



Business Services  
Organisation

## Directorate of Legal Services

— PRACTITIONERS IN LAW TO THE  
HEALTH & SOCIAL CARE SECTOR —

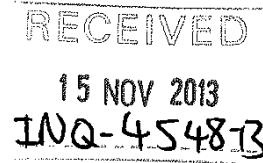
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Your Ref:

Our Ref:  
HYP B04/06

Date:  
14<sup>th</sup> November 2013

Ms Bernie Conlon  
Secretary to the Inquiry  
Inquiry into Hyponatraemia Related deaths  
Arthur House  
41 Arthur Street  
Belfast  
BT1 4GB



Dear Ms Conlon

**RE: INQUIRY INTO HYPONATRAEMIA RELATED DEATHS-DEPARTMENTAL  
AND ADDITIONAL GOVERNANCE SEGMENT**

Further to the above and to the evidence of the representatives from the Belfast Trust on Tuesday 12<sup>th</sup> November, I attach for your attention the following documents:-

1. Standards and Guidelines Committee document entitled '*Policy for the administration of intravenous fluids to children aged from 1 month until the 16<sup>th</sup> birthday: reducing the risk of hyponatraemia*'.
2. Standards and Guidelines Committee document entitled '*Policy for recording fluid prescription and balance charts*'.
3. Document entitled '*Fluid balance/prescription chart audit tool*'.

Yours faithfully

John Johnston  
Solicitor

*Providing Support to Health and Social Care*



**Standards and Guidelines Committee**

***Policy for the administration of intravenous fluids to children aged from 1 month until the 16<sup>th</sup> birthday: reducing the risk of hyponatraemia.***

<b>Summary</b>	<p>This policy outlines the BHSCT approach for administration of intravenous fluids to children aged from 1 month until the 16<sup>th</sup> birthday with particular reference to reducing the risk of hyponatraemia.</p> <p>It maps the advice issued in March 2007 from the National Patient Safety Agency (NPSA) and September 2007 from the Northern Ireland Regional Paediatric Fluid Therapy Working Group on how to reduce the risks associated with administering intravenous infusions to children.</p> <p>This is fundamentally a document aimed at prevention of hyponatraemia and not treatment.</p>
<b>Purpose</b>	To improve the safe use of intravenous fluid in children and reduce the risk of hyponatraemia.
<b>Operational date</b>	June 2011
<b>Review date</b>	June 2014
<b>Version Number</b>	V5.2
<b>Supersedes previous</b>	V4
<b>Director Responsible</b>	Dr AB Stevens, Medical Director
<b>Lead Author</b>	Dr. Peter Crean
<b>Lead Author, Position</b>	Consultant Paediatric Anaesthetist, RBHSC.
<b>Additional Author(s)</b>	Dr H Steen, Associate Medical Director / Dr Julian Johnston
<b>Department / Service Group</b>	Social Services, Family and Child Care
<b>Contact details</b>	<p>Dr Peter Crean Paediatric Intensive Care Unit Royal Belfast Hospital for Sick Children [REDACTED]</p>

<b>Reference Number</b>	
<b>Supersedes</b>	N/A

Date	Version	Author	Comments/ Changes
25 August 2009	V 3.1	JR Johnston	Draft version 3
14 September 2009	V 3.2	JR Johnston	Minor RMcL amendments
16 September 2009	V 3.3	JR Johnston	8.3.4; Appendix 6 changes Final Draft for RQIA
17 September 2009	V 3.4	JR Johnston	4.1; 8.4 - DKA Fluid chart change
17 September 2009	V 3.5	JR Johnston	Appendix 4 changes
February 2010	V 3.6	JR Johnston	Trigger list
	V4		Issue post approval
26 May 2011	V4.1	C Murphy	Review Version 4 - New version Appendices
07/06/2011	V4.2	C Murphy	Consultant only request link Updated Appendix 6
28/06/2011	V4.3	JRJ	Feb 2010 wall chart; Training Hyponatraemia Guidance Note
25/06/2013	V5.2	Forrest	Following Hyponatraemia meeting

#### Policy Record

		Date	Version
Author (s)	Approval	27/03/2008	1.2
Director Responsible - Dr A Stevens	Approval	27/03/2008	1.2

#### Approval Process – Trust Policies

Policy Committee	Approval		
Executive Team	Authorise		
Chief Executive	Sign Off		

#### Approval Process – Clinical Standards and Guidelines

Standards and Guidelines Committee	Approval		1.2
Policy Committee	Approval		
Executive Team	Authorise		
Appropriate Director	Sign Off		

## **Summary**

**Reference No:** SG001/08

**Title:**

***Policy for the administration of intravenous fluids to children aged from 1 month until the 16<sup>th</sup> birthday: reducing the risk of hyponatraemia.***

**Purpose:**

To improve the safe use of intravenous fluid in children and reduce the risk of hyponatraemia.

**Objectives:**

This Policy sets out recommended practice for everyone who looks after children receiving intravenous fluids. It is based on regional and national guidance, ongoing clinical audit, published literature and is also aimed at specifically reducing the risk of hyponatraemia.

It should be considered alongside the guidance from the National Patient Safety Agency Patient Safety Alert 22<sup>1</sup>, and the Regional Paediatric Fluid Therapy Group wallchart<sup>2</sup>.

**Policy Statement(s):**

1. The Paediatric Parenteral Fluid Therapy wallchart<sup>2</sup> forms the basis of BHSCT guidance on fluid prescription in paediatric patients aged from 1 month until the 16<sup>th</sup> birthday.
2. Sodium chloride 0.18% with glucose 4% will be withdrawn from general use in all BHSCT ward areas that treat children and the availability of these fluids will be restricted to critical care areas and other specialist wards such as renal, liver and cardiac units.
3. This policy, the wallchart and a guidance note will be disseminated throughout the BHSCT.
4. Information about the availability of infusion fluids throughout the BHSCT will be available with the Paediatric Fluid Guideline wall chart<sup>2</sup>.
5. The development of new BHSCT paediatric and adult fluid prescription/ balance charts will be completed.
6. All staff involved in prescribing, administering and monitoring IV fluids to such children will be made aware of this policy and the Paediatric Parenteral Fluid Therapy wallchart<sup>2</sup> through the BHSCT intranet and Service Group dissemination.
7. The BHSCT will implement the following governance measures – incident reporting using a set of reporting 'triggers' and formal auditing.

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**Chief Executive/ Director**

**Date:**

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**Author**

**Date:**

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**Full Description**

Reference No: SG001/08

1. ***Policy for the administration of intravenous fluids to children aged from 1 month until the 16<sup>th</sup> birthday: reducing the risk of hyponatraemia.***

2. **Introduction:**

The development of fluid-induced hyponatraemia in the previously well child undergoing elective surgery or with mild illness may not be well recognised by clinicians.<sup>1</sup>

Since 2000, there have been four child deaths following neurological injury from hospital-acquired hyponatraemia reported in the UK.<sup>1</sup> International literature cites more than 50 cases of serious injury or child death from the same cause, and associated with the administration of hypotonic infusions.<sup>1</sup>

In March 2007 the National Patient Safety Agency (NPSA), with Alert 22, issued advice on how to reduce the risks associated with administering infusions to children<sup>1</sup>.

In April 2007, with DHSSPSNI circulars<sup>3,4</sup>, NHS organisations in Northern Ireland were tasked to produce and disseminate local clinical guidelines for the fluid management of paediatric patients based on the suggested NPSA guidelines template. The Northern Ireland Regional Paediatric Fluid Therapy Working Group produced an intravenous fluid clinical guideline (updated in February 2010) in accordance with NPSA guidance<sup>1</sup>. This was disseminated to each HSC Trust for local implementation and monitoring.

In February 2009 the Regulation and Quality Improvement Authority (RQIA) published an independent review "Reducing the risk of hyponatraemia when administering intravenous infusions to children" which dealt with the implementation of recommended actions outlined within the NPSA Alert 22 and dissemination of the clinical guidelines / wall chart throughout HSC Trusts and independent hospitals. (see appendix 7.)

This document, using both the NPSA guidance and the RQIA recommendations, outlines the BHSCT policy for administration of intravenous fluids to children aged from 1 month until the 16<sup>th</sup> birthday with particular reference to reducing the risk of hyponatraemia; it is fundamentally a document aimed at prevention of hyponatraemia rather than treatment.

3. **Purpose:**

To improve the safe use of intravenous fluid in children and reduce the risk of hyponatraemia.

4. **The scope:**

- 4.1 Applicable to all children more than 1 month and until their 16<sup>th</sup> birthday throughout the Belfast Health and Social Services Trust (BHSCT).

It is relevant for all general inpatient areas that treat patients from this age range (even if it is only occasionally) and includes the post-operative scenario, emergency departments, day case departments and the ambulance service.

This policy (and attendant fluid prescription chart) is not intended to apply to paediatric and neonatal intensive care units, specialist areas such as renal, liver and cardiac units where it is used to replace ongoing losses of hypotonic fluids, or those

suffering from burns or diabetic keto-acidosis (DKA) where hypotonic solutions may have specialist indications.

Children receiving long term Total Parenteral Nutrition (TPN) are not covered by the conditions of this policy.

#### 4.2 Young people

As a child progresses through the teenage years there is a transitional stage of physical development i.e. adolescence, as that child progresses through towards adulthood. They will be referred to as 'young people' and many are cared for in adult wards by staff who generally treat adults.

The DHSSPSNI indicates that this paediatric fluid therapy guidance relates to all children from 1 month until their 16<sup>th</sup> birthday, regardless of the ward setting, except in the ICU and specialist areas mentioned above.

#### 5. **Objectives:**

This policy sets out recommended practice for everyone who looks after children receiving intravenous fluids. It is based on regional and national guidance, ongoing clinical audit, the published literature and is also aimed at specifically reducing the risk of hyponatraemia.

It should be considered alongside the guidance from the National Patient Safety Agency Patient Safety Alert 22<sup>1</sup>, and the Regional Paediatric Fluid Therapy Group wallchart<sup>2</sup> and the RQIA recommendations<sup>5</sup>.

#### 6. **Roles and Responsibilities:**

All professionals caring for children must:-

- be familiar with the signs of hyponatraemia.
- be familiar with its emergency management.
- ensure that they have received adequate training in intravenous fluids appropriate to their role.
- if they exclusively care for young people in an adult ward, know where to obtain expert paediatric advice should it be needed. (Appendix 5).
- be familiar with the guidance on intravenous fluids for children outlined by the Regional Paediatric Fluid Therapy Group wallchart<sup>2</sup>.

#### 7. **The definition and background of the policy:**

A child, for the purposes of this policy, is defined as being aged from 1 month up to their 16<sup>th</sup> birthday.

Hyponatraemia is an abnormally low concentration of sodium (Na) in serum. The normal range is generally agreed to be 135 – 145 mmol/L.

Hyponatraemia is defined as a plasma Na of less than 135 mmol/L. It represents an excess of water in relation to sodium in extracellular fluid and is described as severe or significant if below 130 mmol/L.

Significant acute hyponatraemia is defined as a decrease in plasma sodium from normal to less than 130 mmol/L in less than 48 hours.

Symptoms are likely with serum Na <125 mmol/L or if the serum Na has fallen rapidly; greater than 5 mmol/L decline in 24 hours.

The main causes of hyponatraemia in children are:

- Administration of hypotonic fluids, intravenous or enteral (e.g. excessively dilute formula or sodium chloride 0.18% and glucose 4% (No 18 solution))
- Conditions with impaired free water excretion and high anti-diuretic hormone levels
  - Meningitis, encephalitis, pneumonia, bronchiolitis, sepsis
  - Surgery, pain, nausea and vomiting
- Gastrointestinal fluid losses

Less common but important causes are:

- Adrenal insufficiency (Congenital Adrenal Hyperplasia, Addison's Disease )
- Defect in renal tubular absorption, including obstructive uropathy
- Psychogenic polydipsia

The main symptoms of hyponatraemia relate to its central nervous system effects; cerebral oedema, seizures and death. Warning signs may be non-specific and include nausea, malaise and headache.

All children are potentially at risk, even those not considered to be obviously 'sick'. The complications of hyponatraemia often occur because of the inappropriate management of intravenous fluids but they can also occur with inappropriately managed oral fluid regimes. Vigilance is required for all children receiving fluids.

Children particularly at risk are those who are postoperative, have gastrointestinal fluid losses or who have bronchiolitis, CNS injuries or burns. These risk factors also apply to young people.

## 8. Policy / Guideline description:

The NPSA recommended in Alert 22 the following actions:-

1. **Remove 'No. 18 solution'** from general areas that treat children and restrict availability to specialist areas except in critical care and specialist wards such as renal, liver and cardiac units.
2. Produce and disseminate **clinical guidelines** for the fluid management of paediatric patients.
3. Provide adequate **training** and supervision for all staff involved in the prescribing, administering and monitoring of intravenous infusions for children.
4. Review and improve the design of existing intravenous fluid prescriptions and **fluid balance charts** for children.
5. Promote reporting of hospital acquired hyponatraemia **incidents** via local risk management reporting systems. Implement an **audit** programme to ensure adherence to the above.

The 16 RQIA recommendations (appendix 8) map to the above NPSA recommendations:-

NPSA	RQIA
1	1, 2
2	3, (4), 5, 7
3	6, 7, 8, 9, 10
4	11
5	12, 13, 14,
6	15, 16

The specific actions that the BHSCT will institute in order to limit the production of hospital acquired hyponatraemia are detailed below and are mapped to the RQIA recommendations.

### 8.1.1 Remove 'No. 18 Solution'

NPSA 1



*RQIA 1* Sodium chloride 0.18% with glucose 4% has been withdrawn from general use in all BHSCT ward areas that treat children. The availability of these fluids is restricted to critical care areas and other specialist wards such as renal, liver and cardiac units. Areas permitted to stock or order 'No.18 solution' are given in appendix 6.

8.1.2 *NPSA 1  
RQIA 2* Any area that is still permitted to stock 'No. 18' solution will arrange for the provision of additional labelling or separate storage.

8.1.3 *NPSA 2  
RQIA 5* Information about the availability of infusion fluids throughout the BHSCT (Appendix 4) will be available with the Paediatric Fluid Guideline wall chart<sup>2</sup>.

8.1.4 The BHSCT's list of sanctioned standard maintenance fluids is given in Appendix 4.

Where a senior clinician(s) considers that a "special" maintenance infusion fluid is required, then this alternative choice for fluid maintenance must be endorsed by the Chief Executive with clear documentation of the reasons for that endorsement.

## 8.2 *Clinical Guideline*

*NPSA 2  
RQIA 3,5,7* The Paediatric Parenteral Fluid Therapy wallchart<sup>2</sup> (Feb. 2010 version) forms the basis of BHSCT guidance on fluid prescription in paediatric patients within the previously defined age range. This will be disseminated and displayed throughout the BHSCT; to all wards that accommodate children aged from one month until their 16<sup>th</sup> Birthday including Emergency Departments, Adult Wards, Theatre and ICUs.

This will replace any previous wallchart including the 2002 wallchart issued by CMO entitled "Any Child Receiving Prescribed Fluids is at Risk of Hyponatraemia". All previous versions of the chart should be removed.

8.2.1 *NPSA 2  
RQIA 7* The BHSCT will develop policy and guidelines on the general principles of intravenous therapy for adults and children.

Until then, this policy will form the basis of guidance on fluid therapy in children within the BHSCT and, as for all BHSCT policies, it will be reviewed and implemented throughout the organisation.

8.2.3 *NPSA 2  
RQIA 3* All medical and nursing staff should base their intravenous fluid practice for children, young people (and indeed adults) on the following best practice model of:-

- administer appropriate therapy for shock such as fluid boluses
- measure/estimate and correct any fluid deficit
- prescribe a fluid maintenance fluid regime.

Treatment of these elements of the overall fluid status is outlined in the Paediatric Parenteral Fluid Therapy wallchart<sup>2</sup>.

The fundamental layout selected for this guideline complements a structured approach to patient clinical assessment. A sequence of questions is offered that prompts the clinician to

- assess for the presence of shock and guides treatment, if required;
- further assessment of whether there is also a deficit to be considered and then
- calculation and prescribing for maintenance requirements is also included.

8.2.4 This policy, centred on children, has many features that indicate good practice for young people and adults. An intravenous fluid therapy practice based on using

- an individual patient's weight in kilograms
- fluid administration based on a millilitres/hour prescription

is commended rather than blanket prescriptions based only on fluid volume.

#### 8.2.5 Baseline Assessment

Good practice guidelines on monitoring body weight, electrolytes/urea and fluid balance should be followed. Again, these recommendations apply to adults as well as children.

An essential preliminary to these assessments is to accurately measure the body weight in kilograms or failing this, to make an estimate. This must be cross-referenced with the child's age to minimize the risk of error.

In the emergency situation an estimation of the child's weight should be made and an accurate weight obtained as soon as practically possible.

Baseline measurement of electrolytes and urea should be made unless the child is healthy and scheduled for elective surgery when it may be considered unnecessary.

#### 8.2.6 Shock therapy

Shocked or collapsed children must immediately receive fluid boluses as outlined on the Regional Paediatric Fluid Therapy Group wallchart<sup>2</sup>.

Good practice would indicate that the response to fluid therapy is closely observed and if there is no response by the time 40 ml/kg has been administered, senior medical advice and help is required.

Note that special treatment is needed for children with diabetic coma and trauma and the need to obtain senior advice and help is highlighted.

#### 8.2.7 Fluid Deficit management

Calculation of the overall fluid deficit and the prescription of deficit replacement should only be undertaken by a doctor experienced in caring for dehydrated patients. The recommended fluid is sodium chloride 0.9% and it must be prescribed separately. The rate at which it is given is determined by the degree of dehydration and a relevant electrolyte sample.

For those caring for young people in a general adult ward, and who may not have such experience, they should ensure that they can avail themselves of advice from the sources as detailed in Appendix 5.

8.2.8 For advice regarding the estimation of the percentage of dehydration which is required for the fluid deficit calculation, the table in Appendix 2 should be consulted.

#### 8.2.9 Maintenance fluid therapy

When prescribing maintenance fluids to children, young people and adults, the following scheme would be standard practice. For

- children use the calculations as indicated in the Regional Paediatric Fluid Therapy Group wallchart<sup>2</sup>.
- young people and adults prescribe
  - 2 litres fluid for females over the weight of 40 kg.
  - 2.5 litres fluid for males over the weight of 60 kg.

- 8.2.10 The type of fluid selected must be tailored to the patient's needs as set out in the guideline. For example, following surgery, children who require intravenous fluids will be prescribed either sodium chloride 0.9% with or without pre-added glucose or Hartmann's solution in the post-operative period for maintenance fluid needs.
- 8.2.11 Children must not receive intravenous fluids unnecessarily. This guideline emphasises that assessment of each patient should include a decision on whether oral fluid therapy could be appropriately initiated instead of intravenous therapy and further prompts reconsideration of this question when IV therapy is reviewed.
- 8.2.12 This advice does not override or replace the individual responsibility of health professionals to make appropriate decisions in the circumstances of their individual patients, in consultation with the patient and/or guardian or carer or for consultation with a more senior clinician. This would, for example, include situations where individual patients have other conditions or complications that need to be taken into account in determining whether the guidance as detailed in the wallchart<sup>2</sup> is fully appropriate in their case.

### 8.3 Training

NPSA 3  
RQIA  
3,6,8,10

The BHSCT will use various forms of training on paediatric fluid management; didactic lectures, staff induction training and computer based training:-

1. Training 'Powerpoint' presentations in the policies and guidelines section of the Intranet. These multidisciplinary presentations are accessible from any computer terminal within the BHSCT. They cover :-
  - paediatric IV therapy which concludes with a competency assessment section which should be completed by those who may care for children.
  - the methodology for using the paediatric and adult fluid prescription and balance charts.
2. BMJ e-learning module

8.3.1  
NPSA 3  
RQIA 6,8,10

All staff involved in prescribing, administering and monitoring IV fluids to children will be made aware of this policy and the Paediatric Parenteral Fluid Therapy wallchart<sup>2</sup> through the BHSCT intranet and Service Group dissemination.

All staff working exclusively with children and especially those prescribing fluids to children will be encouraged to ensure they are conversant with the knowledge required to prescribe IV fluids to children and that it is within their scope of practice.

They will be encouraged to use the intranet training presentations and the BMJ learning module on hyponatraemia - <http://learning.bmj.com/learning/search-result.html?moduleId=5003358>  
The production of the certificate on completion of the above module may be sought at staff assessments, performance review, personal development plans and appraisals.

8.3.2  
NPSA 3  
RQIA 6,8

All professionals caring for children must be familiar with the signs of hyponatraemia and its emergency management.

8.3.3  
NPSA 3  
RQIA 6,8

For those caring for young people, they should either have received adequate training in intravenous fluids or if they exclusively care for young people in an adult ward, they should know where to obtain such expertise on children should it be needed. (Appendix 5).

Furthermore, they should be familiar with the guidance on intravenous fluids for children outlined in this policy and Regional Paediatric Fluid Therapy Group wallchart<sup>2</sup>.

- 8.3.4 NPSA 3  
RQIA 9 The BHSCT has identified that young people aged 14 - 16 years old can be cared for (even if only occasionally) on most wards that are generally regarded as adult wards with the obvious exceptions of wards like Care of the Elderly. Staff in those locations will be made aware of the training opportunities mentioned in 8.3 and 8.3.1.

BHSCT Service groups continue to consider cohorting young people in dedicated wards - where this can be done safely and will not lead to any diminution in the level of care.

- 8.3.5 The BHSCT will work with the NIMDTA to ensure that the principles of paediatric fluid therapy and its potential risks, as highlighted in the National Patient Safety Agency Alert, are highlighted in postgraduate training programmes.

- 8.3.6 All professionals caring for children must be able to diagnose and manage acute hypoglycaemia.

8.4 Fluid prescription/ balance chart

NPSA 4  
RQIA 11

A new fluid prescription/ balance chart has been developed within the Belfast Trust. It will be used for the prescription of fluids for all children and young people treated in the BHSCT with the exception of treatment of diabetic ketoacidosis (DKA) and acute burns when specialised fluid prescription charts may be used.

A multidisciplinary training presentation in the policies and guidelines section of the Intranet, outlines how the chart should be completed. This presentation is accessible from any computer terminal within the BHSCT.

If needed, they should avail themselves of advice from the sources as detailed in Appendix 5.

- 8.4.1 All children, other than emergencies, must have a blood sample taken for electrolyte and blood glucose estimation before intravenous maintenance fluids are started. This must be repeated at least 24 hourly, more often in the circumstances described. Clinical and other methods of monitoring are outlined in the guidance.

8.4.2 Monitoring

Monitoring of the child receiving parenteral fluid will include considerations of:-

- Body weight to be measured or assessed as a baseline and at least daily thereafter.
- Clinical state to be closely monitored and recorded on a regular basis.
- All fluid intake of any kind (intravenous, oral and medicines) must be measured and recorded on the fluid prescription and balance chart.
- All fluid output of any kind must be assessed. If considered necessary, it should be measured and recorded on the fluid prescription and balance chart.
- Children on intravenous fluids must have any nappies weighed. Children receiving other forms of fluid intake must have any nappies weighed when clinically indicated. If not clinically indicated that nappies are weighed, an estimation e.g. small, moderate or large volume must be made and recorded on the fluid prescription and balance chart.
- An assessment of input/output and need for plasma glucose estimation should be made and documented every 12 hours.
- A formal reassessment of the fluid prescription and the need for intravenous fluids must be made and documented every 12 hours.
- Measurement of E&U and blood glucose/BM should be made at least daily.

- If hyponatraemia exists, these measurements should be 4 – 6 hourly.
- Urinary osmolarity and electrolytes measurements should be considered when dealing with hyponatraemia.
- The ill child will require more frequent and detailed investigations.

For more detailed information about the monitoring requirements the wallchart<sup>2</sup> should be consulted.

8.5  
NPSA 5  
RQIA 12

### **Audit**

The BHSCT will implement the following governance measures.

8.5.1  
NPSA 5  
RQIA 13

The BHSCT clinical biochemistry department will collate, analyse and report quarterly on paediatric hyponatraemia incidents to designated clinicians for children and young people. They will regularly audit these incidents, collate them with the Trust Adverse Incident Reporting System and instigate actions linked to the NPSA Alert 22. Appendix 3a outlines this audit process.

8.6  
NPSA 5  
RQIA 14

### **Incident reporting**

The BHSCT will report these potential adverse incidents related to intravenous infusion through the Trust Adverse Incident Reporting System.

A system of 'triggers' (adapted from those developed by the NHSCT) will be used to

- generate a list of hospital acquired hyponatraemia episodes
- highlight variance from best practice guidance as highlighted in this document
- generate a Trust Adverse Incident Form whenever such incidents occur.

These triggers (Appendix 3b) will cover the choice of fluid prescribed at ward level, charting relevant findings in the medical notes, the frequency of electrolyte analysis and the detection of biochemical abnormalities.

## **9. Additional policy statements:**

9.1 Senior medical advice must be sought when treating the child with hyponatraemia.

9.2 Where additional electrolytes are required, they should only be administered as supplied by the manufacturer and in line with guidance.

Children at or below the age of 13 years must not have electrolytes added to bags of intravenous fluids.

Ordinarily children from 13 to 16 should also not have electrolytes added to bags of intravenous fluids; in certain, predominantly adult areas, children of this age group may have magnesium sulphate or phosphates added.

9.3 Apart from boluses for shocked patients, fluids may only be administered by way of an infusion device. Details of the pump must be recorded on the fluid prescription and balance chart.

9.4 When referring to this policy, staff should consult the BHSCT policy on the management of strong intravenous potassium solutions and/or injections.

## **10. Implementation / Resource requirements:**

The implementation requirements for this policy include:-

- Wallchart production and distribution
- Fluid prescription/ balance chart production and distribution

- Staff training costs – induction, postgraduate courses.
- Audit

Raising staff awareness of the issues surrounding hyponatraemia and the subsequent staff training will be encouraged, as suggested by DHSSPSNI circular<sup>4</sup>, by using the BMJ e-learning module.

**11. Source(s) / Evidence Base:**

The following sources were used:-

- NPSA Alert 22
- NPSA background information <http://www.npsa.nhs.uk/EasySiteWeb/GatewayLink.aspx?allid=5310>
- HSC (SQSD) 20-07 - reducing risk of Hyponatraemia in children (27/04/2007)
- HSC (SQSD) 20-07 - addendum (16/10/2007)
- Paediatric Parenteral Fluid Therapy wallchart.

**12. References, including relevant external guidelines:**

- Reducing the risk of hyponatraemia when administering intravenous infusions to children. National Patient Safety Agency, Patient Safety Alert 22, March 2007.
- Paediatric Parenteral Fluid Therapy initial management guideline, DHSSPSNI 2007. (Revised Feb 2010). [http://www.dhsspsni.gov.uk/hsc\\_sqsd\\_20-07\\_wallchart-2.pdf](http://www.dhsspsni.gov.uk/hsc_sqsd_20-07_wallchart-2.pdf)
- HSC (SQSD) 20-07 Reducing risk of Hyponatraemia in children
- [http://www.dhsspsni.gov.uk/hsc\\_sqsd\\_20-07\\_-\\_addendum.pdf](http://www.dhsspsni.gov.uk/hsc_sqsd_20-07_-_addendum.pdf)
- Regulation and Quality Improvement Authority (RQIA). Reducing the risk of hyponatraemia when administering intravenous infusions to children - September 2008. [http://www.rqia.org.uk/cms\\_resources/NI%20%20report%20Hyponatraemia%20FINAL%20v%203%200.pdf](http://www.rqia.org.uk/cms_resources/NI%20%20report%20Hyponatraemia%20FINAL%20v%203%200.pdf)

**13. Consultation Process:**

This policy is adapted from the

- NPSA Alert 22,
- Northern Ireland Regional Paediatric Fluid Therapy Working Group
- HSC (SQS) 20/2007 and its addendum documentation from the DHSSPSNI.

It has been assured through the Standards and Guidelines committee.

**14. Equality and Human Rights screening carried out:**

In line with duties under the equality legislation (Section 75 of the Northern Ireland Act 1998), Targeting Social Need Initiative, Disability discrimination and the Human Rights Act 1998, the Belfast Trust has carried out an initial screening exercise to ascertain if this policy should be subject to a full impact assessment.

- Screening completed                       Full impact assessment to be carried out.  
No action required.

**15. Procedures:**

- Appendix 1 - Paediatric Parenteral Fluid Therapy wallchart (Feb. 2010 version)
- Appendix 2 Estimating the percentage dehydration based upon physical examination findings.
- Appendix 3a - Paediatric Hospital Acquired Hyponatraemia Audit
- 3b - Triggers for potential adverse events
- Appendix 4 - Availability of intravenous fluids throughout the BHSCT (500ml bags)
- Appendix 5 - Sources of advice regarding Paediatric fluid therapy
- Appendix 6 - Areas permitted to stock/order fluids containing Sodium Chloride 0.18%
- Appendix 7 - Hyponatraemia Guidance Note – April 2011.
- Appendix 8 - RQIA independent review - September 2008 – Recommendations

Director  
Date:

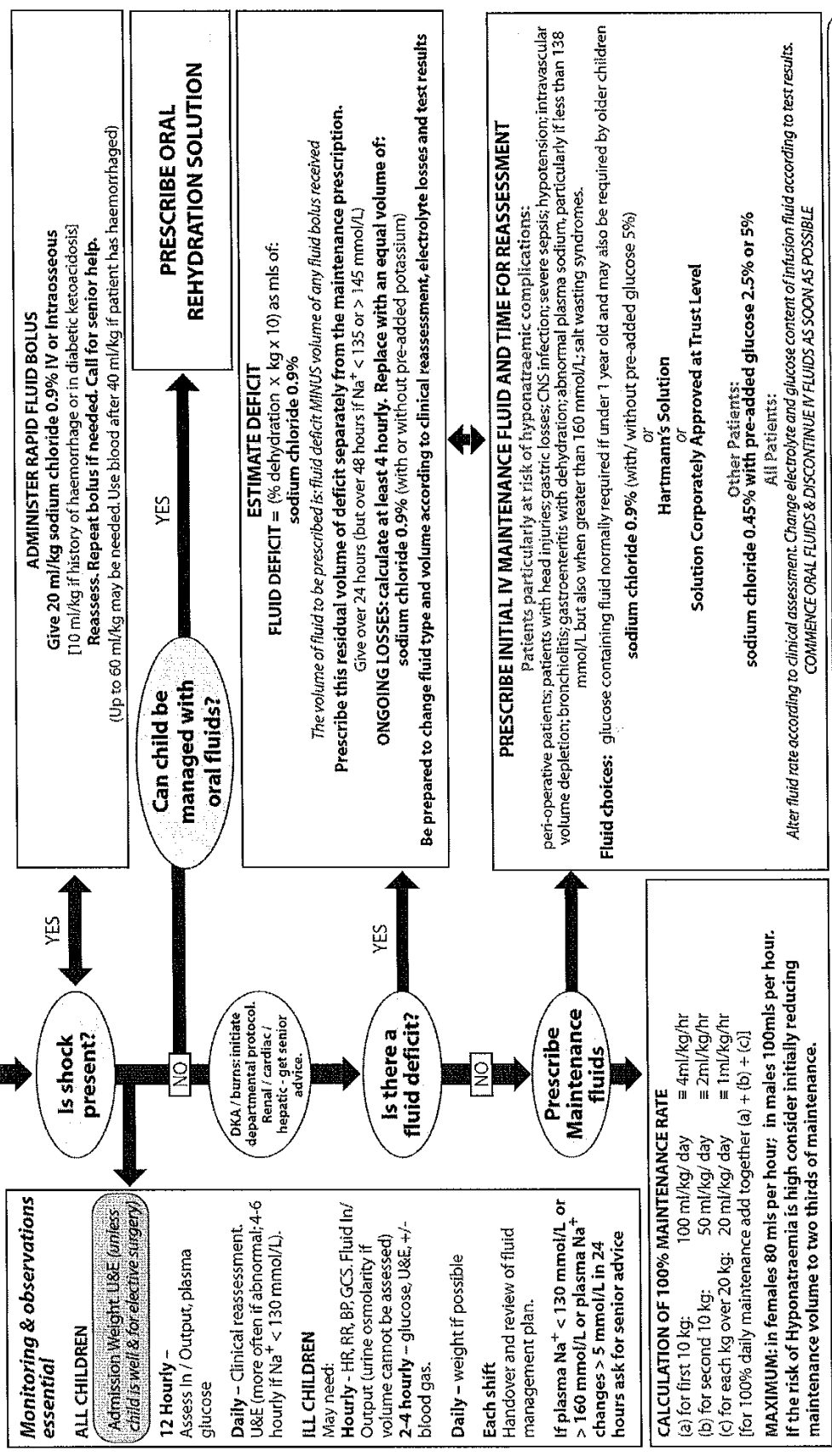
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# PARENTERAL FLUID THERAPY for CHILDREN & YOUNG PERSONS (AGED OVER 4 WEEKS & UNDER 16 YEARS)

*Initial management guideline*



Sept 2007  
Amended February 2010



**Hypokalaemia** ( $< 3.5$  mmol/L): Check for initial deficit. Maintenance up to 40 mmol/L IV potassium usually needed after 24 hrs using pre-prepared potassium infusions as far as possible. Consult Trust Policy on IV strong potassium.

**Oral Intake and Medications:** volumes of intake, medications & drug infusions must be considered in the fluid prescription.

**Hypoglycaemia** ( $< 3$  mmol/L): Medical Emergency: give 5 ml/kg bolus of glucose 10%. Review maintenance fluid, consult with senior and recheck level after 15-30 mins. INTRA-OPERATIVE PATIENTS: consider monitoring plasma glucose.

**Symptomatic Hyponatraemia:** check U&E if patient develops nausea, vomiting, headache, irritability, altered level of consciousness, seizures or apnoea. This is a Medical Emergency and must be corrected. Commence infusion of sodium chloride 2.7% at 2 ml/kg/hour initially and get senior advice immediately.

Appendix 2**Estimating the percentage dehydration based upon physical examination findings.**

<b>Estimated Percentage Dehydration</b>	<b>Physical Examination Findings</b>
<3	History of fluid loss but no findings on physical examination
5	Dry oral mucous membranes but no panting or pathological tachycardia
7	Mild to moderate decreased skin turgor, dry oral mucous membranes, slight tachycardia, and normal pulse pressure.
10	Moderate to marked degree of decreased skin turgor, dry oral mucous membranes, tachycardia, and decreased pulse pressure.
12	Marked loss of skin turgor, dry oral mucous membranes, and significant signs of shock, pallor, cool peripheries, prolonged capillary refill time, hypotension, confusion.



Hyponatraemia Low Sodium Audit  
Agreed Audit Process

1. Biochemistry Department will collate and provide SQA with a quarterly report on all laboratory results where the serum sodium is <130mmol/l.
2. SQA Dept will identify patient list to be audited:
  - All Hyponatraemia cases occurring on Adult wards.
  - RBHSC patients aged between 1 month and 16 years.  
(Exclusions: *Paediatric ICU, RBHSC A&E*)
3. A random sample of 12 RBHSC patients per 3 month period to be selected to facilitate case note review of 10 cases.
4. SQA to agree suitable date and support with Clinical Leads re: data collection.
5. SQA Dept to request case notes from Medical Records.
6. SQA Dept to provide audit proforma (*see attached*), the case notes to be audited and support required on the date agreed for data collection.
7. SQA Dept will establish if incident forms have been completed and submitted (*where appropriate*) to Risk and Governance Dept.
8. SQA Dept to analyse data and produce regular quarterly reports to the Hyponatraemia Project Group.
9. Results of Hyponatraemia Low Sodium Audit to be fed back to the relevant Governance/Audit meetings for action.

SQA = Standards, Quality and Audit Department

## PAEDIATRIC HOSPITAL ACQUIRED HYPONATRAEMIA AUDIT

### Laboratory Report Details (to be completed by audit dept)

Patient No.: \_\_\_\_\_ Patient Date of Birth: \_\_\_\_\_  
 Date of specimen: \_\_\_\_\_ Time of specimen: \_\_\_\_\_ Result : \_\_\_\_\_

### Admission Details

Date of admission: \_\_\_\_\_ Time of admission: \_\_\_\_\_  
 Diagnosis: 1. \_\_\_\_\_  
 2. \_\_\_\_\_

### Hospital acquired hyponatraemia (defn)

- Na =130mmol/l at time of admission, & a subsequent Na of < 130mmol/l whilst on IV fluids.
- Na < 130mmol/l on their initial U&E's, where the U&E's are done >48hrs after admission and they are on IV fluids.
- Admitted from another hospital with Na < 130mmol/l at time of admission whilst on IV fluids.

1. Is this hospital acquired hyponatraemia? Yes / No  
 If no, reason: \_\_\_\_\_  
 If yes, was it acquired whilst in this trust? Yes / No  
 If no, patient transferred from: \_\_\_\_\_

### Prescription and monitoring of IV Fluids prior to Na <130

2. Was IV fluid prescribed? Yes/No (If no, go to Q9)  
 3. Was the fluid prescribed appropriate? Yes / No  
 If no, details: \_\_\_\_\_  
 4. Was IV fluid prescription reviewed 12hrly whilst on IV fluids? Yes / No  
 5. Were U&E done 24hrly whilst on IV fluids? Yes / No

### Following the Na of <130mmol/l,

6. Was appropriate advice sought? Yes / No  
 Grade: \_\_\_\_\_ Speciality: \_\_\_\_\_  
 7. Was the frequency of repeat U&Es appropriate? Yes / No  
 If No, details: \_\_\_\_\_  
 8. Was appropriate action taken? Yes/No  
 If no, details: \_\_\_\_\_

### Recording and communication of incidents (to be completed by Audit dept)

9. If yes to Q1, was adverse incident form completed? Yes / No  
 10. Was copy of form sent to other trust if acquired outside BHSCT? Yes / No

**Triggers for potential adverse events related to the administration of Intravenous Fluids to Children (1 month – to 16<sup>th</sup> Birthday)**

**If any one of these occurs an Incident Report Form must be completed.**

CHOICE OF IV FLUID

1. Bolus fluid: use of a solution with sodium concentration of <130mmol/L for treatment of shock.
2. Deficit fluid \*: use of a solution with sodium concentration of <130mmol/L for correction.
3. Maintenance fluid: use of a solution with sodium concentration of <130mmol/L in a peri-operative patient (intraoperative period and first 24 hours following surgery).

\* In diabetic ketoacidosis and burns: follow departmental protocol

BIOCHEMICAL ABNORMALITIES

4. Any episode of symptomatic hyponatraemia while in receipt of IV fluids.
5. Any episode of hypoglycaemia (blood glucose less than 3mmol/L) while in receipt of IV fluids.
6. Any episode of severe acute hyponatraemia (i.e. sodium level dropping from 135mmol/L or above to < 130mmol/L within 24hrs whilst on IV fluids).

ASSESSMENT

7. Failure to check electrolytes at least once per 24 hours in any patient receiving IV fluids over the majority of a 24 hour period.
8. Failure to record the calculations for fluid requirements on the fluid balance and prescription sheet.
9. Failure to note in the case notes, fluid balance and prescription sheet a serum sodium of <130mmol/L.
10. Failure to document in the case notes the steps taken to correct a serum sodium of < 130mmol/L.

## Appendix 4

**Availability of intravenous crystalloid fluids (500mls) for use in paediatric patients from BHSCT Pharmaceutical Services.**

<b>Name of fluid</b>	<b>Comments</b>
<b>Sodium Chloride solutions</b>	
Sodium chloride 0.45%	Treatment of hypernatraemia
Sodium chloride 0.9%	
Sodium chloride 1.8%	
Sodium chloride 2.7%	Emergency treatment of hyponatraemia & head injury
<b>Combined solutions</b>	
Sodium chloride 0.45% glucose 5%	
Sodium chloride 0.45% glucose 2.5%	
Sodium chloride 0.9% glucose 5%	
<b>Glucose solutions</b>	
Glucose 5%	
Glucose 10%	
Glucose 20%	
Glucose 50%	
<b>Potassium containing solutions</b>	
Sodium chloride 0.18% glucose 10% 10mmol Potassium chloride <b>Commonly known as Basic Solution</b>	<b>Pyloric stenosis patients ONLY</b>
Sodium chloride 0.45% glucose 2.5% 10mmol Potassium chloride	
Sodium chloride 0.45% glucose 5% 10mmol potassium chloride	
Sodium chloride 0.45% glucose 5% 20mmol potassium chloride	
Sodium chloride 0.9% 10mmol potassium chloride	
Sodium chloride 0.9% 20mmol potassium chloride	
Sodium chloride 0.9% glucose 5% 10mmol potassium chloride	<b>Recommended for DKA protocol</b>
Sodium chloride 0.9% glucose 5% 20mmol potassium chloride	<b>Recommended for DKA protocol</b>
Sodium chloride 0.9% 10% glucose 10mmol potassium chloride	<b>For DKA protocol ONLY</b>
Sodium chloride 0.9% 10% Glucose 20mmol potassium	<b>For DKA protocol ONLY</b>
Dipotassium hydrogen phosphate in Sodium chloride 0.9% (20mmol potassium : 10mmol phosphate)	<b>Treatment of hypophosphataemia</b>
<b>Miscellaneous</b>	
Sodium bicarbonate 1.26% polyfusor	
Sodium bicarbonate 8.4% polyfusor (200mls)	Emergency use only
Sodium compound (Hartmann's)	

If it is necessary to prescribe a fluid containing sodium chloride 0.18% then a consultant request form should be completed and sent to Pharmacy.

It can be printed from the Policies and Guidelines section of the BHSCT Intranet, (under Clinical → under Hyponatraemia).

Please note that to avoid any delay to the patient receiving the fluid, Pharmacy must be contacted as soon as possible after the decision is made to prescribe it.

## Appendix 5

**Sources of advice regarding Paediatric fluid therapy**

For help and advice regarding

- management of fluid therapy
- especially to prevent and/or treat hyponatraemia

in all children, but especially for those children aged 13 – 16 years old being managed in adult wards.

Please use the following sources of help and advice in the order they appear in the table. Ordinarily, advice should be for complex cases and should be Consultant to Consultant discussions even though contact will often have to be made through trainee on-call rotas.

Team	Address		Extension
<b>RBHSC Paediatricians</b>	Paediatric On Call Rota	Allen Ward	Bleep [REDACTED]
<b>RBHSC Paediatric ICU</b>	Paediatric ICU		[REDACTED]
<b>Musgrave Park</b>	Orthopaedic theatre – Anaesthesia team during working hours.		
<b>BCH Dufferin theatres</b>	ENT theatre – Anaesthesia team during working hours.		
<b>General Biochemistry</b>	<b>Clinical Biochemistry</b>		
	<b>Inside working hours</b>	<b>Outside working hours</b>	
RVH Tie line: [REDACTED] Ext. [REDACTED]	Ext. [REDACTED]	Contact Medical doctor on call either via the laboratory or via switchboard.	
BCH Tie line: [REDACTED] Ext. [REDACTED]	Ext. [REDACTED]	Ext. [REDACTED] or Contact Medical doctor on call either via the laboratory or via switchboard	
MIH Tie line: [REDACTED] Ext. [REDACTED]	Ext. [REDACTED]	Contact Medical doctor on call either via the laboratory or via switchboard	

Other sources of help are:

- 1 APA consensus guideline on perioperative fluid management in Children  
[http://www.apaqbi.org.uk/sites/apaqbi.org.uk/files/Perioperative\\_Fluid\\_Management\\_2007.pdf](http://www.apaqbi.org.uk/sites/apaqbi.org.uk/files/Perioperative_Fluid_Management_2007.pdf)
- 2 Royal Children's hospital Melbourne Clinical Practice Guidelines  
Intravenous fluids  
[http://www.rch.org.au/clinicalguide/cpg.cfm?doc\\_id=5203#Other%20Resources](http://www.rch.org.au/clinicalguide/cpg.cfm?doc_id=5203#Other%20Resources)
- 3 Royal Children's hospital Melbourne Clinical Practice Guidelines:  
Hyponatraemia  
[http://www.rch.org.au/clinicalguide/cpg.cfm?doc\\_id=8348](http://www.rch.org.au/clinicalguide/cpg.cfm?doc_id=8348)

Standards & Guidelines Committee – Hyponatraemia + IV fluids for children – V5.2 – 24/04/2013

Appendix 6Areas where it is permitted to stock/order fluids containing Sodium Chloride 0.18%

SERVICE GROUP	SITE	SPECIALITY	Stock on Ward	Fluid
Specialist Hospitals	RBHSC	PICU	X	No.18 solution*
Specialist Hospitals	RBHSC	Barbour Ward	X	Basic solution**

\* "No. 18 solution" = sodium chloride 0.18% and glucose 4%

\*\* Basic solution = sodium chloride 0.18%, glucose 10%, potassium chloride 10mmol

**Wards are not permitted** to transfer fluids containing sodium chloride 0.18% from areas allowed to stock to other areas.

*Exception*

Barbour Ward is permitted to transfer 'Basic Solution' to pyloric stenosis outliers within RBHSC. In these instances, the consultant only request form should still be completed for the specific patient and sent to Pharmacy.

**Consultant only request**

Other wards requiring a supply of any solution containing sodium chloride 0.18% must complete a consultant only request form – available on the Trust intranet at

<http://intranet.belfasttrust.local/Policies%20and%20Procedures/Hyponatraemia%20%E2%80%93%20Reducing%20the%20risk%20-%20Consultant%20request%20form%20for%20No%2018%20solution.pdf>

In the event that the consultant is unavailable to sign the form then a doctor, under the specific request of a named consultant, should complete the form; add their own name, signature and designation and include the name of the consultant who has requested the IV fluid. This form must then be signed by that consultant at the earliest opportunity.

Only the estimated quantity needed to treat the patient should be ordered.

The completed consultant only request form, together with a requisition for the fluid, should be sent to pharmacy.



**RQIA INDEPENDENT REVIEW - SEPTEMBER 2008 - RECOMMENDATIONS**

- Recommendation 1 All hospitals should monitor the ongoing use of No. 18 solution to enable assurance that infusions are removed from stock and general use in areas that treat children.
- Recommendation 2 Where appropriate, hospitals must be able to demonstrate that an active strategy is in place for minimising risk of use in clinical areas that continue to stock No 18 solution and where children are accommodated. For example, provision of additional labelling or separate storage for those No.18 solution bags still stocked in such clinical areas.
- Recommendation 3 All hospitals should continue with the ongoing work of disseminating clinical guidelines. This should be undertaken in conjunction with multidisciplinary awareness-raising and education on the use of the guidance and wall chart in all settings where children may be treated. This is particularly important in adult wards where older children are treated.
- Recommendation 4 Independent hospitals must be assured that all visiting doctors who may manage patients up to 16 years old use the clinical guidelines when managing children being treated with intravenous infusions.
- Recommendation 5 All hospitals should ensure that only the DHSSPS Paediatric Parenteral Fluid Therapy wall-chart *issued by DHSSPS in October 2007* is displayed in clinical areas where children may be treated, with a list of available local fluids available alongside it. All previous versions of the wall chart should be removed from clinical areas.
- Recommendation 6 Hospitals should assure themselves that staff have the appropriate skill and knowledge in this clinical area. Competency assessment tools in administration of intravenous infusion to children should be developed, formalised and implemented for all relevant, multi-professional staff.
- Recommendation 7 Hospitals should continue to review, collaborate and implement organisation wide policy and guidelines, in relation to intravenous infusion for children.
- Recommendation 8 All hospitals should ensure that the development and provision of multidisciplinary education opportunities in administration of intravenous infusion to children and that all relevant clinical staff uptake this education.
- Recommendation 9 Hospitals should develop mechanisms to identify the location of patients aged 14-16 years who are in adult wards and ensure staff who care for those children are provided with competency based, assessed education in administration of intravenous infusion to children.
- Recommendation 10 All hospitals should make wider use of training sources available such as BMJ E-Learning Module on Hyponatraemia to address different learning styles and devise a mechanism to ensure 100% multi-professional uptake of such learning.
- Recommendation 11 Priority must be given to the completion of a Trust-wide review, and implementation of revised paediatric intravenous fluid prescription and fluid balance charts in all settings where children may be treated including adult wards where children are treated.
- Recommendation 12 All hospitals should develop a culture of incident reporting, analysis and learning generally and specifically in respect of intravenous fluids and hyponatraemia.
- Recommendation 13 Plans for development of systems for reporting, analysing and monitoring incidents to assure organisations of safe practice and that actions linked to NPSA Alert 22 should be implemented and regularly audited by all hospitals to ensure adherence to the process.
- Recommendation 14 The development of 'trigger lists' that have been adopted by a the Antrim Area Hospital to aid understanding of the types of incidents to be reported should be shared and taken up more widely .
- Recommendation 15 The development of an audit tool which may include wider aspects but should address as a minimum aspects of NPSA Alert 22 should continue to be progressed and used at least annually.
- Recommendation 16 Trusts should continue to seek approval and funding for a regional audit (GAIN proposal) on the uptake of the Paediatric Parenteral Fluid Therapy guideline and potential unexpected clinical consequences of the guideline.



**Standards and Guidelines Committee**

**Policy for recording fluid prescription and balance charts**

Summary	Processes to ensure the appropriate use and correct recording, maintenance and completion of fluid prescription and balance charts.
Purpose	To ensure the appropriate use and correct recording, maintenance and completion of fluid prescription and balance charts & to improve the standards and rigour of these records.
Operational date	January 2011
Review date	January 2014
Version Number	V3.7c
Director Responsible	Ms Brenda Creaney, Director of Nursing
Lead Author	Ms Audrey Dowd
Lead Author, Position	Senior Manager Nursing
Additional Author(s)	Olive Macleod
Department / Service Group	Nursing
Contact details	<div style="background-color: black; width: 100px; height: 15px; display: inline-block;"></div> <i>Trust Headquarters Knockbracken</i> <div style="background-color: black; width: 200px; height: 15px; display: inline-block;"></div>

Reference Number	SG016/08
Supersedes	V 3.0

**Version Record**

Date	Version	Author	Comments
Dec 2007	V1.0	Olive Macleod	Initial draft
June 2008	V2.0	Mary McElroy	Final Draft
20/08/2008	V2.1	JR Johnston	Amendments
02/09/2008	V3.0	C Murphy	Assigning whole number
June 2010	V3.1	Audrey Dowd Olive Macleod	Update
July 2010	V3.2	O Macleod	Amendments
August 2010	V3.3	JR Johnston	Formatting
Jan 2011	V3.4	O Mac/A Dowd	Amendments
March 2011	V3.5	J Flannigan	Addition of midwifery
June 2011	V3.6	JRJ, AD	Following new Fluid chart
February 2013	V3.7	David Robinson / AD / JRJ	Following Hyponatraemia meeting

**Policy Record**

		Date	Version
Author (s)	Approval		
Director Responsible	Approval		

**Approval Process – Clinical Standards and Guidelines**

Standards and Guidelines Committee	Approval	09/03/2011	V3.4
Policy Committee	Approval	21/03/2011	V3.5
Executive Team	Authorise	25/03/2011	V3.5
Appropriate Director	Sign Off	28/03/2011	V3.5

## Full Description

Reference No: SG016/08

### **1 Policy for recording fluid prescription and balance charts**

#### **2 Introduction**

The need for improved record keeping in relation to fluid prescription and balance charts has been a key theme emerging both locally and nationally and is a priority for safe and effective care. The data recorded on fluid prescription and balance charts is used to inform clinical decisions about treatment and care. Therefore it is essential that the information is both accurate and timely. Early recognition of fluid imbalance can ensure that prompt, appropriate treatment is delivered to patients.

#### **3 Purpose:**

To ensure the appropriate use and correct recording, maintenance and completion of fluid prescription and balance charts & to improve the standards and rigour of these records.

#### **4 The scope:**

This policy will apply to all Trust clinical employees in both adult and children's services.

#### **5 Objectives:**

To

- promote the correct use and completion of fluid prescription and balance charts.
- provide guidance to Trust employees to ensure accurate, timely information is recorded consistently.
- promote best evidence-based practice in relation to fluid prescription and balance records thus ensuring high quality, safe and effective care is delivered to all patients.

#### **6 Roles and Responsibilities:**

It is the responsibility of all clinical Trust employees to adhere to this policy

#### **7 The definition and background of the policy:**

Fluid balance is the recording of all the input to and all the output from a patient and then balancing their sum, including consideration of insensible loss and the general health status of the patient.

The BHSCT fluid prescription and balance charts enable the prescription and the recording of administration of all forms of fluid input and output. These charts enable this to be done for patients with a wide range of illnesses, from the simple to complex. As indicated in the training presentations (adult and paediatric) on the BHSCT intranet, some patients may only require simple recording of oral intake while some may need cumulative totalling of all fluid inputs and outputs both for each fluid and hourly along with an hourly overall balance. That means, not all patients need cumulative fluid totalling and the decision regarding the complexity of recording required will vary with each patient and with local unit/hospital policy. Guidance is available in the training presentations.

Fluid input is generally in the form of oral/gastrointestinal intake and intravenous intake.

Fluid losses take the form of urine output, gastrointestinal (vomiting, stomal and wound drainage), haemorrhage (both visible and hidden) and insensible (which can increase dramatically with a pyrexia) plus other losses often from drains of various sorts.

In health, the input and output are balanced. When they are not, the overall balance must be calculated from measurement of the input/output and then the fluid deficits or excesses corrected. This requires attention to detail and manpower to record the necessary data to be able to make the calculations.

## **8 Policy Statements:**

- 8.1 The decision to commence, continue or discontinue recording of fluid prescription and balance charts will be taken by the doctor or the registered nurse/midwife with responsibility for the patient's care. This will be reviewed daily.
- 8.2 The registered nurse/midwife who has been assigned to provide care for patient/s over the period of day, night or partial shift has the responsibility for ensuring that all fluid prescription balance records are accurate and complete at the time of handover.
- 8.3 Children under 16 years old must have the paediatric fluid prescription and balance chart completed. From their 16<sup>th</sup> birthday the adult chart must be used.
- 8.4 The following groups of patients may use different fluid prescription and balance charts. Those:-
  - cared for in ICUs, HDUs, specialist units.
  - with diabetic ketoacidosis.
  - with acute burns.
- 8.5 The fluid prescription and balance chart will commence at 08:00hrs for a full 24-hour period.
- 8.6 The name, address, hospital number and location must be clearly identified on the prescription and balance chart (using addressograph labels if available) along with the date. These details need completed on both sides of the chart.
- 8.7 Record the patient's weight on the back of the prescription and balance chart. This must be a recently measured weight. When it is not possible to weigh the patient, an estimation should be made with agreement between medical and nursing staff and documented in the patients notes.
- 8.8 All intake and measureable output of fluids must be recorded in millilitres.
- 8.9 Oral intake will be recorded contemporaneously. Cumulative totals will be maintained when indicated by the clinical condition of the patient or, as prescribed.
- 8.10 All patients receiving intravenous fluid must have their input measured and recorded on the fluid prescription and balance chart. Children receiving long term TPN may be an exception unless clinically indicated.
- 8.11 All intravenous fluids will be recorded on an hourly basis and can be identified either by their name or by using a letter (a, b, c, etc). Cumulative totals will be maintained when indicated by the clinical condition of the patient or, as prescribed.

- 8.12 All intravenous medications that are delivered in a fluid solution e.g. antibiotics, analgesia, will have fluid volume recorded contemporaneously on the fluid prescription and balance chart.
- 8.13 When infusion devices are used the infusion pump details (model name and serial number) should be recorded.
- 8.14 All enteral feeding will be recorded on an hourly basis. Cumulative totals will be maintained when indicated by the clinical condition of the patient or, as prescribed.
- 8.15 All patients must have their fluid output assessed. If considered necessary a fluid prescription and balance chart should be commenced and fluid output measured and recorded. All children under 16 years should be on a fluid prescription and balance chart.

If intravenous fluids have been started, all patients should have their urine output measured and recorded.

In patients on IV fluids, where accurate urine output measurement is difficult e.g. With incontinence etc. – nappies/pads must be weighed and recorded on the fluid prescription and balance chart and consideration given to placement of a urinary catheter.

The recording of output as PU or PUT is discouraged and the weighing of nappies is encouraged. Children on intravenous fluids must have any nappies weighed. Children receiving other forms of fluid intake must have any nappies weighed when clinically indicated.

- 8.16 Urinary catheters attached to continuous drainage bags will have the total output recorded at the end of each shift (minimum requirement) or as the need arises to empty drainage bag.
- 8.17 Where hourly urometer measurement is indicated and in use, cumulative totals will be maintained.

Patients with a low urinary output will be identified urgently to senior medical, midwifery and nursing staff and action taken in accordance with EWS.

- 8.18 Record the previous day's input, output and balance values. All completed fluid prescription and balance charts (from previous days) will be retained in the patient clinical notes.
- 8.19 Patients and their families, where appropriate, will be informed about the need to record fluid intake and output and encouraged to help in keeping an accurate record.

**9 Source(s) / Evidence Base:**

- 1. Legacy Trust Policy
- 2. Royal Marsden hospital Manual of clinical Nursing Procedures 6<sup>th</sup> Ed

**10 References, including relevant external guidelines:**

- Royal Marsden hospital Manual of clinical Nursing Procedures 6<sup>th</sup> Ed
- <http://www.nmc-uk.org/>

**11 Consultation Process:**

- Associate Directors of Nursing, Service Group Directors, Trade Unions & Standards & Guidelines committee

**12 Equality and Human Rights screening carried out:**

In line with duties under the equality legislation (Section 75 of the Northern Ireland Act 1998), Targeting Social Need Initiative, Disability discrimination and the Human Rights Act 1998, the Belfast Trust has carried out an initial screening exercise to ascertain if this policy should be subject to a full impact assessment.

Screening completed  
No action required.

Full impact assessment to be carried out.



\_\_\_\_\_  
**Director:**

\_\_\_\_\_  
**Author:**

**Date:**

**Date:**

# FLUID PRESCRIPTION/BALANCE CHART AUDIT

Date	Ward/Dept
------	-----------

	Is the patient clearly identified on ALL fluid prescription sheets?	Is the patients weight recorded?	Is the U&E documented?	Is the input and output documented accurately?	Has the IV fluid prescription been reviewed 12hrly whilst on IV fluids? (Record 1 if NA)	Was the guidance for intravenous therapy completed?	Was the blood glucose recored?	Full Compliance	
<b>Record Yes-1 No-0</b>									
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
<b>TOTAL AUDITS</b>								<b>0</b>	<b>TOTAL COMPLIANCE</b>