

Fax Cover Sheet

To: THOMAS BROWN From: Donna Scott
Fax: [REDACTED] Date: 30/01/03
Phone: [REDACTED] Pages: 3
Re: Rachel Ferguson CC:
☒ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

•Comments:

Please note [REDACTED] is the new fax number for Alphy Maginness and the Medical Negligence section.

Could you give Donna a call w/ regard to this action.

*~thanks
Audon*

STRICTLY PRIVATE & CONFIDENTIAL**Rachel Ferguson (Deceased) - Inquest at Belfast Coroner's Court, February 2003****Date of birth: 04.02.92****Date of death: 10.06.01**

My name is John Gordon Jenkins and I am a Senior Lecturer in Child Health at Queen's University, Belfast. I have 20 years experience as a Consultant Paediatrician initially at the Waveney Hospital, Ballymena and subsequently at Antrim Hospital. I qualified in Medicine from Queens University, Belfast in 1974 and subsequently obtained my Doctorate with Honours in 1980. I became a member of the Royal College of Physicians of the United Kingdom by examination in 1977 and was elected to Fellowship of the Royal College of Physicians of Edinburgh in 1989. I became a founder fellow of the Royal College of Paediatrics and Child Health in 1997. This report has been prepared following review of photocopied material from the case notes relating to the admission of this girl to Altnagelvin Hospital in June 2001, together with other material.

Rachel was admitted with abdominal pain suggestive of acute appendicitis on 07.06.01 and subsequently underwent emergency appendicectomy. She was healthy and well with approximate weight 26 kgs and her preoperative blood investigations were normal (serum sodium 137mmol/l). Post-operatively she was initially felt to be making good progress but had vomiting and headache. At approximately 03.00 on 09.06.01 she began to have severe seizure activity with further subsequent deterioration despite resuscitation and intensive care. She subsequently died and evidence on CT scan and at post-mortem was consistent with the diagnosis of cerebral oedema related to hyponatraemia. Her sodium was found to be 119 at 03.30 on 09.06.01 with a repeat specimen at 04.30 giving a result of 118, associated with low levels of potassium and magnesium.

Solution 18 (0.18% saline with 4% dextrose) has been routinely used in Paediatric medical practice for a very long time and is rarely associated with any acute electrolyte disturbances such as were seen in this tragic case. However, this is largely related to the range of conditions commonly seen by Paediatricians and cared for within the medical (as opposed to surgical) environment. By and large these are not associated with the syndrome of inappropriate secretion of antidiuretic hormone. It has become increasingly recognised in recent years that a regime utilising solution 18 may not provide the right balance of sodium and free water for children with some clinical conditions, and particularly where there is an increased likelihood of failure to excrete water. This would include situations of stress, pain and nausea, and may be particularly common in the post-operative period. It is the combination of excessive loss of sodium (for example in vomitus) with water retention (as a result of excessive secretion of antidiuretic hormone) which leads to a fall in the concentration of sodium in body fluids and increased risk of brain swelling (cerebral oedema).

This was well described in an editorial in the Journal "Paediatric Anaesthesia" in 1998 by Dr Arieff, but did not receive widespread publicity in journals likely to be read by most Paediatricians or Surgeons caring for children at that time. The potential dangers were highlighted to a wider clinical community in an article published in the British Medical Journal of 31.03.01 by Halberthal et al. However, this topic is not well covered in a number of standard paediatric texts. Most Paediatric Units were still using their traditional regimes based on solution

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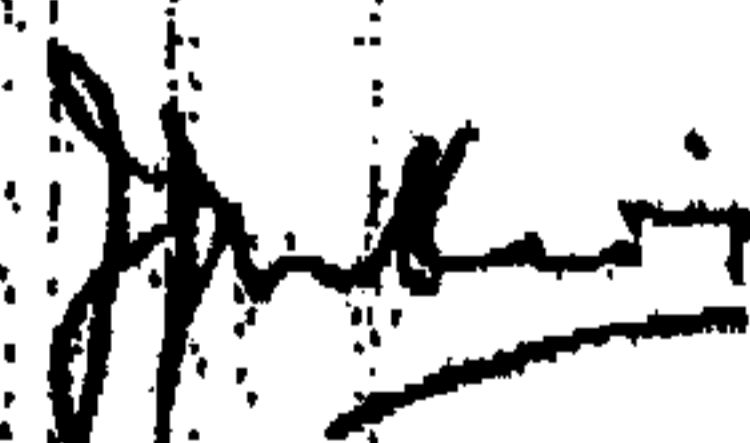
18 until further concerns were raised within Northern Ireland in September 2001 as a result of two deaths. Steps were taken to convene a Working Group who have subsequently prepared and distributed guidance on the prevention of hyponatraemia in children under cover of a letter from the Chief Medical Officer dated 25.03.02. This highlights the danger of this condition and gives guidance as to how this can be minimised in clinical practice.

It seems that some individuals can develop this condition in circumstances which are clinically no more severe than those experienced by many patients in the post-operative period, but the reasons for this variation in susceptibility are currently not well understood. It has been suggested that females and children may be particularly at risk. It is for this reason that guidance has now been prepared and issued to increase awareness of this previously poorly recognised condition, and to ensure that Units providing care for children take steps locally to introduce care pathways and/or fluid management regimes which take account of this possibility and minimise the risks of occurrence.

The deterioration in Rachel's condition occurred rapidly. The possibility of an electrolyte disturbance being the cause of the fit was considered by Dr Johnston and efforts made to obtain electrolyte results from the laboratory urgently. However, even by the time these became available her condition had further deteriorated and her pupils were found to be dilated and not reacting to light (evidence that increased intracranial pressure due to cerebral oedema had already caused pressure damage within the brain). Despite prompt resuscitation and further investigation and management this damage proved irreversible and led to her death.

Conclusion

Having carefully studied the statements provided by the doctors and nurses involved in Rachel's care my impression is that they acted in accordance with established custom and practice in the Unit at that time. Rachel'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. In the circumstances relating to this incident, it was only the tragic deaths of two children in Northern Ireland which alerted the wider clinical community to these concerns. These have subsequently been assessed and relevant guidance prepared and disseminated as outlined above.



Dr J G Jenkins MD FRCP FRCPC
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To THIRID BROWN

Of Rick Management

Fax No [REDACTED]

From Audon

Date 29/01/03

Direct Line / Ext [REDACTED]

No of Pages (inc cover sheet) 3

The message in this fax is confidential. Please notify us if you have received it in error.

Message Re: Rachel Ferguson

I refer to your earlier telephone conversation with Donna
and have enclosed copy report of DA Timmins dated
27th January 2003 for your attention.

Tel: [REDACTED]

Fax: [REDACTED]

E-Mail: diso [REDACTED]

URGENT ☒

For Information ☐

Please Phone ☐

Please Reply ☐

Practitioners in Law to the Nor
Health and Social Service:

Dr. Lane
Re: R. Ferguson

10/01/03
10/01/03
CENTRAL SERVICES AGENCY



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27th January 2003

Dear Sirs

Re Rachel Ferguson (Deceased)

Thank you for your further letter dated 23.01.03 and enclosed copy report from Dr Declan Warde, the Consultant Paediatric Anaesthetist retained to advise the Trust. These documents reached me today 27.01.03. In view of your request for an urgent reply I have not had the opportunity to consider the report in great detail, or to consult the references quoted. My initial impressions are that in many aspects Dr Warde's report does not differ significantly from previously available information. There is a slight difference in his calculation of the total amount of fluid given. He calculates this at 2160 mls whereas the figure given in Dr Sumner's report is 2220 mls and my calculation from the hospital chart was 2080 mls. These differences are largely due to the difficulty each of us have had in trying to interpret the figures given in the chart. It may be that you would wish to clarify this with those responsible for Rachel's care at the relevant time.

Dr Warde again makes reference to the significance of the vomiting. I pointed out in my report of 12.11.02 the importance of seeking further information regarding the frequency and severity of Rachel's vomiting in the opinion of senior staff, given the comments in the report by Sister E Millar. I have also not been provided with any further details of relevant nursing and medical procedures and management in relation to fluid administration and post-operative monitoring of fluid intake, urine output and other losses such as vomiting.

With regard to the involvement of the Paediatric Medical Staff, it must be remembered that Dr Jeremy Johnston only became involved as he happened to be in the ward with a Paediatric medical admission when Rachel's condition deteriorated. He immediately responded and provided appropriate treatment for her convulsion. This was successful in stopping the seizure. He contacted the surgical PRHO Dr Curran and advised him to contact his surgical Registrar and SHO urgently. Unfortunately it appears that it was some significant time before the senior members of the surgical team became available. In the interim Drs Johnston and Curran suspected the possibility that an electrolyte abnormality could be the cause of the fit and electrolyte profile and other blood tests were sent urgently to the Laboratory. Dr Johnston did his best to ensure that these results became available as quickly as possible. In the absence of the Surgical team he discussed the situation with Dr Trainer who was the Paediatric second term SHO on-call and busy in the Neonatal Unit at the time.

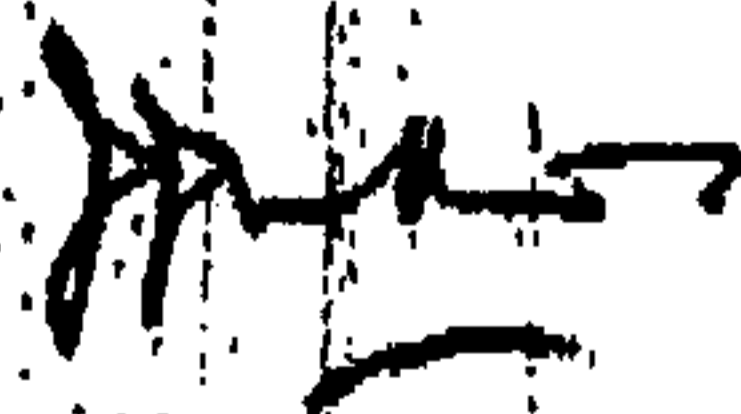
Dr Trainor went to Ward 6 and was informed that the electrolyte results had just become available showing a low sodium of 119 with potassium of 3. She immediately suspected that this might be an erroneous result if the blood sample had been taken from the same arm where the IV drip was running, but was told that this was not the case. It would be standard practice to arrange to urgently repeat electrolytes in this situation and this was performed. At this stage the seizures were under control. The main finding when Dr Trainor examined Rachel was of a petechial rash around her face, neck, upper chest, and her trunk appeared flushed although her temperature was normal. She was also unresponsive with dilated and non reactive pupils. Dr Trainor contacted Dr McCord the Consultant Paediatrician on-call and asked him to come to ward immediately. In view of the possibility of meningococcal infection Rachel was given intravenous antibiotics. Shortly after this her condition deteriorated again and Dr Trainor commenced resuscitation while the Anaesthetic Registrar was fast-bleeped. The Registrar arrived very quickly and assisted with resuscitation. Following this the results of the repeat electrolytes confirmed severe hyponatraemia and fluids were changed to 0.9% sodium chloride at reduced rate of 40 mls per hour.

Dr Warde questions why, upon receipt of the initial electrolyte results, IV therapy was not immediately changed to 0.9% sodium chloride. It is always easy to ask a question like this in retrospect, but the clinical picture had raised the possibility of meningococcal infection and this would be uppermost in the mind of someone whose experience was mainly in the medical aspects of the care of children, where this is a relatively common and immediately life threatening condition. The IV fluid was changed to 0.9% sodium chloride on receipt of the results of the repeat electrolytes (at approximately 04.30). In my opinion it is very unlikely that the continuation of the previous IV fluid for the relatively short period concerned is likely to have significantly worsened the prognosis, given that we now know that cerebral oedema must have already been present at that time.

Dr Warde raises the possibility that some would argue that faced with a symptomatic patient with acute severe hyponatraemia it would have been appropriate to be more aggressive and commenced treatment with hypertonic (3%) sodium chloride combined with a diuretic such as Frusemide. This would certainly not be indicated in a situation where a doctor was unsure as to the accuracy of the electrolyte results, and so would only be considered when the diagnosis had been confirmed by a repeat electrolyte check. Even then this is a treatment which requires specialist knowledge and experience and I would not expect it to have been commenced by a doctor of this level of seniority.

Finally, I wish to confirm my availability all day next Wednesday, 5 February 2003, but to point out that, as stated in my letter to you of 29 November 2002, I am not available on 06 February 2003 as I have a prior commitment to attend and speak at a meeting in London on that day. I will therefore be grateful if you can confirm details of my expected involvement as a matter of urgency as I have heard nothing further regarding this despite the request in my letter of November.

Yours faithfully



Dr J.G. Jenkins MD FRCP FRCPCH
Senior Lecturer in Child Health & Consultant Paediatrician