DEFINITIONS

Subcutaneous Therapy – The establishment of temporary subcutaneous access for repeated/intermittent medication doses and/or continuous subcutaneous infusion of medication.

Hypodermoclysis (HDC) – Refers only to the infusion of isotonic fluids into the subcutaneous space for rehydration or for the prevention of dehydration. For all other uses, the term subcutaneous therapy should be used.

1. PURPOSE

1.1 To minimize the risks of infection and other complications associated with the insertion and maintenance of subcutaneous therapy.

2. POLICY

2.1 A practitioner order is required for medication/fluid therapy as per the SHR policy “Ordering of Medications” #7311-60-004.

2.2 RN/RPN/GN/GPN/LPN/GLPN Role

2.2.1 Initiate and maintain intermittent subcutaneous access.

2.2.2 Administer intermittent subcutaneous medication via established access.

2.2.3 Initiate and maintain continuous subcutaneous infusions (medications/fluids).

2.3 Subcutaneous Site Change

2.3.1 The site will be changed:
  • every 2 days for clients who receive higher volumes associated with HDC or
  • every 7 days for low-volume medication infusions.

Note: The dwell time of the subcutaneous access device is variable, based on fluid volume and the integrity of the site. The subcutaneous site is rotated as clinically indicated based on the integrity of the site.

Note: In the community, palliative care clients will have one site per medication and those sites can be used indefinitely as long as they are healthy.
2.3.2 The maximum volume for intermittent subcutaneous medication is 2 mL.

2.3.3 The subcutaneous site will be assessed each shift or visit for complications such as redness, tenderness, edema, bruising, burning, bleeding and leaking.

2.3.4 Each site will be labeled with the date it was initiated, medication name and concentration, and initials of nurse.

2.4 Tubing and Solution Change

2.4.1 All tubing and solution will be changed every 96 hours, with site change or immediately if contamination or system integrity is suspected. Refer to SHR Nursing Policy & Procedure Manual: Intravenous and/or Peripheral Saline Lock Insertion and Maintenance #1118 or the Long Term Care Intravenous Policy.

2.4.2 Medications mixed on the unit will hang no longer than 24 hours. Refer to SHR Nursing Policy & Procedure Manual: Medication Administration #1170 or the Long Term Care Medication Administration Policy.

   **Note:** Stability of medication in solutions may require more frequent change. Refer to SHR IV Medication Reference Manual.

2.4.3 All tubing will be labelled with the date and time it was initiated, date and time to be discarded or changed, and initials of nurse.

2.5 Contraindications

2.5.1 Clients with an increased risk of pulmonary congestion or edema, existing fluid overload, and reduced local tissue perfusion may not tolerate continuous subcutaneous infusions.

2.5.2 Clients with anticoagulation and clotting disorders may not tolerate subcutaneous access due to bleeding at the injection site.

2.6 Special Considerations

2.6.1 Hand hygiene will always be performed as per policy before and after palpating catheter insertion sites as well as before and after inserting, replacing, accessing or repairing a subcutaneous catheter or dressing a subcutaneous site.

2.6.2 Site selection for subcutaneous access should include areas with adequate subcutaneous tissue with intact skin such as the upper arms, subclavicular chest wall, abdomen, upper back, and thighs. Avoid skin folds or line of clothes (i.e. waistline). Refer to Appendix A for Subcutaneous Insertion Sites.

2.6.3 Subcutaneous infusion of large volume solutions must contain electrolytes:
   - 0.9% sodium chloride (normal saline)
   - 0.45% sodium chloride (half normal saline)
   - Dextrose 5% and 0.9% sodium chloride (DSNS)
   - Dextrose 3.33% and 0.3% sodium chloride (2/3 1/3)
   - Lactated Ringers

2.6.4 In palliative care, subcutaneous is the route of choice when oral route is not possible.
2.6.5 In the community, the RN will preload and label the medications for the client/family to administer.

3. PROCEDURES

3.1 Initiation of Subcutaneous Access

3.1.1 Gather supplies:
- Non-sterile gloves
- Chlorhexidine 2% or Chlorhexidine 2%/Alcohol 70%
- Subcutaneous infusion device (23-25 gauge)
- Adapter for intermittent needleless access
- Transparent, semi-permeable dressing

3.1.2 Perform hand hygiene and don gloves.

3.1.3 Cleanse selected insertion site.

**Note:** Antiseptic must be allowed to air dry before catheter insertion.

3.1.4 Remove white plastic clamp and needle guard from device.

**Note:** Do not pre-prime the subcutaneous infusion device.

3.1.5 Be sure bevel is pointed upwards and not covered by the cannula. If bevel is not upwards, rotate white safety shield until bevel is up.

3.1.6 Grasp a fold of skin and while holding the pebbled sides of wings, insert needle at a 30-45° angle to full length in one quick, smooth movement. Refer to Appendix B for subcutaneous device insertion.

**Note:** When inserting needle, insert in same direction as venous return (i.e. towards the shoulder joint in arm; towards the hip in leg; any direction in the chest avoiding breast tissue; towards the umbilicus in the abdomen). When using the abdomen, avoid the 2-inch diameter around the umbilicus and direct the needle laterally to prevent pinching when the client sits or bends.

3.1.7 Ensure needle is able to move freely between the skin and underlying tissue.

3.1.8 There should be no blood returning into the tubing. If blood return is noted, activate safety device, remove catheter and access a new site using a new set.

3.1.9 To activate the safety mechanism, grasp white safety shield and pull in a straight continuous motion while supporting the device by applying pressure to wings. The shield will come off exposing the injection cap. Dispose of shield in sharps container.

3.1.10 Do not apply tape to wings. Cover with a sterile, transparent, semi-permeable dressing.

3.1.11 Replace injection cap with needleless adapter and secure any loose tubing.

3.1.12 Remove gloves and perform hand hygiene.

3.1.13 Label site with date of insertion, initials of nurse inserting device, and the name and concentration of medication that will be infused.
3.1.14 Document insertion and ongoing care of subcutaneous access in the Nursing Care Plan (acute care) or the myPLAN 1.0 (long term care) and Nursing Progress Notes q shift and pm.

3.1.15 Refer to Appendix C for Subcutaneous Infusion Guidelines.

3.2 **Using Subcutaneous Access Site for Intermittent Subcutaneous Medication Administration**

3.2.1 Assess condition of site as per 2.3.2 and look for blood in tubing. Change site as necessary.

3.2.2 If administering more than one medication, use a separate site for each medication. Ensure each site is labelled with the name and concentration of the medication administered/injected.

3.2.3 **Do not prime** the subcutaneous device tubing. For the initial access of the tubing/line for an intermittent medication when using a newly inserted device, draw up and administer an **extra 0.3 ml** of medication.

   **Note:** This allows for tubing dwell volume (priming) and provides the patient with the full dose of medication. Subsequent doses with an existing device do not require the extra 0.3 ml.

3.2.2 Prior to accessing any port or cap, clean the surface with an alcohol swab for 15 seconds using friction and a twisting motion. Allow to dry.

3.2.3 Attach labelled medication syringe and inject slowly.

   **Note:** Tissue swelling is expected with subcutaneous injection. Do not massage site.

   **Note:** Do not flush the subcutaneous infusion device before or after use.

3.2.4 Document medication administration as per policy on the Medication Administration Record.

3.3 **Initiation and Maintenance of Continuous Subcutaneous Infusions**

   **Note:** Refer to standard text: Perry, A., Potter, P. & Ostendorf, W. (2014). *Clinical Nursing Skills & Techniques*, pp. 580-584. Note the following exceptions to/clarifications of the textbook information:

3.3.1 Complete & attach a medication label to the infusion bags with medication added by a nurse. Document medication administration as per sector policy on the appropriate medication administration record.

3.3.2 Deliver continuous subcutaneous administration of medications/fluids by infusion pump.

3.3.3 Refer to Appendix D for Medication Infusion Rate Guidelines. Infusion rates greater than 25 mL/hr may not be tolerated.

3.3.4 Monitor patient for systemic fluid overload, local and/or dependent edema, cellulitis, erythema, pain and leaking at site q shift and pm.

3.3.5 Document solution type and volume infused on fluid balance record.
4. REFERENCES


Related Policies:
SHR Nursing Policy & Procedure Manual
Intravenous and/or Peripheral Saline Lock Insertion and Maintenance #1118;
Medication - Administration #1170;
Medication Administration Record (MAR) #1091

SHR Long Term Care Nursing Policy & Procedure Manual
Intravenous Policy
Medication Administration Policy

Infection Prevention & Control Manual
Hand Hygiene #20-20

SHR IV Medication Reference Manual
Medication Specific Monographs
SUBCUTANEOUS INSERTION SITES

Shaded areas are areas that can be used to insert an over-the-needle cannula for a subcutaneous site.

OUTER ARM
Do not use the arm site for hypodermoclysis

ABDOMEN
Avoid in presence of tense abdominal distention

THIGH

SUBCLAVICULAR AREA
Avoid when patient:
- has lung disease
- is active (risk of pneumothorax)

Avoid using bilateral chest sites
This site should be last choice

Ensure caution is taken when using the subclavicular space as the insertion site. In a cachectic individual there may be a small amount of tissue between the chest wall and the underlying lung, which results in the risk of a pneumothorax.

To decrease this risk, pull the skin away from the chest wall and insert the needle at a shallow angle or choose a different site for insertion.

The following areas should be avoided when inserting a subcutaneous over-the-needle cannula:
- Areas with lymphedema or edema
- Areas that have too little subcutaneous tissue
- Areas with broken skin
- Skin sites that have recently been irradiated
- Sites with infection or inflammation present
- Area with bony prominences
- Tumor sites
- Skin folds

Use of a Subcutaneous Infusion Device

**BD Saf-T-Intima™ for Subcutaneous infusion therapy**

**1**

**Preparation**
- Hold as shown (Fig. 1) and rotate the white safety shield to loosen the needle. (Fig. 1).

**2a**

**Insertion**
- Grasp the textured sides of wings and bring them together, pinching firmly. (Fig. 2A).
- Using thumb and index finger gently pinch the skin around selected site to identify the subcutaneous tissue. (Fig. 2B).
- Insert the full length of the catheter and needle through the skin at a 30°-45° angle. (Fig. 2B).

**2b**

**3**

**Needle Removal**
- Lay the wings flat on the skin surface and pull the white safety shield in a straight, continuous motion until the safety shield separates from the safety system. (Fig. 3).
- Discard the needle immediately in a puncture resistant, leak-proof sharps container.

**4**

**Stabilisation**
- Secure the catheter and apply a sterile dressing per facility protocol.

**BD Saf-T-Intima. First Choice Integrated Safety IV Catheter System for Subcutaneous Infusion Therapies.**

### SUBCUTANEOUS INFUSION GUIDELINES

#### SUBCUTANEOUS INFUSION THERAPY: RECOMMENDED DELIVERY METHODS

<table>
<thead>
<tr>
<th></th>
<th>Continuous Infusion</th>
<th>Intermittent Subcutaneous Infusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Chlorpromazine (Largactil®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Dexamethasone (Decadron®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Dimenhydrinate (Gravol®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Diphenhydramine (Benadryl®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Fentanyl</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Furosemide (Lasix®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Haloperidol (Haldol®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Hydromorphone (Dilaudid®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Hyoscine Butylbromide</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Insulin (Regular)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Lorazepam (Ativan®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Loxapine</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Metoclopramide (Maxeran®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Methotrimeprazine (Nozinan®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Midazolam (Versed®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Morphine</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Naloxone (Narcan®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Octreotide Acetate (Sandostatin®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Ondansetron (Zofran®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Phenobarbital</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Potassium Chloride</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>*Prochlorperazine (Stemetil®)</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Ranitidine</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Scopolamine Hydrobromide</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

*NOT an officially approved method of administration.

Adapted from Capital Health Regional Pharmacy Services, Hospital Pharmacists’ Special Interest Group in Palliative Care, Palliative Care Tips & SHR IV Medication Reference Manual.

July 2014
### MEDICATION INFUSION RATE GUIDELINES - CONTINUOUS

<table>
<thead>
<tr>
<th>Medication</th>
<th>dose mg/hr</th>
<th>rate mL/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 : 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(25 mg/100 mL)</td>
<td>0.25</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.50</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0.75</td>
<td>3</td>
</tr>
<tr>
<td>* (125 mg/500 mL)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>1 : 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(125 mg/250 mL)</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>1 : 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(500 mg/500 mL)</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>2 : 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1000 mg/500 mL)</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* If you need to change by 0.1 mg increments, mix 1 mg narcotic/10 mL of solution e.g. 0.1 mg = 1 mL

### MEDICATION CONCENTRATION GUIDELINES

<table>
<thead>
<tr>
<th>Range</th>
<th>Concentration</th>
<th>Amount of Medication</th>
<th>2/3 - 1/3 or NS Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25 - 5 mg/hr</td>
<td>1 : 4</td>
<td>25 mg</td>
<td>100 mL</td>
</tr>
<tr>
<td>6 - 10 mg/hr</td>
<td>1 : 2</td>
<td>125 mg</td>
<td>250 mL</td>
</tr>
<tr>
<td>11 - 20 mg/hr</td>
<td>1 : 1</td>
<td>500 mg</td>
<td>500 mL</td>
</tr>
<tr>
<td>22 - 40 mg/hr</td>
<td>2 : 1</td>
<td>1000 mg</td>
<td>500 mL</td>
</tr>
</tbody>
</table>

When range indicates a change in concentration (e.g. from 5 mg/hr to 6 mg/hr), finish the bag that is hanging if patient can tolerate the infusion volume. Change concentration in next bag to accommodate the new range i.e. 125 mg narcotic: 250 mL solution (1:2)