Adult Administration of Subcutaneous Fluids Guideline/Procedure

March 2016
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<th><strong>Type</strong></th>
<th>Policy and procedures</th>
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<td>Administration of Subcutaneous Fluids</td>
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<td>Chief Executive Officer – Julie Gafoor</td>
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GUIDELINE AND PROCEDURE FOR THE ADMINISTRATION OF SUBCUTANEOUS FLUIDS

1. Introduction
1.1 Rationale

Hypodermoclysis is a term for maintaining hydration. Hypodermoclysis (subcutaneous infusion) is a relatively safe, simple and cost effective technique, suitable for use in the community with a range of client groups. Normally this technique is applied to patients requiring palliative care but is also used for patients who are mild/moderately dehydrated. Hypodermoclysis should not be used for patients requiring rapid administration of fluids (see evidence to support procedure and contra-indications).

Family Nursing & Home Care (FNHC) is committed to providing high quality nursing services to all patients. This document is a guide in the decision making process. They are intended to support the nurses undertaking the procedure of commencing and maintaining subcutaneous infusions once the decision has been made to commence treatment.

1.2 Scope

All registered nurses working within Adult Nursing Services.

1.3 Principles

Subcutaneous hydration is not adequate to correct severe dehydration or electrolyte imbalance; such patients will continue to need inpatient services for thorough assessment and treatment. Relatively small amounts of fluid are administered using this method, i.e. one or two litres of fluid in twenty four hours. These can be administered during FN&HC nursing working hours only.

Subcutaneous fluids are often chosen in preference of intravenous (IV) fluids in the community. This is because:

- Venous access can be difficult in the frail elderly
- Where patients are confused they can find peripheral IV lines distressing

Insertion of a butterfly cannula is less distressing

These guidelines are to assist the registered practitioner in the administration of subcutaneous fluids and are to be used in conjunction with professional knowledge and judgement.
2. Guidance

2.1 Referral Process

Referral of patients for the administration of subcutaneous fluids must be made by a medical professional (GP or hospital doctor) or non medical prescriber with the appropriate competency in this area of prescribing.

Patients must be assessed on an individual basis to ascertain if they are willing and able to comply with the treatment and are therefore suitable for treatment in the community.

*If the patient lives alone and / or does not have regular family / carer support, it is not advisable to provide artificial hydration and the patient may needed to be admitted into hospital for treatment.*

2.2 Indications for administration of subcutaneous fluids

- Acute problems such as mild infections, vomiting and diarrhoea.
- Mild dehydration usually indicated by urea and electrolyte imbalance where the usual methods of re-hydration is not appropriate
- Increased oral fluid intake is not feasible or manageable
- The patient is willing to have parenteral hydration
- The patient is experiencing symptoms, e.g. thirst, malaise, confusion for which dehydration is the likely cause
- Anticipation that parenteral hydration will relieve the symptoms
- The patient’s relatives understand fully that the purpose of the procedure is to relieve symptoms and reduce distress
  (Sasson and Shvartzman, 2001)

Subcutaneous fluids should be used with caution where there is a history of cardiac and/or renal failure and bleeding disorder in patients who have existing fluid overload. Consideration for administration should be symptom led but blood tests for urea and electrolytes will be done to confirm appropriateness of subcutaneous administration.

2.3 Contra-indications

- Severe dehydration
- Poor tissue perfusion
- Shock
- Cardiac failure
- Pre-renal or renal failure
- Low platelet or clotting disorders
- Low serum albumin
- Existing fluid overload
- Marked / pitting oedema
- Risk assess patients who live alone
- The patient requests not to have an invasive procedure
- The sum of the burden of parenteral hydration outweighs the likely benefits
- The patient is moribund for reasons other than dehydration
2.4 Sites not suitable for infusion

- Skin which has been irradiated
- Where there is evidence of existing rash
- Peripheral limbs, e.g. below knee or elbow
- Bony prominences
- Lack of subcutaneous tissue
- Lateral aspects of upper arm or thigh
- Mastectomy sites
- Oedematous tissue
- Close to stoma or PEG site

(Sasson and Shvartzman, 2001)

2.5 Suitable sites for infusion

Rotate sites to minimise tissue damage (Elkin et al., 2007)

- Abdomen
- Chest (avoid soft breast tissue)
- Anterior aspect of upper arm or thigh
- Back, usually below shoulder blades

2.6 Infusion Fluids

Intravenous fluids prescribed for sub-cutaneous infusion are prescribed ‘off label’. This should be communicated to patients / relatives when gaining consent for the procedure. Liability for prescribing an ‘off label’ product sits with the prescriber and the dispenser or supplier (NMC, 2010). Other fluids may be prescribed, however Sodium Chloride 0.9% or Glucose 5% (BNF, 2014) is usually the fluid of choice to be infused. The prescription should be checked and any concerns raised with the prescriber immediately and prior to administration. Fluids are to be prescribed on an in-patient medication administration record chart.

Fluids are administered via a Saf-T-Intima 24G cannula with connection tubing and an I.V. free flow gravity giving set. It is now recommended that subcutaneous infusions be given via plastic cannula (RCN, 2013).

*Nurses should not add any medication to bags for subcutaneous fluids.*

2.7 Rate of infusion

2.7.1 Recommended infusion rates: Usual rate only 1ml per minute per site.
Formulas to calculate the rate may be found in Appendix 1. Rate Guidelines

- No more than 2 litres in 24hrs using a single site
- No more than 3 litres in 24hrs using 2 sites

2.7.2 Administration considerations for sub-cutaneous fluids

These should only be administered via gravity using a free flow gravity I.V. giving set connected to a Saf-T-Intima 24G cannula with connection tubing.

An infusion pump is not to be used.
2.8 Site Monitoring and Care

2.8.1 At Home
Patients remaining under the care of FNHC will have the cannula site and infusion rate checked at each visit, using the chart in appendix 2, observing for signs of:

- Pain / tenderness
- Redness
- Inflammation / oedema
- Leakage of fluid
- Bleeding / bruising
- Abscess formation
- Fluid overload

Patient’s family/carers will be instructed by the nursing team how to monitor the cannula site and what to do in the event of the needle being displaced. This site should be observed a minimum of every 4 hours.

The cannula and site should be changed every 72 hours and the change recorded in the patient notes. The giving set should be changed each time the fluids are administered if the infusion is not continuous, or every 72 hours.

The patient should be checked at each visit for signs of pulmonary oedema. Signs often associated with pulmonary oedema could include:

- Extreme shortness of breath and difficulty breathing
- A bubbly, wheezing, or gasping sound when trying to breath
- Anxiety, restlessness or a sense of apprehensions
- A cough that produces frothy sputum that may be tinged with blood
- Excessive sweating
- A blue, grey or pale colouration to skin
- A rapid irregular heartbeat or palpitations
- Rapid weight gain and fluid retention
- Loss of appetite
- Fatigue
- Headache
- A severe drop in blood pressure
- Ankle, leg and abdominal swelling

2.8.2 Nursing Home Care
Patients remaining under the care of FNHC will have the cannula site and infusion rate checked at each visit. Nursing Home registered nursing staff will be responsible for checking the infusion site and the infusion rate for patients in their care outside of these visits.

2.8.3 FN&HC Visits
Minimum frequency of visits are twice daily, initiating and completing the daily fluid requirement, but frequency may be increased based on patient clinical need.

2.9 Oral Hygiene

Care for oral hygiene needs to be negotiated and planned based on assessment of individual need. A dry mouth is often caused by mouth breathing and medication, and may not be alleviated by artificial Hydration (National Council for Palliative Care, 2007). Regular oral care to maintain a moist, comfortable mouth and alleviate any thirst is an essential part of care.
2.10 Education and Training

The organisation will provide training to all relevant staff who will be involved in the administration of subcutaneous fluids. It is the individual nurse’s responsibility to constantly review their competence and keep their knowledge and skills updated.

All new Clinical and Home Care staff recruited to Family Nursing and Home Care must be made aware of this document if relevant to their role and must be informed about how to access a copy.

3. SOP Procedure for the administration of Subcutaneous Fluids

<table>
<thead>
<tr>
<th>Purpose</th>
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<tbody>
<tr>
<td>To provide a safe, effective and standardised procedure for administering subcutaneous fluids</td>
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<table>
<thead>
<tr>
<th>Scope</th>
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<tr>
<td>Patients aged 18 years or over, with mild dehydration usually indicated by urea and electrolyte imbalance where the usual methods of re-hydration such as increased oral fluid intake is not feasible or manageable.</td>
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<table>
<thead>
<tr>
<th>Core Requirements</th>
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<tr>
<td>Assemble all necessary equipment</td>
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</table>

**Equipment required:**
- Sterile dressing pack with gloves
- Apron
- Saf-T-Intima 24G cannula with extension line
- Infusion line
- Infusion fluid as prescribed by a medical practitioner or non-medical prescriber
- Completed prescription chart
- Fluid balance chart
- Subcutaneous Fluid Insertion Site chart (Appendix 2)
- Occlusive dressing x 2 (I.V. 3000)
- Chlorhexidine 2% Alcohol 70% (ChloraPrep)
- Sharps bin
- Portable drip stand if available or appropriate
- to environment

<table>
<thead>
<tr>
<th>Pre-Procedural action</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff member to introduce themselves and identify correct patient verbally or confirm with family/carers</td>
<td>Risk management to identify correct patient</td>
</tr>
<tr>
<td>Explain and discuss the procedure with the patient and relevant family members/carers.</td>
<td>Ensure that the patient understand s the procedure and gives their valid consent</td>
</tr>
<tr>
<td>Check history of any allergies</td>
<td>Reduce risk of allergic reactions</td>
</tr>
<tr>
<td>Before administering any prescribed fluid, check that it is due and has not already been given</td>
<td>To protect the patient from harm</td>
</tr>
</tbody>
</table>
Before administering any prescribed drug consult the patient’s prescription chart and ascertain the following:
- The correct patient
- Drug/fluid
- Dose
- Date and time of administration
- Route of administration
- Validity of prescription
- Signature of practitioner
- The prescription is legible

Maintain patient privacy
Decontaminate hands and put on disposable apron

<table>
<thead>
<tr>
<th>Procedure action</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the name and volume of infusion fluid against the prescription chart.</td>
<td>To ensure that the correct type and quantity of fluid are administered</td>
</tr>
<tr>
<td>Check the expiry date of the infusion bag.</td>
<td>To prevent an ineffective or toxic compound being administered to the patient</td>
</tr>
<tr>
<td>Check that the packaging is intact and inspect the container and contents in a good light for cracks, punctures or air bubbles.</td>
<td>To check that no contamination of the infusion container has occurred</td>
</tr>
<tr>
<td>Inspect the fluid for discolouration, haziness and crystalline or particulate matter. If this occurs discard.</td>
<td>To prevent any toxic or foreign matter being infused into the patient</td>
</tr>
<tr>
<td>To detect any incompatibility or degradation</td>
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<tr>
<td>Establish the correct drip rate setting using the correct calculation</td>
<td>To monitor rate and ensure fluid is infused safely</td>
</tr>
<tr>
<td>Place the infusion bag and administration set in a clean receptacle. Wash hands and proceed to the patient</td>
<td>To minimize the risk of contamination</td>
</tr>
<tr>
<td>Check the identity of the patient against the prescription chart, and with the patient.</td>
<td>To minimize the risk of error and ensure the correct fluid is administered to the correct patient</td>
</tr>
<tr>
<td>Place the infusion bag on a flat surface, remove the seal and insert the spike of the administration set fully into the infusion bag port.</td>
<td>To prevent puncturing the side of the infusion bag and to reduce the risk of contamination</td>
</tr>
<tr>
<td>Hang the infusion bag from a drip stand.</td>
<td>To allow gravity flow</td>
</tr>
<tr>
<td>Open the roller clamp and allow the fluid through the set to prime it. Close clamp.</td>
<td>To remove air from the set</td>
</tr>
<tr>
<td>Apply apron and assist the patient into a comfortable position.</td>
<td>To ensure patient comfort during the procedure</td>
</tr>
<tr>
<td>Expose the chosen site for infusion.</td>
<td>To expose the area</td>
</tr>
<tr>
<td>Apply gloves and clean the chosen site with swab saturated with Chlorhexidine 2% Alcohol 70% (ChloraPrep) for a minimum of 30 seconds and allow to dry</td>
<td>To reduce the risk of infection and prevent stinging sensation on insertion of needle</td>
</tr>
<tr>
<td>Gently hold skin fold on the site chosen, grasping the skin firmly</td>
<td>To elevate the subcutaneous tissue</td>
</tr>
<tr>
<td>Insert the infusion needle into the skin at an angle of 45 degrees, bevel up, and release the grasped skin (If using a cannula, remove the stylet).</td>
<td>To gain access to the subcutaneous tissue</td>
</tr>
<tr>
<td>Secure the infusion device with occlusive dressing</td>
<td>To prevent movement and reduce the risk of mechanical phlebitis and infection</td>
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Privacy and dignity in health care
Reduce the risk of transient organisms on the healthcare workers hands to the patient or equipment
To protect uniform from contamination
4. Quality Standards

Quality standards this policy pertains to are;

**Care and Welfare of People who use services;** People experience effective, safe and appropriate care. Treatment and support meets their needs and protects their rights.

**Management of medicines;** People have their medicines when they need them, in a safe way. People are given information about their medicines.

**Respecting and involving people who use services;** People understand the care and treatment choices available to them. They can express their views and are involved in making decisions about their care. They have their privacy, dignity and independence respected, and have their views and experiences taken into account in the way in which service is delivered.
Cleanliness and infection control; People experience care in a clean environment (wherever possible) and are protected from acquiring infections.

Consent to care and treatment; People give their consent to their care and treatment and know and understand how to change decisions about things that have been previously agreed.

Records; People’s personal records are accurate, fit for purpose, held securely and remain confidential. The same applies to other records that are needed to protect their safety and wellbeing.

5. Development & Consultation

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
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<tbody>
<tr>
<td>Louise Hamilton</td>
<td>Rapid Response Deputy Sister</td>
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<tr>
<td>Elspeth Snowie</td>
<td>Clinical Effectiveness Facilitator</td>
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<td>Clare Stewart</td>
<td>Acting Operational Lead Out of Hospital Model</td>
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<tr>
<td>Carol Rowley-Blackwell</td>
<td>Deputy Sister Rapid Response</td>
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<tr>
<td>Glyn Davies</td>
<td>Deputy Charge Nurse Rapid Response</td>
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<tr>
<td>Suzanne Watson</td>
<td>Deputy Sister Rapid Response &amp; Reablement</td>
</tr>
<tr>
<td>Rachel Hand</td>
<td>Deputy Sister Rapid Response &amp; Reablement</td>
</tr>
<tr>
<td>Catherine Joseph</td>
<td>Deputy Sister Rapid Response &amp; Reablement</td>
</tr>
<tr>
<td>Nora Wright</td>
<td>Deputy Sister Rapid Response &amp; Reablement</td>
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<tr>
<td>Julia Foley</td>
<td>Team Leader, District Nurses</td>
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<tr>
<td>Jim Wilkinson</td>
<td>Team Leader, District Nurses</td>
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<tr>
<td>Angela Buesnel</td>
<td>Sister, District Nurses</td>
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<tr>
<td>Anna-Marie Bailey</td>
<td>Sister, District Nurses</td>
</tr>
<tr>
<td>Michelle Mulhall</td>
<td>Sister, District Nurses</td>
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<tr>
<td>Philippa Venn</td>
<td>General Practitioner</td>
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<tr>
<td>Michelle Nelson</td>
<td>Sister, Hospice</td>
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5.1 Consultation Schedule

<table>
<thead>
<tr>
<th>Name of Committee/Group</th>
<th>Date of Committee/Group</th>
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6. Reference Documents


7. Appendices

7.1 Rate Guidance

Calculating Drops Per Minute

To ensure fluid is replaced at the right speed and over the correct amount of time, the following equation can be used.

To calculate the volume in drops, it is necessary to know how many drops are contained within one millilitre. This information should be available on the packaging of the administration set e.g. CareFusion Ref NT-35-P Infusion Set advises there are 20 drops per ml.

Volume of fluid x drops per ml ÷ number of minutes = drops per minute

In plain English: Example: 1 litre over 10 hours = 1000mls x 20 ÷ (10hrs x 60mins = 600mins) = 33.33r = 33 drops per/min

Example: 1 litres over 8 hours = 1000mls x 20 ÷ ( 8hrs x 60mins = 480mins) = 41.6 = 42 drops per/min

Example: 500ml 0.9% Sodium Chloride to be infused by Hypodermoclycis over 8 hrs
500 x 20 ÷ (8 x 60=480) = 20.83r = 21 dpm

Example: 2 litres to be infused over 12 hours = must be done in two separate sites!
1000 x 20 ÷ (12x60= 720) = 27.77r = 28 dpm each in separate sites

Count drops over full minute to calculate correct rate. May take several attempts.

Size of bags should be considered in order not to waste fluid. Air embolisms are not a problem in this process.

All calculations should be annotated in notes with clear explanation how the infusion was delivered.
7.2 Subcutaneous Fluid Insertion Site Chart

Name
Address
DOB
URN

<table>
<thead>
<tr>
<th>Date</th>
<th>Cannula used and where on Body</th>
<th>VIP Score</th>
<th>Signature and Designation</th>
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<tbody>
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**Observe for;**
- Pain/discomfort
- Tenderness
- Erythema
- Swelling/induration
- Leakage of fluid
- Bleeding
- Infusion rate

**V.I.P. Score (Visual infusion phlebitis score)**

- **I.V. site appears healthy**: 0
  - No sign of phlebitis
  - Observe cannula

- **One of the following is evident**: 1
  - Pain near i.v. site
  - Erythema
  - Swelling
  - Observe cannula

- **Two of the following are evident**: 2
  - Pain along path of cannula
  - Erythema
  - Induration
  - Resite cannula

- **All of the following are evident**: 3
  - Pain along path of cannula
  - Erythema
  - Induration
  - Palpable venous cord
  - Resite cannula
  - Consider treatment

- **All of the following are evident & extensive**: 4
  - Pain along path of cannula
  - Erythema
  - Induration
  - Palpable venous cord
  - Pyrexia
  - Resite cannula
  - Consider treatment

- **Advanced stage of thrombophlebitis**: 5
  - Initiate treatment
  - Resite cannula

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![Acceptable SC cannula insertion sites diagram](image)