



Winnipeg Regional
Health Authority

Office régional de la
santé de Winnipeg

Hypodermoclysis in Long Term Care

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Learning Objectives

- Define hypodermoclysis
- Describe the increased risk for dehydration in older adults
- Describe indications for use of hypodermoclysis
- Demonstrate good knowledge of related equipment
- Recognize complications and interventions to take

What is Hypodermoclysis?

Hypodermoclysis (HDC), also known as subcutaneous hydration, is:

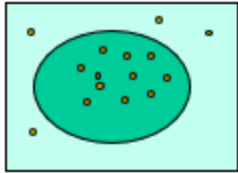
- A form of artificial hydration
- The infusion of isotonic fluids
- Infusion of fluids into the subcutaneous space for rehydration or for the prevention of dehydration (Walsh, 2005)

What is an Isotonic Solution?

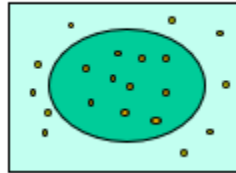
- What is an isotonic solution?
- What is the subcutaneous space?
- What is artificial hydration?

What is an Isotonic Solution?

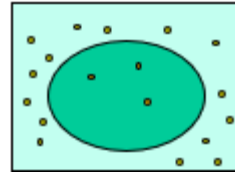
Hypotonic



Isotonic

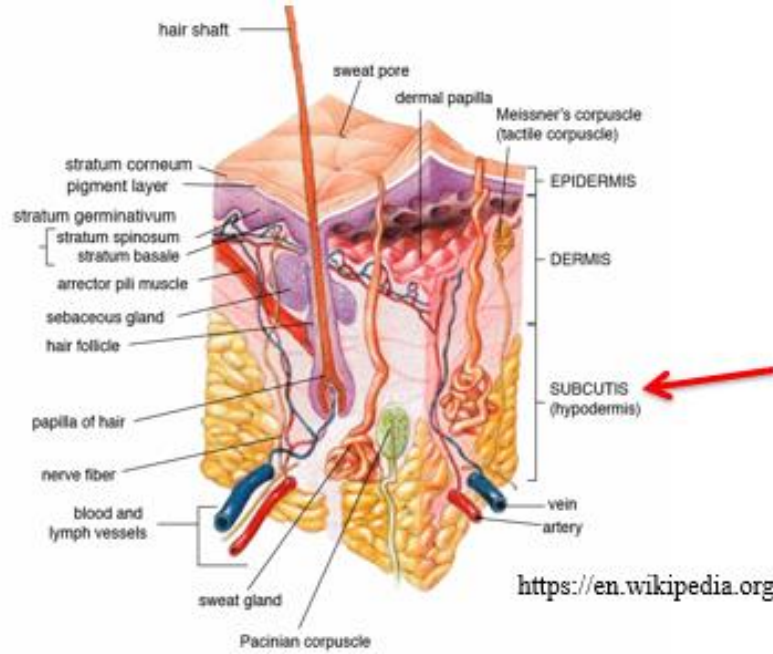


Hypertonic



2 solutions, separated by a semi-permeable membrane, have equal concentrations of solute to water

What is the Subcutaneous Space?



<https://en.wikipedia.org>

Why Use Hypodermoclysis (HDC) in Long Term Care?

- Is safer and less invasive than intravenous hydration
- Keeps residents in their home and prevents transfers to acute care
- Provides symptom relief/management
- Improves quality of life

Physiological Aging Changes Putting Older Adults at Risk for Dehydration

Figure 3.
Risk factors of dehydration
in the elderly



Body water stores

Physiology: lean masse, fat masse



Water intake

Physiology: Decrease in thirst sensation

Diseases: Mental disorders

Fear of incontinence

Malnutrition

Functional: Decreased mobility

Reduced swallowing efficiency

Environment: Inadequate medical assistance



Water losses

Physiology: Decline in renal function

Diseases: Diarrhoe, fever, vomiting, diabetes

Environment: Warm temperatures

Drugs: Laxatives, diuretics ...



Other

Ethnicity, gender

Other Factors Putting Older Adult at Risk for Dehydration

- Medications/Polypharmacy
- Frailty, decrease mobility
- Lack of accessible fluids
- Fear of incontinence
- Pain
- Altered mood or cognition
- Social environment and cultural fact

Considerations for Hypodermoclysis

- Interventions should be in alignment with the resident's **goals of care** and as identified in the **ACP**
- All methods to provide oral hydration have been exhausted before considering artificial hydration
- For symptom relief and treatment of mild to moderate dehydration

Considerations for Hypodermoclysis

- Prescriber must be available for ongoing monitoring and assessment, including reviews of recent lab results (ie. electrolytes) and ordering additional bloodwork
- Resident or substitute decision maker must be informed of the risks associated with HDC, and they are in alignment with the treatment

- The prescriber (Physician or Nurse Practitioner) will identify the indications for artificial hydration and the expected outcomes
- The Physician/NP will write an order for the solution and infusion rate

When to use Hypodermoclysis

HDC 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

When to use Hypodermoclysis

- Persistent nausea and vomiting
- Delirium
- Febrile illness
- End stage disease/illness (to reverse effects of toxic metabolites of drugs)

Hypodermoclysis is NOT used for:

- When the use of HDC does NOT meet the resident's goals of care
- High risk of pulmonary congestion (e.g. severe CHF)
- Chronic dysphagia
- Provision of HDC will impede or interrupt a natural death or where death is imminent
- When rapid infusions or emergency fluid replacement is needed and careful titration of fluids is required
- There are contraindications to HDC, such as

Contraindications:

The resident has one or more of the following conditions:

- 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

Equipment Needed

- IV solution
- IV tubing
- IV pole and/or pump
- Alcohol swabs

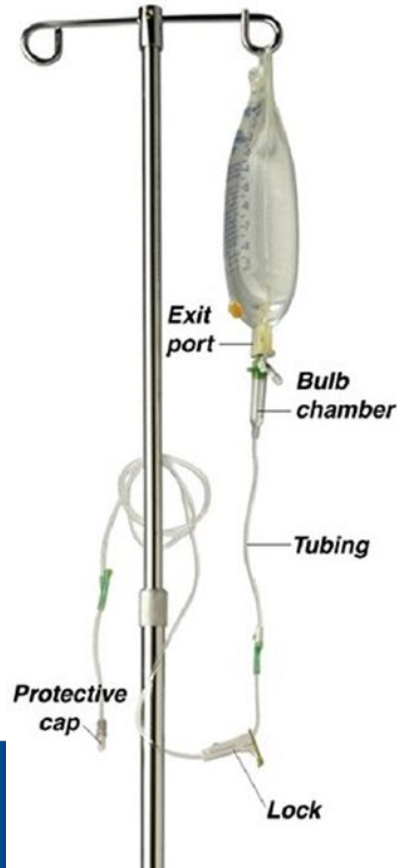
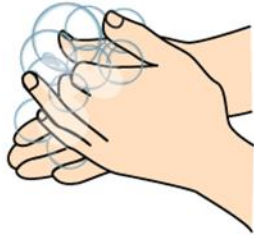
- Transparent dressing and tape
- Needle-less subcutaneous butterfly

Solutions for Hydration

Solutions acceptable for infusion in Residential Care:

- 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
- D5W should NOT be used as it becomes hypotonic as the dextrose is metabolized

HDC administration set up



Site care and maintenance

- Change tubing every 96 hrs
- Change solution bag every 24 hours (BC Guidelines.ca)
- Change/rotate site:
 - Every 24 to 48 hours
 - After 1.5-2 liters of fluid has been infused
 - When there is redness, swelling, leaking, bruising, burning or pain at the subcutaneous site
- Infusion Rate
 - Maximum of 1 to 1.5 litre/day of hydration
 - No faster than 1 litre/2hours

Rate Calculation

- To calculate the drip rate, you need to know the drop factor in drops per milliliter (gtt/ml) of your infusion set
- **Let's look at an example!**

Example

- The order is to infuse 1 liter of 0.9% Normal Saline in 24 hours
 - HINT: figure out the ml/hr first
 - 1000ml in 24 hrs= 42 ml/hour

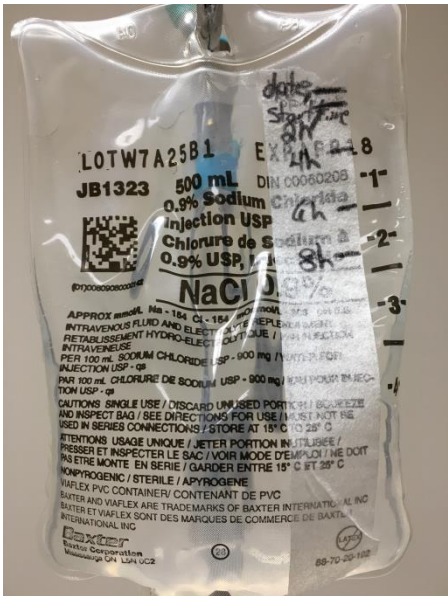
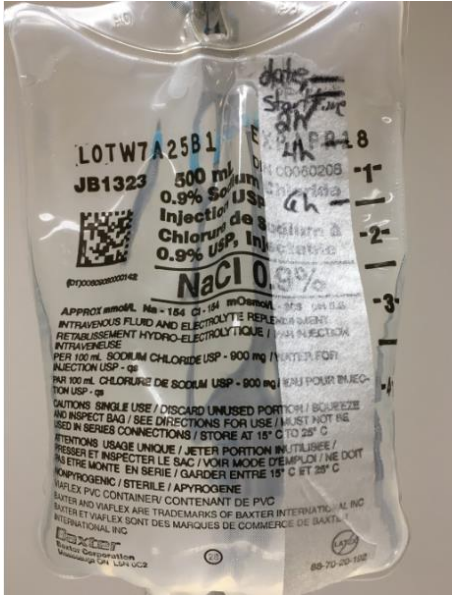
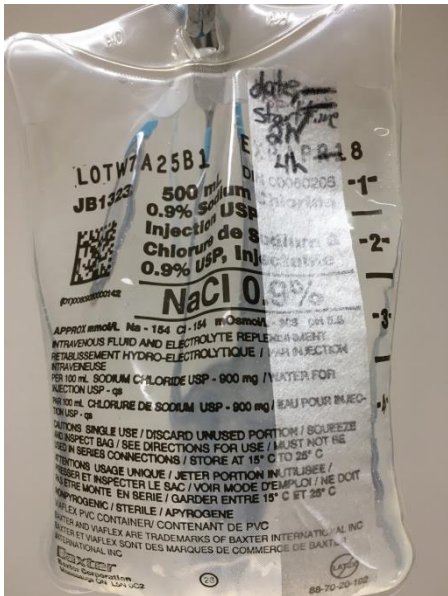
$$x \text{ gtt/min} = \frac{\text{Amount of Solution (mL or mL/hr)} \times \text{drop factor}}{\text{Time in Minutes}}$$

$$x = 42 \text{ ml per hour} \times \text{drop factor} / 60 \text{ minutes}$$

Monitoring

- Weight – daily (if possible)
- Fluid intake and output
- Blood pressure and pulse - daily
- Subcutaneous site every shift (hourly when in use)
- Lab values (as ordered)

Options for Monitoring Infusion



Bedside Signage



Hypodermoclysis

Site Location:

Type: Subcutaneous

Reminders:

- Do not use scissors near the infusion tubing
- Do not pull on the infusion tubing
- Do not kink or put pressure on the tubing

If the subcutaneous catheter becomes dislodged, cover the insertion with a gauze to limit bleeding and notify the RN/LPN.

Complications of HDC

Circulatory overload

- Bounding pulse
- Venous distention
- Increased respirations
- Elevated BP
- SOB
- Hoarseness
- Dyspnea
- Cough
- Restlessness

Action:

- Reduce the flow to 30-50 ml/hour
- Stop infusion if pulse or BP elevated or signs of resp congestion
- Raise head of the bed to facilitate breathing
- Notify prescriber immediately

Complications of HDC (con't)

Electrolyte Imbalance

- Change in behavior
- Poor coordination
- Convulsions
- Hyperventilation
- Tachycardia
- Muscle weakness
- Muscle spasm
- Tingling
- Tetany
- Abdominal cramp

Actions:

- Stop the infusion
- Notify prescriber immediately

Troubleshooting

Infusion stops:

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

Site is leaking:

- Change the site

Troubleshooting(con't)

Site is red and sore:

- Change site.

Pooling of fluid at the infusion site:

- Inform prescriber
- Stop the infusion and change site and/or decrease the rate

Troubleshooting(con't)

Irregular drip rate:

- Adjust the height of the infusion

Documentation

- Prescriber will document the indications for hydration and expected outcomes, as well as solution type and rate
- Response of resident to the therapy and corresponding interventions are documented in the progress notes
- Intake/output will be recorded

Documentation (con't)

- Infusion start and finish time
- Site used
- Solution administered
- Update care plan

Documentation (con't)

- InterRAI assessment

Section K5 a:
Parenteral IV



SECTION K: ORAL/NUTRITIONAL STATUS																		
K1	ORAL PROBLEMS	(Check all that apply in LAST 7 DAYS.) a. Chewing problem b. Swallowing problem	<table border="1"> <tr> <td>a</td> <td>c. Mouth pain</td> <td>c</td> </tr> <tr> <td>b</td> <td>d. NONE OF ABOVE</td> <td>d</td> </tr> </table>	a	c. Mouth pain	c	b	d. NONE OF ABOVE	d									
a	c. Mouth pain	c																
b	d. NONE OF ABOVE	d																
K2	HEIGHT AND WEIGHT	a. (Record height in centimetres) b. (Record weight in kilograms)	<table border="1"> <tr> <td>a. HEIGHT (cm)</td> <td>b. WEIGHT (kg)</td> <td></td> </tr> <tr> <td>_____</td> <td>_____</td> <td></td> </tr> </table> <p>Base weight on most recent measure in LAST 30 DAYS; measure weight consistently in accord with standard facility practice (e.g. in AM after voiding, before meal, with shoes off, and in nightclothes).</p>	a. HEIGHT (cm)	b. WEIGHT (kg)		_____	_____										
a. HEIGHT (cm)	b. WEIGHT (kg)																	
_____	_____																	
K3	WEIGHT CHANGE	a. Weight loss—5% or more in LAST 30 DAYS or 10% or more in LAST 180 DAYS. 0. No 1. Yes 9. Unknown (admission only) b. Weight gain—5% or more in LAST 30 DAYS or 10% or more in LAST 180 DAYS 0. No 1. Yes 9. Unknown (admission only)																
K4	NUTRITIONAL PROBLEMS	(Check all that apply in LAST 7 DAYS.) a. Complains about the taste of many foods b. Regular or repetitive complaints of hunger c. Leaves 25% or more of food uneaten at most meals d. NONE OF ABOVE	<table border="1"> <tr> <td>a</td> <td></td> </tr> <tr> <td>b</td> <td></td> </tr> <tr> <td>c</td> <td></td> </tr> <tr> <td>d</td> <td></td> </tr> </table>	a		b		c		d								
a																		
b																		
c																		
d																		
K5	NUTRITIONAL APPROACHES	(Check all that apply in LAST 7 DAYS.) a. Parenteral/IV b. Feeding tube c. Mechanically altered diet d. Syringe (oral feeding) e. Therapeutic diet	<table border="1"> <tr> <td>a</td> <td>f. Dietary supplement between meals</td> <td>f</td> </tr> <tr> <td>b</td> <td>g. Plate guard, stabilized built-up utensil, etc.</td> <td>g</td> </tr> <tr> <td>c</td> <td>h. On a planned weight change program</td> <td>h</td> </tr> <tr> <td>d</td> <td>i. NONE OF ABOVE</td> <td>i</td> </tr> <tr> <td>e</td> <td></td> <td></td> </tr> </table>	a	f. Dietary supplement between meals	f	b	g. Plate guard, stabilized built-up utensil, etc.	g	c	h. On a planned weight change program	h	d	i. NONE OF ABOVE	i	e		
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c	h. On a planned weight change program	h																
d	i. NONE OF ABOVE	i																
e																		
K6	PARENTERAL OR ENTERAL INTAKE	(Skip to Section L if neither 5a nor 5b is checked.) a. Code the proportion of total calories the resident received through parenteral or tube feedings in the LAST 7 DAYS 0. None 2. 25% to 50% 4. 75% to 100% 1. 1% to 25% 3. 51% to 75% b. Code the average fluid intake per day by IV or tube in the last 7 days 0. None 3. 1001 to 1500 cc/day 1. 1 to 500 cc/day 4. 1501 to 2000 cc/day 2. 501 to 1000 cc/day 5. 2001 or more cc/day																

Resources

- CDST- Appropriate use of hypodermoclysis in Residential care Draft- November 2,2017
- CPG- Intravenous therapy
- MOST
- Actively dying protocol
- Hospice Palliative Care Symptoms Guidelines Dehydration
- Application Parameters for Intravenous Therapy in Residential Care
- Preview ED ©
- HDC Quick reference guide- Draft November 7,2017
- Bed site signage- Draft November 7,2017
- Elsevier- Hypodermoclysis

Questions



Thank

You