



Family Nursing & Home Care

Adult Administration of Subcutaneous Fluids

June 2024

Document Profile

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Version Control/Changes Made

Date	Version	Summary of changes	Author
01/04/2020	1.1	Increased clarity regarding roles and responsibilities, indications for and principles of treatment, including end of life care.	Louise Hamilton
08/07/2020	1.2	Format Changes	Louise Hamilton
June 2024	2	Minor changes to format, update references and additional trouble shooting guidance	Louise Hamilton

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1 INTRODUCTION

1.1 Rationale

Water plays a key role in maintaining multiple physiological functions within the body. The human body is 55% to 65% of water. Subcutaneous fluid administration is a method of infusing fluid into subcutaneous tissue that is an alternative to administering intravenous fluids (Royal Marsden 2020). It is a relatively safe, simple and cost effective technique, suitable for use in the community with a range of client groups (Dougherty & Lister, 2015; Bowen *et al.*, 2014). Normally this type of administration is used in patients requiring palliative care, but it is also used for patients who are mild/moderately dehydrated (Scales 2011, Walsh 2005). Subcutaneous infusions should not be used for patients requiring rapid administration of fluids (see evidence to support procedure and contra-indications).

The administering of subcutaneous fluids can prevent the need for acute hospital admission.

Family Nursing & Home Care (FNHC) is committed to providing high quality nursing services to all patients. This document is a guide to support the nurses undertaking the procedure, including commencing and maintaining a subcutaneous infusion once the decision has been made to begin treatment and are to be used in conjunction with professional knowledge and judgement.

1.2 Scope

This policy applies to all staff involved in the insertion and ongoing care and maintenance of subcutaneous fluids in adult patients. This includes Nurses who have the support of FNHC and their respective managers in the undertaking of this practice. It identifies both the insertion procedure for subcutaneous cannulas and ongoing care management principles that must be adhered to within FNHC.

The NMC (2018) Code specifies that Nursing and midwives (N&M) staff must maintain their knowledge and skills for safe and effective practice and complete the necessary training before carrying out a new role. Nurses are accountable and responsible for providing optimum care for their patients. It is essential that nursing staff objectively examine the information gathered from assessments and observations. Professional accountability demands more than solely being able to perform the procedure correctly, it requires nurses to act on and understanding the clinical relevance of the results (NICE 2007 & Kisiel and Perkins 2006).

The Code (2018) clearly states that the fundamentals of care must be delivered effectively, and patients care needs are recognised, assessed, and responded to. It also states that N&M staff should only delegate tasks and duties that are within the scope of the other person's competence, ensuring that staff who have had a task delegated to them have fully understood your instructions. The Code requires staff that have had tasks delegated to them, be

adequately supervised, and supported to ensure safe and compassionate care and to monitor the task has met the required standard.

1.3 Role and Responsibilities

1.3.1 The Chief Executive (CEO)

The CEO has overall responsibility for effective management of risk within the organisation. As accountable officer, the CEO is responsible for the effectiveness of the organisation's systems of internal controls.

1.3.2 Operational Leads

Operational leads have responsibilities for ensuring that the required structures and resources are in place to enable effective care for patients requiring subcutaneous fluids.

1.3.3 Team Leaders

Team Leaders have responsibility to ensure that all staff are aware of this policy and to encourage and monitor compliance with it and its related guidelines, protocols and procedures.

1.3.4 All Staff

All staff involved in subcutaneous fluids management have a responsibility to adhere to this policy and its related protocols, guidelines and procedures and to identify and address any learning needs they may have in relation to it.

2 POLICY

Replacement therapy should only be considered for patients with acute infection and / poor fluid intake with signs and symptoms of mild/moderate dehydration.

All patients at risk or diagnosed with dehydration at any level require regular review with the following observations / investigation:

- Urea and Electrolytes
- Full Blood Count
- Weight if possible
- NEWS 2 and A-E clinical assessment

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. This can be administered during FNHC nursing working hours only.

2.1 Education and Training

The organisation will provide training to all relevant staff who will be involved in the administration of subcutaneous fluids. It is 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 & Home Car must be made aware of this document if relevant to their role and must be informed about how to access a copy.

3 PROCEDURE

3.1 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.

Where necessary reasonable adjustments must be provided to support service users to receive subcutaneous fluid administration, and also, to help patients to understand the information, recommendations and/ or advice given to them. The use of interpreters or translated information may be required for those patients whose first language isn't English to ensure that information is communicated effectively.

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 need to be admitted into hospital for treatment.

3.2 Indications for administration of subcutaneous fluids

Degree of dehydration

The following guide should be used to assess degree of dehydration:

EGFR decrease or Urea and creatinine increase from baseline	Degree of dehydration
10%-20%	MILD
20%-40%	MODERATE
>40%	SEVERE

(EGFR – Estimated Glomerular Filtration Rate)

Signs and symptoms of dehydration:

- poor oral intake over the previous 48 hours of less than 1 litre per day

- dry mucous membranes
- dry chapped lips
- dry, loose skin with lack of elasticity
- CRT greater than 2 (this can be prolonged in the elderly) (Pickard et al 2011)
- sunken features especially eyes
- clammy hands and feet
- headaches
- light headiness
- dizziness
- tiredness
- decreased urine output
- concentrated dark urine with strong odour
- tachycardia
- 'amber' systolic BP (As defined in NEWS2)
- blood tests – raised urea, Hb
- thirst

Consideration for administration should be symptom led but blood tests for urea and electrolytes will be done to confirm appropriateness of subcutaneous administration.

3.3 Contra-indications for administering subcutaneous fluids

- severe dehydration
- poor tissue perfusion
- shock
- cardiac failure
- pre-renal or renal failure
- low platelet or clotting disorders
- low serum albumin (less effective)
- existing fluid overload such as problems associated with heart failure e.g pulmonary oedema
- 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

3.4 Exclusion

- patients under 18
- patients that require s/c fluids overnight
- patients that live alone
- severe dehydration

3.5 Sites not suitable for infusion

Areas with poor subcutaneous tissue volume, where movement can dislodge the needle or areas where absorption may be impaired should be avoided (Radcliffe, 2017). Other unsuitable sites include:

- skin which has been irradiated
- where there is evidence of existing rash
- peripheral limbs, e.g. below knee or elbow
- bony prominences and sites close to joints
- lack of subcutaneous tissue
- lateral aspects of upper arm or thigh
- mastectomy sites
- where there is a rash
- oedematous, painful, hard, bruised or scarred tissue
- close to stoma or PEG site

3.6 Suitable sites for infusion

Subcutaneous tissue tends to diminish peripherally and increase in central areas as part of the ageing process therefore in elderly patients the abdomen, scapula or thighs are the prime sites for administration of S/C fluids (see [appendix 2](#)). All sites suitable for infusion are:

- abdomen
- upper chest (avoid soft breast tissue)
- anterior aspect of upper arm (deltoid) or thigh
- back, usually below shoulder blades
- thighs

Consider using the deltoid or scapular areas in confused patients to reduce the risk that they will pull the needle out.

3.7 Clinically Assisted Hydration in End of Life / Palliative

Discuss the risks and benefits of clinically assisted hydration with the dying person and those important to them. Advise them that, for someone who is in the last days of life:

- clinically assisted hydration may relieve distressing symptoms or signs related to dehydration, but may cause other problems
- it is uncertain if giving clinically assisted hydration will prolong life, extend the dying process or not giving it will hasten death

Ensure that any concerns raised by the dying person or those important to them are addressed before starting clinically assisted hydration.

When considering this for a dying person, use an individualised approach and take into account:

- whether they have expressed a preference for or against clinically assisted hydration or have any cultural, spiritual or religious beliefs that might affect this documented in an advance statement or an advance decision to refuse treatment
- their level of consciousness
- any swallowing difficulties
- their level of thirst
- the risk of pulmonary oedema
- whether even temporary recovery is possible

Consider a therapeutic trial of clinically assisted hydration if the person has distressing symptoms or signs that could be associated with dehydration, such as thirst or delirium, and oral hydration is inadequate (NICE, 2015).

3.8 Treatment

Mild dehydration treatment

- Oral rehydration 1.2 -2 litres minimum daily unless contra indicates by other co-morbidities
- Document fluid balance accurately – input and output
- Daily completion of fluid / food balance chart and NEWS2 as appropriate to minor treatment
- U & E's and EGFR daily unless otherwise indicated by prescribing clinician

Moderate dehydration treatment

- Administer a maximum of 1 litre subcutaneous normal saline over 12 hours
- Encourage oral fluids to a total of 2 litres over 24 hours
- If sodium > 150 admit to acute setting for consideration of 5% dextrose
- Daily U & E's, EGFR and NEWS2
- If no improvement after 48 hours in renal function treat as severe dehydration and consider admission to acute hospital

Severe Dehydration

Patient requires intravenous fluids, admission should be arranged and review by medical team to rule out other causes of acute kidney injury.

3.9 Infusion fluids

Intravenous fluids prescribed for subcutaneous 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 (RPS, 2020). 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 can be prescribed on an in-patient medication administration record chart, or FNHC Medication Record and Authorisation Sheet.

Fluids are administered via a **Saf-T-Intima 24G cannula** and free flow gravity giving set (RCN, 2016).

An infusion pump is not to be used.

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

3.10 Rate of infusion

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

A maximum volume of 2000 ml can be given over a 24 hour period continuously or intermittently, with a maximum bolus dose of 500ml over 1 hour (Ratcliffe, 2017).

3.11 Before treatment

Take blood to establish urea and electrolyte level

Identify dehydration in assessment

Maintain good skin and oral care

Undertake pressure ulcer risk assessment

3.12 Site monitoring and care

3.12.1 Care 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. Changing the infusion site can help to reduce side-effects (Dougherty & Lister, 2015).

3.12.2 Trouble shooting

Problem	Solution
Pain/tenderness	Adjust needle slightly to exclude intramuscular or nerve ending placement. Re-site if necessary.
Redness at insertion site	Needle may be sited intradermally. Re-site immediately
Persistent redness, localized pain/swelling, unexplained pyrexia	Stop infusion. Consider infection. Think sepsis.
Pooling of fluid at insertion site	Reduce flow rate, oedema will absorb naturally. Re-site if persists or uncomfortable.

Problem	Solution
Infusion running too slowly	Adjust height of infusion bag. Check line regulator. Re-site if problem persists.
Blood is present in the giving set and /or butterfly	Re-site
Bruising at cannula site	Re-site
The needle becomes dislodged or there is leakage (blood or fluid) at needle site	Re-site
Patient develops symptoms of pulmonary oedema (increased respiratory rate, frothy sputum & cough, shortness of breath)	Fluid overload is unlikely at rate less than 80mls per hour. Stop subcutaneous fluids

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.

For regular infusions, rotate the cannula site every 2 to 7 days to prevent scarring and hardening of subcutaneous tissue (RCN, 2016). The giving set should be changed each time the fluids are administered and all site changes documented on the patient's EMIS record and fluid insertion site chart ([appendix 2](#)).

The patient should be checked at each visit for signs of pulmonary oedema. Patients with symptoms of pulmonary oedema should be escalated to the senior nurse on shift, Advanced Nurse Practitioner, medical doctor or telephone 999 depending on severity of symptoms.

Signs often associated with pulmonary oedema could include:

- extreme shortness of breath and difficulty breathing
- decreased oxygen saturation
- bubbly, wheezing, or gasping sound when trying to breath
- anxiety, restlessness or a sense of apprehensions
- cough that produces frothy sputum that may be tinged with blood
- excessive sweating
- blue, grey or pale colouration to skin
- rapid irregular heartbeat or palpitations
- rapid weight gain and fluid retention
- loss of appetite
- fatigue
- headache
- severe drop in blood pressure
- ankle, leg and abdominal swelling

The patient should be checked at each visit for signs of dehydration. Worsening symptoms of dehydration despite receiving subcutaneous fluids should be escalated to the senior nurse on shift, Advanced Nurse Practitioner, medical doctor or telephone 999 depending on severity of symptoms.

Signs often associated with dehydration are:

- poor oral intake over the previous 48 hours of less than 1 litre per day
- dry mucous membranes
- dry chapped lips
- dry, loose skin with lack of elasticity
- CRT greater than 2 (this can be prolonged in the elderly) (Pickard et al 2011)
- sunken features especially eyes
- clammy hands and feet
- headaches
- light headiness
- dizziness
- tiredness
- decreased urine output
- concentrated dark urine with strong odour
- tachycardia
- 'amber' systolic BP (as defined in NEWS2)

3.12.3 Nursing Home care

Patients remaining under the care of FNHC will have the cannula site, infusion rate, signs of pulmonary oedema and dehydration 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.

3.12.4 For End of Life / Palliative care

For people being started on clinically assisted hydration:

- monitor at least every 12 hours for changes in the symptoms or signs of dehydration, and of any evidence of benefit or harm
- continue with clinically assisted hydration if there are signs of clinical benefit
- reduce or stop clinically assisted hydration if there are signs of possible harm to the dying person, such as fluid overload, or if they no longer want it

3.13 FHHC 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.

3.14 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 (Bowen *et al.*, 2014). Regular oral care to maintain a moist, comfortable mouth and alleviate any thirst is an essential part of care.

3.15 Standard Operating Procedure (SOP)

The SOP for 'Subcutaneous infusion of fluids or medications' is accessed via clinical skills.net

https://www.clinicalskills.net/sites/default/files/atoms/files/ADULTS-SUBCUTANEOUS-INFUSION-OF-FLUIDS_P1-P6.pdf

4 MONITORING COMPLIANCE

Compliance with policy will be identified through audits and clinical supervision.

Incident and near miss reporting will inform learning and potential reviews associated with medicines management.

The policy/procedure requirements will be achieved through the monitoring and maintain of competence and compliance.

5 CONSULTATION PROCESS

Name	Title	Date
Clare McConomy	Operational Lead	01/05/2024
Jenny Goddard	Deputy Sister	01/05/2024
Richard Deer	Deputy Sister	01/05/2024
Katrina Roby	Deputy Sister	01/05/2024
Hannah Lowe	tACP	01/05/2024
Kathryn Kelly	tACP	01/05/2024
Rob McAdam	tACP	01/05/2024

6 EQUALITY IMPACT STATEMENT

Family Nursing & Home Care is committed to ensuring that, as far as is reasonably practicable, the way services are provided to the public and the way staff are treated reflects their individual needs and does not discriminate against individuals or groups on any grounds.

This policy document forms part of a commitment to create a positive culture of respect for all individuals including staff, patients, their families and carers as well as community partners. The intention is to identify, remove or minimise discriminatory practice in the areas of race, disability, gender, sexual orientation, age and 'religion, belief, faith and spirituality' as well as to promote positive practice and value the diversity of all individuals and communities.

The Family Nursing & Home Care values underpin everything done in the name of the organisation. They are manifest in the behaviours employees display. The organisation is committed to promoting a culture founded on these values.

Always:

- Putting patients first
- Keeping people safe
- Have courage and commitment to do the right thing
- Be accountable, take responsibility and own your actions
- Listen actively
- Check for understanding when you communicate
- Be respectful and treat people with dignity
- Work as a team

This policy should be read and implemented with the Organisational Values in mind at all times. See below for the Equality Impact Assessment for this policy.

6.1 EQUALITY IMPACT SCREENING TOOL

Stage 1 - Screening			
Title of Procedural Document: Adult Administration of Subcutaneous Fluids Policy and Procedure			
Date of Assessment	28/04/2024	Responsible Department	RRRT
Completed by	Louise Hamilton	Job Title	Team Lead
Does the policy/function affect one group less or more favourably than another on the basis of:			
	Yes/No	Comments	
Age	No		
Disability <i>(Learning disability; physical disability; sensory impairment and/or mental health problems e.g. dementia)</i>	No		
Ethnic Origin <i>(including hard to reach groups)</i>	No		
Gender reassignment	No		
Pregnancy or Maternity	No		
Race	No		
Sex	No		
Religion and Belief	No		
Sexual Orientation	No		
<p>If the answer to all of the above questions is NO, the Equality Impact Assessment is complete. If YES, a full impact assessment is required: go on to stage 2.</p>			
Stage 2 – Full Impact Assessment			
What is the impact	Level of Impact	Mitigating Actions <i>(what needs to be done to minimise / remove the impact)</i>	Responsible Officer
Monitoring of Actions			
The monitoring of actions to mitigate any impact will be undertaken at the appropriate level			

7 IMPLEMENTATION PLAN

Action	Responsible Person	Planned timeline
Policy to be uploaded to the Procedural Document Library	Education and Development Administrator	Within 2 weeks following ratification
Email to all staff	Education and Development Administrator	Within 2 weeks following ratification
Upload policy (+/- assessment tool) to Virtual College and allocate to relevant staff	Education and Development Department	Within 2 weeks following ratification
Relevant staff to sign (via Virtual College) that they have read and understood policy.	All staff notified via Virtual College.	Within 2 months of notification

8 GLOSSARY OF TERMS

Airway to Exposure (A-E) is a systematic clinical examination tool.

Dehydration is when water losses from the body exceed water replacement.

Estimated Glomerular filtration Rate (eGFR) is a blood test that calculates kidney function based on a patient's serum creatinine level, age sex and race.

Erythema the redness of the skin or mucous membranes caused by increased blood flow in superficial capillaries which occurs with any skin injury, infection, or inflammation.

Induration is the localised hardening of soft tissue of the body.

Intradermally means within or below the dermal tissue skin layer.

National Early Warning Score 2 (NEWS2) is a clinical observation scoring system that determines the degree of illness of a patient and prompts increased care intervention.

Percutaneous Endoscopic Gastrostomy (PEG) is a feeding tube placed through the abdominal wall and into the stomach.

Subcutaneous is the innermost layer of skin made up of fat and connective tissue.

Urea and Electrolytes (U&E's) is a blood test used to detect abnormalities of blood chemistry.

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10 APPENDICES

10.1 Appendix 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 = $1000\text{mls} \times 20 \div (10\text{hrs} \times 60\text{mins} = 600\text{mins}) = 33.33\text{r}$
= 33 drops per/min
- Example: 1 litres over 8 hours = $1000\text{mls} \times 20 \div (8\text{hrs} \times 60\text{mins} = 480\text{mins}) = 41.6$
= 42 drops per/min
- Example: 500ml 0.9% Sodium Chloride to be infused by Hypodermoclysis over 8 hrs
 $500 \times 20 \div (8 \times 60=480) = 20.83\text{r} = 21 \text{ dpm}$
- Example: 2 litres to be infused over 12 hours = must be done in two separate sites!
 $1000 \times 20 \div (12 \times 60= 720) = 27.77\text{r} = 28 \text{ dpm}$ 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.

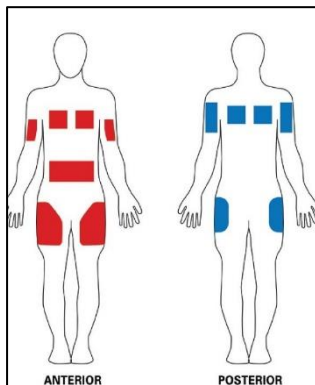
All calculations should be annotated in notes with clear explanation how the infusion was delivered.

10.2 Appendix 2. Subcutaneous Fluid Insertion Site Chart

Name	
Address	
DOB	EMIS No.



Acceptable SC insertion sites



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 : Slight pain near the i.v. site or slight redness near the i.v.site	1	Possible first sign of phlebitis ■ OBSERVE CANNULA
Two of the following are evident: ● Pale near i.v.site ● Erythema ● Swelling	2	Early stage of phlebitis ■ RESITE CANNULA
All of the following are evident: ● Pain along path of cannula ● Erythema ● Induration	3	Medium stage of phlebitis ■ RESITE CANNULA ■ CONSIDER TREATMENT
All of the following are evident & extensive ● Pain along path of cannula ● Erythema ● Induration ● Palpable venous cord	4	Advanced stage of phlebitis or start of thrombophlebitis ■ RESITE CANNULA ■ CONSIDER TREATMENT
All of the following are evident & extensive ● Pain along path of cannula ● Erythema ● Induration ● Palpable venous cord ● pyrexia	5	Advanced stage of thrombophlebitis ■ INITIATE TREATMENT ■ RESITE CANNULA

Date	Cannula used and where on Body	VIP Score	Signature and Designation