Clinical

Food, Fluid and Nutritional Care Policy

SECTION 1: NUTRITIONAL ASSESSMENT, SCREENING & CARE PLANNING

SECTION 1.2 PROTOCOL FOR THE ASSESSMENT AND MANAGEMENT OF HYDRATION IN ADULTS

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1.2. POLICY FOR THE ASSESSMENTAND MANAGEMENT OF HYDRATION

1. PURPOSE AND SCOPE

This document outlines the protocol for the assessment and management of hydration of all **adult** in-patients.

This document should be used in conjunction with other NHS Tayside policies and guidance: Intravenous Venous (IV) peripheral Cannulation, NHST Infection Control Policy, and NHS Tayside Safe and Secure Handling of Medication Guidance.

It includes guidelines and Standard operating procedures for reducing risk and promoting safe practice. All clinical staff has a duty to follow this evidence based practice. This protocol does not cover: central venous catheters, drug therapy (unless added to fluids), Parenteral Nutrition (PN), blood transfusions, or the insertion of peripheral cannula.

This policy excludes: paediatric care, critical care, central venous catheters, drug therapy (unless added to IV fluids), PN, blood transfusions, or the insertion of peripheral cannula.

2. RESPONSIBILITIES AND ORGANISATIONAL ARRANGEMENTS

General Managers/Assistant Directors (or equivalent) are responsible for the distribution of this protocol to staff within their area/directorate/business unit; ensuring staff have the opportunity to access the Food, Fluid & Nutritional Care Policy.

Clinical Directors & Senior Clinical Nurses are responsible for ensuring this protocol is implemented within their area and to monitor compliance.

All clinical staff are responsible for their own compliance with the guidance contained within this protocol, identifying their own training needs and attending appropriate training when provided.

3. BACKGROUND

Water plays many important roles. The body requires water to survive and function properly and is central to the most basic physiological functions. Although commonly it is treated rather trivially, no other nutrient is more essential or is needed in such large amounts, (RCN 2005).Dehydration, over-hydration, and electrolyte imbalance must be treated appropriately, (Holte, Sharrock & Kehlet, 2002, McMillan & Pitcher 2010).

In terms of hydration, the words water and fluid are often used interchangeably. All drinks count, but water is the most effective means of hydration and is the healthiest.

It is essential that all staff has an awareness of the importance of water and hydration to patient health and that all patients have adequate access to and/or provision of fresh drinking water throughout NHS Tayside. Optimal hydration of hospital patients should be a priority in ward routines and should be as fundamental to patient nutritional care as the provision of food, (RCN 2005).

Overhydration occurs when the body takes in more water than it excretes and its normal sodium level is diluted (hyponatraemia). Mild over hydration can generally be corrected by limiting fluid intake or by the use of diuretics. Identifying and treating any

underlying condition (such as impaired heart or kidney function) is a priority, and fluid restrictions are a critical component of a treatment plan, (Ruxton, 2012).

However, dehydration is a more frequently occurring problem and occurs when the loss of body fluids, mostly water, exceeds the amount that is taken in, (Warren et al 1991).

Dehydration can be divided into mild, moderate and severe. Mild and often moderate dehydration can be reversed or put back in balance by oral intake of fluids that contain electrolytes, (Weinberg & Minaker 1995).
Whilst in many cases dehydration is unavoidable, if unrecognised and untreated, some instances of moderate and severe dehydration have been associated with increased mortality rates and can lead to death, (Xaio 2004, Warren et al 1991).

Potential consequences of dehydration include:

- Constipation
- Poor oral health
- Increased risk of falls
- Medication toxicity
- Urinary-tract and respiratory infections
- Delirium/acute confusion
- Renal disease/ Electrolyte imbalance
- Longer time to wound healing (especially pressure ulcers)

(Mentes, 2006 and RCN, 2005)

4. RISK FACTORS FOR DEHYDRATION

The more of the following indicators that are present the greater the likelihood of dehydration:

- A diagnosis of cognitive impairment, malnutrition or >4 chronic conditions
- Age >85 years
- Patient is Nil by Mouth
- Diarrhoea in the last 24hrs.
- High output stoma or increased frequency > 1 litre/24hrs.
- Large open wound/ Vac therapy- patients can lose large fluid volumes through an open wound.
- Excessive vomiting/ high naso-gastric output- particularly if high output(>500 ml / day)
- Urinary catheter, urostomy or bladder irrigation
- Respiratory rate > 20bpm (25bpm in chronic respiratory conditions- can lead to fluid loss > 500mls/24hrs)
- Temperature > 38°C in adults- can increase fluid losses by> 500mls /24hrs.
- Urine output >200mls/hr
- Low Urine output< 0.5mls/kg/hr- is a sign of acute renal failure in adults that may be caused by dehydration and requires urgent medical review (not applicable in end stage renal failure)
- Any patient who has an SEWS >3, shows signs of clinical deterioration or displays signs and symptoms of sepsis or severe sepsis.

Medications:

- Medications that directly affect renal function and interfere with fluid balance include diuretics, laxatives, and angiotensin-converting enzyme [ACE] inhibitors
- Psychotropic's: antipsychotics antidepressants and anxiolytics (cause dryness of the mouth, constipation, or urinary retention
- Taking more than 4 medications
- Oral Steroids

(Lavizzo-Mourey et al, 1988)

5. ROLES AND RESPONSIBILITIES

It is essential that all clinical staff have the knowledge and awareness of the benefits of adequate hydration and their specific roles and responsibilities.

5.1 Registered staff

Hydration status should be part of an assessment of every patient on admission and should be reviewed at regular intervals, monitoring of fluid intake and output as required.

Registered nurses have a vital role in supporting all patients/ clients, especially those who are more dependent or unable to help themselves to maintain healthy hydration levels.
Registered nurses should be aware of individual's need for fluids, are responsible for the delivery of either oral, or prescribed IV or subcutaneous fluids, or restriction of fluids if required, and assessment of fluid preferences.
The result of the assessment and a plan of care should be documented in the nursing notes

Re- assessment should be undertaken if there is a change in the patient's condition, or the patient is placed 'nil by mouth' or unable/ or has difficulty taking food or fluids orally.

Medical staff must be informed if the patient requires a full clinical assessment and prescription of fluids.

5.2 Student nurses

Student nurses may undertake an assessment of hydration status and fluid preferences, supporting or encouraging patients to eat and drink and commencement of prescribed fluids under the supervision of qualified staff.

5.3 Non-registered staff

Delivery of oral fluids can only be delegated to non-registered staff by a registered nurse.

Non-registered staff may encourage and support patients to eat and drink and complete fluid balance charts – recording input and output. Any concerns should be reported to the nurse responsible for the patient care immediately.

5.4 Medical staff

Medical staff is responsible for developing a plan of care/ prescribing a course of treatment if concerns are raised as a result of a hydration assessment and evaluating this care.

5.5 Role of carers/relatives

Carers/relatives have a vital role in supporting more dependent individuals to drink, particularly if they are present during mealtimes. They can also inform staff of patients drinking preferences if the patient is unable to do so themselves, (Muller& Boisen 1989, Reed 1988).

5.6 Role of the patient

Encouraging the patient to participate and take ownership of the management of their hydration status (where possible) is fundamental to ensuring patient focused care and can improve compliance with monitoring of fluids input and output and therefore enhanced accuracy of fluid chart completion (Chung et al 2002, Reid 2004).

6. ASSESSMENT OF HYDRATION STATUS

A complete hydration assessment should be undertaken on admission, following re-admission, or if there is any change in condition that may cause the patient to be at risk for dehydration by a registered nurse using the traffic lights risk assessment documentation and SEWs Chart.

Nursing assessment should include:

1. Basic physiological measures:
- vital signs
- weight
- height
- body mass index (BMI) kg/m^2

2. Hydration status including:
- urine specific gravity/ urine colour
- 24-hour intake/output
- usual pattern of fluid intake
- intake behaviours
- treatments (e.g. NBM status or tube feedings)

In addition the following symptoms should be recorded and reported to relevant member of the medical team:
- Thirst/Dry mouth/ mucous membranes/furrowed tongue, sunken eyes
- Nausea and vomiting
- Muscle cramps
- Reduced skin turgor
- Change in mental status
- Urine becomes darker/ decreased urine output/oliguria
- Dizziness/faintness/weakness
- Postural hypotension
- Tachycardia
- Weight loss (2-3 Kg in short time)

Medical assessment should include:

1. Functional health status

2. Full Medical history to ensure that patients who require fluid replacement for the correction of specific problems are identified, including:
   - Diagnosis
   - Cognitive status
   - Current medical condition
   - History of dehydration
   - Current medications
   - Elevated serum electrolytes and urea

7. TREATMENT GOALS

Recommended daily intake level of water in the UK, is 1.2 litres to 3 litres per day (for men) or 2.2 litres (for women), this works out to be about six 200ml or eight 150ml glasses (Baker et al 2004).However to accurately determine daily fluid intake all patients should have individualised fluid goal determined by a documented standard for daily fluid intake. There is preliminary evidence that the standard suggested by Skipper, (1998), Lobo et al, (2006) and Thomas and Bishop, (2008) PENG, (2012), RCN (2005), (Kleinberg, 1999) of:

- 18-60 years of age - 35 mls/kg x body weight per day
- 60 years of age - 30 mls/kg x body weight per day

In addition:

- Fluid should be given in standardised measures to a prescribed amount per administration time and NHS Tayside has standardised drinking vessels for monitoring of input
- 24 hour Intake/output recording (see Fluid Balance Monitoring - Section 1.2.2 of FFNC Policy)
- Extra fluid should be provided in hot weather, during exercise, if patient has vomiting, diarrhoea or has an elevated temperature

Treatment goals for the patient with dehydration may range from fluid resuscitation, replacement of on-going losses, and maintenance of hydration or palliation.

The choice of therapy depends on the patient's clinical condition, including complications that influence the type and urgency of rehydration efforts. When treatment is indicated, the key to maintaining/ achieving optimal hydration or correcting dehydration is to correct water and electrolyte deficits.

7.1 Fluid restriction

For patients with cardiac, liver or renal failure, limitations of fluid intake to a prescribed amount for each 24-hour period is indicated as a therapeutic measure. This includes patients who have oedema associated with kidney disease and also in certain patients with pulmonary oedema.

7.2 Nutritional support

Some patients need additional nutritional support to help meet their nutritional requirements and this could be provided by:

- Use of Oral Nutritional Supplements (ONS)
- Enteral tube feeds
- Parenteral nutrition

Wherever possible the aim is to re establish the patient back to normal oral diet and fluids. If there are concerns that a patient is not receiving adequate hydration orally, even with oral nutritional support, an assessment nutrition and hydration status must be assessed separately and consideration given to what forms of enteral or parenteral nutrition may be required to meet their needs (GMC 2012). All these means of providing nutrition also provide fluids necessary to keep patients hydrated. Seek advice from Nutrition and Dietetics department.

7.3 Nil by mouth

No patient should be without fluid for more than 10 hours. For pre or post-surgery (see Protocol for pre-operative fasting for elective surgery/procedures in adult patients - Section1.2.3 of FFNC Policy).

If patients need to be kept NBM for longer for swallowing difficulties then an assessment by the multidisciplinary team using the Multidisciplinary Management of Dysphagia Guidelines (see Section 6 of FFNC Policy)

If the patient has been NBM for greater than 5 days then refer to Nutrition and Dietetics immediately to consider other methods of feeding such as Enteral or Parenteral feeding (see Protocol for the Management of Artificial Nutrition Support in Hospital and Community (Adults) - Section 4 of FFNC Policy)

8. PROVISION OF ORAL FLUIDS

8.1 Water provision

When providing water to patients all staff should ensure:

- Use designated drinking water taps supplying fresh, potable mains water. It is vital that drinking water is always drawn from these designated taps
- All patients should have access to fresh, preferably chilled drinking water throughout the day
- The cleaning of jugs and drinking glasses at ward level should be undertaken as per the agreed local procedures; preferably every 24 hours
- If you are unsure about how long water has been in a glass or a jug- change it!
- Always inform the patient when you have refreshed their glass or jug, and tell them where you have placed it
- Provide assistance to/and or encouragement to drink
- All water jugs must have lids

For patients with dysphagia it may be necessary to thicken fluids prior to provision especially those with cognitive impairment or those who are unable to thicken fluid themselves.

8.2 Frequency

Senior Charge Nurses should agree the minimum protocol as to when and how often drinking water should be refreshed for patients in their own clinical area, however it is recommended that water jugs are replenished at minimum of twice daily, (RCN 2005).

It is vital that a process is built into daily ward routines to ensure patients are provided with fresh drinking water and other fluids at regular intervals throughout the day by:

- Implementing fluid rounds mid-morning and late afternoon, (Spangler, Risley & Biley 1984)
- Undertake hourly Intentional Care Rounding, (Dix 2012)
- Serve drinks with each meal, (RCN 2005)

N.B. Patients who are on a fluid restriction should NOT be given a jug of water at their bedside.

8.3 Fluid preferences

Offer a variety of fluids, ensuring individual's drinking preferences are met; however water is considered the best beverage, (NHS QIS 2003). Palatability should be considered and intake may be improved with the addition of a small quantity of low sugar, diluting squash.

However not all patients will drink water, substitutions may include fruit juices, low-sodium soups, coffee and tea. Fluid preferences should be documented in the 'MUST' documentation or in a 'Getting to Know Me' document.

In addition be aware of:

- Food/fluid allergies
- Religious cultural beliefs- may restrict or promote certain fluids
- Personal diets e.g. vegetarian/vegan
- Therapeutic diets- the patients' medical condition may have an impact on their fluid requirements
- Renal disease or heart failure may restrict fluids
- Swallowing difficulties - may change the texture of fluids that the patient can take safely
- Malnutrition - may need more high energy fluids
- Diabetes/obesity - sugar free drinks to reduce energy content of fluids

Acidic drinks e.g. fruit juices and sugary drinks have the potential to cause dental erosion. To prevent tooth decay and promote good oral health sugary and acidic drinks should only be consumed at mealtimes, if at all, rather than between meals and avoid sugar-containing foods and drinks at bedtime (Scottish Health Executive 2012).

9. INTRAVENOUS FLUID MANAGEMENT

When prescribing IV fluids, remember the 5 R's:
Resuscitation, **R**outine maintenance, **R**eplacement, **R**edistribution and **R**eassessment.

Offer IV fluid therapy as part of a protocol (see Algorithms for IV fluid therapy in adults in hospital NICE Clinical Guideline [CG 174], 2013).

Patients should have an IV fluid management plan, which should include details of the fluid and electrolyte prescription over the next 24 hours, the assessment and monitoring plan.

Initially, the IV fluid management plan should be reviewed by an expert daily. IV fluid management plans for patients on longer-term IV fluid therapy whose condition is stable may be reviewed less frequently (NICE 2013).

If patients need IV fluids for routine maintenance alone, restrict the initial prescription to:

- **25 - 30 ml/kg/day of water**
- approximately **1 mmol/kg/day of potassium, sodium and chloride** and
- approximately **50 - 100 g/day of glucose** to limit starvation ketosis (this quantity will not address patients' nutritional needs (see Nutrition Support in Adults NICE Clinical Guideline [CG32])

Additional amounts should be given to correct deficit or continuing losses. Careful monitoring should be undertaken using clinical examination, fluid balance charts and regular weighing, when possible, (Powell-Tuck et al 2009).

The infusion process includes:

- Prescription of the fluid/drug
- Selection of the appropriate infusion device
- Starting and administration of the fluid to the patient
- Monitoring and recording of fluid balance

All patients that require support to maintain hydration or require additional fluids should have individualised fluid goal determined by a documented standard for daily fluid intake.

To maximise the accuracy of the calculation of daily fluid goal, weight measurement should be performed on admission and subsequent weights should be at the same time of day using the same scales, which should be calibrated regularly (McMillan and Pitcher 2010).

9.1 The prescription(s)

All IV fluid therapy must be prescribed by a doctor/ appropriately trained nurse using the approved documentation.

- Each infusion solution must be prescribed separately
- The patient's name, hospital number, and the date must be documented
- The prescription must be unambiguous, indelible and legible, signed, timed (24 hour clock) and dated - the strength as well as the name of the infusion solution must be prescribed in full
- The infusion solution, route, total volume, start time, and administration rate (ml/hr), should be specified
- No alterations should be made; if any changes are necessary the initial prescription should be deleted and a new prescription written in accordance with the above
- It is not acceptable to prescribe more than 24 hours of fluid in advance as this implies inadequate patient assessment and review and are liable to pharmacy scrutiny

Prescriptions should take into account the patient's hydration needs and any electrolyte imbalance.

- The patient's most recent electrolyte counts should be available, however it is recognised that this is not always possible (e.g. in the case of an emergency admission)
- The prescription must attempt to correct the patient's status in keeping with the accepted reference range of each electrolyte
- The prescriber must also make an assessment of the speed of correction indicated for any electrolyte imbalance
- Printed references ranges should be available in each clinical area

In the case of blood products NHS Tayside's Use of Blood and Blood Components Policy (2013) must be followed. Patients receiving blood products should commence fluid monitoring.

9.2 Drug additives

Drug additives must be prescribed by a doctor using the approved documentation.

- For the addition of Potassium Chloride (KCl) see NHS Tayside Policy for the Safe and Secure Handling of Medicine
- Care must be taken to ensure the compatibility between the drug additive, the infusion solution and the infusion device
- The prescriber should note or establish any history of drug allergies or contra-indications
- The prescription should be unambiguous, legible, signed, timed (24 hour clock) and dated
- The drug, total amount to be added to the bag, route, total volume, infusion solution (including strength), start time and administration rate (in ml/hr) should be specified

9.3 Starting and maintaining an infusion

Registered nurses are responsible for checking and starting an infusion, this should include completion of the IV Prescription Chart, ensuring that it is signed, (Dean, Schachter, Vincent, Barber 2002).

The peripheral cannula must have been introduced and must be cared for in accordance with the NHS Tayside's Policy for Peripheral Cannulation (2010).

In addition the following must be adhered to:
- The fluid bag should be confirmed to be 'in date' and have no signs of discolouration or particles
- Any infusion device must be 'fit for purpose', primed and set correctly in accordance with prescription
- Drug calculations should be made independently and then checked by two registered nurses, (Lapham & Agar 1995).
- The correct patient, correct infusion, at the correct rate, via the correct route
- The cannula is patent and there are no signs of phlebitis, pain or discomfort

After commencement and for each subsequent bag, the infusion should be checked after **15 minutes** (Royal Marsden 2006), **30 minutes, and then subsequently every hour.** This on-going monitoring, carried out by a registered nurse is to ensure that:
- The infusion is running according to requirements and prescription
- There are no problems with the cannula and it remains patent

- The patient is tolerating therapy and there is no adverse reaction (if a problem arises then advice should be sought from a medical practitioner)
- Giving set(s) should be changed in accordance with manufacturer's recommendations.

9.4 Infusion rate

To control or adjust the flow rate manually drops per minute are used (Gatford & Anderson 1998).

The IV giving set burette contains a needle or plastic dropper which gives the number of drops per ml (the drop factor). A number of different drop factors are available (determined by the length and diameter of the needle in the giving set burette).

Common drop factors are:
- 10 drops/ml (blood giving set)
- 15 drops/ml (regular giving set)
- 60 drops/ml (microdrop)

To measure the rate we must know:
(a) the number of drops
(b) time in minutes.

The formula for working out flow rates is:

$$\frac{\text{volume (ml)} \times \text{drop factor (drops/ml)}}{\text{time (minutes)}} = \text{drops / minute (flow rate)}$$

Example:

1500 ml IV Saline is ordered over 12 hours. Using a drop factor of 15 drops/ml (regular giving set), how many drops per minute need to be delivered?

$$\frac{1500 \text{ (ml)} \times 15 \text{ (drops/ml)}}{12 \times 60 \text{ (gives us total minutes)}} = 31 \text{ drops / minute}$$

The method of infusion should be selected, following recommended guidelines, by registered healthcare professional that is deemed competent in the use of the appropriate medical device. This competency is essential even if an electronic device is not used as infusion rates still need to be calculated

If any additional lines are connected to the same giving set, for example, Patient Controlled Analgesia (PCA) systems, the connection must be an anti-siphon device.

9.5 Infusion pump

If accurate delivery of fluids is required an infusion device may be used and the appropriate infusion device should be carefully selected

An infusion pump must be used if the following conditions apply:
- Drug therapy e.g. > 40% Potassium, Cytotoxic drugs, Opiates
- Chronic hyponatraemia
- Diabetic ketoacidosis (DKA)

- Frail patient on slow fluids (patient status to be determined in consultation with fluid prescriber)
- Immuno-compromised (e.g. haematology patients)
- Impaired Left Ventricular Function
- Hyper osmolar non-ketoacidosis (HONK)
- Ischemic heart disease
- Pulmonary oedema
- Renal impairment
- Unstable angina
- Pre-eclampsia/eclampsia
- Hyperemesis
- Hyperglycaemia
- Acute Coronary syndrome
- Sepsis

Care must be taken to ensure that the patient is not severely dehydrated or in shock where other modes of administration are indicated or requires more than 2 litres over 24 hours, (Barua & Bhowick 2005).

9.6 Addition of medicines to IV fluids

Registered nurses who have completed the approved IV Therapy Administration course may add medicines to IV fluid bags. In addition they must check IV fluids as per guidance. NEVER leave unlabelled syringes or infusion bags unattended or in the presence of other unlabelled medication, (NHS Tayside Safe and Secure Handling of Medicines Guidance (2010).

The infusion should be labelled with:
- The patient's name and number
- The name and amount of additives
- The date and time prepared
- Infusion expiry date / time
- Initials of the persons preparing and checking and adding the additives

When the medicines have been added, the TPAR and IV prescription sheet must be signed. The label must not obscure the name or the expiry date of the infusion fluid. If cloudiness, crystallisation, change of colour any other sign of interaction or contamination is observed the infusion should be discontinued, (NHS Tayside Safe and Secure Handling of Medicines Guidance (2008).

IV antibiotics should be switched to the oral route as soon as possible.

Where there are no clear instructions that the registered nurse should discuss this with the prescriber.

10. ADMINISTRATION OF SUBCUTANEOUS FLUIDS

This section outlines the procedure for the hydration of all adult patients who are unable to receive adequate fluids and electrolytes orally and require subcutaneous administration of fluids. This may be by inpatient or outpatient care.

For Palliative Care see section 14 (pages 20-21) of this policy or refer to Scottish Palliative Care Guidelines.

The term subcutaneous infusion - also known as Hypodermoclysis - is the administration of an isotonic solution into the subcutaneous tissue to supply the patient with fluid and electrolytes, (Sasson & Shvartzman 2001).

Solutions for IV administration are licensed only for this route by manufacturers, however this policy aims to ensure that the appropriate use of these licensed products by NHS Tayside staff in an unlicensed way (via subcutaneous route) is in line with relevant specialist guidance and supported by the evidence base and therefore able to be given via this route.

10.1 Indications for use

The subcutaneous infusion of fluids is a useful and easy hydration technique suitable for mildly to moderately dehydrated patients, (O'Keefe & Geoghegan 2000). Clinical symptoms should always be considered before administration

Subcutaneous fluids are indicated for maintaining adequate hydration in patients that have:

- Poor fluid intake orally
- Excessive fluid loss through pyrexia, vomiting, diarrhoea, diuretics etc.
- Are mildly or moderately dehydrated
- It is difficult or impractical to insert an intravenous line, (Ferry et al 1999)

It is NOT suitable for emergency situations or for severe dehydration, (Donnelly 1998).

Oral hydration is often difficult in the presence of cognitive impairment, vomiting and nausea, infection, abdominal obstruction related to cancer, or cerebrovascular accident, especially in elderly patients (Steiner & Bruera 1998).

Hypodermoclysis must NOT replace encouragement of oral fluids and maintenance of good oral hygiene and strict monitoring of all fluid intakes is essential.

10.2 Administration of fluids

Fluid is administered by gravity using a "butterfly" infusion set and a standard intravenous giving set. The Saf-T-Intima™ Safety Integrated IV catheter system is currently advocated within NHS Tayside.

A medical infusion pump is NOT to be used, (Steiner & Bruera 1998).

Fluids may be administered continuously, overnight, or for patients who are relatively mobile, by short intermittent infusions, (Steiner & Bruera 1998).

10.3 Volume of fluid

When using Hypodermoclysis, relatively small amounts of fluid are administered.

Infusion Rates of between 30mls/hr and 80mls/hr are recommended, however this has been standardised across NHS Tayside to a rate of 60ml/hr. (Brown 2000).

Total volumes are:

- Up to 2 litres over 24 hours may be delivered at one infusion site
- 3 litres/24hrs can be delivered via 2 infusion sites - 1.5 litres at each site (**excluding Dextrose 5%** - see below), (Steiner & Bruera 1998)

10.4 Fluids for infusion

- Sodium Chloride 0.9%
- Sodium Chloride 0.18% and Glucose 4% (Dextrose Saline)
- Dextrose 5% **(maximum 2 litres in 24 hours)**

Only the above may be administered via subcutaneous infusion with NO exceptions.

Additives must NOT be added to the infusion (e.g. Potassium).

Whilst there is limited evidence that up to 20mmol of potassium can be safely infused in either sodium chloride 0.9% or Dextrose 5% (Rochan,1997), we **DO NOT** recommend this in NHS Tayside,(Farrand 1986).

Additionally the use of Hyaluronidase (an enzyme which has traditionally been thought to promote the absorption of fluid subcutaneously) is NOT recommended in current practice and evidence suggests that it is more likely to cause oedema and abscesses. (Barton, Fuller et al. 2004).

10.5 Site of infusion

Site for infusion includes:

- Abdomen (most common)
- Chest
- Lateral Aspects of upper arm
- Anterior or lateral aspect of thighs (not recommended for incontinent patients)
- Back - usually in inter or sub scapular region (better for confused patients), (Farrand 1989, Campbell 1998)

When placing the infusion avoid any areas such as:

- Lymphoedematous tissue
- Skin that has been recently irradiated
- Sites with skin damage, swelling , scarring or burns
- Where there is an existing rash, skin condition
- Peripheral limbs, i.e. below the knee or below the elbow
- Bony prominences
- Areas of infection
- Sites near a joint

On commencement of the infusion the infusion site must be checked **IMMEDIATELY**, and then after 30 minutes has elapsed.

The infusion should then be checked **every 4 hours** for bruising, reddening, oedema, leaking, pain, pooling or unresolved blanching, although this may not always be practical overnight in community settings.

The site and cannula should be changed every 24 hours or after infusion of 2 litres of fluid, (see Appendix 2 Sub cutaneous fluid bundle), (Jain 1999, Mansfield et al 1998).

10.6 Infusion rates

To control or adjust the flow rate manually drops per minute are used.
See section 9.4 (page 15) for calculation of infusion rates.

10.7 Advantages of Hypodermoclysis

- Recognised clinical improvement of the patient (albeit this may be with no significant improvement in laboratory results)
- Minimal pain or discomfort is associated with this procedure
- Does not cause thrombophlebitis
- Has not been shown to cause septicaemia or systemic infection
- Less likely to cause fluid overload or pulmonary oedema
- Better tolerated in patients with cognitive impairment or delirium
- Greater patient mobility and comfort
- Insertion less distressing to patient
- Can be set up by registered nurses in almost any setting
- Easier to maintain and resite, and requires less nursing supervision
- Low cost

10.8 Disadvantages of Hypodermoclysis

- Typical rate of 1ml per minute, allowing a maximum 3 litres over 24 hours (if using 2 sites)
- Limitations on administration of electrolytes, nutrition additives and medications.
- Oedema/localised pain at infusion site is common
- Does not replace regular mouth care
- Small risk of abscess formation (regular site review advised)
- Possibility of local reactions (Farrand & Campbell 1996, Sasson & Shvartzman 2001)

10.9 Contraindications

There are few contraindications to Hypodermoclysis; however, it should **NOT** be used when fluids must be administered rapidly or in large amounts, such as patients in emergency situations with collapse, shock, severe electrolyte disturbance or major dehydration.

Before treatment is considered, blood levels should be taken to establish urea & electrolytes.

Hypodermoclysis not recommended for patients with:

- Severe dehydration
- Sepsis
- Clotting disorders, coagulopathy and low platelets (Sasson & Shvartzman 2001)
- Haemodialysis
- Cardiac failure
- Existing fluid overload/Marked oedema
- Circulatory collapse

Before treatment is considered blood levels should be taken to establish urea & electrolytes. Hypodermoclysis is less effective in patients with low serum albumin.

11. REVIEW

All patients receiving prescribed fluid therapy, or for those who are on restricted fluid intakes, should have a daily Fluid Balance Chart commenced for calculations of any surplus/deficit, (NICE Clinical Guideline [CG50], 2010).

All actions and assessments must be documented in the relevant section of the nursing documentation. Hydration status should be **reviewed every 24 hours** and IV cannula/infusion sites must be checked in accordance with the NHS Tayside's PVC/ Sub Cutaneous Fluid Bundle. Escalate and refer as appropriate if patient's condition deteriorates.

12. PATIENT INFORMATION

Staff should give all patients NHS Tayside "Your food and drinks in hospital"(LN1110) patient information leaflet on admission to provide basic information needed to guide individuals to achieving good hydration.

13. CRITICAL CARE

It is recognised that in some life-threatening/critical situations, rapid infusions, which over-ride usual infusion rates, may be necessary. Once the critical event has been resolved the same principles set out above will then apply, (NICE Clinical Guideline [CG50], 2010).

14. PALLIATIVE CARE

Intravenous fluids are not indicated in the last days and hours of life to avoid burden of placing intravenous lines. If reversible causes of clinical deterioration have been excluded then the use of subcutaneous hydration should be considered in terms of 'risk versus benefit' for each patient. It is good practice to avoid burdensome interventions at the end of life and this may include avoiding placement of a subcutaneous cannula.

Indications for subcutaneous fluids in palliative care, (Campbell 2007) - include if:

- The patient has persistent symptoms due to dehydration that are not responding to other management options (e.g. intractable nausea, marked postural hypotension)
- Bowel Obstruction associated with intractable nausea (but limit fluids to <1.5L/24hrs to avoid exacerbating gut oedema)
- Dehydration is contributing to poor renal clearance of opioids (e.g. morphine, diamorphine) that are causing symptoms of toxicity such as delirium
- When oral intake is inadequate and maintaining an intravenous line is difficult or inappropriate

In the last days to hours of life, artificial hydration has not been shown to give definite symptom benefit. There is a risk that artificial hydration may lead to development of unpleasant respiratory secretions. In most cases artificial hydration would not be considered appropriate because of these factors (Patchett 1998). If there are individual circumstances that suggest artificial hydration may be trialled for benefit (usually 24-48 hour trial) then this must be carefully considered and monitored, (Musgrave 1995).

Please refer to Scottish Palliative Care Guidelines.

15. CONSENT

The administration of fluids by artificial means requires obtaining patient (or Guardian/ Welfare Power of Attorney) consent; this should be undertaken following the NHST Informed Consent Policy or may be administered under the Adults with Incapacity Scotland Act (2000).

16. AUTHORISED PROFESSIONALS

All staff within NHS Tayside that are involved in the assessment of hydration status must at all times act in accordance with their professional code of practice.

17. EDUCATION AND TRAINING

NICE Clinical Guideline [CG50], (2010) states that "staff caring for patients in acute hospital settings should have competencies in monitoring, measurement, interpretation and prompt response to the acutely ill patient appropriate to the level of care they are providing".

In order to ensure safe practice and minimise risk, staff must be appropriately skilled and competent in clinical skills where applicable (such as IV insertion technique) and follow Standard Operating Procedures.

18. LEGAL LIABILITY

NHS Tayside as an employer will assume vicarious liability for the actions of all staff, including those on honorary contracts, providing that:

- Staff have undergone any training identified as necessary for the procedure
- The member of staff is authorised by NHS Tayside to undertake the procedure
- The provision of this Policy and the supporting procedure has been followed by the member of staff at all times

1.2.1STANDARD OPERATING PROCEDURE – Provision of oral fluids to all adult patients

Policy Food, Fluid and Nutritional Care	**Policy Reference:** 1.2.1	**Originator:** Victoria Hampson

Operation	The provision of oral fluids to all adult patients
Part Number/ Name	This standard operating procedure is for the provision of oral fluids being undertaken by all staff.
Safety Tools/ Clothing	Universal precautions
Tools/ Equipment	N/A

No	**Main Operating Steps**	**Rationale**	**Evidence/support**
1	Undertake a complete hydration assessment using SEWS chart and Traffic Light Risk Assessment, on admission, following re-admission, or if there is any change in condition that may cause the patient to be at risk for dehydration	If the patient is dehydrated, it is important to try to identify the underlying causes of the dehydration	GIFTASUP (2009) BAPEN (1999) Pachett (1998) Steiner & Bruera (1998)
2	Fluid should be given in standardised measures with a minimum of 1.2 litres of fluid every day This works out to be about six 200ml or eight 150ml glasses	Patients should receive at least the minimum amount of daily fluids to achieve optimum hydration	Baker (2004)
3	The patient should have access to fresh drinking water, at the correct temperature, at all times	To ensure palatability of fluids and encourage hydration	RCN (2005)
4	Offer a variety of fluids keeping in mind the individual's preferences including likes and dislikes and record preferences in the core nursing documentation	Person centeredness To ensure palatability of fluids and encourage hydration	NHS QIS (2003)
5	Always inform the patient when you have refreshed their glass or jug, and tell them where you have placed it.	Person centeredness	Spangler Risley & Biley (1984) RCN (2005)
6	Ensure drinks offered to patients are always placed within easy reach and refilled regularly	Person centeredness	Spangler Risley & Biley (1984) RCN (2005)
7	If the patient has difficulties drinking, provide prompt assistance, encouragement and appropriate aides or support as required	To ensure adequate hydration	Mueller & Boisin (1989) Reedy (1988)
8	Some patients will have been assessed for swallowing problems and it may be unsafe for them to drink water. These patients will require all fluids to be thickened to a specified consistency, as directed by a Speech and Language Therapist	To minimise the risk of aspiration	NHS QIS (2003) Mueller & Boisin (1989) Reedy (1988)

9	Patients who are on a fluid restriction should not be given a jug of water at their bedside, but instead be given the calculated amount of fluids throughout the day	To prevent over-hydration	RCN (2005)
10	Encourage the patient to participate and take ownership of the management of their hydration status (where possible)	Patient focused care Can improve compliance with monitoring of fluids input and output and therefore enhanced accuracy of fluid chart completion	Chung et al (2002) Reid (2004)
11	All actions and assessments must be documented in the relevant (following local good practice) section of the patient's Health Care Records i.e. traffic light risk assessment/SEWS chart/ongoing record of care As with all patient records, all entries must be signed, timed and dated	Patient safety	NHS Tayside record Keeping policy (2013) NMC Code of Conduct (2005)
12	Review fluid requirements and hydration status each shift using the traffic lights and communicate and escalate where appropriate	Patient safety	NICE (2010)

1.2.2 STANDARD OPERATING PROCEDURE – Administration of intravenous fluids for adult patients

Policy Food, Fluid and Nutritional Care	**Policy Reference:** 1.2.2	**Originator:** Victoria Hampson

Operation	The administration of intravenous (IV) fluids for adult patients
Part Number/ Name	Administration of IV fluids being undertaken by registered professionals
Safety Tools/ Clothing	Universal precautions/ aseptic technique
Tools/ Equipment	TPAR Fluid Prescription chart Date & time label/ fluid chart

No	**Main Operating Steps**	**Rationale**	**Evidence/support**
1	Undertake a complete hydration assessment using SEWS chart and Traffic Light Risk Assessment, on admission, following re-admission, or if there is any change in condition that may cause the patient to be at risk for dehydration	If the patient is dehydrated, it is important to try to identify the underlying causes of the dehydration	GIFTASUP (2009) BAPEN (1999) Pachett (1998) Steiner & Bruera (1998)
2	Calculate the patients daily fluid goal: 18-60 years of age - 35 mls/kg x body weight per day > 60 years of age - 30 mls/kg x body weight per day	All patients that require support to maintain hydration or require additional fluids should have individualised fluid goal determined by a documented standard for daily fluid intake	Skipper (1998) PENG (2012) RCN (Water UK) Kleiner (1999) Lobo et al (2001)
3	Assessment of patient to identify need for IV fluid administration and/or appropriate drug prescribed by doctor	To determine need for Cannulation and IV therapy, identify allergies, contra indications and compatibility with other drugs prescribed	BAPEN (2007)
4	Staff preparing the patient must ensure that the prescription is correctly written and appropriate for the patients' needs Including generic name, dose, time and route of iv therapy	Patient safety/ correct medicine administration	NHS Tayside Safe and Secure Handling of Medication Guidance (2008) NMC code of professional conduct (2005)
5	The prescription, the correct patient, the correct infusion, at the correct rate, via the correct route must be checked It is essential that at least one of the health professionals starting the infusion is competent in medicine administration	Patient safety/ NMC code for medicines administration	NHS Tayside Safe and Secure Handling of Medication Guidance (2010) NMC code of professional conduct (2005) Dean, Schachter,

			Vincent, & Barber (2002)
6	The fluid bag should be confirmed to be 'in date' and have no signs of discolouration or particles	Patient safety	NHS Tayside Safe and Secure Handling of Medicines Guidance (2010)
7	The infusion device must be primed and set correctly in accordance with prescription	Patient safety	Medicines policy Gatford & Anderson (1998) Lapham & Agar (1995)
8	Check the infusion system is working according to requirements and prescription	Patient safety	NHS Tayside Safe and Secure Handling of Medication Guidance (2010)
9	After commencement, an infusion should be checked after 15 minutes, 30 minutes, and then subsequently every hour	This on-going monitoring is to ensure: • that the infusion is running according to requirements and prescription • there are no problems with the cannula and it remains patent • then advice should be sought from a medical practitioner	Royal Marsden (2006)
10	During administration observe patient for signs of adverse reaction. If reaction occurs to stop therapy immediately and seek medical advice	Early detection & to minimise effects Patient safety	NHS Tayside Safe and Secure Handling of Medication Guidance (2010) NPSA (2007)
11	All actions and assessments must be documented in the relevant (following local good practice) section of the patient's Health Care Records i.e. traffic light risk assessment/SEWS chart /ongoing record of care As with all patient records, all entries must be signed, timed and dated	Accurate record keeping	NHS Tayside Record keeping policy NMC Code of Conduct (2005)
12	Ensure cumulative infusion volumes are tabulated and documented	Ensure accurate fluid management	NHS Tayside Record keeping policy NMC Code of Conduct (2005) BAPEN (1999) RCN (2007)

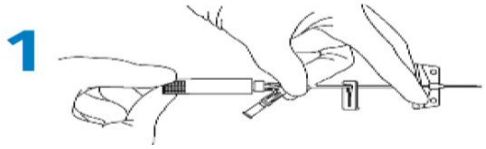
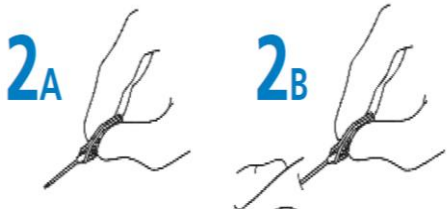
13	Assess the appropriateness of the intended treatment against the patient's current health status and concurrent medication, particularly in relation to intended therapeutic outcomes Escalate and refer as appropriate if patients condition deteriorates	Patient safety	NHS Tayside Record keeping policy (2013) NMC Code of Conduct (2005)
14	Review of hydration status- if fluids are no longer indicated the infusion should be discontinued and the IV cannula removed	Patient safety Reduce risk of infection	NHS Tayside PVC Bundle NHST Infection Control Policy(2014)

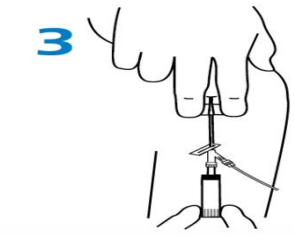
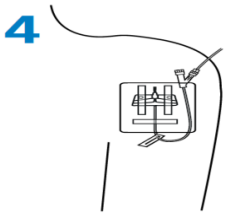
1.2.3 STANDARD OPERATING PROCEDURE – Administration of subcutaneous hydration for adult patients

Policy Food, Fluid and Nutritional Care	**Policy Reference:** 1.2.3	**Originator:** Victoria Hampson

Operation	The administration of subcutaneous hydration (Hypodermoclysis) for adult patients
Part Number/ Name	This procedure is for the administration of subcutaneous hydration being undertaken by registered professionals
Safety Tools/ Clothing	Universal precautions/ aseptic technique
Tools/ Equipment	Alcohol rub/ gloves Sharps box Clean receiver 70% alcohol skin preparation Gauze Prescribed fluid for infusion Administration set Infusion stand Clear occlusive dressing 21 – 23 gauge cannula (IV catheter with wings /'butterfly') /BD Saf-T-Intima Date & time label/fluid chart

No	**Main Operating Steps**	**Rationale**	**Evidence/support**
1	Staff preparing the patient must ensure that the prescription is correctly written and appropriate for the patients needs *N.B. Where the prescription changes from intravenous to subcutaneous the prescription must be written afresh (not altered)*	Patient safety/correct medicine administration	NMC code of professional conduct (2005) NHST Safe and Secure Handling of Medicines Guidelines (2010)
2	The prescription, infusion bag and patients identity band must be checked correct by two appropriately qualified professionals.	Patient safety/NMC code for medicines administration	NHST Safe and Secure Handling of Medicines Guidelines (2010) NMC code of professional conduct (2005)
3	Ensure all the correct equipment is available and assembled and perform the following checks • sealed packaging • expiry dates	To assure equipment is sterile and expiry dates still current	NHST Infection Prevention and Control Policy (2014)
4	Explain the procedure and gain the patient (or carers) consent to the procedure	To advocate for the patient and promote empowerment	NHST Informed Consent Policy (2011)
5	Select the appropriate site for administration of the infusion. This should take into account: • Poor skin condition/existing skin injures/pressure sores/ burns • Avoid bony prominences • Patients mobility • Patients preference	Consider adequate subcutaneous tissue, infection or disease, perfusion and patient preference prior to continuing.	Nobel Adams (1995) Farrand & Campbell (1996) Berger (1984)

	• Incontinence • Cognitive impairment		
6	Position patient comfortably and safely	Patient safety/person centeredness	
7	Wash hands using hygienic hand wash procedure and apply gloves	To improve safety of the procedure by reducing the risk of cross infection. Adherence to infection control policy	Farrand & Campbell (1996) Jain, Mansfield & Wilcox (1999) NHST Infection Prevention and Control Policy (2014)
8	Prepare the infusion maintaining a sterile procedure Ensure the infusion set is labelled with date and time of preparation	Prevent air bubble formation in the cannula.	Sasson & Shvarzman (2001) Dougherty et al (2000)
9	Clean the site with 70% alcohol wipe	To minimise possible site infection from existing body flora.	Maki et al (1991) NHST Infection Prevention and Control Policy (2014)
10	Pinch skin and insert 21-23 gauge winged cannula (butterfly) at 90 degree angle according to manufacturers guidance For BD Saf-T-Intima hold as shown below and rotate the white safety shield to loosen the needle   Grasp the textured sides of wings and bring them together, pinching firmly (Fig. 2A) Using thumb and index finger gently pinch the skin around selected site to identify the subcutaneous tissue (Fig. 2B) Insert the full length of the catheter and needle through the skin at a 30°- 45° angle	To ensure accurate placement in subcutaneous skin layer	Farrand & Campbell (1996) Jain, Mansfield & Wilcox (1999)

11	Observe for blood flashback - if observed remove cannula and start again	To ensure cannula has not been inserted into a vein	
12	Remove the Butterfly introducer needle by twisting 90 degrees and remove For BD Saf-T-Intima, lay the wings flat on the skin surface and pull the white safety shield in a straight, continuous motion until the safety shield separates from the safety system (Fig. 3)  Discard needles immediately in a puncture resistant, leak-proof sharps container	Safe handling of sharps/ prevent needlestick injury	NHST Infection Prevention and Control Policy (2014)
13	Coil the extension line and secure cannula with clear occlusive dressing Label the subcutaneous sites with date and time and “fluid” if more than one line in place  	To prevent kinking, secure the cannula and allow for observation of the infusion site	Noble Adams (1995)
14	Set flow rate at 60mls/hr Calculate flow rate: $\frac{\text{volume (ml) x drop factor (drops/ml)}}{\text{time (minutes)}}$ = drops / minute (flow rate)	To reduce risk of Phlebitis and extravasation ("tissuing")	Brown (2000)
15	Complete fluid record chart- recording date and time infusion commenced/ infusion site	Legal and professional requirement	NHST Policy for Records and Record Keeping (2013) UKCC (1998)
16	Inspect the cannula site immediately, after commencement of the infusion, at 30 minutes and then at 4 hour intervals.	If any concerns are noted upon inspection they should be	Noble Adams (1995) Farrand &

	If there is evidence of pooling, leakage, redness, bleeding or bruising, pain or excessive oedema the infusion should be discontinued	documented and observation should be more frequent to minimise complications such as infection, thrombophlebitis, oedema etc.	Campbell (1996)
17	The infusion should not exceed 2 litres in 24hrs at any one site No mechanical pumps should be used	To reduce incidence of oedema/ tissue damage	Berger (1984) Farrand & Campbell (1996) Mansfield (1998) Jain, Mansfield & Wilcox (1999) Steiner & Bruera (1998)
18	Remove cannula when not required/or at least every 24 hours	To prevent infection/clinical complications	Farrand & Campbell (1996)
19	Monitor patient closely for signs of circulatory overload or breathing problems	Infusion may cause circulatory overload	
20	Ensure accurate completion of Fluid balance chart Continue oral fluids if the patient is able to take them	Legal and professional requirement Patient safety Maintain thirst reflex	NHST Policy for Records and Record Keeping (2013) Musgrave et al (1995)
21	Check U&Es depending on clinical management as needed.	Monitor improvement/ decline in patients condition or fluid overload	Arinzon (2004)

Name/Position of Author Date:	Name/Position of Approver Date:	Responsibility Date:

19. TROUBLESHOOTING

Problem	**Action**
Site is red and inflamed	Needle may have been sited intradermally. Resite in new area.
Pooling of fluid at insertion site	Reduce flow rate. Resite if problem persists.
Infusion running too slowly	Adjust height of infusion bag. Check line regulator. Resite if problem persists.
Persistent reddened, localised pain, swelling or unexplained fever	Stop infusion. Notify doctor. Send cannula for culture & sensitivity.
Large white, flat area	This is not a problem.
Local oedema	Adjust rate (slower). Resite if uncomfortable.
Bruising	Resite.
Signs of fluid overload (wheeze, breathlessness)	Unlikely if fluid rate less than 80mls per hour. If suspected, stop fluids and notify doctor.
Leaking from site after removal of cannula	This will resolve spontaneously.

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APPENDIX 1: Subcutaneous Fluids - Bundle Audit

Subcutaneous Fluids - Bundle Audit **Aim: To monitor compliance with Subcutaneous Bundle/ Standard Operating Procedure**	**Contact Nurse**	**Ward**	**Month/Year**

Audit elements (tick yes, cross no)	**Yes/ No**	**Yes/ No**	**Yes/ No**	**Yes/ No**	**Yes/ No**	**Action required if answer 'no'** Share information at next safety brief
1. Is cannula dated and within 24 hrs of insertion?						Speak to relevant member of medical team
2. Is bundle/care plan in place?						Speak to nursing staff about bundle to raise awareness
3. Are all elements completed and documentation accurate?						Speak to nursing staff about bundle to raise awareness
4. Is there documented evidence that the cannula site has been checked per shift?						

Subcutaneous Fluids - Bundle Audit **Aim: To monitor compliance with Subcutaneous Bundle**	**Contact Nurse**	**Ward**	**Month/Year**

Audit elements (tick yes, cross no)	**Yes/ No**	**Yes/ No**	**Yes/ No**	**Yes/ No**	**Yes/ No**	**Action required if answer 'no'** Share information at next safety brief
1. Is cannula dated and within 24 hrs of insertion?						Speak to relevant member of medical team
2. Is bundle/care plan in place?						Speak to nursing staff about bundle to raise awareness
3. Are all elements completed and documentation accurate?						Speak to nursing staff about bundle to raise awareness
4. Is there documented evidence that the cannula site has been checked per shift?						

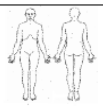
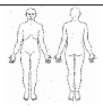
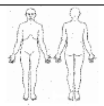
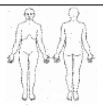
APPENDIX 2: Insertion and Maintenance Bundle - Subcutaneous Fluids

Name DOB/CHI Ward Hospital	**NHS TAYSIDE** **SUBCUTANEOUS FLUID BUNDLE** **INSERTION AND MAINTENANCE BUNDLE**

State reason for insertion - (circle as appropriate)

Poor oral hydration	Mild dehydration	Moderate dehydration	Palliative Care	Limited IV access	Other

SUB-CUTANEOUS FLUID INSERTION BUNDLE

BUNDLE ELEMENTS	1	2	3	4
Hand Hygiene carried out	Y / N	Y / N	Y / N	Y / N
Asepsis & Appropriate Skin Decontamination	Y / N	Y / N	Y / N	Y / N
Non Touch Insertion Technique	Y / N	Y / N	Y / N	Y / N
Dressing Dated and Timed	Y / N	Y / N	Y / N	Y / N
Size/Colour				
Fluid balance previous 24 hrs				
Insertion Site				
Signature				

SUB-CUTANEOUS FLUID MAINTENANCE BUNDLE (TO BE COMPLETED BY NURSING STAFF)

	1	2	3	4
Sub-cut still in use and been inserted for <24 hours	Yes ☐ Continue/ consider ↑ oral fluids if appropriate No ☐ remove if > 24 hours	Yes ☐ Continue/ consider ↑ oral fluids if appropriate No ☐ remove if > 24 hours	Yes ☐ Continue/ consider ↑ oral fluids if appropriate No ☐ remove if > 24 hours	Yes ☐ Continue/ consider ↑ oral fluids if appropriate No ☐ remove if > 24 hours
Sub-cut dressing intact	Y ☐ Continue / N ☐ Renew dressing	Y ☐ Continue / N ☐ Renew dressing	Y ☐ Continue / N ☐ Renew dressing	Y ☐ Continue / N ☐ Renew Dressing
Evidence of pooling of fluid at insertion site	Y ☐ Reduce flow rate Resite if problem persists / N ☐ Continue	Y ☐ Reduce flow rate Resite if problem persists / N ☐ Continue	Y ☐ Reduce flow rate Resite if problem persists / N ☐ Continue	Y ☐ Reduce flow rate Resite if problem persists / N ☐ Continue
Absence of pain, inflammation and/or extravasation	Yes ☐ Continue No ☐ Consider removal If left in-situ document why	Yes ☐ Continue No ☐ Consider removal If left in-situ document why	Yes ☐ Continue No ☐ Consider removal If left in-situ document why	Yes ☐ Continue No ☐ Consider removal If left in-situ document why
Signs of fluid overload. (Wheeze, breathlessness)	Check fluid rate is < 80mls per hr. If suspected, stop fluids and notify medical staff ☐	Check fluid rate is < 80mls per hr. If suspected, stop fluids and notify medical staff ☐	Check fluid rate is < 80mls per hr. If suspected, stop fluids and notify medical staff ☐	Check fluid rate is < 80mls per hr. If suspected, stop fluids and notify medical staff ☐

ASSESS ONGOING NEED FOR SUBCUTANEOUS NEEDLE NOT IN SITU LONGER THAN 24HOURS. ENCOURAGE ORAL FLUIDS WHERE POSSIBLE