Policy for Managing Fluid Balance and Hydration in Adult Patients

This Policy is under review. This version should be used in the interim. Please Contact Ricky K Bell – (Consultant) for Assistance. 24th February 2021

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<th>Approved By:</th>
<th>Policy and Guidance Committee</th>
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<td>Date Approved:</td>
<td>16th September 2016</td>
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<tr>
<td>Trust Reference:</td>
<td>B38/2016</td>
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<tr>
<td>Version:</td>
<td>1</td>
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<td>Supersedes:</td>
<td>N/A</td>
</tr>
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<tr>
<td>Latest Review Date</td>
<td>16 September 2016</td>
</tr>
<tr>
<td>Next Review Date:</td>
<td>March 2018</td>
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July 2021 Review Date Extension Approved at PGC on 19th Feb 2021
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## KEYWORDS

Fluid Balance, Fluid Management, Hydration, Fluid
1 INTRODUCTION

Maintenance of adequate hydration is vital to health and preventing the deterioration of the acutely unwell patient. Effective and consistent fluid management is recognised nationally as being an area of weak practice with inadequate fluid balance monitoring and record keeping having been identified as contributing factors to the poor outcome of acutely unwell patients.\(^1\)\(^2\)\(^3\)

1.1 This document sets out the University Hospitals of Leicester (UHL) NHS Trusts Policy and Procedures for fluid management, to include meeting patients' hydration needs and for monitoring fluid balance.

2 POLICY AIMS

The aim of this policy is to outline the processes for effective fluid management in all adult patients and to provide guidance relating to active fluid monitoring.

3 POLICY SCOPE

3.1 This policy applies to all medical and nursing staff, health care assistants and allied health professionals (AHP) involved in the care of patients admitted to hospital and requiring fluid management support.

3.2 This policy does not apply to the administration of nutrition via the NG or parental nutrition route please refer to the appropriate UHL policies (Insertion and Management of Nasogastric and Nasojejunal Tubes Trust Ref: B39/2005 & Policy for the Administration of Parenteral Nutrition via a central venous catheter in adults Trust Ref: B22/2015)

3.3 This policy relates to all adult patients within the trust with the exception of those patients in the ‘last days of their life’ which are covered by the “Guidance for the Care of Patients in the Last Days of Life” (Trust Ref: B1/2014).

3.4 Blood products need to be taken into account when managing Fluid Balance, however for prescribing and administration please refer to UHL Blood Transfusion Policy (Trust Ref: B16/2003)

3.5 This policy does not apply to the management of Fluid Balance & Hydration in children who are patients, please refer to Guidelines on Fluid & Electrolyte Management in the Children’s Hospital (Trust Ref: C6/2015)

4 DEFINITIONS

4.1 Fluid balance is a term used to describe the balance of the input and output of fluids in the body to allow metabolic processes to function correctly.\(^4\)
4.2 **Fluid Management** is the term used to describe the processes involved in assessing patients’ fluid requirements and delivering those requirements safely.

5 **ROLES AND RESPONSIBILITIES**

5.1 **The Chief Nurse** is the Executive lead for this policy and is responsible for ensuring systems and resources are in place to facilitate implementation and compliance of the policy.

5.2 **CMG Clinical Director and Heads of Nursing** are responsible for the distribution of this policy and ensuring compliance and monitoring processes for relevant staff groups are in place within their CMG.

5.3 **Consultants and Matrons** are responsible for reviewing the patients’ fluid management as part of their ward rounds.

5.4 **Matrons and Sisters/charge nurses** have a responsibility to ensure that this policy is implemented within their areas and to monitor compliance with audit and ensure all staff groups are educated to the required level, whilst keeping up to date with current practice.

5.5 **All Medical staff** are responsible for:

- The effective assessment of the patients’ hydration needs on admission and throughout their hospital stay
- Prescribing enteral, parenteral, intravenous fluids and blood products where required
- Monitoring blood results, the use of diuretics and fluid balance charts
- Regularly reviewing and altering the patients’ fluid management accordingly.

5.6 **All Registered Nurses (RN) and Allied Healthcare Professionals (AHP)** are responsible for:

- Being aware of the implications of fluid management
- Effectively assessing the patients’ hydration needs on admission and throughout their hospital stay
- Implementing and monitoring the effectiveness of appropriate care plans and ensuring that fluid balance charts are commenced, accurately monitored and correctly completed where indicated
- The provision of oral fluids and the correct administration of enteral, parenteral, sub cut, intravenous fluids and blood products as prescribed
- Bringing any concerns regarding the patient’s hydration to the attention of senior staff in a timely manner
- Informing patients and relatives about the role they can play in fluid management.

5.7 **Health Care Assistants/support workers** are responsible for supporting the RN and AHP with their role in maintaining the patients’ hydration requirements by assisting with the provision of oral fluids and accurately monitor and documenting fluid input and output on fluid
balance charts where appropriate and to bring any concerns to the 
attention of the RN and AHP in a timely manner.

6 POLICY STATEMENTS

Assessment of hydration has three main elements: clinical assessment, 
review of fluid balance charts and review of blood chemistry.5

6.1 Clinical Assessment

All patients must be assessed on admission and on a continuing basis for 
their fluid and hydration needs. This could include:

- Assessment of the patient’s ability to drink independently
- Assessing symptoms of thirst and reasons for it
- Measuring weight, baseline vital signs and physical appearance e.g. 
skin, mouth and eyes
- Medical staff must assess patient’s volume status and review baseline 
urea and electrolytes
- Dip stick urinalysis, assessing the specific gravity and assessment of 
urine colour are useful indicators of hydration
- Early Warning Score (EWS) monitoring and management of raised 
scores as per EWS guideline Trust Ref: B25/2011.
- Current medications must be considered when assessing fluid status 
along with the patient’s medical condition/diagnosis.

6.1.1 Promoting Good Hydration

Hydration of the patient is as important as ensuring adequate food intake and 
the Trust is committed to ensuring that where appropriate patients are 
encouraged to take a range of fluids through the day and intake is 
documented in their care plans. If patients are unable to tolerate oral fluids the 
use of alternative routes for the provision of fluids must be discussed with the 
patient’s clinical team (e.g. enteral, IV).

- Patients should be encouraged to participate and take ownership of the 
management of their hydration status where possible. This is regarded 
as being beneficial and can improve compliance with monitoring of 
fluids input and output and therefore enhanced accuracy of fluid chart 
completion.6 The patient must be kept informed of any fluid restrictions 
or requests for increase in fluid intake that the doctor has requested of 
them and the rationale so that they can correctly take an active role in 
their own hydration. If the patient is able then he/she should be fully 
supported to complete their own fluid charts.
- It is the responsibility of the RN/ AHP to ensure carers/relatives are 
aware of the vital role they play in supporting more dependant 
individuals to drink and to assist in accurate fluid balance recording. 
The carers should be made aware of the individuals need for fluid and 
courage them to drink. They should be asked to inform members of
the clinical team if fluids are given so that this can be accurately documented on the Fluid Balance chart.

6.1.2 Provision of Oral Fluids

- Water will be provided for in-patients both at the bedside in individual jugs and from trolleys on drinks rounds.
- Jugs will be refilled at least 3 times daily to ensure that the water is cool and clean.
- Drinks will be offered from the trolley at least seven times in each 24 hours.
- Appropriate drinking vessels will be supplied to each patient.
- RNs, AHP, Health Care Assistants and support workers will provide the patient with assistance where needed when taking oral fluids.
- Patients who require assistance with drinking will have the need for a red-lidded jug considered (refer to Enhanced patient mealtimes: Guidelines for best practice. Trust Ref: B43/2006)
- The individual patient remains the central focus of care.
- Patient’s spiritual/religious beliefs must be documented to ensure that staff are informed of patients who are fasting. Consideration would be based on individuals’ needs and impact fasting may have on their continuing healthcare.

6.1.3 Patients requiring fasting pre-op or Nil by mouth due to clinical condition

All patients who are not receiving oral hydration due to their clinical condition or when fasting pre operatively must be commenced on a fluid balance chart and their hydration needs regularly assessed. Please refer to the UHL Pre-operative fasting guidelines for adults and children (Trust Ref: B27/2014)

6.1.4 Administration of Intravenous (IV) Fluids

a) Following assessment of hydration needs and volume status, if IV fluids are required they must be prescribed according to NICE guidelines for Intravenous fluid therapy in adults (CG 174)\textsuperscript{8}.

b) An accurate fluid balance along with close monitoring of the patients’ physiological observations assists with the assessment of patient’s hydration needs and the monitoring of patient response to IV fluids. This enables an appropriate review of the fluid status and any subsequent fluid required.

c) IV fluids can be given instead of, or in addition to, oral/enteral/parenteral intake.

d) All patients receiving IV fluids must be commenced on a Fluid Balance chart which must be totalled at least every 4 hours and regularly reviewed throughout the day.
e) Any medications given via the IV route must be recorded in the Intake side of the Fluid Balance chart and included in considerations of fluid management.

f) The IV prescription must be monitored and reviewed in conjunction with the Fluid Balance Chart. This must be reviewed at least daily as part of the ward round. For patients on longer-term IV fluid therapy whose condition is stable, reviews should be undertaken as clinically indicated. Any decision to reduce monitoring frequency must be detailed in the medical notes. The clinical staff member making the decision must clearly identify themselves by name and not with a signature.

6.1.5 Administration of Enteral/parenteral/subcutaneous fluids

Patients who require the administration of fluids via the enteral, parenteral or subcutaneous route must be commenced on a fluid balance chart and care given as per UHL policies for the Administration of Parenteral Nutrition via a central venous catheter in adults & the Insertion and Management of Nasogastric and Nasojejunal Tubes (Policy for the Administration of Parenteral Nutrition via a central venous catheter in adults Trust Ref: B22/2015 & Insertion and Management of Nasogastric and Nasojejunal Tubes Trust Ref: B39/2005).

6.1.6 Administration of Blood Products

Patients who require the administration of blood products must be commenced on a fluid balance chart as well as administration of blood products chart. Prescription and administration must be carried out as per UHL Blood Transfusion Policy (Trust Ref: B16/2003).

6.1.7 Administration of medications with impact on hydration status

Current medications must be considered when assessing fluid status, specifically in respect of diuretic, lithium treatment and Desmopressin (please refer to Guidance for the management of In-patients who are admitted on Lithium therapy – B13/2015, see Appendix 3 for NHS England Patient Safety Alert regarding Desmopressin).

6.2 Review of Fluid Balance Charts

Clear, timely, accurate review and completion of fluid balance charts should be carried out on all patients who meet the criteria below.

a) Any patient with an intravenous infusion, catheter, urostomy or stoma.

b) Any patient requiring Enteral i.e. Nasogastric (NG), Endoscopic gastrostomy (PEG) Percutaneous endoscopic jejunostomy (PEJ) or Parenteral feeding i.e. Total Parenteral Nutrition (TPN)
c) Any patient Nil by Mouth.
d) Any patient receiving blood products or colloid boluses.
e) Any patient receiving large amounts of fluid with intravenous drugs.
f) Any patient with drains insitu
g) Any patient with large fluid losses e.g. Diarrhoea, Vomiting, Blood Loss or NG drainage.
h) Any patient on Lithium or Desmopressin
i) Every patient for at least 24 hours post Intensive care discharge.
j) Every patient post major surgery (for at least 24 hours).
k) Any patient with an Early Warning Score (EWS) greater than or equal to 3.
l) Any patient that you are concerned about e.g. patient with poor oral intake, patient having difficulty passing urine, patient continually spiking temperature etc.

Completion includes input and output totals; positive or negative balances documented in patient unified note every 24 hours and action taken by the nurse to address these balances.

Running totals of input, output and running Balance must be totalled 4 hourly.

Standard for the documentation of fluid input & output can be found in Appendix 1 along with information on when to discontinue fluid balance chart.

6.3 Review of Blood Chemistry

All patients admitted as an emergency, regardless of specialty, should have their electrolytes checked routinely on admission and a plan recorded in the medical notes on when and how frequently they should be checked thereafter.

Patients receiving IV fluids need regular monitoring. This should initially include at least daily laboratory values (urea, creatinine and electrolytes)\(^8\); be rechecked if the patient is suspected to have fluid imbalance and reassessed again after any treatment.

7 Education and Training Requirements

7.1 The NICE guidance (CG174 2013) states (direct copy):

- Hospitals should establish systems to ensure that all healthcare professionals involved in prescribing and delivering IV fluid therapy are trained on the principles covered in this [CG174] guideline, and are then formally assessed and reassessed at regular intervals to demonstrate competence in:
  - a) Understanding the physiology of fluid and electrolyte balance in patients with normal physiology and during illness
  - b) Assessing patients' fluid and electrolyte needs (the 5 Rs: Resuscitation, Routine maintenance, Replacement, Redistribution and Reassessment)
  - c) Assessing the risks, benefits and harms of IV fluids
d) Prescribing and administering IV fluids

e) Monitoring the patient response

f) Evaluating and documenting changes and

g) Taking appropriate action as required.

Healthcare professionals should receive training and education about, and be competent in, recognising, assessing and preventing consequences of mismanaged IV fluid therapy, including:

a) pulmonary oedema

b) peripheral oedema

c) volume depletion and shock.

7.2 In UHL the NICE Education and Training recommendations are covered as follows:

a) Pre-Registration training for Healthcare Professional includes training in Fluid Management and awareness of the importance of meeting patients’ basic hydration needs.

b) New Healthcare Assistants / support workers receive Fluid Balance Training as part of their clinical induction programme and through completion of the Care Certificate

c) New Registered Nurses / Midwives and nurses from the EU / Overseas receive fluid management training as part of the Deteriorating Patient Sessions in their Preceptorship Programme / Induction programme.

d) FY1/2 Medical staff receive fluid management training at multiple points in their post graduate training.

e) Clinical areas or individual staff who identify a learning need in this area, (for example through incident reporting, audit results or personal reflection) will be offered further training and support. This must be discussed and actioned with their line manager in the first instance, further advice can be sought from the relevant Education Lead / Clinical supervisor.

8 PROCESS FOR MONITORING COMPLIANCE

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<th>Element to be monitored</th>
<th>Lead</th>
<th>Tool</th>
<th>Frequency</th>
<th>Reporting arrangements</th>
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Managing Fluid Balance and Hydration in Adult Patients Policy
V1 Approved by Policy and Guideline Committee on 16 September 2016 Trust Ref: B38/2016

NB: Paper copies of this document may not be most recent version. The definitive version is held on INsite Documents

Next Review: July 2021
Patients with hydration needs have their Fluid Balance monitored

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<th>Matron/Ward Sister</th>
<th>Matrix</th>
<th>Monthly</th>
<th>Scorecard published on INsite</th>
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Fluid Balance Charts are completed accurately

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<th>Matrix</th>
<th>Monthly</th>
<th>Scorecard published on INsite</th>
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Review of incidents as a means of monitoring effectiveness

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**9 EQUALITY IMPACT ASSESSMENT**

9.1 The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.

9.2 As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

**10 LEGAL LIABILITY**

Guidelines or Procedures issued and approved by the Trust are considered to represent best practice. Staff may only exceptionally depart from any relevant Trust guidelines or Procedures and always only providing that such departure is confined to the specific needs of individual circumstances. In healthcare delivery such departure shall only be undertaken where, in the judgement of the responsible healthcare professional’ it is fully appropriate and justifiable - such decision to be fully recorded in the patient’s notes.

**11 SUPPORTING REFERENCES, EVIDENCE BASE AND RELATED POLICIES**

11.1 References


7 National Institute for Clinical Excellence quality standard [QS66] August 2014 Intravenous fluid therapy in adults in hospital

8 National Institute for Clinical Excellence guidelines (CG174) 2013. Intravenous fluid therapy in adults in hospital


11.2 UHL Trust Policies

Insertion and Management of Nasogastric and Nasojejunal Tubes Trust Ref: B39/2005

Policy for the Administration of Parenteral Nutrition via a central venous catheter in adults Trust Ref: B22/2015

Guidance for the Care of Patients in the Last Days of Life Trust Ref: B1/2014

UHL Blood Transfusion Policy (Trust Ref: B16/2003)

Guidelines on Fluid & Electrolyte Management in the Children’s Hospital (Trust Ref: C6/2015)

Guideline for the completion and escalation of Early Warning Scoring (EWS) monitoring system in adult patients Trust Ref: B25/2011.


Guidance for the management of In-patients who are admitted on Lithium therapy Trust ref: B13/2015
1. Standards for the documentation of Fluid Input.

1.1 Oral Fluids.

a) Each measure of oral fluid given will be accurately recorded on the fluid balance chart once it is taken. Wherever possible, patients should be encouraged to document oral intake themselves.

b) Hospital cups and beakers vary in size across the three sites. **Any container used on a ward should be measured and a standard amount agreed locally.** The amount documented obviously depends on how much the fluid container was filled and how much of that the patient drank.

Generally

- Hospital glass/beaker of fluid = 200mls
- Hospital beaker cup = 150mls
- Hospital mug = 200mls
- Hospital jug of fluid = 1500mls.

c) Other fluids taken e.g. contrast solution must also be recorded in mls on the fluid balance chart once the patient takes it.

d) Patients may also need sips of fluid to be accurately recorded, please refer to specific divisional guidelines or standards which should be kept on each ward. A measured amount should be given to the patient over time.

e) Refusal of oral intake must also be recorded on the fluid balance chart. Medical staff must be made aware of any patient who has poor oral intake or persistently refuses oral intake in order to assess whether some other form of hydration is required and the outcome of their assessment documented.

1.2 Intra-Venous Fluids.

Classification of intra-venous (IV) Fluid types.

- **Crystalloids** are mainly water with small molecule solutes e.g. Normal saline 0.9 %, glucose solutions, Hartmans solution and hyper tonic solution.\(^9\)

- **Colloids** have larger molecules so remain longer within the intravascular compartment. Colloids can be grouped as Blood, Blood products (Fresh Frozen Plasma and plasma derivatives), Gelatin (Volplex) and starches.\(^9\)
a) **All** IV and subcutaneous fluids/drugs/blood and blood products must be recorded on the fluid balance chart. This also includes

- Drugs infused via syringe driver (e.g. Heparin/Insulin infusions).
- IV Flushes.
- IV Drug Boluses.

b) Where possible for accuracy, an infusion device is the preferred method of IV fluid delivery and **must** be used for all infusions containing potassium as per IV policy.

c) For fluids that are being delivered via an infusion device, identify the name of the solution at the commencement of the bag (e.g. Dextrose 5%). The rate infused must be documented every hour.

d) It is essential that IV solutions not being delivered by an infusion device or burette (e.g. drugs) are accurately recorded and that they run to time.

e) The drug or solution name must be recorded on the Fluid Balance Charts in brackets (e.g. Dextrose 5%) when commenced.

f) Upon discontinuation/completion of the bag of fluid or drug, a record of the total volume infused must then be documented on the Fluid balance chart and added into the input balance. Running totals of input, output and running Balance must be totalled 4 hourly as highlighted by the shaded area of the chart.

g) At the end of a 24 hour period, when a new Fluid Balance Chart is commenced, the practitioner must ensure any fluid still to be completed is carried forward and that only infused volume is added into the balance.

An example of a completed Fluid Balance Chart can be found at the end of this standard.

1.3 Nutrition.

Includes: - Naso- Gastric (NG); Parenteral nutrition (PN) feeds; Percutaneous Endoscopic Gastrostomy (PEG); Percutaneous Endoscopic Jejunostomy (JEJ).

All Nutrition must be run via a volumetric or feed pump unless bolus feeding is being used.

a) When commencing feeds identify the name of the feed on the Fluid Balance Chart and record the rate hourly.
b) All Flushes or drugs administered in-between/during feeds must be recorded on the Fluid Balance Chart.

1.4 Blank Columns

Any other fluid input that the patient is receiving must be recorded in the blank column and clearly identified. For example:

- When multiple fluids are being transfused simultaneously.
- Irrigation solutions

1.5 Running Total

A running total of all fluid input must be recorded correctly at least four hourly (as highlighted by the shaded area on the chart) but may be required more frequently dependent upon patient condition or clinical judgement. Any concern about discrepancy between input and output must be highlighted to the Medical team as soon as possible.

2 Standards for the Documentation of Fluid Output

2.1 Urine (for patients WITHOUT a urinary catheter).

a) All patients without a urinary catheter must have access to equipment that facilitates the measuring of urine output i.e. urinal (with cover), bedpan (with cover), gloves etc., where necessary.

b) Patients should be encouraged to document their own urine output on the Fluid Balance Chart when possible.

c) Where the patient is on a Fluid Balance Chart all urine output must be recorded in mls on the Fluid Balance Chart by the person discarding the contents after each void.

d) If a patient Has Not Passed Urine then a note should be made on the chart every 4 hours (HNPU). If the patient has been incontinent a record of this must also be documented on the Fluid Balance Chart.

e) If a patient has still not passed urine within 12 hours the medical staff must be contacted to review the patient and the results of their assessment documented.

2.2 Urine - for Patients with an hourly catheter bag (urometer).

a) The urine in the upper measuring chamber must be recorded on the Fluid Balance Chart by the person measuring the content at least every 4 hours. Once recorded the chamber must be emptied into the lower reservoir bag below.

b) Only the volume in the upper chamber should be recorded on the Fluid Balance Chart. When the total collection bag content is emptied, an E must be documented to symbolise that the bag has been emptied and discarded. The
volume of the lower bag must not be recorded on the fluid balance chart as the amount has already been documented.

2.3 Urine (for patients with a single chamber catheter bag)

Urine must be recorded when the bag is emptied by the person measuring the content. An E should be documented alongside the volume amount to symbolise that the bag has been emptied and discarded. This must be done at least every 6 hours. If the amount recorded is less than 0.5ml/kg/hr, medical staff must be informed to review the patient.

e.g. Catheter bag last emptied 6hrs ago. Amount now in bag = 200mls

Patient weighs 80kg therefore should pass 40mls per hour. Over 6hrs this works out as 40 x 6 = 240mls

As 200mls is less than the expected 240mls the medical team need to be informed.

2.4 Urostomy bags/flip flow.

a) Urine must be recorded as above when the bag is emptied by the patient or practitioner. The running total and running balance must be documented every 4 hours as highlighted by the shaded areas on the Fluid Balance Chart.

b) Patients should be encouraged to document their own urine output on the Fluid Balance Chart when possible.

2.5 Drains (that can be emptied)

a) If the patient has more than one drain insitu, each collection chamber must be clearly labelled with a number e.g. 1, 2, etc., the corresponding number must be entered at the top of the drain column on the Fluid Balance Chart.

b) The drainage must be measured at least every four hours (or more frequently if the patient’s condition dictates) with the drainage amount written on the Fluid Balance Chart and added to the output running total.

c) When the drain is emptied this must be clearly identified on the fluid balance chart by recording an E in the output column along with the amount drained. If the drain is changed or removed this too must be recorded in the output column next to the volume of fluid in mls.

d) Nil drainage must also be documented on the chart as 0 at least every four hours.

2.6 For Closed System Drains (e.g. redivac /chest drains) the drainage must be measured and volumes recorded every four hours (or more frequently if the patient’s condition dictates). The running total in the drain is recorded on the chart but not included in the fluid balance. It is the difference between the previous running total and the current running total that is the
actual amount that has been drained in the 4 hour period and recorded in the fluid output. E.g. Previous running total was 80mls, new running total is 120mls therefore the drainage for the last 4hrs is 40mls.

This is recorded in the output column as

\[
\text{Drainage} = 40 \\
\text{Running total} = 120
\]

Only the drainage over the last 4hrs is included in the fluid balance output (e.g. 40 mls).

b) Following removal of the drain, any leakage from the drain site that is collected in a bag or collection chamber must be recorded in a blank column on the Fluid Balance Chart and included in the running total.

2.7 Vomit

a) All patients’ feeling nauseous or vomiting must be provided with vomit bowls, tissues and mouth care.

b) Vomit must be measured and recorded in mls on the Fluid Balance Chart by the person disposing of it. Vomiting must be reported to medical staff.

2.8 Naso-Gastric (NG) Tube Output

a) For Naso-Gastric (NG) Tubes that are on free drainage, the bag should be emptied at least every four hours and recorded on the Fluid Balance Chart by the person measuring the content. An E should be written beside the amount to clearly identify that it has been discarded.

b) For NG tubes that require aspirating, the frequency of aspiration will be dictated by the patient’s condition. All NG tube aspirate must be recorded by the person measuring the content. In Critical Care, if the patient is being fed and aspirate is to be replaced an R should be written next to the amount replaced as per local policy. The amount of any replaced aspirate should not be included in the running total.

2.9 Bowels/Stoma Measurements

The stoma bag contents must be emptied as required. The person measuring the contents must record the measurements in mls in the output column and add it to the output running total.

2.10 Blank Columns

Any additional fluid output must be recorded in the blank columns and clearly identified.
2.11 Additional Losses
In some circumstances patients have additional large losses from leaking wounds and oedema. This should be documented on the fluid balance even if the amount lost is unknown.

2.12 Running Total
A running total of all fluid output and balance must be recorded at least four hourly but may be required more frequently dependent upon patient condition or clinical judgement. Medical staff must be informed of any great discrepancies in fluid balance such as if a patient has a positive or negative balance of more than one litre at any given time.

3. 24-Hours Balance and Totals
a) All Fluid Balance Charts must be totalled at midnight every night and a negative or positive balance recorded.
b) The previous day’s total of all fluid input and output must be identified at the top of the Fluid Balance Chart in the space provided. An overall negative or positive fluid balance for the previous day must also be recorded.

4. When to discontinue Fluid Balance Monitoring
Providing the patient does not fulfil any other criteria to remain on a Fluid Balance Chart monitoring can be discontinued;
a) When IV fluids, enteral or parenteral feeding is discontinued and oral intake is deemed to be adequate
b) 24hrs after removal of urinary catheter providing urine output and fluid balance has been acceptable
c) Following direction from medical team
d) 24hrs after patient has stopped receiving blood products or colloid boluses
e) 24hrs following cessation of large fluid losses
f) When Fluid Balance monitoring is no longer considered essential
g) When patient is deemed fit for discharge
h) When patient is near the End of Life.

When fluid balance monitoring is stopped a line should be put through the remainder of the chart and the word “Discontinued” clearly written on the Fluid Balance Chart. The name of the staff member stopping the chart must be clearly printed alongside this.
An example of a correctly filled in fluid balance chart.

Appendix 2
FLUID BALANCE

Name: k  

Number:  

Ward:  

Date:  

FLUID BALANCE

Ward Round Review  

Senior Decision Maker  

only:  

INPUT  

Oral Intake (mls) Fluids IV or 10T Blood Bolus Drugs Drug Infusions PCA/ Epidural NGTR/ PEG (mls) Running Total In 

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Total INTAKE=  

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Urinalysis  

Date:  

PAIN SCORE
### FLUID BALANCE

**Name:** A. N. OTHER  
**Number:** 5012345  
**Ward:** 5J  
**Date:** 1kt/11/1b

#### Ward Round Review

**Senior Decision Maker:** G'6l..46  
**Previous:** '6l..46  
**Previous 24 hours BALANCE:** t- o\l/4  
**Previous OUTPUT:** 2.\(\_\) S  
**Patients:**  
**Weight:** <6

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**Totals**  
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- 42D  
- 110  
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OUTPUT = 2 - 0 w.; s

Urinalysis
pH:
Protein:
Blood:
Leucocytes:
Glucose:
Ketones:
Nitrates:

Date:

PAIN SCORE
No Pain Mild Moderate Severe
Cranial diabetes insipidus is a rare disorder of the pituitary gland characterised by an inability to produce antidiuretic hormone (ADH) [1]. This results in the production of large volumes of dilute urine. Cranial diabetes insipidus is the most common type of diabetes insipidus. It can be caused by damage to the hypothalamus or pituitary gland, for example, after an infection, operation, brain tumour or head injury. Left untreated, patients with cranial diabetes insipidus will develop life-threatening dehydration and hypernatraemia. Desmopressin is a synthetic form of ADH used to treat cranial diabetes insipidus and is considered a life sustaining medication in this situation. In the treatment of cranial diabetes insipidus, desmopressin is most commonly administered as an intranasal spray or oral tablets, but may also be given as an injection, which is useful in the treatment of acutely unwell or fasting patients. It is also available in sub-lingual tablet and oral liquid formulations.

The dose of desmopressin is different depending on the indication for use and formulation [2]. While 56 reported incidents to the National Reporting and Learning System (NRLS) identified dosing errors with resulting patient harm, NHS England is aware of four incidents in the past seven years where omission of desmopressin has resulted in severe dehydration and death. A further 76 incidents to the NRLS described omission or delay that had been detected and acted on before the patient became critically ill. An example incident reads:

This patient was admitted and had their drug chart written-up. The patient did not receive desmopressin for 48 hours and became profoundly hypernatraemic as a result. The patient is currently life-threateningly ill. (Patient subsequently died, reported harm death).

The main themes from reported incidents of desmopressin omission, confirmed by a short survey of nursing staff, included: a lack of awareness of the critical nature of desmopressin amongst medical, pharmacy and nursing staff; and poor availability of desmopressin within inpatient clinical areas where it was often not kept as a stock item. Other common reasons for desmopressin omission included nil-by-mouth status and patient refusal, which may be related to acute illness. There was also an assumption that desmopressin was a relatively low priority medication; in particular where the nasal spray formulation was prescribed as most other nasal sprays are used to treat minor symptoms (including where desmopressin is used for the treatment of nocturia). As the symptoms of omitted desmopressin can include confusion, agitation, hostile and un-cooperative behaviour, patients who would usually be aware of how vital their medication was were not always able to emphasise this to staff.

In many organisations, desmopressin, when indicated for the treatment of cranial diabetes insipidus, was not classed or recognised as a critical medicine as understood in the National Patient Safety Agency Rapid Response Report, NPSA/2010/RRR009 [3]. For organisations with alerts linked to electronic prescribing, warnings of the risks of desmopressin omission may not be in place.

**Actions**

**Who:**

All organisations providing NHS-funded care for treatment of cranial diabetes insipidus

**When:**

As soon as possible and by no later than 21 March 2016

1. Identify if the omission of desmopressin for the treatment of cranial diabetes insipidus has or could occur in your organisation.

2. Consider if immediate action needs to be taken locally, and ensure that an action plan is underway if required, to reduce the risk of further incidents occurring.

3. Circulate this alert to all relevant medical, nursing, pharmacy and other staff.

4. Share any learning from local investigations or locally developed good practice resources by emailing patientsafety.enquiries@nhs.net

See page 2 for technical notes and references.
Technical notes

NRLS search dates and terms
A SAS search was performed on 6/10/2015 of the NRLS for reported medication patient safety incidents occurring between 1/1/2009 and 1/10/2015 inclusive containing the terms ‘desmo’ or ‘ddavp’.

The search returned 471 incidents. All harm incidents (94) and a search of no harm undertaken with key terms to identify further incidents (n=200) were thematically reviewed. Omission (76) and wrong dose (56) were the most common themes identified. An additional two fatal incidents were identified through inquest reports and direct information from the trust where they had occurred.

Five Medication Safety Officers in different acute trusts undertook an opportunistic survey of 25 ward-based registered nurses in October 2015. Apart from nurses working in specialist brain injury units, none were aware that desmopressin was a critical medication, and some were not aware that diabetes insipidus was a different condition from diabetes mellitus.

Stakeholder engagement
• Medical Specialties Patient Safety Expert Group
• Patient Safety Steering Group
• Medication Safety Officer Network

For details of the membership of the NHS England patient safety expert groups and steering group see http://www.england.nhs.uk/ourwork/patientsafety/patient-safety-groups/

References
2. Summary of Product Characteristics http://www.mhra.gov.uk/spc-pil/?IdcService=SS_GET_PAGE&nodeId=%3C%25%3D+nodeId+%25%3E&searchFiled=desmopressin&SubmitSearch=Search