| Name of Policy: | Southern Health and Social Care Trust (SHSCT) Paediatric Intravenous Infusion Policy |
| Purpose of Policy: | To ensure that all registered nurses, midwives and medical practitioners are aware of their responsibilities and apply the recommended clinical procedures in relation to the prescription, administration, monitoring and review of intravenous fluids, including hypotonic infusions, as set out in the National Patient Safety Agency (NPSA) Patient Safety Alert 22 and the DHSSPS Parenteral Fluid Therapy Guidance, September 2007. |
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Southern HSC Trust Paediatric Intravenous Infusion Policy Final
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1.0 Introduction

This policy has been developed in response to the National Patient Safety Agency (NPSA) Patient Safety Alert 22 and the DHSSPS Circular HSC (SQS) 20/2007 and its addendum, which advises that in the UK since 2000 sub-standard intravenous fluid management has resulted in the deaths of four children and serious neurological injury to one child from acquired hyponatraemia. International literature cites that there have been more than 50 cases of serious injury and associated with the mal-administration of hypotonic infusions ((NPSA/2007/22).

This policy has been developed in accordance with the Trust's key principles and in consultation with appropriate internal and external stakeholders.

2.0 Purpose

This policy has been developed to provide assurance that all registered nurses, midwives and medical practitioners are aware of their responsibilities and apply the recommended clinical procedures in relation to the prescription, administration, monitoring and review of intravenous fluids, including hypotonic infusions, as set out in the NPSA Patient Safety Alert 22 (NPSA/2007/22) and the DHSSPS Parenteral Fluid Therapy Guidance, September 2007.

3.0 Policy Statement

The Trust is committed to providing safe, high quality care to all patients, including children and young people admitted to its acute facilities. The Trust will ensure that registered nurses, midwives and medical practitioners are supported in delivering safe and effective care to children and young people through the implementation of recommendations as set out in the NPSA/2007/22 alert and the DHSSPS Parenteral Fluid Therapy Guidance, September 2007.

The Trust will support registered nurses, midwives and medical practitioners by:-

- Providing access to evidenced-based practice relating to intravenous infusion therapy;
- Providing necessary training and updates to ensure all staff are appropriately trained in undertaking this clinical procedure;
- Clarifying the roles and responsibilities of those involved in the prescription, administration, monitoring and review of intravenous infusions to children and young people; and
- Setting in place clinical governance arrangements to provide assurance on safe, high quality practice.

In addition, the Trust will put in place a ‘Desist Notice’ process whereby registered nurses, midwives or medical practitioners, who have not undertaken appropriate training to undertake this clinical procedure, will be prohibited from prescribing, administering, reviewing and monitoring intravenous fluids to children and young people.

4.0 Scope of the Policy

This policy applies to all Trust employees who are registered nurses, midwives and medical practitioners and who may be involved in the prescription,
administration, monitoring and review of intravenous infusions to children and young people. Children and young people are defined as those persons who are aged 'greater than or equal to 31 days and less than or equal to their 16th Birthday (SHSCT, October 2009).

5.0 Responsibilities

5.1 Responsibility of the Chief Executive

The Trust Chief Executive, as accountable officer, has overall responsibility for ensuring the aims of this policy are met. The Chief Executive has devolved operational responsibility for the delivery of this Policy to the Director of Children and Young People (Acute Paediatrics) and the Director of Acute Services (Children and young people in adult wards). The Medical Director in respect of his lead role for Clinical and Social Care Governance systems and processes has devolved responsibility to provide assurance to the Chief Executive that this policy is effectively implemented.

The Trust is responsible for the implementation of the policy and will work with partner organisations in order to ensure the safe administration of intravenous infusions to children and young people.

As outlined by the NPSA/2007/22 the Trust has a responsibility to:
- Remove sodium chloride 0.18% with glucose 4% intravenous infusions from stock and general use in areas that treat children and young people. Suitable alternatives must be available. Restrict availability of these intravenous infusions to critical care and specialist wards such as renal, liver and cardiac units.
- Produce and disseminate clinical guidelines for the fluid management of paediatric patients. These should give clear recommendations for fluid selection, and clinical and laboratory monitoring. (Within Northern Ireland these clinical guidelines are specifically those issued by the DHSSPS entitled - Parenteral Fluid Therapy Guidance, September, 2007)
- Provide adequate training and supervision for all staff involved in the administering of intravenous infusions for children and young people;
- Reinforce safer practice by reviewing and improving the design of existing intravenous fluid prescriptions and fluid balance charts for children and young people.
- Promote the reporting of hospital acquired hyponatraemia incidents via local risk management reporting systems. Implement an audit programme to ensure NPSA recommendations and local procedures are being adhered to.

5.2 Medical Responsibility

- All doctors (excluding Consultants) involved in the prescribing, monitoring and reviewing of intravenous infusions to children and young people must complete BMJ e-learning module and obtain a certificate of completion biannually. A training record will be held with respect to this. In addition, Paediatric doctors will also complete an awareness session.

- All newly appointed doctors who will be involved in the prescribing, monitoring and reviewing of intravenous infusions to children and young people should complete the BMJ e-learning module within one month of taking up employment.
• All doctors involved in the prescribing, monitoring and reviewing of Paediatric IV Infusions must be aware of and adhere to the Parenteral Fluid Therapy Guidance, (DHSSPS, September, 2007) and clinical incident triggers (SHSCT, October 2009) which are available in all wards and facilities. (Appendix 4)

• All doctors involved in the prescribing, monitoring and reviewing of Paediatric IV Infusions must be aware of and adhere to appropriate documentation including the paediatric fluid prescription and balance chart.

• Any Doctor who is not appropriately trained in the prescription, monitoring and review of intravenous fluids to children and young people will be prohibited from doing so and will be issued with a desist notice. This will include locum appointments employed by the Southern Trust.

• All doctors involved in the prescribing, monitoring and reviewing of Paediatric IV Infusions must, as far as possible, adhere to the algorithm for prescription - a guideline on roles and responsibilities for prescription, monitoring and review. (Appendix 1)

• All doctors involved in the prescribing, monitoring and reviewing of Paediatric IV Infusions will facilitate and participate in the rolling audit programme monitoring hospital acquired hyponatraemia.

5.3 Registered Nurses and Midwives Responsibility (See appendix 2)

• All Registered Nurses and Midwives involved in the administration of intravenous infusions to children and young people must attend the awareness sessions provided by the Trust biennially. A training record will be held with respect to this. In addition, Registered Children’s Nurses will also complete the BMJ e-learning module bi annually.

• All newly appointed Registered Nurses and Midwives who will be involved in the administration of intravenous infusions to children and young people must complete the awareness session within one month of taking up employment.

• All Registered Nurses and Midwives involved in the administration of intravenous infusions to children and young people must be aware off and adhere to the Parenteral Fluid Therapy Guidance, (DHSSPS, September, 2007) and clinical incident triggers (SHSCT, October 2009) which are available in all wards and facilities. (Appendix 4)

• All Registered Nurses and Midwives involved in the administration of intravenous infusions to children and young people must be aware of and adhere to appropriate documentation including the paediatric fluid prescription and balance chart.

• Any Registered Nurse and Midwife involved in the administration of intravenous infusions to children and young people who is not appropriately trained in the administration of intravenous fluids to children and young people
will be prohibited from doing so and will be issued with a desist notice. This will include agency or temporary registered nurses and midwives employed by the Southern Trust.

- All Registered Nurse and Midwife involved in the administration of intravenous infusions to children and young people must facilitate and participate in the rolling audit programme monitoring hospital acquired hyponatraemia.

5.4 **Pharmacy Responsibilities**

- Pharmacy staff will not procure or stock sodium chloride 0.18% with glucose 4% intravenous infusions within the trust.

- When a clinical pharmacist reviews and monitors an intravenous fluid prescription, they will adhere to the Parental flowchart guidance (DHSSPS, September, 2007) and the clinical incident triggers (SHSCT, October, 2009)

- All pharmacists will complete the BMJ e-learning module as part of their induction program.

5.5 **Audit and Evaluation Team Responsibilities**

- The Audit and Evaluation team will complete a rolling monthly audit within all acute adult facilities where children and young people are cared for as inpatients and in the paediatric inpatient wards which will identify, review and produce recommendations for learning in respect of hospital acquired hyponatraemia.

- This will be achieved in conjunction will laboratory services and clinical teams.

- The procedure for this monthly rolling audit is outlined in Appendix 3

6.0 **Legislative Compliance, Relevant Policies, Procedures and Guidance**

Staff must take cognisance of relevant professional standards and guidance and other relevant National, regional DHSSPS publications and local procedures. (Local procedures are listed in the appendices to this policy).

This policy should read in conjunction with following:


7.0 References

See above 6.0

8.0 Equality and Human Rights Considerations

Alternative formats – this document can be made available on request in alternative formats, for example Plain English, Braille, disc audiocassette and other languages to meet the needs of those who are not fluent in English.

9.0 Records Management

The supply of information under the Freedom of information does not give the recipient or organisation that receives it the automatic right to re-use it in any way that would infringe copyright. This includes, for example, making multiple copies, publishing and issuing copies to the public, permission to re-use the information must be obtained in advance from the Trust.

A copy of this policy will be placed on the Trust Intranet and internet. Hard copies will also be sent to relevant Team Managers to ensure dissemination. All clinical staff are required to read the policy.

This policy will be reviewed in one year.

10.0 Copyright

11.0 Sources of advice and further information

Line Managers should be contacted in the first instance, in relation to any specificquires on the policy content. Line Managers should then escalate queries which they are unable to address to the Policy Author.

All information and guidance resources to support the management of intravenous fluids in Children and Young People are available on the following website: www.dhssps.gov.uk.
Appendix 1

Medical Procedure (A&E, SURGERY, MEDICINE AND GYNAECOLOGY)

Roles and Responsibilities in relation to Prescription, monitoring and reviewing of IV infusions for Children and Young People
SHSCT ALGORITHM FOR IV INFUSION IN CHILDREN AND YOUNG PEOPLE

Algorithm 2: Children and Young people aged 31 days -13 years inclusive treated in the Paediatric Ward

**Team Who Identifies Need for IV Infusion**

- Paediatric Medicine Team
  - Trained and competent Doctor from the paediatric medical team prescribes, monitors and reviews fluids

- Adult Surgical Team
  - CYP Well
  - CYP Unwell / Undiagnosed
    - Trained and competent Doctor from adult based team prescribes and monitors fluids

In hours: Consultant from adult based team contacts the Consultant from Paediatrics and requests a consultation. Trained and competent Paediatric clinician assesses and prescribes for CYP. Further monitored by adult team in consultation with Paediatrics. Out of hours referrals can be made Registrar to Registrar. The adult team Registrar must contact their Consultant prior to referral.
Medical Algorithm for Maternity Services
For Parenteral Fluid Therapy for Young People 16 years or younger

Individual 16 years or younger requiring IV fluids

- Admitted to Antenatal/Postnatal Ward
  - Follow Paediatric Parenteral Fluid Therapy Guideline

- Admitted to Delivery Suite requesting epidural or requiring monitoring in delivery suite with IV fluids
  - Follow principles of Initial Management Guideline for Parenteral Fluid Therapy For Pregnant Women up to 16 years in conjunction with Paediatric Parenteral Fluid Therapy Guideline
Medical Algorithm for Maternity Services
For Parenteral Fluid Therapy for Young People 16 years or younger

- The Obstetric Registrar should calculate and prescribe any IV Fluids that are required. The Obstetric Registrar will have the responsibility for overseeing the prescription but if necessary may discuss same with the Anaesthetist.

- Anaesthetist will advise if additional fluid required post epidural or if condition deteriorates/changes sufficiently to require rapid fluid bolus.
Appendix 2

NURSING AND MIDWIFERY PROCEDURE FOR THE ADMINISTRATION OF INTRAVENOUS INFUSIONS TO CHILDREN & YOUNG PEOPLE
1.0 INTRODUCTION
The administration of intravenous fluid is an integral part of the majority of nurses and midwives professional practice. To ensure full implementation of the National Patient Safety Agency (NPSA) Patient Safety Alert 22 and thereby reduce the incidence of hospital required Hyponatraemia, it is essential that intravenous fluids are administered by competent practitioners who, following training, undertake the procedure safely with minimal associated risks to the child or young person.

This procedure solely relates to the role of Nursing and Midwifery staff in the administration of intravenous infusions to children and young people aged 1 month to their 16th Birthday.

2.0 PROCEDURE
1. All nursing and midwifery staff caring for children/young people must have attended Hyponatraemia training and be familiar with the signs of hyponatraemia and its emergency management.
2. An accurate weight must be obtained prior to the administration of any fluid to a child/young person and documented in the fluid prescription chart.
3. Explain and discuss the procedure with the child/young person and parent.
4. Before administering any prescribed intravenous fluid, check the fluid prescription chart to ensure that it is due and has not already been given.
5. Before administering any prescribed intravenous fluid, consult the child/young person’s prescription chart and ascertain the following:
   - Child’s name, date of birth, hospital number
   - Type of IV fluid
   - Weight of child/young person is documented
   - The fluid calculation chart has been completed by the prescribing doctor
   - Amount and time frame for administration
   - Date and time due
   - Route of administration
   - Validity of prescription
   - Signature of prescribing doctor
   - The prescription is legible
6. Nursing and midwifery staff should not commence any intravenous fluids if they are not satisfied that the prescription of these fluids is in accordance with the “Paediatric Parenteral Fluid Therapy” Guidelines (DHSSPS, Sept 2007). If they have concerns they must check this with an experienced member of the Paediatric Medical Team.
7. Wash hands and assemble the necessary equipment
8. Two registered nurses/midwives will check the following:
   - Name, strength and volume of intravenous fluid against the fluid prescription chart
   - Expiry date of the IV fluid
   - Packaging is intact and inspect the container and contents for cracks, punctures or air bubbles
   - Fluid for discoloration, haziness and crystalline or particulate matter
   - Identity of the patient with the prescription chart and infusion bag
9. If an infusion is in progress switch it off, place the new infusion bag on a flat surface and disconnect empty infusion bag.
10. Push the spike into the new infusion bag fully without touching the spike and hang the infusion bag onto the infusion stand
11. Check the intravenous cannula is patent by flushing the IV line ensuring
   - No resistance is met
   - No pain or discomfort is felt
   - No swelling is evident
   - No leakage occurs around the cannula
   - There is good backflow of blood on aspiration
12. Connect the infusion to the cannula using a non touch technique
13. Tape the administration set in a way that places no strain on the cannula, which could in turn damage the vein
14. Start the infusion and set the rate of flow as prescribed by the doctor
15. Two nurses/midwives will check the rate of infusion is set in keeping with the prescription
16. Observe the patient for any abnormal sensations, report to nurse in charge and/or doctor and record in nursing notes and stop if appropriate
17. Both nurses/midwives involved in checking the intravenous fluid for administration will sign the fluid prescription chart.
18. The nurses/midwives are also responsible for recording the batch number of the intravenous fluid and the serial number of the pump used to administer the intravenous fluid
19. The nurse/midwife responsible for the care of the child/young person should
   - Document that the infusion has commenced on the fluid balance chart and nursing care plan
   - Check the infusion and cannula site hourly and document
   - Record the cumulative total of fluid administered over 24 hours
   - Complete the Early Warning Score in use and report any changes in the general condition of the child/young person to the appropriate member of the MDT depending on the score
   - Ensure prompt action is taken to resolve any problems with the intravenous line
   - Ensure medical reassessment is undertaken when required
   - Change the intravenous fluid and/or rate as prescribed by the doctor
   - Ensure issues relating to the intravenous infusion are discussed at all shift changes

Supporting Guidance

Nursing and Midwifery Council (2007) NMC Record Keeping Guidance. London, NMC.

Nursing and Midwifery Council (2008), The Code Standards of Conduct, Performance and Ethics for Nurses and Midwives, London, NMC.

Nursing and Midwifery Council (2008), Standards for Medicines Management, London, NMC.
Royal Marsden 2008 Hospital Manual of Clinical Nursing Procedures 7TH Edition
Wiley-Blackwell

SH&SCT.

Southern Health and Social Care Trust, 2008, Medicines Management Code,
SH&SCT.
APPENDIX 3

Procedure to monitor Paediatric Hospital Acquired Hyponatraemia within Acute Inpatient Facilities (Paediatric and Adult wards)
Introduction

This procedure outlines:

a) the monitoring arrangements to establish whether or not those patients who had a low sodium during admission, had **developed hospital acquired hyponatraemia**.

b) the process for reviewing the management of these children and young people in accordance with agreed guidelines\(^1\), as well as the integrated clinical and social care governance approach being adopted to:

- give assurances regarding the care provided
- identify and collate educational issues arising from case note review (i.e. review of the fluid prescription, fluid balance chart and other relevant documentation)
- provide an integrated mechanism for feedback on the outcome of the case note review, clinical incident or serious adverse incident reporting and for sharing these across directorates
- ensure educational issues are forwarded for inclusion in corporate induction programmes for new medical, nursing and midwifery staff
- ensure appropriate arrangements are in place regarding the prescribing of IV fluids by locum doctors

A standardised approach to implementation of this procedure will be adopted; however the process for reviewing case management within the Children & Young People’s directorate will differ due to the number of patients receiving IV fluids in those clinical areas.

Procedure

1.0 In line with existing standardised laboratory operating procedures, abnormal plasma sodium results will continue to be identified (*) on the U&E report issued by the laboratory at the time the investigation is undertaken, or as recorded on the laboratory’s computerised system.

2.0 The audit procedure will be taken forward using a two-stranded approach:

**Strand 1:**

1. Within the **Children & Young People's Directorate**, a weekly audit will be undertaken by reviewing the fluid prescription and fluid balance charts of 5 children / young people receiving IV fluids, in each of the two acute inpatient paediatric wards in Craigavon Area and Daisy Hill Hospitals (n=10 per week).

2. As the number of young people receiving IV fluids within the **acute adult inpatient** setting is smaller, a different approach has therefore been adopted. A record of the name of young people who were administered IV fluids will be retained by Ward Managers and forwarded to the Head of Service within the four divisions (Surgery & Elective Care; Medicine & Unscheduled Care; Integrated Maternal & Women’s Health and Cancer & Clinical Services) by 18th of each month (or the nearest working day). The fluid prescription and fluid balance charts of all young people identified in this way will be reviewed.
2.3 The Effectiveness & Evaluation Manager has developed a standardized audit proforma in consultation with senior clinical staff. This standardized audit proforma will be used by both the Children & Young People and Acute Directorates (Table 1).

Strand 2:
2.4 The Head of Laboratory Services will provide a list identifying children and young people who had a low sodium level during an inpatient episode. This list will be issued on the 21st of each month (or the nearest working day) and will be forwarded electronically to the Effectiveness & Evaluation Manager.

The minimum dataset produced by the laboratory will include:

- Plasma sodium level during inpatient episode <135
- Age (inclusion criteria: 1 month – 16th Birthday)
- Patient’s surname, forename and date of birth
- Hospital Number and Health & Care Number, where available
- Date of U&E, sodium result
- Consultant responsible for the patient, ward, hospital

2.5 The Effectiveness & Evaluation Manager will establish whether or not a review of the management of these children and young people has already been undertaken in Strand 1 of the audit, as outlined above in paras 2.1 and 2.2.

2.5.1 Where an individual case has not been included in Strand 1 of this procedure, the Effectiveness & Evaluation Manager will bring this to the attention of the nominated Consultant Audit Co-Ordinator within the relevant directorate, who will ensure a review of case management is undertaken by the ‘nominated audit team’, for inclusion in the audit process.

3.0 Nomination of clinical staff involved in the audit process: Children & Young People’s directorate

3.1 Under the direction of the Associate Medical Director, the nominated, supervising Consultant Audit Co-Coordinators and Head of Paediatric Services will identify a senior trainee doctor and Ward Manager / Clinical Sister respectively in Craigavon Area and Daisy Hill Hospitals each week. The ‘nominated audit team’ will review the fluid prescription and fluid balance chart of 5 randomly selected children / young people who received IV fluids that week, using the audit proforma outlined in Table 1.

The case notes of any additional children / young people with a low sodium post admission, as identified in para 2.5.1 above, will also be reviewed.

4.0 Nomination of clinical staff involved in the audit process: Acute directorate

4.1 Under the direction of the Associate Medical Directors, the nominated, supervising Consultant Audit Co-Coordinators in Craigavon Area and Daisy Hill Hospitals will each identify a senior trainee doctor (Registrar, Staff Grade etc) each month to review the case notes of young people who received IV fluids.
4.2 The nominated senior trainee doctor on each site will review all of the case notes for the four divisions within the acute directorate, irrespective of the Consultant under whom the patient was managed. Responsibility for nominating a senior trainee doctor to undertake the audit will rotate between divisions.

4.3 In line with rotation of audit within the divisions, the General Manager Medicine & Unscheduled Care, or the Head of General Surgery / Urology and ENT, or the Head of Midwifery / Gynaecology, or the Head of Anaesthetics / Theatres and ICU will nominate a Ward Manager or Clinical Sister, in both Craigavon Area and Daisy Hill Hospitals each month, to undertake the audit in conjunction with the senior trainee doctor, as outlined in 4.1 above.

4.4 The Heads of Service will forward the list received from the Ward Managers identifying those children / young people who received IV fluids in the previous month. This list should be forwarded by email to the Effectiveness & Evaluation Manager, by the 21st of each month (or nearest working day). The Effectiveness & Evaluation Manager will organize retrieval of the hospital charts for review by the 'nominated audit team'.

4.5 The case notes of any additional children / young people with a low sodium post admission, as identified in para 2.5.1 above, will also be included in the audit.

5.0 Data collection process: Acute and Children & Young People's directorates

5.1 The senior trainee doctor and Ward Manager / Clinical Sister will undertake a review of the fluid prescription and fluid balance charts to establish whether or not:

- This was a hospital acquired hyponatraemia (ie sodium fell below 135 mmol/L after admission)
- DHSSPS Paediatric Parenteral Fluid Therapy (1month – 16 yrs) Initial management guidelines, Sept 2007, were adhered to
- Monitoring and observations were undertaken in accordance with the above-mentioned guideline
- Action taken regarding ongoing management of the patient was appropriate and clearly documented
- Fluid balance chart was completed accurately
- Incident reporting requirements in relation to hospital acquired hyponatraemia were followed

5.2 Where non-compliance with any of the above indicators is identified, the audit process will suggest recommendations, for wider discussion within and across directorates.

5.3 Audit criteria have been developed as outlined in Table 2. This will ensure there is uniform interpretation of the seven parameters outlined in audit proforma - Table 1.

5.4 The senior trainee doctor will validate the outcome of the case note review with the nominated, supervising Consultant Audit Co-Ordinator.
5.5 Where the case note review identifies that the **sodium was low on presentation to hospital** and educational issues were identified, these will be feedback to the individual practitioner by the Lead Clinician / Consultant Audit Co-ordinator. These educational issues will be recorded on the audit proforma (Table 1) and be collated for incorporation into presentation of audit findings.

5.6 Where hospital **acquired hyponatraemia is confirmed**, the outcome of the clinical incident / serious adverse incident (where available), together with any educational issues identified in the case note review and recommendations and action plans from the nominated audit team and Consultant Audit Co-Ordinator, will be collated for feedback as outlined below. Where the outcome of the clinical incident / serious adverse incident is not available when the audit findings are being presented, the relevant manager will ensure the outcome of the clinical incident / serious adverse incident is forwarded to the Effectiveness & Evaluation Manager on a timely basis, for inclusion in a subsequent presentation.

6.0 **Collation, presentation and dissemination of findings arising from Strands 1 and 2 of the audit procedure**

6.1 The nominated senior trainee doctors in the Acute and Children & Young People’s Directorates will liaise with the Effectiveness & Evaluation Manager(2) to ensure timely analysis of audit findings for Craigavon Area and Daisy Hill Hospitals, together with the outcome of any clinical incident / serious adverse incident and educational issues identified, as follows:

- **Acute directorate**: audit proforma submitted to the Effectiveness & Evaluation Manager by 5th of each month
- **Children & Young People’s directorate**: the audit proforma will be submitted electronically to the Effectiveness & Evaluation Manager each Tuesday.

6.2 The Effectiveness & Evaluation Manager will collate these findings in conjunction with the nominated senior trainee doctor and nurse representatives and the outcome will be presented at:

6.3 **Acute directorate: 14 to 16th Birthday**

Monthly morbidity and mortality, audit or other appropriate meeting within Surgery & Elective Care, Cancer & Clinical Services, Medicine & Unscheduled Care and Integrated Maternal & Women’s Health divisions, by a nominated senior trainee doctor.

A summary of the key recommendations and action plans arising from the audit will be forwarded to Assistant Directors and Associate Medical Directors within the acute directorate.

**Children & Young People’s directorate**

Presentation at monthly audit, educational or other appropriate meeting in CAH and DHH. A summary of the key recommendations and action plan arising from the audit will be forwarded to the Associate Medical Director and Assistant Director of Specialist Child Health and Disabilities within Children & Young People’s Directorate.
6.4 Discussion on the findings, recommendations and action plans should be included as a standing agenda item at:

**Monthly multi-disciplinary** directorate / divisional governance / educational or other appropriate meetings within

- Children & Young People’s directorate
- Acute directorate
- Acute divisions:
  - Surgery & Elective Care
  - Cancer & Clinical Services
  - Medicine & Unscheduled Care
  - Integrated Maternal & Women’s Health.

Directorates / divisions will agree the clinicians to present this information at the monthly meeting.

Each directorate / division will agree a dissemination process to ensure the audit recommendations are further cascaded to facilitate the following:

6.5 The nominated, supervising Consultant Audit Co-Ordinators will ensure issues and recommendations identified from the monthly monitoring process are included in ongoing educational programmes at directorate / division level for medical staff.

6.6 The Head of Paediatrics, the General Manager Medicine & Unscheduled Care, the Head of General Surgery / Urology and ENT, the Head of Midwifery / Gynaecology and the Head of Anaesthetics / Theatres and ICU will ensure these issues are incorporated into ongoing education and induction programmes for existing nursing and midwifery staff.

6.7 A corporate, single response including recommendations will be collated by the Medical Director’s office and distributed to:

  - Chief Executive
  - Medical Director
  - Executive Director of Nursing
  - Operational Directors
  - Assistant Director of Specialist Child Health and Disabilities
  - Associate Medical Director, Children & Young People’s directorate.

6.8 A nominated officer will collate the recommendations on a quarterly basis and forward these to the Chairman of the Drugs & Therapeutics Committee, for information.

6.9 When the audit process has been validated and embedded within the acute directorate, consideration will be given to capturing the information on a ‘live, weekly’ basis, as children and young people are identified with a low sodium post admission. This would ensure timely feedback to clinical staff, to inform case management and enhance compliance with clinical incident / serious adverse reporting requirements. In the event that ‘live’ data capture is introduced in the acute directorate, all other aspects of this procedure will remain insitu.
7.0 Induction programmes for new medical / nursing and midwifery staff

The Assistant Director of Specialist Child Health and Disabilities and Associate Medical Director, Children & Young People’s directorate will ensure educational issues arising from the ongoing monitoring are forwarded to Mr Rice Director of Mental Health & Disability Services; Executive Director of Nursing, Mr Weir Associate Medical Directorate Education & Training and Dr Harty Foundation Director & Post Graduate Clinical Tutor for inclusion in corporate induction programmes for new junior doctors, nursing and midwifery staff.

8.0 Arrangements for locums

IV fluids should only be prescribed by locum doctors who have undergone formal training on hyponatraemia, as outlined in the training section of this policy. In this respect, locum doctors therefore should not prescribe IV fluids for children and young people, unless they can satisfy senior nursing and midwifery staff at ward level of their competence.

9.0 Implementation of recommendations

It is the responsibility of the Assistant Director of Specialist Child Health and Disabilities and Associate Medical Director, Children & Young People’s Directorate, under the direction of the Medical Director, to monitor progress on implementation of corporate recommendations arising from this audit.

10.0 Reporting to SMT Governance and Trust Board

The Medical Director, Director of Children and Young People’s Services and Director of Acute Services will provide a joint report to SMT Governance and Trust Board (frequency to be defined).

11.0 NPSA audit

A small working group will be convened to undertake an annual organizational audit, using the template developed by Patient Safety Alert 22 Reducing the risk of hyponatraemia when administering intravenous infusions to children. The outcome of this work also will be shared at directorate / divisional meetings as outlined above.

12.0 Responsibility of staff

It is the responsibility of all medical, nursing and midwifery staff to facilitate implementation of this procedure.

12.1 The duration of this audit process will be informed by the findings of the weekly audit. The Associate Medical Director for Children & Young People and the Assistant Director of Specialist Child Health and Disabilities will advise directorates of this timespan, following joint consultation with the Medical Director and the Director of Children & Young People’s Services.
12.2 When an acceptable baseline position on the parameters outlined paras 5.1 and 12.1 has been agreed, it is recommended, as a minimum, that this audit be repeated in the following circumstances:

- at the changeover of doctors in February and August,
- an increasing trend in the number of clinical incidents is identified
- following any serious adverse incident involving hospital acquired hyponatraemia.

The timespan of audit in these circumstances will be advised by the nominated officers outlined in para 12.1.

Issue: October 2009
Pilot: November 2009
Implementation: December 2009 (two weeks after completion of training on hyponatraemia)
Review date: March 2010

References:
1. DHSSPS Paediatric Parenteral Fluid Therapy (1month – 16 yrs) Initial management guidelines, Sept 2007
2. Business case submitted to SMT for Effectiveness & Evaluation Facilitator to enhance ward-based monitoring of corporate projects
### Table 1: SH&SCFT Fluid Balance Audit

<table>
<thead>
<tr>
<th>Date of Audit (dd/mm/yy)</th>
<th>Chart No</th>
<th>Auditor</th>
<th>Patient is clearly identified</th>
<th>Were the DHSSPS Guidelines: Paediatric Parenteral Fluid Therapy Sept 07 followed?</th>
<th>Was reassessment and U&amp;I undertaken a minimum of 24 hours, or more frequently if clinically indicated?</th>
<th>Was appropriate action taken as a result of the reassessment?</th>
<th>Were the actions clearly documented?</th>
<th>Was the Fluid balance chart completed accurately?</th>
<th>Were incident reporting requirements followed in relation to hospital acquired hyponatraemia?</th>
<th>Was there compliance for all elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/09/09</td>
<td>E12345</td>
<td>Philip Rodgers</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>10/09/09</td>
<td>E54321</td>
<td>Gail Watson</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>11/09/09</td>
<td>E13452</td>
<td>Anne Quinn</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>N/A</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>12/09/09</td>
<td>E14532</td>
<td>Laura Gribben</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>13/09/09</td>
<td>E15432</td>
<td>Terri Harte</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

**% Compliance (Individual parameter)**
- Date of Audit: 100%
- Chart No: 100%
- Auditor: 80%
- Patient is clearly identified: 100%
- Were the DHSSPS Guidelines: Paediatric Parenteral Fluid Therapy Sept 07 followed?: 100%
- Was reassessment and U&I undertaken a minimum of 24 hours, or more frequently if clinically indicated?: 100%
- Was appropriate action taken as a result of the reassessment?: 100%
- Were the actions clearly documented?: 100%
- Was the Fluid balance chart completed accurately?: 100%
- Were incident reporting requirements followed in relation to hospital acquired hyponatraemia?: 100%
- Was there compliance for all elements?: YES

**Overall % Comp (PaA bundle of 7)**: 80%

<table>
<thead>
<tr>
<th>Issue No</th>
<th>Issue</th>
<th>Action By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Test Issue1</td>
<td>Action By 1</td>
</tr>
<tr>
<td>2</td>
<td>Test Issue2</td>
<td>Action By 2</td>
</tr>
<tr>
<td>3</td>
<td>Test Issue3</td>
<td>Action By 3</td>
</tr>
<tr>
<td>4</td>
<td>Test Issue4</td>
<td>Action By 4</td>
</tr>
</tbody>
</table>
This audit will be undertaken jointly between the nominated senior trainee doctor and Ward Manager / Clinical Sister

**Inclusion criteria:**
- Children & young people receiving IV fluids
- Aged 1 month – 16th birthday
- CYP: 5 children on IV fluids per week
- Acute: all children receiving IV fluids that month
- Any additional children identified by the laboratory who had a low sodium post admission, who have not been included in the above

**Criteria and descriptor for assessing compliance**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Descriptor</th>
<th>Possible Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient is clearly identified in fluid prescription chart</td>
<td>Addressograph label or Name and Hospital Number or Name and DoB</td>
<td>Yes</td>
</tr>
<tr>
<td>Were the DHSSPS Paediatric Parenteral Fluid Therapy (1 month – 16 yrs) Initial management guidelines, Sept 2007 followed?</td>
<td>U&amp;E result recorded in clinical notes/care pathway Weight is recorded on fluid prescription sheet Fluid calculation sheet is completed and indicates 24-hour fluid requirements Volume was appropriate to the patient’s weight and clinical condition. Appropriate IV fluid was prescribed.</td>
<td>Yes</td>
</tr>
<tr>
<td>Reassessment and U&amp;E undertaken a minimum of 24 hourly if the patient is receiving IV fluids, or more frequently if clinically indicated.</td>
<td>Date and time of doctor’s reassessment is recorded on the fluid prescription sheet / clinical notes Reassessment and U &amp; E was undertaken a minimum of 24-hourly or more frequently if clinically indicated</td>
<td>Yes</td>
</tr>
<tr>
<td>Was appropriate action taken as a result of the reassessment?</td>
<td>Was a change in the prescription required i.e. solution, rate etc If required, was the prescription changed appropriately?</td>
<td>Yes</td>
</tr>
<tr>
<td>Were the actions taken clearly documented?</td>
<td>Clear documentation in care pathway / clinical notes re change as above</td>
<td>Yes</td>
</tr>
</tbody>
</table>
| Was the fluid balance chart completed accurately? | Accurately = Legible documentation on:  
- Time  
- Amount and type of oral/enteral feeding,  
- Amount hourly, type, cumulative total, IV site and PP for IV infusion 1  
- Amount hourly, type, cumulative total, IV site and PP for IV infusion 2  
- Output – PU, BO, NG, Vomit, Drain is recorded  
- BM where appropriate  
- Initials or signature of nurse observing IV fluids is clear  
- Total across page is recorded | Yes  
No |
|---|---|---|
| Were incident reporting requirements followed in relation to hospital acquired hyponatraemia? | Na < 135 post admission – reported as a clinical incident  
Na < 130 post admission – reported as a serious adverse incident. | Yes  
No  
NA – normal  
Na at reassessment |

For calculation purposes – not applicable (NA) will be calculated as compliance
APPENDIX 4

Incident Trigger List
Hospital Acquired Hyponatraemia in Children and Young People  
(1 month to 16th Birthday)

The following are clinical incidents and should be reported:

• The use of any IV fluid for bolus, deficit or maintenance other than outlined in the DHSSPS (Sept 2007) Paediatric Parenteral Fluid Therapy Guidelines

• Any episode of hypoglycaemia (<3 mmol/L) while the child or young person is in receipt of IV fluids

• Any episode of hospital acquired hyponatraemia in children receiving IV fluids (i.e. sodium level dropping below 135 mmol/L)

• Failure to record a serum sodium less than 135 mmol/L or failure to document the action taken

• Electrolytes not being checked a minimum of 24 hourly in any child or young person receiving IV fluids

• Failure to record the calculations for fluid requirements on the fluid balance sheet

• Signs and symptoms of hypovolaemia or fluid overload while on IV fluids

In any episode of hospital acquired hyponatraemia where the sodium drops below 130 mmol/L, the relevant risk manager must be contacted immediately and notified of this Serious Adverse Incident

This is not an exhaustive list and other incidents should be reported where staff feel this is appropriate

If a doctor, nurse or pharmacist recognizes any of these triggers, an IRI incident form must be completed. This will help evaluate how the Paediatric Parenteral Fluid Therapy Guideline (Sept 2007) is being implemented and ultimately improve the quality of our service

Implementation date: October 2009
Review date: October 2010
Appendix 5
Incident reporting mechanism

All staff are involved in and contribute to organisational learning through a cyclical process set up within the Trust:-

An incident of hyponatremia will follow through this cyclical process

For example:-

A member of staff reports an incident or identifies a possible risk →

It is entered on the electronic database by staff in the Central Reporting Unit and is graded by the Liaison, Safety and Risk Manager who also quality assures the data entry and ensures that any onward reporting necessary is completed.

All incidents and risks are reviewed by the Liaison, Safety and Risk Manager and the relevant Head of Service in conjunction with other governance staff as relevant. They are also screened by the Incident Review Group on a monthly basis.

If necessary an investigation is commenced. The level of investigation will depend on the severity of the incident or that a trend has been highlighted or because of a performance issue.

The investigation will highlight any actions and learning necessary to prevent recurrence of an incident or to minimise a risk. It will also highlight areas of good practice that could be used in other teams. All investigation reports include an action plan that is submitted to senior staff for regular review on progress at the meetings described below.

→ all incidents are discussed at Head of Service or Clinical Director monthly management meetings and at divisional governance groups on alternate months. In addition, they are considered at directorate senior management governance team meetings monthly and, if necessary,

→ referred to the Trust senior management team, the Trust Risk Management Forum, the Trust Governance Committee, and/or the Trust Board.

At each of these meetings, the action plan and learning points will be reviewed and progress noted. The action plan will remain active until all points have been satisfactorily progressed.

Learning is shared across divisions at directorate monthly groups and through the Governance Key Messages and Learning Bulletins.

The same process is in place to consider issues arising in user views including complaints and commendations.

Staff contribution is therefore welcomed and very important in ensuring that appropriate issues are reported or raised and considered.