RAYCHEL FERGUSON

In the preparation of this report I have carefully perused the documentation presented to me by the Police Service of Northern Ireland.

I must stress that the comments I make and the answers to questions posed are only my opinion.

My opinions have not changed since my report for the Coroner dated February 2002.

The verdict at the Inquest was cause of death: a) Cerebral oedema b) Hyponatraemia.

The letter of Dr Loughrey, Consultant Chemical Pathologist (page 168) to Dr Herron, consultant neuropathologist is extremely helpful, provides an excellent chronology and a very lucid explanation of the cause of the cerebral oedema from which Raychel died. I am in total agreement with her point of view.

Raychel was a previously fit little girl who underwent an appendicectomy late on the 7th June 2001. Postoperatively she was nursed on the children's ward and was therefore likely to have been under the care of the paediatricians as far as fluid management was concerned. The trainee surgeon who performed the surgery had written Raychel for Hartmann's solution while she was in the A and E Depar tment but this was changed to Dextrose/Saline at the request of the nursing staff on the children's ward (Staff Nurse Noble) as this was the regime in use there at that time.

She was given 200ml of Hartmann's solution in theatre by the anaesthetists.

Postoperatively she repeatedly vomited, though this was never quantified, nor was the volume of urine passed.
She had been given a total of 2220ml of the dextrose/saline solution over the first postoperative 24 hours.
On the 9th of June at 0315 Raychel had a fit and at that time the sodium was found to be 119, potassium 3 and magnesium 0.59 mmol/l, a picture of severe dilution. By 0630 her pupils were fixed and dilated.

After the operation she was seen by the trainee surgeon Mr Zatar the following day who found her well early in the morning, and did not see her again until the time of the resuscitation. She was also seen by Mr Makar in the morning.
According to the statement of Staff Nurse Rice, she had asked one of the paediatric SHOs to write up another bag of dextrose saline and then later the surgical JHO wrote Raychel for an anti-emetic around 6 pm, the signature for this is not clear

It is not clear from the notes whether she was seen again by the medical staff until 0315 when she suffered the seizure. At that time she was seen by Dr Johnston a junior paediatrician who wrote a good report (page158) and acted appropriately. He discussed the clinical situation with his next superior, Dr Trainor who informed the duty consultant paediatrician, Dr McCord. The surgeons were also informed and were present at the time of resuscitation, as were the anaesthetists.

In my opinion Raychel's death was caused by a systems failure, rather than by individuals at fault.
She was being nursed on the children's ward where the paediatricians would be in charge. The regimes operating in that ward at that time would prevail, as seen by the request of the nursing staff for the surgeon to change the type of intravenous fluid to that in used on that ward. I imagine that the role of the surgeon would be confined to looking after the surgical aspects of the postoperative management.

There was a failure on the part of the nursing staff to take the postoperative vomiting seriously and not to measure or at least estimate the sort of volumes being lost in this way. There was a great deal of discussion on this in the Coroner's Court. However, it might well be that a child having had "only" an appendicectomy would not be put on a strict intake/output regime.

There was a collective ignorance of the need to replace losses from vomiting with saline or Hartmann's solution, rather than dextrose/saline. This latter solution is only appropriate for use as a maintenance agent.
There was also a collective ignorance of the need to initially restrict fluids for the first 24 hours postoperatively because of the phenomenon of inappropriate ADH secretion and water retention.

I am enclosing a list of references relating to the phenomenon of hyponatraemia, the most important of which is the Arieff paper in the British Medical Journal from 1992. It might have been expected that earlier papers such as that in the New England Journal (the most prestigious medical journal in the world in my opinion) or that from Acta Paed Scand could have gone into the collective consciousness.

Dr Jenkins conclusion in his report for the Coroner, dated 30th January 2003 (page11) reads "Raychel's untimely death highlights the current situation whereby one sector of the medical profession can become aware of risks associated with particular disease processes or procedures through their own specialist communication channels, but where this is not more widely disseminated to colleagues in other specialties who may provide care for patients at risk from the relevant condition" I note he mentions the paper from Halberthal et al from the BMJ in 2001, rather than the BMJ paper from nine years earlier.

Dr Fulton, Medical Director of the Altnagelvin Trust at the time of Raychel's death set up a Critical Incident enquiry. Dr Nesbitt, Clinical Director of Anaesthesia suggested that dextrose/saline should not be used in paediatric surgical patients and from this stemmed the publication of Guidelines on Hyponatraemia which are now used in Northern Ireland (and elsewhere in the UK) His statement is on pages 26/7 and dated April 2002.