

20-A

**DHSSPS / HSC MEDICAL LEADERS' FORUM**  
**30 APRIL 2012, 13.00 – 16.00**  
**D2 LECTURE THEATRE, CASTLE BUILDINGS, BELFAST**

**AGENDA**

Apologies

**PART I STRATEGIC ISSUES**

Items	Papers
1. Medical Leadership Programme Proposal – David Bingham	5/12
2. HSC R&D Evaluation – Professor B Hannnigan- presentation	6/12
3. Healthcare Associated Infections <ul style="list-style-type: none"><li>• Changing Epidemiology – Dr J Johnston, Dr L Geoghegan</li><li>• NI Regional Infection Control Manual – Dr Ciaran O'Gorman</li></ul>	Pres Pres
4. Trauma – Transfer of Patients to Royal Victoria Hospital Dr H Livingston – presentation	7/12
5. Regional Fluid Balance Chart - Dr Julian Johnston	

**PART II**

- |    |   |      |
|----|---|------|
| 6  | Introduction  |      |
|    | Chairman's Business   |      |
|    | • Pseudomonas<br><a href="http://www.dhsspsni.gov.uk/index/pressoffice/iropinu.htm">http://www.dhsspsni.gov.uk/index/pressoffice/iropinu.htm</a>  |      |
|    | • Guidance on Death, Stillbirth and Cremation Certification (HSS(MD)14 /12) – Re issue<br><a href="http://www.dhsspsni.gov.uk/hss-md-14-2012.pdf">http://www.dhsspsni.gov.uk/hss-md-14-2012.pdf</a> |      |
|    | • Radiology – Review Phase 2  |      |
| 7. | Minutes of previous meeting   | 8/12 |
| 8  | Update on Outstanding Action Points   | 9/12 |
| 9  | Any Other Business  |      |

**Diary Dates for 2012**

**25<sup>th</sup> June, 3<sup>rd</sup> September, 5<sup>th</sup> November**

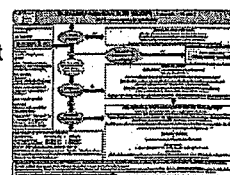
# Paediatric intravenous fluid therapy & Hyponatraemia Standards & Guidelines Committee

4 April 2011



## Warning !

- ❖ This presentation outlines the **basics** of paediatric fluid prescription.
- ❖ It is based on the Paediatric Parenteral Fluid Therapy wallchart.
- ❖ It will
  - ❖ make the reader aware of the changes required after NPSA alert 22.
  - ❖ outline the symptoms and signs of hyponatraemia
  - ❖ describe the principles of basic paediatric fluid management
  - ❖ introduce the new paediatric fluid prescription chart
  - ❖ indicate the criteria for local incident reporting
  - ❖ Provide the sources of help and advice



- ❖ Please refer to the wallchart for more **detailed** guidance.

- ❖ 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.

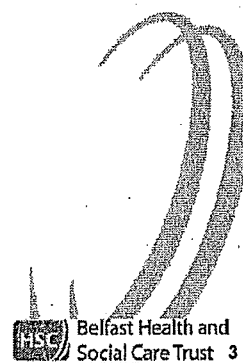
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## Background

- ❖ Paediatric deaths
- ❖ Inquests
- ❖ Public Inquiries: O'Hara
- ❖ RQIA
- ❖ Chief Medical Officer
- ❖ GAIN
- ❖ NPSA Alert 22

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## NPSA alert 22

### Patient safety alert

22

- 1 Remove sodium chloride 0.18% with glucose 4% intravenous infusions from stock and general use in areas that treat children. Suitable alternatives must be available. Restrict availability of these intravenous infusions to 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. These should give clear recommendations for fluid selection, and clinical and laboratory monitoring.
- 3 Provide adequate training and supervision for all staff involved in the prescribing, administering and monitoring of intravenous infusions for children.
- 4 Reinforce safer practice by reviewing and improving the design of existing intravenous fluid prescriptions and fluid balance charts for children.
- 5 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.

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## NPSA alert 22

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## DHSSPSNI Wallchart

Safety, Quality and Standards Directorate  
Office of the Chief Medical Officer

Department of Health, Social Services and Public Safety  
www.dhsspsni.gov.uk

in name  
Stáinute, Seirbhíde Sábháilte agus Sábháilteachtá Poblá  
in name  
Fosúille, Reasúntaire Heáin an Fovk Sionar

For Action:  
Medical Directors, HSC Trusts – for immediate cascade of wallchart

Chief Executive, RQIA – for immediate cascade to Independent Hospitals, Hospices and relevant regulated establishments

For Information:  
Chief Executives, HSC Boards & HSC Trusts  
Directors of Pharmacy, HSC Boards & HSC Trusts  
Directors of Nursing, HSC Boards & HSC Trusts  
Chair, Regional Paediatric Fluid Therapy Group  
NI Medicines Governance Team  
Chief Executive, RQIA  
Chief Executive, NIMDTA

Castle Buildings  
Stormont Estate  
Belfast  
BT6 5SQ

Tel: [REDACTED]  
Fax: [REDACTED]  
Email: [REDACTED]  
Our Ref: HSC (SQSD) 2007  
Date: 05 March 2008

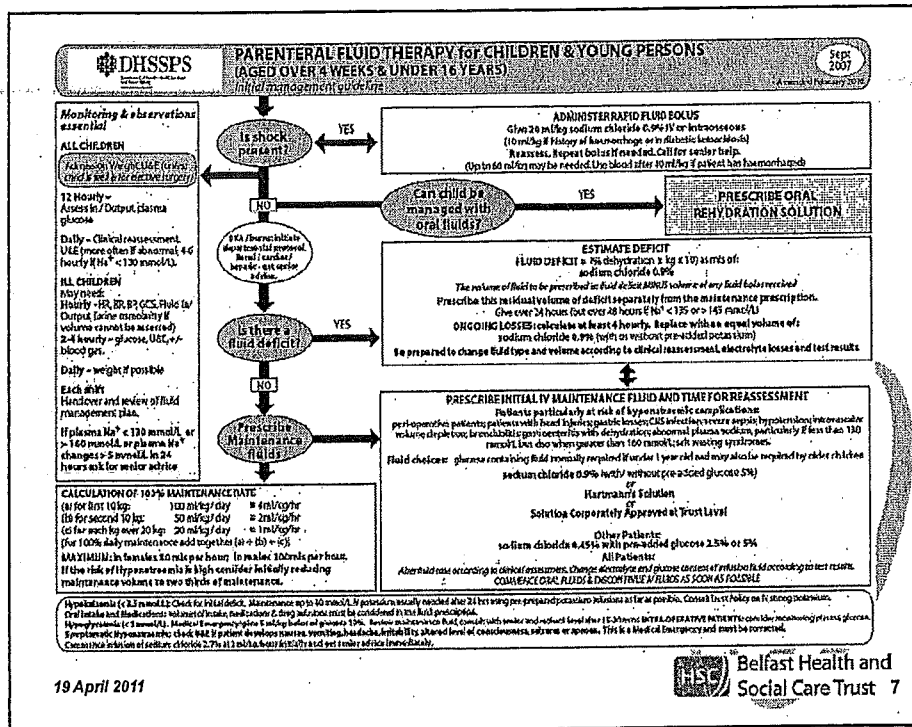
Dear Colleague

HSC (SQSD) 2007 – NPSA Patient Safety Alert 22: Reducing the Risk of Hyponatraemia when Administering Intravenous Infusions to Children.

Further to my letter of 27 April 2007 on the above and addendum of 10 October 2007, [http://www.dhsspsni.gov.uk/hsc\\_sqsd\\_20-07\\_wallchart.pdf](http://www.dhsspsni.gov.uk/hsc_sqsd_20-07_wallchart.pdf), please find attached in poster format, the Paediatric Parenteral Fluid Therapy Wallchart developed in collaboration with the Regional Paediatric Fluid Therapy Working Group.

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**BHSCT policy**

**Belfast Health and Social Care Trust**

**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>	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.  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.  This is fundamentally a document aimed at prevention of hyponatraemia and not treatment.
<b>Purpose</b>	To improve the safe use of intravenous fluid in children and reduce the risk of hyponatraemia.
<b>Operational date</b>	March 2008
<b>Review date</b>	March 2010
<b>Version Number</b>	V2.0
<b>Supervising provider</b>	V2.0
<b>Responsible professional</b>	Medical Director
<b>Lead author</b>	Dr. Peter Cavan
<b>Lead author, Position</b>	Consultant Paediatric Anaesthetist, RBHSC
<b>Additional Author(s)</b>	Dr. H. Swan, Associate Medical Director
<b>Department / Service Group</b>	Social Services, Family and Child Care
<b>Control details</b>	Dr. Peter Cavan Paediatric Intensive Care Unit Royal Belfast Hospital for Sick Children Q28 W05 2 448 Email: p.cavan@belfasthsc.nhs.uk
<b>Reference Number</b>	
<b>Supersedes</b>	N/A

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## Introduction

- ❖ Intravenous fluid-induced hyponatraemia in the previously well child undergoing elective surgery or with mild illness may not be well recognised by clinicians.
- ❖ This policy outlines the BHSCT policy approach for
  - ❖ administration of intravenous fluids
  - ❖ to children aged 1 month up to 16<sup>th</sup> birthday
  - ❖ especially reducing the risk of hyponatraemia.

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## The Scope

- ❖ children more than 1 month and up to 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, accident and emergency, day case departments and the ambulance service.
- ❖ not intended to apply to
  - ❖ paediatric and neonatal intensive care units,
  - ❖ specialist areas such as renal, liver and cardiac units
  - ❖ those suffering from acute burns or diabetic keto-acidosis (DKA).
- ❖ based on National NPSA guidance

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## Definition and background of the policy

- ❖ Hyponatraemia = plasma Na of less than 135 mmol/L.
- ❖ 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.

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## Definition and background of the policy

- ❖ 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.

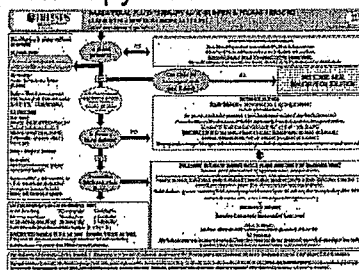
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## Policy Statements

- ❖ The Paediatric Parenteral Fluid Therapy wallchart forms the basis of BHSCT guidance.



- ❖ 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.

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## Symptoms of Hyponatraemia

- ❖ Relate to its central nervous system effects;
  - ❖ Lethargy, anorexia, agitation, disorientation, cerebral oedema, seizures, death.
  - ❖ warning signs may be non-specific and include nausea, malaise and headache. (See BMJ e-learning module)
- ❖ All children are potentially at risk, even those not considered to be obviously 'sick'.
- ❖ Complications often occur because of inappropriate management on intravenous fluids but can also occur with inappropriately managed oral fluid regimes.

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## Children particularly at risk

- ❖ Those who are or have
  - ❖ Peri-operative,
  - ❖ Bronchiolitis,
  - ❖ CNS injuries,
  - ❖ CNS infection,
  - ❖ Burns,
  - ❖ Severe sepsis
  - ❖ Vomiting, gastric losses, gastroenteritis with dehydration.

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## Baseline Assessment

- ❖ Accurately measure the **body weight** in kilograms
- ❖ or failing this, to make an estimate.
- ❖ This should be cross-referenced with the child's age to minimise the risk of error.
  
- ❖ Measurement of **electrolytes and urea** should be made unless the child is healthy and scheduled for elective surgery when it may be considered unnecessary.

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## Policy/Guideline Description

❖ All children who are to receive parenteral fluid therapy should have the following assessments made of their fluid status:

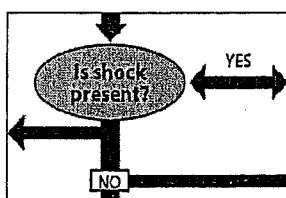
1. Haemodynamic check. Is Shock present?
2. Fluid deficit assessment.
3. Maintenance fluid requirement.

Include ongoing losses

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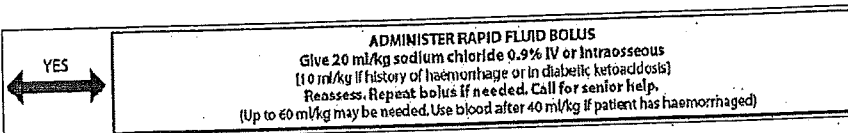
## 1. Haemodynamic check. Is Shock present?



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# 1. Haemodynamic check. Is Shock present?



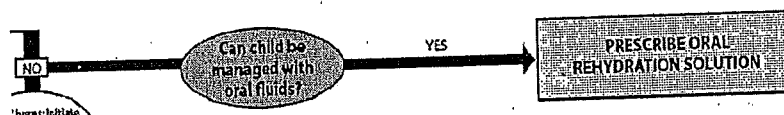
❖ If YES,

- ❖ Administer Rapid fluid bolus
- ❖ 20 ml/kg Sodium Chloride 0.9% intravenously = **G mls**
- ❖ Reassess
- ❖ Repeat if needed
- ❖ Call for senior help

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# 1. Haemodynamic check. Is Shock present?



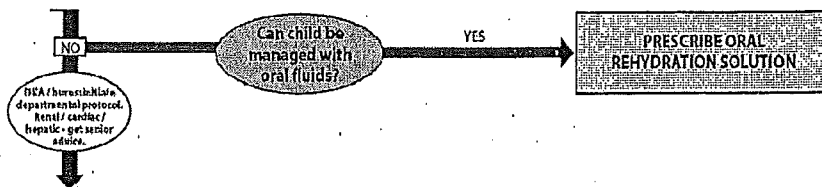
❖ If No,

- ❖ Can child be managed with oral fluids?

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## 1. Haemodynamic check. Is Shock present?

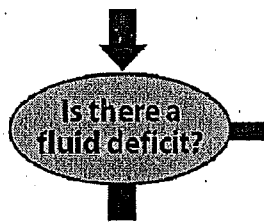


- ❖ If No,
  - ❖ Can child be managed with oral fluids?
  - ❖ If DKA or burns – initiate appropriate protocols
  - ❖ If Renal, Cardiac or Hepatic – get senior advice.

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## 2. Fluid deficit assessment



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## 2. Fluid deficit assessment

**ESTIMATE DEFICIT**  
**FLUID DEFICIT** = (% dehydration x kg x 10) as mls of:  
 sodium chloride 0.9%

*The volume of fluid to be prescribed is: fluid deficit MINUS volume of any fluid bolus received*  
 Prescribe this residual volume of deficit separately from the maintenance prescription.  
 Give over 24 hours (but over 48 hours if Na<sup>+</sup> < 135 or > 145 mmol/L)

**ONGOING LOSSES:** calculate at least 4 hourly. Replace with an equal volume of:  
 sodium chloride 0.9% (with or without pre-added potassium)

Be prepared to change fluid type and volume according to clinical reassessment, electrolyte losses and test results

YES →

- ❖ If Yes,
  - ❖ Estimate deficit
  - ❖ = % dehydration x kg x 10 = F mls
  - ❖ as mls of 0.9% sodium chloride

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## 2. Fluid deficit assessment

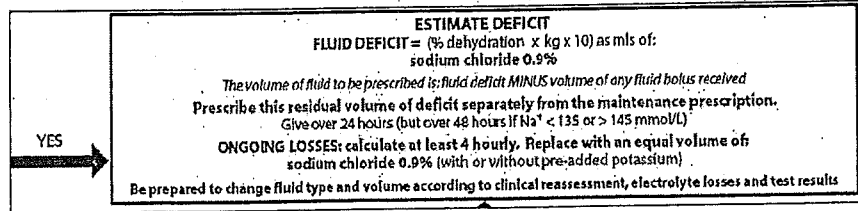
Clinical signs of dehydration

Signs/symptoms	Mild < 5%	Moderate 5 - 10%	Severe > 10%	Notes/ caveats
Decreased urine output	+	+	+	Urine may be dark
Dry mouth	+/	+	+	Severe dehydration may be dry, white, fissured tongue
Decreased skin turgor	-	+/	+	Skin turgor is important in assessing dehydration. Particularly applicable in children and in hypotensive/dehydrated
Sunken anterior fontanelle	-	+	+	Only useful if fontanelle well patent and in absence of haemorrhage or meningitis
Sunken eyes	-	+	+	Not reliable in young children. In older children may be useful

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## 2. Fluid deficit assessment

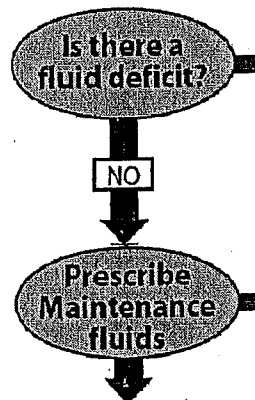


- ❖ Volume to be prescribed (H) mls  
 = Fluid deficit (F) – Fluid (shock) bolus (G)
- ❖ Give over 24 or 48 hours = (I) mls/hour

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## 2. Fluid deficit assessment



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### 3. Maintenance fluid requirement

#### CALCULATION OF 100% MAINTENANCE RATE

- (a) for first 10 kg: 100 ml/kg/ day = A  
 (b) for second 10 kg: 50 ml/kg/ day = B  
 (c) for each kg over 20 kg: 20 ml/kg/ day = C  
 [for 100% daily maintenance add together (a) + (b) + (c)]

**MAXIMUM: in females 80 mls per hour; in males 100 mls per hour**  
**If risk of hyponatraemia is high consider initially reducing maintenance volume to two thirds of maintenance**

- ❖ i.e.
- ❖ 1000 mls for the first 10 kg = A ml/day
- ❖ 500 mls for the next 10 kg = B ml/day
- ❖ 20 ml for each kg over 20 kg = C ml/day

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### 3. Maintenance fluid requirement

#### CALCULATION OF 100% MAINTENANCE RATE

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**MAXIMUM: in females 80 mls per hour; in males 100 mls per hour**  
**If risk of hyponatraemia is high consider initially reducing maintenance volume to two thirds of maintenance**

- ❖ Calculated as a total (D) mls/day = (A + B + C)
- ❖ Give over 24 hours = (E) mls/hour

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### 3. Maintenance fluid requirement

- ❖ Ongoing losses
  - ❖ Vomiting, drainage, diarrhoea - estimated or measured
  - ❖ Calculate as mls/hour (**J**)
  - ❖ Replace with equal volume of (usually) 0.9% sodium chloride.

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### Total fluid per hour

- ❖ Maintenance + Residual deficit + ongoing losses  
= **E + I + J** mls/hour

- ❖ Alter fluid rate according to clinical assessment.
- ❖ Change electrolyte and glucose content of infusion fluid according to test results.
- ❖ Commence oral fluids & discontinue iv fluids as soon as possible

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## Fluid Prescription/Balance Chart

- ❖ A **new** paediatric fluid prescription/balance chart has been developed within RBHSC.
- ❖ It is being trialled in other areas that care for children.
- ❖ Ultimately, it will be used for the prescription of **all** fluids for **all** children treated throughout the BHSCT – except those
  - ❖ being cared for in specialist Units.
  - ❖ with acute burns
  - ❖ in diabetic ketoacidosis.
- ❖ A separate presentation is available regarding the new fluid prescription chart.

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**Daily Fluid Balance & Prescription Sheet**

Child  
No to this body

HOSPITAL  
Ward  
Date

Use (if necessary) additional paper to expand

Fluid Input (ml)

Time	Oral	IV	Subcut	Rectal	Other	Total
08.00						
09.00						
10.00						
11.00						
12.00						
13.00						
14.00						
15.00						
16.00						
17.00						
18.00						
19.00						
20.00						
21.00						
22.00						
23.00						
24.00						
01.00						
02.00						
03.00						
04.00						
05.00						
06.00						
07.00						

Fluid Output (ml)

Time	Urine	Stool	Vomit	Sweat	Other	Total
08.00						
09.00						
10.00						
11.00						
12.00						
13.00						
14.00						
15.00						
16.00						
17.00						
18.00						
19.00						
20.00						
21.00						
22.00						
23.00						
24.00						
01.00						
02.00						
03.00						
04.00						
05.00						
06.00						
07.00						

Grand total in: \_\_\_\_\_

Grand total out: \_\_\_\_\_

24 hour fluid balance (ml): \_\_\_\_\_

24 hour urine (ml): \_\_\_\_\_

24 hour stool (ml): \_\_\_\_\_

24 hour vomit (ml): \_\_\_\_\_

24 hour sweat (ml): \_\_\_\_\_

24 hour other (ml): \_\_\_\_\_

24 hour total (ml): \_\_\_\_\_

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[illegible]

## Monitoring

- ❖ Body weight to be measured or assessed as a baseline and at least daily thereafter.
- ❖ All fluid intake of any kind (intravenous, oral and medicines) must be measured and recorded on the fluid balance chart.
- ❖ All fluid output must be assessed and, if clinically indicated, measured and recorded on the fluid balance chart.
- ❖ An assessment of
  - ❖ input/output
  - ❖ need for intravenous fluids
  - ❖ need for plasma glucose estimation
  - ❖ should be made and documented every 12 hours.

## Monitoring

- ❖ Measurement of electrolytes, urea and blood glucose/BM should be made at least daily.
- ❖ If hyponatraemia exists, these measurements should be 4-6 hourly:
- ❖ Urinary osmolality and electrolytes measurements should be considered when dealing with hyponatraemia.
- ❖ The ill child will require more frequent and detailed investigations.

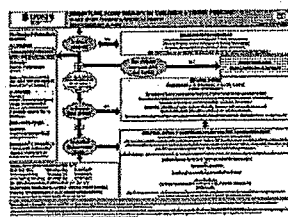
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## Roles and Responsibilities

- ❖ It is the professional responsibility of all who look after children to ensure that they have received adequate training in intravenous fluids appropriate to their role.
- ❖ Furthermore they should be familiar with the guidance on intravenous fluids for children outlined by the Regional Paediatric Fluid Therapy Group wallchart.
- ❖ [http://www.dhsspsni.gov.uk/hsc\\_sqsd\\_20-07\\_wallchart.pdf](http://www.dhsspsni.gov.uk/hsc_sqsd_20-07_wallchart.pdf)

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## Training

- ❖ Intravenous therapy will be incorporated into all staff induction programmes. This will complement the teaching received in undergraduate medical and nursing curricula.
- ❖ Regarding postgraduate staff, all staff, and especially those prescribing fluids to children, will be encouraged to ensure they are conversant with the knowledge required to prescribe intravenous fluids to children and that it is within their scope of practice.

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## Training

- ❖ All staff are encouraged to use 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 will be sought at staff assessments, RITAs, performance review, personal development plans and appraisals.
- ❖ This presentation concludes with an assessment section.

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## Audit

- ❖ The following situations require a local incident report form (IR1) to be completed:
  - ❖ All children with a hospital acquired,  $[Na^+] < 130\text{mmol/L}$ .
  - ❖ use of a solution with serum Na of  $<131\text{mmol/L}$  for treatment of shock, maintenance fluid in a peri-operative patient, deficit fluid.
  - ❖ episode of symptomatic hyponatraemia while in receipt of IV fluids.

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## Policy Statements

- ❖ Apart from boluses for shocked patients, fluids may only be administered by way of an infusion device.
- ❖ 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.

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## Sources of help

- ❖ 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.
- ❖ 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.

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## Sources of help

Team	Address	Extension
For patients within RBHSC		
RBHSC Paediatric ICU	Paediatric ICU	32449
RBHSC Paediatricians	Paediatric On Call	Allen Ward Bleep 2277
For patients outside RBHSC.		
General Biochemistry	Clinical Biochemistry	
	Inside working hours	Outside working hours
RVH Tie line: 7222 Ext. 33708	Ext. 34714	Contact Medical doctor on call either via the laboratory or via switchboard.
BCH Tie line: 7111 Ext. 2625/2950/3448	Ext. 2625/2950/3448	Contact Medical doctor on call either via the laboratory or via switchboard
MIH Tie line: 7231 Ext. 2391/2325	Ext. 2391/2325	Contact Medical doctor on call either via the laboratory or via switchboard
RBHSC Paediatric ICU	Paediatric ICU	32449
RBHSC Paediatricians	Paediatric On Call	Allen Ward Bleep 2277
Musgrave Park	Orthopaedic theatre – Anaesthesia team during working hours.	
BCH Dufferin theatres	ENT theatre – Anaesthesia team during working hours.	

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## Sources of help

Other sources of help are:

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)

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)

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)

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## Remember

- ❖ If plasma  $\text{Na}^+$  < 130 mmol/L
- or
- ❖ > 160 mmol/L
- or
- ❖ plasma  $\text{Na}^+$  changes > 5 mmol/L in 24 hours
- ❖ **ask for senior advice.**

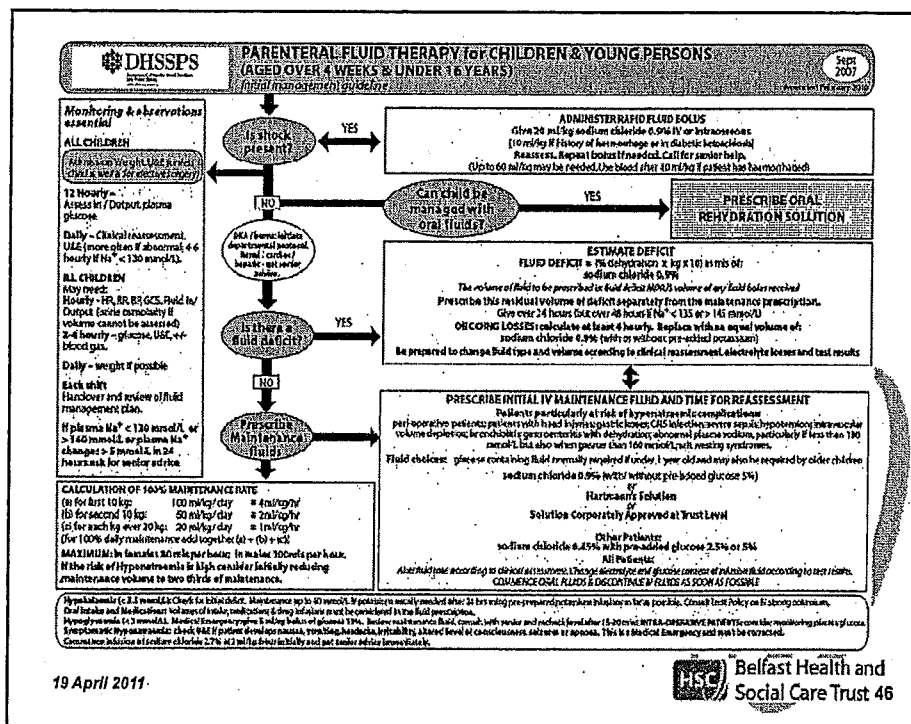
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## Symptomatic Hyponatraemia:

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

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## Assessment

- ❖ Please complete the following questions.
- ❖ They are adapted from the eBMJ learning site
- ❖ <http://learning.bmj.com/learning/search-result.html?moduleId=5003358>
- ❖ This free module written by Dr. Stephen Playfor is named "Reducing the risk of hyponatraemia when administering intravenous fluids to children."
- ❖ It gives information about safely prescribing, administering, and monitoring intravenous fluids for children. It aims to highlight the main risks and key issues that you should consider. It looks in detail at the risk of children developing acute hyponatraemia as a result of receiving intravenous fluids.

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## Question 1

Which one of the following statements about children in hospital who are able to drink oral fluids is correct?

1. You can safely exclude volumes of oral fluids consumed from fluid balance calculations.
2. Hyponatraemia may develop even if no intravenous fluids are being administered.
3. You do not need to measure plasma electrolytes.
4. Fluid balance will be maintained because volumes of oral fluids consumed will be equalled by the urine output.

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.

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 Belfast Health and Social Care Trust 48

## Question 1

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❖ Only click when you have picked an answer!

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.  
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**HSC** Belfast Health and Social Care Trust 49

## Question 1

Which one of the following statements about children in hospital who are able to drink oral fluids is correct?

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2. Hyponatraemia may develop even if no intravenous fluids are being administered.
3. You do not need to measure plasma electrolytes.
4. Fluid balance will be maintained because volumes of oral fluids consumed will be equalled by the urine output.

❖ Correct ✓

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.  
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**HSC** Belfast Health and Social Care Trust 50

## Question 1

Which one of the following statements about children in hospital who are able to drink oral fluids is correct?

- |   |  |
|---|--|
| 1. You can safely exclude volumes of oral fluids consumed from fluid balance calculations.                        | ❖ You must include oral fluids in fluid balance calculations.  |
| 2. Hyponatraemia may develop even if no intravenous fluids are being administered.                                | ❖ <b>Correct ✓</b>   |
| 3. You do not need to measure plasma electrolytes.  | ❖ You should measure plasma electrolytes every 24 hours while intravenous fluids are being administered or if there is clinical suspicion of an electrolyte abnormality. |
| 4. Fluid balance will be maintained because volumes of oral fluids consumed will be equalled by the urine output. | ❖ You cannot assume that urine output equals the oral fluid intake.  |

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.

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## Question 2

Which one of the following groups of children is most at risk of developing acute symptomatic hyponatraemia while in hospital?

- Children administered sodium chloride 0.9% with glucose 4% at standard maintenance fluid volumes.
- Children administered oral fluids at standard maintenance fluid volumes.
- Critically ill children admitted to paediatric intensive care units.
- Previously well children admitted for elective surgery and administered hypotonic intravenous fluids.

❖ **Only click when you have you have picked an answer!**

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.

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## Question 2

Which one of the following groups of children is most at risk of developing acute symptomatic hyponatraemia while in hospital?

1. Children administered sodium chloride 0.9% with glucose 4% at standard maintenance fluid volumes.
2. Children administered oral fluids at standard maintenance fluid volumes.
3. Critically ill children admitted to paediatric intensive care units.
4. Previously well children admitted for elective surgery and administered hypotonic intravenous fluids. ❖ Correct ✓

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.

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## Question 2

Which one of the following groups of children is most at risk of developing acute symptomatic hyponatraemia while in hospital?

1. Children administered sodium chloride 0.9% with glucose 4% at standard maintenance fluid volumes. ❖ Although symptomatic hyponatraemia may occur as a complication of any fluid regime, including situations where there is uncontrolled intake of oral fluids, the children most at risk appear to be those admitted with gastroenteritis or for elective surgery and administered hypotonic intravenous fluids.
2. Children administered oral fluids at standard maintenance fluid volumes.
3. Critically ill children admitted to paediatric intensive care units.
4. Previously well children admitted for elective surgery and administered hypotonic intravenous fluids. ❖ Correct ✓

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.

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### Question 3

Which one of the following statements about monitoring children receiving intravenous fluids is correct?

1. You should measure plasma electrolytes every 24 hours while intravenous fluids are being administered.
2. Weighing children is rarely helpful.
3. You should measure plasma electrolytes before all elective surgery.
4. It is easy to document accurate fluid balance in most patients.

❖ Only click when you have picked an answer!

adapted from eBMJ learning site – "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.  
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3. You should measure plasma electrolytes before all elective surgery.
4. It is easy to document accurate fluid balance in most patients.

❖ Correct ✓

adapted from eBMJ learning site – "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.  
19 April 2011



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### Question 3

Which one of the following statements about monitoring children receiving intravenous fluids is correct?

- |   |  |
|---|--|
| 1. You should measure plasma electrolytes every 24 hours while intravenous fluids are being administered. | ❖ <b>Correct ✓</b> You should measure plasma electrolytes every 24 hours while intravenous fluids are being administered. You should also check them before starting an infusion, except in most children undergoing elective surgery. |
| 2. Weighing children is rarely helpful.   | ❖ Where possible, you should weigh all children on intravenous fluids before starting therapy and then reweigh them each day.  |
| 3. You should measure plasma electrolytes before all elective surgery.                                    |  |
| 4. It is easy to document accurate fluid balance in most patients.  | ❖ Accurate fluid balance is difficult, but you should monitor this daily.  |

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.

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### Question 4

A 9 year old boy weighing 27 kg is admitted for an elective hernia repair. He needs intravenous fluids. What volume of maintenance fluid should you prescribe over 24 hours?

1. 1240 ml
2. 1440 ml
3. 1640 ml
4. 1840 ml

❖ Only click when you have you have picked an answer!

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.

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### Question 4

A 9 year old boy weighing 27 kg is admitted for an elective hernia repair. He needs intravenous fluids. What volume of maintenance fluid should you prescribe over 24 hours?

1. 1240 ml
2. 1440 ml
3. 1640 ml
4. 1840 ml

❖ Correct ✓

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.  
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### Question 4

A 9 year old boy weighing 27 kg is admitted for an elective hernia repair. He needs intravenous fluids. What volume of maintenance fluid should you prescribe over 24 hours?

#### CALCULATION OF 100% MAINTENANCE RATE

- (a) for first 10 kg: 100 ml/kg/ day
- (b) for second 10 kg: 50 ml/kg/ day
- (c) for each kg over 20 kg: 20 ml/kg/ day

[for 100% daily maintenance add together (a) + (b) + (c)]

A 100 x 10 for the first 10 kg = 1000 ml

B 50 x 10 for the next 10 kg = 500 ml

C 20 x 7 for the next 7 kg = 140 ml

= 27 kg = 1640 ml

Correct ✓

adapted from eBMJ learning site - "Reducing the risk of hyponatraemia when administering intravenous fluids to children" written by Dr. Stephen Playfor.

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If you have had difficulty with any of these answers you may get further information and help from the website as below.

❖ eBMJ learning site

❖ <http://learning.bmj.com/learning/search-result.html?moduleId=5003358>

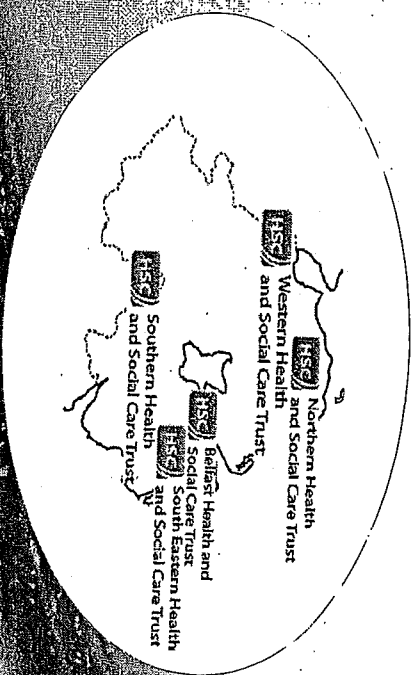
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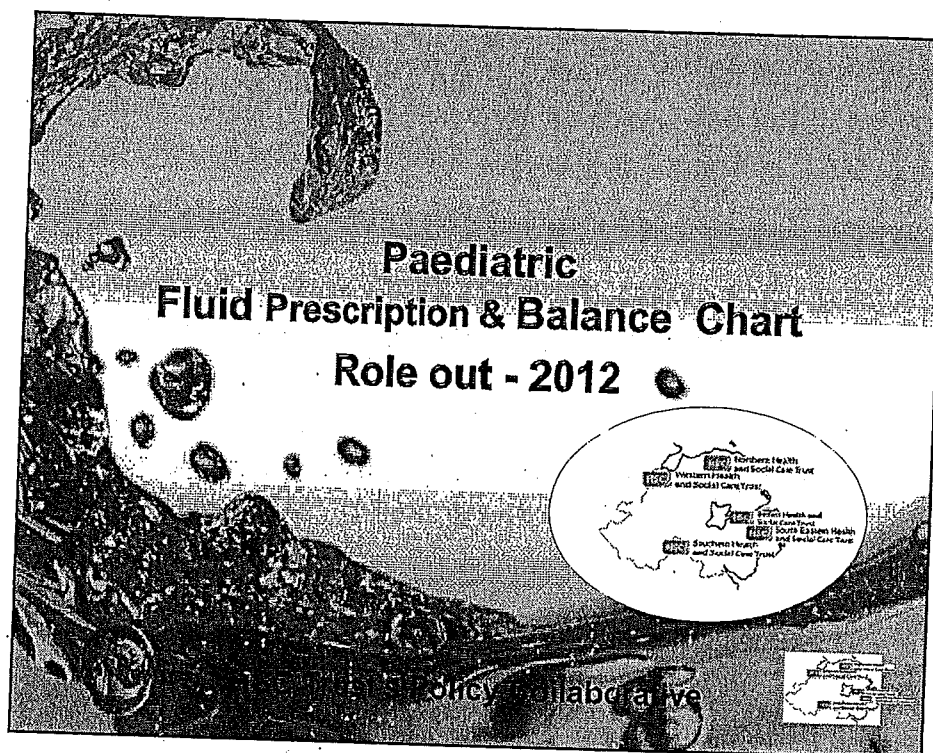
# Paediatric Fluid Prescription & Balance Chart

## Role out - 2012



HSC Trusts Policy Collaborative





## Aims and outcomes of session.

### Aim:

- ❖ To instruct staff on the correct completion of the paediatric fluid prescription chart.

### Outcomes:

- ❖ Demonstrate the ability to correctly complete and calculate a fluid balance chart.
- ❖ Used to explain correct and accurate completion to colleagues in the clinical environment.

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Paediatric Fluid Prescription & Balance Chart



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**CHILD**  
Use addressograph otherwise write in capitals  
Surname: \_\_\_\_\_  
Forename: \_\_\_\_\_  
Gender: \_\_\_\_\_  
Date of Birth: \_\_\_\_\_  
Hospital No: \_\_\_\_\_  
Ward: \_\_\_\_\_  
Nurse: \_\_\_\_\_  
Doctor: \_\_\_\_\_  
Check Identity: \_\_\_\_\_

Yesterday's Data  
Fluid Intake (ml) \_\_\_\_\_  
Fluid Output (ml) \_\_\_\_\_  
Balance (ml) \_\_\_\_\_

**& Prescription Sheet**  
Use addressograph otherwise write in capitals  
Drug: \_\_\_\_\_  
Dose: \_\_\_\_\_  
Frequency: \_\_\_\_\_  
Route: \_\_\_\_\_  
Start Date: \_\_\_\_\_  
Stop Date: \_\_\_\_\_  
Check Identity: \_\_\_\_\_

FLUID BALANCE (ml)

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- ❖ Chart must be used for children
- ❖ aged from 4 weeks up to their 16<sup>th</sup> birthday
- ❖ throughout each of the 5 HSC Trusts
- ❖ wherever their care is provided.
- ❖ Except for patients
  - ❖ cared for in ICUs, HDUs, specialist units
  - ❖ with diabetic ketoacidosis
  - ❖ with acute burns.
- ❖ who may use different fluid prescription charts.

## 1. Labelling

**Front**  
Hospital: \_\_\_\_\_  
Ward: \_\_\_\_\_  
Date: \_\_\_\_\_  
Use addressograph otherwise write in capitals  
Surname: \_\_\_\_\_  
Forename: \_\_\_\_\_  
Gender: \_\_\_\_\_  
Date of Birth: \_\_\_\_\_  
Hospital No: \_\_\_\_\_  
Ward: \_\_\_\_\_  
Nurse: \_\_\_\_\_  
Doctor: \_\_\_\_\_  
Check Identity: \_\_\_\_\_

**Back**  
Use addressograph otherwise write in capitals  
Surname: \_\_\_\_\_  
Forename: \_\_\_\_\_  
Gender: \_\_\_\_\_  
Date of Birth: \_\_\_\_\_  
Hospital No: \_\_\_\_\_  
Ward: \_\_\_\_\_  
Nurse: \_\_\_\_\_  
Doctor: \_\_\_\_\_  
Check Identity: \_\_\_\_\_

- ❖ Stick on labels and complete hospital, ward & date
- ❖ on both sides of chart

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## 2. Insert patient's weight in kgs

The weight used must be a recent weight

Indicate whether estimated or measured & when.

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Paediatric Fluid Prescription &amp; Balance Chart



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## 3. Complete previous days fluid volumes

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Paediatric Fluid Prescription &amp; Balance Chart



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## 4. Prescribe fluids

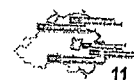
Infusion - all that apply: Fluid, Glucose, Electrolytes, Bolus, On-going losses, Combined maintenance and electrolyte replacement. \* Medicines must be recorded in Drug Kardex

Letter	Fluid	Glucose	Electrolytes	Bolus	On-going losses	Combined maintenance and electrolyte replacement
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						
K						
L						
M						
N						
O						
P						
Q						

\* Medicines must be recorded in Drug Kardex

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Paediatric Fluid Prescription &amp; Balance Chart



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## 4. Prescribe fluids

Balance, Deficit, On-going losses, Combined

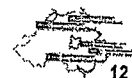
Infusion - all that apply: Fluid, Glucose, Electrolytes, Bolus, On-going losses, Combined maintenance and electrolyte replacement. \* Medicines must be recorded in Drug Kardex

Letter	Fluid	Glucose	Electrolytes	Bolus	On-going losses	Combined maintenance and electrolyte replacement
	Infusion Fluid/Type					Add
A	5% Glucose Solution					
B	0.9% Sodium Chloride					
C	Hartmann's Solution					
D						

Infusion fluids can also be identified by their Letter

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Paediatric Fluid Prescription &amp; Balance Chart



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## 5. Administer fluids

Indications - Metabolic: fluid balance, electrolytes, glucose, coagulating factors, combined electrolytes and electrolyte replacement. - Prescribed fluids for prevention of drug reactions. - Fluid of choice, Serial number.

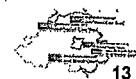
Time	Fluid	Amount	Rate	Site	Batch No.	Expiry Date	Infusion Pump Details
	A						
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
	J						
	K						
	L						
	M						
	N						
	O						
	P						
	Q						

The following items should be completed:-

- Batch number & Expiry date
- Infusion pump details.

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Paediatric Fluid Prescription &amp; Balance Chart



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## 6. Record Intake

FLUID INPUT (ml)

Time	ORAL FLUID				INTRAVENOUS FLUID*				Total	Hourly Average	Daily Total
	Liquids	Solids	Other	Other	Liquids	Solids	Other	Other			
08.00											
09.00											
10.00											
11.00											
12.00											
13.00											
14.00											
15.00											
16.00											
17.00											
18.00											
19.00											
20.00											
21.00											
22.00											
23.00											
24.00											
01.00											
02.00											
03.00											
04.00											
05.00											
06.00											
07.00											

### ❖ Record

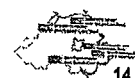
- ❖ Site
- ❖ Amount
- ❖ Type
- ❖ Total

❖ for each type of fluid

❖ every hour

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Paediatric Fluid Prescription &amp; Balance Chart



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## 6. Record Intake

**FLUID INPUT (ml)**

	ORAL FLUID				INTRAVENOUS FLUID*							
	LIQUIDS		SOLIDS		PAC		PAC		LIPADP		TOTAL	
	Amount	Type	Amount	Type	Amount	Type	Amount	Type	Amount	Type	Amount	Type
06.00												
09.00												
10.00			40	A								
11.00			40									
12.00			40				100					
13.00			40				100					
14.00			40				100					
15.00			40				100					
16.00			40				100					
17.00			40				100					
18.00			40				40					
19.00			40				40					
20.00			40				40			100		
21.00							40			100		
22.00							40			100		
23.00							40			100		
24.00							40			100		
01.00							40			100		
02.00							40					
03.00							40					
04.00							40					
05.00							40					
06.00							40					
07.00							40					

### ❖ Record

- ❖ Site
- ❖ Amount
- ❖ Type\*
- ❖ Total

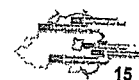
❖ for each type of fluid

❖ every hour

\* = identify with letter if wish

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Paediatric Fluid Prescription &amp; Balance Chart



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## 7. Intake – Cumulative total for each fluid

**FLUID INPUT (ml)**

	ORAL FLUID				INTRAVENOUS FLUID*							
	LIQUIDS		SOLIDS		PAC		PAC		LIPADP		TOTAL	
	Amount	Type	Amount	Type	Amount	Type	Amount	Type	Amount	Type	Amount	Type
06.00												
09.00												
10.00			40	A								
11.00			40									
12.00			40				100					
13.00			40				100					
14.00			40				100					
15.00			40				100					
16.00			40				100					
17.00			40				100					
18.00			40				40					
19.00			40				40					
20.00			40				40			100		
21.00			40				40			100		
22.00							40			100		
23.00							40			100		
24.00							40			100		
01.00							40			100		
02.00							40					
03.00							40					
04.00							40					
05.00							40					
06.00							40					
07.00							40					

- ❖ Cumulative totals for
- ❖ each type of fluid

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Paediatric Fluid Prescription &amp; Balance Chart



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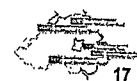
## 7. Intake – Cumulative total for each fluid

FLUID INPUT (ml)											
ORAL FLUID						INTRAVENOUS FLUID*					
LIQUIDS			NCTEAL (CONC)			SUBCUTANEOUS			OTHER		
Amount	Time	Amount	Amount	Time	Amount	Amount	Time	Amount	Amount	Time	Amount
05.00											
06.00											
07.00			40	A							
08.00			40	B							
09.00			40	C							
10.00			40	D							
11.00			40	E							
12.00			40	F	100	100					
13.00			40	G	100	200					
14.00			40	H	100	300					
15.00			40	I	100	400					
16.00			40	J	100	500					
17.00			40	K	100	600					
18.00			40	L	100	700					
19.00			40	M	100	800					
20.00			40	N	100	900					
21.00			40	O	100	1000					
22.00			40	P	100	1100					
23.00			40	Q	100	1200					
24.00			40	R	100	1300					
01.00			40	S	100	1400					
02.00			40	T	100	1500					
03.00			40	U	100	1600					
04.00			40	V	100	1700					
05.00			40	W	100	1800					
06.00			40	X	100	1900					
07.00			40	Y	100	2000					

- ❖ Cumulative totals for
- ❖ each type of fluid

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Paediatric Fluid Prescription &amp; Balance Chart



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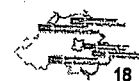
## 8. Intake – Hourly cumulative totals

FLUID INPUT (ml)											
ORAL FLUID						INTRAVENOUS FLUID*					
LIQUIDS			NCTEAL (CONC)			SUBCUTANEOUS			OTHER		
Amount	Time	Amount	Amount	Time	Amount	Amount	Time	Amount	Amount	Time	Amount
05.00											
06.00											
07.00			40	A							
08.00			40	B							
09.00			40	C							
10.00			40	D							
11.00			40	E							
12.00			40	F	100	100					
13.00			40	G	100	200					
14.00			40	H	100	300					
15.00			40	I	100	400					
16.00			40	J	100	500					
17.00			40	K	100	600					
18.00			40	L	100	700					
19.00			40	M	100	800					
20.00			40	N	100	900					
21.00			40	O	100	1000					
22.00			40	P	100	1100					
23.00			40	Q	100	1200					
24.00			40	R	100	1300					
01.00			40	S	100	1400					
02.00			40	T	100	1500					
03.00			40	U	100	1600					
04.00			40	V	100	1700					
05.00			40	W	100	1800					
06.00			40	X	100	1900					
07.00			40	Y	100	2000					

- ❖ Then,
  - ❖ Cumulative totals to be calculated
  - ❖ each hour
  - ❖ to get an
- Hourly amount in**
- and then
- Grand Total in**

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Paediatric Fluid Prescription &amp; Balance Chart



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## 8. Intake

**FLUID INPUT (ml)**

	ORAL FLUID				INTRAVENOUS FLUID*								Total
	Liquids	Enteral Feeds	Rectal	Other	100 ml/hr	200 ml/hr	300 ml/hr	400 ml/hr	500 ml/hr	600 ml/hr	700 ml/hr	800 ml/hr	
05.00													
06.00													
07.00													
08.00													
09.00													
10.00													
11.00													
12.00													
13.00													
14.00													
15.00													
16.00													
17.00													
18.00													
19.00													
20.00													
21.00													
22.00													
23.00													
24.00													
01.00													
02.00													
03.00													
04.00													
05.00													
06.00													
07.00													

❖ Worked example

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Paediatric Fluid Prescription &amp; Balance Chart



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## 9. Record intake totals

**24-hour intake (ml)**

Oral total	440
Intravenous total**	1560
Grand total in	2000

\*\* Include estimate of daily cannula flush volume

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Paediatric Fluid Prescription &amp; Balance Chart



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## 10. Record outputs

- ❖ Record
  - ❖ Site if necessary
  - ❖ Amount
  - ❖ Type
- ❖ for each type of fluid.

[illegible]

**24 April 2012**

### Paediatric Fluid Prescription & Balance Chart

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### 11. Output – Cumulative total for each fluid

- ❖ Cumulative totals to be calculated for
  - ❖ each type of fluid

Up to 6 hrs bleed		FLUID OUTPUT (ml)									
URINE		GASTRIC		BOWEL		DRUGS					
Amt.	Total	Amt.	Total	Amt.	Total	Amt.	Total	Sweat	Other losses	Fluid balance	Comment
0-15											
15-30											
30-45											
45-60											
60-75											
75-90											
90-105											
105-120											
120-135											
135-150											
150-165											
165-180											
180-195											
195-210											
210-225											
225-240											
240-255											
255-270											
270-285											
285-300											
300-315											
315-330											
330-345											
345-360											
360-375											
375-390											
390-405											
405-420											
420-435											
435-450											
450-465											
465-480											
480-495											
495-510											
510-525											
525-540											
540-555											
555-570											
570-585											
585-600											
600-615											
615-630											
630-645											
645-660											
660-675											
675-690											
690-705											
705-720											
720-735											
735-750											
750-765											
765-780											
780-795											
795-810											
810-825											
825-840											
840-855											
855-870											
870-885											
885-900											
900-915											
915-930											
930-945											
945-960											
960-975											
975-990											
990-1005											
1005-1020											
1020-1035											
1035-1050											
1050-1065											
1065-1080											
1080-1095											
1095-1110											

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### Paediatric Fluid Prescription & Balance Chart

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## 11. Output – Cumulative total for each fluid

- ❖ Cumulative totals to be calculated for
- ❖ each type of fluid

Use with birthday

**FLUID OUTPUT (ml)**

URINE		GASTRIC		LOWEL		PRINCE		Other		Total		Grand Total	
Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total
10	40												
20	60	40	40										
30	90												
40	130												
50	180												
60	240												
70	310												
80	390												
90	480												
100	580												
110	690												
120	810												
130	940												
140	1080												
150	1230												
160	1390												
170	1560												
180	1740												
190	1930												
200	2130												
210	2340												
220	2560												
230	2790												
240	3030												
250	3280												
260	3540												
270	3810												
280	4090												
290	4380												
300	4680												
310	4990												
320	5310												
330	5640												
340	5980												
350	6330												
360	6690												
370	7060												
380	7440												
390	7830												
400	8230												
410	8640												
420	9060												
430	9490												
440	9930												
450	10380												
460	10840												
470	11310												
480	11790												
490	12280												
500	12780												
510	13290												
520	13810												
530	14340												
540	14880												
550	15430												
560	15990												
570	16560												
580	17140												
590	17730												
600	18330												
610	18940												
620	19560												
630	20190												
640	20830												
650	21480												
660	22140												
670	22810												
680	23490												
690	24180												
700	24880												
710	25590												
720	26310												
730	27040												
740	27780												
750	28530												
760	29290												
770	30060												
780	30840												
790	31630												
800	32430												
810	33240												
820	34060												
830	34890												
840	35730												
850	36580												
860	37440												
870	38310												
880	39190												
890	40080												
900	40980												
910	41890												
920	42810												
930	43740												
940	44680												
950	45630												
960	46590												
970	47560												
980	48540												
990	49530												
1000	50530												

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Paediatric Fluid Prescription &amp; Balance Chart

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## 12. Output – Hourly Cumulative totals

- ❖ Cumulative totals to be calculated for
- ❖ each hour
- ❖ to get an Hourly amount out and then Grand Total out

Use with birthday

# FLUID OUTPUT (ml)

S

URINE		GASTRIC		LOWEL		PRINCE		Other		Total		Grand Total	
Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total
10	40												
20	60	40	40										
30	80												
40	120												
50	160												
60	200												
70	240												
80	280												
90	320												
100	360												
110	400												
120	440												
130	480												
140	520												
150	560												
160	600												
170	640												
180	680												
190	720												
200	760												
210	800												
220	840												
230	880												
240	920												
250	960												
260	1000												
270	1040												
280	1080												
290	1120												
300	1160												
310	1200												
320	1240												
330	1280												
340	1320												
350	1360												
360	1400												
370	1440												
380	1480												
390	1520												
400	1560												
410	1600												
420	1640												
430	1680												
440	1720												
450	1760												
460	1800												
470	1840												
480	1880												
490	1920												
500	1960												
510	2000												
520	2040												
530	2080												
540	2120												
550	2160												
560	2200												
570	2240												
580	2280												
590	2320												
600	2360												
610	2400												
620	2440												
630	2480												
640	2520												
650	2560												
660	2600												
670	2640												
680	2680												
690	2720												
700	2760												
710	2800												
720	2840												
730	2880												
740	2920												
750	2960												
760	3000												
770	3040												
780	3080												
790	3120												
800	3160												
810	3200												
820	3240												
830	3280												
840	3320												
850	3360												
860	3400												
870	3440												
880	3480												
890	3520												
900	3560												
910	3600												
920	3640												
930	3680												
940	3720												
950	3760												
960	3800												
970	3840												
980	3880												
990	3920												
1000	3960												
1010	4000												
1020	4040												
1030	4080												
1040	4120												
1050	4160												
1060	4200												
1070	4240												
1080	4280												
1090	4320												
1100	4360												
1110	4400												
1120	4440												
1130	4480												
1140	4520												
1150	4560												
1160	4600												
1170	4640												
1180	4680												
1190	4720												
1200	4760												
1210	4800												
1220	4840												
1230	4880												
1240	4920												
1250	4960												
1260	5000												
1270	5040												
1280	5080												
1290	5120												
1300	5160												
1310	5200												
1320	5240												
1330	5280												
1340	5320												
1350	5360												
1360	5400												
1370	5440												
1380	5480												
1390	5520												
1400	5560												
1410	5600												
1420	5640												
1430	5680												
1440	5720												
1450	5760												
1460	5800												
1470	5840												
1480	5880												
1490	5920												
1500	5960												
1510	6000												
1520	6040												
1530	6080												
1540	6120												
1550	6160												
1560	6200												
1570	6240												
1580	6280												
1590	6320												
1600	6360												
1610	6400												
1620	6440												
1630	6480												
1640	6520												
1650	6560												
1660	6600												
1670	6640												
1680	6680												
1690	6720												
1700	6760												
1710	6800												
1720	6840												

## 12. Output – Hourly Cumulative totals

❖ Cumulative totals  
to be calculated  
for

❖ each hour

❖ to get an

Hourly amount out  
and then

Grand Total out

Up to 1000 ml/day

FLUID OUTPUT (ml)

URINE		GASTRIC		BOWEL		OTHER		TOTAL		Hourly amount out		Grand Total out	
Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total	Amount	Total
40	40	10	10					50	50	40	40	10	10
10	50		10					60	60	50	90	20	110
10	60							70	70	60	150	10	120
10	70							80	80	70	220	10	130
10	80							90	90	80	300	10	140
10	90							100	100	90	390	10	150
10	100							110	110	100	490	10	160
10	110							120	120	110	600	10	170
10	120							130	130	120	720	10	180
10	130							140	140	130	850	10	190
10	140							150	150	140	990	10	200
10	150							160	160	150	1150	10	210
10	160							170	170	160	1320	10	220
10	170							180	180	170	1500	10	230
10	180							190	190	180	1690	10	240
10	190							200	200	190	1890	10	250
10	200							210	210	200	2100	10	260
10	210							220	220	210	2320	10	270
10	220							230	230	220	2560	10	280
10	230							240	240	230	2810	10	290
10	240							250	250	240	3070	10	300
10	250							260	260	250	3340	10	310
10	260							270	270	260	3620	10	320
10	270							280	280	270	3910	10	330
10	280							290	290	280	4210	10	340
10	290							300	300	290	4520	10	350
10	300							310	310	300	4840	10	360
10	310							320	320	310	5170	10	370
10	320							330	330	320	5510	10	380
10	330							340	340	330	5860	10	390
10	340							350	350	340	6220	10	400
10	350							360	360	350	6590	10	410
10	360							370	370	360	6970	10	420
10	370							380	380	370	7360	10	430
10	380							390	390	380	7760	10	440
10	390							400	400	390	8170	10	450
10	400							410	410	400	8590	10	460
10	410							420	420	410	9020	10	470
10	420							430	430	420	9460	10	480
10	430							440	440	430	9910	10	490
10	440							450	450	440	10370	10	500
10	450							460	460	450	10840	10	510
10	460							470	470	460	11320	10	520
10	470							480	480	470	11810	10	530
10	480							490	490	480	12310	10	540
10	490							500	500	490	12820	10	550
10	500							510	510	500	13340	10	560
10	510							520	520	510	13870	10	570
10	520							530	530	520	14410	10	580
10	530							540	540	530	14960	10	590
10	540							550	550	540	15520	10	600
10	550							560	560	550	16090	10	610
10	560							570	570	560	16670	10	620
10	570							580	580	570	17260	10	630
10	580							590	590	580	17860	10	640
10	590							600	600	590	18470	10	650
10	600							610	610	600	19090	10	660
10	610							620	620	610	19720	10	670
10	620							630	630	620	20360	10	680
10	630							640	640	630	21010	10	690
10	640							650	650	640	21670	10	700
10	650							660	660	650	22340	10	710
10	660							670	670	660	23020	10	720
10	670							680	680	670	23710	10	730
10	680							690	690	680	24410	10	740
10	690							700	700	690	25120	10	750
10	700							710	710	700	25840	10	760
10	710							720	720	710	26570	10	770
10	720							730	730	720	27310	10	780
10	730							740	740	730	28060	10	790
10	740							750	750	740	28820	10	800
10	750							760	760	750	29590	10	810
10	760							770	770	760	30370	10	820
10	770							780	780	770	31160	10	830
10	780							790	790	780	31960	10	840
10	790							800	800	790	32770	10	850
10	800							810	810	800	33590	10	860
10	810							820	820	810	34420	10	870
10	820							830	830	820	35260	10	880
10	830							840	840	830	36110	10	890
10	840							850	850	840	36970	10	900
10	850							860	860	850	37840	10	910
10	860							870	870	860	38720	10	920
10	870							880	880	870	39610	10	930
10	880							890	890	880	40510	10	940
10	890							900	900	890	41420	10	950
10	900							910	910	900	42340	10	960
10	910							920	920	910	43270	10	970
10	920							930	930	920	44210	10	980
10	930							940	940	930	45160	10	990
10	940							950	950	940	46120	10	1000

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Paediatric Fluid Prescription &amp; Balance Chart

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## 13. Record output totals

24 hour output (ml)

Urine	1310
Gastric	200
Bowel	470
Other	
Grand total out	1980

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Paediatric Fluid Prescription &amp; Balance Chart

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- FLUID INPUT (ml)

[illegible]

FLUID OUTPUT (ml)

Total	Hours over 100	Cost over \$200	Hours over \$200	Cost over \$200
10	10	10	10	10
160	200	200	200	200
10	210	210	210	210
10	220	220	220	220
30	230	230	230	230
30	240	240	240	240
100	250	250	250	250
50	260	260	260	260
50	270	270	270	270
220	280	280	280	280
180	290	290	290	290
100	300	300	300	300
150	310	310	310	310
40	320	320	320	320
320	330	330	330	330
	340	340	340	340
	350	350	350	350
	360	360	360	360
	370	370	370	370
	380	380	380	380
	390	390	390	390
	400	400	400	400
	410	410	410	410
	420	420	420	420
	430	430	430	430
	440	440	440	440
	450	450	450	450
	460	460	460	460
	470	470	470	470
	480	480	480	480
	490	490	490	490
	500	500	500	500

### Paediatric Fluid Prescription & Balance Chart

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**15. Complete overall 24 hour balance**

24 hour intake (ml)		24 hour output (ml)		24 hour Fluid Balance (ml)	
Oral total	440	Urine	1310	Balance	+20
Intravenous total <sup>1</sup>	1560	Gastric	200		
Grand total in	2000	Resol	470		
		Other			
		Grand total out	1980		

<sup>1</sup> Includes nasogastric int. if daily drainage blank volume

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**Paediatric Fluid Prescription & Balance Chart**

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## 16. Start next day's chart

i. Labelling

Front

Back

Use appropriate abbreviations only to update:

Prescription

Consent

Followed on

DOE

ii. Weight

Weight

Height

Temperature

Pulse

Respiratory rate

SpO<sub>2</sub>

Urine output

Stool output

Vomiting

Diarrhoea

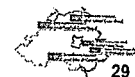
Other

iii. Volumes

Yesterday's Date	Grand total in	Grand total out	Balance
	2000	1980	+20

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Paediatric Fluid Prescription & Balance Chart



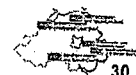
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## Fluid Prescription/Balance Chart



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Paediatric Fluid Prescription & Balance Chart



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