HYDRATION TOOLKIT

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Hydration Management
Policy and Procedure

Policy:
Each resident will have an interdisciplinary hydration assessment completed upon admission, upon re-admission, quarterly, annually, and with significant change in condition, to assist in identifying the risk of 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 legal representatives.
4. Monitor and evaluate resident outcomes.
5. Hydration Management committee will provide oversight of Hydration Management Program with information provided by the interdisciplinary team.

Procedure:

A. **Hydration Assessment**
   1. The interdisciplinary team shall complete the hydration/nutrition assessment (see Section E for interdisciplinary team roles and responsibilities in detail):
      a. Upon admission
      b. Upon re-admission
      c. Quarterly
      d. Annually
      e. With a significant change in condition that may increase the resident's risk for dehydration (examples of conditions would include, but not be limited to UTI, vomiting, diarrhea, medications such as diuretics)
   2. Initiate a written plan of care within 24 hours of admission and update as necessary.
   3. Observe and monitor for signs and symptoms of dehydration as an initial assessment:
      a. Dry mucous membranes – cracked lips, furrowed tongue, sunken eyes, decreased salivation
      b. Decreased skin turgor – test on chest or forehead, gently gather skin between thumb and index finger and a tent-like appearance is noted that "holds" up to 30 seconds with decreased turgor and then the skin will slowly return to normal contour.
      c. Skin breakdown and increased frailty
      d. Weight loss see Appendix D Glossary of terms for definition of weight loss.
      e. Rapid pulse (normal heart rate is 60-100 beats per minute, an elevation* can indicate dehydration. **Greater than 20% of normal heart rate- particularly for residents on beta blockers*).
      f. Weakness
      g. Orthostatic blood pressure as defined by a 'drop' within 2-5 minutes of standing: systolic blood pressure 20 mm Hg and diastolic blood pressure 10 mm Hg (mayoclinic.org).
      h. Decrease in urine output (decrease in weight/amount of wet incontinence pads or less than 400 ml/day (Devarajan, et al or as defined by physician/medical director).
      i. Changes in neurological status –confusion, dizziness, altered mental status
      j. Constipation

   It is important that each of the common signs and symptoms be assessed independently to determine the diagnosis of dehydration. The clinician must take into account medications (beta blockers slow heart rate) and the "baseline normal" for the patient when performing their assessment.

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4. Monitor resident's hydration status based on dehydration risk assessment
5. Monitor resident's response and outcome to the plan of care and document
6. Develop interventions to address resident's hydration as needed
7. Encourage resident and family participation in the plan of care
8. Evaluate, document resident outcome and update care plan as needed

B. **Care Planning for Hydration Management**

Risk Reduction for Dehydration	The interdisciplinary team shall: 1. Provide fluids throughout the day and when awake at night 2. Ensure the resident receives a daily intake to meet their dietary goals 3. Ensure fluid intake with meals and at other times, i.e., medication administration, snack rounds, etc. 4. Offer a variety of fluids, make water readily available and offer fluids every few mouthfuls of food 5. Provide fresh water and cups at the nursing stations for visitors and staff to offer to residents throughout the day 6. Establish a minimum, standardized amount of fluids for each medication administration (or per physician orders) 7. Schedule additional fluid rounds and snack times 8. Schedule "happy hours" or "tea times" in the afternoon when residents gather for activities, etc. 9. Use assistive devices to encourage independence and activity 10. Provide fluids at the end of each meal 11. Minimize caffeinated drinks (as they have dehydrating effects) 12. Monitor for fluid loss during hot weather and offer additional fluids
Sick Day	The interdisciplinary team will: 1. Be notified by the nursing team of a resident's need for sick day hydration management 2. Monitor intake and provide comfort measures: • Offer 30-60 ml of fluid/hr when awake • Encourage a minimum of 1500 ml of free fluid/day • Offer hydrating fluids, i.e., Gatorade • Provide frequent oral care 3. Monitor and record output of residents with elevated body temperature, vomiting, diarrhea, or non-febrile infection • Urine output = < 30 ml/hr = high risk for dehydration as this can cause fluid imbalance • Urine output = <800 ml/day = dehydration 4. Complete hydration assessment and develop plan of care 5. Assess for delirium q shift, monitor for changes in mental, physical, and behavioral conditions and inform physician 6. Discuss temporary use of hypodermoclysis with resident and/or legal representative 7. Review medications 8. Document resident response to sick day hydration management and adjust care plan accordingly

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End of Life	The interdisciplinary team shall: 1. Discuss hydration and end-of-life with the resident, family or legal representative 2. Refer to ethics consultant as needed 3. Develop and review end-of-life care plan with resident and family based on resident choices and document outcome of discussion 4. Discuss options for hydration, enteral feedings, etc. 5. Provide oral care every 2 hours and prn 6. Provide fluids to promote comfort as tolerated 7. Discuss the use of medications to dry secretions Note: Recognize that in the last stages of life, palliative care clinicians have observed the following: • Dehydration does not produce discomfort • There is no evidence that IV hydration therapy prolongs life • Suctioning may cause discomfort and aspiration • Positioning may be used to promote fluid drainage Gastrointestinal tubes: • Used for short-term, time limited, reversible medical crisis only G-tubes should be inserted if: • Resident and family have discussed with the interdisciplinary team including the implications and risks associated with G tubes • Medical prognosis suggests a reversible outcome • Other alternatives have been discussed • Side effects have been explained (i.e., aspiration, pain, diarrhea, and skin excoriation)

C. **Documentation: The interdisciplinary team will:**

1. Document the initial assessment, monthly, quarterly, annually, and with significant change in resident condition:

Frequency	Documentation
Initial	• 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/RD including likes and dislikes and cultural preferences • Referrals and consultations initiated and the results • Develop a hydration management care plan • Evaluation of interdisciplinary interventions • Communication to the RD regarding effectiveness of interventions
Monthly (for residents with high nutritional/hydration risk	• Resident's response to interventions • Revisions to interventions and/or resolution of risk • Evaluate improvement or deterioration in resident's condition • Recommendations for further investigations and laboratory work (i.e., electrolytes, BUN, Creatinine)

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Quarterly and Annually (for residents with low to moderate nutritional/hydration risk	• Changes in vital signs, laboratory values and/or medications • Summary of interventions and resident response • Evaluate improvement or deterioration in resident condition • Additional testing/assessment being considered • Review and update care plan
Significant Change in Condition	• Review with interdisciplinary team, seek expert advice, investigate, follow up on care plan

D. Evaluating Effectiveness: The interdisciplinary team will:

Monitor For	Description
Expected outcomes of adequate hydration	• Urine color (monitor at the same time of day in order to make valid comparisons) • Maintenance of body hydration • Reduced risk of infection, especially urinary tract infections • Improvement in urinary continence • Reduced risk of constipation • Reduced risk of acute confusion
Other Follow-Up	• Response to rehydration and adjusted interventions • Continual monitoring for recurrence from underlying causes

E. Interdisciplinary Team:

Team Members	Roles and Responsibilities
Director of Nursing or Designee	• Seeks advice from experts to support team decisions. • Coordinates education processes relating to hydration management including hypodermoclysis. • 'Develop a system to flag residents on Hydration Management Program for members of the interdisciplinary team.

Nursing (RN and LPN)	• Conducts and documents a hydration assessment:
	  • Upon admission
	  • Re-admission
	  • Quarterly
	  • Change in condition
	  • Seasonal conditions that may increase risk of dehydration
	• Assesses and provides quality oral care
	• Plans and initiates hydration management
	• Updates resident-centered care plan
	• Initiates, communicates, and reviews the plan of care with the interdisciplinary care team to address individual resident hydration needs
	• Makes referral to interdisciplinary team members
	• Provides education to family/resident about dehydration and hydration management program
	• Monitors intake/output and weight
	• Monitors and evaluates the care plan; updates as necessary
	• Increase monitoring of residents at high risk for dehydration, e.g., those with history of dehydration or on thickened liquids.
	• Offer water with medications (per P&P).

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Personal Care/CNAs	• Measure and record resident height and weight on admission • Weigh and record resident's weight monthly (or as ordered) • Report resident's verbal and non-verbal behaviors indicating discomfort • Promote good oral hygiene per individual resident care plan • Provide and assist with meals and snacks per resident care plan • Document and report resident intake and output • Report observations of warning signs of dehydration. • If no contraindications, offer water/fluids each time in the resident's room and after toileting. • Ensure pitcher and cup are easily available to resident and are manageable by resident (pitcher should be light enough for resident to lift and cup/glass with handle if needed). • Record I&O per facility policy and resident care plan. • Offer and encourage variety of fluids and hydrating foods as per resident care plan for meals and snack (popsicles, pudding, smoothies, jell-o, milkshakes, etc.)
Occupational therapist (OT)/Physical therapist (PT)	• Evaluate and advise the interdisciplinary team on seating and assist devices to maximize independence and promote good intake • Educate resident, family, and staff on proper use of equipment/devices/aids • Monitor and document resident outcomes in the use of seating and assist devices
OT Assistant/PT Assistant/ Restorative Aide	• Carry out assigned treatments relating to seating and comfort • Monitor resident response and report response to OT/PT and interdisciplinary team
Registered Dietitian/Food Service Supervisor	• Complete a dietary profile upon admission • Complete a nutrition/hydration assessment upon admission • Recommend appropriate diet and supplements to attending physician • Recommends fluid and nutritional intake to maintain adequate hydration • Reassess resident's nutritional and hydration status including weights, on a quarterly basis (or as ordered) and with significant change in condition • Evaluates residents with new onset of illness or unstable health conditions • Provide annual educational sessions on nutrition and hydration • Perform dining observations to identify swallowing/chewing deficits • Refer to Speech Language Pathologist (SLP) as needed
Pharmacist	• Reviews and recommends changes to medications and supplements • Provides consultation services
Recreational Therapist/Activities	• Resident encouraged to participate in activity programs • Provide fluids during activity programs (per orders only) • Report verbal and non-verbal behaviors indicating discomfort • Report resident changes in condition or behavior to nurse
Physician	• Identify, implement and monitor medical interventions to address hydration, risks and management
Social Work	• Provide support to resident to address psychosocial needs • Counsel and support families as needed

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Chaplain/Clergy	• Provide support to resident's spiritual/cultural needs • Counsel and support families as needed
Family	• Encouraged to attend interdisciplinary care conference • Encourage to offer fluids per physician orders and resident preference • Support plan of care, work with staff and resident

References:

- American Medical Directors Association. (2001). Dehydration and fluid maintenance. Columbia, MD: American Medical Directors Association.
- Brown, J. B., Bedford, N. K., & White, S. J. (1999). Gerontological Protocols for Nurse Practitioners. Philadelphia: Lippincott.
- Brown, M. K. & Worobec, F. (2000). Hypodermoclysis another way to replace fluids. Nursing, 30(5), 58-59. Buttaro, T. M. Trybulski, J, Bailey, P., & Sandberg-Cook, J. (2003). Primary care: A Collaborative practice. 2 nd Ed. Mosby.
- Hamilton Long-Term Care Project. (2006). Prevention of Dehydration – Educational In-service.
- Mayhew, M. (2002). What should I know about using hypodermoclysis in geriatric patients? Medscape Nurse 4(1).
- Mentes, J. (2006). Oral hydration in older adults. Advanced Journal in Nursing (AJN), 106(6), 40-49.
- 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.
- Mentes, J. C. & Iowa-Veterans Affairs Research Consortium. (2000). Hydration management. Journal of Gerontological Nursing, 6-15.
- Ministry of Health and Long-Term Care. (2005). Standards: Nutrition and Hydration. Toronto, Canada: Ministry of Health and Long-Term Care.
- Ontario Association of Non-Profit Homes and Services for Seniors. (2005). A Resource Guide for Long Term Care Homes: Skin and Wound Care, Continence Care, Nutrition and Hydration. Woodbridge, Canada: Ontario Association of Non-Profit Homes and Services for Seniors.
- Toronto Homes for the Aged. (2004). Dehydration in the Elderly.
- Uphold, C., R., & Graham, M. V. (2003). Clinical Guidelines in Family Practice. (4th Ed.) Gainesville, FL: Barmarrae Books, Inc.
- Walsh, G. (2005). Hypodermoclysis: An alternate method for rehydration in long-term care. Journal of Infusion Nursing, 28(2), 123-129.
- Woodrow, P. (2002). Assessing fluid balance in older people: Fluid needs. Nursing Older People, 14(9), 31 32.
- Yap, L. K. P., Tan, S. H., & Koo, W. H. (2001). Hypodermoclysis or subcutaneous infusion revisited. Singapore Medical Journal 42(11), 526-529
- https://www.mayoclinic.org/diseases-conditions/orthostatic-hypotension/diagnosis-treatment/drc-20352553
- https://www.mayoclinic.org/healthy-lifestyle/fitness/expert-answers/heart-rate/faq-20057979#:~:text=A%20normal%20resting%20heart%20rate%20for%20adults%20ranges%20from%2060,to%2040%20beats%20per%20minute.
- Watso, J and Farquhar, W. (2019) Aug 11*8):1866 Nutrients Published online 2019 Aug 11. National Library of Medicine, National Center for Biotechnology Information
- Devarajan, P, Landman, C and more. Feb 28, 2022. Oliguria. MedScape.
- Retrieved on 11/16/2022 from https://emedicine.medscape.com/article/983156-overview#:~:text=Oliguria%20is%20defined%20as%20a,400%20mL%20daily%20in%20adults.
- https://www.medicoverhospitals.in/symptoms/low-urine-output

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Hydration Management Program Committee

Purpose:
Geriatric residents with multiple co-morbid conditions and medications are at a higher risk for dehydration and fluid imbalances. The Hydration Management Program as set out in the Hydration Management Policy and Procedures is designed to:

- Address needs of individual residents with respect to hydration and fluid balance management.
- Identify circumstances under which strategies and interventions are to be implemented to prevent and/or manage dehydration and fluid imbalances.
- Educate staff, residents, families, and/or legal representatives on hydration assessment and management.
- Monitor and evaluate outcomes of the Hydration Management Program.

The Hydration Management Program Committee oversees the overall function and outcomes of the Hydration Management Program and the effectiveness of specific hydration and fluid balance management interventions. The Hydration Management Program committee will, in its oversight of the program, promote open communication among stakeholders as well as monitor the outcome of the program using data derived from documentation by the interdisciplinary team. Additionally, the Committee will make recommendations for modifications and enhancement to the processes, policies, and procedures

Hydration Committee Members

Committee Membership	**Roles and Responsibility**
Medical Director	Oversee program and offer insight and direction
Director of Nursing or Designee	Coordinate educational process and implementation of program. Ensure that care plans are updated as a means of flagging all members of the interdisciplinary team.
Administrator (facility)	Implementation and monitoring of program
Dietary/Food Services Supervisor	Coordinate, evaluate and make recommendations on program and implementation (supplements, liquids)
Therapy department (OT,PT, SLP)	Make recommendations on program and assistive devices as needed, implementation of program
Activities/Recreation Director	Implementation of program and monitor adherence to program along with implementation
Ethics Committee Member	Consult on ethical and legal issues that arise related to the program and administration/implementation
Pharmacist or consultant/Designee	Supplement recommendation and medication considerations

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A. Information for Review
- Monthly, quarterly, annually, and ad hoc
  - Percent of residents with initial hydration assessment within 24 hours of admission, readmission or change in condition.
  - Percent of residents at risk for dehydration or fluid imbalance with hydration management care plan initiated.
  - Percent of resident at risk for dehydration or fluid imbalance with initiation of hydration management program that improved.
  - Percent of resident at risk for dehydration or fluid imbalance with hydration management plan initiated that deteriorated.
  - Percent of residents placed on sick day hydration management program and their status at completion of program.
  - Clysis implementation on residents and outcome of interventions.
  - G tube usage and frequency of short term limited, reversable medical conditions outcomes.
  - All referrals to Ethics Committee (in relationship to dehydration or fluid imbalance).
  - Evaluate the effectiveness of the educational programs (via documentation and observation)
  - Review when care plans were changed, and interventions were recommended for time to follow-through. (Time lapse between recommendation and follow-through)

B. Committee Reporting
- Findings are reported after each review and ad hoc reviews to the following:
  - Stakeholders as identified
  - Staff

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Hypodermoclysis (HDC) Competency Check List

Criteria	Met	Comments
Initiation of Infusion		
Obtain physician order to begin HDC		
Hand Hygiene		
Gather correct equipment		
Verify resident identity and explain procedure		
Correctly assemble supplies and prime tubing with attached needle		
Select appropriate site for HDC		
Perform Hand Hygiene; Don gloves		
Clean site per policy		
Correctly insert HDC needle		
Secure needle appropriately		
Begin infusion and regulate gravity rate		
Remove gloves; perform hand hygiene		
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		
Hand Hygiene		
Don gloves		
Remove dressing		
Pull needle straight out and apply pressure if needed		
Apply dressing		
Remove gloves; perform hand hygiene		
Documentation		
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 (more frequently as indicated)		
Document site rotations and indications		
Document discontinuation of therapy and indication		

Nurse signature: _____ Date: _____

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This policy and procedure is not intended to replace the informed judgment of individual physicians, nurses or other clinicians nor is it intended as a statement of prevailing community standards or minimum standards of practice. It is a suggested method and technique for achieving optimal health care, not a minimum standard below which residents necessarily would be placed at risk.

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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.

- ☐ 85 years
- ☐ Female
- ☐ BMI < 21 or >27 (BMI = weight (kg)/height (m)2

Significant Health Conditions/Situations

- ☐ Dementia/ + screen for cognitive impairment
- ☐ Depression/ + screen for depression
- ☐ CVA
- ☐ Diabetes
- ☐ Urinary Incontinence
- ☐ Major Psychiatric Disorders
- ☐ Vomiting
- ☐ NPO status
- ☐ Renal Disease
- ☐ Cardiac Arrhythmias
- ☐ Malnutrition
- ☐ History of dehydration
- ☐ History of repeated infections
- ☐ ≥ 4 chronic health conditions
- ☐ Fever
- ☐ Diarrhea

Medications

- ☐ > 4 medications
- ☐ Laxatives
- ☐ Steroids
- ☐ ACE inhibitors
- ☐ Diuretics
- ☐ Psychotropics: Antipsychotics
- ☐ Antidepressants, Anxiolytics

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Intake Behaviors

- ☐ Requires assistance to drink
- ☐ Has difficulty swallowing/choking
- ☐ Can drink independently but forgets
- ☐ Poor eater (eats < 50% of food)
- ☐ Receiving IV fluid therapy
- ☐ Drools
- ☐ Semi-dependent with feeding
- ☐ Fluid intake of < 1500 ml/day
- ☐ Spills
- ☐ Receives enteral feeding
- ☐ Holds food/fluid in mouth
- ☐ Spits out food/fluid

Laboratory indicators

- ☐ Urine specific gravity > 1.020
- ☐ Urine color dark yellow >4
- ☐ BUN/Creatinine > 20.1
- ☐ Serum sodium > 150 meq/L
- ☐ Serum osmolality > 300 mmol/Kg
- ☐ 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.

Mentes, J. C. & Iowa-Veterans Affairs Research Consortium. (2000). Hydration management. Journal of Gerontological Nursing, 6-15.

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

Resident Name: _____ Room: _____ Date: _____

Signs/Symptoms	Yes	No	N/A
Dry Skin			
Cracked lips (dry appearance to mucous membranes)			
Sunken Eyes			
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 (dark color, sediment present)			
Sweating			
Weakness			
Change in mental status			
Acute illness			
Dementia			
Depression			
Change in activities of daily living (ADL)			
25% of food or fluid not consumed at meals			
Nothing by mouth (NPO) status			
Weight Loss (see Appendix D Glossary of Terms for definitions)			
Decreased urine output (specify incontinence pad amount or ml/hr)			
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).

Reviewer: _____

Date: _____

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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 color	Dark yellow	Greenish brown
Amount of urine	800 – 1200 mL/day	<800 mL/day

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. Mentes, J. (2006). Oral hydration in older adults. AJN, 106(6), 40-48.

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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 meters (kg/m2)

$$BMI = \frac{\text{Weight (kg)}}{\text{Height (m) x Height (m)}}$$

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

a. 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. Gently gather skin between thumb and index finger and a tent-like appearance is noted that “holds” up to 30 seconds with decreased turgor and then the skin will slowly return to normal contour. Testing areas should be the forehead and/or chest in the elderly.

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

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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, i.e., daily, or weekly.

Decrease in Orthostatic Blood Pressure

A decrease of 20 mmHg in the systolic blood pressure within 2-5 minutes 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.

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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 is both sodium and water with greater losses of sodium than water, resulting in extracellular fluid loss. Causes include overuse of diuretics, chronic salt wasting renal disease, and decreased intake 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

SAMPLE

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