MEMO

Department of
Health, Social Services and Public Safety

An Roinn
Sláinte, Seirbhísí Sóisialta agus Sábháilteachta Poiblí

MINISTERIAL SUBMISSION

From: Dr M McCarthy

Date: 6 April 2004

To:
1. CMO
2. Secretary 6/4/04.
3. Angela Smith

cc: Dr Carson
Mr Hamilton
Dr Mitchell
Dr Mock
Mr Sullivan
Mr Shannon

INQUEST VERDICT ON LUCY CRAWFORD

Issue: **The recent inquest verdict on Lucy Crawford, a toddler who died in 2000, and the subsequent requests for media interviews with the Minister.**

Timing: **URGENT.**

Presentational: **Given the high profile of this case Minister may be asked to comment on the case during the course of other upcoming events.**

Recommendation: **Minister declines to be interviewed but agrees a line to take and a statement to be issued by the Department.**

DHSSPS

04-003-011.

Background

Lucy Crawford, a 17 month old child died following admission to the Erne Hospital with a history of vomiting and fever in April 2000. The inquest, completed on 19 February 2004, concluded that Lucy died from (a) Cerebral oedema, (b) acute dilutional hyponatraemia, (c) excess dilute fluid. A Verdict On Inquest is attached for information (Annex A). Lucy's inquest followed the inquest into another death from hyponatraemia, in a 9 year old girl, Raychel Ferguson, who died at Altnagelvin Hospital in June 2001. There were a number of similarities in the two cases with the administration of excess diluted fluid being cited in both as contributing to the death.

1. Hyponatraemia (low sodium levels) is known to be a risk in any child receiving intravenous fluids. It is potentially extremely serious, with a rapid fall in sodium leading to cerebral oedema seizures and death. Hyponatraemia most often reflects a failure to excrete water. Stress, pain and nausea are all potent stimulators of a hormone which inhibits water excretion.

2. Following the inquest into Raychel Ferguson's death the Chief Medical Officer convened a small working group to develop guidance on the prevention of hyponatraemia in children as a matter of urgency. The Guidance, issued in March 2002, emphasised that every child receiving intravenous fluids requires a thorough baseline assessment, that fluid requirements should be assessed by a doctor competent in determining a child's fluid requirements, and fluid balance should be regularly monitored. A copy of the guidance is attached Annex B. Last month, CMO wrote to Trust Chief Executives requesting assurance that the guidance had been implemented throughout Trusts.

3. Furthermore, following the inquest verdict on Lucy Crawford's death CMO has engaged a national expert to quality assure the guidance in light of the findings of the inquest and any new evidence available.

Presentational Issues

4. The inquests into Lucy and Raychel's death both attracted considerable media attention, most recently with an ITV documentary 'The Issue' covering the events around Lucy's death. This was televised on Thursday 25 March and included an interview with the Chief Medical Officer.

5. Following broadcast of 'The Issue' its host Fergal McKinney and a second journalists, Denzil McDaniel from the Impartial Reporter have requested interviews with the Minister.

6. As legal proceedings against Sperrin Lakeland Trust are still pending I advise Minister to decline the interview bids but to approve the release of a statement as attached Annex C.

7. I also attach Lines to Take (Annex D). Both the lines to take and the draft statement have been agreed with the DHSSPS Information Office.

Recommendation

8. Minister declines to be interviewed but agrees to release the attached statement.

9. Minister agrees attached lines to take.

Mary McCarthy

DR MIRIAM McCARTHY
Senior Medical Officer

004-003-013.

ANNEX A

Form 22

CORONERS ACT (NORTHERN IRELAND) 1959

VERDICT ON INQUEST

On an inquest taken for our Sovereign Lady the Queen, at THE OLD TOWNHALL BUILDING, 80 VICTORIA STREET, BELFAST in the County Court Division of GREATER BELFAST on TUESDAY the 17TH to THURSDAY the 19TH of FEBRUARY 2004, before me MR J L LECKEY HM Coroner for the district of GREATER BELFAST touching the death of LUCY REBECCA CRAWFORD to inquire how, when and where the said LUCY REBECCA CRAWFORD came to her death, the following matters were found:

1. Name and surname of deceased: LUCY REBECCA CRAWFORD

2. Sex: FEMALE

3. Date of Death: 14 April 2000

4. Place of Death: ROYAL BELFAST HOSPITAL FOR SICK CHILDREN

5. Usual Address: [redacted]

6. Marital Status: SINGLE

7. Date and Place of Birth: 5 November 1998 at

8. Occupation: DAUGHTER OF WILLIAM NEVILLE CRAWFORD, [redacted]

9. Maiden Surname: N/A

10. Cause of Death: 1(a) CEREBRAL OEDEMA (b) ACUTE DILUTIONAL HYPONATRAEMIA (c) EXCESS DILUTE FLUID 11 GASTROENTERITIS

Findings:

On 12th April 2000 the deceased, who was aged 17 months was admitted to the Erne Hospital, Enniskillen with a history of poor oral intake, fever and vomiting. The vomiting was sufficient to have caused a degree of dehydration and she required intravenous fluid replacement therapy. It was believed she was suffering from gastroenteritis. Her condition did not improve and she collapsed at about 3.00am on 13th April, developing thereafter decreased respiratory effort and fixed and dilated pupils. Whilst in a moribund state she was transferred by ambulance shortly after 6.00am to the Royal Belfast

Hospital for Sick Children. Her condition remained unchanged and after two sets of brain-stem tests were performed showing no signs of life she was pronounced dead at 13.15 hours on 14th April. She had become dehydrated from the effects of vomiting and the development of diarrhoea whilst in the Erne Hospital and she had been given an excess volume of intravenous fluid to replace losses of electrolytes. The collapse which led to her death was a direct consequence of an inappropriate fluid replacement therapy in that the use of 0.18% saline to make up deficits from vomiting and diarrhoea was wrong, too much of it was given and there had been a failure to regulate the rate of infusion. This led to the development of dilutional hyponatraemia which in turn caused acute brain swelling and death. The errors in relation to the fluid replacement therapy were compounded by poor quality medical record keeping and confusion by the nursing staff as to the fluid regime prescribed.

Date: 19TH FEBRUARY 2004

Signed: [redacted]

Coroner for GREATER BELFAST

[redacted]

[redacted]

DHSSPS

004-003 - 015

DHSSPS

CHILD AT RISK OF HYPONATRAEMIA RECEIVING PRESCRIBED FLUIDS

INTRODUCTION

- **Any child on IV fluids or oral rehydration is potentially at risk of hyponatraemia.**

- Hyponatraemia is potentially extremely serious, a rapid fall in sodium leading to cerebral oedema, seizures and death. Warning signs of hyponatraemia may be non-specific and include nausea, malaise and headache.

- Hyponatraemia most often reflects failure to excrete water. Stress, pain and nausea are all potent stimulators of anti-diuretic hormone (ADH), which inhibits water excretion.

- Complications of hyponatraemia most often occur due to the administration of excess or inappropriate fluid to a sick child, usually intravenously.

- Hyponatraemia may also occur in a child receiving excess or inappropriate oral rehydration fluids.

- Hyponatraemia can occur in a variety of clinical situations, even in a child who is not overtly "sick". Particular risks include:

  - Post-operative patients
  - CNS injuries
  - Bronchiolitis
  - Burns
  - Vomiting

BASELINE ASSESSMENT

Before starting IV fluids, the following must be measured and recorded:

- **Weight:** accurately in kg. [In a bed-bound child use best estimate.] Plot on centile chart or refer to normal range.

- **U&E:** take serum sodium into consideration.

FLUID REQUIREMENTS

Fluid needs should be assessed by a doctor competent in determining a child's fluid requirement. Accurate calculation is essential and includes:

Maintenance Fluid

- 100mls/kg for first 10kg body wt, plus
- 50mls/kg for the next 10kg, plus
- 20mls/kg for each kg thereafter, up to max of 70kg.

[This provides the total 24 hr calculation; divide by 24 to get the mls/hr.]

Replacement Fluid

- Must always be considered and prescribed separately.
- Must reflect fluid loss in both volume and composition (lab analysis of the sodium content of fluid loss may be helpful).

CHOICE OF FLUID

- **Maintenance fluids** must in all instances be dictated by the anticipated sodium and potassium requirements. The glucose requirements, particularly of very young children, must also be met.

- **Replacement fluids** must reflect fluid lost. In most situations this implies a minimum sodium content of 130mmol/l.

- **When resuscitating** a child with clinical signs of shock, if a decision is made to administer a crystalloid, normal (0.9%) saline is an appropriate choice, while awaiting the serum sodium.

- The composition of oral rehydration fluids should also be carefully considered in light of the U&E analysis.

Hyponatraemia may occur in any child receiving any IV fluids or oral rehydration. Vigilance is needed for all children receiving fluids.

MONITOR

- **Clinical state:** including hydrational status. Pain, vomiting and general well-being should be documented.

- **Fluid balance:** must be assessed at least every 12 hours by an experienced member of clinical staff.

  Intake: All oral fluids (including medicines) must be recorded and IV intake reduced by equivalent amount.

  Output: Measure and record all losses (urine, vomiting, diarrhoea, etc.) as accurately as possible.

  If a child still needs prescribed fluids after 12 hours of starting, their requirements should be reassessed by a senior member of medical staff.

- **Biochemistry:** Blood sampling for U&E is essential at least once a day – more often if there are significant fluid losses or if clinical course is not as expected.

  The rate at which sodium falls is as important as the plasma level. A sodium that falls quickly may be accompanied by rapid fluid shifts with major clinical consequences.

  Consider using an indwelling heparinised cannula to facilitate repeat U&Es.

  Do not take samples from the same limb as the IV infusion.

  Capillary samples are adequate if venous sampling is not practical.

  Urine osmolarity/sodium: Very useful in hyponatraemia. Compare to plasma osmolarity and consult a senior Paediatrician or a Chemical Pathologist in interpreting results.

SEEK ADVICE

Advice and clinical input should be obtained from a senior member of medical staff, for example a Consultant Paediatrician, Consultant Anaesthetist or Consultant Chemical Pathologist.

- In the event of problems that cannot be resolved locally, help should be sought from Consultant Paediatricians/ Anaesthetists at the PICU, RBHSC.

The Department Of Health, Social Services And Public Safety. Guidance is also available on the Departmental website : www.dhsspsni.gov.uk

004-8031 016.

ANNEX B.

ANNEX C

DRAFT

MINISTERIAL STATEMENT

I would like to express my deepest sympathy to the parents and family of Lucy Crawford following her death.

I am satisfied that the cause of Lucy's death has been properly and comprehensively investigated and I fully accept the coroner's verdict on the cause of death. In his deliberations the coroner did not see a need to refer the case to the Director of Public Prosecution. He did, however, refer inquest papers to the General Medical Council, which is responsible for the registration of medical practitioners, and I await the findings of the General Medical Council in due course.

Dr Henrietta Campbell, the Chief Medical Officer, issued guidance on the prevention of hyponatraemia in 2002. This guidance provides very practical advice for doctors and nurses who manage the care of children in hospital. It has been commended by both local clinicians, and by expert witnesses who gave evidence at Lucy's inquest. Following the inquest into Lucy's death the Coroner wrote to the Chief Medical Officer asking her to consider if any changes are required to the current guidance. In response, Dr Campbell has engaged an international medical expert in the speciality of paediatrics to quality assure the guidance in light of the findings of the inquest into Lucy's death.

Under Clinical Governance arrangements introduced last year, my Department is strengthening the systems for quality assurance within Trusts. Specifically, work is underway to improve the mechanism for reporting and investigating untoward incidents and to ensure the maintenance of good medical record keeping. This latter area was found to be seriously lacking in Lucy Crawford's case and a major lesson learned from this tragic case was the importance of accurate record keeping.

The lessons learned since Lucy's death and the action taken to inform health professionals should prevent a similar tragedy from occurring in the future. My Department will continue to work to ensure that all patients receive high quality care throughout the health service.

DHSSPS

004-003-018.

ANNEX D

LINES TO TAKE

I want to extend my sympathy to the parents and family of Lucy following her death.

I am satisfied that the cause of Lucy's death has been properly and comprehensively investigated, and I fully accept the Coroner's verdict on the cause of death.

I am very concerned about this incident, and am determined that the lessons we learn from this unfortunate event will prevent a similar case occurring in the future.

The Chief Medical Officer has already issued guidance to all doctors and nurses involved in treating children in hospital. This guidance raises awareness of hyponatraemia, a rare but potentially serious problem, and provides clear and practical advice on how to prevent it. The Chief Medical Officer has also engaged an international medical expert to quality assure the guidance in light of the findings of the inquest into Lucy's death.

We must ensure the very highest quality standards in our Health Services. I intend to put in place new arrangements to ensure that serious untoward events are brought to the attention of my Department without delay.