hyponatraemia' with reference to a recent death at Altnagelvin due to hyponatraemia caused by fluid imbalance
03.07.2001	Letter from Dr. Nesbitt to Paul Bateson (Clinical Director at Altnagelvin) advising him: *"I have asked my Anaesthetic Colleagues to prescribe Hartman's solution instead of No.18 solution …* *The problem in the Children's ward seemed to be that <u>even if Hartman's was prescribed, it was changed to No.18 by default</u>. I therefore asked Sister Miller to change this policy so that, for surgical children, the default solution became Hartman's. With agreement, it may also be possible for the paediatricians to undertake the fluid management of surgical children. Obviously this impacts on surgical care and needs your support …* *<u>I am concerned that my attempt to put in place a safe policy has met with resistance so quickly</u>"* *(Emphasis added)*	Ref: 021-057-137	
05.07.2001	Letter from Dr. William McConnell (WHSSB – Director of Public Health) to Dr. Fulton confirming that he has notified the CMO of Raychel's death and that he will write to each of the Directors of Public Health advising them of Raychel's death *"who would then take responsibility for drawing the issue to the attention of any relevant paediatric settings within their respective Boards"*	Ref: 022-094-302 See also File 6 1B	
05.07.2001	Letter from Dr. William McConnell (WHSSB – Director of Public Health) to the Directors of Public Health in the various Boards referring to Raychel's death and informing them: *"It appears that the use of hypotonic saline is still common practice in a number of paediatric units although there has been information around for a few years suggesting that this does present risks to a very small number of children in the acute perioperative period … while the information may be known by anaesthetic staff, there has not necessarily been discussion regarding change between anaesthetists, surgeons and paediatricians"*	Ref: 022-094-303	
05.07.2001	Letter from Dr. William McConnell to Dr. Jim Kelly responding to this letter of 27th June 2001 and the enclosures, stating: *"… this seems to capture a range of the issues of which you and I have now become all too familiar. There are issues of systems failures, communication failures and individual performance failures … I am not sure that all of these are sufficiently clear and serious to form the basis of very definitive action in relation to Dr. O'Donohoe. I do feel, however, that there is likely to be a need for the Trust to discuss these findings in some detail with Dr. O'Donohoe and get some sense from him of what*	Ref: 036a-029-070	

Date	Events (Raychel-related)	Reference	Other Developments
	programme of corrective action he would propose to make"		
09.07.2001	Update for the Chief Executive Re: Critical Incident Meeting 12-06-01 *"Mrs. Brown to undertake a more extensive review of the research regards the use of Solution 18... There is a concern by Nursing Staff that Surgeons are unable to give a commitment to children in Ward 6 unless they are acutely ill and are bleeped. Could Paediatricians maintain overall responsibility for surgical children in Ward 6?"*	Ref: 022-097-307	
20.07.2001	Mrs. Irene Duddy (Director of Nursing) requests Hyponatraemia articles from Mr. Ciaran Cregan (Trust Librarian)	Ref: 022-086-226	
22.07.2001	Dr. Fulton telephones and speaks directly with CMO who suggests that the Clinical Resource Efficiency Support Team (CREST) might be involved in the development of guidance	Ref: 075-002-005 & Ref: 006-002-238 Ref: 023-021-048	
26.07.2001	Stella Burnside (Chief Executive of Altnagelvin Hospital) speaks to CMO advocating the development of regional guidance: *"I believe that this is a regional, as opposed to 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"*	Ref: 022-093-301	
27.07.2001	Reply from CMO to Stella Burnside stating that her understanding was that the Directors of Public Health for each of the Boards were to deal with any guidelines to be issued at a local level and that she would personally oversee the production of guidelines	Ref: WS-075/1, p.4	
30.07.2001		Ref: 021-056-135	E-mail from Dr. Ian Carson (Consultant Anaesthetist at the Royal & Trust Medical Director & Deputy Chief Executive) to the CMO and copied to Dr. Robert Taylor and Dr Raymond Fulton enclosing the Notice of 12th June 2001 and stating: *"Please find attached document … drawn up by Dr Bob Taylor and his colleagues. It reflects current 'opinion' among experts in the management of these children, however it does not yet command full support amongst paediatricians …* *The problem today of 'dilutional hyponatraemia' is well recognised (see reference to BMJ Editorial) … There was also a previous death approx. 6 yrs ago in a child from the Mid-Ulster. [Adam] Bob Taylor thinks there have been 5 – 6 deaths over a 10 year period of children with seizures, but he has not seen any Cochrane reviews on the subject.* *This might be a subject that would be worth Clinical Research Efficiency Support Team (CREST) looking at. There is obviously a need to get better agreement between anaesthetists/intensivists and paediatricians. I also believe that there are some laboratory and nursing issues in relation to blood sampling and volumes of blood necessary for regular sodium analysis"* *(Emphasis added)*

Date	Events (Raychel-related)	Reference	Other Developments
August 2001			DHSS & NPSA, 'Doing Less Harm; Improving the Safety and Quality of Care through Reporting, Analysing and Learning from Adverse Incidents'
August 2001	The Altnagelvin Doctor's Handbook	Altanagelvin HSS Trust	
8th August 2001	Management of Fluid Balance by Dr. Morrow, as part of the teaching timetable provided at Altnagelvin	Altanagelvin HSS Trust	
09.08.2001	Dr. Raymond Fulton forwards on to Stella Burnside the e-mail from Dr. Ian Carson to the CMO dated 30th July 2001, forwarding Dr. Taylor's presentation on Hyponatraemia	Ref: 021-056-135	
14.08.2001	Memorandum from the Chief Executive, Mrs. Stella Burnside, to Dr. Nesbitt, Clinical Director, enclosing literature on fluid balance and urging teaching at the Hospital Management Team meeting	Ref: WS-035/2 p.90	
14.08.2001		Ref: WS-080/1, p.2	Dr Paul Darragh meets with Dr Miriam McCarthy, informs her of Raychel's death and asks her to convene a working group to produce guidance on the prevention of hyponatraemia in children
21.08.2001		Ref: 007-050-099	Letter from Dr. Paul Darragh (Deputy Chief Medical Officer) to 'colleagues' referring to *"increasing evidence that Acute Hyponatraemia is emerging as a significant clinical problem in sick children receiving IV fluids"*, inviting them to a meeting on 26th September 2001 in respect of the Department to: *"convene a group 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."*
23.08.2001	Kay Doherty telephones from WHSSC regarding the death of Raychel. Memo taken of the call	Ref: 014-001-001	
??	Mr. Ferguson writes to Professor J. Crane seeking a copy of the Post-Mortem Report, and to the Patient Advocate at Altnagelvin seeing copies of the medical notes	Ref: 014-004-005 & Ref: 014-003-004	
30.08.2001	Memo of the telephone call from Kay Doherty faxed through to Mrs. Helen Quigley.	Ref: 014-002-002	
03.09.2001	Altnagelvin hold a meeting with the Fergusons, attended by Mrs. Ferguson, senior members of the Trust and the nurses involved in the care and treatment of Raychel.	Ref: 022-084-215	
03.09.2001	Dr. Herron writes to Dr. Clodagh Loughrey seeking her opinion on the *"cause of hyponatraemia in this case."*	Ref: 012-063g-322	
04.09.2001	Mrs. Burnside sends Raychel's hospital notes to Mr. and Mrs. Ferguson. She also provides the same to Dr. Ashenhurst, the family GP	Ref: 022-083-214 & 022-082-213	
24.08.2001		Ref: WS-066/1, p.158	Letter sent to Chief Executives of HSS Boards and Trusts re: Priorities for Action- Monitoring and Accountability, stating that the Department of Health, Social Services & Public Safety will now monitor progress towards the achievement of Priorities for Action on a quarterly basis.

Date	Events (Raychel-related)	Reference	Other Developments
03.09.2001		Ref: 075-082-329	CMO chairs meeting of Directors of Public Health /DHSSP Informs the group that Dr Paul Darragh is setting up a working group to consider hyponatraemia in children and: *"The Group will make recommendations on the fluid balance in children. These will be presented to SAC Surgery, SAC Paediatrics and SAC Anaesthetics"*
18.09.2001		Ref: 007-051-100	E-mail from Dr. Robert Taylor to Dr. Paul Darragh in respect of the meeting on 26th September 2001 and providing a draft power point presentation 'Hyponatraemia in Children – Teaching Aid'. The presentation included 'Incidence of hyponatraemia at RBHSC' recording admissions and deaths in respect of hyponatraemia and showing a death in 1997 and one in 2001.
24.09.2001	Dr. Brian McCord writes to Dr. Fulton, Medical Director, Altnagelvin, confirming that the charts have been actioned and issued to Sister Millar	Ref: 022-096-306	
25.09.2001	Dr Robert Taylor sends the 'Committee on Safety of Medicines: Medical Control Agency' a 'Suspected Adverse Drug Reactions' form in relation to solution 0.18% NaCl/4% and Raychel's brain death following seizures	Ref: WS-008/1	
26.09.2001		Ref: 007-048-094	Meeting on 'Acute Hyponatraemia in Children', chaired by Dr. Paul Darragh and attended by: Dr. Robert Taylor (Royal), Dr. Lowry (Craigavon), Dr. Nesbitt (Altnagelvin), Mr. Marshall (Erne), Mr. McCallion (Royal), Dr. Kennedy (Northern Health & SS Board), Dr. Clodagh Loughrey (Belfast City Hospital), Ms. McElkerney (Ulster Hospital), Dr. Peter Crean (Royal), Dr. Miriam McCarthy, Dr. Mark (Department) The notes of the meeting record that Dr. Robert Taylor *"informed the meeting about the background, incidence of cases seen in RBHSC and patients who are particularly at risk of hyponatraemia".* *(Emphasis added)* Dr. Robert Taylor also stated: *"This is a problem that has been present for many years. Fluid replacement in children is complex and while guidelines are in place for acute management, chronic management is not well covered. Patients at risk include children post surgery and those with acute reactions to a number of stressors. The problem is that of water intoxication rather than Na depletion. Problems can arise with incorrect weighing of children"* (Emphasis added)

Date	Events (Raychel-related)	Reference	Other Developments
			The meeting decided: *"that a small group should undertake the drafting of guidelines and audit protocol"*
26.09.2001	Letter from Dr. Ashgar to Dr. Jim Kelly (Medical Director, Erne Hospital) copied to Hugh Mills (Chief Executive) and Eugene Fee (Sperrin Lakeland Trust) about Dr. Jarlath O'Donohoe stating: *"I must stress it again and I have said it before that it is typical of Dr. O'Donohoe to hide his ignorance and near misses by blaming others"*	Ref: 032-071-144	
27.09.2001	E-mail from Dr. Robert Taylor to Anne Safford (Secretary to Paul Darragh Deputy Chief Medical Officer) advising that he had completed a 'yellow card' hazard to CSM [in respect of .18%NaCl/4%glucose] and voicing his concerns *"about the move to Normal saline as a recommended fluid, even in the post op child"* and stating his belief that *"the recommendation should remain 'infuse at least 0.45%NaCl in 2.5% glucose solution'"*	Ref: 007-043-088	
01.10.2001	Letter from Dr. Maurice Savage to Dr. Paul Darragh (Deputy Chief Medical Officer) referring to the Working Group drawing up guidelines for the use of intravenous fluids in children, pointing out: *"I am concerned that someone in my position <u>only hears about such a group on the 'grapevine'</u>"* and seeking reassurance that *"such guidelines were not an isolated recommendation in Northern Ireland but were the subject of scrutiny by the appropriate committee of the Royal College of Paediatrics and Child Health."* (Emphasis added)	Ref: 007-042-087	
01.10.2001	Dr. Robert Taylor writes to Dr. Jarlath McAloon enclosing draft recommendations on Hyponatraemia in Children	Ref: WS-059/2 p.16	
02.10.2001	Meeting of Speciality Advisory Committee Anaesthetics chaired by Paul Darragh The minutes record that Dr. Darragh advised the meeting of a draft paper prepared as guidance in respect of prevention of hyponatraemia in children and asked for comments to be sent to Dr McCarthy	Ref: 075-080-322 & Ref: 075-080-322	
03.10.2001		Ref: 007-041-082	E-mail from Dr. Robert Taylor to Dr. Miriam McCarthy providing her with feedback from Speciality Advisory Committee Anaesthetics ("SAC"), Alder Hey and Toronto Sick Kids: *"It appears that the common factor is the use of Balanced Salt (Hartmanns or N Saline) intraoperative and 0.45%NaCl, with either 2.5% or 5% glucose … <u>Alder Hey as you can see do not stock 0.18%NaCl/4%glucose at all</u>"* (Emphasis added)
10.10.2001	Second meeting of original group from meeting on 26.09.2001 – Dr. Maurice Savage also invited. Agreed that further communication would be via e-mail	Ref: 007-038-072	
11.10.2001	Coroner's Memo regarding Dr. Crean contacting the Office to indicate that the Ferguson family wish to speak with him and informing them that there *"was mismanagement of this case in the Altnagelvin Hospital"*	Ref: 012-052c-276	

Date	Events (Raychel-related)	Reference	Other Developments
17.10.2001	Letter send to Therese Brown from the Coroner informing her that *"the Pathologist and a Consultant Anaesthetist from the Intensive Care Unit [in RBHSC] that questions must be asked regarding the management of the child whilst a patient in Altnagelvin Hospital"* and requesting statements from *"all those concerned with the care and management including the consultant in charge, the surgeon and the nursing staff"*	Ref: 022-081-212	
17.10.2001	Letter from Dr. Cheng at the Medicines Control Agency to Dr. Robert Taylor seeking further information in respect of his request for a 'Hazard Notice' for 0.18%NaCl/4%glucose	Ref: 012-071f-413	
22.10.2001	E-mail from Clodagh Loughrey to Dr. Miriam McCarthy on the draft hyponatraemia guidelines, querying: *"Should we be more specific about what are 'appropriate fluids'? Or at least 'suggested replacement fluids'?"*	Ref: 007-036-068	Working Group on Paediatric Medicines of the Committee on Safety of Medicines conclude that hyponatraemia in association with hypotonic intravenous fluids administration related more to clinical practice and advised there should be no changes to product information.
23.10.2001	Letter from Dr. Robert Taylor to Dr. Cheng replying to her letter of 17th October 2001 and providing summary details on Raychel's case: *"I am not in a position to supply a post-mortem result as it is a Coroners case … I have copied this response to both these men [Coroner and the Neuropathologist who conducted the post-mortem.* *I am also conducting an audit of all infants and children admitted to the PICU with hyponatraemia. My initial results indicate at least 2 other deaths attributable to the use of 0.18NaCl/4%Glucose"* (Emphasis added)	Ref: 007-033-060	Principles for Best Practice in Clinical Audit
24.10.2001	Dr. Robert Taylor writes to the Coroner enclosing Medicine Control Agency correspondence and seeking a copy of the Post-Mortem Report	Ref: 012-071d-411	
24.10.2001	Clodagh Loughrey provides report to Dr. Herron: *"In summary I believe that the cerebral oedema which you noted at autopsy was caused by a rapid fall in plasma sodium concentration as a result of a net sodium loss coupled with hypotonic fluid administration in a situation (i.e. postoperative state+- vomiting) where a normal physiological response inhibited the effective excretion of the excess free water"*	Ref: 012-019-124	Departmental Board adopt common model of risk management for Dept and all associated bodies- circular HSS (PPM) 3/2002 – Corporate Governance and the Statement of Internal Control and 6/2002 – Risk Management
30.10.2001	Meeting of the Specialist Advisory Committee (SAC) – Paediatrics The minutes record that it was attended by CMO and that Dr McCarthy summarised the guidelines on the 'Prevention of Hyponatraemia in children receiving intravenous fluids' that were to be published soon	Ref: 075-076-292 & Ref: 075-076-287	Report of Dr. John Jenkins (Senior Lecturer in Child Health and Consultant Paediatrician) on instructions from the DLS and in relation to Lucy's care and treatment at the Erne Hospital. He referred to: *"intravenous fluids for replacement should contain a higher content of sodium (eg 'normal saline' – 0.9% NaCl – sodium chloride)"*. He also stated: *"Over recent years concerns have begun to be expressed regarding the use of 0.18% saline in Dextrose as a standard solution for intravenous use in young children and a number of cases of symptomatic hyponatraemia have been identified, some resulting in death or cerebral damage"*. However, he pointed out that the use of solutions with a higher level of sodium (as per the guidelines) is a *"very recent development and many paediatric units are continuing to us the*

Date	Events (Raychel-related)	Reference	Other Developments
			sodium solution which was given in this case". He concluded: *"I would anticipate great difficulty in achieving a successful defence as there appears to have <u>been confusion between the staff involved with inadequate documentation and record keeping</u>. In this respect, unless it can be clarified in a satisfactory manner, it is my opinion <u>that management fell below the standard which would be accepted by a responsible body of medical opinion</u> as reasonable practice at the relevant time."* (Emphasis added)
31.10.2001	Coroner writes to Dr. Robert Taylor seeking to understand if his concerns relate to a death of a child that has been reported to him	Ref: 012-071c-410	
01.11.2001	Dr. Robert Taylor writes to the Coroner and states: *"As you will remember I also had a child's death related to this type of fluid and have requested that the MCA consider issuing a "hazard notice" to prevent further deaths related to this fluid"*	Ref: 098-048-185	
05.11.2001	Meeting of the Directors of Public Health/DHSSPS Meeting attended by CMO. Dr McCarthy introduced a draft paper on prevention of hyponatraemia in children, which was discussed. The benefit of having it endorsed by CREST was considered as was having it endorsed by SAC - Anaesthetics and Paediatrics	Ref: 075-083-333	
07.11.2001 & 08.11.2001	Memo goes out from Therese Brown requesting statements from Nurse Rice, Dr. McCord, Nurse Noble, Mr. Makar, Mr. Gilliland, Dr. Morrison, Dr. Nesbitt, Sister Miller, Dr. Johnstone, Dr. Jamison, Dr. Trainor, Dr. Gund and Dr. Date	Ref: 022-080-211	
08.11.2001	Dr. Miriam McCarthy attends a meeting of CREST sub group on hyponatraemia at Castle Buildings to advise of working group on hyponatraemia guidelines in respect of children, the minutes of which record at item 5 'Prevention of Hyponatraemia in Children Receiving Intravenous Fluids': "*Dr. Stewart reported that the Department had approached CREST regarding the dissemination and 'kite marking' of guidelines on the Prevention of Hyponatraemia in Children Receiving Intravenous Fluids. He introduced Dr. McCarthy, DHSSPS, who stated that the problem had come to the attention of the Department through <u>**clinicians, who reported an increase in the condition**</u> and felt in need of urgent guidance"* (Emphasis added) CREST agrees to set up a small working group to take matter forward	Ref: 075-066-213 & Ref: 075-066-210	
14.11.2001	Dr. Fulton issues memorandum to Mrs. Burnside informing her that he has advised Dr. Nesbitt to challenge the 'Choice of Fluid' section of the draft 'Intravenous Fluids in Children' guidelines as "*Geoff says it is a fudge"*	Ref: 021-055-134	
14.11.2001	Dr. Nesbitt provides his statement to Therese Brown.	Ref: 021-066-157	
20.11.2001	E-mail from Dr. Robert Taylor to Elizabeth Garrett (Secretary to Dr. Miriam McCarthy) commenting on the final draft of the hyponatraemia guidelines: *"I am a little disappointed that you have not come out*	Ref: 007-029-056	

Date	Events (Raychel-related)	Reference	Other Developments
	with a 'typical' or 'suitable' fluid for children … *I will continue to pursue a 'hazard notice' for 0.18&MaCl/4%glucose through the CSM"*		
21.11.2001	Letter from Dr. Bell (Consultant Paediatrician, Ulster Hospital) to Dr. Miriam McCarthy commenting on the draft hyponatraemia guidelines: *"I had very much hoped for a clearer statement from the Department of Health to bring uniform consistent practice through all Paediatric Units in Northern Ireland, so that when SHOs rotate through posts the management will not vary.* *I think it is important to include a statement to emphasize the importance of not giving modified saline solutions before serum sodium is known and in those instances fluids are needed immediately that normal saline or colloid should be given."* *(Emphasis added)*	Ref: 007-027-050	
26.11.2001	Letter from Medicines Control Agency to Dr. Robert Taylor advising him that they are satisfied that there should be no amendments to product information re 0.18% NaCl but suggest that electrolyte imbalance is a risk with all iv solutions and careful monitoring is crucial.	Ref: 007-017-034	
26.11.2001	Meeting of the Paediatric Anaesthetic Group presenting and discussing the final draft of the Prevention of Hyponatraemia in Children Receiving Intravenous Fluids	Ref: WS-038/1 p.14	
28.11.2001	Medicines Control Agency write to Dr. Herron seeking copy of the Post-Mortem Report	Ref: 012-071-407	
28.11.2001	Autopsy Report on Raychel by Drs. Al-Husaini and Herron, which stated: *"At autopsy she had cerebral oedema and aspiration pneumonia from which she died. Specialist opinion was sought as to the likely causes of the cerebral oedema and a report is enclosed"*	Ref: 006-002-176	
30.11.2001	The Coroner writes to Dr. Herron seeking to discover *"whether there are any parallels between the death of Adam Strain and Raychel Ferguson"*	Ref: 098-053-192	
30.11.2001	Dr. Robert Taylor writes to Department to advise that he has received a letter from Medicines Control Agency dated 26th November 2001 and summarises its content ie that there should be no amendments to product information re 0.18% NaCl but suggest that electrolyte imbalance is a risk with all iv solutions and careful monitoring is crucial.	Ref: 007-032-059	
30.11.2001	Dr. Robert Taylor's letter to Medicines Control Agency.[25] He states that he has information that at least 2 other deaths were attributable to 0.18% NaCL	Ref: 007-033-060	
30.11.2001	E-mail from Clodagh Loughrey to Elizabeth Garrett (Secretary to Dr. Miriam McCarthy) commenting on the draft hyponatraemia guidelines: *"I am disappointed that we are not actively discouraging the use of hyptonic fluids in replacement fluids … since I believe this was a major factor (if not the major) factor in the demise of the child in Altnagelvin [ie Raychel] … I will give in gracefully, as long as my thoughts are on record"* The e-mail went on to ask:	Ref: 007-025-048 Ref: WS-075/1, p.2	

[25] NB: Dr Nesbitt wrote to CMO on 1st May 2002 to ask if she knew about Adam

Date	Events (Raychel-related)	Reference	Other Developments
	"Were you aware of the death of a 4 year-old child in what sound like very similar circumstances in Northern Ireland in 1996? [ie Adam] I was speaking to the Coroner about it today and he is to send me a copy of his report in that case. Let me know if you'd be interested in seeing it. Perhaps you're already aware of it." CMO 'cannot recall' whether or not Dr McCarthy brought this e-mail to her attention at the time		
04.12.2001	Coroner writes to Dr. Edward Sumner to obtain his opinion on the death of Raychel Ferguson and to secure his attendance at Inquest	Ref: 012-067v-367	
05.12.2001	The Coroner, Mr. Leckey writes to Therese Brown enclosing the post mortem report of Dr. Herron and a copy of the supplemental report of Dr. Clodagh Loughrey and to inform her of the engagement of Dr. Sumner to provide an independent report	Ref: 022-070-170	
06.12.2001	Therese Brown receives statement of Dr. Morrison	Ref: 021-065-155	
07.12.2001	Therese Brown provides the statements of Dr. Morrison, McCord, Nesbitt and S/N Rice to Donna Scott, Solicitor	Ref: 022-069a-169	
11.12.2001	Dr. Sumner writes to the Coroner to confirm engagement as Expert	Ref: 012-067s-363	
11.12.2001	Meeting of the Special Advisory Committee on General Surgery – CMO present. Guidelines commended – request to forward same to A&E Departments. The minutes record that: *"It was also felt that the guidance could be made more explicit in general and particularly in the use of 1/5 normal saline. It was also felt that the guidance should state who should prescribe fluids as well as monitor the patient"*	Ref: 075-084-338	
12.12.2001	Therese Brown receives statement of Dr. Date	Ref: 021-064-152	
13.12.2001 **14.12.2001**	Coroner telephones Dr McCarthy to advise the CMO of Adam's death	Ref: 006-056-440	
14.12.2001	E-mail from Dr. Miriam McCarthy to Dr. Edward Sumner informing him that guidelines were being drafted on the prevention of hyponatraemia in children receiving IV fluids following on from an incident in Altnagelvin Hospital (Raychel) and seeking his advice and guidance on the issues being debated: (i) whether specific fluid choices should be recommended bearing in mind that there is no right and wrong and (ii) the need to stress that any fluid has the capacity to cause hyponatraemia in a sick child	Ref: 007-016-032	
15.12.2001	Therese Brown receives statement of Dr. Trainor	Ref: 021-063-149	
17.12.2001	Therese Brown receives statement of Dr. Gund	Ref: 021-062-147	
17.12.2001	E-mail from Dr. Edward Sumner to Dr. Miriam McCarthy's e-mail of 14th December 2001 acknowledging that it is a *"tricky matter"* and stating: (i) intraoperatively, patients do not need dextrose though it should be measured routinely (ii) Hartmann's is a very suitable maintenance fluid and should be given strictly in line with the guidelines – ie 10ml per kilo for the first hour and subsequent hours 8 per kilo (iii) colloid loss should be replaced with colloid and gastrointestinal losses with saline (iv) in a complex case sodium, potassium and haematocrit should be measured regularly throughout the case (v) postoperatively fluid should be restricted for the first 24-48 hours because of inappropriate ADH	Ref: 007-016-032 Ref: WS-075/1, p.3	

Date	Events (Raychel-related)	Reference	Other Developments
	[anti-diuretic hormone] associated with surgical stress. CMO states that 'Dr McCarthy passed a copy of the report on to me, although I cannot now be sure of the precise date'.		
19.12.2001	Therese Brown provides Raychel's hospital notes to Dr. Sumner	Ref: 022-066-165	
20.12.2001	E-mail from Dr. Miriam McCarthy (at 09.28am) to amongst others: (i) Dr. John Jenkins; (ii) Dr. Peter Crean; (iii) Clodagh Loughrey; (iv) Dr. Robert Taylor; (v) Dr. Geoff Nesbitt stating: *"Following SAC surgery and the medical directors meeting last week I have had feedback that we should include some reference to .18% saline and I have added one brief statement in under 'choice of fluids' and would be happy to have your views"*	Ref: 007-013-028	
20.12.2001	E-mail from Dr. Peter Crean (at 11.59am) to Dr. Miriam McCarthy stating: *"… you have now added specific iv fluids. Unfortunately there is not really any evidence to suggest that one solution is more or less harmful than another …* *I still feel that the most important aspect of these recommendations is the monitoring of fluid administration. Also any fluid with a sodium content of less than 140mmol/l is potentially harmful"*	Ref: 007-014-029	
20.12.2001	E-mail from Clodagh Loughrey (at 13.27pm) to Dr. Miriam McCarthy providing her comments on the proposed hyponatraemia 'wall chart' and 'guidelines': *"How would you feel about expanding the third line to read 'the risk of hyponatraemia may be increased in a child receiving 4% dextrose/0.18% saline <u>as a replacement fluid</u>' … Would it help if I spoke directly to the individual(s) who doesn't agree with me on the safe sodium content of replacement fluids? I feel so strongly about this being the essence of the problem that I'd like you to remove my name from any association with the guidelines if we don't make any direct reference to the sodium content of replacement fluids. I'd be content with the above as a minimum"* *(Emphasis added)*	Ref: 007-013-027	
21.12.2001	Therese Brown provides the statement of Mr. Makar to Donna Scott, Solicitor	Ref: 022-062-161	
24.12.2002	Dr Nesbitt emails Dr McCarthy commenting on draft guidelines and his dismay that there is no reference to sol. No. 18	Ref: 007-003-005	
31.12.2001	Therese Brown provides the statement of Dr. Johnston to Donna Scott, Solicitor	Ref: 160-207-001	
16.01.2002	Therese Brown receives statement of Mr. Makar	Ref: 021-061-146	
??.02.2002	Medicolegal Report of Dr. Sumner on Raychel	Ref: 007-002-176	
24.01.2002	Dr. Nesbitt emails Dr. Miriam McCarthy expressing disappointment as to the *"plan to drop the reference to Solution 18"*	Ref: 007-003-005	
25.01.2002	Therese Brown provides the following statements to Mr. Leckey, the Coroner: Drs. McCord, Gund, Trainor, Morrison, Nesbitt, Johnston, and Nurses Millar, Rice and Noble	Ref: 022-054-151	
30.01.2002	Therese Brown provides the statement of Mr. Gilliland to Mr. Leckey	Ref: 022-051-148	
31.01.2002	Mr. Walby provides statement of Dr. Crean to the Coroner	Ref: 012-072c-417	

Date	Events (Raychel-related)	Reference	Other Developments
05.02.2002	Dr. Sumner provides draft Report to the Coroner	Ref: 012-067o-358	
06.02.2002	Therese Brown advises Marie Carey, Solicitor, that Inquest to be held 10th April 2002	Ref: 022-047-134	
06.02.2002	Therese Brown writes to the Coroner to enclose the statement of Mr. Makar	Ref: 012-050l-251	
07.02.2002	Letter from Dr. Jim Kelly to Dr. Patricia Hamilton (Secretary, Royal College of Paediatrics & Child Health) referring to their previous contact in 2000 and a Review of case notes carried out by Dr. Moira Stewart and explaining: *"The outcome from the review was that they contained a combination of systems failures, some failure to follow best practice guidelines but nothing of sufficient concern that would warrant referral to GMC or direct intervention such as temporary suspension. Initially all of the incidents and concerns were raised by a single individual who had also introduced a claim of harassment against this consultant and it has always been difficult to separate out the components that were personality clash and those that were genuine professional competency concerns."* *(Emphasis added)* The letter went on to say that they had been unable to recruit an additional paediatrician and that: *"There have been ongoing concerns in relation to the performance of Dr. O'Donohoe … involve a wider range of cases and some of the concerns have been endorsed by other staff …while none of the clinical team views the matter as one warranting referral to the GMC, there is clearly a need to define the level of underperformance if any."* *(Emphasis added)* The letter concluded with a *"formal request"* for *"assistance with providing an external professional competency review of the practice of Dr. O'Donohoe … [to] involve a visiting paediatrician reviewing aspects of workload, clinical management of patients including outcomes and performance within the team."* *(Emphasis added)*	Ref: 036a-129-273 & Ref: 032-020-032	
14.02.2002	Therese Brown provides statements of Drs. Date and Jamison to the Coroner	Ref: 012-050l-250	
18.02.2002	Coroner provides the Report of Dr. Sumner to Therese Brown	Ref: 160-197-001	
20.02.2002	Medico Legal Advisor of the Medical Protection Society writes to Mr. Gilliland advising that it is satisfactory for him to attend the Inquest represented by the Trust advisors	Ref: 022-042-103	
02.2002	Medico Legal Report of Dr. Sumner issued	Ref: 012-001-001	
25.02.2002		Ref: WS-081/1, p.3	CMO/Directors of Public Health meeting
27.02.2002	Dr McCarthy reports to CREST sub group meeting on the 'Management of Hyponatraemia in the Adult Patient' on the outcome of the work on a small multi-professional group dealing with 'Prevention of Hyponatraemia in Children Receiving Intravenous Fluids'. She referred to the fact that: *"some months ago, the Department had been approached by Paediatricians, expressing concerns over an increase in the condition of Hyponatraemia and felt in need of urgent guidance"*[26] She stated that an A2 wall chart targeted at junior	Ref: 075-073-276	

[26] NB: Dr McCartney does not inform CREST that the need for guidelines came about as a result of the deaths of 2 children.

Date	Events (Raychel-related)	Reference	Other Developments
	staff and non-specialists would be published shortly, which was intended to raise awareness of the problem with the recommendation that each Unit should draw up its own protocol, using the guidelines as advice		
?	CMO commissions Regional Working party to consider the use of fluids and risk of hyponatraemia in children		
??.03.2002	Guidance issued on prevention of hyponatraemia in children, emphasising on a base line assessment in every case, requirements to be assessed by a doctor monitoring	Ref: 074-002-016	
??.03.2002		Ref: WS-062/1, p.5	Departmental Board adopt common model of risk management for Dept and all associated bodies- circular HSS (PPM) 3/2002 – Corporate Governance and the Statement of Internal Control and 6/2002 – Risk Management
05.03.2002	Coroner writes to Dr. Loughrey requesting attendance at the Inquest	Ref: 012-063d-319	
07.03.2002	Report of Dr. John Jenkins (Senior Lecturer in Child Health and Consultant Paediatrician) on instructions from the DLS and in relation to Lucy's care and treatment at the Erne Hospital. He referred to: *"intravenous fluids for replacement should contain a higher content of sodium (eg 'normal saline' – 0.9% NaCl – sodium chloride)"*. He also stated*: "Over recent years concerns have begun to be expressed regarding the use of 0.18% saline in Dextrose as a standard solution for intravenous use in young children and a number of cases of symptomatic hyponatraemia have been identified, some resulting in death or cerebral damage"*. However, he pointed out that the use of solutions with a higher level of sodium (as per the guidelines) is a *"very recent development and many paediatric units are continuing to us the sodium solution which was given in this case"*. He concluded: *"I would anticipate great difficulty in achieving a successful defence as there appears to have <u>been confusion between the staff involved with inadequate documentation and record keeping</u>. In this respect, unless it can be clarified in a satisfactory manner, it is my opinion <u>that management fell below the standard which would be accepted by a responsible body of medical opinion</u> as reasonable practice at the relevant time."* (Emphasis added)	Ref: 036-006-006	
12.03.2002	Therese Brown writes to Mrs. Stella Burnside, Chief Executive, to advise her that some clinical staff have informed her of *"factual inaccuracies"* in the Report of Dr. Sumner	Ref: 022-036-097	
18.03.2002	Letter from Patricia Hamilton (Secretary Royal College of Paediatrics and Child Health to Dr. Jim Kelly (Medical Director Sperrin Lakeland Health & Social Care Trust) referring to a request for assistance *"with providing an External Professional Competency Review of Dr. O'Donohoe"*. The letter advised that 2 paediatricians would be involved (as is the practice) and that Dr. Moira Stewart had been chosen as one as she *"knows the local situation and has been involved in some of the casework before"*. The letter also stated:	Ref: 032-019-030	

Date	Events (Raychel-related)	Reference	Other Developments
	"Dr. Stewart feels that she is able to continue to provide a balanced and independent view, despite having been previously involved. Please let me know if this is acceptable to the Trust"		
20.03.2002	Pre-Inquest Consultation takes place between legal representatives and Mr. Makar, Gilliland, Drs. Nesbitt and McCord, and Therese Brown	Ref: WS-322/1 p.23	
22.03.2002	Mr. Zafar provides his first statement to Therese Brown	Ref: 160-239-001	
24.03.2002	Therese Brown received statement from Dr. Zafar	Ref: 021-059-144	
25.03.2002	Letter from CMO to Trusts and Consultants (Paediatricians, Surgeons, Neurosurgeons, Anaesthetists/Intensivists, Plastic Surgery/Burns, A&E Medicine, Pathologists) informing them of publication of Guidance on the Prevention of Hyponatraemia (and enclosing a copy of it). She noted that: "*Hyponatraemia can be extremely serious and has in the past few years been responsible for two deaths among children in Northern Ireland*" (Emphasis added). Further notes that the Guidance will take the form of *"an A2 sized poster and I ask you to ensure that the posters are prominently displayed in all units that may accommodate children"*	Ref: 021-053-115	
26.03.2002	Dr. Henrietta Campbell writes to all Medical Directors or Acute Trusts enclosing posters of Guidance requesting that they be prominently displayed in clinical rooms	Ref: 007-002-003	
29.03.2002	Donna Scott, Solicitor, writes to Coroner setting out the Altnagelvin Trust's position in relation to the Report of Dr. Sumner	Ref: 160-163-001	
??.04.2002	CMO Update – CMO included an article on Hyponatraemia – referring to the guidelines which were being issued and stressing the need for rigorous monitoring of fluid balance	Ref: 075-085-346	
03.04.2002	Mr. Zafar provides amended, and final, statement	Ref: 021-059-143	
04.04.2002	Inquest adjourned to allow the Ferguson family to obtain legal representation	Ref: 012-059-301	
09.04.2002	Review of Action Plan held by Dr. Fulton	Ref: 022-092-299	
11.04.2002	Dr. Fulton provides statement as to the Investigation of the death of Raychel Ferguson	Ref: 160-143-002	
24.04.2002		Ref: 075-074-279	CREST sub group meeting on 'Management of Hyponatraemia in the Adult Patient', which discussed papers produced on hyponatraemia and the way forward was agreed
01.05.2002	Letter from Dr Nesbitt to the CMO in respect of Adam's death in the light of Raychel's death: *"I am interested to know if any such guidance was issued by the Department of Health following the death of a child in the Belfast Hospital for Sick Children which occurred some 5 years ago and whose death the Belfast Coroner investigated. I was unaware of this case and am at a loss to explain why.* *I would be grateful if you would 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****"* (Emphasis	Ref: 006-045-427	

Date	Events (Raychel-related)	Reference	Other Developments
	added)		
01.05.2002	Letter from Mr. Nesbitt in his capacity as Medical Director to all Medical Staff at Altnagelvin (copying Mrs. Burnside, Therese Brown, Mrs. Hutchinson-Clinical Services Manager, and Sister Millar) recommending a change of the *"default postoperative fluid from Hartmann's to 0.45% Saline in 2.5% dextrose"*	Ref: 021-049-106	
09.05.2002	CREST meeting Sub group on adult hyponatraemia reports: *"A worrying scenario which had come to light during deliberations, was that* ***medical students were no longer taught pharmacology*** *and* ***nurses taught very little about fluid balance****. Dr. Russell said these issues needed to be addressed but were outside the remit of the group"*[27] (Emphasis added)	Ref: 075-067-223	
10.05.2002	CMO replies to Dr. Nesbitt's letter of 1st May 2002 that she was unaware of *"a Coroner's case five years ago in which the cause of death of a child was reported to be due to hyponatraemia. This Department was not made aware of the case [Adam] 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" (Emphasis added)*	Ref: 006-046-428	
28.05.2002	Letter from Mr. Nesbitt to Dr. McCord requesting that the consensus statement (Ref: 077-004-005) be incorporated into a ward protocol (Ref: 077-005-006).	Ref: 077-003-004	
29.05.2002	Memorandum from Therese Brown to Sister Millar indicating that it was agreed at Clinical Incident Meeting that daily U&E of post-operative children should be undertaken	Ref: 021-047-103	
21.06.2002	CREST sub group meeting on 'Management of Hyponatraemia in the Adult Patient', The draft guidelines identify, inter alia, children as being at risk[28]	Ref: 075-075-282	
July 2002		HSS (PPM) 10/2002, p.2	DHSSPS(NI) announced, following on from the proposals in 'Best Practice – Best Care, its decisions on the new arrangements for clinical governance focusing on inter alia: (iii) setting clear standards; (ii) programmes of continuous professional development strengthened by enhanced arrangements for professional regulation; (iv) systems for monitoring the delivery of services. A draft circular on 'clinical and social care governance' for comment was enclosed
04.07.2002	Note of telephone call to Kay Doherty (sister of Marie Ferguson) by Stanley Millar (WHSSC) re Inquest	Ref: 014-008-018	
07.07.2002	Dr. Jeremy Johnston provides statement to Therese Brown	Ref: 021-058-139	
July 2002	The Junior Doctor's Handbook	Altnagelvin HSS Trust	
August	The Altnagelvin Doctor's Handbook	Altnagelvin HSS Trust	

[27] NB. This raises issues about how well the RBHSC had done its job on lessons learned after Adam for these concerns to persist

[28] NB. Would that not mean that even on an adult ward children were identified as being in the class of 'Patients at Greater Risk'?

Date	Events (Raychel-related)	Reference	Other Developments
2002			
07.08.2002	Letter of Dr. Andrew Boon (Consultant Paediatrician) to Dr. Jim Kelly enclosing the Royal College of Paediatrics & Child Health Review on Jarlath O'Donohoe carried out jointly by Dr. Andrew Boon and Dr. Moira Stewart (Consultant Paediatrician/Senior Lecturer in Child Health, Queen's University Belfast). The Review stated: (i) *"During the interview it became clear that there appears to be a gap between Dr. O'Donohoe's medical knowledge and his ability to put this into practice"* (ii) *"Dr. Kirby recounted how his 10 year old daughter had been under the care of Dr. O'Donohoe … Overall he was not impressed by Dr. O'Donohoe's clinical ability"* (iii) *"The prescription for the fluid therapy for LC [Lucy] 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 that time this was not so well recognised as at present"* (iv) *In summary it was felt that there is some substance to the concerns raised in the cases cited by Dr. Ashgar and these are compounded by Dr. O'Donohoe's style of working and personality"* *(Emphasis added)*	Ref: 035-021-073 & Ref: 032-006-007	
14th August 2002	'Breaking Bad News' by Dr. Garvey, as part of the teaching timetable provided at Altnagelvin	Altnagelvin HSS Trust	
25.08.2002			Letter from CMO to: (i) Medical Directors of Acute Trusts; (ii) Directors of Nursing in Acute Trusts; (iii) Consultant Paediatricians; (iv) Consultant Surgeons; (v) Consultant Neurosurgeons; (vi) Consultant Anaesthetists/Intensivists; (vii) Consultants in Plastic Surgery/Burns; (viii) Consultants in A&E Medicine; and (ix) Consultant Pathologists – advising that 'Guidance on the Prevention of Hyponatraemia in Children' has been published and will be forwarded. Special mention is made of the concerns over the use of 0.18% Sodium Chloride in Glucose.
September 2002		Royal College of Surgeons of England Ref: 317-018-001	Good Surgical Practice
10.09.2002	Speciality Advisory Committee (SAC) –Paediatrics meeting attended by the CMO. Members recommended that an audit of the guidelines in due course would be valuable	Ref: 075-077-295	
18.09.2002	CMAC (General Medical Care sub-committee) meet on 18.09.2002 to discuss legal difficulties in commissioning services from NICE; 'review of paediatric surgery' and the CMO's view that greater specialisation was required to maintain skills in surgery & anaesthesia	Ref: 320-035-007	
25.09.2002	Meeting of Dr. Jim Kelly (Medical Director) and Mr. Eugene Fee (Director of Acute Hospital Services) with Dr. O'Donohoe (Consultant Paediatrician) to provide him with feedback on the 'external review' undertaken by the Royal College of Paediatrics and	Ref: 035-026-087	

Date	Events (Raychel-related)	Reference	Other Developments
	Child Health. The following was agreed: (i) Dr. O'Donohoe would get up to date with his CPD (ii) The relationship between Dr. Ashgar and Dr. O'Donohoe to be addressed with a view to facilitating them putting their differences behind them, including engaging in mediation (iii) Joint working (iv) Recommendations concerning Dr. Ashgar – the 'review' would be shared with Dr. Ashgar		
01.10.2002	SAC (Anaesthetics) meeting 01.10.02 on consent; paediatric surgery & concern from Altnagelvin on maintaining surgical skills with inadequate volume	Ref: 320-114-001	
02.10.2002	Speciality Advisory Committee (SAC) – Anaesthetics		
22.10.2002	Meeting of Dr. Jim Kelly (Medical Director) and Mr. Eugene Fee (Director of Acute Hospital Services) with Dr. Ashgar (Staff Grade Paediatrician) to provide him with feedback on the 'external review' undertaken by the Royal College of Paediatrics and Child Health	Ref: 035-028-096	
25.10.2002	Letter from Dr. Jim Kelly to Dr. Ashgar confirming the outcome of the meeting on 22nd October 2002 that Dr. Jim Kelly (Medical Director) and Mr. Eugene Fee (Director of Acute Hospital Services) had with him and the agreements reached	Ref: 035-028-096	
31.10.2002	Pre-Inquest Consultation held between the legal representatives and Mrs. Therese Brown, Mr. Gilliland, Dr. Nesbitt and Sister Millar	Ref: WS-322/1 p.23	
01.11.2002	Memorandum from Therese Brown to S/N Rice, and Gilchrist seeking nursing staff attendance at the Inquest to "*counteract the comments made by Dr. Sumner, the Independent expert, in relation to the allegation of excessive vomiting*"	Ref: 022-017-052 & Ref: 022-017-056	
04.11.2002	Dr. Robert Taylor writes to Dr. Nesbitt enclosing MCA "*yellow card*" report	Ref: 321-020b-001	
06.11.2002	Copies of statements of Sister Millar and Staff Nurses Noble and Rice provided to the Coroner by Mrs. Donna Scott, Solicitor	Ref: 012-070k-396	
07.11.2002	CREST meeting Guidelines in respect of the prevention of hyponatraemia in adult patients in final draft. Dr. Russell reported: "*The production of the guidelines had highlighted that junior doctors and nurses were not rained[sic] in pharmacology and fluid balance and* ***these issues needed to be brought to the attention of the Universities***."[29] (Emphasis added)	Ref: 075-068-232	
07.11.2002	Coroner writes to Dr. Henrietta Campbell, CMO, seeking direction as to the reporting of deaths, such as Adam Strain, to the Department	Ref: 012-064b-327	
12.11.2002	First Report of Dr. J.G. Jenkins provided	Ref: 022-010a-040	
13.11.2002	CMO, Dr. Campbell writes to the Coroner welcoming the opportunity to meet to "*discuss how the health service might work with the Coroner's Office to improve the management of risk*"	Ref: 012-064a-325	
25.11.2002	Statement of Nurse Gilchrist provided to Therese Brown	Ref: 098-293-771	
27.11.2002	Therese Brown issued Memorandum to Mr. Gilliland, Drs. McCord and Nesbitt, Sister Millar,	Ref: 022-013-046	

[29] NB. Again, this raises issues as to whether the RBHSC had done its job on lessons learned after Adam for these concerns to persist.

Date	Events (Raychel-related)	Reference	Other Developments
	and Nurses Noble and Rice advising that the Inquest is listed for 5th February 2002		
03.12.2002	Donna Scott,, Solicitor, writes to Dr. Declan Warde regarding the provision of a report and attendance at the Inquest	Ref: 160-083-001	
10.12.2002	SAC (General Surgery) meeting held on 10.12.02: discussion re Paediatric Surgery- there was potential that all surgeons would withdraw from the surgical management of children; Paediatric General Surgical Service; and Consent to Examination or Treatment.	Ref: 320-122-001	
2003			Postgraduate Medical Education & Training Board (PMETB), a non-governmental independent regulatory body, is established under the General and Specialist Medical Practice (Education, Training and Qualifications) Order 2003 to develop a single, unifying framework for postgraduate medical education and training. It did not commence operations until September 2005
January 2003		INQ0485-11	Managing Medical Problems in Children: RBHSC (3rd Edition) published, with contributions from: Drs. Bartholome (Claire); Hanrahan (Raychel); O'Connor (Adam); Sands; Steen (Claire); Taylor (Adam & Claire); Webb (Adam & Claire).
13.01.2003		HSS (PPM) 10/2002	DHSSPS(NI) publishes guidelines 'Governance in the HPSS – Clinical and Social Care Governance: Guidelines for Implementation' to assist Boards, Trusts etc to *"formally begin the process of developing and implementing clinical and social care governance arrangements within your organisation or area of responsibility"(p.1).* That process was to start from the date of the circular, which was to be read in conjunction with: *"guidance already issued on the implementation of a common system of risk management across the HPSS and the development of controls assurance standards for financial and organisational aspects of governance"(p.1)* The clinical and social care governance framework was intended to build on and strengthen activities that included: • *Audit* • *Identifying, promoting and sharing good practice, learning lessons from best practice as well as poor performance* • *Risk assessment and risk management* • *Adverse incident management (emphasis added, p.6)* See also: • *An open, honest and proactive system where people can report poor performance, near misses and adverse*

Date	Events (Raychel-related)	Reference	Other Developments
			events to allow them to be appropriately dealt with, lessons learnt and shared within and where appropriate outwith the organisation (Emphasis added, p.8)
20.01.2003	Dr. Warde provides his Report to Donna Scott, Solicitor	Ref: 021-033-076	
27.01.2003	Dr. Jenkins provides his Report to the DLS	Ref: 022-004-013	
31.01.2003	Pre-Inquest Consultation is held between legal representatives and Therese Brown, Nurses Rice, Noble, Gilchrist, and Sister Millar	Ref: WS-322/1 p.23	
February 2003		Ref: 010-039-234	The Health and Personal Social Services (Quality, Improvement and Regulation) (Northern Ireland) Order 2003 The Order places a statutory duty of quality on all HPSS providers. See proposals in 'Best Practice Best Care' April 2001
??.02.2003		Ref: WS-062/1, p.5	Department issues guidelines to the HPSS on implementing clinical and social care governance (HSS (PPM) 10/2002). These stressed the importance of organisations taking corporate responsibility for performance and for providing the highest possible standard of clinical and social care. Emphasis was also placed on adverse incident management.
05.02.2003	Pre-Inquest Consultation held between the legal representatives and Drs. Gund, Jamison, Jenkins and Trainor	Ref: WS-322/1 p.23	
05.02.2003	**Raychel's Inquest and Verdict on Inquest**		
06.02.2003	CREST meeting – Sub group report on adult guidelines. Finalised. Proposal for a ½ day seminar in May 2003 to launch.	Ref: 075-069-248	
10.02.2003	Press Statement from Altnagelvin Hospitals Health and Social Services Trust informing of the action taken following Raychel's death: *"Altnagelvin Hospital immediately made changes to the practices to ensure nothing similar happens again. In addition, the hospital's Medical Director met with the Chief Medical Officer for Northern Ireland to initiate a review. As a direct result, new guidance from the chief Medical Officer was issued to all hospitals in Northern Ireland and is therefore now available to the wider medical community"*	Ref: 023-003-003	
10.02.2003	Coroner writes to CMO, Dr. Henrietta Campbell, to inform her of the outcome of the Inquest and whether this had *"implications for the training of both doctors and nurses"*	Ref: 012-064-324	
11.02.2003	Telephone message taken by Mrs L. Preston (Office Manager WHSSC) from Sally Doherty (Altnagelvin Area Hospital) to Stanley Millar (WHSSC) requesting list of questions for meeting regarding Raychel	Ref: 014-011-021	
14.02.2003	Letter from Stanley Millar (WHSSC) to Mrs Stella Burnside Chief Executive Altnagelvin Area Hospital requesting a meeting re death of Raychel	Ref: 014-012-022	
18.02.2003	Dr. Nesbitt writes to Mr. Paul Bateson, Clinical Director, Altnagelvin, regarding the surgical team not following the agreed protocol for checking	Ref: WS-035/2 p.91	

Date	Events (Raychel-related)	Reference	Other Developments
	electrolytes		
19.02.2003	Meeting between Altnagelvin and the WH&SSC held at which: *"Mrs Burnside said in hindsight the Trust accepted the death could have been avoidable"*	Ref: 014-016-028	
23.02.2003	Letter from Dr. Taylor to the Coroner dated 23rd February 2003 stating that the problem of fluid and electrolyte management has been *"emphasised over and over again"* in his capacity as Director of APLS	Ref: 064-006-034	
11.03.2003	Coroner writes to Professor Jack Crane seeking a meeting to discuss his concerns that *"when deaths of children in particular are reported to my office the proper questions may not be asked."*	Ref: 012-065b-335	
07.04.2003	Paediatric Antiemetic Guidelines for use in post-operative patients aged 12 months to 12 years – Patrick Stewart (Consultant Paediatrician at Altnagelvin)	BC-00/3-11 INQ 0642-12 (DLS attachments)	
01.05.2003	Letters sent by John J. Rice & Co to the Chief Executive at Altnagelvin, and RGH promising proceedings unless satisfactory proposals for compensation are made. States that either or both Altnagelvin or the RBHSC are liable for Raychel's death	Ref: 024-001-001	
02.05.2003	Dr. Nesbitt and Mr. Bateson issue joint Memorandum regarding Paediatric Fluid Management, requiring all surgeons to conduct ward rounds, and to have responsibility for the management of children admitted under their care	Ref: 021-044-091	

SCHEDULE 6: Post Conor's death

Date	Events (Post Conor's death)	Reference	Other Developments
12.05.2003	Conor's death		
13.05.2003	Coroner telephoned Dr. McCarthy to advise that there may be another 'death from hyponatraemia', a 16 year old boy with cerebral palsy transferred from Craigavon to the Royal who died on 12th May 2003. He said he was awaiting the results of the post mortem and may hold an Inquest Dr. McCarthy e-mails the information to the CMO, Dr. Ian Carson (Deputy CMO30)	Ref: 075-064-203	
??.06.2003		Ref: WS-075/1, p.14	Report reviewing the Death Certification and Investigation system in England, Wales and Northern Ireland (The Luce Report). The report recommends that Coroners should have an obligation to send to any public or other body an account of any inquest or investigation finding relevant to the body's services, activities or products and to the safety of its users, customers or staff.
05.06.2003	Therese Brown issues letter to Mr. A. Maginness of Directorate of Legal Services, enclosing the letter from John J. Rice of the 6th May 2003. Acknowledgement of receipt of letter also issued to John J. Rice	Ref: 024-002-002 & 024-003-003	
23.06.2003		Ref: 075-071-264	CREST seminar to launch the adult guidelines.

[30] Dr. Ian Carson appointed the Deputy Chief Medical Officer on secondment from the Royal where he held the following appointments: (i) 1975 – 2002: Consultant Anaesthetist, Cardiac Surgical Unit; (ii) 1993 – 2002: Trust Medical Director & Deputy Chief Executive. Also from November 1999 – 31st July 2002: Special Adviser in Clinical Governance to CMO

Date	Events (Post Conor's death)	Reference	Other Developments
16.07.2003		Ref: 073-030-138	CREST issued guidance on management of hyponatraemia in adults
22.07.2003	Clinical Negligence Case Review attended by Dr. Nesbitt, Mrs. Brown, Ms. Kyle and Ms. Scott re: allegations of negligence	Ref: 024-008-009	
19.09.2003		Ref: WS-075/1, p.76	Deloitte publish "Evaluation of HPSS Baseline Assessment and Action Plan – Clinical and Social Care Governance" Final Report Eastern Health & Social Services Board (the one for the Royal) and the Royal are recorded as: "assessment and action plan was generally poor based on most performance criteria … Significant weaknesses included no risk management policy, no complaints/customer care training, no communication policy, no workforce plan, no system for promoting best practice and no clinical governance policy" Ref: WS-075/1, p.87 "Royal Group of Hospitals …. The Trust did not supply an action plan and the information submitted only covered about 20% of that required in the original baseline assessment. This resulted in an overall score of red" Ref: WS-075/1, p.89 See also: ▪ Status of Clinical & Social Care Governance in Northern Ireland – Ref: WS-075/1, p.101 ▪ Detailed areas for HPSS Support – 'Effective leadership and management' – Ref: WS-075/1, p.103 ▪ Baseline assessment of Eastern Health & Social Services Board – Ref: WS-075/1, p.117
01.10.2003	Response to Press Enquiry issued to Roddy McGregor of the Irish News stating: "The matter is now the subject of litigation and the Trust is not therefore in a position to make any comment in the public arena"	Ref: 024-015-023	
07.10.2003	SAC Paediatrics meeting CMO attended. Dr McAloon advised an audit of guidelines is on going.	Ref: 075-078-303	
November 2003			Statement published by the Royal College of Paediatricians and the Royal College of Anaesthetists: 'Possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/ 0.18% saline'.
06.11.2003		Ref: 075-071-258	CREST meeting Dr Russell reported that guidelines for management of hyponatraemia in adults launched on 23rd June 2003

Date	Events (Post Conor's death)	Reference	Other Developments
??.11.2003		Ref: 007-083-198	Publication by Drs John Jenkins, Robert Taylor, Miriam McCarthy of 'Prevention of hyponatraemia in children receiving fluid therapy': The Ulster Medical Journal, Volume 72, No.2, pp.69-72
??.11.2003			Statement issued by the Royal College of Paediatrics and Child Health on 'Possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline' and asks the Royal College of Anaesthetists to disseminate the following, which it does via its website: *"There is a possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline. The issue has been discussed by both the Medical Control Agency/Committee on Safety Medicines and the Joint RCPCH/NPPG Standing Committee on Medicines. The issue has arisen because of a recent report of a case of fatal hyponatraemia in a child following the use of 4% dextrose/01.8% saline after surgery.* *However, a review of the literature shows that acute hyponatraemia in children following the administration of hyptonic fluids … is well documented … as far back as the late 1960s … In contrast 4% dextrose/0.18% saline is isotonic before being administered but is effectively hypotonic in the sick child once the glucose has metabolised. Children in the post-operative period are particularly susceptible to serious and occasionally fatal neurological complications of acute hyponatraemia and sick children in other 'stressful' situations may also be at additional risk"* (Emphasis added)
09.12.2003	SAC (General Surgery) meeting held on 09.12.03: Hospital at Night and NCEPOD Report.	Ref: 320-123-001	
??.02.2004			Royal College of Anaesthetists re-publishes on its website the Statement issued by the Royal College of Paediatrics and Child Health on 'Possibility of water overload with sever hyponatraemia developing after the infusion of 4% dextrose/0.18% saline'
10.02.2004	SAC (Paediatrics) meeting held on 10.02.04 on: upper age limit for admission to RBHSC; audit of hyponatraemia	Ref: 320-057-001	
17.02.2004	Lucy's Inquest Inquest carried out by John Leckey (Coroner for the District of Greater Belfast)		
19.02.2004	Lucy's Inquest continued	Ref: 006-001-030	

Date	Events (Post Conor's death)	Reference	Other Developments
	Verdict on Inquest: Cause of death: I(a) cerebral oedema, (b) acute dilutional hyponatraemia, (c) excess dilute fluid and II gastroenteritis: *"The collapse which led to her death was a direct consequence of an inappropriate fluid 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."*		
19.02.2004	Letter of the Corner to Dr. Henrietta Campbell (Chief Medical Officer) enclosing Reports of the Expert Witnesses and correspondence of Sperrin Lakeland Trust	Ref: 006-008-290	
19.02.2004	Letter from the Coroner to Dr Nesbitt (cc to the CMO): (i) advising of the outcome of the Inquest into Lucy's death; (ii) enclosing the Expert Reports of Drs Edward Sumner, Dewi Evans and John Jenkins; (iii) enclosing a copy of correspondence received by Mr Crawford from Sperrin & Lakeland Trust to the effect that an independent review carried out by Dr Murray Quinn (Consultant Paediatrician at Altnagelvin Hospital); (iv) indicating that Dr Quinn reconsider his views in the light of the Expert Reports and the admission by Dr Auterson (Consultant Anaesthetist at the Erne) that: *"the wrong fluid was given, too much of it was given and the rate of infusion should have been regulated, Lucy's care was not up to standard"* Also: *"I strongly believe that Dr Quinn and Altnagelvin Hospital (because of the death of Raychel Ferguson) should consider afresh the issues of fluid management of children"*	Ref: 006-009-292	
20.02.2004	Interview with Stanley Millar by BBC Radio Ulster's Good Morning Ulster	Ref: 009-027-061	
23.02.2004	Coroner writes to CMO referring the Inquest papers in Lucy Crawfords case to her under Rule 23(2) Re monitoring of standards of record keeping	Ref: 006-001-022	
27.02.2004	Departmental Board Meeting Dr Carson refers to inquest into the death of Lucy Crawford and that Dept meeting with Trust that day to discuss the case Clive Gowdy claims to have first become aware of Lucy's death	Ref: 004-019-236 Ref: WS-062/1, p.2	
??.03.2004		Ref: WS-075/1, p.14	Position paper published by Home Office on 'Reforming the Coroner and Death Certification Service'. It recommended that Coroner's reports should be sent to Health and Safety Executive and Directors of Public Health, as well as the

Date	Events (Post Conor's death)	Reference	Other Developments
			individual or body responsible for any shortcomings identified
04.03.2004	CMO writes to Chief Executives of the Trusts to request assurance that guidance on hyponatraemia is being implemented Responses – Dr. Nesbitt (Altnagelvin), Sperrin; United; Causeway; Ulster; Craigavon; Belfast	Ref: 007-067-136; Ref: 007-066-137; Ref: 007-068-138; Ref: 007-069-139; Ref: 007-069-140; Ref: 007-069-141; Ref: 007-071-143; Ref: 007-072-144; Ref: 007-073-145; Ref: 007-074-147	
11.03.2004	Dr. Nesbitt writes to the Coroner that *"it is unfortunate that the earlier death was not brought to our attention in order to cause the alert throughout Northern Ireland, which regrettably only occurred following Raychel's death"*	Ref: 021-042-087	
18.03.2004	CMO interview with BBC Radio Ulster's Evening Extra. CMO states that "this issue of hyponatraemia where the body goes through this abnormal response in just a very few cases" (Emphasis added) CMO interview with BBC Newsline.	Ref: 004-010-166 Ref: 004-010-163	
22.03.2004	Dr. Nesbitt writes to the CMO, Dr. Henrietta Campbell to confirm that the Guidance was fully endorsed by Altnagelvin, incorporated and implementation monitored through the Trust's incident reporting mechanism	Ref: 077-066-136	
25.03.2004	CMO interview with UTV. When discussing Lucy and Raychel's deaths, she refers to *"the abnormal reaction which is seen in very few children" and "the very abnormal reaction in certain children"* (Emphasis added)	Ref: 006-037-375	
31.03.2004		Ref: WS-062/1, p.5 & WS-075/1, p.142	Deloitte's Report to the Department on 'adverse incidents and near miss reporting in the HPSS and special agencies' The report noted 'inconsistencies in approach, including incident reporting systems, monitoring, collation, analysis and follow-up' and its recommendations included: • *A consistent approach to the definition and coding of adverse incidents and near misses …* • *Links between local reporting arrangements and national, statutory, and confidential reporting mechanisms …* • *Improved training and development of staff in the use of risk assessment tools, such as root cause analysis* There is reference to the Royal's 'incident reporting policies' – Ref: WS-075/1, p.171
??.04.2004			National Patient Safety Agency publishes: 'Seven Steps to Patient Safety; An overview guide for NHS staff', providing as 'step 6': *"develop a local policy which describes the*

Date	Events (Post Conor's death)	Reference	Other Developments
			criteria for when your organisation should undertake a Root Cause Analysis (RCA) or Significant Event Audit (SEA). These criteria should include all incidents that have led to permanent harm or death … identify which other departments might be affected in future, and share your learning more widely" (p.18, emphasis added)
??.04.2004			NI Council for Postgraduate Medical & Dental Education established under the Health & Personal Social Services Act as a special agency sponsored by the DHSSPS – replacing the NI Council for Postgraduate Medical & Dental Education. Its role is inter alia: ▪ organising, accrediting and reviewing educational and training activities for doctors and dentists; ▪ monitoring quality standards in medical and dental education and assessing the educational value of training posts; ▪ managing foundation and specialty, including general practice, training programmes; ▪ implementing and developing a framework for regular, assessment, appraisal and annual review of doctors and dentists in training; ▪ advising on the needs of international medical and dental graduates training in Northern Ireland; ▪ the provision of authoritative advice to the Department of Health, Social Services and Public Safety; ▪ responding to wider changes in the regulation, supervision and quality assurance of medical and dental education and training
02.04.2004	Hugh Mills is interviewed by the Impartial Reporter	Ref: 001-004-007	
06.04.2004	Ministerial submission prepared and sent to the Minister – Dr McCarthy and Dr Campbell consulted regarding the content of this briefing	Ref: 001-010-024 Ref: 001-011-032	
07.04.2004	Dr. Stephen Playfor, Consultant Paediatric Intensivist at Royal Manchester Children's hospital comments on guidelines He thinks guidelines are a step in the right direction but do not go far enough in stating that 4%dex/0.18%saline should never be used	Ref: 075-044-152	
09.04.2004	CMO offers to meet with the parents of Lucy Crawford	Ref: 075-041-144	
15.04.2004	CMO asks Sir Cyril Chantler at Gt Ormond Street to be independent assessor of hyponatraemia guidelines	Ref: 075-040-140	
27.04.2004	Dr. Corrigan writes to Therese Brown confirming regional Paediatric IV fluid therapy audit copied, and presented to the Paediatric SAC	Ref: 021-040-083	
06.05.2004	CREST meeting Sub group reports on comments in respect of guidelines:	Ref: 075-072-274	

Date	Events (Post Conor's death)	Reference	Other Developments
	"Dr. Russell reported that he had received correspondence from Dr. Winston Shaer, a South African Plastic Surgeon working in London and Dr. Anil Mane, Consultant Physician, Erne Hospital. Dr. Shaer had felt that the CREST guidelines didn't sufficiently cover the surgical point of view. Dr. Russell had replied that this aspect had been alluded to at the launch of the guidelines but that the guidelines had been targeted at junior doctors and nursing staff" (Emphasis added)		
12.05.2004	Lucy's parents request a meeting with the Minister of Health	Ref: 001-053-164	
13.05.2004	Letter from the Permanent Secretary Mr. Clive Gowdy to Mr. Alan Bremner, Controller of Programmes UTV regarding an interview with the CMO Dr. Campbell	Ref: 023-005-006	
14.05.2004	Writ lodged with the High Court of Justice on 14th May 2004 on behalf of the Fergusons	Ref: 024-019-028	**14.05.2004**
21.05.2004	'Platform' Article by CMO in Irish News	Ref: 004-010-154	
25.05.2004	CMO interview with Denzil McDaniel of the Impartial Reporter	Ref: 069A-035-090	
28.05.2004	Ministerial briefing prepared by Dr McCarthy	Ref: 004-010-105	
28.05.2004	Board meeting – Lucy Crawford discussed	Ref: 004-020-238	
28.05.2004	E-mail from Jonathan Bill (Deputy Director, Quality & Performance Unit) to Noel McCann (Director, Planning & Performance Management). In relation to informal notification of incidents, he notes: *"Frankly the picture is not a good one. Notification is patchy, the numbers small and there is no overall analysis. I do think Minister is somewhat vulnerable to the accusation that the Department is not aware what is going on as regards serious incidents. (Secretary had taken the line that it was usual for CMO / Department to be notified, and Lucy Crawford was an exception .... we have no impirical (sic) evidence to support this"*	Ref: 010-025-180	
01.06.2004	Ministerial briefing prepared by Dr McCarthy	Ref: 004-010-055	
03.06.2004	Interview of Minister for Health by Denzil McDaniel of the Impartial Reporter	Ref: 001-072-252	
06.06.2004	Conor's Inquest Verdict on Inquest		
07.06.2004	Trevor Birney (producer UTV 'Insight Programme') interviews Dr. John Jenkins, Consultant Paediatrician, Antrim Area Hospital	Ref: 069A-056-179	
09.06.2004	Trevor Birney rings the Marie Dunne to seek and interview with Dr. Nesbitt regarding a clinical view of hyponatraemia	Ref: 023-006-009	
11.06.2004	Dr. Sumner writes to Dr. Jenkins, the Coroner and the CMO: *"My overall impression from these cases is that the basics of fluid management ware neither well understood, nor properly carried out."*	Ref: 006-043-406	

Date	Events (Post Conor's death)	Reference	Other Developments
15.06.2004	Altnagelvin HSST issue Statement for Insight Programme summarising sequence of events following death of Raychel	Ref: 023-007-010	
28.06.2004	CMO asks her staff to re convene the working group on hyponatraemia in light of the remarks of Sir Cyril Chantler	Ref: 075-008-018	
28.06.2004	CMO writes to Coroner and advises him of initiatives dept taking forward: (i) workshop in early Autumn; (ii) developing better hospitals initiative; (iii) Health and Social Care Records Steering Group	Ref: 006-042-401	
05.07.2004	Dr McCarthy seeks comments in respect of the CMO's review of the guidance on hyponatraemia	Ref: 007-062-131	
05.07.2004	Dr Jenkins' response identifies those who may not have access to the literature/guidance but who treat children ie adult /surgical	Ref: 007-064-134	
05.07.2004	Fiona Kennedy's response – care in weighing a child not to confuse kg and lbs	Ref: 007-065-135	
07.07.2004		Ref: HSS(PPM)06/04 Ref: WS-062/1, p.5	DHSSPS(NI) issues interim guidance on: 'Reporting and Follow-up on Serious Adverse Incidents'. The purpose of the guidance was stated to be: *"To provide interim advice for HPSS organisations and Special Agencies on the reporting and management of serious adverse incidents and near misses, pending the issue of more comprehensive guidance on safety", with 'serious adverse incidents defined as: "any event or circumstance arising during the course of the business of a HSS organisation/Special Agency or commissioned service that led, or could have led to serious unintended or unexpected harm, loss or damage"* Para.16 of the interim guidance required: *"… where a serious adverse incident occurs it should be reported immediately to the senior manager … If the senior manager considers the incident is likely to:* • *be serious enough to warrant regional action to improve safety or care within the broader HPSS;* • *be of public concern; or* • *require an independent review* *he/she should provide the Department with a brief report … within 72 hours of the incident being discovered"* Further guidance was to be provided once the Safety in Health and Social Care Steering Group and reported to the Department on its strategic review of the reporting, recording and investigation of adverse incidents and near misses Clinical and Social Care Governance Support Team appointed in 2004

Date	Events (Post Conor's death)	Reference	Other Developments
08.07.2004	CMO meets with Sir Cyril Chantler, Dr Ian Carson and Dr McCarthy and discusses the Hyponatraemia guidance to identify any amendments that Sir Cyril Chantler thought were appropriate. Recent literature was noted. Possibility discussed of explicit guidance on prescription of IV fluids with low Na levels.	Ref: WS-075/1, p.20	
08.07.2004	CMO writes to Prof Jack McCluggage of NI Council for Postgraduate Medical & Dental Education: *"A number of recent coroner's inquests have highlighted the need for better training in fluid administration and management, particularly in children.* *As part of a strategy to address this problem I would be pleased if you would ask the training committees to consider this as a priority area. We have developed guidelines for fluid maintenance and replacement which should form the basis of a training programme. Many units have also included fluid management in their audit programme and it is essential that doctors in training participate in such audits"*	Ref: 075-007-017	
08.07.2004	CMO writes to Dr. Maurice Savage (Director of Undergraduate Education – QUB Medical School) cc to Dr. John Jenkins reminding him that the Coroner had highlighted the need for better training in fluid management, particularly in children. She referred to the guidelines for fluid management in children and for adults and stated: *"It is essential however that we address the needs for better training and education in this area. I have asked Jack McCluggage to take this forward through the training committees, but I also recognise the need for education and awareness at undergraduate level and at PRHO level. I would be pleased if you would consider how this might be taken forward"*	Ref: WS-075/1, p.30	
20.07.2004	Letter from Professor Jack McCluggage to: (i) Chair, Paediatric TC – Dr. McAloon; (ii) TPD/Adviser, Paediatric TC – Dr. Shields; (iii) Chair, Medical Specialities TC – Dr. McMahon; (iv) Adviser, Medical Specialities TC – Dr. Collins. The letter enclosed the correspondence from the CMO and stated: *"As requested please bring to the attention of your Training Committee and consider as a priority area"*		
26.07.2004	Letter from Dr Maurice Savage to CMO outlining how fluid management is taught	Ref: WS-075/1, p.12	
?			A multi agency group established comprising DHSSPS(NI) officials, PSNI, HSE and the Coroners Service to develop a Memorandum of Understanding for consultation for the investigation of death and serious incidents in hospitals
02.08.2004	Regional audit for 2003/2004 to examine adherence to DHSSPS(NI) Guidelines	Ref: 007-092-234	
12.08.2004	CMO requested meeting to facilitate discussion on proposed amendments – Dr McCarthy sent letter to Jenkins, Taylor, Crean, Loughrey and McAloon	Ref: 007-055-120	
02.09.2004	Meeting held in Castle Buildings to share information regarding the planned Insight	Ref: 023-008-012	

Date	Events (Post Conor's death)	Reference	Other Developments
	Programme		
20.09.2004	E-mail from Christine Stewart (Press & Public Relations Officer at the Royal) to Colm Shannon (DHSSPS(NI)) advising that she had just spoken to Dr Robert Taylor: *"Following a detailed examination of the issues surrounding patient as there were no new learning points, and therefore no need to disseminate any information. Our hospital has an established structure for the teaching of the management of fluids to doctors in training"*	Ref: 023-045-105	
22.09.2004	Dr McCarthy met with members of the Working Group. Agreed that rather than amend the guidance, it would be complemented with a fluid care pathway.	Ref: WS-075/1, p.20	
23.09.2004	Letter of the Coroner to the Chief Medical Officer referring the Inquest papers to her referring to: (i) Possible changes that might be made to the Protocol established after the Inquest into the death of Raychel Ferguson, in particular: (a) medical record keeping; and (b) nurses' understanding of fluid regime prescribed (ii) Particular concerns: (a) Whether it is the responsibility of the Medical Director of a hospital to ensure proper standard of medical record keeping are maintained; (b) Whether there is any monitoring of the standard of record keeping; (c) Whether nurses are briefed on a regular basis as to the implications of the Protocol Letter of the Coroner to the GMC (Fitness to Practice Directorate)		
27.09.2004	Press statement of Sperrin Lakeland Health and Social Care Trust to UTV stating: *"We would wish to assure the people of our local community that the systems which contributed to Lucy's death in April 2000 have been changed and improved"*	Ref: 023-012-017	
05.10.2004	SAC – Paediatrics meeting CMO attended. Dr McAloon reported on hyponatraemia audit- implementation incomplete. Dr McAloon reporting findings to forthcoming workshop and looking at a re design of fluid charts	Ref: 075-079-315	
21.10.2004	UTV Insight programme – 'Why hospitals kill' Clive Gowdy states he first became aware of Adam's death around the time of the UTV programme	Ref: WS-062/1, p.2	
Date Unknown	Claire's parents contact the Royal afterwards as they had continuing concerns over Claire's death.		
Date Unknown	Professor Young States in his deposition to the Coroner that: "in my opinion hyponatraemia may have made a contribution to the development of cerebral oedema in Claire's case. I advised that it would be appropriate to consider discussing the case with the Coroner for an independent external opinion with access to statements from all of the staff involved in Claire's case".		
22.10.2004	Departmental Board meeting – allegations of Insight programme discussed	Ref: WS-084/1, p.3	

Date	Events (Post Conor's death)	Reference	Other Developments
28.10.2004	Request by Clive Gowdy to the Health Estates Agency for any information in relation to Lucy, Raychel and Adam	Ref: 001-095-320	
29.10.2004	Mr. Guckian replies confirming all documents are secured and available for inspection	Ref: 021-016-034	
01.11.2004	Health Minister Angela Smith announces Public Inquiry		
??.11.2004	Dr McCarthy writes to the remaining Trusts seeking confirmation of compliance with the Hyponatraemia guidelines, receiving the following responses: Greenpark, Mater, Newry & Mourne, Royal Group	Ref: 073-038-163 Ref: 073-034-144 Ref: 073-031-139 Ref: 073-030-136	
03.11.2004	Meeting of WHSSC re UTV Insight Programme	Ref: 014-021-035	
04.11.2004	Letter from Mr Clive Gowdy Permanent Secretary DHSSPS to Mr P McGowan Chair WHSSC re: UTV Insight Programme (instructions to secure and index files re: Lucy Crawford and Raychel Ferguson)	Ref: 014-022-042	
04.11.2004	WHSSC issues press release regarding the Insight programme and the establishment of the Inquiry	Ref: 023-016-023	
04.11.2004	Mr. Tom Melaugh, Director of Clinical Support Services issued Memorandum to Mrs. Irene Duddy, Director of Nursing, in relation to the Insight Programme	Ref: 021-014-031	
05.11.2004	CMO wrote to Dr McAloon inviting him to convene and chair a small multi-disciplinary group to develop a care pathway for fluid management	Ref: WS-075/1, p.20	
06.11.2004	The Ferguson family make a formal complaint to the GMC Fitness to Practise Directorate in respect of the CMO, Dr Quinn, Dr Hanrahan, Dr Jenkins, Dr Nesbitt and Dr Kelly.	Ref: GMC Tab 16, p.1	
15.11.2004	Dr. Nesbitt issues Memorandum to Dr. Moles seeking confirmation that Solution 18 can be removed from use	Ref: 021-036-079	
18.11.2004			Angela Smith MP announces the Terms of Reference for the Inquiry into the deaths of Adam, Lucy and Raychel.
23.11.2004	Chief Executive Stella Burnside writes to Chairman of the Inquiry assuring the AHHSST's fullest cooperation	Ref: 021-009-021	
01.12.2004	John O'Hara QC writes to Mr. Patrick McGowan seeking all notes, documents, records and reports in relation to the cases of Lucy Crawford and Raychel Ferguson	Ref: 014-023-044	
06.12.2004	Meeting took place between Professor Young, Dr. Michael McBride and Dr. Heather Steen which was not 'formally minuted'. Professor Young stated that Dr. Sheen *"has definite views about the significance of the fluid management, which are not quite the same as mine"*. Dr. McBride decided that Claire's case should be referred to the Coroner, and agreed that Dr. Webb should be informed.	INQ 0241/11 INQ 0558-11	
07.12.2004	Meeting between Claire's parents and medical staff from the Royal (Drs. Rooney, Steen, Sands and Professor Young). Professor Young stated: *"At the Royal Hospitals, lessons have been learnt regarding management of sodium levels in children- which is still not the case in many UK hospitals"* and advised	Ref: 089-002-002	

Date	Events (Post Conor's death)	Reference	Other Developments
	Claire's parents to consider giving permission to refer the case to the Coroner.		
08.12.2004	Mr. Roberts writes to the Royal requesting answers to questions and referral to the Coroner.	Ref: 089-003-006	
14.12.2004	Dr. Rooney suggests postponing a further meeting until early January, in light of the questions posed by Mr. Roberts, with a referral to the Coroner in the meantime.	INQ-0558-11	
14.12.2004	SAC (General Surgery) meeting held on 14.12.04, discusses: General Surgery of childhood at a District General Hospital–Paper 3/04- difficulties on the way forward for training.	Ref: 320-124-001	
15.12.2004	Dr. McBride emails Dr. Walby (Associate Medical Director of the Royal) to ask him to take the lead in informing the Coroner of Claire's case	INQ-0558-11	
16.12.2004	At the request of the family Dr. Walby reports Claire's case to the Coroner for investigation.	Ref: 089-004-008	
17.12.2004	Dr. McBride writes to Claire's parents to inform them of the report to the Coroner.	Ref: 089-005-010	
21.12.2004	Dr. Nesbitt writes to Clinical Directors to "ensure that where fluids are prescribed the solution chosen and the rate of administration are based on clinical examination and measurement of electrolytes.	Ref: WS-035/2 p.130	
2004 (end of)		Ref: WS-062/1, p.6	National Reporting and Learning System (NRLS) developed by National Patient Safety Agency
06.01.2005	1-day Workshop on Clinical Care of Children – 'Fluid Management': Dr. Jarlath McAloon (Consultant Paediatrician, Antrim Hospital) Dr J McAloon presented inter alia the Hyponatraemia audit results at a workshop on the Clinical Care of Children, chaired by CMO. Over 100 participants at the workshop with reps from various disciplines and Trusts involved in delivering children's services throughout NI. One of the issues covered at the workshop was hyponatraemia. Dr McAloon highlighted that the guidelines were not fully implemented across all trusts: *"Summary* *•Adherence to Regional guidelines is probably incomplete* *•There are identifiable hindrances to guideline implementation which can be overcome* *•There is also a need for further expert review of the guidance"*	Ref: WS-075/1, p.26 Ref: WS-075/1, p.11	
07.01.2005	Claire's parents meet with Dr. Leckey, Coroner, to discuss their concerns relating to hyponatraemia and Claire's treatment.	Ref: 089-007-016	
12.01.2005	Letter from Dr. Rooney to Claire's parents responding to questions arising in Mr. Roberts' letter of 8th December 2004. Indicates that: "the Coroner had not been informed at the time as it was believed that the cause of Claire's death was viral encephalitis".	Ref: 089-006-012	
17.01.2005	Mr. Roberts writes to the Inquiry Chairman to inform him of Claire's case and upcoming inquest.		
25.01.2005	Letter from Dr. Walby to the Coroner which states	Ref: 097-005-006	

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	that, in a letter of 16th December 2004, he: "referred to the provisional diagnosis as simply being that of a viral illness whereas the admitting Registrar had gone further and considered it to be encephalitis".		
03.02.2005	Letter from Dr. Herron to John Leckey in which it states: *"the central oedema that was present may have had many causes, one of which is hyponatraemia. The autopsy did not exclude this as a cause of brain swelling nor did it show any specific findings (structural changes) to make the diagnoses of hyponatraemia. I am unclear from the letter as to whether it is thought that the hyponatraemia was a primary factor in the case..."*	Ref: 097-003-004	
10.02.2005		Ref: 073-003-014	Clive Gowdy speaks at Nursing Conference on 'patient safety'
			Royal College of Anaesthetists re-publishes on its website the Statement issued by the Royal College of Paediatrics and Child Health on: 'Possibility of water overload with severe hyponatraemia developing after the infusion of 4% dextrose/0.18% saline'
16.03.2005	Dr. Heather Steen gives statement	Ref: 096-004-021	
April 2005		Ref: WS-068/1, p.255	Publication of Best Practice, Best Care, The Quality Standards for Health and Social Care: Supporting Implementation of Clinical and Social Care Governance in the HPSS.
01.04.2005		Ref: WS-062/1, p.5	HPSS Regulation and Quality Improvement Authority (RQIA) (established by Health & Social Personal Services (Quality Improvement & Regulation) (NI) Order 2003) commenced work. Role in relation to the inspection, regulation, investigation and review of performance within HSS organisations against 5 quality 'themes': ▪ Corporate leadership & Accountability ▪ Safe & Effective Care ▪ Accessible, Flexible & Responsive Services ▪ Promoting, Protecting & Improving Health & Social Well-being ▪ Effective Communication & Information
06.04.2005		Ref: WS-066/1, p.8	Circulation of Priorities For Action 2005/08 by Health, Social Services and Public Safety.
14.04.2005	Dr. Bingham prepares report on Claire	Ref: 091-006-023	
06.06.2005	Letter from the Inquiry Solicitor to Prof. Jack McCluggage (Chief Executive, NI Council for Postgraduate Medical & Dental Education) seeking information on: ▪ teaching/training on fluid management (and in particular hyponatraemia) and record keeping		

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	provided to postgraduate medical students as part of their training and continuous professional development in the 20 years prior to 1995 ▪ extent to which the teaching/training in Northern Ireland on fluid management (and in particular hyponatraemia) and record keeping provided to postgraduate medical students has changed since the deaths of Adam in 1995, Lucy in 2000 and Raychel in 2001 ▪ how NIMDTA ensures that as part of their continuous development, doctors who qualified before changes were made to the teaching of fluid management, incorporate training in fluid management and how to diagnose hyponatraemia in the continuous development education ▪ how NIMDTA ensures that doctors from overseas coming to work in Northern Ireland are trained in fluid management and hyponatraemia? ▪ changes in teaching/training of postgraduate doctors in record keeping since 1995? ▪ how NIMDTA ensures that doctors from overseas working in Northern Ireland are advised of the requirements for record keeping		
10.06.2005		Ref: HSS (PPM) 05/05	Department up-date following the interim guidance in July 2004 on 'Reporting of Serious Adverse Incidents within the HPSS' (PPM 06/04) announcing a 'briefing session' for safety managers on 15th June 2006 when the Department would provide feed back on the operation of the reporting and management arrangements established by PPM 06/04
10.06.2005		Ref: WS-062/1, p.5	Two Incident Investigation Workshops for the HPSS arranged in 2005. They focused on the current experience in dealing with adverse incidents.
14.06.2005	Letter from Dr. Terry McMurray (NIMDTA) to: (i) Advisers/Training Programme Directors of Specialty Training Committees; (ii) Postgraduate Clinical Tutors; (iii) Educational Co-ordinators; (iv) Director of Postgraduate GP Education, NIMDTA seeking: *"documentary evidence about training in [fluid management (and in particular hyponatraemia) and record keeping] prior to the death of Adam Strain (1995), and how training has changed between 1995 and Lucy Crawford's death (2000) and Raychel Ferguson's death in 2001. Furthermore, how has training changed since 2001?"*		
15.06.2005			Department's 'briefing session' for safety managers on the operation of the reporting and management arrangements established by PPM 06/04
22.06.2005	E-Mail from David Cousins to Miriam McCarthy advising of the National Patient Safety Agency work plan in relation to hyponatraemia	Ref: WS-079/1, p.9	
29.06.2005	E-mail from Terry McMurray to CMO in response to hers of 27th June 2005 seeking information on what Prof Jack McCluggage had done about fluid management and training. He states that:	Ref: WS-075/1, p.31	

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	"I wrote to all relevant training committees and clinical tutors for evidence about training over the last 20 years (as requested). To date I have had 12 replies from Paediatrics, the Medical Specialities, Sperrin-Lakeland (inl Tyrone County), the Mater, Antrim Area Hospital, Mid-Ulster, Newry and Mourne and the Ulster Hospital. As soon as I have an overall picture I will forward it to you"		
06.07.2005	Dr. Andrew Sands gives statement	Ref: 096-002-013	
27.07.2005	PSNI investigation into the circumstances of Adam's death begins	Ref: 093-001-001	
29.08.2005	Dr. Terry McMurray (Chief Executive & Postgraduate Dean, NIMDTA) writes to Dr. Henrietta Campbell (CMO) providing a summary of the responses from the acute trusts on postgraduate training in fluid management, which showed: ▪ Altnagelvin Hospital – since 1995 lunchtime training for all PRHO & others on fluid and electrolyte management, since 2002 the Medical Director had developed a specific talk re hyponatraemia ▪ Craigavon Area Hospital – fluid management is part of the Induction Programme, hyponatraemia has been included since 2005 ▪ Erne Hospital – there was little documentation until 2003 when it became part of medical and paediatric training ▪ Royal - prior to 2001 "reasonably assured that fluid management was covered in induction programme", since 2001 there has been a specific lecture and induction pack		
??.09.2005			Postgraduate Medical Education & Training Board (which was established in 2003) began operations. It took over the responsibilities of the Specialist Training Authority of the Medical Royal Colleges and the Joint Committee on Postgraduate General Practice Training. Its responsibilities included: ▪ certifying doctors for the GP and specialist registers ▪ approving specialist training curricula and assessments submitted to it by the medical Royal Colleges ▪ quality assurance and evaluation of the management of postgraduate training
06.09.2005	PSNI take statement from Debra Slavin	Ref: 093-003-003	
22.09.2005	Claire's parents meet Mr. Leckey, and express a wish that he hold an Inquest- this is agreed	Ref: 089-010-029 Ref: 089-011-034	
11.10.2005	SAC (Paediatrics) meeting held on 11.10.05: NPSA review of hyponatraemia	Ref: 320-059-003	
31.01.2006 – 18.11.2006	PSNI take statements from Maurice Savage, Catherine Murphy, Jacqueline Cartmill, Patricia Conway, Patrick Keane, Stephen Brown, Gillian Popplestone, Margaret Mathewson, Peter Shaw, Eleanor Donaghy, Joanne Sharratt, Kathryn Knaggs, Cathy Hall, Mary O'Connor, David Webb, Alison Armour, Joe Gaston, Samuel Lyons, George Murnaghan, Fiona Gibson, John Wilson, Brian	Ref: File 93	

Date	Events (Post Conor's death)	Reference	Other Developments
	McLaughlin, Adrian McConville, Peter Berry, RA Risdon, Jayne Larkin, Amanda Lennon, Margaret Jackson, William Cross and Denise Graham		
??.02.2006			'Memorandum of Understanding: Investigating patient or client safety incidents (unexpected death or serious untoward harm)': between Health & Personal Social Services, PSNI, Coroners Service, Health & Safety Executive for Northern Ireland
14.03.2006			DHSSPS(NI) issues 'Quality Standards for Health and Social Care' to support the statutory duty of quality imposed on HPSS Boards and Trusts by The Health and Personal Social Services (Quality, Improvement and Regulation) (Northern Ireland) Order 2003 Under 'Ensuring Safe Practice and the Appropriate Management of Risk' (para.5.3.1): *"promotion of safe practice on the use of medicines and products, particularly in areas of high risk, for example: … intravenous fluid management"* Under 'Preventing, Detecting, Communicating and Learning from Adverse Incidents and Near Misses' (para.5.3.2): *"(a) has systems and processes in place to prevent, identify, assess and manage and review adverse incidents and near misses across the spectrum of care and support" … (c) has reporting systems in place to collate, analyse and learn from all adverse incidents, and near misses, share knowledge and prevent reoccurrence of adverse incident or near miss"*
20.03.2006		Ref: HSS (PPM) 02/2006	Department 'Reporting and follow up on serious adverse incidents' in relation to the new interim reporting procedures for adverse incidents and near misses introduced in July 2004 by PPM 06/04. The circular identified certain aspects of the process that needed to be managed more effectively, including (at para.4): (i) organisations reviewing their arrangements *"to ensure that incident management is co-ordinated and working effectively and that [the] designated senior manager is aware of those incidents reported to the Department as SAIs (serious adverse incidents)"*; (ii) *"Where an incident involves the death of a person every effort should be made to submit a report within 24 hours"* In addition, making certain changes to the SAI Report Proforma, including: *"Trusts and practices should note that all SAIs should be reported to their commissioning HSS Board as a matter of*

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			course. These reports will help inform HSS Boards with regard to meeting their statutory duty of quality on the services they commission providing an overview of the quality of service provision and, where appropriate, will facilitate regional learning" (para.7, emphasis added)
10.04.2006	Letter from D/S William Cross to Dr Walby (Associate Medical Director at the Royal) seeking to establish whether: *"the Siemens Monitor which was inspected on 2 December 1995 was the monitor which was used in the operation on Adam Strain on 27 November 1995"*	Ref: 094-210-997	
24.04.2006			'How to Classify Adverse Incidents and Risk': Department's guidance for senior managers responsible for adverse incident reporting and management, which set out a flowchart for adverse incidents management, defined as: *"Any event or circumstance that could have or did lead to harm, loss or damage to people, property, environment or reputation"* (para.1.6)
25.04.2006	Depositions given at Inquest of: Mr. Roberts, Dr. Sands, Dr. Steen, Dr. Herron, Professor Young and Dr. Webb, Dr. Bingham and Dr. Maconochie.	Ref (respectively): 096-001-001 096-003-015 096-005-025 096-006-032 096-008-041 096-010-065 096-010-065 096-011-070 096-012-079	
05.05.2006	Claire's Inquest and Verdict on Inquest: *"Cerebral Oedema due to menigo-enchephalitis, hyponatraemia due to excess ADH production and status epilepticus"*	Ref: 091-002-002	
27.11.2006	Letter from Dr Walby in reply to the letter of 10th April 2006 from DS William Cross in respect of the Siemens Monitor: *"It now seems that the possibility that the technicians tested a different monitor to the one used on Adam Strain as Mr McLaughlin had raised in his statement to you of 2.5.06 has proved correct as the normal one was removed after 27.11.95 and before 2.12.95. It probably will not have been pointed out to the technicians that the normal monitor was actually back in the Department between 1.12.95 and 6.12.95, but was under test and therefore not in the operating theatre for inspection"*	Ref: 094-210-999	
16.12.2006	Letter from DS William Cross to DI Nicholl providing a copy of his correspondence with Dr Walby about the Seimens Patient Monitor: *"I have received the attached reply which confirms that the equipment tested was not that used in Adam's operation. This should be borne in mind when considering the evidence of Dr Gibson"*	Ref: 094-210-996	
2007		Ref: Hypotonic saline paediatric safety	National Patient Safety Agency issue Patient Safety Alert- Reducing the

Date	Events (Post Conor's death)	Reference	Other Developments
		review.	Risk of Hyponatraemia when Administering Intravenous Infusions to Children, recommending the use of 0.45% sodium chloride/ 5% glucose or 0.9% sodium chloride/ 5% glucose solutions as maintenance IV fluids in the paediatric population.
28.03.2007		Ref: NPSA/2007/22	NHS National Patient Safety Agency Alert no.22 for 1month to 16 year olds, recommending that: *"NHS and independent sector organisations in England and Wales take the following actions by 30 September 2007 to minimise the risk of hyponatraemia in children:* *1. Remove sodium chloride 0.18% with glucose 4% intravenous infusions from stock and general use in areas that treat children …* *2. Produce and disseminate clinical guidelines for the fluid management of paediatric patients …* *3. Provide adequate training and supervision for all staff involved in the prescribing, administering and monitoring of intravenous infusions for children* *4. Reinforce safer practice by reviewing and improving the design of existing intravenous fluid prescriptions and fluid balance charts for children* *5. Promote the reporting of hospital acquired hyponatraemia incidents via local risk management reporting systems. Implement an audit programme to ensure NPSA recommendations are adhered to"*
01.04.2007			Belfast Health & Social Care Trust established as an amalgamation of: (i) Belfast City Hospitals; (ii) Royal Hospitals; (iii) Mater Hospital; (iv) Greenpark Healthcare Trust; (v) North & West Belfast HSS Community Trust (including Muckamore Abbey Hospital); (vi) South & East Belfast HSS Community Trust
01.04.2007			Southern Health & Social Care Trust established as an amalgamation of: (i) Craigavon Area Hospital Trust; (ii) Craigavon & Banbridge Community Trust; (iii) Newry & Mourne Health & Spcial Services Trust; (iv) Armagh & Dungannon Health & Social Services Trust
01.04.2007			Western Health & Social Care Trust established as an amalgamation of: (i) Altnagelvin Hospitals Health & Social Services Trust; (ii) Foyle Health & Social Services Trust; (iii) Sperrin Lakeland Health & Social Services Trust
27.04.2007	Joint letter from Dr. Michael McBride (Chief Medical Officer), Dr. Norman Morrow (Chief Pharmaceutical Officer) and Martin Bradley (Chief Nursing Officer) for action to: (i) Chief Executives of HSC Trusts; (ii)		

Date	Events (Post Conor's death)	Reference	Other Developments
	Chair – Regional Paediatric Fluid Therapy Working Group; (iii) NI Medicines Governance Team; (iv) RQIA referring to NPSA Patient Safety Alert 22: Reducing the risk of Hyponatraemia when administering intravenous infusions to children and informing them that *"HSC organisations are required to implement the actions identified in the Alert by 30 September 2007. Independent sector providers which administer intravenous fluids to children will also wish to ensure that the actions specified in the alert are implemented in their organisations within the same time scale"* (Emphasis added)		
??.09.2007	Paediatric Parenteral Fluid Therapy (1 month – 16 years): initial management guideline		