HSC Business Services Organisation

Directorate of Legal Services
Practitioners in Law to the Health & Social Care Sector

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Your Ref: AD-0629-13

Our Ref: HYPS071/01

Date: 20th September 2013

Ms A Dillon
Solicitor to the Inquiry
Arthur House
41 Arthur Street
Belfast
BT1 4GB

Dear Madam,

RE: INQUIRY INTO HYPONATRAEMIA RELATED DEATHS – CONOR MITCHELL

I refer to the above matter and to your letter of 4th September 2013. I am instructed by the Southern Health and Social Care Trust as follows:-

Issue 1

(a) The document at appendix 1 carries the title 'Intravenous Fluids in Children' yet in your description you appear to be referring to it as 'The guidance on the Prevention and Management of Hyponatraemia in Children'. This is the title which the Chief Medical Officer gave to the guidance which she issued on this subject in March 2002. In the circumstance please take instructions to clarify the title of the document at appendix 1.

The title of the document in Appendix 1 is 'Intravenous Fluids in Children'. This document was created by Dr Michael Smith and Dr Darrell Lowry on 8th August 2001 and modified on 13th September 2001. This was prior to the 'Guidance on the Prevention and Management of Hyponatraemia in Children' being issued by the Chief Medical Officer in 2002.

(b) At one point your description states that the three named clinicians worked as an informal group when *'developing'* the guidance at document appendix 1, and then in the next sentence you say that the document at appendix 1 was the guidelines *'discussed'* by the group.

This is somewhat confusing. Please take instructions to clarify whether the following:

(I) **Was the document which is referred at appendix 1 'developed' by the three clinicians in the sense that they formulated it or drafted it, or was it supplied to these clinicians from another source and merely 'discussed' by them?**

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, understands that informal meeting and discussion took place between Dr Michael Smith and Dr Darrell Lowry and as a result of these discussions, the 'Intravenous Fluids in Children' document was developed. The Trust wishes to clarify that Dr Sharpe was not involved in the work undertaken in 2001 regarding the development of the document, 'Intravenous Fluids in Children'.

(II) **If the document was supplied to this group by another source, please identify that source.**

The document was not supplied by another source.

(III) **If this group developed the document at appendix 1 in the sense that they formulated it or drafted it, please take instruction to clarify:**

- **Who asked them to work as an informal group?**
- **Were they asked to develop a set of guidance for use by the Trust, or what was the task set for them?**
- **In what circumstances were they asked to work as an informal group? Was it in response to any particular development or event? If so, what was that development or event**
- **Who were they required to report to at the completion of their work?**

The doctors were not asked to work as an informal group or to develop the guideline outlined in Appendix 1. The doctors had attended a regional meeting in Stormont in September 2001. Hyponatraemia was a topic of clinical interest and the two doctors themselves took forward the development of the guidance, Intravenous Fluids in Children (Appendix 1). The two doctors therefore developed this local guidance for use within their own clinical specialties.

In addition, Dr Darrell Lowry had received a telephone call from Dr Geoff Nesbitt, Altnagelvin Hospital. Dr Lowry had also attended a regional meeting in Musgrave Park Hospital at which hyponatraemia was discussed.

There was no reporting mechanism in place, other than that the two doctors disseminated the information within their own clinical specialties i.e. anaesthetics and paediatrics.

(c)You have not explained how the document contained at appendix 1 was used by the Trust, or its purpose, if it was used at all. Please take instruction in order to clarify whether the document at appendix 1 was used by the Trust, and if so, for what purpose it was used, and the period of time during which it was used

The two doctors disseminated the guideline (Appendix 1) within their own clinical specialties and its purpose was to provide guidance on the management of IV fluids. The document was used until the Chief Medical Officer published the regional guidance on the Prevention and Management of Hyponatraemia in Children in March 2002.

Issue 2
I refer you back to the letter written by Dr C Humphrey to the Chief Medical Officer dated 7th April 2004 (007-073-145). In that letter she explained how a group of senior clinicians took forward the guidance on the prevention and management of Hyponatraemia in children. She referred to five senior clinicians who were responsible for taking the guidance forward. Plainly the guidance she was referring to was the guidance published by the CMO in March 2002.

(i) Your letter of the 28th August 2013 identifies three clinicians as having been involved in the development and/or having discussed the document at appendix 1. It is unclear whether the three clinicians you have identified were part of the group of five senior clinicians referred to by Dr Humphrey. Please clarify the position.

(ii) In any event you have been asked to take steps to provide the Inquiry with the names of each of the five clinicians referred to by Dr Humphrey. To date those names have still not been provided. Please do so without further delay.

Dr Caroline Humphrey's letter to the Chief Medical Officer (7th April 2004, ref 007-077-150) explains how a group of senior clinicians took forward the CMO's 2002 guidance on "The Prevention and Management of Hyponatraemia in Children".

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, has been unable to identify the five senior clinicians referred to in Dr Humphrey's letter to the CMO in 2004, as the work to develop

the hyponatraemia guidance for children, "Intravenous Fluids in Children" (Appendix 1) was commenced in 2001 and was superseded by the CMO's regional guidance in 2002.

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, instructs that it will be necessary to clarify this issue with Dr Humphrey. Dr Humphrey has now been issued with a witness statement and in those circumstances the Trust is unable to clarify this matter with her at present.

(iii) **Moreover, as we understand the position from your letter, the three clinicians so far identified by you on behalf of the Trust developed and/or discussed the document enclosed as your appendix 1. That document was seemingly drawn up in August or September 2001, that is some six months before the CMO's guidance was published.**

Therefore a clear description is still awaited of just what it was Dr Humphrey was referring to when she told the CMO that a group of senior clinicians took the guidance forward in Craigavon Area Hospital. You have provided the Inquiry with a series of appendices 2-14. Again, some of these documents pre-date the introduction of the CMO's guidance. In any event if it is your instructions that these documents reflect what Dr Humphrey described as the efforts of the five senior clinicians to take forward the guidance within the Craigavon Area Hospital, then please say so in clear and unambiguous terms.

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, confirms that the documents listed in Appendices 2-14 were in use in the time periods stated in my previous response. However it cannot confirm whether these documents reflect what Dr Humphrey described in her letter of 7th April 2004. The Trust instructs that it will be necessary to clarify this issue with Dr Humphrey. Dr Humphrey has now been issued with a witness statement and in those circumstances the Trust is unable to clarify this matter with her at present.

(iv) **Furthermore, we would ask you to clarify how this work was done, and under whose direction. Thus, if a decision was taken after the publication of the guidance in March 2002 that steps would have to be taken, for example, to ensure that trainee doctors were informed of the guidance at induction, then who took that decision and who ensured that it was carried out?**

In relation to the information referenced in Dr Humphrey's letter, the Trust cannot clarify how or under whose supervision this work was done. However the Trust confirms that Dr Smith and Dr Lowry ensured that information regarding hyponatraemia in children was included in induction for medical staff from November 2000 until 2006.

Please find enclose further documentation highlighting that the issue of Fluids in Paediatrics was included in the Paediatric Department, Craigavon Area Hospital Group Trust's teaching sessions – August 1999 (Table A attached).

(v) **I refer you to the points raised under number 2 of our letter of 4th July 2013. You will see that we summarised in four bullet points, the steps which Dr Humphrey had said were taken to take the guidance forward in Craigavon Hospital Trust: they were adopted throughout the Trust; they formed part of induction for junior doctors; detailed fluid protocols were available for medical staff; junior medical staff were guided to seek consultant input.**

Having referred to the four steps in the Inquiry's letter of 4th July 2013, we then proceeded to raise a request for five classes of specific documentation (a-e). You have answered some of these. You have said that the three clinicians identified by you worked as an informal group and no formal records exist relating to their decisions or records. You should clarify whether the same approach was taken by the five clinicians referred to by Dr Humphrey. You have also provided some documentation in the appendices which demonstrates that the management of fluids and the prevention of Hyponatraemia became part of junior doctor training. However, you have not addressed the other classes of document referred to in our correspondence:

At (b) we queried whether the guidelines were brought to the attention of staff through correspondence, memos, handbooks, meetings etc. The emphasis in the documentation provided to us so far is on the induction of junior medical staff. Accordingly, the Inquiry repeats it request that the Trust examines whether records exist which demonstrate how the guidelines were disseminated / adopted more generally amongst its staff.

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, has been unable to locate any records e.g. correspondence, memos, handbooks or meetings, which demonstrate how the regional guidance on Prevention and Management of Hyponatraemia in Children, March 2002, was disseminated / adopted more generally amongst its

staff. However, the Trust has instructed the Head of Informatics to further explore the viability of retrieving Legacy Trust electronic correspondence. This exercise has been completed.

At (d) we asked the Trust to provide the detailed fluid protocols which Dr Humphrey said were made available to medical staff. We have examined the documentation provided so far and we cannot identify any such protocols. Please address this specific point.

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, cannot identify the detailed fluid protocols which Dr Humphrey referred to in her letter to the Chief Medical Officer of 7th April 2004. The Trust instructs that it will be necessary to clarify this issue with Dr Humphrey. Dr Humphrey has now been issued with a witness statement and in those circumstances the Trust is unable to clarify this matter with her at present.

At (e) we made a specific request for documentation relevant to any particular steps that were taken to disseminate and implement the guidelines amongst staff at the locations within the hospital Conor was treated. Again, you have omitted to address this particular point. Please now do so.

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, has been unable to locate specific documentation relevant to any particular steps which were taken to disseminate or implement the regional guidance on the Prevention and Management of Hyponatraemia in Children, March 2002, within CAH in the locations where Conor was treated. However, the Trust has instructed the Head of Informatics to further explore the viability of retrieving Legacy Trust electronic correspondence. This exercise has been completed.

Issue 3

The "print screen" provided by the Trust in connection with the document at Appendix 3 ("Hyponatraemia in Children") indicates that the document was created on the 27th September 2001 by the Royal Group of Hospitals. Please take instructions from the Trust in order to address the following matters:

(i) Confirm that the document at Appendix 3 was supplied to Craigavon Trust by the Royal Group of Hospitals.

(ii) Who in the Royal Group of Hospitals supplied the document

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, instructs that the document in Appendix 3 was supplied by Dr Robert Taylor, a clinician from the Royal Group of Hospitals, to two clinicians in Craigavon Area Hospital.

(iii) Who at Craigavon Area Hospital asked for the document from the Royal Group of Hospitals, and/or who received the document from the Royal Group of Hospitals

The Trust understands that Dr Darrell Lowry asked for this document.

(iv) In what circumstances and for what reason was the document supplied?

The document (Appendix 3) was supplied as a source of information to produce local guidelines.

Issue 4
We refer to the letter issued by the Chief Medical Officer on the 25th March 2002 (ref 007-001-001). You can see that it was directed to Medical Directors in the Acute Trusts, Directors of Nursing and Consultants in a number of specialties. The correspondence contains a number of directions:

- **The Guidance in the form of an A2 sized poster was to be prominently displayed in all units that may accommodate children".**

Arising out of this direction please take instruction to address the following:

(i) Who was responsible for ensuring compliance with this direction?

In March 2002 the Medical Director, Director of Nursing and the Chief Executive would have had the key responsibility for dissemination, implementation and monitoring of the guidelines.

(ii) Was the Guidance poster displayed in Craigavon Hospital? If so, in what units of Craigavon Hospital was the guidance poster displayed?

I am instructed that the Guidance poster was displayed in Craigavon Area Hospital. However the Trust is unable to provide clarity on the units in which the 2002 guidance was displayed.

(iii) Who was responsible for selecting the units where the poster was displayed?

In March 2002 Dr W McCaughey, the Medical Director and the Director of Nursing & Quality would have had the key responsibility for dissemination, implementation and monitoring of the Guidelines. The Trust is currently verifying the identity of the relevant Director of Nursing & Quality and will confirm same as soon as possible. Mr J Templeton, the Chief Executive was the Accountable Officer at that time.

(iv) Outline the steps that were taken to check that the poster was displayed in the units selected

Apart from the information previously provided by SHSCT in Appendices 1-14, there is no additional information available regarding the steps that were taken to check that the poster was displayed in the units selected, or who was responsible, or copies of any local protocols.

(v) Provide all documentation relevant to the decision(s) taken to select the units where the poster was displayed.

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, is unable to locate any documentation relevant to the decision(s) taken to select the units where the poster was displayed.

(vi) Provide copies of all correspondence issued to the units in association with the display poster.

The Southern Health & Social Care Trust, in respect of the legacy Craigavon Area Hospital Group Trust, is unable to locate any correspondence issued in relation to the units in association with the display of the poster, however the Trust continues to strive to locate historical information in order to support the Inquiry. However, the Trust has instructed the Head of Informatics to further explore the viability of retrieving Legacy Trust electronic correspondence. This exercise has been completed.

- **Since the guidance provided (only) general advice, specific protocols were to be developed locally to complement the Guidance and to provide more specific direction to junior staff.**

Arising out of this direction please take instructions to address the following:

(i) Who was responsible for ensuring compliance with this direction?

(ii) Were steps taken to develop local protocols?
If so, who was responsible for developing local protocols?
Please see above

(v) **Provide copies of any local protocols which were developed**

The Southern Health and Social Services Trust, in respect of the legacy CAH Group Trust, has endeavoured to review all electronic and manual information available from the issue of the Chief Medical Officer's letter in March 2002. However, at the time of writing there is no information available to it which confirms who was responsible for ensuring compliance with this direction, or the steps taken to develop local protocols (other than those referenced in Appendices 1-14 in our previous submission).

I am instructed that in 2002 the IT Infrastructure in the legacy CAH Group Trust was very basic. At present the Trust is unable to confirm whether detailed fluid protocols were developed and in place before 2009. However the Trust will continue to search for historical information in the hope of providing this information to the Inquiry.

- **Carry out audits of compliance with the guidance and locally developed protocols**

Arising out of this direction please take instruction to address the following:

(i) Who was responsible for ensuring compliance with this direction?

Please see response to Issue 4 (i) above.

(ii) Apart from participating in the regional audit in May 2003, were steps taken to carry out audits to ensure compliance with the guidance and locally developed protocols?

(iii) If so, who was responsible for conducting such audits, when were they carried out, and how were they carried out?

(iv) If such audits were conducted, provide a copy of all documentation relevant to them.

The Trust instructs that the following initiatives were undertaken to ensure compliance with the 2002 guidelines / IV fluids:

2002

Monitoring through clinical incident reporting: Dr M Hogan, Lead Clinician in Paediatrics:

A multi-disciplinary Paediatric Clinical Incidents Group reviewed all new paediatric clinical incidents. In 2003 the format of this meeting was further developed to include discussion on a wider clinical and social care governance agenda. This wider agenda included clinical effectiveness guideline updates. Feedback on clinical incidents within paediatrics continued to be discussed at these meetings.

Stabilisation and Transfer of Critically Ill Children Telelink Audit 2005/2006 Dr Davis SpR Paediatrics, Dr Bell
Transfer Audit Dr B Bell

Paediatric, anaesthetic and A&E teams were involved in presenting critical care cases to Dr R Taylor, Consultant Paediatric Anaesthetist, Royal Victoria Hospital, via telelink. This project covered all aspects of the stabilisation and transfer of critically ill children, including fluid and airway management where appropriate. A summary of the feedback on this project is incorporated in the excerpt from the Clinical and Social Care Governance Report for Paediatrics, 2005 (Table B).

Audit of paediatric resuscitation: This project was undertaken by Dr A Chillingworth. It included a review of all paediatric resuscitations between April – July 2005. The audit included the use of IV fluids. The Southern Health and Social Services Trust, in respect of the legacy CAH Group Trust, would draw your attention to the conclusion that in all cases the clinical features of shock were documented; IV Saline was used for fluid resuscitation and appropriate volumes were used for fluid bolus. The findings of this project were presented at the Area Paediatric Audit meeting on 21st July 2005 in order to share learning with paediatric colleagues in Daisy Hill Hospital. A copy of the audit presentation is enclosed in Table C.

(v) If such audits were not performed, fully explain why they weren't performed.

The audits outlined in (iv) above were undertaken. In addition, I am instructed a number of additional audits were undertaken after the revised guidance was issued in 2007; supporting papers for these latter audits will be included in the Inquiry's separate request for information on audit.

Save as is otherwise explained in the foregoing, what was the responsibility of the Medical Director of the Craigavon Area Hospital Group Trust in March 2002 in respect of the implementation of the Guidance on the Prevention of Hyponatraemia in Children, and for ensuring compliance with the directions referred to in the Chief Medical Officer's correspondence of 25 March 2002?

The Trust has sought advice from the Medical Director who was in post in 2002, who is now retired, and will forward this information as it becomes available.

Issue 5

(a) Please clarify whether any particular steps were taken at Craigavon Area Hospital, following the death of Conor Mitchell, to examine his intravenous fluid management and/or compliance by nursing staff and clinicians with the Guidance those steps that were taken

There were no particular steps to examine the intravenous fluid management and/or compliance by nursing staff following Conor's death. At the time of Conor's death, there were no indications of fluid management issues within his treatment and care.

(b) If any particular steps were taken, provide any documentation associated.

N/A

Yours faithfully

JRBo

Joanna Bolton
Solicitor Consultant

Table A

CRAIGAVON AREA HOSPITAL GROUP TRUST
PAEDIATRIC DEPARTMENT

Teaching Sessions - August 1999

Wednesday, 4 August (9.00am)	Induction Day	See Schedule	Study Room, Neonatal Unit
Friday, 6 August (11.30am-12.30pm)	Normal Newborn Examination		Peter Pan Room
Monday, 9 August (12.30pm-1.30pm)	Fluids in Paediatrics		Post Grad Rm 1
Tuesday, 10 August (11.30am-12.30pm)	Postnatal Ward Problems		Tutorial Room 2
Thursday, 12 August (12.45pm)	Perinatal Meeting		Parentcraft Room
Friday, 13 August (11.30am-12.30pm)	Journal Club		Tutorial Room 2
Monday, 16 August (12.30pm-1.30pm)	X-ray Meeting		X-ray Department
Tuesday 17 August (11.30am-12.30pm)	Immunisations in Children		Tutorial Room 2
Friday, 20 August (11.30am-12.30pm)	Journal Club		Tutorial Room 2
Monday, 23 August (12.30pm-1.30pm)	Neonatal Audit		Post Grad Room 1
Tuesday, 24 August (11.30am-12.30pm)	Constipation in Children		Tutorial Room 2
Thursday, 26 August (12.45pm)	Perinatal Meeting		Parentcraft Room
Friday, 27 August (11.30am-12.30pm)	Asthma Guidelines		Tutorial Room 2
Monday, 30 August	BANK HOLIDAY		
Tuesday, 31 August (11.30am-12.30pm)	Bronchiolitis		Tutorial Room 2

CRAIGAVON
AREA HOSPITAL
GROUP TRUST

Caring Through Commitment

Table B

Excerpt from: Clinical and Social Care Governance Report for Paediatrics 2005

Stabilisation and Transfer of Critically Ill Children Telelink Audit 2005/2006
Dr Davis, SpR Paediatrics, Dr Bell

Paediatric, Anaesthetic and A&E teams have been involved in presenting critical care cases to Dr Bob Taylor, Consultant Paediatric Anaesthetist. These sessions have allowed multidisciplinary learning and have identified areas for practice development. There is the added opportunity to discuss PICU issues such as bed pressures and morbidity and mortality data as it relates to the transfer of the critically ill child from district general hospitals. From this case based discussion areas for development have been determined. These include documentation, guidelines, fluid and airway management and drug administration. Identifying these learning points is helping us develop best practice, training and multidisciplinary pathways which will be used during the transfer of all critically ill children. An inter-departmental (Paediatrics, A&E and Anaesthetics) project group has been established to progress these developments locally. We have also developed and extended this model to create a transport network that takes the form of a three-way teleconference between Craigavon Area Hospital, Paediatric Intensive Care and Altnagelvin Area Hospital. This allows the sharing of information between district hospitals and the regional paediatric intensive care and also provides necessary evaluation of critical care transport.

Dr Martina Hogan
Lead Clinician in Paediatrics
Date 23-03-06

Presented by Dr Anna Chiesigworth @ Area Heads meeting 21/7/05

Table 1

Paediatric Resuscitation

Paediatric Resuscitation

- Bass et al (1992)
- Bass et al (1998)

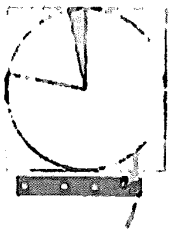
Aims

Audit of paediatric resuscitation in Craigavon Area Hospital

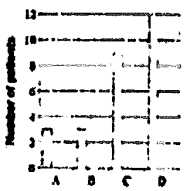
- Establish incidence and outcomes of paediatric resuscitation
- Establish whether management follows APLS guidelines
- 4 months (April – July 2005)
- All life threatening cases requiring urgent intervention
- Exclusions: newborn resuscitation

Cases

- 27 cases (16th July)
- 23 patients
- 13 male, 10 female
- Age
  - range 1mth – 12 years
  - mean 3 years
  - median age 21mths



Primary Intervention



- Medical: 25 patients
- Trauma: 2 patients
  - 1 abdominal injury
  - 1 neurological

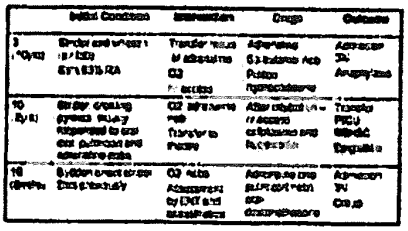
Outcome

- 3 North 74%
- Transfer
  - RBHSC (Barbour Wd) 1 patient
  - RBHSC PICU 4 patients (15%)
  - PICU, Crumlin Hosp, Dublin 2 patients (7%)
- Anaesthetic Assessment 48%
  - Intubation 26%
- Paediatric Consultant 56%

Stridor

- Keep calm, Oxygen
- Determine cause and severity
- Anaphylaxis
  - IM adrenaline (10mcg/kg)
  - Chlorpheniramine, steroids, adrenaline nebs
- Severe stridor
  - Adrenaline nebs
  - Senior help, ENT and Anaesthetics

Stridor



Wheeze

- 5 year old, exacerbation of asthma
  - Sats 82% RA, RR 52, unable to talk in sentences
  - Oxygen, CXR, Back to back nebs, iv access
  - Medication
    - Salbutamol and ipratropium nebs
    - Hydrocortisone
    - Aminophylline

Shock

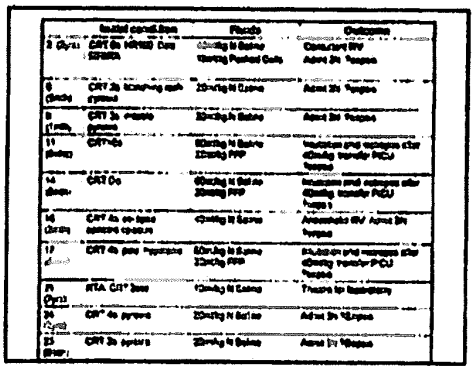
Determine potential causes

Circulatory inadequacy

- Recognise signs
- 20ml/kg bolus of crystalloid
- Repeat fluid bolus if still signs of shock

40ml/kg fluids

- Consider intubation and ventilation
- Inotropes



Status Epilepticus

- High flow oxygen
- BM
- Lorazepam/Diazepam
- 2nd dose lorazepam
- Paraldehyde
- Phenytoin (Phenobarbitone if already on phenytoin)
- RSI with Thiopentone

	Initial Condition	PMHx	Drugs Administered	Outcome
4 (dys)	Generalised seizure & apnoea in ambulance	Epilepsy Autism	Lorazepam x1 paraldehyde [illegible] phenytoin	Transfer to PICU Dublin [illegible]
7 ([illegible])	Focal Seizure Pyrexia	Nil	Lorazepam x2 paraldehyde phenytoin	Admit 3N [illegible]
13 ([illegible])	Generalised seizure & apnoea at home	Epilepsy	Lorazepam x1 paraldehyde	Admit 3N
16 ([illegible])	Generalised seizure	Epilepsy	Lorazepam x2	Admit 3N
20 ([illegible])	Generalised seizure & apnoea at home	Epilepsy	Lorazepam x1 paraldehyde	Admit 3N
22 ([illegible])	Generalised seizure & apnoea at home	Epilepsy on [illegible]	Lorazepam x1 paraldehyde phenobarbitone	Admit 3N
23 (5yrs)	Generalised seizure	Epilepsy	Lorazepam x1	Admit 3N
26 ([illegible])	Generalised seizure apnoea at home	Epilepsy	Lorazepam x3 Paraldehyde	Admit 3N

Conclusions

- Stridor
  - Anaphylaxis recognised early and treated
    - Adrenaline nebs
  - Severe stridor
    - Adrenaline nebs (5ml of 1:1000) Incorrect dose in 50%
    - ENT assessment in 60%
- Wheeze/Exacerbation of asthma
  - Appropriate treatment with nebulisers, oxygen, steroids, aminophylline

Conclusions

- Shock
  - All cases
    - Clinical features of shock documented
    - N Saline used for fluid resuscitation
    - Appropriate volumes used for fluid bolus
  - >40ml/kg fluid resuscitation
    - 75% of cases intubated, ventilated and inotropes
- Status Epilepticus
  - All cases: High flow oxygen, ABC, BM result documented
  - APLS Algorithm followed appropriately in 88%
    - 1 case: 3 doses of benzodiazepines

Transfers

- 7 cases to PICU, 2 cases transferred to Dublin
- A&E
  - 1 status epilepticus
  - 3 Sepsis
- 3 North
  - 1 case of ? Viral induced Wheeze
  - 1 case of epiglottitis
    - [illegible] A&E [illegible] CXR
  - 1 case of meningitis
    - Decreasing GCS, no beds in PICU
- Pulmonary Function Lab
  - Severe anaphylaxis during bronchoprovocation testing
  - No resuscitation equipment available

Learning Points

- APLS guidelines followed in majority of cases
- Stridor
  - Use of adrenaline nebs in severe stridor
  - Assessment by anaesthetics and ENT
- Shock
  - Consider ventilation after >40ml/kg fluids
- Status epilepticus
  - Careful use of benzodiazepines
- Recent changes to APLS guidelines
- Documentation

Meningococcal Disease

The role of healthcare delivery in the outcome of meningococcal disease in children

- Ninis N et al., *BMJ 2005* 330: 1475
- To determine whether suboptimal management in hospital could contribute to poor outcome in children admitted with meningococcal disease
- Case control study of childhood deaths from meningococcal disease, comparing hospital care in fatal and non-fatal cases
- Suboptimal healthcare delivery significantly reduces the likelihood of survival
  - Improved training of medical and nursing staff
  - Adherence to published protocols
  - Increased supervision by consultants may improve the outcome for these children and [illegible] with other life threatening diseases