



POLICY AND PROCEDURE

HYDRATION MANAGEMENT



**Developed by:
Toronto Best Practice in LTC Initiative
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Disclaimer: This policy and procedure has been developed by a sub-group of the Toronto Best Practice Implementation Steering Committee. It is based on the 2005 Ministry of Health and Long-Term Care Standards on Nutrition and Hydration and various available best practice sources. It has been reviewed by stakeholders from various LTC Homes and representatives of the Toronto Best Practice Implementation Steering Committee.

This policy and procedure is to be used as a guideline at the discretion of the LTC Homes.

POLICY AND PROCEDURE HYDRATION MANAGEMENT

POLICY:

Each resident must have an interdisciplinary hydration assessment completed within 21 days of admission. Reassessment must be done on re-admission, quarterly and any change in condition that may cause the resident to be at risk for dehydration.

PURPOSE:

The purpose of hydration management is to:

1. Address resident's individual needs with respect to fluid intake.
2. Initiate appropriate strategies and interventions to prevent dehydration.
3. Provide learning opportunities for staff, residents, families and Substitute Decision Makers (SDM).
4. Monitor and evaluate resident's outcome.

PREAMBLE:

Dehydration is misdiagnosed in the elderly. All healthcare professionals need a simple skill to assess for dehydration. The classic clinical signs and symptoms of dehydration are:

- Dry mucous membranes – cracked lips, furrowed tongue, sunken eyes, decreased salivation
- Decreased skin turgor – test on chest or forehead, pinched skin “holds” up to 30 seconds
- Skin breakdown
- Rapid weight loss in less than a week – accuracy of monthly weights is absolutely necessary
- Rapid pulse
- Weakness
- Decrease in orthostatic blood pressure
- Decreased urine output
- Changes in mental status – dizziness, confusion
- Constipation

The interdisciplinary team plays a significant role in hydration management, promotes open communication and monitors the outcome of the program.

Team Members	Roles and Responsibilities
Director of Care or Designate	<ul style="list-style-type: none">• Facilitates the implementation of hydration management procedures for each individual resident.• Collects data, analyzes statistics, identifies trends, and evaluates outcomes.

Team Members	Roles and Responsibilities
Director of Care or Designate	<ul style="list-style-type: none"> • Seeks advice from experts to support team decisions. • Coordinates education processes relating to hydration management including hypodermoclysis.
Nursing (RN and RPN)	<ul style="list-style-type: none"> • Conducts and documents a hydration assessment, <ul style="list-style-type: none"> ○ On admission ○ Re-admission ○ Quarterly ○ Change in condition and seasonal conditions that may cause resident to be at risk for dehydration • Assesses and ensures quality mouth care. • Plans and initiates hydration management; and updates care plan. • Initiates, communicates, and reviews the plan of care with the interdisciplinary team to address each individual resident's hydration needs. • Makes referral to interdisciplinary team members. • Provides education to family/resident about dehydration and importance of hydration management. • Monitors intake/outputs and weight. • Monitors and evaluates the plan of care; and updates as necessary.
Health Care Aide/Personal Support Worker	<ul style="list-style-type: none"> • Measures and records the resident's height and weight on admission. • Weighs and records resident's weight monthly. • Reports resident's verbal and non-verbal behaviours indicating discomfort. • Promotes good oral hygiene as per individual resident's care plan. • Provides and assists with meals and snacks as per resident's care plan. • Documents and reports resident's intake and output.
Occupational Therapist (OT)/ Physiotherapist (PT)	<ul style="list-style-type: none"> • Evaluates and advises the interdisciplinary team on seating and assistive devices to maximize independence and promote good intake. • Educates residents, family and staff on proper use of equipment/ devices/aids. • Monitors and documents resident's outcome in the use of seating and assistive devices.
OT Assistant/PT Assistant/Rehabilitation Assistant	<ul style="list-style-type: none"> • Carries out assigned treatments relating to seating and comfort. • Monitors resident responses and reports responses to OT/PT & interdisciplinary team.
Registered Dietitian/Food Service Supervisor	<ul style="list-style-type: none"> • Completes a dietary profile within 7 days. • Completes a nutrition/hydration assessment within 21 days. • Orders appropriate diet and supplements as described by the LTC Homes policy. A Physician co-signature is required. • Makes recommendations to Physicians. • Suggests fluid and nutritional intake to maintain adequate hydration, e.g., 1500 ml of free fluids per day. • Reassess resident's nutritional and hydration status including weights on a quarterly or monthly basis as per risk assessment. • Follows up on residents who are ill or in an unstable condition. • Conducts annual in-service on nutritional and hydration related topics. • Observes resident's swallowing and chewing ability. • Makes referral to speech language pathologist as needed.
Pharmacist	<ul style="list-style-type: none"> • Reviews and recommends changes to medications and supplements. • Provides consultation services. • Provides education to residents and interdisciplinary team.

Team Members	Roles and Responsibilities
Recreation Therapist/Restorative	<ul style="list-style-type: none"> • Involves the resident in activities or programs. • Encourages fluid intake during activities or programs. • Reports resident's verbal and non-verbal behaviours indicating discomfort. • Reports resident changes to RN/RPN.
Physician	<ul style="list-style-type: none"> • Identifies, implements and monitors medical interventions to address hydration, risks and management.
Social Work	<ul style="list-style-type: none"> • Provides support to resident's psychosocial needs. • Counsels and supports families as needed.
Chaplain	<ul style="list-style-type: none"> • Provides support to resident's spiritual/cultural needs. • Counsels and supports families.
Family	<ul style="list-style-type: none"> • Attends the multidisciplinary conference. • Offers fluid as per resident's preference. • Works with staff and resident to support plan of care.

PROCEDURE:

A. Hydration Assessment

The interdisciplinary team will:

1. Complete the hydration/nutrition assessment,
 - On admission,
 - Re-admission,
 - Quarterly, and
 - Any change in condition that may cause the resident to be at risk for dehydration.
2. Initiate a written plan of care within 24 hours of admission and update as necessary.
3. Complete interdisciplinary team assessments and plan of care within 21 days of admission.
4. Observe and monitor for the following classic signs and symptoms as an initial assessment for dehydration:
 - Dry mucous membranes – cracked lips, furrowed tongue, sunken eyes, decreased salivation
 - Decreased skin turgor – test on chest or forehead, pinched skin “holds” up to 30 seconds
 - Skin breakdown
 - Rapid weight loss in less than a week – accuracy of monthly weights is absolutely necessary
 - Rapid pulse
 - Weakness
 - Decrease in orthostatic blood pressure
 - Decreased urine output
 - Changes in mental status – dizziness, confusion
 - Constipation

It is important that each of the common signs and symptoms be assessed independently to determine the diagnosis of dehydration.

5. Monitor resident's hydration status based on dehydration risk assessment. (See Appendix A for dehydration risk assessment samples).
6. Monitor resident's response and outcome to the plan of care.

7. Develop interventions to address resident's hydration as needed.
8. Encourage resident and family participation in the plan of care.
9. Evaluate, document resident outcome and update care plan.

B. Care Planning for Hydration Management

<p>Risk Reduction for Dehydration</p>	<p>The interdisciplinary team will:</p> <ol style="list-style-type: none"> 1. Provide fluids consistently throughout the day and when awake at night. 2. Ensure the resident receives a daily intake of a minimum of 1500 ml of free fluids in 24 hours. 3. Ensure 75% to 80% of fluid intake with meals and 20% to 25% at other times, such as during medication or snack rounds. 4. Offer a variety of fluids, make water readily available and offer a drink every 2 to 3 mouthfuls of food. 5. Have a jug of fresh water and glasses available at nursing stations, etc. for visitors and staff to offer to the residents throughout the day. 6. Utilize a standardized minimum amount of 100 ml of fluid per medication pass. 7. Schedule additional fluid rounds other than snack time. 8. Plan "happy hours" or "tea time" in the afternoon where residents can gather together for fluids, snacks, and socializing. 9. Use appropriate assistive device to better suit a resident's ability to hold a cup or swallow. 10. Offer a drink at the end of each meal to cleanse and refresh the mouth. 11. Minimize the intake of tea and coffee due to dehydrating effects of caffeine. 12. Monitor for fluid loss during hot weather and offer replacement fluids. 13. Rinse the resident's mouth with 30 ml of antacid (e.g., Mylanta or Maalox) if resident complains of a sore mouth prior to eating or drinking.
<p>Sick Day</p>	<p>The interdisciplinary team will:</p> <ol style="list-style-type: none"> 1. Be notified by the registered nursing staff of a resident's need for sick day hydration management. 2. Monitor intake and provide comfort measures: <ul style="list-style-type: none"> • Offer 30-60 ml of fluid /hr. when awake • Encourage minimum 1500 ml of free fluid/day • Offer hydrating fluids, e.g., ginger ale and moist nourishment • Offer mouth care 4x/day 3. Monitor and record output of residents who develop a fever, vomiting, diarrhea or non-febrile infection.

Sick Day	<ul style="list-style-type: none"> • Amount of urine = 800-1200 ml/day = at high risk for dehydration • Amount of urine = <800 ml/day = dehydration <ol style="list-style-type: none"> 4. Completes an assessment and develops a hydration plan of care. 5. Assess for delirium every shift and monitor for unexplained changes in mental, physical and behavioural condition and inform the Physician. 6. Discuss the temporary use of hypodermoclysis with resident and/or substitution decision-maker as needed. (See Appendix B) 7. Review medications. 8. Document resident's response to sick day hydration management and adjust plan of care as necessary.
End of Life	<p>The interdisciplinary team will:</p> <ol style="list-style-type: none"> 1. Discuss hydration and end of life with resident, family, or SDM and suggest palliative care articles to read that relate to the positive role of dehydration at end of life. 2. Develop process for referral to ethics consultation as available. 3. Confirm the end of life plan of care as per the resident's wishes with the family and staff at a care conference and document outcome of discussion. 4. Develop an end of life care plan. 5. Discuss options e.g., feeding tube and quality of life. 6. Provide mouth care Q1-2 H and prn. Cleanse the mouth using 1 litre of water with ½ teaspoon of salt and 1 teaspoon of baking soda - renew daily. 7. Offer fluids to promote comfort as tolerated by resident. 8. Discuss use of medication to dry secretions, e.g. Scopolamine. <p>Note: Recognize that in the last stages of life, palliative care clinicians have observed the following: (AMDA, 2001).</p> <ul style="list-style-type: none"> • Dehydration does not produce discomfort. • Intravenous hydration therapy can cause burdensome, distressing symptoms. • There is no evidence that IV hydration therapy prolongs life. • Suctioning is of no benefit to resident. It may cause discomfort and aspiration. Positioning may be used to promote fluid drainage. <p>Gastrointestinal tube:</p> <ul style="list-style-type: none"> • Indications for use: Short term, time limited and reversible medical crisis • G-tubes should only be inserted if: <ul style="list-style-type: none"> -Interdisciplinary team and family meet with the ethics committee to discuss the short and long term implications of a G-tube. -Medical prognosis suggests a reversible outcome. -Other alternatives which include emotional support for family have been discussed. -Side effects have been explained to family e.g., aspiration, pain, diarrhea and skin excoriation.

C. Documentation

The interdisciplinary team will:

1. Document the initial assessment, monthly, quarterly and with changes in resident's condition. See chart below:

Frequency	Documentation
Initial	<ul style="list-style-type: none">• Outcome of assessments and laboratory testing completed. See Appendix C for Ranges of Laboratory Test Results for Determining Hydration Status.• Review of information received from resident/SDM including likes and dislikes and cultural preferences• Referrals and consultations initiated and the results• Develop a hydration management plan of care• Evaluation of interdisciplinary interventions• Communication to the resident or SDM regarding effectiveness of interventions
Monthly (For Residents with High Nutritional/ Hydration Risk)	<ul style="list-style-type: none">• Resident's response to interventions• Revisions to interventions and resolution of risk• Evaluate improvement or deterioration in resident's condition• Recommendations for further investigations and laboratory work (e.g. electrolytes, BUN, Creatinine)
Quarterly (For Residents with Low to Moderate Nutritional/Hydration Risk)	<ul style="list-style-type: none">• Changes in vital signs, laboratory values and medications• Summary of interventions and resident's response• Evaluate improvement or deterioration in resident's condition• Any further testing/assessment being considered• Review and update care plan
Change in condition	<ul style="list-style-type: none">• Review with interdisciplinary team, seek expert advise, investigate, follow up on plan of care

D. Evaluating Effectiveness

The interdisciplinary team will:

Monitor for	Description
Expected outcomes of adequate hydration	<ul style="list-style-type: none">• Urine colour (monitor consistently at the same time of day in order to make valid comparisons)• Maintenance of body hydration

Monitor for	Description
Expected outcomes of adequate hydration	<ul style="list-style-type: none"> • Reduced risk of infections, especially urinary tract infections • Improvement in urinary continence • Reduced risk of constipation • Reduced risk of acute confusion
Other follow-up	<ul style="list-style-type: none"> • Response to rehydration and adjusted interventions • Continual monitoring for recurrence from underlying cause(s)

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APPENDIX A: Dehydration Risk Appraisal Checklist (Sample 1)

Instruction:

The information on this form may be collected from direct observation, from chart review, or from MDS information that has been collected. Many of the items on this checklist have MDS identifiers next to them reflecting that information from MDS can be used to complete this checklist. The total number of risk factors should be totaled. The higher the number of risk factors checked, the higher the risk for hydration problems. Please check all that apply.

Addressograph

- > 85 years
- Female

- BMI < 21 or > 27
[BMI = weight (kg)/height (m)²]

Significant Health Conditions/Situations

- | | |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> Dementia/ + screen for cognitive impairment <input type="checkbox"/> Depression/ + screen for depression <input type="checkbox"/> CVA <input type="checkbox"/> Diabetes <input type="checkbox"/> Urinary Incontinence <input type="checkbox"/> Major Psychiatric Disorders <input type="checkbox"/> Urinary Incontinence <input type="checkbox"/> Vomiting <input type="checkbox"/> NPO status | <ul style="list-style-type: none"> <input type="checkbox"/> Renal Disease <input type="checkbox"/> Cardiac Arrhythmias <input type="checkbox"/> Malnutrition <input type="checkbox"/> History of dehydration <input type="checkbox"/> History of repeated infections <input type="checkbox"/> ≥ 4 chronic health conditions <input type="checkbox"/> Fever <input type="checkbox"/> Diarrhea |
|---|--|

Medications

- | | |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> > 4 medications <input type="checkbox"/> Laxatives <input type="checkbox"/> Steroids <input type="checkbox"/> ACE Inhibitors | <ul style="list-style-type: none"> <input type="checkbox"/> Diuretics <input type="checkbox"/> Psychotropics: Antipsychotics, Antidepressants, Anxiolytics |
|---|--|

Intake Behaviours

- | | |
|---|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> Requires assistance to drink <input type="checkbox"/> Has difficulty swallowing/Chokes <input type="checkbox"/> Can drink independently but forgets <input type="checkbox"/> Poor eater (eats < 50% of food) <input type="checkbox"/> Receiving IV fluid therapy <input type="checkbox"/> Drools | <ul style="list-style-type: none"> <input type="checkbox"/> Semi-dependent with feeding <input type="checkbox"/> Fluid intake of < 1500ml/day <input type="checkbox"/> Spills <input type="checkbox"/> Receives tube feedings <input type="checkbox"/> Holds food/fluid in mouth <input type="checkbox"/> Spits out food/fluid |
|---|---|

Laboratory Indicators

- | | |
|---|--|
| <ul style="list-style-type: none"> <input type="checkbox"/> Urine specific gravity > 1.020 <input type="checkbox"/> Urine colour dark yellow > 4 <input type="checkbox"/> BUN/Creatinine > 20:1 | <ul style="list-style-type: none"> <input type="checkbox"/> Serum sodium > 150 meq/L <input type="checkbox"/> Serum osmolality >300 mmol/Kg <input type="checkbox"/> Hematocrit > normal |
|---|--|

Date of Assessment: _____ Assessor: _____

References:

Mentes, J. C. & The Iowa Veterans Affairs Nursing Research Consortium. (2004). *Evidence-Based Practice Guideline: Hydration management*. Iowa City, IA: The University of Iowa Gerontological Nursing Interventions Research Center Research Translation and Dissemination Core.

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APPENDIX A: Signs and Symptoms of Dehydration Checklist (Sample 2)

Nursing Home (name): _____

Resident Name: _____

Date: _____

Sign/Symptom	Yes	No	N/A
Dry skin			
Cracked lips			
Thirst			
Poor skin turgor			
Fever			
Loss of appetite/decreased fluid intake			
Nausea			
Vomiting			
Diarrhea			
Dizziness			
Increased confusion/delirium			
Laboratory values within the past month that may indicate Dehydration*			
Decreased blood pressure			
Increased pulse			
Constipation			
Concentrated urine			
Sweating			
Weakness			
Change in mental status			
Acute illness			
Dementia			
Depression			
Change in activities of daily living (ADL)			
> 25% food or fluid not consumed at meals			
Nothing-by-mouth (NPO) status			
Weight Loss			
Decreased urine output			
Swallowing difficulty			
Medications (diuretics, phenytoin, laxatives, lithium, ACE inhibitors, etc.)			

*Increased Blood Urea Nitrogen (BUN); elevated BUN: Creatinine ratio (in presence of a normal creatinine); elevated Hematocrit; elevated Potassium (K⁺); elevated Chloride (Cl⁻); elevated Urine Specific Gravity; and/or elevated Serum Osmolality; (Sodium can be increased normal or low, depending on the underlying cause of the dehydration.)

Comments:

Reviewer: _____

APPENDIX B: Hypodermoclysis (HDC)

Definition of Hypodermoclysis (HDC) or Clysis	<ul style="list-style-type: none"> • The administration of isotonic fluids via a subcutaneous infusion by gravity for mild rehydration or the prevention of dehydration. • It is a simple procedure that may be used to treat dehydration when other means of rehydration are not readily available. Fluids administered subcutaneously are usually well absorbed and may even be as well absorbed as fluids given intravenously.
Indications for Use	<ul style="list-style-type: none"> • Short term therapy to relieve mild to moderate dehydration caused by decreased intake, vomiting or diarrhea • Resident does not need rapid emergency intravenous fluid replacement • Requires less than 3 litres per 24 hours • No history of bleeding or coagulation disorder • Intact skin sites for access. • Resident who is unable to take oral fluids related to suspected aspiration, NPO waiting for Physician assessment or test results, or gastrostomy feeding
Contraindications	<ul style="list-style-type: none"> • Emergency situations: shock, severe dehydration • Clotting disorders • Fluid overload CHF, marked edema • IV fluids required • Resident in renal dialysis/or strict fluid balance requirements • Inadequate access
Disadvantages	<ul style="list-style-type: none"> • Maximum 3.0L per 24/hours • Edema can occur at site • Does not address electrolytes imbalances
Advantages	<ul style="list-style-type: none"> • Simple insertion • Decreases need for hospitalization if dehydration addressed early • No thrombophlebitis, start and stop easily, no thrombosis • Improve functional status for residents who have mild to moderate reversible fluid deficit problem • Improve the quality of life of residents
Equipment	<ul style="list-style-type: none"> • IV tubing (prefers micro-drip chamber) • 21-25 gauge either metal butterfly needle (change at least q72h) with tubing, or silicone subcutaneous needle (change at least q5 days) with tubing. • Alcohol and povidine swabs. • 2/3-1/3 solution, ½ strength Normal Saline (NS), NS, or as per Physician's order • Tape for tubing • Transparent occlusive dressing • 2 X 2" gauze • IV pole • 3cc syringe • vial of NS • Use of infusion pumps not recommended.
Who can perform the procedure	<ul style="list-style-type: none"> • All nursing staff who are qualified in providing subcutaneous injection. • All nursing staff who have received education/training or have the knowledge, skill and judgment in hypodermoclysis infusion.
Note	<ul style="list-style-type: none"> • Registered Nursing staff must be competent in hypodermoclysis administration. The checklist on p.11 may be used prior to performing the procedure. • LTC Homes must seek external support (e.g., hospital, CCAC) if in-house support is not available.

Addressograph

Hypodermoclysis (HDC) Check List:

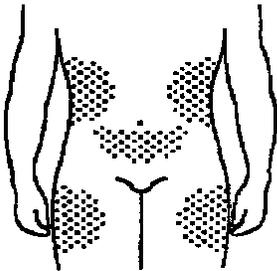
Criteria	Met	Comments
Initiation of Infusion		
Obtain physician order to begin HDC		
Gather correct equipment		
Verify resident identity and explain procedure		
Correctly assemble supplies and prime tubing with attached needle		
Select appropriate site for HDC		
Clean site per policy		
Correctly insert HDC needle		
Secure needle appropriately		
Begin infusion and regulate gravity rate		
Maintenance		
Assess resident's general condition every shift		
Monitor site/clinical complications		
Rotate site and change tubing every 3 days or prn if continuous		
Change tubing daily and rotate site every 3 days if intermittent		
Discontinuing infusion		
Obtain physician order		
Stop flow		
Don gloves		
Remove dressing		
Pull needle straight out and apply pressure if needed		
Apply dressing		
Documentations		
Label solution bag, tubing and insertion site		
Document resident or family education		
Document insertion date, time, site and description of procedure		
Q shift site checks including rate, amount infused, resident tolerance		
Document site rotations and indications		
Document discontinuation of therapy and indication		

Nurse signature: _____

Date: _____

Procedure:

1. Obtain current medical order for hypodermoclysis. Medical order includes reason for therapy, type, volume, and rate of solution, and duration of infusion.
2. Explain the procedure to resident/family, and obtain consent.
3. Verify 2/3-1/3 solution or ½ strength NS, and check expiry date.
4. Wash hands.
5. Assemble equipment, prime butterfly tubing with NS and 3cc syringe.
6. Selection of appropriate site:

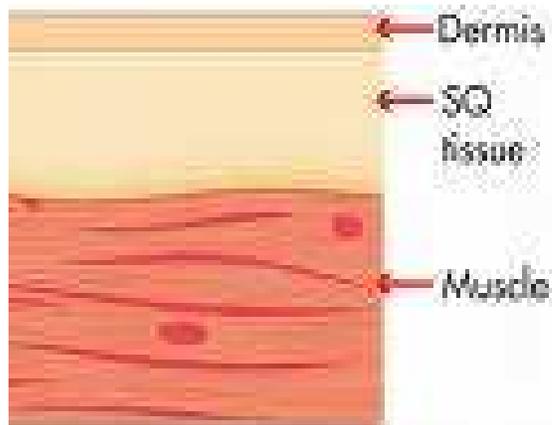
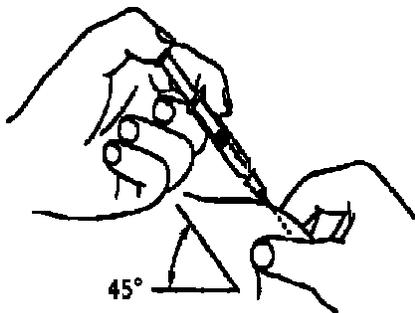


Ambulatory resident – Use abdomen, intraclavicular, or scapula area

Bedridden resident – Use anterior or lateral thighs and hips, or abdomen.

Note: Area should have a fat fold at least 1 inch thick

7. Technique:



- Use aseptic technique to clean the area with povidone and wipe povidone off using alcohol swabs.
- Remove the alcohol swab from the site. Allow the injection site to dry for 10 seconds.
- Use index finger thumb to gather subcutaneous tissue together gently on the selected site.
- Insert the needle with bevel up at 35-45 degree angle into the tissue.
- Slightly withdraw the 3cc syringe, observe for blood.
- If blood is noted, withdraw the needle and repeat the procedure using a new needle and different site.
- Blood flows in skin and in muscle-so make sure you are in the subcutaneous tissue
- Muscle irritation will occur if you are in too deep and painful swelling will occur if it's too superficial.

8. Attach the infusion set to the end of the butterfly tubing.
9. Secure the butterfly in place by applying a transparent occlusive dressing with a 2x2" gauze under the wings of butterfly.

10. Secure the tubing and date the dressing.
11. Date and time of fluid bag.
12. Initiate at 30 ml for the first hour or as per Physician's order. See below for calculating drip rate.

$\text{Drops/ min} = \frac{\text{Volume of infusion (in ml)} \times \text{Drops/ml}^*}{\text{Time of Infusion (in min.)}}$
--

* Information from infusion set

13. Increase the rate of infusion to 75 ml per hour after the first hour or as per Physician's order to maximum 3000 ml/24 hours. **Note: A maximum of 3000 ml/24 hours must be infused in more than 1 site.**
14. Assess, monitor and record vital signs, intake and output.
15. Assess and monitor infusion site hourly for redness, swelling, pain, leaking or dislodged needle.
16. Document the treatment in the chart with type and size of needle, location, rate, and type of solution, time of the infusion start, and resident's response.
17. Change the infusion site every 48-72 hours or PRN. Change the site at first sight of inflammation.
18. Assess and monitor for signs of fluid accumulation around the infusion site, change site PRN.
19. Monitor for signs of resolution of dehydration e.g., skin turgor, increase urine output, moist mucous membranes, less confusion.
20. Continue to assess and monitor for signs of fluid overload, e.g., edema, breathing difficulty, adventitious chest sound.
21. Continue to assess and monitor for signs of infection at the site, change site PRN, and report to Physician.
22. Continue to assess and monitor for dislodgement of needle and disconnection of tubing, change the equipment and site PRN.
23. Discontinue infusion by clamping the tubing, removing the dressing, and applying gauze and dry dressing after removal of needle. Reasons for discontinuation may include: terminal phase of illness, excessive fluid accumulation causing edema and pain, cardiac failure or pulmonary edema, and not tolerating therapy.

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APPENDIX C: Ranges of Laboratory Test Results for Determining Hydration Status

Test	Ranges for	
	Impending dehydration	Dehydration
Blood urea nitrogen-creatinine ratio	20:1 – 24:1 mg/dL	≥ 25:1 mg/dL
Serum osmolality	290 – 300 mmol/kg	> 300 mmol/kg
Serum sodium		> 150 mEq/L
Urine osmolality		> 1 050 mmol/kg
Urine specific gravity	1.020 – 1.029	> 1.029
Urine colour	Dark yellow	Greenish brown
Amount of urine	800 – 1200 mL/day	< 800 mL/day

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APPENDIX D: Glossary of Terms

Body Mass Index (BMI)

Body Mass Index (BMI) is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults.

It is defined as the weight in kilograms divided by the square of the height in metres (kg/m²).

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)} \times \text{height (m)}}$$

Hydration Management

The promotion of adequate fluid balance that prevents complications resulting from abnormal or undesired fluid levels.

Hypodermoclysis (HDC) or Clysis:

The administration of isotonic fluids via a subcutaneous infusion by gravity for mild rehydration or the prevention of dehydration.

Information on Clinical Signs and Symptoms of Dehydration

Dry mucous membranes

Dry mucous membranes can be an indicator of dehydration; however, mouth breathing and medications can also cause a dry mouth. The normal mouth breather may have dry lips and tongue. With severe dehydration, the lips will be cracked and the tongue will be furrowed. Dehydration may cause sunken eyes. Dry mucous membranes alone are not sufficient to make a diagnosis of dehydration, but must be assessed as one of the clinical signs.

Decreased skin turgor

Hydrated skin is plump, smooth and immediately returns to its normal appearance following stretching or compression (turgor). Turgor, "the return to the normal appearance" is slower in older people. Pinched skin "holds" up to 30 seconds in hydrated residents with decreased skin turgor, then slowly returns to its normal contour.

It is best to "pinch" the skin over the chest or forehead to test for dehydration in the elderly.

Decreased skin turgor commonly occurs with moderate to severe dehydration. Reduced skin turgor alone, however, is not conclusive sign of dehydration because of the reduced skin elasticity in the elderly.

Skin breakdown

Dehydrated tissue is more prone to develop pressure areas and ulcers.

Rapid weight loss in less than a week

Dehydration is defined as depletion of water from the body. If the resident's weight decreases rapidly, it may be due to dehydration. This usually occurs over a few days. Rapid weight loss would probably not be an indicator of chronic dehydration.

It is essential to have accurate baseline weight in order to establish the presence of dehydration.

Residents in LTC are routinely weighed each month to assess weight change. Accuracy of the weight is absolutely necessary. This weight change may be the primary sign used in the diagnosis of dehydration. For dehydration, weigh resident frequently, e.g., weekly.

Decrease in orthostatic blood pressure

A decrease of 20 mmHg in the systolic blood pressure within 1 minute of moving from lying to sitting may indicate dehydration. A decrease of 10 mmHg in the diastolic blood pressure may also indicate dehydration. This is the result of decreased blood volume. This drop in blood pressure may cause the resident to be dizzy or fall.

Neurologic illness, some medications and prolonged bed rest can also cause this marked drop in blood pressure; therefore, it is important that this change be supported by the other clinical signs and symptoms of dehydration.

Decreased urine output

Decreased fluid intake leads to decreased urine output (oliguria) and to more concentrated urine. These two factors, along with hypotension may be indicative of water depletion (hypertonic dehydration).

Changes in mental status

Signs and symptoms of lightheadedness, dizziness and confusion may be secondary to changes in blood volume and electrolytes.

Constipation

Lack of adequate fluid intake is a major cause of constipation. It is important to monitor the resident's elimination pattern for frequency and quantity.

Types of Dehydration

Hypertonic Dehydration

Also known as intracellular dehydration and hypernatremic dehydration. It is a depletion in total body water content due to pathologic fluid losses, diminished water intake, or a combination of both.

Hypotonic Dehydration

Also known as extracellular fluid volume depletion. It is a depletion in both sodium and water with greater losses of sodium than water, resulting in extracellular fluid loss. Causes include: over use of diuretics, chronic salt wasting renal disease, and decreased intake of both salt and water.

Isotonic Dehydration

Also known as isotonic fluid volume depletion. It is a balanced depletion of water and sodium causing extracellular fluid loss. Causes include: vomiting, diarrhea, and the osmotic diuresis of glucose.

Weight Fluctuation: Significant Weight Change

A significant weight change is defined as:

- A resident who has a 1.4 kg (3 lbs) weight loss in 7 days.
- A resident who has a 1.4 kg (3 lbs) weight gain in 7 days.
- For a resident with a BMI greater than 19, a significant weight loss is:
 - 3% weight loss in 14 days,
 - 5% weight loss in 30 days,
 - 7.5% weight loss in 90 days,
 - 10% weight loss in 180 days.

- For a resident with a BMI equal to 19 or less, a significant weight loss is:
 - 2% weight loss in 7 days,
 - 2% weight loss in 14 days,
 - 3% weight loss in 30 days,
 - 7.5% weight loss in 90 days,
 - 10% weight loss in 180 days.