

## BRIEF FOR EXPERT PAEDIATRIC ANAESTHETIST

Re: Lucy Crawford

### Background

1. Lucy Crawford was born on 5<sup>th</sup> November 1998. She was admitted to the Erne Hospital, Enniskillen on 12<sup>th</sup> April 2000 at about 19:30 with a history of fever, vomiting and listlessness. She weighed 9.14kg and had a capillary refill of >2 seconds. The paediatric SHO, Dr. Malik, was unable to insert a line to start IV administration. However, he does manage to take bloods for electrolyte tests which subsequently show Lucy's serum sodium to be 137mmol/L. The sample time on the lab result is recorded as 20.50 on 12/4/2000 [Ref: 027-012-031].
2. Ultimately the paediatric consultant, Dr. O'Donohoe, was called to assist and IV fluids were started at about 22:30 [Ref: 027-017-058].
3. There is a difference of view over what was to be administered. Nevertheless what is recorded as having been given is solution no.18 at a rate of 100mls per hour [Ref: 027-019-062 and 027-017-058]. She had a large vomit at 00:15 and a large, foul-smelling, runny motion at 02:30. Then at 02:55 she had a seizure.
4. There is also a difference in the evidence as to when Lucy's IV fluids were changed to normal saline. The fluid balance sheet [Ref; 027-019-062] records "500 N/Saline" at 3am. Dr. Malik records the change as part of an entry timed at 3.20 [Ref: 027-010-024] The nursing notes record that it happened when Dr. Malik responded to a call immediately after the seizure [Ref: 027-017-057]. Nurse Jones told police that the decision to change fluids was implemented about 3.10am [Ref: 115-014-003]. But Dr O'Donohoe, in a later statement in 2003, raised the possibility that the infusion of normal saline had been commenced after the first episode of diarrhoea and before the seizure [Ref: 047-053-148]. He apparently based this belief on a conversation he had with Dr Malik. However this is not supported by any other evidence seen by the Inquiry.
5. Additionally there is a difference as to the rate at which the normal saline was given. Dr. Malik records 500mls an hour [Ref: 027-010-024]. The nurses record it being left to 'run freely'[Ref: 027-017-057]. Dr O'Donohoe later told police in 2005 that the saline drip was "running freely" when he arrived and he reduced the flow to 30mls.[Ref: 116-008-003]. He explained that "running freely" meant "that it was not under the influence of an intravenous pump"[Ref: 116-009-003]. Nurse Jones confirmed to police that the normal saline was running freely for approximately 10-15 minutes before Dr O'Donohoe arrived [Ref: 115-014-002].

6. Dr. O'Donohoe was called at about 03:15 and arrived shortly afterwards to find Lucy making reduced respiratory effort. In 2003 he made a statement to his Medical Director Dr Kelly that the infusion of 500mls normal saline IV "was virtually complete before [he] arrived" [Ref: 047-053-148]. Lucy was bagged and Dr O'Donohoe took bloods for repeat electrolyte testing, which showed her serum sodium level to be 127mmol/L [Ref: 047-053-148]. Dr. O'Donohoe's arrival is timed at 3.20 [Ref: 027-010-024]. Nurse Jones later told police that the repeat blood sample was taken around 3.30am. The laboratory scientist who received it confirmed that the repeat blood sample request was entered in the laboratory computer at 3.57 am [Ref: 115-043-001].
7. Dr O'Donohoe first noticed that Lucy's pupils were fixed and dilated at about 03:30.
8. The order of all of those events seems not to have been appreciated by the clinicians at the RBHSC who appear to have believed that the 127mmol/L represented her serum sodium level just prior to her receiving any normal saline. As the information above suggests, it is more likely that this was her level after she had received an amount of NS though the precise amount is unclear.
9. Lucy was transferred to ICU at about 04:45 where she was ventilated and stabilised by Dr. Auterson, consultant anaesthetist, for transfer to the RBHSC by ambulance at about 06:00.
10. She was admitted to PICU, in the RBHSC, at about 08:00 on 13<sup>th</sup> April 2000. Her pupils were still fixed and dilated and she was unresponsive to pain. She was stabilised and put on a ventilator but a CT scan later that day indicated that she had 'coned'. Two brain-stem death tests on 14<sup>th</sup> April 2000 were negative and ventilatory support was removed at 13:00 that day.

### **Investigation to date**

11. Lucy's death was not the subject of an Inquest until similarities were noted between it and Raychel's death during Raychel's Inquest in 2003. Queries raised then led to the Coroner obtaining a report from Dr. Sumner and holding an Inquest into Lucy's death in 2004. That in turn led to a change to her Death Certificate, which originally showed cerebral oedema due to dehydration and gastroenteritis, so as to add hyponatraemia.
12. Lucy's death was however the subject of a review undertaken by the Sperrin Lakeland Trust in 2000. In a footnote to an appendix to this review [ref: 036-035-067] there is this: "Nursing staff advise that normal saline was commenced at 3.15 am and 250 mls had been administered by 4.00 am."

13. The UTV documentary, which aired later that year focused on what it regarded as a 'cover up' over the cause of Lucy's death. Raychel's parents are of the view that if Lucy's death had been properly investigated, lessons might have been learned that could have led to their daughter receiving a more appropriate IV fluid regime at the Altnagelvin Hospital, which is a hospital within the same Board as the Erne Hospital.
14. Lucy's parents wanted her death excluded from the Inquiry's work for personal reasons and so the Inquiry is not examining her treatment directly. Rather it is investigating the aftermath of Lucy's death and the quality of the investigation, if any, at the RBHSC and the Erne Hospital, so as to determine its possible implications for Raychel's treatment some 14 months later. However, in order to do that the Inquiry is considering the extent to which clinicians and management failed to properly identify the cause of Lucy's death.
15. The Inquiry engaged Dr. Roderick MacFaul, who is a paediatrician by training, as an expert to advise on the clinical elements of the investigation and also on hospital management and governance issues. In addition Professor Gabriel Scally has provided an expert report on a discrete issue concerning the relationship between the Trusts and Boards.
16. The oral hearings started on 28<sup>th</sup> May 2013 and evidence has so far been received from the clinicians at the RBHSC and two of those directly involved in Lucy's treatment at the Erne Hospital (Drs. O'Donohoe and Auterson). The Inquiry is shortly to hear evidence from those involved in an investigation established at the Erne Hospital. However, an issue has arisen around the likely true level of Lucy's serum sodium level at the time of her seizure, about which the Inquiry is keen to obtain expert guidance as a matter of urgency.

### **Requirements**

Lucy's serum sodium level was measured at 127mmol/L from bloods taken at around 03:30. It is not clear how much normal saline she had received by then, nor at exactly what rate. Dr O'Donohoe suggests that virtually 500mls of normal saline was infused when he arrived, and before the repeat blood sample was taken. Dr O'Donohoe also suggests that the normal saline infusion began before Lucy's collapse. Nurse Jones suggests that normal saline was running freely for about 20 minutes before the repeat blood sample was taken. One possibility is that she had received about 500mls over the preceding hour; ie the infusion was started after the diarrhoea episode at 2.30am and before her collapse. A second possibility is that she received about 500 mls of normal saline but the infusion was started very soon after her collapse. A third possibility is that she may have received about 250mls that had been 'run in freely' over about twenty minutes or half an hour. A

fourth possibility, raised by the footnote to the review is that 250 mls was administered between 3.15am and 4pm, with only a proportion of that having been administered before the repeat blood sample was taken at in or about 3.30

- (i) If it is possible to do so, please calculate, on all four bases, what you believe Lucy's serum sodium level was likely to be when she suffered a seizure at 02:55
- (ii) Provide an explanation for the way in which you have carried out your calculation, which should be referable to sources available in 2000
- (iii) If your calculation derives from a formula, then please provide the source of that formula and a reference to any textbook or article available in 2000 in which it is cited and explained
- (iv) If such a calculation would be made differently now, then please provide a current calculation, explaining the basis of the difference, when it arose and provide a reference to any current textbook or article in which it is cited and explained

### **Report**

17. Please provide your response to the Inquiry's requirements in the form of a fully referenced, signed and dated report, which should include an expert's statement of truth.

### **Accompanying documents**

- File 27 (Erne casenotes)
- 061-014 (transfer letter)
- 061-015 (patient transfer form)
- 047-053 (letter O'Donohoe/Kelly 24-Aug-2003)
- 115-012 and 115-014 (police statements Thecla Jones)
- 115-015 and 115-016 (police statements Siobhan MacNeill)
- 115-043 (police statement of Matthew Hackett)
- 116-008; 116-009; 116-010 (police interviews Dr O'Donohoe)
- 036-035-067; (Notes of telephone conversation Fee/Quinn)
- Clinical chronology
- 013-036 (Dr Sumner's Report)