Winnipeg Regional Health Authority / Office régional de la santé de Winnipeg — Caring for Health / À l'écoute de notre santé	Long Term Care Program	
	Hypodermoclysis via Indwelling Subcutaneous Device	**Page 1 of 8**
Operational Guideline	**Approval Signature:**	Supercedes: **NEW**
	Date of Approval: December 14, 2020	
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1.0 PURPOSE:

1.1 To provide a clinical resource for safely establishing and monitoring an infusion of fluids into the subcutaneous space to treat reversible, mild to moderate dehydration. Dehydration may be due to short-term reduced oral intake or an acute illness for which oral, intravenous, and/or enteral sites are unsuitable options.

2.0 DEFINITIONS:

2.1 Hypodermoclysis (HDC): The continuous administration of isotonic solution into subcutaneous tissue. This definition is interchangeable with 'subcutaneous infusion.

2.2 Prescriber: Refers to a health care professional who is permitted to prescribe medications or treatments as defined by Provincial and Federal legislation, his/her regulatory college or association, and practice setting.

2.3 Subcutaneous Infusion Device: A needleless, closed, indwelling subcutaneous catheter system inserted into the subcutaneous tissue, which is used for administration of medications or fluids.

3.0 OPERATIONAL GUIDELINES:

3.1 The need for hydration therapy through HDC is determined following a Prescriber assessment of the resident's overall physical and hydration status, including signs and symptoms of dehydration, cause of dehydration, the goals/outcomes of therapy and treatment plan, and their alignment with the resident's goals of care.

3.2 Residents receiving HDC must have a prescriber available for ongoing monitoring and assessment of the resident.

3.3. All residents receiving HDC will be assessed and monitored based on a frequency that is determined by the resident's health status and duration of treatment.

3.4 Hypodermoclysis is used to treat mild to moderate dehydration which may be related to:

- Reduced oral intake due to a reversible condition
- Short-term dysphagia due to neuromuscular weakness or mechanical obstruction
- Partial bowel obstruction
- Persistent nausea and vomiting
- Delirium
- Febrile illness
- End stage disease/illness (to reverse effects of toxic metabolites of drugs)

3.5 Hypodermoclysis is only to be used when other means of hydration (i.e. increasing oral intake) have been attempted or are not feasible. Also, HDC will only be used when it aligns with the resident's goals of care and Advanced Care Plan (ACP).

Hypodermoclysis is NOT used for:

- Situations that require rapid infusions or emergency fluid replacement
- Situations where careful titration of fluids is required
- Situations that impede or interrupt a natural death, or where death is imminent
- High risk of pulmonary congestion (e.g. severe CHF)
- Chronic dysphagia
- Contraindicated resident conditions, such as: gross edema, extreme emaciation, skin conditions that limit site selection, bleeding or coagulation disorders, fluid overload/CHF, severe dehydration, shock/hypotension, severe electrolyte imbalance, acute MI

3.6 Consult the Registered Dietitian and Speech Language Pathologist for assistance managing reduced oral intake and short-term dysphagia.

3.7 Medications are not to be mixed with hydration fluid bags.

3.8 If medications are to be administered, a separate subcutaneous line is to be established for medications given via subcutaneous route (i.e. do not give medications through the ports of the IV administration tubing).

3.9 Nurses must follow their scope of practice as per their licensing body. Nurses are required to seek support and guidance as needed to fill their scope of practice regarding subcutaneous infusion devices and infusions.

3.10 Routine Practices with particular attention to the four moments of hand hygiene are a minimum requirement during HDC via a Subcutaneous Infusion Device.

3.11 A Prescriber's order is required and is to include:
- Reason for therapy (e.g. dehydration related to infection)
- Type of solution
- Route (subcutaneous)
- Volume of solution to be infused and length of time of infusion
  Examples:
  - 250mL of 0.9% Normal Saline over 8 hours OR
  - 0.9% Normal Saline infused at 30mL/hr for 8hrs for total 250mL
- Goal of treatment and plan for reassessment

3.12 Isotonic solutions appropriate for HDC are:
- Normal Saline - 0.9% Sodium Chloride (recommended)
- Dextrose 5% and 0.9% Sodium Chloride
- Dextrose 5% and 0.45% Sodium Chloride
- Dextrose 3.33% and 0.3% Sodium Chloride (2/3:1/3)
- Lactated Ringers

Note: D5W should not be used as it becomes hypotonic as the dextrose metabolizes

3.13 The rate for fluid hydration depends upon how quickly the replacement must be achieved, but recommended rate is between 30-50 mL/hour. The resident's condition guides the rate of infusion.

3.14 Recommended maximum volume to be infused is 1000mL to 1500mL in 24 hrs.

3.15 Change/Rotate site whenever one of these occurs:
- Subcutaneous catheter has been insitu for 24 to 48 hours
- 1.5-2 litres of fluid has been infused
- Erythema, swelling, leaking, bruising, burning or pain has developed at the subcutaneous site.

4.0 **PROCEDURE:**

Equipment

In addition to any equipment required to establish a Subcutaneous Infusion Device, the following equipment is required for HDC:
- Ordered infusion solution bag - Normal Saline - 0.9% Sodium Chloride is recommended (check the expiry date)
- Intravenous tubing administration set (check the expiry date)
- 2 Alcohol swabs
- Tape
- SUBCUT line label
- IV pole
- Infusion pump or flow regulation device (if available, not required)

4.1 Initiating subcutaneous infusion

4.1.1 Establish a new Subcutaneous Infusion Device for HDC. Refer to WRHA LTC Program SUBCUTANEOUS INFUSION DEVICE: Insertion and Removal Operational Guideline https://home.wrha.mb.ca/ltc/files/2016_PHARM_LTCProgramSubcutLineInsertionRemoval_OpDir.pdf or site policy/procedure.

4.1.1.1 The preferred site for HDC is the lower limbs and abdomen, with upper limbs used if no access to sites in lower limbs. The subclavicular site is the last site of choice and should not be used in cachectic residents, as there is a risk of pneumothorax.

4.1.2 Explain procedure, purpose of infusion to resident and/or substitute decision-maker as per the WRHA Policy #110.000.005 Informed Consent

4.1.3 Verify the resident's identity using a minimum of 2 resident identifiers as per the WRHA Policy #110.000.370 Client Identification

4.1.4 Perform hand hygiene

4.1.5 Obtain necessary equipment and supplies required to initiate the infusion.

4.1.6 Ensure the subcutaneous site is labeled with "SUBCUT LINE for Hypodermoclysis only".

4.1.7 Set-up equipment:

- Open the IV administration set and close the roller clamp and spike the solution bag.
- Squeeze drip chamber of administration set so it is half full and then prime the line. (NOTE: If administration set has ports, invert each port and tap to release trapped air bubbles.)
- Hang the solution bag on the IV pole
- Label the administration set with date and time

4.1.8 Perform hand hygiene

4.1.9 Cleanse the injection / end cap of the subcutaneous line with 2 alcohol swabs for a total of 30 seconds and allow to air dry.

4.1.10 Remove the cap from the end of the tubing of the IV administration set and connect to the needleless connector. Open the roller clamp slowly and set to the calculated drip rate to achieve the correct infusion rate.

Start the infusion slowly (e.g. 20-30 mL/hr) for the first hour. If the resident is tolerating well increase the rate of infusion to the ordered rate.

See below for calculating drip rate.

$$\text{Drops/minute} = \frac{\text{Volume of infusion (in mL) X Drops /mL*}}{\text{Time of infusion (in minutes)}}$$

*Information located on infusion set

4.1.11 Secure tubing to the resident to reduce pulling on the Subcutaneous Infusion Device.

4.1.12 Perform hand hygiene.

4.2 Monitoring and Care Guidelines

4.2.1 Resident response

- Monitor and review fluid intake and output
- Daily blood pressure and pulse. An increase in pulse or blood pressure can indicate fluid volume excess.
- Weight – if possible weigh the resident daily. An increase in weight can indicate fluid volume excess. Obtain daily weights with the same scale, at the same time of day, and with comparable articles of clothing.
- Monitor for the following complications of HDC:

Fluid (Circulatory) Overload

- Observe for increased or bounding pulse and elevated blood pressure, systemic edema (specifically of pelvis, feet and genitalia), respiratory congestion, dyspnea, cough, restlessness. USE CAUTION with residents with end stage renal disease.
- Slow infusion rate and notify Prescriber. If there is an increase in the resident's pulse or blood pressure and/or signs of respiratory congestion, stop the infusion and immediately contact the Prescriber. For respiratory issues, raise the head of bed to facilitate breathing.
- Monitor resident's condition closely

Electrolyte imbalance

- Observe for change in behavior, poor coordination, convulsions, hyperventilation, tachycardia, muscle weakness, muscle spasm, tingling, tetany, abdominal cramps
- Stop infusion and immediately notify Prescriber.

4.2.2 Subcutaneous site:

- Observe site at least every eight hours, every time the solution is changed, and as needed for signs of local or systemic complications (local edema, irritation, resident comfort, leaking, bleeding, and infusion rate).
- If site is in use for infusion, monitor infusion rate, site and resident condition hourly
- If site is not being used at regular intervals, monitor the site every 8 hours.

Monitor for the following:

4.2.2.1 Edema at Site

- Monitor if it occurs in a small amount (a small 'fluid bubble' may occur normally with HDC).
- Consider slowing the infusion rate and monitor for absorption
- If edema persists for greater than 8 hours or increases, discontinue and restart in another site

4.2.2.2 Redness/erythema, irritation, edema, induration, bruising at site

- Possible allergic reaction to the Subcutaneous Infusion Device
- Possible causes are prolonged duration of placement, rapid infusion or irritation from solution
- Monitor. If redness does not resolve, remove Subcutaneous Infusion Device as outlined in the WRHA LTC Program SUBCUTANEOUS INFUSION DEVICE: Insertion and Removal Operational Guideline https://home.wrha.mb.ca/ltc/files/2016_PHARM_LTCProgramSubcutLineInsertionRemoval_OpDir.pdf or site policy/procedure.

4.2.2.3 Pain or discomfort at infusion site

- Possible causes are Subcutaneous Infusion Device migration, prolonged duration, inadvertent placement into muscle tissue or rapid infusion
- Warm compresses after Subcutaneous Infusion Device removal may be used for comfort

4.2.2.4 Infection at Site

- Discontinue infusion
- Remove Subcutaneous Infusion Device
- Restart in new site
- Initiate new solution and administration set
- Notify Prescriber
- Monitor the infected site every shift until healed

4.2.2.5 Leakage or pooling of fluid at insertion site

- Possible cause is poor absorption or too rapid infusion
- Stop infusion and remove Subcutaneous Infusion Device, restart in another site

4.2.2.6 Infusion stops

- Check to see if tubing is kinked or clamped
- Raise the height of the infusion set
- Change site of subcut device

4.2.2.7 Irregular drip rate

- Adjust the height of the solution bag

4.3 Discontinuing /changing subcutaneous infusion solution and administration sets

4.3.1 Change solution bag every 24 hours even if bag is not empty.

4.3.2 Change tubing every 96 hours if infusing continuously and not to be disconnected from resident, or sooner if clinically indicated.

Change tubing minimum every 24 hours if infusing fluids intermittently.

4.3.3 If new bag is to be hung and tubing does not need to be changed:

- Close the roller clamp on tubing
- Remove the spike from the empty bag, but do not allow it to touch anything (i.e. keep sterile)
- Spike new solution bag
- Prime the drip chamber and tubing as needed.

If both new solution bag and new tubing required, disconnect tubing from resident and discard in garbage. Follow steps in 4.1.6 to initiate infusion with new solution bag and administration set.

4.3.4 If HDC is discontinued, disconnect the administration set from the Subcutaneous Infusion Device and discard. If subcut line to remain in situ, it does not require flushing to maintain patency.

4.3.5 To remove the Subcutaneous Infusion Device, follow the WRHA LTC Program SUBCUTANEOUS INFUSION DEVICE: Insertion and Removal Operational Guideline or site policy/procedure.

4.4 Documentation

4.4.1 Document the following:

4.4.1.1 IPN documentation:

- Assessment of the subcut site
- Date and time of initiation of therapy
- Solution type and rate of infusion
- Resident's response
- Any adverse reactions (follow facility incident reporting processes)
- Date and time new solution bags are hung
- Date and time solution discontinued

4.4.1.2 24-hr Fluid balance record

- Volume
- Solution type
- Rate of fluid administration

4.4.1.3 Update resident care plan and communicate with all staff to inform HDC is in place (e.g. post bedside HDC notification sign).

5.0 **REFERENCES:**

5.1 Covenant Health Edmonton (Sept 2017) Hypodermoclysis (HDC) Administration Policy No. VII-B-315

5.2 Deer Lodge Centre, (June 2017) Hypodermoclysis via Indwelling Subcutaneous Device. Policy #80.009.012

5.3 Fraser Health (November 2017) Clinical Decision Support Tool: Appropriate Use of Hypodermoclysis in Residential Care

5.4 Public Health Agency of Canada, (July 17, 2020) Interim guidance: Care of residents in long term care homes during the COVID-19 pandemic

5.5 Riverview Health Centre. (January, 2016). Hypodermoclysis via indwelling subcutaneous catheter. Policy 20.130.42

5.6 The Infusion Therapy Standards of Practice (2016) https://source.yiboshi.com/20170417/1492425631944540325.pdf (Retrieved September 9, 2020)

5.7 WRHA Palliative Care Program (May 2017). Procedure for Hypodermoclysis

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