ST. PATRICK'S CENTRE, KELLS ROAD, KILKENNY

Policy Document

POLICY TITLE:

Procedure for Hypodermoclysis in Adults (Administration of Subcutaneous Infusions)

Prepared by: Sarah Egan	Approval Date: 08.05.2020	Review Date: 08.05.2022
Policy Number 33 – Other Policies	Approved By: Signed: _____ CEO (Interim) Signed: _____ Board Member	

Mission Statement

To enable people to live a good life, in their own home, with supports and opportunities to become active, valued and inclusive members of their local communities.

To enable a supported self-directed living (SSDL) model of provision which is underpinned by our beliefs, values and vision.

Review Date: 08.05.2020 Revision No:____1____	Amendments Required	New Revision Status 08.05.2022
Reviewed By: Sarah Egan	Signed: _____ CEO (Interim)	

Contents

1. Policy Statement

1.1. Registered nurses (RNs) will have the necessary competence and confidence to undertake safe hypodermoclysis (administration of subcutaneous (SC) infusions).

1.2. SPC must put appropriate arrangements in place to support the implementation of this policy thereby improving patient safety.

1.3. The policy is underpinned by the best available evidence relating to hypodermoclysis.

2. Purpose

2.1. The purpose of this policy is to:

- Establish safe and consistent practice regarding preparation, administration and monitoring of hypodermoclysis.
- Direct RN's to ascertain, in collaboration with the supported persons physician, if hypodermoclysis is appropriate for specific people taking into account the indications and contraindications.
- Provide an up-to-date, evidence-based policy to support RNs involved in hypodermoclysis.
- Direct RN's on the procedure for:
- The insertion of a cannula and administration of hypodermoclysis.
- The care and management of a patient with hypodermoclysis.
- The removal of a cannula following the discontinuation of hypodermoclysis
- Reduce risks, minimise errors and maintain the safety of patients.
- Provide guidance on the ethical issues associated with hypodermoclysis.

3. Scope

3.1. This policy applies to all RNs who administer hypodermoclysis for adults and who are employed by SPC

4. Legislation / other related policies

It is expected that each RN undertaking hypodermoclysis is familiar with the documents below (4.1- 4.13) as well as other publications of Nursing & Midwifery Board of Ireland (NMBI) relating to nursing practice. They must also be familiar with and adhere to policy /procedure and guideline documents from their own service area within the HSE. Quality, Safety

and Risk frameworks must also be considered in conjunction with this policy.

4.1. E-learning guide to medication management; National Council for the Professional Development of Nursing and Midwifery and An Bord Altranais (2007) available at www.nursingboard.ie and www.hseland.ie.

4.2. Guidance to Nurses and Midwives on Medication Management. An Bord Altranais (2007)

4.3. Guidelines for Hand Hygiene in Irish Health Care Settings Health Protection Surveillance Centre, Health Service Executive (2005)

4.4. Guidelines for Segregation, Packaging and Storage of Healthcare Risk Waste.4thEdition. Health Service Executive. 2010 http://www.dohc.ie/publications/healthcarewastepackaging2010.html Refer to local policy also

4.5. HSE Standards and Recommended Practices for Healthcare Records Management. Version 3.0. Health Service Executive (May 2011)

4.6. Professional Guidance for Nurses working with Older People. An Bord Altranais (2009)

4.7. Recording Clinical Practice: Guidance to Nurses and Midwives. An Bord Altranais (2002)

4.8. Standard Precautions. Health Protection Surveillance Centre (2009) Available from: https://www.hpsc.ie/a-z/respiratory/influenza/seasonalinfluenza/infectioncontroladvice/ Please refer to local policy also.

4.9. The Code of Professional Conduct for Each Nurse. An Bord Altranais (2000a).

4.10. The Scope of Nursing and Midwifery Practice Framework. An Bord Altranais (2000b).

4.11. National Quality Standards for Residential Care Settings for Older People In Ireland, Health Information and Quality Authority (HIQA). (2008) https://www.hiqa.ie/reports-and-publications/standard/national-standards-residential-care-settings-older-people-ireland

4.12. National Standards for Safer Better Healthcare Standards. HIQA; (2012)

4.13. National Standards for Residential Services for Children and Adults with Disabilities. HIQA. (2013) 4.13 Practice Standards and Guidelines for Nurses and Midwives with Prescriptive Authority (NMBI, (2010)

4.14. National Policy for Nurse and Midwife Medicinal Product Prescribing (ONMSD, 2012) HSE

4.15. Health Service Executive (HSE) National nursing policy and procedure for

Hypodermoclysis in Adults (Administration of Subcutaneous Infusions) (2014)

4.16. National Consent Policy V.1.3, HSE, (2019)

5. Glossary of terms, definitions and abbreviations

ABA	An Bord Altranais also referred to as Nursing & Midwifery Board of Ireland
Aseptic Non Touch Technique (ANTT)/Aseptic Technique	Comprises of a number of fundamental components including reducing environmental risks, hand cleansing, non- touch technique protection for 'key parts', correct cleaning of 'key parts', use of gloves and sterile fields (Rowley & Laird, 2006). The principle of aseptic (non touch) technique operates on the basis of identifying and protecting key parts by a non touch method e.g. cannula hub, port etc (HPSC 2009)
Cannula	Is a short and flexible tube, containing a needle, or introducer, which pierces the skin, to provide access for administration of fluids or medications.
Competence	is defined as the ability of RNs to practice safely and effectively, fulfilling his/her professional responsibility within his/her scope of practice (An Bord Altranais 2000b,)
Clinical Governance	is a framework through which healthcare teams are accountable for the quality, safety and satisfaction of supported people in the care they deliver
Hypodermoclysis	Is a term used for administration of fluid by the subcutaneous (SC) route used mainly for hydration with isotonic solutions (Frisoli et al 2000). Fluids can only be infused by gravity and volumetric pumps must not be used. This technique should only be used when fluid replacement is not an emergency requirement (Brown and Worbec, 2000) Hypodermoclysis should not be confused with SC administration of medications (Walsh 2005)
Hypertonic	A solution with higher concentration of solutes than body fluid
HSE	Health Service Executive
NMBI	Nursing & Midwifery Board of Ireland also referred to as An Bord Altranais
Isotonic	A solution with the same concentration of solutes as body fluid
Off Label Medications	The use of an authorised (licensed) medicinal product outside the terms of its product authorisation1. An RNP may prescribe an off-label medication.
ONMSD	Office of the Nursing and Midwifery Services Director
NMPDU	Nursing and Midwifery Planning & Development Unit
Registered Nurses (RNs)	Nurses entered on the live/active register held by the Nursing & Midwifery Board of Ireland (NMBI)

Registered Nurse Prescriber (RNP)	A nurse or midwife who is registered in the division of the Register of Nurse Prescribers of the Nursing and Midwifery Board of Ireland (An Bord Altranais, 2007)
RCN	Royal College of Nursing
Subcutaneous tissue	The layer of loose connective tissue directly under the skin. The subcutaneous layer contains fat and connective tissue that houses larger blood vessels and nerves. This layer is important in the regulation of temperature of the skin itself and the body. The size of this layer varies throughout the body and from person to person. (http://dermatology.about.com/cs/skinanatomy/g/subcutaneous.htm accessed 21/06/13) SC: Subcutaneous
Unauthorised Medicinal Product	Do not have a product authorisation for use in Ireland, and have not been assessed by the IMB against the criteria of safety, quality and efficacy. An RNP may not prescribe an unauthorised medicinal product
WHO	World Health Organization

6. Roles and Responsibilities

6.1. **Responsibility of St Patricks Centre**

- To disseminate this policy to all staff

6.2. **Responsibility of the Director of Nursing**

- To ensure that all nursing staff are aware of and adhere to this policy and that effective communications systems are in place to disseminate and implement it.
- To identify and provide resources and supports to ensure that this policy is adhered to.
- To ensure robust clinical governance structures are in place to monitor and audit practice and ensure patient safety.
- To ensure systems are in place, to facilitate education and training with regard to all aspects of hypodermoclysis management in conjunction with the appropriate

personnel.

- To ensure that risk management policies and procedures are in place for reporting all adverse events, incidents including healthcare-associated infection, near misses and adverse drug events related to hypodermoclysis infusion.

6.3. **Responsibility of the Person in Charge**

- It is the responsibility of the person in charge to ensure that nurses, who are administering hypodermoclysis, fulfil the following criteria. RNs must:
  - Be registered on the live register of nurses and midwives maintained by Nursing and Midwifery Board of Ireland.
  - Be employed by SPC or approved Agency.
  - Be approved by their Manager as an appropriate person to manage hypodermoclysis.
  - Be employed in an area where hypodermoclysis is required to enhance service provision.

- To ensure that all RNs are aware of the policy and adhere to it.

- To ensure that each RN take appropriate steps to develop and maintain competence with regard to hypodermoclysis.

- To adhere to risk management structures, policies, procedures and guidelines.

- To maintain appropriate records regarding the competence of the RN reporting to them.

- To maintain a signature sheet detailing that the local policy document is read and understood.

6.4. **Responsibility of the RN**

- It is the responsibility of each RN to:

  - Work within their scope of practice (An Bord Altranais, 2000b).
  - Maintain and update their professional competence through relevant continuing professional development.
  - Comply with local organisational policies and procedures.
  - Be competent and maintain competence in all aspects of hypodermoclysis including:
    - The equipment required for the procedure.
    - The care and management of the patient throughout hypodermoclysis.
    - The completion of all associated documentation.

- Be familiar and comply with the organisation's infection prevention and control, health and safety procedures and risk management policies as they apply to hypodermoclysis and safe disposal of equipment.
- All relevant RNs including those contracted to provide services to SPC, must sign a signature sheet to confirm that they have read, understand and agree to adhere to the policy.

- RNs should undertake the self assessment of hypodermoclysis competencies (Appendix 1) to assure themselves and their employer that they are competent in this area. If an RN identifies a gap in knowledge or skill they should liaise with their line manager to nominate a competent colleague from whom clinical supervision can be obtained or to access continuing education to develop competence and confidence in the skill.

7. Procedure for hypodermoclysis in adults

7.1. Indications for Hypodermoclysis

Hypodermoclysis may be necessary and the preferred option to maintain hydration in persons when the oral intake is insufficient (Abdulla and Keast, 1997).

Indications include:

- Maintenance of hydration for people who have poor intake (<1,000mls/24 hours) secondary to chronic medical conditions e.g. patients with dementia or post a cerebral vascular accident (Dasgusta et al, 2000).
- Fluid replacement for people with conditions associated with mild to moderate dehydration e.g. fever, infection, vomiting, diarrhoea, constipation (Dasgusta et al, 2000; Walsh, 2005; Khan and Younger, 2007).
- People for whom it is difficult to insert an intravenous catheter e.g. patients who are agitated or confused or have poor venous access (Ferry et al 1999; Walsh 2005).
- For specific advice in relation to palliative care settings please refer to Appendix 2.

7.2. Contra-indications

Hypodermoclysis should not be used:

- When fluids need to be infused rapidly and in large amounts e.g. collapse, shock, severe electrolyte disturbance or major dehydration (Ferry et al, 1999; Sasson and Shvartzman, 2001).
- For people needing electrolyte free or hypertonic solutions (Khan and Younger, 2007). Rapid infusion of these solutions can lead to vascular collapse resulting in hypotension and shock (Rochon et al, 1997).
- For people with coagulation defects or clotting disorders where there is a potential risk of bleeding at the injection site, (Sasson and Shvartzman, 2001).
- When the person may be at increased risk of pulmonary congestion or oedema, such

as severe congestive heart failure (Sasson and Shvartzman, 2001).

- Where precise control of volume and rate of infused fluids are essential and fluid balance is clinically important (Khan and Younger, 2007).
- For people who are extremely emaciated or have pre-existing gross oedema (Khan and Younger, 2007).
- People on renal dialysis due to the requirement for precise fluid balance control.

7.3. Ethical considerations

The use of hypodermoclysis should be considered where patient choice and comfort can be maximised.

- The decision to commence hypodermoclysis in a palliative care situation is one that needs careful consideration and should involve the supported person, carers and family and be discussed widely within the multidisciplinary team caring for the patient. Everyone should understand why hypodermoclysis is being used, its aims as a treatment, together with the benefits and risks. If the aims of treatment are not met, the treatment should be discontinued. The potential difficulties of withdrawing hypodermoclysis should be taken into account before making the decision to start such treatment. Further information relating to the palliative care setting is available in Appendix 2.
- The delivery of a hypodermoclysis is unlikely to influence survival for people with advanced disease and who are near to death. However, it may have a limited place in treating some patients who have thirst who are near to death but still conscious or semi-conscious. It is important to note however, that hypodermoclysis will not improve mouth dryness caused by mouth breathing and medication. In addition, hypodermoclysis have the potential to exacerbate oedema and increase transudates in other body spaces in moribund patients (NCPC, 2007).
- The RN must discuss these complex issues with the supported person (where possible), family/carers and other relevant members of the multidisciplinary team including the physician.

7.4. Providing information to supported person/Consent

The prescriber should ensure that the supported person and their family/representative have a clear understanding of why hypodermoclysis is being considered and the benefits and complications that may arise.

There is currently no legislative framework to govern how a decision about treatment and care should be made for those who lack capacity to make that decision themselves.

However, Irish case law, national and international guidelines suggest that in making decisions for those who lack capacity, the health and social care professional should determine what is in their best interests, which is decided by reference to their values and preferences if known

Many supported persons who lack capacity to make a decision will nevertheless be able to express a preference to receive or forgo an intervention. RN's must ensure that all necessary information is provided to the supported person in a format that is accessible for them and as outlined in the persons communication plan

7.5. Prescribing hypodermoclysis

- Hypodermoclysis must be prescribed by a doctor.
- The prescriber must provide clear, precise written instructions regarding the type of infusion, the volume to be infused, and the route and rate of administration.
- Fluid can be delivered subcutaneously at a maximum rate of 60ml/hour at one site as a faster rate can produce local oedema. Fluid can be delivered subcutaneously at a maximum rate of 1500ml/24hours at one site (Arinzon et al 2004; Walsh 2005)
- If a patient is prescribed more than 1500ml of fluid in 24hours, the fluid must be delivered using 2 sites (Walsh 2005). The total volume infused over 24 hours should not exceed 2 litres.
- The duration of the infusion must be stated.
- The RN must be satisfied with the prescription, ensuring it is clear and unambiguous and appropriate for the patient's condition.
- The RN should delay administration and seek immediate advice if there are any doubts or concerns regarding either the prescriber's instructions or the patient's condition.

7.6. Solutions that may be given by Hypodermoclysis

- The following isotonic fluids are safe to administer by hypodermoclysis.
    - Sodium Chloride 0.45% or 0.9%
    - Glucose-sodium chloride combinations
- These solutions for infusion are not licensed for subcutaneous infusion in Ireland and as such, a suitable protocol for the prescription and SC administration of these solutions should be in place. The use of intravenous solutions for hypodermoclysis has been well documented and the prescriber should be aware of this evidence as he/she has responsibility for their prescription.
- The Medication management officer should be made aware of and approve the unlicensed use of intravenous solutions for SC infusion.
- Fluids infused subcutaneously must be as near to isotonic as possible (RCN, 2010).

7.7. Solutions/medications that should not be given by hypodermoclysis

- Hyaluronidase
- Colloids.
- Blood or blood products.
- Total parenteral nutrition.
- Solutions with any drugs added.
- Glucose solutions > 5%.
- Solutions containing > 20 mmol /L of potassium.
- Antibiotic therapy. (Peterborough Community Policy, 2010)

7.8. **Selection of infusion site**

In theory, any skin site with loose SC tissue is available for cannula insertion. The site chosen should have adequate amounts of SC tissue and good lymphatic drainage to maximise absorption (Donnelly, 1999). Selection of an appropriate site should consider the person's preference, his/her level of mobility, access, comfort and the skin condition at the site (Noble-Adams, 1995). Evidence suggests that fluids are better absorbed from central sites that have larger stores of adipose tissue (Brown and Worobec, 2000; Barton et al, 2004). Patients with peripheral vascular disease should not be given fluid in their lower extremities

Table 1 provides information on the suitability of sites for hypodermoclysis infusion, while Table 2 details sites that should be avoided.

Table 1: Suitable infusion sites for hypodermoclysis

Site	Rationale
Abdomen – at least 5cm or 2 inches in circumference from the umbilicus but not too low to cause fluid to drain into the scrotum in males or labia in females	This site is suitable for both people who are ambulant and people who are confined to bed, especially patients with little peripheral SC tissue
Anterior or lateral aspects of the thigh	Suitable for people who are confined to bed. Avoid in ambulant patients because of risk of backflow into the administration set. Inner thigh is not suitable for people with incontinence
Upper chest below the clavicle but avoiding breast tissue (fluid may drain into the axillary lymph glands)	Suitable site for ambulant people as it allows full range of movement NB: This site should be avoided in people who are cachectic to reduce the risk of pneumothorax
Subscapular (under the shoulder blades)	The less accessible subscapular area can be helpful for people who are agitated and may pull out the cannula (O Keefe and Lavan, 1996)

Table 2: Sites unsuitable for hypodermoclysis

Unsuitable Sites	Rationale
Arms	Fluids are better absorbed from central sites as they have large stores of adipose tissue
Oedematous areas	There is insufficient absorption from the site and there is increased risk of infection at the insertion site
Areas of induration (hard) tissue	Poor absorption and discomfort
Waistline	Bending can cause kinking of the line
Irradiated skin area	Radiotherapy can reduce patency of small blood vessels, thereby affecting skin absorption
Over bony areas	There is insufficient absorption due to lack of SC tissue
Near joints	Limb movement may dislodge cannula or cause patient discomfort
Areas of broken or infected skin.	Increases the risk of infection or deterioration of an infection at the site
Bruised or scarred tissue	Reduced site absorption and patient discomfort
Areas near breast tissue	Fluid may drain into axillary lymph glands
On the site of a mastectomy or close to a stoma	Patient discomfort/reduced Absorption, risk of infection
Areas near the perineum	Fluid may drain into the scrotum or labia

(Brown and Worobec, 2000; RCN 2010; Walsh, 2005; Khan and Younger, 2007).

7.9. **Selection of access devices**

- There are a number of cannula devices that may be used however they must be deemed by manufacturers as suitable for hypodermoclysis, and should be able to:
  - Reduce site reactions
  - Promote decreased trauma of insertion
  - Reduce needle stick injury
  - Be durable i.e. a cannula that can remain in place for a period of time. (South Eastern Sidney, Australia, Local Health Network 2011)
- The cannula to be used will be determined by local organisational policy and in accordance with Medical devices Directive 93/42/EEC.

7.10. Procedure for commencing hypodermoclysis

- Equipment Required:
    - Persons prescription for hypodermoclysis
    - Fluid balance chart
    - Persons records
    - Sterile dressing pack
    - Clean procedure tray
    - Cannula
    - Sterile fluid administration set
    - Skin disinfectant2 e.g. 2% chlorhexidine in alcohol or 70% alcohol
    - Semi-permeable dressing
    - Drip stand or equivalent
    - Sharps box
    - Prescribed infusion fluid (Refer to Section 7.5, 7.6 and 7.7)
    - Alcohol hand rub/gel
    - Non-sterile disposable gloves

Table 3: Procedure for commencing hypodermoclysis

Action	Rationale
Collect all the necessary equipment and bring to person	
Perform hand hygiene, prior to touching the person	To protect the person from harmful microorganisms on the healthcare workers hands; **Moment 1 of the 5 Moments** (WHO, 2009)
Introduce self to the person explain procedure	To ensure person understands the procedure.
Check that the prescription specifies the person's details, the solution type, and timeframe for administration in accordance with the "5Rights" (An Bord Altranais,2007) Calculate the flow rate (Table 4, page 13)	To ensure correct type and volume is administered to the correct person.
The person administering the infusion and a colleague, must check each of the following: • That the order is legible • Infusion fluid (and medication name if applicable) • Prescribed dosage • Date of order • Date and time of administration • Order stop date • Frequency and time of last infusion (medication) given	To minimise risk of errors

Special precautions necessary and any likely side effects/contraindications • Expiry date • Check the infusion is clear • Calculate the infusion rate • Signature of prescriber	
Any lack of clarity in the prescription must be verified with the prescriber before administration	To minimise risk of errors
Perform hand hygiene	To protect the person from harmful microorganisms including the patient's own microorganisms – **Moment 2 of the 5 Moments** (WHO 2009)
Using a non touch technique: Attach the cannula (ensuring that the cover on the needle is not removed) to the administration set, then connect the administration set to the solution If using a vascular catheter – there is a metal introducer inside the plastic cannula – this introducer has to be removed after inserting the cannula into the SC tissue and before the administration set is attached to the cannula.	To maintain asepsis
Prime the administration set and cannula with the solution as appropriate for type of cannula being used.	To prevent air bubble formation in the cannula
Ensure privacy and comfort is maintained, choose a suitable infusion site in collaboration with the person if possible, expose and inspect the insertion site ensuring it is free from redness or pain.	To facilitate insertion of cannula
Perform hand hygiene and put on non-sterile gloves	Hand Hygiene: To protect the patient from harmful microorganisms including the persons own microorganisms – **Moment 2 of the 5 Moments** (WHO 2009) Non-sterile gloves are worn to protect the nurse from blood or body fluid exposure
Disinfect the insertion site (e.g. with 70% alcohol) and allow to dry for 30 seconds	To prevent the risk of introducing infection
Insert the cannula beneath the skin at an angle of 45 degrees with the bevel pointing upwards Remove the metal introducer if used and discard into sharps box	To ensure the cannula is inserted into the SC space Reduce risk of sharps injury
If blood appears in the line on insertion of cannula, withdraw immediately and repeat the process using a new cannula Apply pressure to stop bleeding and apply sterile dressing if required and select a different site	To ensure a blood vessel has not been cannulated
Cover cannula with semi permeable transparent dressing	To prevent kinking at insertion site, ensure security of the line and allow

	visualisation of insertion site and reduce the risk of infection
Remove gloves and perform hand hygiene	To protect yourself and the healthcare environment from harmful patient micro organisms (WHO, 2009) **Moment 3**
Set infusion at prescribed rate Label the giving set with date/time	To ensure fluid is administered at the prescribed rate
Ensure the infusion bag is 1 metre above the insertion site	Infusions administered by SC route should be gravity fed; an infusion pump should not be used (RCN. 2010).
Ensure that the date and time of line insertion is documented.	To maintain accurate records
Commence fluid balance chart	To monitor the patients fluid input and output
Ensure person is comfortable	To maintain persons dignity
Request the person to report any pain or tenderness at the infusion site and/or observe the person for any signs of pain/discomfort	Awareness of abnormal symptoms will alert staff thus minimising the risk of complications
Dispose of waste appropriately and perform hand hygiene	To ensure adherence to safe and best practice To protect yourself and the healthcare environment from harmful microorganisms **Moment 4 of the 5 Moments** (WHO, 2009)

7.11. **Rate of infusion**

- Infusions administered by SC route should be gravity fed; an infusion pump should not be used (RCN. 2010). Fluid can be delivered subcutaneously at a maximum rate of 60 ml/hour at one site as a faster rate can produce local oedema. A maximum volume of 1500 ml may be delivered SC at one site over a 24 hour period (Arinzon et al 2004; Walsh 2005).

- If a patient is prescribed more than 1500 ml of fluid in 24hours, the fluid must be delivered using more than one site (Walsh 2005, Barua and Bhowmick 2005)

Table 4: Formula to calculate the flow rate (Hutton 1998)

Flow rate = Volume of infusion (ml) x Number of drops per ml
Number of minutes

Example: To administer 1000 ml over 12 hours using a giving set that delivers 20 drops/ml the calculation would be:

1000 ml (volume of Infusion) x 20 (drops per ml) =20,000 total drops
12 (hours) x 60 (mins) =720 total minutes

Total drops 20,000/Total minutes 720 =27.7 drops/minute

NB: It is considered best practice to round up to a whole number i.e. 28 drops per minute

7.12. **Post insertion Care**

- There is limited research available on the optimum duration of SC cannula and replacement of administration sets, Anecdotal and case study evidence suggests that changing the infusion site and giving set every 48 – 72 hours is safe practice (Abdulla & Keast, 1997; Yap et al, 2001). Caution should be taken not to exceed the maximum life- span recommended by the manufacturer of the particular device to ensure patient safety is maintained.

- In some SPC locations, it may be necessary for non-nursing staff to provide elements of post insertion care for the person receiving Hyperdermoclysis, this is detailed below.

Table 5: Post insertion care

Action	Rationale
The insertion site, the infusion rate and the person must be checked within 1 hour of treatment commencing and at least 4 hourly thereafter to look for signs of adverse effects to the SC infusion (Table 6) (The RN must check the insertion site, the infusion rate and person 1 hour post insertion. Following this, if no issues are present, suitably competent (upskilling can be provided by N/S in location) staff can monitor the person for any abnormal presentation, at the site or in the	To identify symptoms of infection/tissue damage In line with national infection control monitoring standards for invasive devices (HPSC, 2009)

person's behaviour. Frequency of checks should be risk assessed and documented in the supported person's records.)	
When the site is changed the administration set and infusion should be changed at the same time	To reduce the risk of infection
Sites should be rotated	To minimise tissue damage
Maintain appropriate records of all care interventions	To ensure efficient communication within the team and to maintain safety for the supported person.

Table 6: Adverse effects of hypodermoclysis

Signs/symptoms	Comment
Local oedema	Most common adverse effect
Local cannula reactions e.g. redness, obstruction, or swelling	May occur in a small number of patients
Pain or discomfort at infusion site	Rare; can be related to insertion of cannula into underlying muscle or to increase in infusion rate
Cellulitis	Risk is minimal when aseptic technique is used and cannula is changed as per product instructions
Puncture of blood vessels	Risk is minimal; hypodermoclysis infusion should not be performed if blood appears when cannula is inserted. Action: Remove cannula and insert in new site
Pulmonary oedema	Rare; reported in 0.6% of more than 600 patients hydrated by hypodermoclysis
Changes in plasma concentrations of electrolyte	Rare; less common than with intravenous infusion

Adapted from Schen R. (1997) and Dasgupta M, Binns MA, Rochon PA. (2000) cited Sasson. M., and Shvartzman. P (2001).

7.13. Discontinuation of Hypodermoclysis

Table 7: Procedure for the discontinuation of hypodermoclysis

Action	Rationale
Confirm prescription has been discontinued	To minimise error
Undertake hand hygiene	To protect the person from micro-organisms on the healthcare workers hands **Moment 1 of the 5 Moments**

	(WHO 2009)
Introduce self to the person and explain the procedure.	To minimise risk of errors
Ensuring the persons privacy, expose the insertion site	
Perform hand hygiene and put on disposable non-sterile gloves	To protect the person from micro-organisms including the patient's own micro-organisms **Moments 2 of the 5 Moments** (WHO 2009)
Using an aseptic non-touch technique and wearing clean non sterile disposable gloves, remove the dressing and gently withdraw the cannula using a sterile gauze square	To protect the person from micro-organisms including the person's own micro-organisms **WHO Moment 2**
Dispose of any sharps as per local sharps disposal policy	To reduce risk of sharps injury
Using a non-touch technique, clean the site with an appropriate antiseptic such as chlorhexidine in alcohol and cover the wound with a small sterile adhesive dressing	To reduce the risk of infection
Dispose of other equipment Remove gloves and perform hand hygiene	To protect yourself and the health care environment from harmful micro-organisms **Moment 3 of the 5 Moments** (WHO 2009)
Ensure person is comfortable	To minimise pain and distress for the person.
Perform hand hygiene	To protect yourself and the healthcare environment from harmful organisms **Moment 4 of the 5 Moments** (WHO, 2009)
Document the removal of the cannula including date and time, reason for removal, cannula integrity, observations and actions taken, dressing applied (RCN, 2010). `	To ensure effective communication with team and to adhere to local and national record management policy

8. Revision and Audit

8.14. This policy will be reviewed two years from the approval date the Assistant director of services in line with National HSE policy on Hypodermoclysis

8.15. In the interim, revision of this document must be considered if new evidence that impacts on this policy emerges in advance of the two year period.

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9. Appendix 1 Self-Assessment of Hypodermoclysis Competencies.

The following tool provides an opportunity for registered nurses involved in the management of hypodermoclysis to undertake a self assessment of their competency and then discuss their conclusions, if necessary, with a more experienced colleague. The RN may wish to provide their line manager with a copy of the completed document.

This is a guide for individual knowledge and does not replace direct clinical teaching and supervision

Consider your answer to each of the following questions I can…	**I understand and am able to practice safely**	**I needto learn more**
Identify indications and contraindications for use of a hypodermoclysis infusion**.**		
Identify essential equipment required for hypodermoclysis		
Describe/demonstrate correct site selection and rationale for selection		
Demonstrate correct preparation of the patient		
Demonstrate correctpreparation and management of hypodermoclysis		
Demonstrate understanding of indications for solutions commonly used in hypodermoclysis		
Demonstrate understanding of relevant drug incompatibilities.		
Demonstrate correct set up of hypodermoclysis used in my organisation including relevant safety and equipment checks.		
Describe how to troubleshoot/solve problems that may occur during hypodermoclysis		
Describe the nurse's role in ensuring individual needs are met including education of patient and family.		
Demonstrate understanding of assessment principles, symptoms, interventions and potential adverse effects.		

Demonstrate knowledge and use of required documentation.		
Explain where to find legislation, policies and procedures relating to hypodermoclysis		

Adapted with permission from 'Management of Subcutaneous Infusions in Palliative Care' (Centre for Palliative Care Research and Education, 2010)

Date: _____

Signature: _____

Actions if learning needs identified:

_____

_____

_____

10.Appendix 2 The Use of Hypodermoclysis in Palliative Care Settings

Introduction

One of the most important aims of palliative care is to minimise unpleasant symptoms of discomfort and pain for persons with a life limiting diagnosis. A decline in appetite is a normal process during the active dying phase of an individual's life (Wagner et al, 2003). Decisions about artificial hydration and nutrition are multifaceted and can be emotionally challenging for everyone involved (Bryon et al., 2008; Gillick, 2000; Huang & Ahronheim, 2000; Wagner et al, 2003). Decisions regarding the use of hydration towards the end of life should be based on a clear purpose with consideration for:

- the benefit versus burden
- the person's goals, values and beliefs
- the goals of the healthcare team
- ethical decisions regarding doing the right thing (McQuillan, 2010).

The Medical Council of Ireland Ethical Standards on End of Life Care (2009:22) states that "there is no obligation on you to start or continue a treatment, or artificial nutrition and hydration that is futile or disproportionately burdensome, even if such treatment may prolong life".

Decision making

Reaching a decision by consensus that is in the best interest of the person, and that it is acceptable to all interested parties is advised by the Irish Association of Palliative Care (2011). It is important for healthcare professionals to acknowledge that psychological and social issues relating to oral intake at end of life pose significant challenges for many families/carers and are interrelated with awareness of dying (Raijmakers et. al., 2013). The purpose and decision regarding hydration should always be undertaken in a sensitive manner.

Possible indications for artificial hydration

Distressing symptoms attributed to dehydration that have not responded to alternative management options.

Opioid toxicity caused by poor renal clearance of opiods due mainly to dehydration.

Cautions / contraindications

If a person is imminently dying, hydration is unlikely to improve symptoms and is likely to increases the risk of distressing respiratory secretions.

Subcutaneous infusion will not relieve symptoms of thirst or dry mouth

Complications due to fluid overload.

Complications for persons on fluid restriction or at risk of fluid overload (heart failure, and haemodialysis).

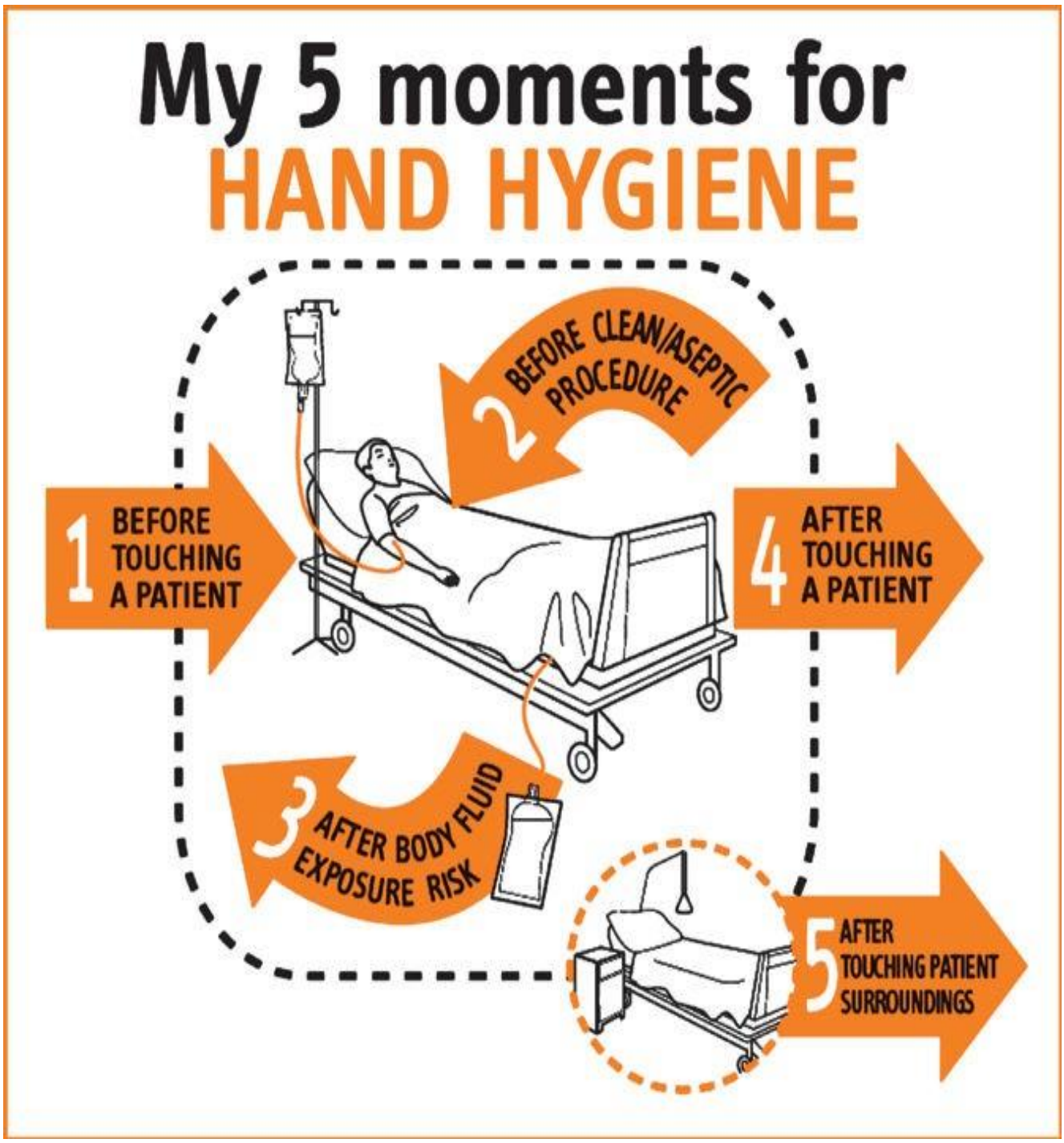
Practice points

Artificial hydration usually will not improve a dry mouth or associated thirst therefore is never a substitute for good oral care. Effective and frequent oral hygiene is necessary as a comfort measure and to reduce secondary infection.

It should be remembered that intravenous hydration may be more appropriate than subcutaneous hydration.

If subcutaneous fluids are started remember to keep under regular review e.g. the appropriateness of continuing fluids internally.
Monitor site for signs of complications.

11.Appendix 3 5 Moments Hand Hygiene



Adapted from World Health Organisation (WHO), Guidelines on Hand Hygiene in Healthcare, (2009)

12.Appendix 4 Subcutaneous infusion of fluids or medications

Adults

clinicalskills.net

Subcutaneous Infusion

Subcutaneous infusion of fluids or medications

Demonstrated by Marie Woodley, IV CNS/OPAT Lead, Buckinghamshire Healthcare NHS Trust

Subcutaneous infusion of fluids via a needle placed under the skin into the subcutaneous tissue (adipose tissue or fat) is a method of administering fluids and medication to patients who cannot take these in adequate amounts via the oral route. Subcutaneous replacement of fluids and electrolytes is as effective as the intravenous route for hydrating patients with mild-to-moderate dehydration (Dougherty & Lister, 2015; Bowen *et al.*, 2014). Currently, it is a procedure more commonly seen in end-of-life and palliative care settings (NICE, 2015). Other indications for subcutaneous infusion include the continuous infusion of insulin (NICE, 2008) and the care of patients who have vomiting, diarrhoea or dysphagia and who cannot tolerate oral medication (Dougherty & Lister, 2015).

Medicines administered by subcutaneous infusion include opioid analgesics, antiemetics, anxiolytic sedatives, corticosteroids, non-steroidal anti-inflammatory drugs and anticholinergic drugs (Dougherty & Lister, 2015). Due to the poor blood supply of subcutaneous tissue, medication given by this route is absorbed more slowly than that given intramuscularly. A maximum volume of 2000 mL can be given over a 24-hour period continuously or intermittently, with a maximum bolus dose of 500 mL over 1 hour (Radcliffe, 2017).

Using the subcutaneous route to administer fluids has a number of advantages, including (Dougherty & Lister, 2015):

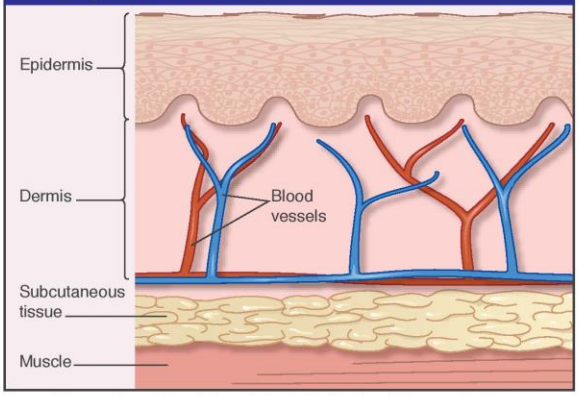
- Subcutaneous infusion is a relatively straightforward and inexpensive procedure that can be performed at home or in the community;
- Few side-effects are associated with the procedure;
- Subcutaneous infusion is less likely to cause fluid overload than the intravenous route;
- The subcutaneous route is less painful than the intramuscular route, and can be less distressing to access than the intravenous route, so is the preferred route in palliative care.

The subcutaneous route is not suitable for patients who need rapid administration of fluids as, unlike intravenous fluid infusion, subcutaneous infusions do not directly enter the venous system and are slowly absorbed by the tissues. Subcutaneous fluid infusion is also contraindicated in patients with clotting disorders and those who have problems with fluid overload, e.g., in cardiac/renal impairment (Radcliffe, 2017). Side-effects of subcutaneous infusion include pain, bruising, local oedema, erythema and local inflammation. Changing the infusion site can help to reduce side-effects (Dougherty & Lister, 2015).

There has been much controversy surrounding artificial hydration with fluids such as sodium chloride 0.9% during end-of-life care; Bowen *et al.* (2014) provide a useful overview. General Medical Council (2010) guidance states that, before beginning artificial hydration for patients at the end of life, it is important to consider each case individually and decide whether to proceed in the patient's best interests, while considering the wishes of their family.

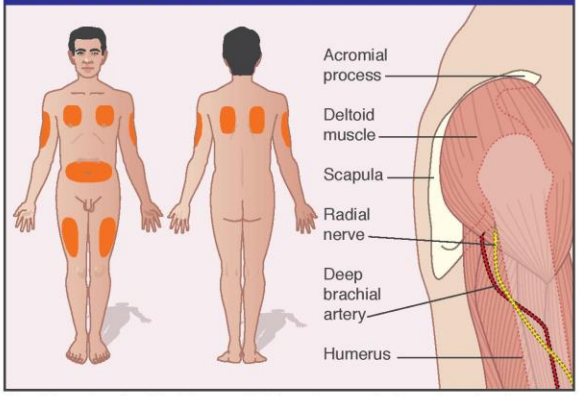
The healthcare professional carrying out subcutaneous infusion should be trained and competent in the use of medications, solutions and subcutaneous administration procedures (RCN, 2016). This procedure describes how to insert a subcutaneous needle/infusion set and administer the prescribed fluid or medication via a gravity flow infusion. Healthcare professionals should consult local policies on the administration and frequency of monitoring of subcutaneous fluids before undertaking this procedure. Do not neglect other aspects of symptom control that can alleviate patients' symptoms, such as mouth care. Mouth breathing and medication may cause dry mouth, and this will not be alleviated by artificial hydration (Bowen *et al.*, 2014).

Anatomy of the skin



Several factors determine choice of site, including the thickness of subcutaneous tissues and patient convenience (Dougherty & Lister, 2015), the volume of medication to be infused and the time period. The chest wall, abdomen and thigh are the most common insertion sites (Bowen *et al.*, 2014). Healthcare professionals should use clinical judgement, incorporating evidence-based practice, when selecting an appropriate site.

Sites for subcutaneous infusion

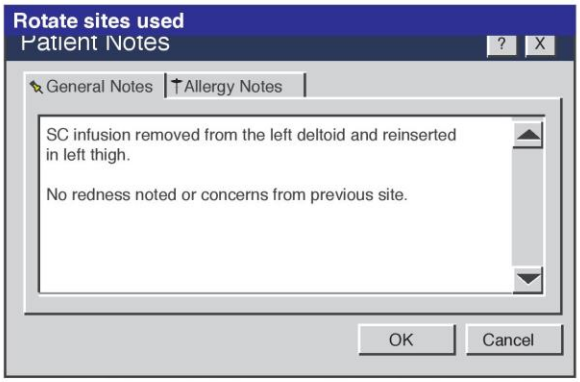


Consider using the deltoid areas (right) or the scapula in confused patients, to reduce the risk that they will pull the needle out. Avoid bony areas where subcutaneous tissue is poor, areas where movement could dislodge the needle, broken skin, and areas of ascites, lymphoedema and previously irradiated skin where absorption may be impaired (Radcliffe, 2017).

Do not undertake or attempt any procedure unless you are, or have supervision from, a properly trained, experienced and competent person. Always first explain the procedure to the patient and obtain their consent, in line with the policies of your employer or educational institution.

Subcutaneous infusion of fluids Page 2

Rotate sites used

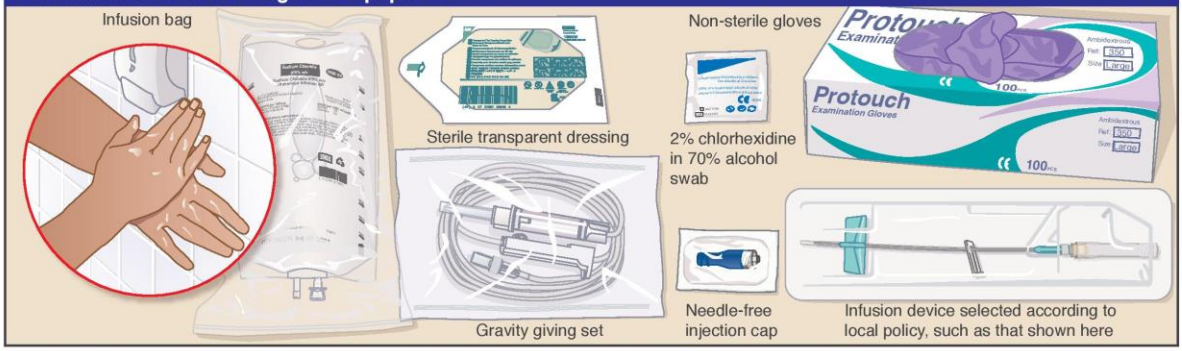


For regular infusions, rotate the sites every 2–7 days (depending on whether administering medications, fluids, hydration or both) to prevent scarring and hardening of subcutaneous tissue (RCN, 2016). Rotate the site at least every 72 hours when infusing medication that causes irritation, e.g., cyclizine and levomepromazine (Dougherty & Lister, 2015); follow local policy and procedures.

Explain the procedure to the patient and gain consent

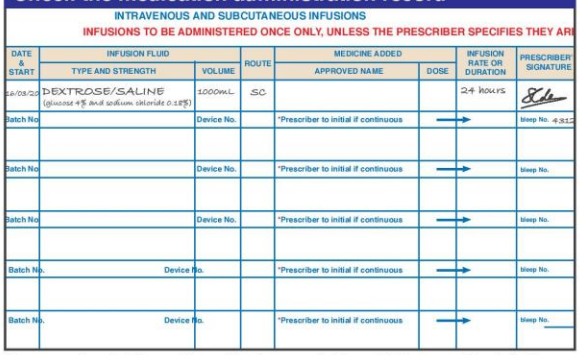
Explain the procedure to the patient. Make sure the patient understands what is going to happen, and obtain their consent. If the patient lacks mental capacity to consent to treatment, it is important to hold a discussion between the multidisciplinary healthcare team and the patient's relatives/carers in order to make a decision in the best interests of the patient (Mental Capacity Act 2005).

Decontaminate hands and gather equipment



Decontaminate your hands to avoid cross-infection. Assemble the equipment you need. Your choice of equipment will be dictated by what is available locally. Select an infusion device of the smallest gauge and shortest length necessary to establish subcutaneous access. Smaller needles may cause less pain for subcutaneous injections (RCN, 2016).

Check the medication administration record



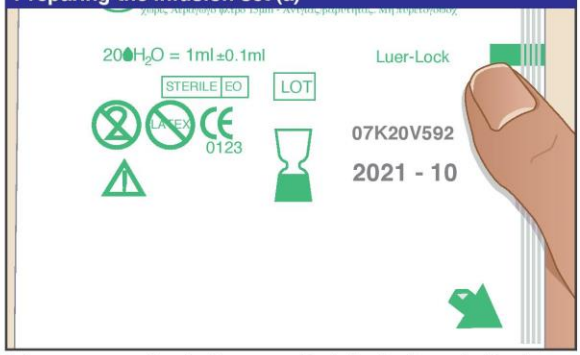
INTRAVENOUS AND SUBCUTANEOUS INFUSIONS

INFUSIONS TO BE ADMINISTERED ONCE ONLY, UNLESS THE PRESCRIBER SPECIFIES THEY AR

DATE & START	INFUSION FLUID TYPE AND STRENGTH	VOLUME	ROUTE	MEDICINE ADDED APPROVED NAME	DOSE	INFUSION RATE OR DURATION	PRESCRIBER SIGNATURE
14/03/20	DEXTROSE/SALINE (glucose 4% and sodium chloride 0.18%)	1000mL	SC			24 hours	
Batch No.		Device No.		*Prescriber to initial if continuous	→		bleep No. 4312
Batch No.		Device No.		*Prescriber to initial if continuous	→		bleep No.
Batch No.		Device No.		*Prescriber to initial if continuous	→		bleep No.
Batch No.		Device No.		*Prescriber to initial if continuous	→		bleep No.
Batch No.		Device No.		*Prescriber to initial if continuous	→		bleep No.

Compare the details on the patient's prescription with those on the infusion bag: check that you have the correct fluid in the correct strength and volume and check the expiry date. Ensure the bag is intact and the fluid is clear and not discoloured. Check that the medicine dose, volume, concentration and rate are suitable for the clinical need and appropriate for the condition of the patient's subcutaneous tissue (RCN, 2016). Calculate the correct drip rate (see clinicalskills.net procedure on "Intravenous infusions: calculating rates").

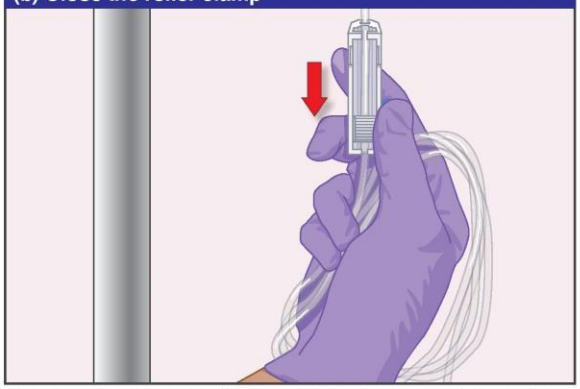
Preparing the infusion set (a)



Put on an apron and apply gloves according to local policy and national guidance. Gloves must be worn for invasive procedures, and all activities that have been assessed as carrying a risk of exposure to blood, body fluids, or to sharp or contaminated instruments (Loveday *et al.*, 2014). Open the packaging of the set and inspect the tubing. Do not use it if it is kinked or damaged.

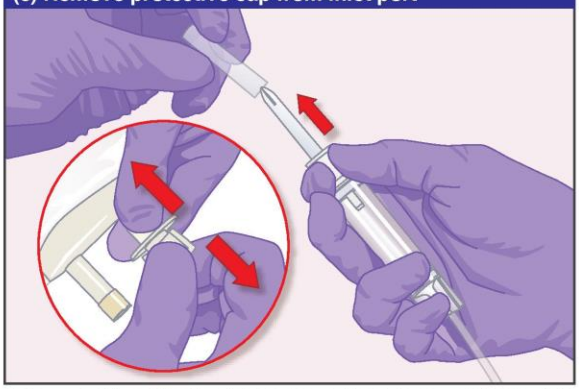
Subcutaneous infusion of fluids Page 3

(b) Close the roller clamp



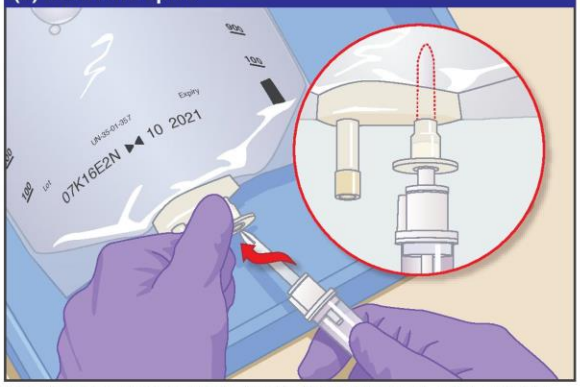
Close the roller clamp on the infusion set. If you leave it open, fluid can flow into the tubing and will form air bubbles.

(c) Remove protective cap from inlet port



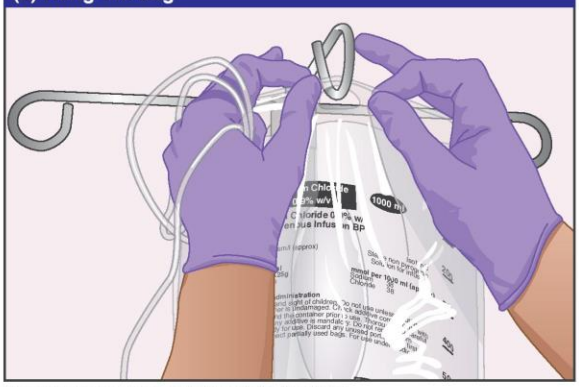
Using an aseptic non-touch technique, remove the protective cap from the inlet port of the infusion bag and the protective cover from the administration set spike.

(d) Insert the spike



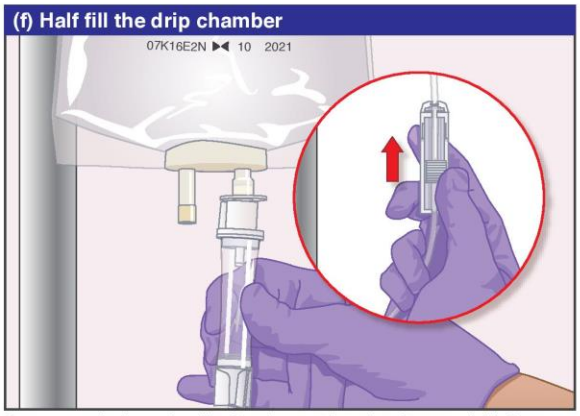
Press the spike firmly into the inlet port of the infusion bag, using a twisting motion. Again, avoid touching the spike or the inlet port.

(e) Hang the bag



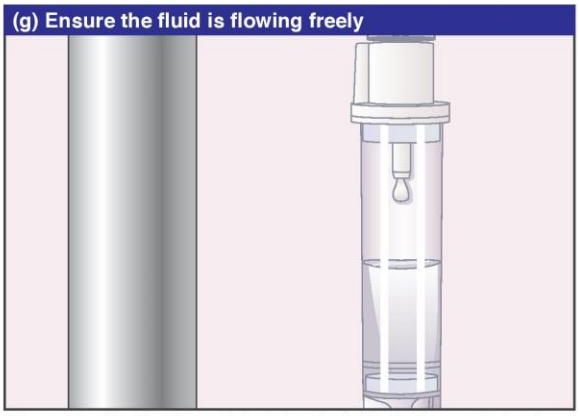
Place the bag on the hook of the infusion stand.

(f) Half fill the drip chamber



Squeeze and release the drip chamber gently to draw in some fluid. Stop when the chamber is half full—if you overfill it, you will not be able to see the drops forming. Then partially open the roller clamp. Fluid will run slowly into the tubing.

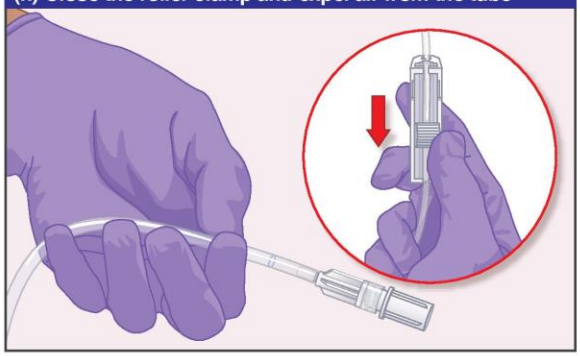
(g) Ensure the fluid is flowing freely



Observe the drip chamber and check that the fluid is flowing readily into the tubing.

Subcutaneous infusion of fluids Page 4

(h) Close the roller clamp and expel air from the tube

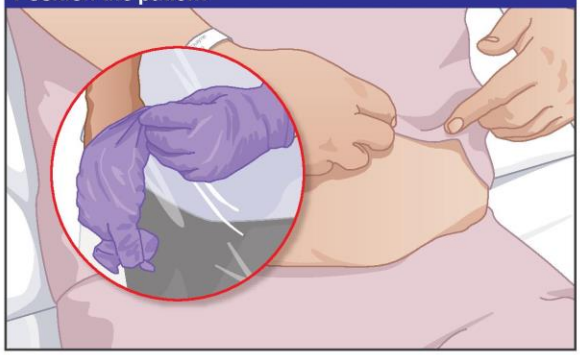


When the fluid reaches the end of the tubing, stop any further flow by closing the roller clamp. Always prime the infusion set according to the manufacturer's instructions and ensure that no air remains in the tubing (NPSA, 2007). Remove gloves and decontaminate your hands.

Confirm patient identity

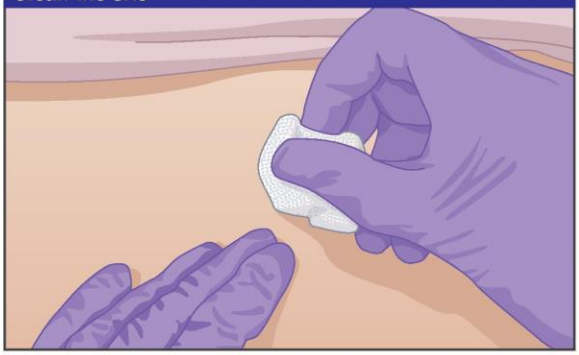
Confirm the patient's identity both verbally and by checking their identity band against the medication administration record, following local policy (RPS/RCN, 2019). Ask the patient if they have a preference for the insertion site.

Position the patient



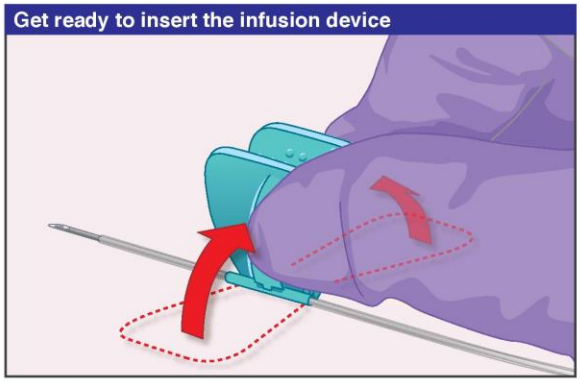
Help the patient into a comfortable position. If possible, ask the patient to adjust or remove clothing in order to expose the insertion site. Assess the injection site for signs of inflammation, oedema, infection and skin lesions—if any of these are present you should use an alternative site. Decontaminate your hands again and put on a fresh pair of gloves.

Clean the site



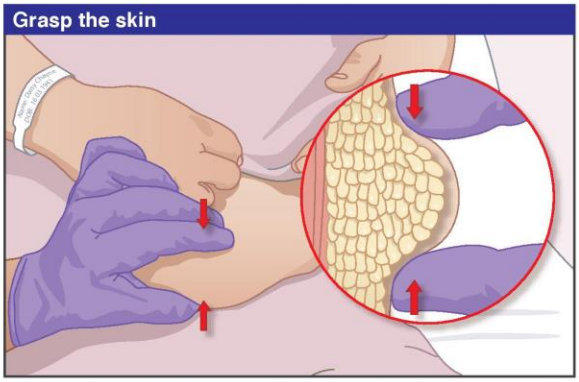
Clean the site with a swab saturated with 2% chlorhexidine/70% alcohol and allow to dry, following local policy (Dougherty & Lister, 2015).

Get ready to insert the infusion device



Remove the infusion device from its packaging and prepare to insert it in the subcutaneous tissue. Follow the manufacturer's instructions. Depending on the equipment, you may need to grasp the wings and bring them together, pinching firmly, as shown. Some devices may need to be primed before insertion; check the manufacturer's instructions.

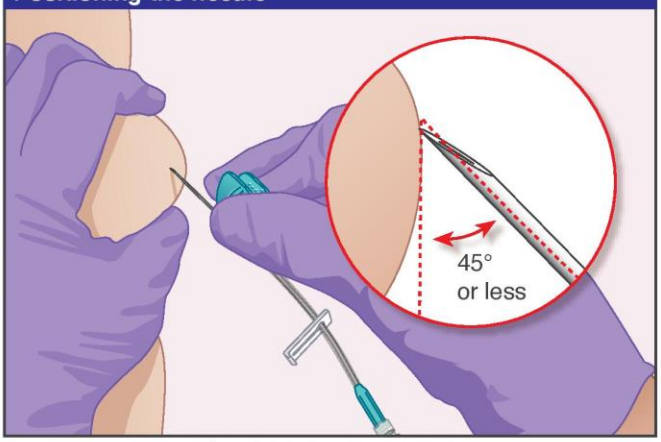
Grasp the skin



When inserting a subcutaneous needle, you must pinch the skin between the thumb and first finger of your non-dominant hand, to ensure that the subcutaneous tissue is separated from the skeletal muscle below. Failure to pinch the skin could result in inadvertent intramuscular injection. The fold of pinched-up skin should be approximately double the length of the needle.

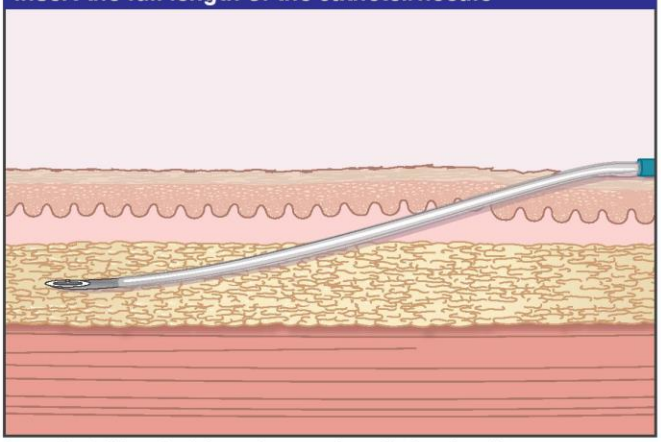
Subcutaneous infusion of fluids Page 5

Positioning the needle



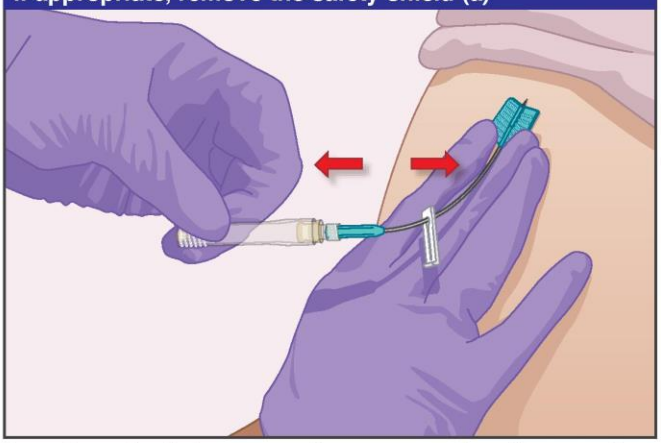
Insert the needle at a 45˚ angle into the skin with the bevel up. Use a lower angle for thinner patients. If blood appears in the cannula, remove the cannula and insert a new one at a different site.

Insert the full length of the catheter/needle



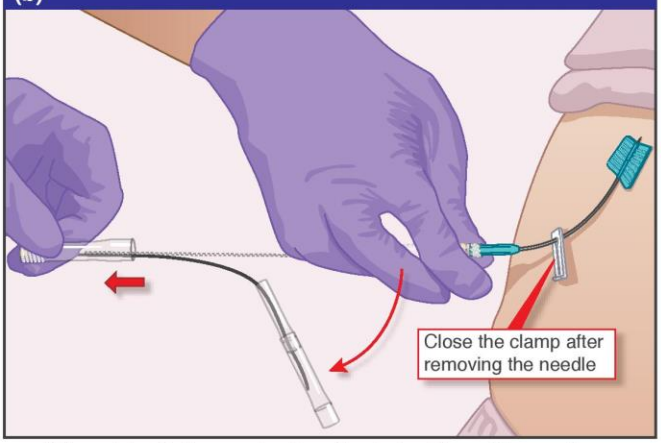
Insert the full length of the catheter and needle into the skin.

If appropriate, remove the safety shield (a)



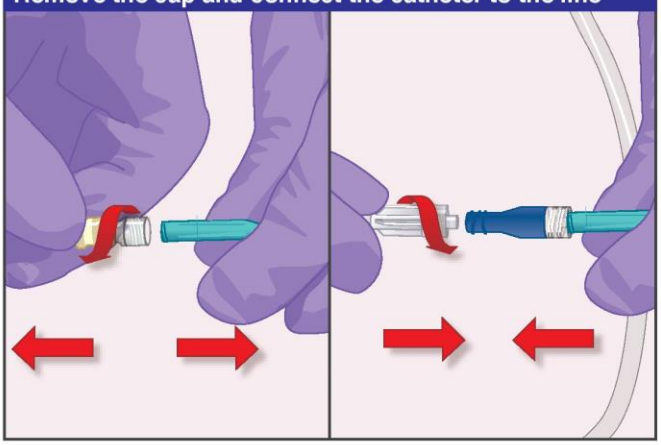
Depending on the device you are using, you may next need to remove the safety shield and needle. In this case, pull the safety shield in a straight, continuous motion...

(b)



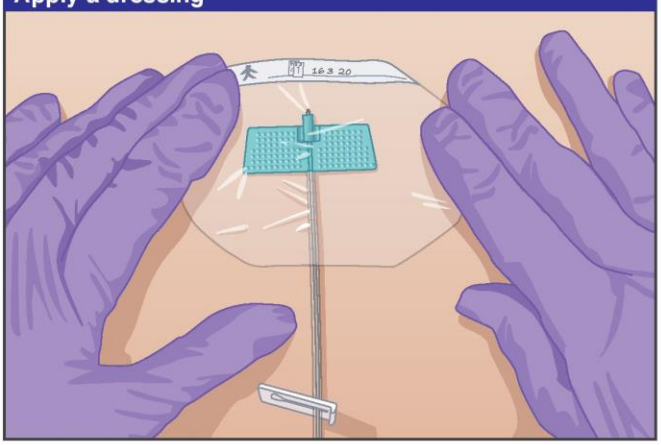
...until the safety shield separates from the device. Discard the needle immediately into a sharps container. Close the clamp on the device (if present).

Remove the cap and connect the catheter to the line



Remove the cap from the catheter (left) and attach a needle-free connector (bung). Then attach the infusion set to the connector (right).

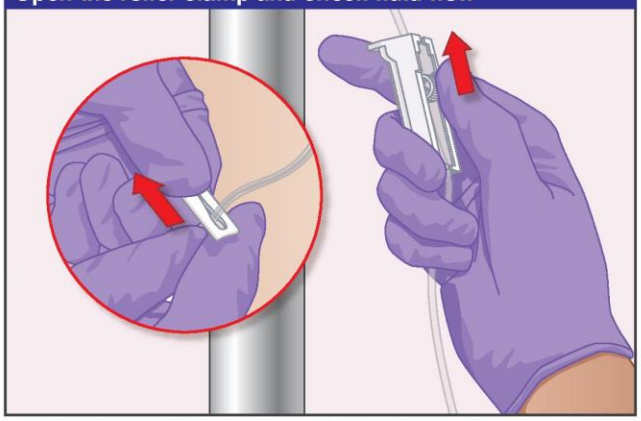
Apply a dressing



Cover the needle insertion area and tubing with a transparent occlusive dressing and date the dressing. This will reduce movement but allow regular assessment of the insertion site.

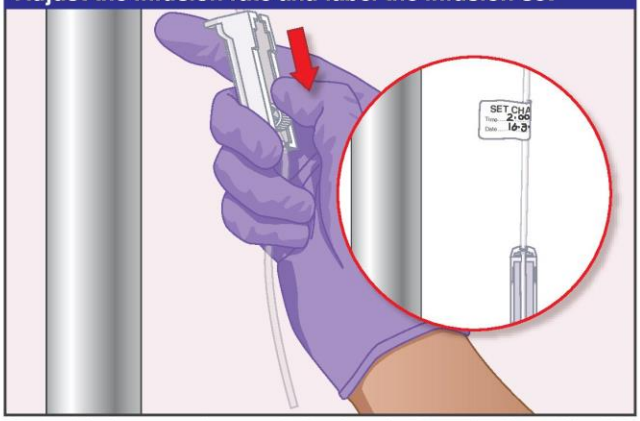
Subcutaneous infusion of fluids Page 6

Open the roller clamp and check fluid flow



Open the clamp on the device (inset). Then slowly open the roller clamp. Check that fluid is flowing readily through the set.

Adjust the infusion rate and label the infusion set



Set the infusion rate to the rate calculated, so that the patient is receiving fluid as prescribed. Put a label on the infusion set stating the date and time that you changed the administration set. Ensure that the patient is comfortable.

Dispose of equipment

Dispose of equipment according to local policy, remove your gloves and apron and decontaminate your hands.

Complete documentation

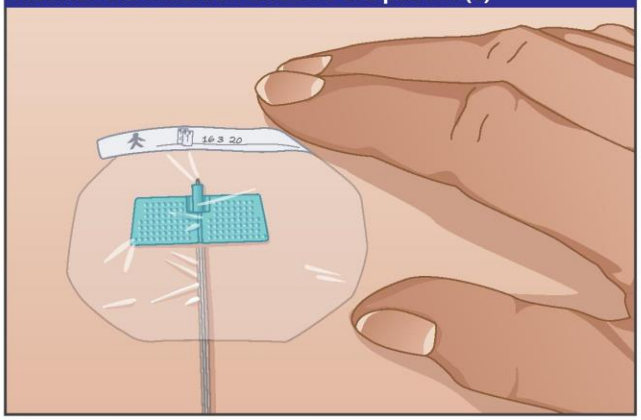
ID SUBCUTANEOUS INFUSIONS

SS THE PRESCRIBER SPECIFIES THEY ARE ARE TO BE CONTINUOUS*

CINE ADDED		INFUSION RATE OR DURATION	PRESCRIBER'S SIGNATURE	PHARM	TIME		VOL GIVEN	GIVE BY
D NAME	DOSE				DATE	START	STOP		
		24 HRS			16/03	12.00			
f continuous	→		bleep No. 4312					
f continuous	→		bleep No.					
f continuous	→		bleep No.					

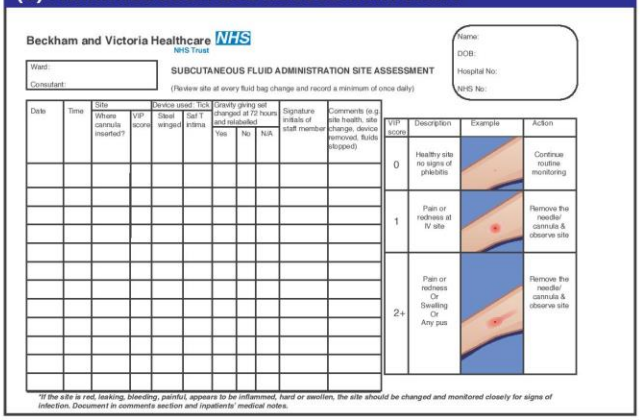
Document on the medication administration record that the medication has been started. Complete all necessary documentation for the infusion. Record needle insertion in the notes and appropriate documents according to local policy.

Monitor the insertion site and the patient (a)



Check the insertion site regularly and re-site the needle if there are any signs of redness, swelling, pain, leakage of fluid or bleeding.

(b) Administration site assessment chart



Beckham and Victoria Healthcare NHS
NHS Trust

Ward:
Consultant:

SUBCUTANEOUS FLUID ADMINISTRATION SITE ASSESSMENT
(Review site at every fluid bag change and record a minimum of once daily)

Name:
DOB:
Hospital No:
NHS No:

Date	Time	Site: Where cannula inserted?	VIP score	Device used: Tick: Steel winged	Saf T intima	Gravity giving set changed at 72 hours and relabelled: Yes	No	N/A	Signature: initials of staff member	Comments (e.g. site health, site change, device removed, fluids stopped)

VIP score	Description	Example	Action
0	Healthy site no signs of phlebitis		Continue routine monitoring
1	Pain or redness at IV site		Remove the needle/ cannula & observe site
2+	Pain or redness Or Swelling Or Any pus		Remove the needle/ cannula & observe site

If the site is red, leaking, bleeding, painful, appears to be inflammed, hard or swollen, the site should be changed and monitored closely for signs of infection. Document in comments section and inpatients' medical notes.

Document the patient's response to therapy (RCN, 2016). Monitor the site as fluids/medication are commenced and completed. Observe the insertion site every shift and document the condition of the site in the patient's records (RCN, 2016). Ask the patient to report any pain at the infusion site.

13.Appendix 5 Fluid and nutritional intake via Oral or Sub Cut

Fluid and nutritional intake via Oral or Sub Cut

Name: _____ DOB: _____ R – Refused T- Taken

Date: _____

1. Recordings to be completed on a 24 hour basis from 12 midnight to 12 midnight
2. 2. If at home for part of the 24 hour period, staff records any comments regarding fluid intake i.e. drank well/poor intake etc.
3. Night staff to check fluid intake (oral and sub cut) and total same at 12 midnight and sign same
4. Please record in dub cut column what time sub cut was commenced or finished.

Time	Nutritional intake	R/T	Oral Fluid intake	R/T	Running intake of fluid intake	Sub cut	Signature

Total Daily fluid intake including oral and sub cut: _____ Signed: _____ (Night Staff)

14. Appendix 6 Record of Check to infusion site when Subcutaneous Fluid Infusing

Record of Check to Infusion Site when Subcutaneous Fluid infusing

Name: _____ Date of Birth _____ Date: _____

Insertion Time: _____ Check after 15 mins: _____ Check after 1 hour: _____

Continue with infusion: Yes No If no action taken: _____

Time of Check	Comment/Concerns	Action Taken	Signature

At each visit, check the site for the following:

- Irritation around site
- Redness/Tenderness
- Inflammation/Swelling

If any are present

- **Day Shift** – Inform nurse on duty
- **Night shift** – Phone night manager for advice