



Prevention of Dehydration

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Hamilton Long Term Care Project



Part One: Promoting Hydration

Hydration management: promotion of adequate fluid balance that prevents complications resulting from abnormal or undesired fluid levels

(McCloskey & Bulechek, 2000)



Outline

- Dehydration defined
- Risk factors and Red flags
- Types of dehydration
- Contributing factors
- Nursing Prevention Measures
- Discussion and Communication Methods



What is Dehydration

Dehydration: a decrease in total body water caused by excessive water loss or reduced intake.

Clinically this presents with altered serum sodium levels and elevated BUN, osmolarity.



Dehydration....

Why are the Elderly at Risk?

Physiology 101

Decreased total body water

Decreased urine concentrating ability

Decreased effectiveness of regulating hormones

Decreased thirst perception

And signs can be hard to spot....



A Serious Threat to Seniors

- Elderly people are at greatest risk for dehydration and its potentially life-threatening consequences.
- Elders aged 85–99 are six times more likely to be hospitalized for dehydration than those aged 65–69.
- More than 18% of those hospitalized for dehydration will die within 30 days, and associated mortality increases with age. Men appear to dehydrate more often than women.⁶



Why is this important

Dehydration in the elderly is

1. Commonly under diagnosed
2. Contributes to hospitalization
3. If untreated-mortality may be 50%

Flu season-late flu shot this year.



Dehydration can contribute or cause.....

- Low blood pressure
- Pressure ulcers
- Confusion-metabolic imbalance
- Constipation
- UTI
- Diabetes dyscontrol



TOP Risk Factors

UTI

Falls

Hypotension

---Dementia-----short term memory/visual agnosia

Pneumonia

Pressure ulcers/infection

End stage diseases

Confusion

Decreasing weight



Note: Lasix

- If residents are on lasix or a diuretic they should be on the lowest dose possible
- Diuretics doses should not be given if they are not drinking adequately.

WHY?

- This can result in and lytes imbalance...most likely low sodium.

Assessment of Dehydration

- Three Types
- **Isotonic dehydration:** a balanced loss of water and sodium typically resulting from total abstinence from food and water or large volume loss from diarrhea or vomiting.
- **Hypertonic dehydration:** loss of more water than sodium, commonly caused by fever-induced escape of fluid through the lungs and skin.
- **Hypotonic dehydration:** sodium loss exceeds water loss, most often due to use of diuretics.



Isotonic Dehydration

Most Common (80%)

A balanced depletion of water and sodium causing extracellular fluid loss.

Causes include: decreased intake of food and water, vomiting, diarrhea,

Serum Sodium is 130-150mEq/L
(Mentes, 2000)



Hypertonic Dehydration (5-10%)

The loss of more than water than sodium

The sodium level is high in the blood >150

Most commonly caused by **fever** induced escape of fluid through lungs and skin, but can also occur due to low intake of fluids.



Hypotonic Dehydration (5-10%)

The loss of more sodium than water numerous causes, commonly occurs due to use of **diuretics**.

$\text{Na} < 130 \text{ mEq/L}$



Hypotonic & Isotonic signs

DRY MOUTH, DRY SKIN

Headache,

GI upset

Restlessness

Lethargy-Fatigue

Confusion-Delerium

Assess Urine & Lab work

- Crude evaluation methods include evaluating urine color (as dehydration progresses, urine color darkens) and weight (one pound of body weight is equivalent to 470 ml of water).⁹
- Lab work can help, although most references stress that changes from baseline values are more telling than abnormal values, as abnormal values are "normal" for some individuals.^{1,11} Electrolytes, osmolality, creatinine, serum urea nitrogen, hematocrit, and hemoglobin can help establish a diagnosis.^{1,7}



Prevention of fluid loss

- Replace fluids with hypodermoclysis or IV fluids
- Fluids should be isotonic or hypotonic because hypertonic solutions draw electrolytes from the tissues.



Prevention Measures

- Ensure daily fluid intake for your residents

>1,500 mls/ per day

Offer fluids frequently

High Alert: NPO-N/V diarrhea, low intake

Monitor for low blood pressure PRN

Medications & Dehydration

- Lasix (Furosamide)
- Laxatives
- Sedatives
- Antihistamines
- Hypertensive medications

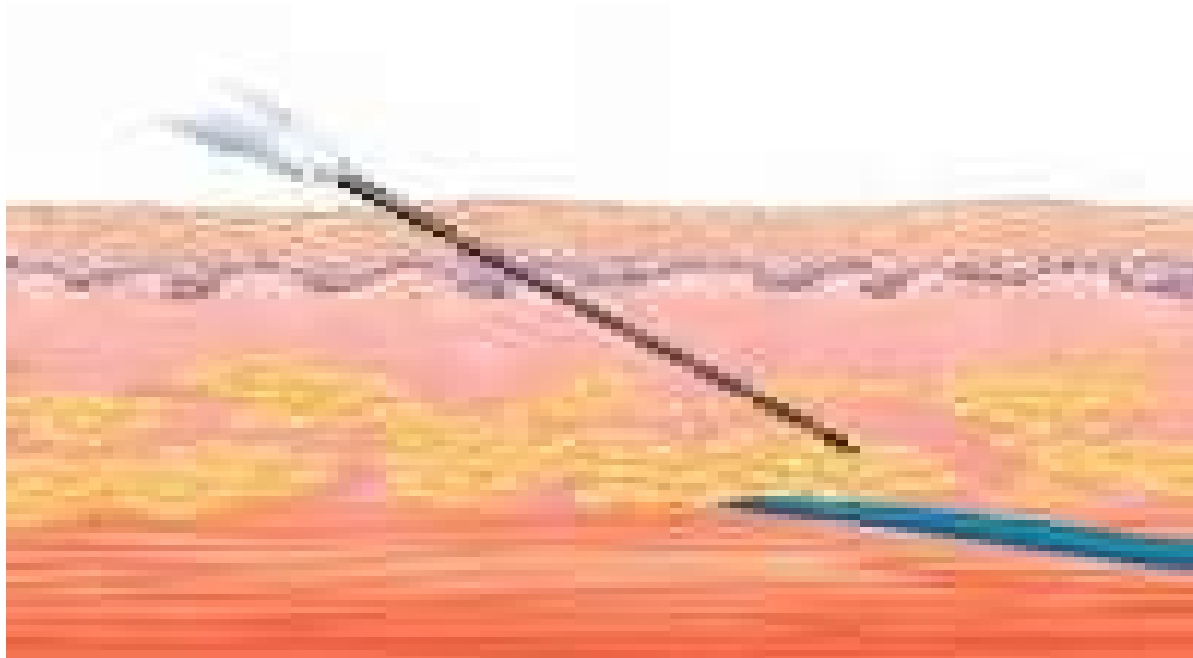



Conclusion

- Prevention FIRST.
- Remember who is high risk.
- TEAM approach for increasing fluids
- 8 cups a day=2 litres 1 cup=250mls

- Routine practice of identifying and Managing risk factors for dehydration.

Management of Dehydration via Hypodermoclysis





Learning Objectives

1. Understand the Pathophysiology of Hypodermoclysis
2. Demonstrate the indications of use and monitoring guidelines
3. Review technical skills and supplies/High Intensity
4. Interpreting orders and communication with the MD
5. Documentation
6. Knowledge, Skill and Judgment to perform the task safely

HDC-Hypodermoclysis

Hypodemoclysis (Clysis)

Is the administration of isotonic fluids via a subcutaneous infusion for rehydration or the prevention of dehydration.



Pathophysiology

- The fluid enters the extracellular tissue fluid and is either drained by the lymphatic system or enters the blood plasma at the venous ends of capillary networks in the subcutaneous tissues.





Indications of Use

- Short term therapy to relieve mild to moderate dehydration caused by decreased intake, vomiting or diarrhea.
- Requires less than 3 litres per 24 hours
- IV therapy unsuccessful
- Very old residents with fragile veins
- Fluid replacement when not drinking



Helping make the DECISION

The decision should be made on the basis of a careful assessment taking into account the problems related to dehydration, the potential risks and benefits of fluid replacement, and the patient's and family's wishes (Steiner and Bruera, 1998).



Geriatric fluid replacement

- Both sc fluids require careful monitoring because of decreased sensation may allow fluids to enter s/c tissue in noticed

USUALLY 500ml over 12-16 hours



Contraindications

- Emergency situations: Shock, severe dehydration,
- Clotting disorders
- Fluid overload CHF, marked oedema
- IV fluids required-HYPOVOLEMIA
- Patients in renal dialysis/or strict fluid balance requirements
- Inadequate access



Pros-Cons

DISADVANTAGES:

- Max 3.0L per 24/hours.
- Oedema can occur at site,
- does not address lytes imbalances.

ADVANTAGES:

- simple insertion,
- decreases need for hospitalization if dehydration addressed early,
- no thrombolphlebitis, start and stop easily, no thrombosis.

2004 US-LTC study

- 4 month period 30 infusions
- Range of 1-3 days, run by gravity only, fluids included N/S with or without 5% dextrose
- Rates ranged from 40-125ml/hour with total infusions of 1-3 L per residents
- Staff were trained in clysis and related procedures before initiating procedures

With documentation of competency with skills check lists

Results



- Only one incidence of local edema which resolved after site rotation
- All over infusions were completed with out adverse reactions.
- Facility management reported high levels of satisfaction with outcomes. (Walsh 2005)



Palliative Care & Hydration

- No evidence that hydration interventions prolong survival in the terminally ill
- Dehydration acts as a natural anesthetic
- Hydration promotes GI production and can worsen nausea and vomiting
- Hydration promotes resp tract secretion and can worsen cough and dyspnea in palliative patients



New-Onset Dehydration Overview of Management

1. Implement a system of immediate physician notification when a resident demonstrates inadequate fluid intake for more than two shifts or with significant signs and symptoms of dehydration.
 - SBAR tool
 - Change of status tools



SBAR Review

- Situation/Background/Assessment helps with complicated cases
- Consider the trajectory especially with dementia patients.
- Advanced directives need to be up to date. Contact MD/NP if this needs to be updated with status changes.



Assess & Treat

2. Complete assessment/ Hx of medical illnesses, signs, symptoms including bowel and bladder function and changes in mental status
3. Provide oral hydration if appropriate,
4. Suspend diuretics and all other meds with toxic effects when decreased kidney fx.



Management continued

5. Other management includes blood work, drug levels if needed Initiative of IV or hypodermoclysis
6. Identify causes of dehydration and address them specifically
7. Monitor intake, urine output and daily weight
 - Once resolved address contributing factors: medication or dietary



Clysis Equipment

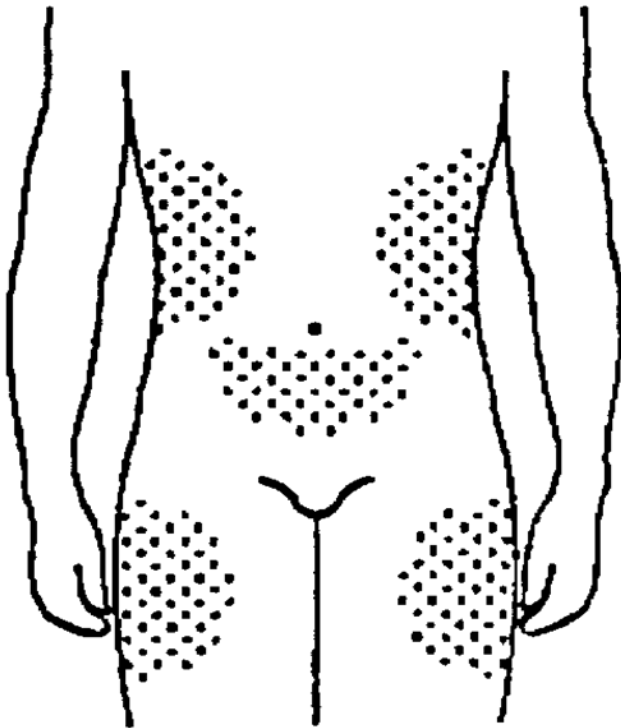
- Fluid usually 1 L of n/s
- 19 or 21 G s/c butterfly needle
- Alcohol swabs
- Semipermeable transparent dressing
- Standard IV set
- IV pole
- Non-sterile gloves
- Fluid Balance chart



Procedures for Clysis

- IV manual has Teaching Module
- Sample Procedures (Handout)
- Competency Check lists

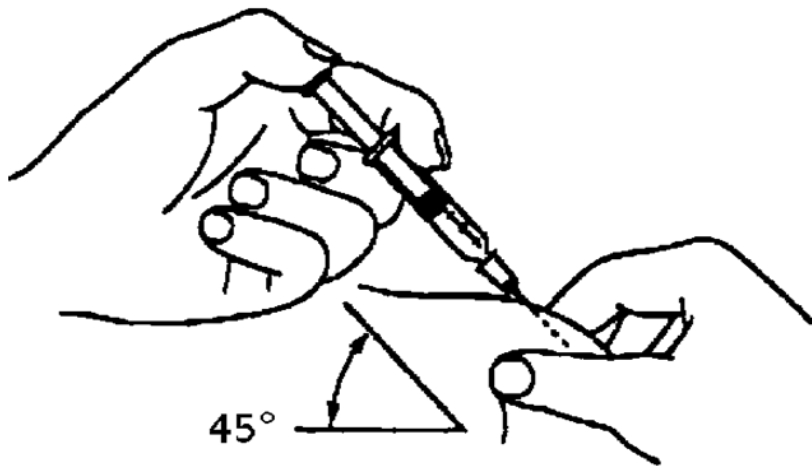
Site Selection



- Upper chest (Avoid breast tissue)
- Abdomen
- Outer aspect of thighs
- Scapula
- Arm

Area should have a fat fold at least 1 inch thick

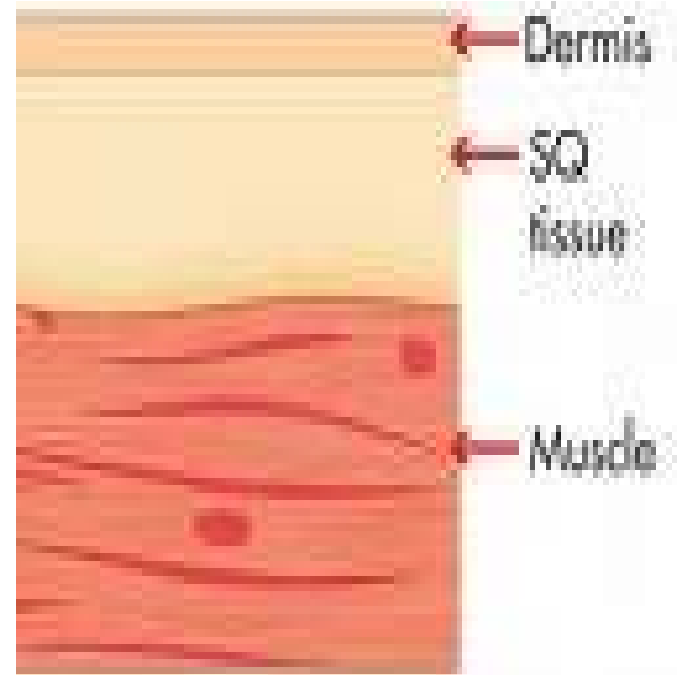
Technique



- Remove the **alcohol swab** from the site. Allow the injection site to dry for 10 seconds.
- Pinch some skin between your thumb and forefinger (without squeezing) to elevate the subcutaneous tissue then release.

Site Tips

- Insert at 40-45 degree angle-Bevel down
- Blood in tubing required re-insertion at another site
- Blood flows in skin and in muscle-so make sure you are in the S/Q
- Muscle irritation will occur if you are in too deep and painful swelling will occur if its too superficial.



Site and Line changes

- Bag and line changes should be made Q 72 hours
- Site changes are as needed but should be generally between 24-48 hours or after 1.5-2 L of fluid
- At first site of inflammation –change the site unless redness is related to manipulation



Monitoring

- Site should be checked at least Q 2 hours or as per protocol for signs of redness, inflammation and pain.
- Monitor for fluid overload with in/out sheets Q 2 hours

Site Change Needed

- Leaking or if tissue inflamed or painful
- After 500cc has infused

A word on rate and drip rates....

Check your tubing...

Example..15 gtt/ml

For a 500ml bag is 5 gtt per min.



Orders & MD Communication

An order must be obtained to run clysis:

Infuse N/S via HDC up to 125 ml/hour for a total of 6 Litres over 2 days.

You need

Fluid

Rate

Route



Documentation

- FLOW SHEET -rate, type of solution, amount
- PROGRESS NOTES: Site initiation, change, size of needle, clients reaction during and after, family teaching and date removals and why.
- Infusion sites, tubing, and containers are labeled with the date.

Reasons for Cessation



- Resident in terminal phase of illness
- Excessive fluid accumulation causing edema and pain
- Cardiac failure or pulmonary edema
- Not tolerating therapy



Comparison of IV and Clysis

Study 2003 American Geriatric Society

48 pt study, average age 85 randomized,
with mild to moderate dehydration

Average infusion-6 days average 750-1 L
per day.

Results

13 pts changed from SC to IV. 11 changed because of the need for IV drugs and twice because of poor absorption from SC

17 patients changed from IV to SC because of no peripheral access (8) and removal of IV (5)

Acute cardiac failure occurred 2x in s/c group and 4x in IV group.

Hyponatremia occurred in IV group 2x and s/c 1x



Conclusion

The randomized study shows that hypodermoclysis is safe and effective method. In addition it represents the far superior methods for those residents who do not have IV access.



Resources

- **Inservices:** Skills checklist-Self Test
- Family Handout
- SBAR tool
- Reference Card: On subcutaneous Hydration

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