INQUIRY INTO HYPONATRAEMIA RELATED DEATHS

LUCY CRAWFORD AFTERMATH

SUBMISSION
On behalf of

DR HANRAHAN

1. Dr Hanrahan was a willing witness who provided two witness statements to the Inquiry (WS 289-1; WS 289-2). He attended the Inquiry to give sworn oral testimony on 5th June 2013. Prior to attending to give evidence to the Inquiry Dr Hanrahan had received a Salmon letter highlighting a number of areas of potential criticism.

2. Dr Hanrahan attended at the Inquiry and made a number of specific concessions. These were foreshadowed in his witness statement of 1st November 2012 (paragraph 29(c)) and can be summarized as follows:

    a. He should have been more rigorous in his questioning of the sodium analysis conducted in the Erne;
    b. He should have referred the matter back to the Coroner;
    c. The death certificate was inaccurate and did not fully reflect the chain of events that led to Lucy's death.

3. *Dr McFaul's criticism.* The Inquiry expert Dr McFaul offered a direct criticism of Dr Hanrahan's analysis of the causative factors in Lucy's death at paragraph 623 of his report. He stated that Dr Hanrahan's omission to seek an explanation for the death was a "significant failure". The report stated:

    > "His [Dr Hanrahan's} lack of appreciation of the significance of both level and rate of change of the blood sodium was in part understandable in the context of the knowledge available at the time but if he had conducted a fluid management review and referred to texts and published literature it would have been clear to him that the fluid types and volumes used had *probably been contributory or causative."*

4. Dr Hanrahan took issue with this analysis in his evidence to the Inquiry. He was clear that the sodium level of 127 was not indicative of severe hyponatraemia. At page 33 of the transcript of evidence of 5th June 2013 it is stated:

"So I knew the sodium had dropped from 137 to 127 and I did not attribute that as causative of her cerebral oedema because I do not think that is enough of a drop. At that stage I did not and I still wouldn't."

5. At page 34 the transcript records Dr Hanrahan stating:

"…that was a pattern which I would have regularly seen. Children with 127, even coming on fairly quickly, would have been a very common finding ….

…I have frequently seen children drop from 137 to 127. I can't say exactly from what value, but certainly 127 or even less - - children have done very well from that in my experience."

6. Dr Hanrahan's evidence highlighted the fact that the reading of 127 was a false sodium level. When he examined the child and saw the notes in 2000 he was unaware that the sodium reading of 127 had been taken **after** the bolus of saline had been administered to her. Thus, the sodium levels had necessarily been lower than 127. This crucial factor was not apparent to Dr Hanrahan when he was assessing Lucy in the RBHSC. At page 51 of the transcript his evidence is:

"I clearly missed that in the nursing notes. However, I wasn't the only one to miss it. **Every other expert missed it as well**, including if I may say so, Dr Evans who provided a very hostile report against the Erne. He missed that as well and he assumed that the drop was from 137 to 127, so certainly this is something, in retrospect, that I missed and I would liked to have picked up on…… I was working under a wrong assumption when I assessed the degrees of sodium."

7. As Dr Hanrahan pointed out, the "other experts" who missed this point did so from the vantage point of calmly reading the notes in order to prepare an *ex post facto* clinical opinion with the benefit of hindsight. His contemporaneous analysis was made in the unusual and perplexing situation of a catastrophic collapse of a child who had been admitted with gastroenteritis.

8. It is also important to note that Dr Hanrahan was unaware that 127 was not an accurate reading when he attended at the inquest in 2004. Dr Sumner's report, which was influential at the inquest, had proceeded on the basis that 127 was the base level for sodium. Dr Sumner was not aware that the level was a false reading which concealed the fact that the sodium level had been significantly lower before the administration of the saline bolus.

9. Dr McFaul, sidestepping the force of Dr Hanrahan's point, suggested that the rate of fall was the significant clinical indicator rather than the absolute sodium level. Dr Hanrahan took issue with this proposition. He stated at page 219 of the transcript:

"I genuinely do not believe that she coned at 127, and I really do not know if anybody could show me a child who's coned, going from 137 to 127."

10. It is notable that when the effect of the bolus on the 127 reading was raised with Dr McFaul after Dr Hanrahan had given his evidence his response was to disavow expertise on the topic. Dr McFaul stated (250-020-006):

> "As a general paediatrician **I make no claim to any expertise in how to quantify electrolyte changes resulting from infusions of normal saline** as calculated on behalf of the Royal Trust. I would defer to clinical chemistry or intensive care specialists in this respect as it is beyond my expertise…..
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> ….. The clinicians at RBHSC did not know the precise timing of the blood sample and its relationship to the volume of saline infused as this detail is not in the clinical notes which they had received. If the possible presence of a lower level than measured (even if marginal) had been considered this could have led to greater attention being paid to the potential contribution of the changes in blood sodium and/or the volumes of fluid infused in Lucy in Erne on the development of brain oedema."

11. It is submitted that, read fairly, Dr McFaul ultimately agrees with the core analysis put forward by Dr Hanrahan in this report of 24th June 2013. Dr McFaul was recalled to give further oral evidence to the Inquiry on 27th June 2013. On 26th June 2013 Dr Hanrahan's solicitors wrote to the Inquiry asking that Counsel to the Inquiry to put a series of specific questions to Dr McFaul. Specifically, the letter asked that the following points be put to Dr McFaul:

> **The Sodium Level of 127.** Dr. Hanrahan's evidence was that he did not consider the sodium level of 127 to be causative of the cerebral oedema and that he was unaware that there had been an intervening bolus of normal sale in prior to the reading of 127 being taken. Dr. McFaul states at paragraph 619 of his report that "127 was not *usually* regarded as causative of cerebral oedema in 2000".
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> a. What, if any, evidence was available in 2000 that would support a conclusion that a sodium level of 127 was likely to be causative of cerebral oedema?
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> b. What, if any, evidence was available in 2000 that "coning" had occurred in cases with a sodium level of 127?
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> c. Was there any peer reviewed clinical journal published on or before 2000 that recorded an instance of "coning" occurring with a sodium level above 123.
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> **Rate of Fall**. Dr. McFaul's report sets out the developing state of knowledge in the early 2000s of hyponatraemia at paragraphs 633 *et seq* of his report. At paragraph 802 of his report he asserts that Dr. Hanrahan's lack of awareness of the possible sequalae of a rapid fall in sodium was a notable deficit in his knowledge. Given that Dr. McFaul accepts that this

> was not widely known in paediatric practice what, precisely, is the evidence he relies upon for advancing this criticism of Dr. Hanrahan? In addition what is the evidence that Dr. Hanrahan should have known that a fall from 137 to 127 could cause acute encephalopathy?

12. Counsel to the Inquiry failed to put these questions to the witness. This was more than unfortunate given that these questions go to the core issues in dispute between Dr McFaul and Dr Hanrahan and sound upon the potential criticisms foreshadowed in the Salmon letter. In our submission the Inquiry has been shown no evidence that demonstrates that in 2000 a sodium level of 127 would have been considered likely to cause cerebral oedema. Further, the literature available in 2000 does not support the conclusion that "coning" occurred in cases with a sodium level of 127. The evidence on the "rate of fall" issue is similarly unsatisfactory. Dr McFaul was unrestrained in his criticism of Dr Hanrahan's lack of awareness of the sequalae of a rapid fall in sodium. Yet he also acknowledged that these sequalae were not widely known in paediatric practice.

13. When Dr McFaul gave evidence on 27th June 2013 he was unable to advance any peer-reviewed publication in support of his "rate of fall" thesis. Rather, he relied upon an anecdotal presentation of a single case that had occurred in his hospital in 2001. [pg 65 transcript]. With respect to Dr McFaul, a single anecdotal reference of an incident that post-dated Lucy's death, cannot provide a proper basis for the trenchant criticisms directed at Dr Hanrahan.

14. There is, in fact, a suggestion in the evidence of Dr McFaul that he recognised that his critique of Dr Hanrahan may have been overstated. At line 12 page 69 of the 27th June 2013 transcript he states that he is now trying to be fair on the subject of the predicament faced by Dr Hanrahan. Remarkably, counsel for the inquiry responded to that observation by exhorting the witness to "leave aside wanting to be fair." In response to that Dr McFaul retreated from the measured position he had adopted and stated once again that Dr Hanrahan should have identified the linkage between the drop from 137 to 127 and the cerebral oedema.

15. It is submitted that the Inquiry will not want to leave aside being fair to Dr Hanrahan. The analysis he has put forward is logical and has not been subject to coherent challenge by an appropriately qualified expert. The Inquiry will note that on this issue Dr Hanrahan, who has been prepared to make concessions elsewhere, does not concede that either the absolute value of 127 or the rate of fall from 137 to 127 were clinically significant. The vital fact that the absolute value had been lower was missing from the equation and, it is submitted, the Inquiry can fairly find that Dr Hanrahan's analysis on this point – shared by every other expert who examined the materials – ought not to be subject to criticism.

16. *The Curtis Conversation.* Both Dr Hanrahan and Dr Curtis were unable to recall whether they had a direct discussion about Lucy Crawford. The Inquiry examined the case on the basis that such a conversation did take place. However, the evidence of Mrs Dennison, of the Coroner's Office, on 24th June 2013 strongly indicates that this conversation did not happen. Her evidence was to the effect that Dr Hanrahan had spoken only to her and not directly to Dr Curtis. The note "spoken to Dr Curtis" was her record of having relayed Dr Hanrahan's concerns to Dr Curtis. She stated that it would not have been normal practice to put a clinician directly in contact with the State Pathologist. This would, of course, be entirely consistent with the fact that neither clinician has any recollection of speaking to the other.

17. Dr Hanrahan has acknowledged that he ought to have reverted to the Coroner before the death certificate was completed. He also acknowledged that, in retrospect, the information provided to the Coroner was not complete. The failure to identify fluid management as being key to the collapse of the child can be attributed, in large measure, to the false sodium reading of 127.

18. *The Death Certificate.* As is noted above Dr Hanrahan recognised in his first witness statement that there were deficiencies in respect of the production of the death certificate. In his oral evidence his candour continued. The transcript records his acceptance that he had handled the death certificate badly. He explains this by reference to a benevolent focus on the need for the parents to have a death certificate. Dr Hanrahan concludes that the text which appeared on the death certificate was "illogical and unhelpful."

19. *The Raychel Ferguson Case.* The Inquiry will be aware that when Raychel Ferguson was admitted to the RBHSC one year later she had a sodium reading of 118. Dr Hanrahan was also involved in her care. He correctly identified the significance of the 118 reading and responded accordingly. It is submitted that his response to this later event corroborates his account that, on a proper analysis of the information available in 2000, the reading of 127 did not implicate fluid management as being causative of the cerebral oedema.

20. *Conclusion.* Dr Hanrahan gave his evidence to the Inquiry in a candid and self-critical manner. He has carefully reflected on his role in the Lucy Crawford case and has conceded that there were shortcomings in aspects of his management of the case. None were causative of the death. There has been no suggestion that he attempted in any way to conceal information relating to the cause of Lucy's death, nor would there be any proper basis for such a contention.

Tony McGleenan QC
4th December 2013