BRIEF FOR CONSULTANT NEURORADIOLOGIST

RAYCHEL FERGUSON

Introduction

1. Raychel Ferguson is one of four children who are the subject of a public inquiry being conducted by John O'Hara QC.

2. Raychel was born on 4th February 1992. She was admitted to the Altnagelvin Area Hospital on 7th June 2001 with suspected appendicitis. An appendicectomy was performed on 8th June 2001. She was transferred to the Royal Belfast Hospital for Sick Children ("RBHSC") on 9th June 2001 where brain stem tests were shown to be negative and she was pronounced dead on 10th June 2001. The Autopsy Report dated 11th June 2001 concluded that the cause of her death was cerebral oedema caused by hyponatraemia.

3. The Inquest into Raychel's death was opened on 5th February 2003 by Mr. John Leckey, the Coroner for Greater Belfast. He engaged Dr. Edward Sumner as an expert. At that time Dr. Sumner was a Consultant in Paediatric Anaesthesia.

4. The Coroner found that the cause of Raychel's death was cerebral oedema with acute dilutional hyponatraemia as a contributory factor. He also found that the hyponatraemia was caused by a combination of inadequate electrolyte replacement following severe post-operative vomiting and water retention resulting from the secretion of anti-diuretic hormone (ADH).

5. The other 3 children who are the subject of the public inquiry are:-

   (1) Adam Strain
   Adam was born on 4th August 1991. He died on 28th November 1995 in the RBHSC following kidney transplant surgery. The Inquest into his death was conducted on 18th and 21st June 1996 by John Leckey, the Coroner for Greater Belfast, who engaged as experts: (i) Dr. Edward Sumner, Consultant Paediatric Anaesthetist at Great Ormond Street Hospital for Sick Children ("Great Ormond Street"); (ii) Dr. John Alexander, Consultant Anaesthetist at Belfast City Hospital; and (iii) Professor Peter Berry of the Department of Paediatric Pathology in St. Michael's Hospital, Bristol. The Inquest Verdict identified cerebral oedema as the cause of his death with dilutional hyponatraemia as a contributory factor.

(2) **Claire Roberts**

Claire Roberts was born on 10th January 1987. She was admitted to the RBHSC on 21st October 1996 with a history of malaise, vomiting and drowsiness and she died on 23rd October 1996. Her medical certificate recorded the cause of her death as cerebral oedema and status epilepticus. That certification was subsequently challenged after a television documentary into the deaths of Adam and two other children (Lucy Crawford and Raychel Ferguson).

The Inquest into Claire's death was carried out nearly 10 years after her death by John Leckey on 4th May 2006. He engaged Dr. Robert Bingham (Consultant Paediatric Anaesthetist at Great Ormond Street) and Dr. Ian Maconochie (Consultant in Paediatric A&E Medicine at St Mary's, London) as experts. The Inquest Verdict found the cause of Claire's death to be cerebral oedema with hyponatraemia as a contributory factor.

(3) **Conor Mitchell**

Conor Mitchell was born on 12th October 1987 with cerebral palsy. He was admitted to A&E Craigavon Hospital on 8th May 2003 with signs of dehydration and for observation. He was transferred to the RBHSC on 9th May 2003 where brain stem tests were shown to be negative and he was pronounced dead on 12th May 2003.

The Inquest into Conor's death was conducted on 9th June 2004 by John Leckey who again engaged Dr. Edward Sumner as an expert. Despite the Inquest, the precise cause of Conor's death remains unclear.

The clinical diagnosis of Dr. Janice Bothwell (Paediatric Consultant) at the RBHSC was brainstem dysfunction with Cerebral Oedema related to viral illness, over-rehydration/inappropriate fluid management and status epilepticus causing hypoxia. Dr. Brian Herron from the Department of Neuropathy, Institute of Pathology, Belfast performed the autopsy. He was unsure what 'sparked off' the seizure activity and the extent to which it contributed to the swelling of Conor's brain but he considered that the major hypernatraemia occurred after brainstem death and therefore probably played no part in the cause of the brain swelling. He concluded that the ultimate cause of death was Cerebral Oedema. Dr. Edward Sumner commented in his Report of November 2003 that Conor died of the acute effects of cerebral swelling which caused coning and brainstem death but he remained uncertain why. He noted that the volume of intravenous fluids was not excessive and the type appropriate but queried the initial rate of administration. That query was raised in his correspondence shortly after the Inquest Verdict. In that correspondence, Dr.

Sumner described the fluid management regime for Conor as 'sub-optimal'.

The Inquest Verdict stated the cause of death to be brainstem failure with cerebral oedema, hypoxia, ischemia, seizures and infarction and cerebral palsy as contributing factors.

6. The impetus for this Inquiry was a UTV Live 'Insight' documentary 'When Hospitals Kill' shown on 21st October 2004.[1] The documentary primarily focused on the death of a toddler called Lucy Crawford (who died in hospital in 2000 and whose death was subsequently found to have been as a result of hyponatraemia). The programme makers identified what they considered to have been significant shortcomings of personnel at the Erne Hospital where Lucy had been initially treated before being transferred to the RBHSC. In effect, the programme alleged a cover-up and it criticised the hospital, the Trust and the Chief Medical Officer. The programme also referred to the deaths of Adam and Raychel in which hyponatraemia had similarly played a part. At that time, no connection had been made with the deaths of Claire and Conor.

Original Terms of Reference

7. The Inquiry was established under the Health and Personal Social Services (Northern Ireland) Order 1972, by virtue of the powers conferred on the Department by Article 54 and Schedule 8 and it continues pursuant to the Inquiries Act 2005.

8. The original Terms of Reference for the Inquiry as published on 1st November 2004 by Angela Smith (then Minister with responsibility for the Department of Health, Social Services and Public Safety) were:

To hold an Inquiry into the events surrounding and following the deaths of Adam Strain, Lucy Crawford and Raychel Ferguson, with particular reference to:

i. The care and treatment of Adam Strain, Lucy Crawford and Raychel Ferguson, especially in relation to the management of fluid balance and the choice and administration of intravenous fluids in each case.
ii. The actions of the statutory authorities, other organisations and responsible individuals concerned in the procedures, investigations and events which followed the deaths of Adam Strain, Lucy Crawford and ***Raychel Ferguson.***
iii. The communications with, and explanations given to, the respective families and others by the relevant authorities.

[1] See DVD of the programme with the accompanying Core File- to follow

In addition, Mr O'Hara will:

(a) Report by 1 June 2005 or such other date as may be agreed with the Department, on the areas specifically identified above and, at his discretion, examine and report on any other relevant matters which arise in connection with the Inquiry.

(b) Make such recommendations to the Department of Health, Social Services and Public Safety as he considers necessary and appropriate.

(Emphasis added)

Changes

9. There have been a number of significant changes in the Inquiry since 2005. Firstly, following representations from the Crawford family who wished to have Lucy excluded from the Inquiry's work, the Inquiry received the following Revised Terms of Reference from the Minister:

   1. *The care and treatment of Adam Strain and Raychel Ferguson, especially in relation to the management of fluid balance and the choice and administration of intravenous fluids in each case.*

   2. *The actions of the statutory authorities, other organisations and responsible individuals concerned in the procedures, investigations and events which followed the deaths of Adam Strain and Raychel Ferguson.*

   3. *The communications with and explanations given to the respective families and others by the relevant authorities.*

   In addition, Mr O'Hara will:

   (a) Report by 1 June 2005 or such date as may be agreed with the Department, on the areas specifically identified above and, at his discretion, examine and report on any other matters which arise in connection with the Inquiry.

   (b) Make such recommendations to the Department of Health, Social services and Public Safety as he considers necessary and appropriate.

10. Secondly, Claire Roberts and Conor Mitchell were included into the Inquiry's work by the Chairman. In Claire's case that decision arose out of the belated acknowledgement by the RBHSC that hyponatraemia played a part in Claire's death. In Conor's case the decision arose out of apparent fluid mismanagement in his care soon after the implementation of Guidelines on Hyponatraemia that stressed the importance of fluid management.

11. The effect of the Revised Terms of Reference was to exclude all explicit references to Lucy Crawford. The Chairman has interpreted them in the

following way:

> *"... the terms still permit and indeed require an investigation into the events which followed Lucy's death such as the failure to identify the correct cause of death and the alleged Sperrin Lakeland cover-up because they contributed, arguably, to the death of Raychel in Altnagelvin. This reflects the contention that had the circumstances of Lucy's death been identified correctly and had lessons been learned from the way in which fluids were administered to her, defective fluid management would not have occurred so soon afterwards (only 14 months later) in Altnagelvin, a hospital within the same Western Health and Social Services Board area."*

12. Claire Robert's case is being investigated in accordance with precisely the same terms as those of Adam Strain and Raychel Ferguson.

13. The investigation of Conor will address more limited issues in view of the fact that hyponatraemia was not thought to be a cause of his death (indeed if anything he developed hypernatraemia). Similarly, the fluid mismanagement referred to by Dr. Sumner was not considered to have been a cause of his death. So far as Conor's death is concerned, the Chairman has stated:

> *It is obviously a matter of concern if guidelines which have been introduced as a result of a previous death or deaths and which are aimed at avoiding similar events in the future, are not properly communicated to hospital staff and followed. It is relevant to the investigation to be conducted by the Inquiry whether and to what extent the guidelines had been disseminated and followed in the period since they were published. Another matter of interest is whether the fact that Conor was being treated on an adult ward rather than a children's ward made any difference to the way in which it appears that the guidelines may not have been followed.*
>
> *Accordingly, the Inquiry will investigate the way in which the guidelines had been circulated by the Department, the way in which they had been made known to hospital staff and the steps, if any, which had been taken to ensure that they were being followed. While this is an issue of general importance, it will be informed by an examination of the way in which the guidelines had been introduced and followed in Craigavon Area Hospital by May 2003.*

Role of the Experts

14. The Role of the Experts to the Inquiry is set out in 'Protocol No.4: Experts', a copy of which is attached.[2] There are 4 categories of expert

[2] Attached

assistance:

(i) Expert Advisors to assist the Inquiry in identifying, obtaining, interpreting and evaluating the evidence within their particular area of expertise, currently: (a) Paediatrician; (b) Paediatric Anaesthetist; (c) Nurse in Paediatric Intensive Care; and (d) National Health Service Hospital Management
(ii) Experts appointed to 'peer review' the work of the Expert Advisers, currently: (a) Internal Medicine/Nephrology; (b) Paediatric Anaesthetist; and (c) Paediatric Intensive and Critical Care Nursing
(iii) Experts on a case by case basis as Expert Witnesses
(iv) Experts to provide commissioned 'Background Papers'

15. You have been identified as an expert whose role falls within category (iii) above. You are asked to consider Protocol No. 4 from this perspective.

Background to Raychel

Admission to Altnagelvin Hospital, Derry – 7th June 2001

16. Raychel was a healthy 9 year old girl who had no history of serious illness or disability. She weighed 25kg. On 7th June 2001 she developed abdominal pain and her mother thought it best to bring her to the local hospital where she could be examined.

17. Raychel arrived at the Altnagelvin Hospital in Derry at about 20:00 and was seen by a nurse in the Accident and Emergency Unit. She was complaining of a sudden onset of increasingly severe peri-umbilical abdominal pain. She also complained of dysuria. She was said to be nauseated although she had not vomited. A provisional diagnosis was recorded of *"appendicitis?"*[3]

18. At 20:20 Raychel received cyclimorph 2mg which was administered intravenously.[4]

19. At 22:41 Raychel was admitted on to Ward 6. This is the children's unit of Altnagelvin Hospital. The named consultant was Mr. Robert Gilliland (Surgical Consultant), although it is clear that he did not treat her during her time in the Hospital.

20. The notes relating to this admission record that Raychel was examined by Mr. Regai Reda Makar (Surgical, SHO) who had documented periumbilical pain which had shifted to the right iliac fossa (McBurney's

[3] [020-006-010]
[4] [020-006-010]

point). He diagnosed acute appendicitis and obtained consent for an appendicectomy. Intravenous fluids were prescribed.[5]

21. Despite the complaint of dysuria which had been made by Raychel in the accident and emergency department, this was not noted in Mr. Makar's assessment[6]. Subsequent urinalysis showed 1+ protein in Raychel's urine[7] and then 2+ protein.[8] There is no evidence to suggest that a sample of Raychel's urine was ever sent to the laboratory for microscopic examination and bacterial culture.

22. A nursing care plan was formulated for Raychel by Staff Nurse Daphne Patterson.[9]

23. The records show that at 22:15 Raychel was fasting and had been commenced on Solution No. 18 at an infusion rate of 80ml/hour.[10] The fluids were continued at this rate until in or about 23:00 when Raychel was taken to theatre. The records show that Raychel was recommenced on this fluid at 02:00 on 8th June 2001, after the completion of surgery. The last entry on the document records total fluid intake from commencement at 22:15 to 07:00 as being 540ml. There is then a second sheet for the period from 07:00 on 8th June 2001.[11]

24. Dr. Sumner has commented that the fluid balance chart did not record any urine output or oral fluid intake.[12]

25. From the depositions which were provided to the Coroner at the Inquest into the circumstances of Raychel's death, it is clear that the prescription of fluids was the product of a discussion between Staff Nurse Noble and Mr. Makar.

26. Significantly, Mr. Makar had initially prescribed intravenous Hartmann's solution for Raychel in the Accident and Emergency department, but upon being informed by Nurse Noble that this was inconsistent with common practice on the ward, Mr. Makar changed the fluid prescription to Solution 18 (dextrose 4% saline 0.18%).[13]

27. There is no evidence to indicate whether Raychel received any Hartmann's solution when she was in the Accident and Emergency department.

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[5] [020-007-011] & [020-008-015]
[6] [020-007-011 and 012]
[7] [020-016-031]
[8] [020-015-030]
[9] [020-027-060]
[10] [020-021-040] & [020-020-039]
[11] [020-018-037]
[12] [012-001-003]
[13] [012-043-207]. See also depositions of Noble [012-043-207] and Makar [012-045-216]

28. Prior to surgery, blood was taken from Raychel for haematological and biochemical testing. The date/time of the results is not indicated on the face of the document[14] but commenting on this document Dr. Sumner has noted that preoperative biochemistry was normal and most notably serum sodium was normal at 137mmol/L.[15]

Appendicectomy

29. Raychel was brought to theatre at 23:20 in preparation for the appendectomy. The surgeon was Mr. Makar, and the anaesthetists were Dr. Vijay Kumar Gund and Dr. Claire Jamison, although the latter left before the completion of surgery. Staff Nurse McGrath was the nurse in charge of theatre. The scrub nurse was Staff Nurse Ayton.

30. The anaesthetic record shows that Dr. Gund performed a pre-anaesthetic evaluation of Raychel.[16]

31. The intraoperative nursing record shows that Raychel was administered with a diclofenac (Voltarol) suppository (12.5mg) and a paracetamol suppository (500mg).[17] The anaesthetic record indicates that Raychel received ondansetron 2 mg, fentanyl 50 ug total, propofol 100 mg, suxamethonium 30 mg, Cyclimorph 5 mg, mivacurium 2 mg, metronidazole 250 mg intravenously.[18] The same record also shows (via the addition of a retrospective note) that Raychel received 200 ml of Hartmann's solution during her operation.

32. Surgery lasted for approximately one hour (23:45 - 00:40). Mr. Makar noted no surgical problems in the conduct of the appendicectomy. Following surgery Mr. Makar reported that he had found a *"mildly congested appendix"* and that the *"peritoneum [was] clean."*[19] The pathologist's report showed that the appendix appeared normal and that a faecolith was found on section.[20]

Post Operative Period 8th June 2001

33. Raychel was in the recovery ward by 00:45[21] and she was returned to Ward 6 at 02:10.[22] In his deposition provided to the Coroner in respect of

[14] [020-022-045]
[15] [012-001-002]
[16] [020-009-017]
[17] [020-013-021]
[18] [020-009-016]
[19] [020-010-018]
[20] [020-022-047]
[21] [012-014-022]

Raychel's Inquest, Dr. Gund has explained that before transferring Raychel to the ward he prescribed intramuscular cyclimorph, paracetamol, diclofenac and ondansetron on an *"as required"* basis. He discarded the remaining Hartmann's solution and left fluids "on ward protocols."[23] It was his understanding that a nurse would ask a paediatrician to prescribe any fluids for Raychel.

34. When Raychel arrived back on Ward 6 the IV infusion of Solution No. 18 was recommenced at 80ml/hr. By 07:00 on the 8th June 2001 she had received 540ml of this solution in total, together with between 200-300ml of Hartmann's intraoperatively.[24] Vital signs were frequently recorded overnight by nursing staff, and there was no indication that Raychel's recovery from surgery was anything other than satisfactory.[25]

35. Sister Millar was in charge of the Ward 6 at Altnagelvin Hospital during the day shift for 8th June 2001. She came on duty at approximately 07:50. Her nursing team comprised Staff Nurse Rice (McAuley) and Staff Nurse Rowlston.

36. A nursing handover took place at 08:00 when Staff Nurse Noble explained the drugs which Raychel had received overnight. She also stated that Raychel had not yet passed urine.[26]

37. Mr. M.H. Zafar (Surgical SHO) saw Raychel as part of the ward round on the morning of 8th June. In a statement provided by him he has recalled that Raychel was free of pain and was apyrexial, and that the plan was for continuous observation.[27] There is a short untimed medical note to that effect.[28]

38. In her deposition for the Coroner Sister Millar has recalled that Mr. Zafar was happy for Raychel to have small amounts of clear fluids, and that the IV fluids were to continue as prescribed.[29] She has also recalled that Mr. Makar spoke to Raychel's father on the morning after surgery but there is no record available to the Inquiry referring to such a conversation.[30]

39. A new fluid balance sheet was commenced at 08:00, and it maintained the IV fluid record from that time until 04:00 on 9th June 2001.[31] It records

[22] [012-028-145]
[23] [012-033-163]
[24] [020-020-039]
[25] [020-015-029]
[26] [012-043-208]
[27] [012-024-134]
[28] [020-007-013]
[29] [012-041-202]
[30] [098-018-041]
[31] [020-018-037]

input of 80ml of Solution No. 18 per hour, and shows that between 07:00 on 8th June and 04:00 on 9th June Raychel received 1680 ml of that fluid.

40. At 12.10 on 8th June 2001 Staff Nurse Rice asked Dr. Mary Butler (Paediatric SHO) to write up another bag of Solution No. 18 as the bag which had been running from the previous night had run out.[32] Dr. Butler did not make any other note with regard to her attendance on Raychel. She has stated in her witness statement to the Inquiry that she does not recall the nurses raising any concerns with her about Raychel's condition. She has said that had they done so this would have prompted her to examine Raychel and to write up a note.[33]

41. The fluid balance sheet is also used to record gastric losses. It is recorded on the sheet that Raychel vomited for the first time at 08:00 that is approximately ten hours after surgery had finished. Further vomiting is recorded on this chart throughout the day at 10:30, 13:00, 15:00, 21:00, 22:00 and 23:00. By the time Dr. Butler wrote up the second bag of Solution No. 18 Raychel had already vomited at least twice.

42. The papers available to the Inquiry reveal that there is a dispute about the severity of Raychel's vomiting during 8th June 2001. Dr. Sumner has expressed the view that Raychel *"suffered very severe and prolonged vomiting."* He cites the presence of coffee grounds and the petechiae seen on her neck in support of this opinion. [34]

43. In witness statements provided to police, visitors to the hospital such as Mrs. Duffy and Mr. Duffy have given their accounts of witnessing Raychel's vomiting.[35]

44. In his police statement Raychel's father (Mr. Ferguson) also referred to his observations of the severity of Raychel vomiting.[36]

45. Raychel's mother recalled in her deposition for the Coroner that:

> *At about 12.00 hours I took Raychel to the toilet and as she was about to leave the toilet she began to vomit which was large in volume ... I informed a nurse that she had been sick but the nurse said that this was normal. As the day progressed, she became sick more often and at one point she was vomiting bile on the bed and a nurse said that her stomach was empty and that she would not be sick any more. We left the hospital at 15.00 hours and returned at approximately 15.45 hours and Raychel appeared listless and not her lively self. She continually vomited ...*

[32] [020-019-038]
[33] [095-014-067]
[34] [012-001-004]
[35] [095-007-022] & [095-008-025]
[36] [095-005-017 & 018].

46. Mrs. Ferguson also recalled that Raychel had passed urine at 12:00 and 14:00, but these episodes are not recorded on the fluid chart.[37]

47. Other witnesses who visited Raychel at the hospital have commented at how unresponsive she was to attempts to stimulate her into conversation. [38]

48. There is at least a suggestion in all of these accounts that Raychel vomited more often and was more ill than has been allowed for in the records compiled by nursing staff and in their evidence to the Coroner and in their statements to this Inquiry.

49. In a letter to the Coroner, solicitors acting on behalf of the Altnagelvin Hospital H&SST challenged Dr. Sumner's view that the vomiting was either very severe or prolonged.[39]

50. This was certainly the view of the nurses who were on duty that day and who gave evidence to the Inquest. Staff Nurse Rice, for example, stated that while she had recorded the vomit at 22:30 as *"large"* in fact *"it was not very large"* and it was her impression that Raychel seemed *"bright and alert."*[40]

51. Others also supported the view that the degree of vomiting was not unusual and gave no cause for concerns.[41] For example Sister Millar referred in her deposition to Raychel being *"very bright and happy"* and her vomiting not being large amounts, despite the description of the vomiting contained in the fluid charts.[42]

52. There is, however, some confusion in Sister Millar's accounts because at one point she did apparently accept that the vomit at 22:30 was *"large"* while rejecting the description that Raychel was *"listless."*[43] However, later she appeared to accept the accuracy of such a description.[44] Nevertheless, she appeared to hold to the view that vomiting on the number of occasions recorded in the fluid balance sheet was not that unusual in her experience.[45]

53. Dr. Sumner has expressed the view that after Raychel had vomited a large amount at 22:30 on the 8th June 2001, fluid supplements ought to

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[37] [095-003-012]
[38] (095-006-020] & [095-009-028].
[39] [012-070o-403]
[40] [012-042-205]
[41] [012-041-204] & [012-043-207].
[42] [012-041-202]
[43] [098-017-039]
[44] [098-018-044]
[45] [012-041-204]

have been administered.[46] This was not done.

54. However, it would appear that by late afternoon Raychel's vomiting was generating sufficient concern as to cause nursing staff to summon the surgical JHO to administer an anti-emetic. It is noted that despite the need to summon a doctor to prescribe an anti-emetic, the notes do not record any vomiting between 15:00 and 21:00.

55. Medical staff were first *"bleeped"* at 16:30 to attend Ward 6, and at some time between 17:30 and 18:00 Dr. Joe Devlin attended Raychel. Dr. Devlin was a 'house officer' in the surgical team.

56. In his statement for the Inquiry Dr. Devlin recalled that he was requested to prescribe an anti-emetic for Raychel.[47] He was told that she was less than 24 hours post-appendicectomy, and that she had vomited on a few occasions that afternoon. He was aware that she had been drinking fluids earlier in the day. When he saw Raychel she was vomiting, although this vomiting is not recorded in any of the notes or records made available to the Inquiry. He thought it reasonable for a child to vomit within 24 hours of surgery.

57. Dr. Devlin has stated that Raychel did not otherwise appear to be dehydrated or distressed, and he therefore thought it appropriate to administer IV ondanestron (Zofran)[48], and to advise the nurses to contact the on-call team if there was any further deterioration.

58. There was no change to Raychel's nursing care plan to reflect the fact that Raychel was still vomiting more than 12 hours after the completion of her surgery. The entry for 17:00 completed by Staff Nurse Rice recorded that Raychel had no complaints of pain, was tolerating small sips of water and had vomited three times that morning.[49]

59. A nursing handover took place at approximately 20:00. It is the recollection of Staff Nurse Noble that she was advised by Staff Nurse Rice that Raychel had micturated during the day but had vomited a few times.[50]

60. At 21:00 Raychel vomited *"coffee grounds"*[51] and at 21:15 Staff Nurse Gilchrist noted that Raychel was pale, had been vomiting and was complaining of a headache.[52] She noted a normal pulse, respiratory rate and temperature.

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[46] [012-001-004]
[47] Statement Number 27, IHRD Statements File
[48] [020-017-035]
[49] [020-027-057]
[50] [012-043-208]
[51] [020-018-037]
[52] [020-015-029]

61. At 21:25 Staff Nurse Noble administered paracetamol 500 mg per rectum in response to Mr. Ferguson's complaint that Raychel was experiencing headaches.[53] At 22:00 Raychel vomited a further amount and this would appear to have prompted nursing staff to call the surgical junior house officer, Dr. Curran, to administer cyclizine (Valoid).[54]

62. There is no note or record to indicate whether Dr. Devlin and Dr. Curran discussed Raychel's case, or whether her case was discussed by them with their senior colleagues. The statement from Dr. Devlin does not suggest that there was any such follow-up from him. The Inquiry is not in possession of any note or record documenting Dr. Curran's recollection of events.

63. Dr. Sumner has stated that,

> *It would have been very prudent to check the electrolytes in the evening of that day [8th June] as the vomiting had not settled down by that stage. It is very uncomfortable, but with prolonged and severe vomiting after an abdominal operation, a nasogastric tube to drain the stomach and allow the gastric losses to be accurately quantified should have been passed. There is no evidence of any attempt to measure the gastrointestinal losses or the urine output – both essential for correct fluid therapy.*[55]

64. The records show that Raychel had a small coffee ground vomit at 23:00,[56] but that by 23:30 she was asleep. Raychel's parents asked the nursing staff to telephone them if any problems arose overnight and they left for home some time after midnight. At 00.35am Raychel vomited a *"small mouthful"* which was observed by Staff Nurse Bryce and reported to Staff Nurse Gilchrist[57] but not recorded in the records. Raychel was apparently restless but settled to sleep.

Raychel Suffers a Seizure 9th June 2001

65. At 02:00 Staff Nurse Gilchrist checked Raychel and found that her vital signs were unremarkable, and that she was asleep but rousable.[58]

66. At 03:00 Nursing Auxiliary Lynch reported to Staff Nurse Noble that Raychel was fitting. Staff Nurse Noble attended Raychel and found that she was lying in a left lateral position, was not cyanosed, but had been incontinent of urine and was in a tonic state with her hands and teeth

[53] [012-043-208]
[54] [012-044-212] and [020-017-034]
[55] [012-001-004]
[56] [020-018-037]
[57] [012-044-213]
[58] [012-044-213]

tightly clenched.[59] At that time Raychel's pulse rate was 76 and her temperature was 37.6 ◦ C.

67. Despite Raychel being a surgical patient, Staff Nurse Noble asked the paediatric SHO, Dr. Jeremy Johnston, who was on the ward at the time, to attend to Raychel urgently.

68. Dr. Johnston has made a detailed note of his attendance with Raychel and the steps that he took.[60] He noted that Raychel was incontinent of urine and unresponsive. He administered 5 mg diazepam per rectum, but seizure activity continued, and so he followed this up with 10 mg diazepam intravenously. Oxygen was provided by facemask. He called Dr. Curran and asked him to contact his surgical registrar and SHO. He directed Dr. Curran to obtain blood for investigation and to send samples to the laboratory because he suspected that an electrolyte abnormality was a likely cause of the seizure.

69. Raychel's seizure would appear to have lasted about 15 minutes in total.[61] On examination Dr. Johnston found Raychel apyrexial, with a normal pulse and clear chest. He noted his interpretation of her state: that she was unresponsive due to the administration of diazepam.[62]

70. At 03:10 Staff Nurse Noble found Raychel's pupils to be equal and to be reacting briskly to light. Raychel's oxygen saturation was in the high nineties and she was attempting to push the mask away from her face.[63] Staff Nurse Noble sought to contact Raychel's parents and got a response at approximately 03:45.[64]

71. Dr. Curran acted on Dr. Johnston instructions by contacting Mr. Zafar (Surgical SHO) at or around 03:15. Mr. Zafar could not attend immediately because he was with a patient. Mr. Zafar attended when Raychel was being resuscitated.[65] This would appear to have been at some time around 04:45.

72. Dr. Johnston performed a 12 lead ECG while awaiting the senior members of the surgical team and the biochemistry results.[66] The observation sheet shows that at 03:30 Raychel was cool to the touch (temperature 36.6^{0}C) and that she remained agitated.[67] At 04.10 Raychel's pulse measured 124 and blood pressure was 104/73.[68]

[59] [012-043-209] & [020-016-032]
[60] [020-007-013]
[61] [020-016-032]
[62] [020-007-013]
[63] [012-043-209]
[64] [012-044-213]
[65] [012-046-218]
[66] [012-040-199]
[67] [020-016-032]

73. At or about 04:00 Dr. Johnston noted that Raychel was stable clinically and that there were no signs of seizure activity. Therefore, he went to the neonatal intensive unit to discuss the case with the paediatric registrar, Dr. Bernie Trainor. He asked Dr. Trainor to review Raychel. As he concluded his conversation with Dr. Trainor he was contacted by nursing staff to be advised that Raychel looked more unwell.

74. Dr. Trainor advised Dr. Johnston to finish off the admissions she had been processing and she proceeded to Ward 6 to attend to Raychel.[69] Dr. Trainor made a retrospective note in respect of her attendance with Raychel.[70]

75. According to Staff Nurse Noble, at the point at which Raychel's father arrived at the ward which is presumed to have been some time shortly after 04:00, Raychel remained the subject of intermittent tonic episodes. Raychel's pupils were found to be sluggish but still reacting to light.[71]

76. Upon her attendance to Ward 6 Dr. Trainor saw Dr. Curran who was checking Raychel's blood results on the computer. She noted that Raychel's serum sodium concentration was low.[72] Dr. Raymond McCord (Consultant Paediatrician) wrote a retrospective note recording the electrolyte results which he timed at 04:30.[73] This presumably means that the results were received at 04:30.

77. However, there appears to be some confusion here. The results that are recorded in Dr. McCord's note, which showed a serum Na concentration of 118 mmol/L, K 3.0 mmol/L and Cl 90 mmol/L[74] had been obtained from the record showing lab number 1747, whereas the first set of electrolytes would appear to bear lab number 1742.[75] In other words the retrospective note prepared by Dr. McCord would appear to refer to the repeat electrolyte results. The first set of results (lab number 1742) show a serum Na concentration of 119 mmol/L and a low serum magnesium (0.59 mmol/L).[76] That this is the correct interpretation is reflected in Dr. Trainor's statement to the Inquiry.

78. Dr. Trainor confirmed that the blood sample had not been taken from the same arm where the drip had been positioned. She directed Dr. Curran to urgently repeat the electrolytes, to do blood cultures and a

[68] [020-016-032]
[69] [012-040-199]
[70] [020-015-025]
[71] [012-043-210]
[72] Statement Number 30, IHRD Statements File
[73] [020-015-025]
[74] [020-022-043]
[75] [020-022-044]
[76] [020-022-042] and Dr. Trainor Statement Number 30, IHRD Statements File.

venous gas.[77] Raychel's fluids were not changed at this point.

79. When Dr. Trainor examined Raychel she found Raychel to be unresponsive and her pupils dilated and unreactive.[78] In her retrospective note Dr. Trainor recorded that when she examined Raychel she looked very unwell, her face was flushed, there were petechiae on her neck, and her chest was "rattly" (although she was maintaining saturations at 97% with a face mask). Raychel's heart rate was 160 beats per minute, temperature was normal and blood glucose had been checked and was 9 mmol/L. Raychel's limbs were found to be flaccid. Raychel was placed on her side and the oxygen concentration was increased.[79] Dr. Trainor set out her differential diagnosis in the following terms: *"Imp ? seizure 2 °electrolyte problem ? cerebral lesion."*[80]

80. Raychel was transferred from the ward to the recovery/treatment room and connected to a monitor. Dr. Trainor contacted Dr. Brian McCord (Consultant Paediatrician on-call) and asked him to come in.[81] She also spoke to Raychel's father and explained to him that Raychel had experienced a seizure but that at that time she was unsure of the cause. She advised Raychel's father that his daughter was very unwell and that a Consultant (Dr. McCord) was coming in to assess her.[82]

81. During assessment in the recovery/treatment room Raychel's oxygenation deteriorated to 80% on oxygen and her respiratory efforts declined. Dr. Trainor commenced bag and mask ventilation and an anaesthetist was fast bleeped.[83] Dr. Aparna Date (SHO anaesthetist) attended very quickly, at approximately 04:45, and found Raychel to be cyanosed, apnoeic, with oxygen saturations at 70%. Dr. Date intubated Raychel and copious dirty secretions were sucked out.[84]

82. Dr. McCord arrived after Raychel had been intubated. She was being manually ventilated. He found Raychel to be perfused and unresponsive, and her pupils remained fixed and dilated. He remarked in his deposition that Raychel had *"a marked electrolyte disturbance with profound hyponatraemia and low magnesium."*[85]

83. Mr. Zafar and Mr. Naresh Kumar Bhalla (Surgical Registrar) also arrived at Ward 6 at or about the same time as Dr. McCord.

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[77] [012-035-166]
[78] [020-015-023]
[79] [020-015-024 and 025]
[80] [020-015-024]
[81] [012-035-167]
[82] [012-035-167]
[83] [020-015-024]
[84] [020-023-048]
[85] [012-036-170 and 171]

84. While we have not been provided with a specific time it would appear that shortly thereafter, probably about 05:00, the repeat electrolyte results (which Dr. Trainor asked Dr. Curran to obtain) confirmed the presence of hyponatraemia.[86] Once these results had been seen the IV fluids were changed to 0.9% saline at 40 ml/hr[87] and at 05:00 intravenous cefotaxime and benzylpenicillin were given, and an intramuscular injection of magnesium sulphate 50% (1 ml.) was administered by Dr. Trainor.[88] Arrangements were made for an urgent CT scan.[89]

85. Both of Raychel's parents were in attendance and Staff Nurse Noble spoke to them to advise that doctors were stabilising her condition and arranging for further investigations and tests.[90]

CT Scans and Transfer to Intensive Care Unit at Altnagelvin

86. At or about 05:30 Dr. Trainor accompanied Raychel to the X-ray department for the CT scan.[91] Dr. G.A. Nesbitt (Clinical Director, and Consultant Anaesthetist) had come into the hospital at the request of Dr. Date. He attended Raychel while the CT scan was being conducted.[92] At the completion of the CT scan Raychel was transferred to the intensive care unit where she was anointed by a priest.[93] An evaluation sheet was completed with regard to Raychel's history which precipitated her admission to ICU.[94]

87. The scan was conducted by Dr. CCM Morrison (Consultant Radiologist). He reported that *"there is evidence of subarachnoid haemorrhage with raised intracranial pressure"* and that *"no focal abnormality [was] demonstrated."*[95]

88. Another CT scan of Raychel's brain was performed at 08:51 at the request of a member of the Neurological Unit at the Royal Victoria Hospital with whom clinicians at the Altnagelvin Hospital were in contact.[96] The purpose of the scan is recorded as being to rule out "abscess in the brain." A note records that the CT scan produced "no new findings"[97] but the scan was later reported as suggesting raised intracranial pressure due to cerebral oedema, and as excluding a

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[86] [020-022-043]
[87] [020-019-038]
[88] [020-017-034]
[89] [012-035-167] and [020-015-024] and [020-025-054]
[90] [012-043-211]
[91] [012-035-168]
[92] [012-037-173] and [012-018-122]
[93] [012-035-168] and [012-028-146]
[94] [020-023-051]
[95] [020-015-026]
[96] [020-023-049]
[97] [020-023-049]

subdural collection or a subarachnoid haemorrhage.[98]

89. Raychel was returned to ICU. At about 09:00 another blood sample was taken showing that Raychel continued to have severe acute hyponatraemia.[99] At 09:10 following discussions between clinicians at the Altnagelvin and the Royal it was decided that Raychel should be transferred to the PICU of the RBHSC.[100] The referring consultant was named in the transfer referral sheet as Dr. Nesbitt and the receiving consultant was named as Dr. Peter Crean (Consultant in Paediatric Anaesthesia and Intensive Care).

Transfer to the PICU of RBHSC

90. Raychel was taken to the RBHSC by ambulance at 11:10. She arrived at the PICU at 12:30 after an uneventful journey.[101] A transfer record sheet[102] recorded Raychel's condition during the transfer process, and a transfer letter was compiled by Dr. Trainor and provided to the RBHSC.[103]

91. Raychel was admitted to the RBHSC under the care of Dr. Crean. She was found to have no purposeful movement and her pupils were dilated and unreactive to light. She had evidence of diabetes insipidus which was causing a high urine output and she was treated for this. Her serum sodium level was 130 mmol/L on admission.[104]

92. The PICU Nursing Admission Record shows that Raychel was being admitted for neurological assessment and further care.[105] The plan was to ventilate, to restrict fluid input and for Dr. Crean and Dr. Donncha Hanrahan (Consultant Paediatric Neurologist) to review. Raychel's parents were told that she was critically ill and that the outlook was very poor.[106]

93. Dr. Dara O'Donoghue recorded in the clinical notes that Raychel appeared *"to have coned with probably irreversible brain stem compromise."*[107] He indicated that Raychel would require a battery of brain stem tests.

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[98] [020-026-055] and [020-015-026]
[99] [020-022-042]
[100] [020-024-052]
[101] [012-037-174]
[102] [020-024-053]
[103] [063-005-010]
[104] [063-009-018] and [012-032-159]
[105] [063-015-035]
[106] [063-009-021]
[107] [063-009-023]

Brain Stem Tests and Raychel's Death

94. At 05:30 on 9th June 2001 Doctors Crean and Hanrahan performed the first brain stem test indicating brain death.[108] A second test was performed by the same doctors at 09:45 on 10th June 2001[109]. In the notes Dr. Hanrahan has recorded: *"Repeat brain stem testing shows no evidence of brain function, as was found on testing yesterday. She is brain dead."*[110] The Coroner's office was contacted and advised of the circumstances.[111]

95. Raychel's parents were advised that nothing more could be done for their daughter [112] and at 11:35 ventilatory support was removed.[113] Raychel was confirmed dead at 12:09 with her parents and relatives in attendance.[114] Dr. Crean and Dr. Hanrahan spoke to the parents.[115]

Post Mortem Findings

96. On 11th June 2001, at the request of the Coroner, Dr. Herron (Consultant Neuropathologist)[116] and Dr. Al-Husaini (Pathologist) carried out a post mortem examination. On 3rd September 2001 he sought an opinion from Dr. Clodagh Loughrey (Consultant Chemical Pathologist) concerning the cause of the hyponatraemia in Raychel's case.[117] In a report dated 24th October 2001 Dr. Loughrey commented upon the causes of the cerebral oedema which Dr. Herron had identified at the post mortem.[118]

97. Dr. Loughrey's findings were considered by Dr. Herron. He signed off on the Autopsy Report on 20th November 2001[119] and on his clinical summary on 4th December 2001.[120] Dr. Herron concluded that the cause of death was cerebral oedema due to hyponatraemia[121] and in explaining the cause of the *"low sodium"* Dr. Herron referred to the three factors identified by Dr. Loughrey: infusion of low sodium fluids post operatively; vomiting; and inappropriate secretion of anti-diuretic hormone.

98. On 4th December 2001 Mr. John Leckey (Coroner for Greater Belfast)

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108 [063-010-024] and [012-032-160]
109 [063-010-024]
110 [063-012-026]
111 [063-012-026]
112 [063-022-049]
113 [063-016-040] and [063-017-042]
114 [063-016-041]
115 [063-022-050]
116 [014-005-006] and [012-031-157]
117 [012-063g-322]
118 [014-005-014]
119 [014-005-006]
120 [014-005-012]
121 [014-005-013]

engaged Dr. Sumner to investigate Raychel's death on his behalf.[122] Dr. Sumner provided Mr. Leckey with a report dated 1st February 2002 in which he concluded that Raychel died from acute cerebral oedema leading to coning as a result of hyponatraemia. [123]

Inquest Verdict (2003)

99. On 5th February 2003 Mr. Leckey opened an Inquest into the death of Raychel. He heard evidence over the course of the 5th, 6th, 7th and 10th February 2003. The Autopsy findings were not challenged. Mr. Leckey issued the following verdict on 10th February 2003:

Findings: On 7 June 2001 the deceased was admitted to Altnagelvin Hospital complaining of sudden onset, acute abdominal pain. Appendicitis was diagnosed and she underwent an appendectomy the same day. Initially, post-operative recovery proceeded normally. However, the following day she vomited on a number of occasions and complained of a headache. The next day, 9 June, she suffered a series of tonic seizures necessitating her transfer to the Intensive Care Unit of the Royal Belfast Hospital for Sick Children where she died the following day. A subsequent post-mortem investigation established that she died from cerebral oedema caused by hyponatraemia. The hyponatraemia was caused by. a combination of inadequate electrolyte replacement in the face of severe post-operative vomiting and water retention resulting from the inappropriate secretion of ADH (Anti-Diuretic Hormone).[124]

Altnagelvin's Response to Raychel's Death

100. On 12th June 2001 a critical incident inquiry was established at the Altnagelvin Hospital by Dr. Raymond Fulton (Medical Director), in accordance with the Hospital's Critical Incident Protocol.[125]

101. At this meeting six action points were agreed.[126] One of those actions involved a review of the continued use of Solution No. 18 in the treatment of post-operative patients. Dr. Nesbitt wrote to Dr. Fulton to report his findings regarding the use of Number 18 solution at other hospitals, including the RBHSC which, he discovered, had discontinued its use of the solution six months previously.[127]

102. Accordingly, Dr. Nesbitt advised Dr. Fulton that as of that day (14th June

[122] [012-067u-365]
[123] [012-001-001]
[124] [012-026-139 and 140]
[125] [022-109-338]
[126] [022-108-337] and [026-011-012]
[127] [022-102-317]

2001) the Hospital would no longer be routinely using the fluid in the management of surgical cases. A notice highlighting a change in post-operative fluid prescribing policy was formulated and posted at relevant points within the Hospital.[128] It would appear, however, that the change in fluid prescribing policy ran into some opposition among surgeons at the Hospital and Dr. Nesbitt felt compelled to write to the Clinical Director (Surgery) in order to address that issue on 3rd July 2001.[129]

103. On a date unknown Dr. Fulton contacted Dr. William McConnell, the Director of Public Health at the Western Health and Social Services Board. Dr. Fulton described the circumstances of Raychel's death and according to him Dr. McConnell agreed that he would raise the matter at his next meeting with the Chief Medical Officer and his fellow directors of public health.[130]

104. On 22nd June 2001 Dr. Fulton made direct contact with Dr. Henrietta Campbell, Chief Medical Officer.[131] He advised her of the circumstances of Raychel's death and he suggested to her that there was a need to formulate regional guidelines and to publicise the dangers of hyponatraemia when using low saline solutions in post surgery children. Dr. Campbell suggested that CREST might be the best forum through which to develop appropriate guidelines.

105. On 5th July 2001 Dr. McConnell wrote to Dr. Fulton to confirm that Raychel's death had been discussed at a recent meeting with the Chief Medical Officer and the directors of public health.[132] He had drafted a letter which had been issued to all of the directors of public health concerning fluid management.[133]

106. On 9th July 2001 the Chief Executive Officer of Altnagelvin Hospital Trust (Stella Burnside) was provided with an 'update' which explained to her the steps that had been taken following Raychel's death as part of the critical incident inquiry.[134]

107. On 26th July 2001 Mrs. Burnside followed up Dr. Fulton's contact with the Chief Medical Officer, by writing to her to emphasise the need for a regional review of the evidence relating to fluid management.

108. On 3rd September 2001 the Ferguson family met the Chief Executive of the Altnagelvin Hospital Trust, as well as many of the nursing staff and

[128] [022-103-318]
[129] [022-098-309]
[130] [012-039-180]
[131] [012-039-180]
[132] [012-039-191]
[133] [012-039-193]
[134] [022-097-308]

clinicians who were responsible for Raychel's care.[135] Raychel's mother was assisted by her sister Mrs. Doherty and was able to ask a range of questions which were answered by Dr. Nesbitt. His answers appear to suggest that Raychel's vomiting, headaches and her reduced responsiveness had been regarded by nursing staff and clinicians as normal in the post-surgical period.

109. Thereafter, a review of the critical incident inquiry was held at a meeting on 9th April 2002, by which time the Department of Health and Social Services had published its own guidelines for fluid management, Guidance on the Prevention of Hyponatraemia in Children', which was published on 25th March 2002. It was noted that these guidelines had been displayed in Ward 6, in the theatres and in the accident and emergency department.[136]

110. It should be noted that Dr. Nesbitt entered into correspondence with Dr. Henrietta Campbell (Chief Medical Officer) after the Department's guidance had been published. As appears from correspondence dated 1 May 2002 he was concerned that he had only recently discovered that another child (who the Inquiry believes to have been Adam) had suffered a hyponatraemia related 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****"*[137]
>
> (Emphasis added)

111. The response from Dr. Campbell is also noteworthy. In a letter dated 10th May 2002 she stated 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"*[138]

[135] [095-010-036]
[136] [022-095-304]
[137] [012-039-196]
[138] [012-039-197]

(Emphasis added)]

112. Following the research which had carried out on the issue of fluid management, Dr. Nesbitt designed a computer presentation to assist him in his teaching on the subject of hyponatraemia and fluid administration.[139]

PSNI Investigation

113. Following investigations into the deaths of first Lucy and then Adam, the Police Service of Northern Ireland ('PSNI') decided to investigate Raychel's death.

114. In Raychel's case detectives obtained witness statements and/or reports from most of the key medical and nursing personnel who had responsibility for Raychel's treatment and care.

115. It is necessary to examine the statements made to the PSNI and particularly those of Dr. Nesbitt[140] and Dr. Fulton.[141] It will be noted that in his police statement Dr. Nesbitt recalled how he asked those key staff who were involved in Raychel's treatment to prepare a statement.[142] Those statements can be found in **File 12.**

116. The PSNI engaged a nursing expert (Susan Margaret Chapman) to assist them with their investigation. Having analysed the work of the nursing team in caring for Raychel, Ms. Chapman commented that the nursing care appears to have been both appropriate to Raychel's needs and delivered to a good overall standard.[143]

117. With regard to the specific issue of managing Raychel's needs given her repeated vomiting, Ms. Chapman commented that: *"the nurses took appropriate action by informing a member of the medical team ..."*[144]

118. Dr. Sumner provided the PSNI investigation with several reports which can be found in **File 98.** He advised that in his opinion Raychel's death was *"caused by a systems failure."*[145] In subsequent reports he returned to this theme. In one such report (undated) he has explained that by systems failure he meant, *"a sequence of causes each of which contributed to the death which we believe to be dilutional hyponatraemia ..."*[146]

139 [021-054-131]
140 [095-010-030]
141 [095-011-047]
142 [095-011-053]
143 [095-019-090 and 091
144 [095-019-089]
145 [098-081-236]
146 [098-081-244]

119. Amongst the *"sequence of causes"* Dr. Sumner highlighted the absence of a written protocol and the absence of an understanding of the correct line of treatment. He also referred to the fact that Raychel's treatment was in the hands of surgeons and that paediatricians would only become involved if requested to do so. Moreover, nurses failed to realise the severity and longevity of the vomiting and failed to pass the information on to doctors.[147]

120. Indeed, by contrast with the conclusions reached by Ms. Chapman regarding the standard of nursing care, Dr. Sumner advised that there was a *"failure on the part of the nursing staff to take the postoperative vomiting seriously."*[148] Overall, he commented that *"there was a collective ignorance of the need to replace losses from vomiting with saline or Hartmann's solution rather than dextrose/saline."*[149]

121. In another report dated 31st October 2006 Dr. Sumner noted that post operatively Raychel was *"officially under the care of the surgeons"*[150] but that in fact *"it fell to the paediatricians to be involved as they were on the ward dealing with other patients ..."*[151]

122. This comment is accurate with regard to the period after Raychel's tonic fit when she was seen by the Dr. Johnston and Dr. Trainor (who were both paediatricians). However, before her seizure she had been seen by clinicians from the surgical side: Mr. Zafar, Dr. Devlin and Dr. Curran.

123. Dr. Sumner seems to have been under the misapprehension that Dr. Devlin was from the paediatric team. He was also unable to identify Dr. Curran's role in Raychel's care.

124. Raychel was seen briefly by Dr. Butler (Paediatric SHO) at or about 12:00 noon, but she seems only to have been responsible for writing up a further bag of Solution No. 18 (this having been earlier prescribed by the surgeons).

125. So far as the prescription of fluids was concerned Dr. Sumner noted the remarks of Dr. Gund (the Anaesthetist at Raychel's surgery) who had discarded the remaining Hartmann's solution after completion of surgery and "left the prescription of fluids on ward protocols." He has explained that he understood that the nurses would ask a paediatrician to prescribe fluids for Raychel.[152] Dr. Sumner also noted the remarks of Dr. McCord who advised that the prescription of fluids for Raychel was

[147] [098-081-244]
[148] [098-081-236]
[149] [098-081-236]
[150] [098-098-373]
[151] [098-098-374]
[152] [012-033-163]

a matter for the surgical team and that as a paediatrician neither he (nor members of his paediatric team) would have expected to have been consulted.[153]

126. Accordingly, Dr. Sumner was of the view that surgeons were at least in theory in charge of Raychel and that they should have been the *"first line of call for the nurses."*[154] Returning to his theme of *"systems failure"* he characterised what followed as an underestimation of the vomiting on the part of the nurses. He suggested that this might have occurred because of poor communication between the nursing team.[155]

127. Dr. Sumner noted that the Consultant Surgeon at the Altnagelvin Hospital, Dr. Gilliland, was of the view that nurses should be reporting to doctors if a child has vomited more than twice. Dr. Gilliland noted that doctors were called in and that they prescribed anti-emetics. However, he said that the doctors should have been noting the extent of the vomit if that was possible. Dr. Sumner repeated the view expressed in the other reports that he thought that the severity of the vomiting simply wasn't communicated to the medical staff.[156]

128. Dr. Sumner has expressed the view that even as late as 22:15 on 8th June 2001 it would have been possible to have retrieved the situation had steps been taken to assess Raychel properly.[157] He has suggested that it ought to have been realised at that time that the vomiting was *"becoming unusual"* and that steps ought to have been taken to assess Raychel properly by measuring the electrolytes and by changing the fluids. He has referred to the absence of these measures as a *"missed opportunity."*[158]

129. While Dr. Sumner has indicated that the doctor who attended Raychel at that time is unknown, it seems clear that it was Dr. Curran (Surgical Junior House Officer) whose name appears in the medication record at 22:15 on 8th June 2001,[159] and who has been identified by Dr. Johnston as being the surgical JHO on duty overnight (see above).

130. For reasons that are unknown to the Inquiry, Dr. Curran never gave information/evidence to Altnagelvin's critical incident review, the Coroner's Inquest or the PSNI investigation.

131. Ultimately, none of the persons responsible for the care and treatment of Raychel were charged with any criminal offence.

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[153] [098-098-374]
[154] [098-098-374]
[155] [098-098-375]
[156] [098-098-375]
[157] [098-098-377]
[158] [098-098-378]
[159] [020-017-034]

Requirements

132. The Inquiry team requires your assistance for the specific purpose of addressing a number of issues raised by the Inquiry's Advisers with regard to the CT scans which were conducted by Dr. Cyril Charles Morrison (Consultant Radiologist) in relation to Raychel's brain.

133. For that purpose you are referred to the relevant films and to the following discrete documents:

- Request to radiologist for initial scan[160]
- Clinical notes recording Dr. Morrison's findings on each scan (poor quality copy)[161]
- Note documenting initial findings[162]
- Clinical note recording request for and reason for second CT scan[163]
- Typed report on enhanced scan[164]
- Dr. Morrison's report to Mrs. Brown (Risk Management Co-Ordinator, Altnagelvin Hospital)[165]
- Dr. Morrison's statement to this Inquiry[166]

134. When you have considered the films and the aforementioned documents you are asked to provide advice on the following matters:

a. What can be seen on the first scan and understood from it

b. The adequacy of Dr. Morrison's report on the first scan

c. The reasons given for carrying out a second scan (enhanced) and whether they were reasonable

d. The technical differences, if any, between the first scan and the second scan

e. What can be seen on the second scan and understood from it

f. The adequacy of Dr. Morrison's report on the second scan

g. Whether any further steps were necessary from a radiological perspective after each scan was conducted

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[160] [020-025-054]
[161] [020-015-026]
[162] [020-023-050]
[163] [020-023-048 and 049]
[164] [020-026-055]
[165] [012-005-096]
[166] Statement to IHRD No.036

Conclusion

135. You will have noted that in the context of explaining the background of Raychel's case to you this brief contains references to a large number of Inquiry documents. The Inquiry Team does not believe that it is necessary to brief you with those documents for the purposes of enabling you to provide a comprehensive report.

136. However, if you believe that in order to complete your report you require further material in addition to those documents cited at paragraph 133, please contact the Inquiry Office.

137. It is of fundamental importance that the Inquiry receives a clear and reasoned opinion on the above radiological issues in the form of a fully referenced Expert's Report.