Public – To be published on the Trust external website

Subcutaneous Fluid Administration

Ref: CLIN-0053-v6

Status: Approved
Document type: Procedure

Contents

1 Introduction

Subcutaneous fluid administration is a method of infusing fluid into subcutaneous tissue that is an alternative to administering intravenous fluids (Royal Marsden 2020). Subcutaneous fluids can be given to maintain adequate hydration in patients with mild or moderate dehydration (Scales 2011, Walsh 2005) and have been shown to be as effective as the intravenous route for replacing fluid and electrolytes (Barton et al.2004)

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

TEWV NHS Foundation Trust provides care to a diverse range of service users across several specialties and localities, all of whom require varying degrees of need and support. As reiterated by NHS England, 2019 [online], care provision is variable, with some groups of people continuing to experience inequalities. TEWV NHS Foundation Trust is therefore fully committed to ensuring that patients receive care that is individualised, holistic and evidence based, and that fair and equal treatment is offered to all. No one should have a poorer service or a lesser experience because of their differences, inclusive of Subcutaneous fluid administration. It is in keeping with this principle that this procedure has been written.

This procedure reflects the Trust's strategic direction of travel, Our Journey to Change, by supporting its values and goals.

Living our values is integral to the care we deliver. We will show respect to patients by actively listening to their concerns and acting upon them. We will ensure we are always compassionate, kind and supportive. We will be open and honest in our conversations, always receptive (listening) to how much information a person may want, and in what kind of format.

This procedure also supports the Trust's strategic goals. It is important that we work closely with the person so that the experience can be as good as it possibly can be, working to ensure the person has as much choice and control as possible. We will work closely with our Trust colleagues, so they feel supported in working with the person. This treatment can be offered to those who lack capacity through the completion of a best interest's assessment (MCA 1 & 2).

2 Purpose

Following this procedure will help the Trust to:-

- Ensure that subcutaneous fluid administration is performed safely and effectively.
- Ensure that registered nursing staff adhere to professional codes of practice and clinical competence is maintained.

3 Who this procedure applies to

This procedure applies to all registered nursing staff working within TEWV NHS Foundation Trust who there is a possibility that subcutaneous fluid administration may be required in their working environment.

Consideration has also been given to those who may be affected by this procedure to ensure that the document content aligns to the Trust's values, so that people who may be affected are treated with compassion, respect and responsibility.

4 Related documents

This procedure describes what you need to do to implement the Policy section of the Physical Health and Wellbeing Policy.

The Physical Health and Wellbeing Policy defines the roles and responsibilities, which you must read, understand and be trained in before carrying out the procedures described in this document.

This procedure also refers to:-

- Consent to Examination of Treatment Policy
- Hand Hygiene Procedure
- Infection Prevention and Control Policy
- Medical Devices Policy
- Mental Capacity Act 2005 Policy
- Privacy and Dignity Policy
- Procedure for Using the National Early Warning Score (NEWS) 2 for the Early Detection and Management of the Deteriorating Patient in Adults (aged 16 and above)

- Procedure for Using the Paediatric Early Warning Score (PEWS) for the Early Detection and Management of the Deteriorating Patient in CAMHS
- Sharps - Safe Use and Disposal of Procedure

5 Administering Subcutaneous Fluids

Sign and Symptoms of Dehydration

- Dry skin with loss of elasticity
- Dry oral tissues
- Sunken eyes
- Reduced urine output
- Low BP/weak pulse
- Blood tests - raised urea, Hb
- Patient not drinking
- Thirst
- Constipation
- Confusion/Delirium (new or worsening)
- General weakness/lethargy
- Difficulty swallowing

Advantages of Administering Subcutaneous Fluids

- Easy to set up
- Easy to site cannula
- Can be used intermittently
- Reduced risk of fluid overload (compared to IV administration)
- Fewer complications
- Less distressing
- Less painful
- Reduced risk of needle stick injury (compared to IV administration)
- Reduced risk of bleeding and blood contamination
- Can reduce need for acute hospitalisation
- Can help to prevent acute kidney injury (AKI)
- More cost effective

Disadvantages of Administering Subcutaneous Fluids

- Poor absorption of fluid in some patients
- Local pooling/oedema of infused fluid

- Leakage at insertion site
- Localised pain at insertion site
- Erythema around insertion site (superficial reddening of skin)
- Local inflammation
- Bruising/pain at insertion site (very rare)
- Abscess at insertion site (extremely rare)
- Not suitable for drug additives - unless for palliative care

Indications (For Adequate Short-Term Hydration)

- Patients who are unable to take adequate fluids orally
- Acute illness such as mild infections, vomiting and diarrhoea
- Mild or moderate dehydration usually indicated by urea and electrolyte imbalance
- Where oral or IV methods of rehydration are not suitable
- Patients requiring palliative or end of life care (debate remains around the administration of subcutaneous fluids in such circumstances. A considered MDT approach is required)

Subcutaneous fluid administration is not recommended for patients needing rapid administration of fluids, for example, emergency situations or severe dehydration (Mei and Auerhahn 2009 and Walsh 2005).

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 who first language isn't English to ensure that information is communicated effectively.

It is also important to acknowledge the patients personal preferences and wishes. Wherever possible these preferences need to be taken into account to promote collaborative decision making, privacy and dignity, and also, to prevent the breach of iatrogenic harm.

Further information can be obtained from to the consent to examination or treatment policy and also, the privacy and dignity policy- both of which are available via the Trust intranet.

This procedure is for inpatients only. Patients **should not** be admitted from the community for subcutaneous fluids. In this instance, admission to the acute hospital is required.

Contraindications

- Severe electrolyte disturbance
- Less effective in patients with low serum albumin
- Fluid overload problems associated with heart failure e.g. pulmonary oedema
- Clotting disorders
- Patients who require precise control of fluid balance

5.1 Choosing a Subcutaneous Infusion Site

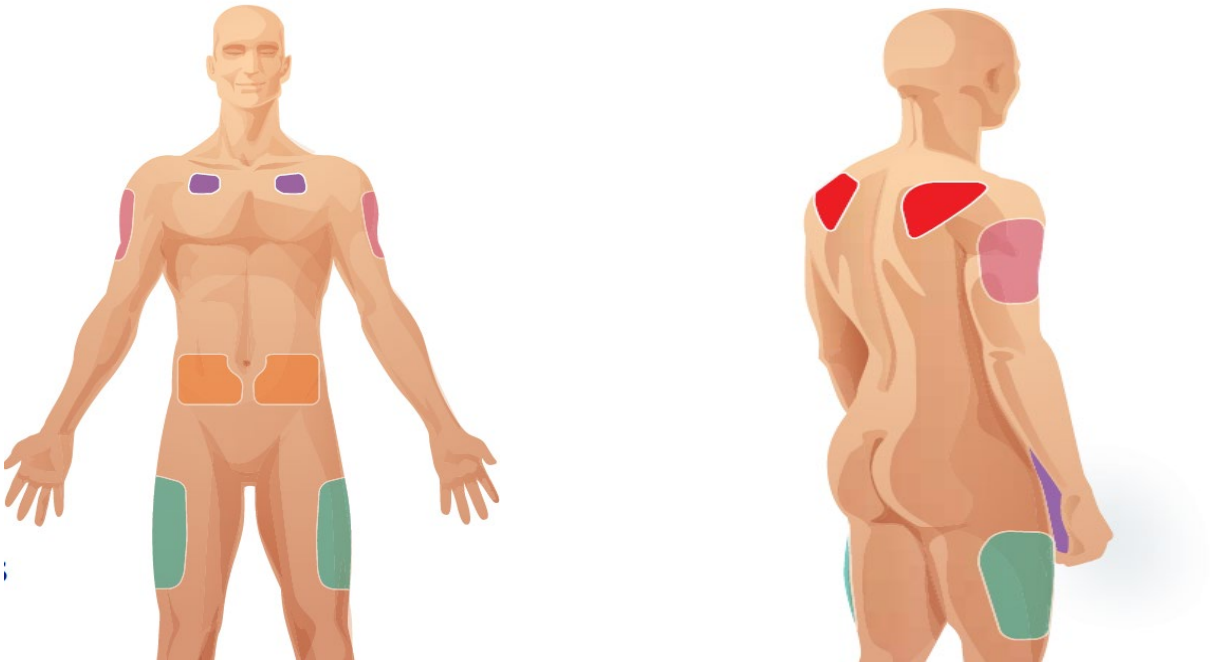
Where possible, always discuss options with the patient first.

AVOID

- Sites that are oedematous, painful, hard, bruised or scarred
- Sites close to the breast tissue or perineum
- Bony prominences and sites close to joints
- Previously irradiated skin (from radiotherapy treatment)
- Below the knee or elbow
- Where there is a rash

USE

- A healthy oedema free area
- Select from:
  - Abdomen
  - Outer aspect of thigh or upper arm
  - Back (often best for patients with dementia or confusion. Fluid may be administered when patients are sleeping which helps prevent the line from being pulled out). The cannula would be inserted whilst the patient is awake and may be very slightly uncomfortable on insertion of the cannula, but the procedure is not painful for the patient. The administration of the fluids will be given during the night usually, but this only requires connecting the administration set to the cannula and won't cause any pain or awakening of the patient.



5.2 Infusion Regime

- Clinical evidence required in patient's electronic care record to justify the need
- Fluids must be prescribed on the Subcutaneous Infusion Prescription and Administration Chart (Appendix 4)
- Up to a maximum of 2 litres in 24 hours
- All equipment should be prepared and ready to use
- Regime and intervention plan should be written in accordance with Trust guidance

1000 mls (bag size) Sodium Chloride 0.9% (Normal saline) or Sodium Chloride 0.18% and 4% Glucose (dextrose saline) **only** to be prescribed and administered

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

6 Procedure

This procedure must only be carried out by Doctors or qualified nursing staff.

It is essential that both the correct equipment is used, and the operator is trained and proficient in the administration of subcutaneous fluids.

All registered nursing staff are eligible to undertake subcutaneous fluids administration training. Specific training in subcutaneous fluids administration is to be arranged and will be accessed via the Physical Healthcare Practitioner.

A short video demonstrating the procedure of administration of subcutaneous fluids can be accessed via the physical health page of the Trust intranet.

A competency assessment must be successfully completed before staff administer subcutaneous fluids unsupervised. (See Appendix 3).

Ward Managers must keep a record of all completed clinical competencies

6.1 Before treatment

Before treatment is considered blood must be taken to establish urea and electrolyte level.

Additional care/ management

- Identify dehydration in intervention plan
- Accurate fluid intake and output monitoring
- Maintain good skin and oral care
- Undertake pressure ulcer risk assessment (Waterlow score and visual inspection of pressure areas, if patient consents, and documented in the patient's electronic care record).

6.2 Equipment

The following equipment is required when setting up for subcutaneous infusion of fluids:

- Personal Protective Equipment (PPE)
- Patient's Subcutaneous Infusion Prescription and Administration Chart
- Patient's Subcutaneous Cannula Record Chart (Appendix 5)
- Clean sharps tray (decontaminate before and after use using Clinell universal wipes)
- Sharps container
- Alcohol skin cleansing wipe - preferably alcohol 2% chlorhexidine skin wipe
- Watch or clock to count drip rate
- Drip stand
- Transparent adhesive dressing
- Saf-T-Intima cannula 24 gauge
- Infusion fluid - 1000 mls (bag size) Sodium Chloride 0.9% (Normal saline) or Sodium Chloride 0.18% and 4% Glucose (Dextrose Saline) **only** to be prescribed and administered
- Administration set (IV giving set)

6.3 Process

- Explain procedure to patient and gain consent. This treatment can be offered to those who lack capacity through the completion of a best interest's assessment (MCA 1 & 2)
- Decontaminate hands either with soap and water or alcohol hand sanitiser and assemble the necessary equipment
- Check and identify the patient against the Subcutaneous Infusion Prescription and Administration Chart (appendix 4)
- Check the expiry date of the infusion bag (record batch number and expiry date on the Subcutaneous Prescription and Administration Chart)
- Check that the packaging is intact and inspect the contents in good light for any punctures and air bubbles
- Inspect the fluid for discolouration, haziness, and crystalline or particular matter. If this is found, discard and report to pharmacy
- Place the infusion bag and administration set in a clean sharps tray, wash hands and proceed to the patient
- Use alcohol hand sanitiser
- Place the infusion bag on a flat surface, remove the seal insert the spike of the administration set fully into the infusion bag port (blue port)
- Hang the infusion bag from a drip stand

- Open the roller clamp and allow the fluid through the set to prime it then close the clamp
- Apply an apron and assist the patient into a comfortable position
- Expose the chosen site for infusion
- Decontaminate hands with alcohol hand sanitiser and use an aseptic non touch technique (ANTT)
- Apply gloves and clean the chosen site for 30 seconds and allow 30 seconds to dry
- Pinch a fold of skin firmly
- Insert the Saf-T-Intima cannula into the skin at an angle of 45 degrees, bevel facing upwards, and release the grasped skin
- Apply a transparent dressing to secure the cannula and remove the introducer needle and dispose in sharps container
- Connect the administration set to the cannula
- Open the roller clamp and adjust until the flow rate is approximately **30mls/hour (10 drops per min) for first hour**
- Remove and dispose of PPE into clinical waste and wash hands with soap and water
- Complete the patient's Subcutaneous Infusion Prescription and Administration Chart and commence a Fluid Balance Chart
- Complete the patient's Subcutaneous Cannulation Record Chart (Appendix 5)
- Monitor the patient for any infusion or site related complications. If identified, document in the patient's electronic care record
- Ask the patient, if able, to report any pain or tenderness at the infusion site
- Dispose of any equipment not required

6.4 Monitoring, Care and Ongoing Infusion Rates

- As stated above, commence the infusion at **30 mls/hour (10 drops per min)** initially and document on the patient's electronic care record
- A visual site check should be performed after 15 minutes and documented on the patient's electronic care record
- A further visual site check should be performed at 1 hour of administration and if there are no problems, the rate may be increased **as prescribed to a maximum of 83 mls/hour (28 drops per min)**. Again, this should be documented on the patient's electronic care record.
- Establish the correct drip rate setting using the correct calculation:

$$\frac{\text{Volume of fluid (mls) X Number of drops per ml (giving set)}}{\text{Prescribed duration of infusion (minutes)}}$$

Example: 1000 mls over 12 hours

To calculate the number of drops per minute for a 1000 ml bag of sodium chloride 0.9% given over 12 hours where the giving set delivers 20 drops per ml:

$$\text{Number of drops per minute} = \frac{1000\ (\text{mls}) \times 20\ (\text{giving set})}{12\ \text{hrs} \times 60\ \text{minutes}} = \frac{20000\ \text{drops}}{720\ \text{minutes}}$$

20000 divided by 720 = 28 drops per minute, one drop every 2 seconds

Example: 1000 mls over 24 hours

To calculate the number of drops per minute for a 1000 ml bag of sodium chloride 0.9% given over 24 hours where the giving set delivers 20 drops per ml:

$$\text{Number of drops per minute} = \frac{1000\ (\text{mls}) \times 20\ (\text{giving set})}{24\ \text{hrs} \times 60\ \text{minutes}} = \frac{20000\ \text{drops}}{1440\ \text{minutes}}$$

20000 divided by 1440 = 14 drops per minute, one drop every 4 seconds

- Once increased to prescribed rate (**remember maximum is 83 mls/hour (28 drops per min)**), another visual site check should be performed after 15 minutes and documented on the patient's electronic care record
- Again, a further visual site check should be performed at 1 hour of administration
- Visual site checks should then continue at 4 hourly intervals (all of which should be documented on the patient's electronic care record
- Replace cannula at least every 48 hours
- Urea and electrolytes (U&Es) blood tests should be obtained and reviewed every 48 hours
- Encourage oral fluids (unless patient is nil by mouth (NBM)) and aim for a total fluid intake of at least 2 litres in 24 hours
- Daily medical review is essential to assess ongoing and further management

6.5 Hazards

Universal precautions and safe use and disposal of sharps should be adhered to as stated in the infection control policies

A comprehensive risk assessment of the patient, the environment and other patients must be undertaken before considering subcutaneous fluids.

6.6 Troubleshooting

Issue	Possible solution
Redness at insertion point	Re-site infusion may be required
Pooling of fluid at insertion point	Reduce flow rate. Possibly massaging the area may help Re-site infusion if problem persists
Infusion running too slowly	Adjust height of infusion bag. Check line regulator. Re-site if problem persists.
Fluid overload-wheeze, breathlessness- put entry on the patients electronic care record about what breathing is like prior to administering	Unlikely with rate less than 80mls/hour If suspected, stop infusion and notify doctor
Persistent redness, localised pain/swelling, unexplained pyrexia	Stop infusion and notify doctor If required by microbiology cannula to be sent for culture and sensitivity
Leaking from site after removal of cannula	This will resolve spontaneously

6.7 Recommended Infusion Rates

⚠ Up to a maximum of 2 litres in 24hours can be administered

⚠ Rates of between 30 mls/hr and 83 mls/hr are recommended

⚠ The location of the subcutaneous site should also be changed every 48 hours (unless a problem is identified earlier, necessitating an earlier change)

⚠ A mechanical pump must **NOT** to be used. Infusion is by gravity only using a standard IV giving set connected to a Saf-T-Intima cannula via a luer-lock connection

⚠ Standard administration set delivers 1 ml of fluid per 20 drops

7 Definitions

Term	Definition
ANTT	• Aseptic Non Touch Technique
Dehydration	• Body loses more fluids than it has taken in
Oedema	• Build-up of fluid in the body which causes the affected tissue to become swollen
Pyrexia	• An increase in the body temperature of an individual beyond the normal range
TEWV	• Tees, Esk and Wear Valleys Trust

8 How this procedure will be implemented

- This policy will be published on the Trust's intranet and external website
- Each team/ward manager will ensure that staffs training needs are met in accordance with the Trust's training needs analysis
- Awareness of the Procedure will be included in the Trust Physical Health Core Skills Training Day
- Line Managers will disseminate this Procedure to all relevant Trust employees

8.1 Training needs analysis

Staff/Professional Group	Type of Training	Duration	Frequency of Training
Registered Clinical Staff	Face to face as part of the Physical Health Core Skills Training	1 Hour	Once only, but refresher training available via the Education and Training portfolio

9 How the implementation of this procedure will be monitored

Ward/Unit Managers will ensure training records are maintained. To ensure good practice is maintained, regular audits to ensure this is completed will be performed in the clinical areas by the Physical Healthcare Practitioner.

10 References

Abdullah A, Keast J, (1997) Hypodermoclysis as a means of rehydration. **Nursing Times**, 93(29) 54-55

Barton, A., Fuller, R. & Dudley, N. (2004) Using subcutaneous fluids to rehydrate older people: Current practices and future challenges. *Quarterly Journal of Medicine*, 97(11), 765–768.

Donnelly M (1999) The benefits of hypodermoclysis. **Nursing Standard**, 13 (52) 44-45

Mei, A. & Auerhahn, C. (2009) Hyperdermoclysis: Maintaining hydration in the frail older adult. *Annals of Long-Term Care*, 17(5), 28–30.

O'Keefe S, Geoghegan M (2000) Subcutaneous hydration in the elderly**, Irish Medical Journal**, 93(7) October

Scales, K. (2011) Use of hypodermoclysis to manage dehydration. *Nursing Older People*, 23(5), 16–22.

The Royal Marsden NHS Foundation Trust (2020) The Royal Marsden Manual of Clinical and Cancer Nursing Procedures. 10th Edition.

Walsh, G. (2005) Hypodermoclysis: An alternate method for rehydration in long-term care. Journal of Infusion Nursing, 28(2), 123–129.

11 Document control (external)

To be recorded on the policy register by Policy Coordinator

Date of approval	05 October 2023
Next review date	05 October 2026
This document replaces	CLIN-0053-v5.1 Subcutaneous Fluid Administration
This document was approved by	Physical Healthcare Group
This document was approved	05 October 2023
This document was ratified by	Physical Healthcare Group
This document was ratified	05 October 2023
An equality analysis was completed on this policy on	11 August 2023
Document type	Public
FOI Clause (Private documents only)	N/A

Change record

Version	Date	Amendment details	Status
6	05 Oct 2023	Full review and update of procedure with minor amendments to wording and inclusion of: - Explaining what to do should a patient deem not to have capacity. - The use of interpreters should the patients first language not be English.	Approved

Appendix 1 - Equality Analysis Screening Form

Please note: The Equality Analysis Policy and Equality Analysis Guidance can be found on the policy pages of the intranet

Section 1	Scope
Name of service area/directorate/department	Nursing and Governance/ Physical Health
Title	Subcutaneous Fluid Administration
Type	Procedure/guidance
Geographical area covered	Trust wide
Aims and objectives	To ensure safe practice in the administration of subcutaneous fluids
Start date of Equality Analysis Screening	11 Aug 2023
End date of Equality Analysis Screening	11 Aug 2023

Section 2	Impacts
Who does the Policy, Service, Function, Strategy, Code of practice, Guidance, Project or Business plan benefit?	Patients and staff
Will the Policy, Service, Function, Strategy, Code of practice, Guidance, Project or Business plan impact negatively on any of the protected characteristic groups?	• **Race** (including Gypsy and Traveller) **NO** • **Disability** (includes physical, learning, mental health, sensory and medical disabilities) **NO** • **Sex** (Men, women and gender neutral etc.) **NO** • **Gender reassignment** (Transgender and gender identity) **NO** • **Sexual Orientation** (Lesbian, Gay, Bisexual, Heterosexual, Pansexual and Asexual etc.) **NO**

	• **Age** (includes, young people, older people – people of all ages) **NO** • **Religion or Belief** (includes faith groups, atheism and philosophical beliefs) **NO** • **Pregnancy and Maternity** (includes pregnancy, women who are breastfeeding and women on maternity leave) **NO** • **Marriage and Civil Partnership** (includes opposite and same sex couples who are married or civil partners) **NO** • **Armed Forces** (includes serving armed forces personnel, reservists, veterans and their families) **NO**
Describe any negative impacts	This procedure will not negatively impact upon any of the protected characteristic groups.
Describe any positive impacts	The positive impacts of this procedure are to ensure safe practice in the administration of subcutaneous fluids.

Section 3	**Research and involvement**
What sources of information have you considered? (e.g. legislation, codes of practice, best practice, nice guidelines, CQC reports or feedback etc.)	Yes - see reference section for full list of information sources
Have you engaged or consulted with service users, carers, staff and other stakeholders including people from the protected groups?	Yes
If you answered Yes above, describe the engagement and involvement that has taken place	This procedure has been discussed with the Physical Health Group who support patients from a range of protected characteristics on a daily basis.
If you answered No above, describe future plans that you may have to engage and involve people from different groups	

Section 4	Training needs
As part of this equality analysis have any training needs/service needs been identified?	No
Describe any training needs for Trust staff	N/A
Describe any training needs for patients	N/A
Describe any training needs for contractors or other outside agencies	N/A

Check the information you have provided and ensure additional evidence can be provided if asked

Appendix 2 – Approval checklist

To be completed by lead and attached to any document which guides practice when submitted to the appropriate committee/group for consideration and approval.

	Title of document being reviewed:	Yes / No / Not applicable	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Rationale**		
	Are reasons for development of the document stated?	Yes	
3.	**Development Process**		
	Are people involved in the development identified?	Yes	
	Has relevant expertise has been sought/used?	Yes	
	Is there evidence of consultation with stakeholders and users?	No	
	Have any related documents or documents that are impacted by this change been identified and updated?	N/A	
4.	**Content**		
	Is the objective of the document clear?	Yes	
	Is the target population clear and unambiguous?	Yes	
	Are the intended outcomes described?	Yes	
	Are the statements clear and unambiguous?	Yes	
5.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	Yes	
	Are key references cited?	Yes	
	Are supporting documents referenced?	Yes	
6.	**Training**		
	Have training needs been considered?	Yes	
	Are training needs included in the document?	Yes	

	Title of document being reviewed:	Yes / No / Not applicable	Comments
7.	**Implementation and monitoring**		
	Does the document identify how it will be implemented and monitored?	Yes	
8.	**Equality analysis**		
	Has an equality analysis been completed for the document?	Yes	
	Have Equality and Diversity reviewed and approved the equality analysis?	Yes	
9.	**Approval**		
	Does the document identify which committee/group will approve it?	Yes	
10.	**Publication**		
	Has the policy been reviewed for harm?	Yes	
	Does the document identify whether it is private or public?	Yes	Public
	If private, does the document identify which clause of the Freedom of Information Act 2000 applies?	N/A	

Appendix 3 – Competency assessment

CLINICAL SKILLS COMPETENCY

Subcutaneous Fluid Administration	Name: Date:

Competency Statement	Evaluation Strategy
➢ To apply and demonstrate theoretical knowledge and practical skills required for subcutaneous fluid administration	➢ Verbalise understanding ➢ Practical demonstration

Assessment method	1 = Observed	2 = Questions / Discussion

		Assessment Method	Achieved Y / N
1	Demonstrates theoretical knowledge of subcutaneous fluid administration.		
2	Is able to name all the components required for subcutaneous fluid administration		
3	Is able to identify suitable anatomical sites for subcutaneous fluid administration		
4	Is able to perform the procedure correctly		
5	Demonstrates the safe disposal of sharps		
6	Is able to explain the monitoring and ongoing care of the subcutaneous infusion		
7	Is able to explain the importance of the incremental infusion rates and visual site checks necessary		
8	Is able to explain good practice principles in relation to documentation		

GUIDELINES

- The response **'not achieved'** for any of the competencies requires an explanation in the comments space provided below.
- The staff member must have received an **'achieved'** rating in all steps of the procedure to be deemed competent.
- The staff member must not perform this skill unsupervised until they have been deemed competent in all steps of the procedure.

No.	Comments	Date

I _____ as the assessor confirm the above criteria have been achieved.

Signature _____ Date ____ / ____ / ____

I_____as the trainee confirm I have achieved the above criteria. I further confirm that I have the skills and knowledge to confidently use the device unsupervised.

Signature _____ Date ____ / ____ / ____

Appendix 4 - Subcutaneous Infusion Prescription and Administration Chart

Name……..…… NHS Number …….. Ward …….

Prescription Chart					**Administration Record**				
Date	Fluid Sodium Chloride 0.9% (Normal saline) or Sodium Chloride 0.18% and 4% Glucose (Dextrose Saline) **only**	Volume & Rate	Prescribers Name & Signature	Additional Information	Date	Start Time	Fluid batch number and expiry date	Administered by: Name & Signature	Finish Time

Appendix 5 - Subcutaneous Cannula Record Chart

Name …….. **NHS Number** …….. **Ward** ……..

Subcutaneous Cannula Record Chart					
Date & time of cannulation	**Site of cannulation**	**Cannulated by: Name & Signature**	**Comments**	**Date and Time cannula removed**	**Cannula removed by: Name & Signature**