Witness Statement Ref. No.	043/1

NAME OF CHILD: Raychel Ferguson

Name: Raymond Fulton

Title: Consultant Dermatologist

Present position and institution: Consultant Dermatologist

Altnagelvin Hospitals Health &Social Services Trust

Previous position and institution: Medical Director

Altnagelvin Hospitals Health & Social Services Trust
[As at the time of the child's death]

Membership of Advisory Panels and Committees
[Identify by date and title all of those between January 1995-December 2004]

Altnagelvin Trust Board March 1998 – March 2002
Altnagelvin Executive Committee March 1998 – March 2002
Altnagelvin Hospital Management Team March 1998 – March 2002
Altnagelvin Risk Management and Standards Committee November 2002 – December 2004
Altnagelvin Ethics Committee March 1998 – February 2002
Altnagelvin Clinical Incident Review Committee February 2000 – March 2002
Altnagelvin Scrutiny Committee March 1998 – March 2002
WHSSB Scrutiny Committee March 1998 – March 2002
General Medical Council Performance Assessor 2003 - present

Previous Statements, Depositions and Reports:
[Identify by date and title all those made in relation to the child's death]

OFFICIAL USE:
List of previous statements, depositions and reports attached:

Ref:	Date:	

012-039-179 012-022-130	06.02.03 12.11.02	Deposition into the death of Raychel Ferguson Statement

Particular areas of interest
[Please attach additional sheets if more space is required]

1. **Describe your role in the investigation into the death of Raychel Ferguson at Altnagelvin hospital, to include:**
   (i) the reason why the investigation was commenced;
   (ii) who directed that an investigation should be carried out; and
   (iii) the nature and scope of the investigation.

In June 2001 I was Medical Director at Altnagelvin. As Medical Director I was responsible to the Trust for monitoring the quality of medical care at Altnagelvin. I was chairman of the team that investigated any serious clinical incidents (also known as critical incidents).

I left this post in March 2002 but I chaired the Review meeting on 09 April 2002. After then Dr Nesbitt was involved in investigating the incident and I had no further involvement.

During my clinic at Tyrone County Hospital on the morning of Monday 11 June 2001 I was telephoned by Mrs Burnside, Chief Executive, Altnagelvin Hospital. She informed me that there had been a postoperative death of a child, Raychel Ferguson. She explained that Raychel had developed seizures and cerebral oedema following a routine appendectomy on 08 June 2001. Raychel died on 10 June 2001 after transfer to the Royal Hospital for Sick Children in Belfast. Mrs Burnside asked me to investigate this very serious event in my role as Medical Director and in accordance with the hospital Critical Incident Policy (026-012-016).

I was also telephoned on Monday morning 11 June 2001 by Mr Robert Gilliland who had been the consultant surgeon on call at the time of Raychel's admission. He also told me the same sequence of events though he personally had not seen Raychel as his junior staff had carried out the treatment including the appendectomy.

I returned to Altnagelvin on the early afternoon of Monday 11 June 2001 and met Mrs Therese Brown, Risk Management Coordinator. We agreed to set up an immediate Critical Incident Enquiry on the next day, Tuesday 12 June 2001, in accordance with the Critical Incident Protocol (026-012-016). This protocol was based on the recommendations in the standard textbook "Clinical Governance" by Myriam Lugon, 1999 (pages 94-96) ISBN 1 85315 383 4. We had invited the author to Altnagelvin to give a PowerPoint presentation to the Trust on 25 October 2000. As a result of her advice on investigating critical incidents we introduced the Altnagelvin Critical Incident Protocol in late 2000. This protocol was followed in investigating Raychel Ferguson's death.

My concern was to form an accurate account of the events leading to Raychel's death while it was still clear in everyone's memory. I was also keen to ascertain whether lessons could be learned so that a recurrence of this tragic event could be avoided. In accordance with the hospital policy staff were informed that this was the purpose of the meeting and that it was not going to be judgemental or disciplinary.

Mrs Brown then contacted the relevant staff on the afternoon of Monday 11 June 2001 and asked them to attend a meeting at 4pm on Tuesday 12 June 2001. This meeting would be chaired by myself. All contacted staff agreed to attend.

2. Give an account of the discussions that took place at the critical incident meeting that you convened on 12 June 2001 to include how the agreed action plan was arrived at.

The Critical Incident Enquiry started at 4pm on Tuesday 12 June 2001 in Trust Headquarters. The staff who attended were (026-011-012)

Dr Raymond Fulton (Chairman)
Mrs Therese Brown Risk Management Coordinator
Dr Bernie Traynor Registrar Paediatrics
Dr Brian McCord Consultant Paediatrician
Dr Jeremy Johnston SHO paediatrics
Dr Makar SHO Surgery
Mr Zafar SHO Surgery
Mr Robert Gilliland Consultant Surgeon
Dr Geoff Nesbitt Consultant Anesthetist
Dr Claire Jameson SHO Anesthetics
Dr Gund SHO Anesthetics
Sister Millar Ward 6
Margaret Doherty Clinical Services Manager, Child Care Directorate
SN Anne Noble
SN Fiona Bryce
NA Elizabeth Lynch
SN Sandra Gilchrist
Anne Witherow Clinical Effectiveness Coordinator

I was immediately struck by how subdued and shocked all the nurses and doctors appeared at the start of the meeting. It was clear to me that they regarded this as a very serious and highly unusual event.

I restated that the purpose of the meeting was to establish an accurate detailed picture of all the events leading to Raychel's death. I said that it was important to do this quickly while everyone had good recall of the details. I said everyone would find this difficult and distressing but that it was essential to understand what went wrong so that we could reduce or avoid the likelihood of another death or injury.

I also stressed that the purpose of the meeting was to establish facts and not to blame individual staff members. This was the approach recommended for Critical Incident investigations to allow staff to give essential information in a non judgmental atmosphere. To reassure all staff I said I would not take detailed minutes of the meeting but we would have to produce an Action Plan to address any issues identified. I also said that I would need statements from key staff which would contain a detailed description of their involvement in Raychel's treatment. I said these would be available to the Coroner as a Coroner's inquest would probably be held. Everyone present agreed.

We had in the room the original case notes so that we could refer to individual details.

I then asked individual doctors and nurses to describe their part in Raychel's treatment in chronological order from her admission to Altnagelvin to her transfer to Belfast.

I recall the following discussions and have brief summary notes written shortly after the meeting (026-011-013 and 026-011-015).

Dr Makar (SHO surgery) described how he made a diagnosis of appendicitis in the A&E Department on 07 June 2001. He had ordered an electrolyte test which was normal. He set up an IV infusion of Hartman's solution and he prescribed the infusion rate. Raychel was transferred to the Paediatric Ward (6) prior to operation. Dr Makar changed the infusion to solution 18 on ward 6 at the request of SN Noble as solution 18 was the standard paediatric infusion used on ward 6. SN Noble confirmed she had asked Dr Makar to do this and that this was ward policy.

Dr Jameson (SHO anesthetics) said Raychel had arrived in theatre with no IV infusion (normal policy is to disconnect drip during transfer to theatre). Dr Jameson had set up an IV infusion of 1 litre of Hartman's solution in theatre.

Dr Gund (SHO anesthetics) confirmed that Hartman's solution was set up on theatre and thought about 200mls was infused. Dr Gund remembered discarding the remaining fluid in the bag of Hartman's solution and left the prescription of further fluid to ward protocols (i.e. Solution 18 on ward 6).

Dr Makar described a routine appendectomy at 23:40 on 07 June 2001, and he encountered no technical difficulties.

SN Noble stated that solution 18 was restarted on ward 6 on return from theatre and continued until she returned to night duty on 08 June 2001.

Sister Millar and SN Rice confirmed Solution 18 was given after the operation at 80ml/hour and throughout Friday 08 June 2001.

SN Rice (on day duty 08 June 2001) remembered asking a Paediatric SHO to write up another bag of Solution 18 as the chart prescription had expired.

I recall several nurses, including Sister Millar who were on day duty Friday 08 June 2001 say that Raychel appeared to be making a normal recovery until later on Friday afternoon. She had walked to the toilet with her father. Her parents felt reassured enough to go home for a few hours on Friday evening.

The nurses had noticed several episodes of vomiting on Friday which they felt was not excessive or unusual. The vomit was recorded in the nursing charts on a + to ++++ scale as the nurses felt it was impossible to quantify the volume more accurately. The nurses also believed they could not measure urinary output accurately as Raychel had gone to the toilet. Raychel became drowsy and had a seizure on Friday evening.

Dr Jeremy Johnston (SHO Paediatrics) was called to investigate the seizure. He sent a blood sample for urgent electrolytes.

Dr Bernie Traynor (Registrar Paediatrics) was then called by Dr Johnston when the blood sample showed a low sodium (118). Dr Traynor changed the infusion to 0.9% saline and reduced the volume to 40ml/ hour.

Dr McCord (Consultant Paediatrician) described how he was called in and found Raychel seriously ill. He was unsure at this stage of the diagnosis but was concerned by the low sodium and agreed with the treatment. Dr McCord ordered a CT scan of the brain which initially suggested a subarachoid hemorrhage and cerebral oedema. A second CT scan a few hours later showed cerebral oedema and ruled out a subarachoid hemorrhage. Raychel was transferred to RBHSC on Saturday 09 June 2001.

Dr Nesbitt Consultant Anesthetist, described how he accompanied Raychel in the ambulance to RBHSC and still appeared shocked by the experience. He commented on the fluid balance charts and infusion rates. Dr Nesbitt reviewed the infusion rate of Solution 18 and felt it was too high for Raychel's weight. However he said the recommended rate was for maintenance of normal fluid loss and therefore a slightly higher rate would have been appropriate in the early stages of Raychel's illness to allow for the higher fluid loss in an ill child.

Dr Nesbitt also felt a low sodium solution such as Solution 18 could be unsuitable for postoperative children as they were predisposed to hyponatraemia. However he was aware that the use of Solution 18 was common practice in such situations in other hospitals in Northern Ireland. Dr Nesbitt offered to ring other hospitals in Northern Ireland to establish the current use of Solution 18. I also asked him to review the medical literature.

Following this detailed description of Raychel's admission to Altnagelvin we agreed that future management should be changed to reduce the chances of recurrence of postoperative hyponatraemia.

1. The routine use of low sodium infusions such as solution 18 in postoperative children should be reviewed and in the interim Hartman's solution would be used (026-010-011). Dr Nesbitt was asked urgently to review the practice in other hospitals in Northern Ireland and make urgent recommendations.
2. To detect early hyponatraemia all post operative children on IV infusion should have routine electrolyte blood tests every 24 hours. Sister Miller would ensure this was done and make the results known to the surgical staff.
3. Junior surgical staff should be made aware of this requirement (Mr Gilliland undertook to do this)
4. Sister Millar was asked to ensure nursing staff record all urinary output in post operative children.
5. Dr McCord agreed to put up in ward 6 a chart to give optimal infusion volumes for different weights in children. This would guide both medical and surgical staff (026-009-010).
6. It was felt that the paediatric fluid balance charts could be redesigned to increase accuracy. Nurse Ann Witherow, Clinical Effectiveness Coordinator, was asked to review the current charts.

These points were summarised by me in an Action Plan dated and sent on 14 June 2001 to all present at the meeting (hand written notes 026-011-014 and typed notes 026-008-009)

At the end of the meeting I asked key staff involved in Raychel's treatment to prepare a detailed Statement which would be available to the coroner. These statements were to be sent to Mrs Therese Brown within 1-2 weeks. Everyone agreed.

Directly after the meeting Mrs Therese Brown and I met with Mrs Burnside, Chief Executive, and gave her a verbal summary of the discussion. Mrs Burnside agreed with our approach and Action Plan. Mrs Therese Brown subsequently summarised in writing our discussion (022-097-307).

On 14 June 2001 I received a letter from Dr Nesbitt (026-005-006). As a result of a telephone survey following the meeting on 12 June 2001Dr Nesbitt had discovered that Solution 18 was used post operatively in children in Craigavon and the Ulster Hospital. The Children's Hospital in Belfast had changed from Solution 18 six months previously. Dr Nesbitt stated that his review of the medical literature had suggested that Solution 18 was unsafe in certain postoperative children. He pointed out that the Altnagelvin policy of using Solution 18 was common practice throughout Northern Ireland. However he had decided with Dr McCord, Consultant Paediatrician, that, with immediate effect, Solution 18 should no longer be used routinely in postoperative children.

Particular areas of interest (Cont'd)

3. **Describe in detail the steps you took to bring the cause of Raychel's death to the attention of the DHSSPS and your colleagues in other hospitals.**

On 18 June 2001 I attended the regular meeting of Medical Directors at Castle Buildings. This is normally chaired by the Chief Medical Officer and is a regular interchange of information between Medical Directors from all the Trusts in Northern Ireland and the CMO. On this occasion the CMO was absent and the meeting was chaired by Dr Ian Carson, Medical Director at the Royal Group of Hospitals. At the end of the meeting under "Any other Business" I described the chain of events which had lead to Raychel's death from hyponatraemia. I said that Dr Nesbitt had reviewed the literature on hyponatraemia and he concluded that Solution 18 should not be used routinely in postoperative children. I said that he had discontinued the use of Solution 18 in paediatric surgical patients in Altnagelvin a day following our critical incident enquiry. I said also that Dr Nesbitt had confirmed that several other Trusts in Northern Ireland were using Solution 18 in paediatric surgical patients.

I told the Medical Directors present at the meeting that in my opinion there was evidence that Solution 18 was hazardous in postoperative children and there should be regional guidelines drawn up to prevent recurrence of the death in Altnagelvin. I said I intended to inform the CMO and recommend that regional guidelines should be published.

I clearly remember that several Medical Directors were very shocked by the description and that two Medical Directors who were Consultant Anesthetists said that they would immediately review the practice in their Trusts. I think some Medical Directors had left at this stage.

On 22 June 2001 (not 22.07.01 as in my original statement 012-039-182) I personally rang the Chief Medical Officer, Dr Campbell and gave her an account of the death of Raychel Ferguson. I said that I had described the same details to the Medical Directors at the meeting on 18 June 2001 and they were concerned. I suggested that the Chief Medical Officer should draft Regional Guidelines on the risk of hyponatraemia in surgical children. I suggested that Dr Campbell might use her regular bulletin to alert clinicians to the dangers of hyponatraemia. Dr Campbell said that the latest bulletin had just been published. Dr Campbell said that the CREST Group, which is responsible for drawing up Regional Guidelines, might look into this. She said she would approach CREST.

I informed Mrs Burnside of my conversation with the CMO. Mrs Burnside said she would also contact the CMO and request a regional review (026-007-008).

Around mid June 2001 I rang Mr Martin Bradley, Chief Nursing Officer of the Western Area Health Board, to give him details of the death. I also rang the Director of Public Health at the Western Health Board (Dr W McConnell) and gave him full details. Dr McConnell was very concerned and said he would discuss the problems of hyponatraemia at his next meeting with the Chief Medical Officer and also with the Directors of Public Health at the other three health boards. I sent Dr McConnell reprints from the British Medical Journal which gave details of the problems of hyponatraemia in children (026-013-019 to 026-013-027).

Dr McConnell wrote on 05 July 2001(026-006-007 and 026-015-029) to confirm that he had discussed the case with the CMO and the other three Directors of Public Health. He said that they had agreed to alert the paediatricians in their Boards about the hazards of hyponatraemia.

I had informed Mrs Burnside, Chief Executive, Altnagelvin, of all these contacts with colleagues, members of the Western Health Board, Medical Directors and the CMO. I was aware that Mrs Burnside also contacted the CMO on 26 July 2001(not 06 July 2001 as in my statement 012-039-182) by email to suggest a regional review of the hazards of hyponatraemia. I remember seeing a reply from the CMO saying that she would set up a Regional Group to review hyponatraemia and bring forward guidelines. She said Dr Nesbitt would be a member of this group.

On 14 January 2002 the CMO visited Altnagelvin in connection with another matter. I arranged for her to meet with Dr Nesbitt to view a Powerpoint presentation on hyponatraemia. Dr Nesbitt had prepared this presentation himself and had previously shown it to me. I found it very helpful in understanding the complex subject of hyponatraemia (021-054-117 up to 021-054-133).

On 25 March 2002 the CMO circulated guidelines "Prevention of hyponatraemia in children" with a covering letter (026-019-046 and 026-019-047).

4. Give details of all communications you had with the family of Raychel Ferguson, to include:
(i) at whose request such communications took place; and
(ii) the nature of those communications.

I had no communications with the family of Raychel Ferguson as I felt my role was to investigate the events leading to Raychel's death. I was aware that Mrs Burnside, Chief Executive, had written to the Ferguson family offering to meet them to explain the events and offer sincere sympathy on behalf of all the staff involved.

Other points you wish to make including additions to any previous Statements, Depositions and or Reports
[Please attach additional sheets if more space is required]

Following the Critical Incident Meeting on 12 June 2001 Dr Nesbitt contacted other hospitals in Northern Ireland and established that Solution 18 was in use in several hospitals. I remember he said that this was the case in Craigavon Area Hospital. He also reviewed the literature. Based on this he felt that Solution 18 should be removed with immediate effect from use in peri operative children. He recommended that Hartman's solution should be used as an alternative. A notice summarising this change dated 12 June 2001 was placed on the treatment room notice board (were IV infusions are kept on ward 6). I visited the ward a few days after the meeting on 12 June 2001 and saw this notice in place.

During my visit to ward 6 following the meeting on 12 June 2001 I noticed that there was no chart on the ward giving the optimal infusion volumes as had been agreed at the meeting. I contacted Dr McCord who had undertaken to do this and he said that he was in the process of designing a chart. I subsequently received a letter from Dr McCord confirming that an infusion volume chart was in place on ward 6 (022-096-306). I saw the infusion rate chart pinned to the notice board in the treatment room in ward 6.

I also received a letter from Dr Nesbitt on 14 June 2001 (2 days after the Critical Incident Meeting) giving details of his conversation with other hospitals in Northern Ireland considering peri operative fluid managements. This confirmed that Craigavon hospital and the Ulster hospital were using Solution 18 in postoperative children as was the practice in Altnagelvin.

I confirmed with Sister Millar that electrolytes were being measured in all surgical children every 24 hours while on infusions.

A review of the fluid balance charts has been undertaken on a Regional basis and a model chart has been produced.

Dr Nesbitt got agreement that the anesthetists would be responsible for writing up the first 12 hours of infusion following any operation in children. Thereafter the responsibility for the infusion rate and solution type would rest with the surgical team. Non adherence to this policy is reported by ward 6 nurses as a Clinical Incident to Mrs Therese Brown.

The CMO set up a Regional group on the prevention of hyponatraemia. The draft guidelines were discussed with me by Dr Nesbitt. He felt that the guidelines were too general and did not specifically refer to the hazards of Solution 18. I wrote to Mrs Burnside highlighting Dr Nesbitt's concerns (021-055-134).

Following the publication of the DHSSPS document "Guidance of the prevention of hyponatraemia in children" in March 2002 we set up a review meeting on 09 April 2002 to assess progress on the Action Plan dated 13 June 2001 (026-004-005) and I prepared specific questions in advance (026-002-002). I have no record of who attended though I can remember Mrs Therese Brown, Sister Millar, Dr McCord, Dr Nesbitt and Anne Witherow. No formal minutes were taken. I completed an Action Plan dated 11 April 2002 (022-092-299/300).

A review of each point on the Action Plan of 12 June 2001 was made in light of the Regional guidance.

The bold type denotes the steps that followed the meeting of 12 June 2001.

The items in order were: -

1. On 12 June 2001 after the Critical Incident Meeting Dr Nesbitt decided to change from Solution 18 to Hartman's solution in surgical paediatric patients, including orthopaedic, with immediate effect. He informed Sister Millar and asked her to display a notice to this effect and to inform nursing staff (026-010-011). I saw this notice myself a few days later on ward 6. Dr McCord advised that 6 hourly blood sugars should be carried out on patients receiving Hartman's and this had been included in the ward notice.

2. From 12 June 2001 Sister Millar implemented with nursing staff a policy of sending blood samples for electrolytes 12 hours following surgery and then every 24 hours in surgical children on IV infusions. Routine results are available within 2-3 hours on computer. The nurses ring the surgical doctor with the results. The results are also accessible on computer to surgical doctors. It had been hoped that the normal ranges could be available on computer as a guide but Dr O'Kane, Head of Laboratories, advised that this was not possible for technical reasons.

3. Information on the prescribing of IV fluids in children is included in the Altnagelvin Doctor's handbook (page 41 August 2004 edition)

4. The Fluid Balance charts had been reviewed regionally by the Northern Ireland Bench Marking Group of senior paediatric nurses including Sister McKenna from Altnagelvin. This allowed standardised recording in Northern Ireland and was introduced in 2002. In Altnagelvin after the meeting of 12 June 2001 the nurses changed the recording of vomit from a + scale to a "small-medium-large" scale. The nurses attempted to record urinary volume for several months after the 12 June 2001 meeting but this proved unachievable.

5. The infusion rate chart was put up in a strategic position on ward 6 by Dr McCord. I saw this myself on ward 6.

6. The revised Fluid Balance chart recommended by the Bench Marking Group was introduced in 2002 to ward 6.

7. Dr Nesbitt subsequently confirmed that the anesthetists would prescribe IV fluids for the first 12 hours of the postoperative period. Thereafter it was the responsibility of the surgical team.

8. Nursing staff confirmed that the Departmental Guidelines on hyponatraemia were displayed on several areas of ward 6 immediately after receipt in April 2002.

Signed:  **Dated:** 21.6.05