



COMMONWEALTH of VIRGINIA

DEPARTMENT OF BEHAVIORAL HEALTH AND DEVELOPMENTAL SERVICES

Post Office Box 1797
Richmond, Virginia 23218-1797

Nelson Smith
Commissioner

Telephone (804) 786-3921
Fax (804) 371-6638
www.dbhds.virginia.gov

Office of Integrated Health Health & Safety Alert/Information

Dehydration in Individuals with Intellectual and Developmental Disabilities Health & Safety Alert

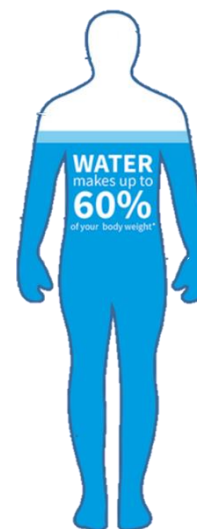
Introduction

The human body depends on water as a basic requirement for life. Without water the average person can only survive for a few days (42) (29) (30).

About 50 to 70% of the body's weight is made up of water (29). Every cell in the body requires water to function properly. Getting enough water every day is vital for good health and wellbeing.

Consuming adequate fluid:

- Helps keep the body's temperature within normal range (97.0-99.0).
- Lubricates and cushions joints.
- Protects and acts as a shock absorber for organs, muscles, tissues and bones.
- Rids the body of wastes through urination, perspiration, and bowel movements (35) (30).



Hydration is defined as the balance between the fluids an individual takes in and puts out during normal body functioning within a 24-hour period (30). An individual's intake and output are often referred to as their "I&O". The term "intake" refers to fluid taken into the body. The term "output" refers to the fluids that leave the body.

The recommended total daily intake for a specific individual refers to the total amount of liquids required to maintain balanced hydration within the body. An individual's recommended total daily fluid intake varies due to height, weight, age, gender, daily physical activity, environment, and kidney function (35). The U.S. National Academy of Medicine's (NAM's) daily guidelines for the *average* adult are:

- Men: 15.5 8-ounce cups (3.7 liters) of fluids.
- Women: 11.5 8-ounce cups (2.7 liters) of fluids (35).

An individual's daily fluid intake recommendations should be determined by their primary care provider (PCP) (29).

Foods High in Water Content

About 20% of an individual's daily fluid intake comes from consuming foods high in water content (29).

Broths, soups, stews, chili, smoothies, milkshakes, ice cream, popsicles, jello, applesauce, vegetables, seafood, beans, and fruits, all contribute to an individual's daily fluid intake total (13).



Dehydration

The body is constantly losing fluids through urination, defecation, breathing, sweating and other physical processes. When an individual does not replace the fluids at the same rate the body is losing fluids, dehydration can occur (29) (30). An individual does not have to be experiencing a sudden illness such as diarrhea or vomiting to become dehydrated.

An individual could become dehydrated over a period of days or weeks if they are experiencing what might seem like an unrelated health event. A toothache, a cold sore, dysphagia (difficult swallowing), hip surgery or even a broken arm, can all negatively impact the amount of fluids a person consumes, which can result in dehydration (11).

When too much water is lost from the body, the organs, cells, and tissues fail to function as they should, which can lead to dangerous complications. Depending on the amount of water lost from the body at any given time dehydration can range between mild, moderate or severe. If severe dehydration isn't corrected immediately, it will cause shock and lead to death (33) (18). You can usually reverse mild to moderate dehydration by drinking more fluids, but severe dehydration needs immediate medical treatment (22).

Signs and Symptoms of Mild or Moderate Dehydration in Adults

- Thirst.
- Dry or sticky mouth.
- Not urinating very much.
- Dark, yellow, concentrated or strong-smelling urine.
- Dry, cool skin.
- Headache.
- Muscle cramps (18).

Signs and Symptoms of Severe Dehydration in Adults

- Lack of urination, dark amber colored urine.
- Very dry skin.
- Feeling dizzy.
- Rapid heartbeat.
- Rapid breathing.
- Sunken eyes.
- Sleepiness, listlessness, lack of energy, confusion or irritability.
- Fainting.
- Severe headache.
- Shock (not enough blood flowing through the body).
- Loss of consciousness or delirium (18).

Diagnosing Dehydration

- There is no gold standard for diagnosing dehydration. Dehydration occurs when there is a loss of 1% or more of an individual's total fluid body weight (29) (30). If the PCP assessing the individual observes physical changes or symptoms of dehydration, they will order urine and blood tests to confirm the diagnosis. If the individual is dehydrated, urine and blood tests will be abnormal (22).

Causes of Dehydration

Failure to consume (orally, G-tube, etc.) enough water or fluids to replenish the fluids lost from the body, will result in dehydration. The body can lose large amounts of fluid from:

- Physical exercise.
- Fever (body temperature over 101 degrees).
- Vomiting.
- Diarrhea.
- Excessive urination.
- Prolonged sunlight exposure in hot weather.
- Taking certain types of medications (e.g. diuretics, blood pressure medications, antihistamines, migraine medications, etc.) (18).

Those At Highest Risk

- Infants.
- Elderly individuals.
- Individuals with intellectual or developmental disability.
- Individuals with chronic diseases (e.g. diabetes, heart disease).
- Individuals who are medically fragile.
- Individuals who are dependent on others to provide them with fluids (18).

Dehydration and Urine Color

Urine color and urine frequency is an easy and affective way to establish an individual's hydration level. In the picture below, the urine in the toilet farthest left is the most diluted, indicating the individual is well-hydrated. The urine in the toilet farthest right is the most concentrated, indicating the individual is dehydrated (1).

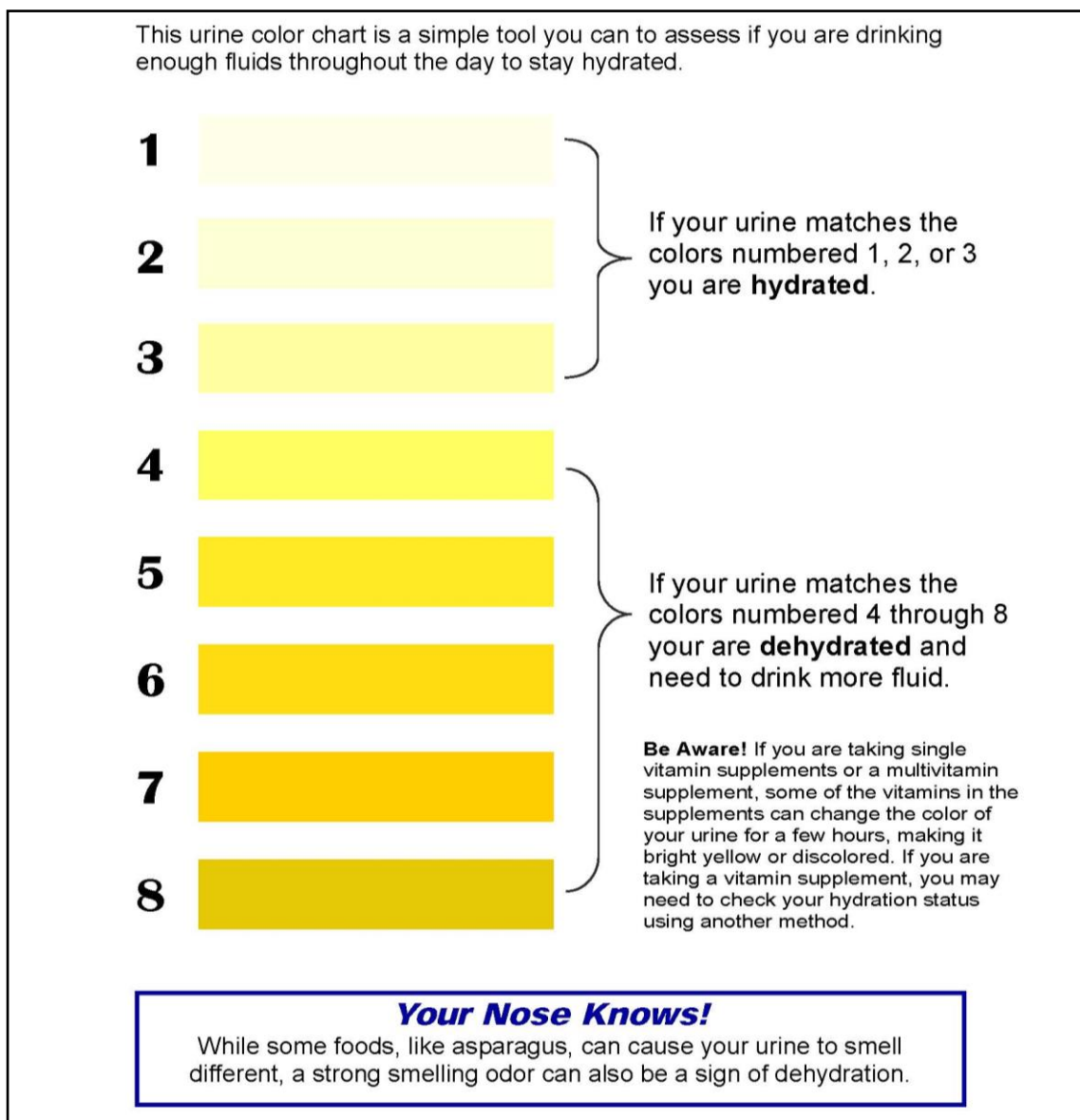


**DEPARTMENT OF
BEHAVIORAL HEALTH AND DEVELOPMENTAL
SERVICES**

Post Office Box 1797
Richmond, Virginia 23218-1797

The chart below, can help determine if an individual is well-hydrated or dehydrated. In addition to color, the more concentrated urine is, the stronger smelling the urine will be, and the less frequently an individual will void in a 24-hour period (1).

The color of urine, and the number of times an individual voids in a day are both strong indicators of hydration and dehydration. The lighter the urine, the more hydrated the individual is because the intake of fluids consumed has diluted the urine. The darker the urine, the more dehydrated the individual is because the intake of fluids consumed has concentrated the urine (1).



Check the color of the urine in the toilet, or in adult brief, if the individual is incontinent. If an individual's urine is concentrated, foul smelling and they are voiding less, you should encourage the individual to drink more fluids if possible and schedule an appointment with the individual's PCP as soon as possible. When scheduling the appointment make sure the scheduler knows the individual might be dehydrated due to their urine characteristics.

The PCP may direct you to bring the individual in immediately or instruct you to take the individual to the ER for diagnostic testing. **If the individual's urine is concentrated and he/she has any other symptoms of dehydration (headache, vomiting, diarrhea, listlessness, etc.), call 911 immediately.**

Individuals With Intellectual And Developmental Disabilities (IDD) Are At Higher Risk For Dehydration

Dehydration can happen to anyone. However, there are groups of people who are considered at much higher risk for dehydration than the general population (30).

Individuals with intellectual and developmental disabilities (IDD) are at higher risk for dehydration; and are at a much higher risk for serious complications due to dehydration than their peers in the general population (3) (4).

- Dehydration is a common problem for individuals with IDD and risk typically increases with the severity of their cognitive or physical disability and the advancement of their age (6) (34). Due to this, elderly and more severely disabled individuals may be at a much higher risk than those who are young adults who have a mild or moderate disability.
- Dehydration has been known to progress quickly among individuals with IDD, leading to many preventable deaths (36).
- Individuals with IDD often experience subtle, less obvious signs and symptoms of dehydration, that may be difficult for caregivers to detect, delaying both recognition and treatment (36).
- Individuals with IDD experience higher rates of swallowing difficulties such as dysphagia and choking, along with chronic digestive conditions, such as GERD, leading to loss of appetite, nausea, and vomiting, resulting in increased risk of dehydration (36) (2).
- Diet modifications for dysphagia may put individuals at even higher risk for dehydration (14). Individuals with orders for thickened liquids may refuse to drink them or may consume less than usual. Thickening agents can alter the flavor of

liquids slightly and can result in a sticky, coated feeling in the mouth or on the tongue.

- Individuals diagnosed with dysphagia (who are prescribed thickened fluids) are also dependent on caregivers to prepare all their beverages. Although necessary to reduce an individual's aspiration risk, this may also prevent individuals from independently retrieving and consuming a beverage independently when they are thirsty (6) (36).
- Individuals with IDD often have poorer overall oral health (missing teeth, jaw malformations, etc.) leading to difficulties with chewing and swallowing which increases the risk of both dehydration and malnutrition (6) (36).
- Due to cognitive issues which impact the understanding of abstract concepts such as thirst and hunger, an individual with IDD may have difficulty determining if they are hungry or thirsty and may then be unable to communicate their needs effectively to a caregiver (36).
- Non-ambulatory or physically impacted individuals, dependent on caregivers to retrieve beverages and put them in a container, are at increased risk for dehydration when fluids are not offered/supplied on a regular basis (36).
- Many medications prescribed to individuals with IDD who have chronic physical and mental health conditions have side effects which affect appetite, cause dry mouth, increase thirst, and cause constipation (36).
- Dehydration is directly connected to increased constipation and seizure activity among individuals with IDD (25) (3) (4).
- Individuals with poor grasp (for whatever reason) may have difficulty holding their cup or getting their cup or glass to their mouth so they can take a drink, which negatively impacts their ability to consume liquids (40).

Individuals with IDD who also have chronic medical conditions are at even higher risk for dehydration.

- A diagnosis of dysphagia (swallowing difficulties) is one of the most common reasons for dehydration (6). Swallowing is a complicated physical process involving many muscles. Swallowing can be especially difficult for individuals with physical and cognitive impairments and worsens with age. Fear of choking or strangling during the swallowing process discourages many individuals from both eating and drinking adequate amounts to maintain a balanced hydration level within the body. This further increases their risk of dehydration (31).

-
- Chronic diseases such as diabetes and kidney disease increase the risk for dehydration (22). Increased thirst and dry mouth, signs of mild dehydration, can often be the first indicators of diabetes (15).
 - Individuals with high blood sugar levels due to diabetes tend to urinate more often. The kidneys work overtime to process and reduce the sugar levels in the blood stream which can lead to dehydration or ketoacidosis (15). Ketoacidosis is a medical emergency situation which happens when an individual with diabetes has extremely high blood sugar levels for long periods of time. Signs and symptoms of ketoacidosis are extreme thirst and excessive urination which can cause an electrolyte balance in the body, which may result in severe dehydration. All individuals with diabetes should attempt to maintain normal blood sugar levels at all times through monitoring of fluid intake, eating a balanced diet, and getting regular exercise (15).

Aging further elevates dehydration risk.

- Dehydration in older adults is one of the most common reasons for hospitalization (27). As the body ages the thirst response decreases, fluid body weight is reduced, and kidney function declines. These factors, coupled with medication side effects, all lead to a higher occurrence of dehydration in the aging population (20) (27) (23).

Biological age versus chronological age

- Individuals with genetic syndromes *may age at a much faster rate than their normal peers*. A UCLA study revealed that the brain tissue from someone with Down syndrome appeared and functioned as if it was eleven years biologically older than the individual's actual chronological age (16).
Researchers believe other genetic syndromes may also accelerate an individual's biological age (21). If true, this could result in individuals with genetic syndromes being at a much higher risk for dehydration as early as their 30's, 40's and 50's.

Medication side effects can also further elevate dehydration risk.

Some common drugs which are known to increase the risk of dehydration are:

- Diuretics work by removing fluid and salt from the body through urination. Diuretics are prescribed for medical conditions such as hypertension, congestive heart failure, or edema. Some examples of diuretics are Lasix, Diuril, and Chlorothiazide (7) (43).
- Caffeine is also a diuretic which increases urination and thirst. Caffeine can be found in certain supplements and migraine medications such as Excedrin and

Fioricet, and popular beverages such as coffee, tea and soda. Consuming several medications, supplements, foods and drinks which contain caffeine can increase an individual's risk for dehydration (43).

- Laxatives provide temporary relief of constipation but can also put an individual at greater risk for dehydration. Generally, laxatives do not remove excessive fluid from the body when taken as prescribed. However, when taken in much higher dosages, they may cause diarrhea. Example of laxatives include Docusate and Dulcolax (7) (43).
- Anticholinergics are used to treat a wide variety of conditions such as asthma, chronic obstructive pulmonary disease (COPD), overactive bladder, irritable bowel syndrome (IBS), nasal congestion, and many others. Examples of anticholinergics are Atrovent, Ditropan, and Bentyl. Some side effects of anticholinergics which may lead to dehydration are sweating, nausea, loss of appetite, and vomiting (23).

Drugs and supplements: Antihistamine, decongestant, and anticholinergic combination (oral route): Side effects. <https://www.mayoclinic.org/drugs-supplements/antihistamine-decongestant-and-anticholinergic-combination-oral-route/side-effects/drg-20069979>

- Long-term use of blood pressure medications such as Lisinopril, Cozaar, and others can negatively affect the kidneys. ACE inhibitors and other blood pressure medications can lower the amount of water and salt the kidneys reabsorb back into the body and as a result, may elevate risk of dehydration (43).
- Lithium is used to treat individuals with bipolar disorder, but can cause increased urination in some individuals, leading to increased thirst and elevated dehydration risk (43).
- Antipsychotics medications commonly prescribed to individuals with IDD for mental health conditions such as schizophrenia, and bipolar disorder can also elevate risk of dehydration. Examples of antipsychotics are Haldol, and Risperdal among others (43). A common side effect of antipsychotics is dry mouth and excessive sweating (in some individuals).
- Neuroleptic malignant syndrome (NMS) is a rare but serious side effect which can also occur due to antipsychotics. As a result of NMS an individual may experience excessive drooling, sweating and urination, muscle stiffness, and mental confusion, making it difficult for the body to regulate temperature

increasing the risk for severe dehydration to occur (43). NMS *can suddenly occur when the medication is initially started* or can occur after an individual has taken the medication *with no side effects* for many years (10).

- If you think an individual is experiencing NMS, **call 911 or take the individual to the nearest ER and tell hospital staff that you think the individual is experiencing symptoms of Neuroleptic Malignant Syndrome and ask that the individual be evaluated immediately.**

Remember to advocate for the individual by stating the antipsychotic medication name, dose and frequency. Be sure to describe the symptoms you have observed, how the symptoms are different/changed from their normal baseline and the date the symptoms started. For more information on advocacy, please read the [OIH Healthcare Advocacy Health and Safety Alert](#).

- Chemotherapy medications such as Camptosar, Cytosan, and many others, target the rapid growth of cancer cells and also damage health cells in the body at the same time. Common side effects of chemotherapy include diarrhea, nausea and vomiting which leads to dehydration (7) (43).

Individuals with gastrostomy feeding tubes (G-Tubes) may be at increased risk for dehydration.

- Gastrostomy tubes are commonly used to increase calorie intake, improve hydration, increase weight gain, and improve quality of life for individuals with IDD. However, it can place individuals at risk for dehydration if prescribed fluid orders are not adjusted by the individual's PCP during times of illness (41).
- Hydration should be reviewed and adjusted by the individual's PCP if the individual is experiencing fever, an infection, wound healing, or a gastrointestinal upset. Contact the individual's PCP, (explain what the individual is experiencing as best as you can) and obtain updated orders.
- **If the individual's PCP cannot be reached, assessment in the ER may be required. The on-call PCP should be able to instruct you. If no one can be reached, err on the side of safety and take the individual to the ER immediately.**
- A hydration and/or nutrition protocol which includes instructions on what to do during times of illness can help to ensure individuals are receiving the recommended amount of liquids and calories ordered by their PCP at all times (27).

Mealtime supports can play a major role in lowering dehydration risk.

- Many individuals with IDD require mealtime support from caregivers to ensure proper nutrition and hydration (6). Mealtime supports can range from minimal supports such as observation and encouragement to full supports which may include modified or textured diets, or enteral feedings (G-tube, etc.) (6).
- When swallowing difficulties (dysphagia) are suspected a swallow-study conducted by a Speech language Pathologist (SLP) is best practice. The typical intervention is a modified diet which adjusts the individual's foods and fluids texture (6).
- Eating and drinking too slowly or quickly, over-stuffing of food into the mouth, food refusal, poor vision, poor oral health, and behavioral issues are some additional reasons an individual might require assistance during mealtime.
- The ability of caregivers to manage mealtime supports for risky behaviors (such as overstuffing the mouth) is critical to maintain their nutritional and hydration status (6).
- Poor hand grip, poor muscular strength and other physical limitations after surgery or extended illness can also negatively impact an individual's ability to eat and drink, which also elevates risk (40). Adaptive eating utensils, elbow supports, trunk supports, or special seating may be needed. Ask the individual's PCP for a referral to an Occupational Therapist or a Physical Therapist for an assessment.

Individuals who spend time outside in hot weather are at risk for dehydration.

- The skin's function and purpose is to sweat. The evaporation of sweat is what cools the body. When the outside air is hot and humid, sweat does not evaporate well, which negatively affects the body's ability to cool itself, resulting in a rise in the body's temperature. This is why individuals are at higher risk for a heat-related illness during hot and humid weather (5).
- Some individuals with genetic disorders or some type of brain injury or damage (e.g., cerebral palsy, traumatic brain injury, etc.) may also have damage to the area of their brain which regulates body temperature. Due to this, the individual may be at higher risk for dehydration. These individuals must rely on caregivers to recognize symptoms of dehydration or heat stroke, provide hydration and move them to a shaded, cooler or air-conditioned environment as quickly as possible (26).

Complications from Dehydration

Electrolyte imbalance

When an individual is dehydrated, their electrolytes (potassium, sodium, etc.) are out of balance as well. Electrolytes are minerals which must be evenly balanced for your body to function properly. Electrolyte imbalance occurs when the body's electrolyte levels (mineral levels) are too high or too low and can accelerate dehydration as the body struggles to balance itself. Severe electrolyte imbalances can cause an irregular heartbeat, seizures, coma, seizures, and even cardiac arrest (40) (38).

Increased seizure risk

Dehydration lowers the seizure threshold, which can result in an increased number of seizures, breakthrough seizures (even when the individual is taking seizure medication) and may even result in a first seizure for an individual. Individuals taking anti-seizure medication which typically controls or significantly reduces their seizures may suddenly have an increase in seizure activity (25).

As a general guideline, caregivers should **notify the individual's PCP immediately** if the individual suddenly has any seizure-related changes (intensity, type or frequency) because the individual may need to be evaluated for dehydration and/or electrolyte imbalances. However, if the individual has a signed PCP seizure-related protocol (orders) with instructions outlining steps you should take, you should always follow those orders first. **If any individual experiences a first seizure, you should call 911 immediately.**

Low blood volume shock (hypovolemic shock)

Hypovolemic shock occurs when there isn't enough fluid in the body for it to function properly. It is the most serious and life-threatening complication of dehydration and occurs when low blood volume causes a drop in blood pressure and results in a drop in the amount of oxygen throughout the body (38). Hypovolemic shock is a medical emergency which can cause damage to the body's major organs leading to organ failure and death (38). **Call 911 immediately if you think an individual is having symptoms of hypovolemic shock.**


Signs of hypovolemic shock are:

- Faster than normal breathing (tachypnea) (>18 breaths per minute, unless you have a PCP signed vital signs protocol (orders) indicating parameters which advise you otherwise).
- Confusion or anxiety.
- Sweating.

- Loss of consciousness
- Muscle weakness.
- Skin that feels cool to the touch.
- A lower-than-normal body temperature (<97.8, unless you have a PCP signed vital signs protocol (orders) indicating parameters which advise you otherwise).
- A lower-than-normal blood pressure (hypotension) (<90/60, unless you have a PCP signed vital signs protocol (orders) indicating parameters which advise you otherwise).
- A higher-than-normal heart rate or pulse (tachycardia) (>100, unless you have a PCP signed vital signs protocol (orders) indicating parameters which advise you otherwise) (8).

Please note: an individual's baseline (normal) vital signs will vary some from person to person and normal vital signs ranges may vary slightly due to differences among health experts and health agencies. If you are unsure if the chart you are using is accurate, please contact an OIH RNCC at: communitynursing@dbhds.virginia.gov for help and assistance.

Adult Vital Signs	
Normal vital signs vary based on your age, BMI, sex and overall health.	
Vital Sign	Adults
Temperature	97.8 F to 99.1 F (36.5 C to 37.3 C).
Blood pressure	90/60 mm Hg to 120/80 mm Hg.
Pulse	60 to 100 beats per minute.
Respiratory rate	12 to 18 breaths per minute.

 Cleveland Clinic

Caregiver Considerations

Awareness of health conditions, issues and factors which elevate dehydration risk can help caregivers be alert to those individuals at higher risk. Health changes which indicate dehydration might be suspected should be reported to the individual's PCP immediately. Dehydration is especially dangerous for individuals who are young children, older adults, medically fragile, and those with chronic diseases (e.g., diabetes, kidney disorders, seizures, etc.), and can become life-threatening *very quickly*.

A PCP may write and sign a protocol (order) for an intake/output record for those individuals with chronic dehydration and/or a history of hospitalization due to dehydration. The intake/output protocol may also include instructions for visualizing and documenting

the individual's urine either in the toilet or in their adult brief. If the individual is incontinent, the protocol may include instructions for counting or weighing incontinence briefs and/or counting the number of times an individual voids in a 24-hour period (39).

Caregivers should include all risk-lowering interventions and PCP ordered protocols into an individual's service plan (ISP) for those at higher risk for dehydration. If you think a protocol is needed, please discuss your concerns with members of the individual's Care Team (PCP, support coordinator, family, nurse, caregivers, etc.).

The challenge to caregivers.

The challenge with maintaining adequate hydration is getting individuals to drink more water or fluids. As previously discussed, there are many reasons why individuals may decrease their fluid intake.

The Mayo Clinic Health System (2023) offers the following suggestions to increase fluid intake: *(Individuals not on a fluid restrictive diet.)*

1. Encourage individuals to drink plenty of non-caffeinated fluids throughout the day.
2. Increase fluid intake when the weather is warm, hot and/or if individuals are physically exerting themselves.
3. Increase fluid intake if an individual is ill.

(If an individual is unable to eat or drink, seek help immediately.)

4. Add flavor to water - this may be in the form of flavor packets, a slice of cucumber, or a fruit wedge (lemon, lime, orange, grapefruit, etc.).
5. Make drinking a part of the daily schedule. Offer individuals an 8-ounce drink of water after every bathroom break and with medications.
6. Encourage more fruits and veggies: many fruits and vegetables have a high concentration of water.
7. Make fluid intake a game, use a wall chart to keep track of who can drink their recommended fluid intake for each day. People love a challenge! There could even be a small reward at the end of the day.
8. Encourage variety. We all enjoy choosing our favorite flavorful drinks. Alternating beverage choices with water helps individuals comply with a hydration plan.
9. Travel cups/bottles help keep hydration within reach. This also curbs the temptation of purchasing drinks such as soda when outside of the home.
10. Limit sun exposure when there is a higher risk for dehydration and heat stroke.

11. If an individual is on an outing in warm or hot weather, (in direct sunlight), schedule frequent hydration breaks in the shade or in air-conditioned buildings to lower the risk of dehydration.
12. Anyone with a fever, vomiting, or diarrhea should drink plenty of fluids and should not be outside in warm or hot weather.
13. **DO NOT** wait for signs of dehydration—be proactive! **If an individual is experiencing vomiting and diarrhea contact the individual’s PCP (primary care provider) immediately. Do this before the person becomes dehydrated or severely dehydrated.**
14. Recognition of symptoms which frequently lead to dehydration and/or the earliest signs of dehydration may prevent a trip to the ER or an extended hospitalization (Taghavi et al., 2023).
15. Severe dehydration always requires fluid replacement by IV solution. **If you think an individual may be experiencing severe hydration, call 911 immediately.**

Individuals with mild dehydration may only require drinking water to replace fluids lost. Sports drinks can help restore electrolytes like potassium and salt balance lost in sweat and/or from medical issues such as diarrhea or vomiting (19).

However, care should be taken regarding carbohydrate content for certain individuals in drinks containing sugars. The labels below serve as an example of how much sugar is contained in some sports drinks, although many now have a low or no sugar alternative.

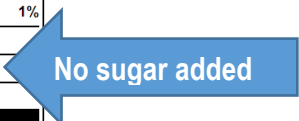
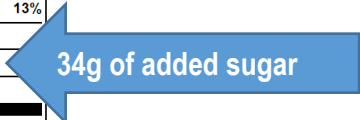
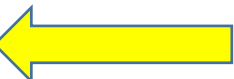
Notice the difference in calories!

Nutrition Facts	
1 serving per container	
Serving Size	20 fl oz (591 mL)
Amount Per Serving	
Calories	140
	<small>% Daily Value*</small>
Total Fat 0g	0%
Sodium 270mg	12%
Total Carbohydrate 36g	13%
Total Sugars 34g	
Includes 34g Added Sugars	
Protein 0g	
Potassium 80mg	0%
<small>Not a significant source of saturated fat, trans fat, cholesterol, dietary fiber, vitamin D, calcium, and iron.</small>	
<small>*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	

WATER, SUGAR, DEXTROSE, CITRIC ACID, SALT, SODIUM CITRATE, MONOPOTASSIUM PHOSPHATE, GUM ARABIC, GLYCEROL ESTER OF ROSIN, NATURAL FLAVOR, YELLOW 5

Nutrition Facts	
Serving Size	1 Bottle (591 mL)
Amount Per Serving	
Calories	5
	<small>% Daily Value*</small>
Total Fat 0g	0%
Sodium 270mg	12%
Total Carbohydrate 2g	1%
Total Sugars 0g	
Includes 0g Added Sugars	
Protein 0g	
Potassium 80mg	0%
<small>Not a significant source of saturated fat, trans fat, cholesterol, dietary fiber, vitamin D, calcium, and iron.</small>	
<small>*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	

WATER, CITRIC ACID, SODIUM CITRATE, SALT, MONOPOTASSIUM PHOSPHATE, MODIFIED FOOD STARCH, NATURAL FLAVOR, SUCRALOSE, GLYCEROL ESTER OF ROSIN, RED 40, ACESULFAME POTASSIUM, CARAMEL COLOR



Resources

- USDA Nutrition.gov - Water, Hydration and Health:
<https://www.nutrition.gov/topics/basic-nutrition/water-hydration-and-health>
- The American Heart Association: <https://www.nutrition.gov/topics/basic-nutrition/water-hydration-and-health>
- The Centers for Disease Control and Prevention: About Water and Healthier Drinks: <https://www.cdc.gov/healthy-weight-growth/water-healthy-drinks/index.html>
- Mayo Clinic information on urine color: <https://www.mayoclinic.org/diseases-conditions/urine-color/symptoms-causes/syc-20367333>
- Cleveland Clinic urine infographic: <https://health.clevelandclinic.org/what-the-color-of-your-urine-says-about-you-infographic/>
- Cleveland Clinic - Neuroleptic Malignant Syndrome:
<https://my.clevelandclinic.org/health/diseases/22703-neuroleptic-malignant-syndrome>
- Cleveland Clinic - Electrolyte Imbalance:
<https://my.clevelandclinic.org/health/symptoms/24019-electrolyte-imbalance>
- Cleveland Clinic - Hypovolemia:
<https://my.clevelandclinic.org/health/diseases/22963-hypovolemia>

References

1. [Adams, J.D., Giannis Arnaoutis, G., Johnson, E.C., Jansen, L.T., Bougatsas, D., Capitan-Jimenez, C., Mauromoustakos, A., Panagiotakos, D.B., Perrier, E.T., Guelinckx, I., & Kavouras, S.A. \(2021, January\). Combining urine color and void number to assess hydration in adults and children. *European Journal of Clinical Nutrition*, 75, 1262–1266.](#)
2. [Alex, A., Lindh, M. G. & Palmcrantz, S. \(2023, November\). Assessing eating and swallowing in adults born with intellectual and motor disabilities: Face and content validity of a Swedish translation of the Dysphagia Assessment Package. *Journal of Intellectual Disability Research*, 67\(11\), 1174–1189. Doi: 10.1111/jir.13067](#)
3. [Bailey, R. \(2017, February\). The fatal four: Major health issues that impact individuals with intellectual and developmental disabilities. *Relias Learning*.](#)
4. [Baker, J. \(2023, February\). Why is dehydration included in the Fatal Five? *Relias Learning*.](#)
5. [Baker, L. \(2019, June\). Physiology of sweat gland function: The roles of sweating and sweat composition in human health. *Temperature*, 6\(3\), 211–259.](#)
6. [Ball, S., Panter, S., Redley, M., Proctor, C., Byrne, K., Clare, I., & Holland, A. \(2012\). The extent and nature of need for mealtime support among adults with intellectual disabilities. *Journal of Intellectual Disability Research*, 56\(4\), 382-401. Doi: 10.1111/j.1365-2788.2011.01488.x](#)
7. [Bonvissuto, D. and Robinson, J. \(2022, September\). What medicines can cause dehydration? *WebMD*.](#)

**DEPARTMENT OF
BEHAVIORAL HEALTH AND DEVELOPMENTAL
SERVICES**

Post Office Box 1797
Richmond, Virginia 23218-1797

8. [Cleveland Clinic \(2020\). Body temperature: What is \(and isn't\) normal?](#)
9. [Cleveland Clinic \(2021, November\). What the color of your pee says about you color, density, and smell can reveal health problems. *Health Essentials*.](#)
10. [Cleveland Clinic \(2022\). Neuroleptic Malignant Syndrome.](#)
11. [Ekman, L., Johnson, P., & Hahn, R.G. \(2020, July\). Signs of dehydration after hip fracture surgery: An observational descriptive study. *Medicina*, 56\(361\), 2-11. doi:10.3390/medicina56070361](#)
12. [Gibson-Moore, H. \(2013, January\). Hydration and health. *British Nutrition Foundation Nutrition Bulletin*, 39, 4–8.](#)
13. [Gold, B. & Reeves, M. \(2024, May\). 28 hydrating foods to increase your daily water intake. *Real Simple* \[Internet\].](#)
14. [Hansen, T., Beck, A. M., Kjaersgaard, A., & Poulsen, I. \(2022\). Second update of a systematic review and evidence-based recommendations on texture modified foods and thickened liquids for adults \(above 17 years\) with oropharyngeal dysphagia. *Clinical Nutrition ESPEN*, 49, 551–555.](#)
15. [Higuera, V., Szilagyi, C., Wood, K., & Des Baux, E.L. \(2024, March\). What to know about diabetes and dehydration. *Healthline*.](#)
16. [Horvath, S., Garagnani, P., Bacalini, M. G., Pirazzini, C., Salvioli, S., Gentilini, D., ... & Franceschi, C. \(2015\). Accelerated epigenetic aging in Down syndrome. *Aging cell*, 14\(3\), 491-495.](#)
17. [Kahn, A., Sharon, A. & Cynthia Taylor Chavoustie, C.T. \(2019, September\). What you need to know about dehydration. *Healthline*.](#)
18. [Kaneshiro, N.K. and Dugdale, D.C. \(2023, August\). Dehydration. *Medline Plus, National Library of Medicine \(NIH\)*.](#)
19. [Johns Hopkins \(2020\). Dehydration and Heat Stroke.](#)
20. [Lešnik, A., Piko, N., Železnik, D., & Bevc, S. \(2017, September\). Dehydration of older patients in institutional care and the home environment. *SLACK Incorporated*, 260-266. doi:10.3928/19404921-20171013-03](#)
21. [Mangaonkar, A. A., & Patnaik, M. M. \(2018, July\). Short telomere syndromes in clinical practice: bridging bench and bedside. In *Mayo Clinic Proceedings* \(Vol. 93, No. 7, pp. 904-916\). Elsevier.](#)
[Cleveland Clinic \(2023\). Vital signs \[image\].](#)
22. [Mayo Clinic \[Internet\]. \(2021, October\). Dehydration.](#)
23. [Mayo Clinic \[Internet\]. \(2023, January\). Urine color.](#)
24. [Medline Plus \[Internet\]. \(2023, December\). Dehydration. *U.S. National Library of Medicine*.](#)
25. [Nardone, R., Brigo, F., & Trinko, E. \(2016, December\). Acute symptomatic seizures caused by electrolyte disturbances. *Journal of Clinical Neurology*, 12\(1\), 21-33.](#)
26. [Osilla, E., & Sharma, S. \(2019\). *Physiology temperature regulation*.](#)
27. [Parris, C., McCray, S., & Copland, A. \(2019\). Part IV enteral feeding: Hydrating the enterally-fed patient. It isn't rocket science. *Practical Gastroenterology* 186, 12- 28.](#)
28. [Pruthi, S. \(2021, October\). Diseases & conditions: Dehydration - Signs and symptoms. *Mayo Clinic, Mayo Foundation for Medical Education and Research \(MFMER\)*, 1-10.](#)
29. [Pruthi, S. \(2022, October\). Nutrition and healthy eating: Water-how much should you drink every day? *Mayo Clinic \[Internet\]*.](#)
30. [Rebelo-Marques, A., Coelho-Ribeiro, B., De Sousa Lages, A., Andrade, R., Afonso, J., Pereira, R., Ana Sofia Batista, A.S., Teixeira, V.H. & Jácome, C. \(2024, May\). Trends and missing links in \(de\)hydration research: A narrative review. *Nutrients*, 16\(1709\), 1-24.](#)

**DEPARTMENT OF
BEHAVIORAL HEALTH AND DEVELOPMENTAL
SERVICES**

Post Office Box 1797
Richmond, Virginia 23218-1797

31. [Reber, E., Gomes, F., Dahn, I., Vasiloglou, M., & Stanga, Z. \(2019\). Management of dehydration in patients suffering swallowing difficulties. *J. Clin. Med*, 8 \(1923\). Doi: 10.3390/jcm8111923](#)
32. [Reiland, L., \(2023, August\). Tips for drinking more water. *Mayo Clinic Health System*. 1-2.](#)
33. [Rolands, J. \(2019, November\). Severe Dehydration: Symptoms, Causes & Treatment. *Healthline*.](#)
34. [Rosen, N. \(2020, October\). Treating dehydration in people with special needs. *Dispatch Health*.](#)
35. [Seal, A.D., Colburn, A.T., Johnson, E.C., Péronnet, F., Jansen, L.T., Adams, J. D., Bardis, C.N., Guelinckx, I., Perrier, E.T., & Kavouras, S.A. \(2022, August\). Total water intake guidelines are sufficient for optimal hydration in United States adults. *European Journal of Nutrition*, 62, 221–226](#)
36. [Smith, M.A. and Escude, C.L. \(2016, February\). Intellectual and developmental disabilities. *The Clinical Advisor*, 49-59.](#)
37. [Sparks, D. \(2016, September\). Dehydration can lead to serious complications. *Mayo Clinic News Network*, 1-3.](#)
38. [Taghavi, S., Nassar, A.K., & Askari, R. \(2023, June\). Hypovolemic shock. *StatPearls \[Internet\]*.](#)
39. [Taylor, K. and Jones, E.B. \(2022, October\). Adult dehydration. *StatPearls \[Internet\]*.](#)
40. [Touhy, T. \(2015, p. 193\). Risk Factors for Dehydration. In Ebersole & Hess' Toward Healthy Aging-E-Book: Ebersole & Hess' Toward Healthy Aging-E-Book, 193.](#)
41. [Vudayagiri, L., Hoilat, G.J. & Gemma, R. \(2023, August\). Percutaneous endoscopic gastrostomy tube. *StatPearls \[Internet\]*.](#)
42. [Veilleux, J.C., Caldwell, A.R., Johnson, E.C., Kavouras, S., Brendon P. McDermott, B.P., & Ganio, M.S. \(2019, April\). Examining the links between hydration knowledge, attitudes and behavior. *European Journal of Nutrition*, 59, 991–1000.](#)
43. [Williams, N. and Aungst, C. \(2023, November\). Medications that cause dehydration: 9 drugs that may leave you feeling thirsty. *Good Rx Health*.](#)

To the best of the OIHSN Nursing Team's knowledge the information contained within this alert is current and accurate. If the reader discovers any broken or inactive hyperlinks, typographical errors, or out-of-date content please send an email to communitynursing@dbhds.virginia.gov to include the title of the Health & Safety alert with specifics details of concern.

Dehydration Quiz/Evaluation

Name: _____ Date: _____

Email Address: _____

Quiz:

1. What percentage of the body's weight is made up of water?
 - a. Between 25 to 35%.
 - b. Between 50 to 70%.
 - c. Between 75 to 100%.
 - d. None of the body's weight is made up of water.
2. Consuming adequate amounts of water helps the body to...
 - a. Maintain a temperature within normal range.
 - b. Lubricate and cushion joints.
 - c. Protect and act as a shock absorber for organs, muscles, tissues and bones.
 - d. Eliminate wastes through urination, perspiration, and bowel movement.
 - e. All of the above.
3. The balance between the fluids an individual takes in and puts out during normal body functioning within a 24-hour period is referred to as?
 - a. Input and Output, or "I&O".
 - b. Culture and Sensitivity, or "C&S".
 - c. Fluid body weight.
 - d. 24-hour urine.
4. An individual's recommended total daily fluid intake varies based on...
 - a. Age.
 - b. Kidney function.
 - c. Weight.
 - d. Activity level
 - e. Environment.
 - f. Height.
 - g. Gender.
 - h. All of the above.
5. Dehydration is defined as...
 - a. The loss of 1% or more of the body's fluid weight.
 - b. The increase of 1% or more of the body's fluid weight.
 - c. The loss of 10% or more of the body's fluid weight.
 - d. None of the above.
6. The body loses fluid through...
 - a. Breathing.
 - b. Urinating.
 - c. Sweating.
 - d. Defecating.
 - e. Menstruating.
 - f. All of the above.
7. Signs and symptoms of severe dehydration are...
 - a. Dark amber colored urine.
 - b. Dizziness.
 - c. Rapid heartbeat.
 - d. Rapid breathing.
 - e. Sunken eyes.
 - f. Fainting.
 - g. Loss of consciousness or delirium.
 - h. All of the above.

Dehydration Quiz/Evaluation

Name: _____ Date: _____

Email Address: _____

8. Urine color, smell and number of voids in a day is an easy way to tell if a person is...
 - a. Hungry.
 - b. Happy.
 - c. Hydrated.
 - d. Hysterical.
9. People at highest risk for dehydration are...
 - a. Infants.
 - b. Elderly.
 - c. Intellectual and developmentally disabled.
 - d. All of the above
10. Which factors put individuals with IDD at even higher risk for dehydration?
 - a. Swallowing difficulties (Dysphagia).
 - b. Immobility or decreased mobility.
 - c. Inability to communicate using words.
 - d. All of the above.
11. Which medications increase dehydration risk?
 - a. Diuretics.
 - b. Anticholinergics
 - c. Antipsychotics.
 - d. All of the above.
12. What are the signs and symptoms of hypovolemic shock?
 - a. Very fast breathing.
 - b. Lower than normal blood pressure and temperature.
 - c. Higher than normal heart rate or pulse.
 - d. All of the above
13. How can caregivers help individuals to consume more water?
 - a. Add flavorings to water.
 - b. Include drinking breaks as part of the daily schedule.
 - c. Offer more fruits and vegetables, especially those higher in water content.
 - d. All of the above.
14. Sports drinks...
 - a. Can replace electrolytes.
 - b. May contain extra added sugars.
 - c. Can rehydrate *mildly* dehydrated individuals.
 - d. All of the above.
15. Severe dehydration or hypovolemic shock...
 - a. Is a medical emergency.
 - b. Requires IV fluids to correct.
 - c. Can lead to death if not corrected quickly.
 - d. All of the above.

Evaluation:

1. Was the information presented in this Health & Safety Alert helpful?
 - a. Yes
 - b. No
2. Will you use this Health & Safety Alert information to train other staff?
 - a. Yes
 - b. No
3. What topic(s) would you like to have presented in a Health & Safety Alert for CNE's?

Dehydration Quiz/Evaluation

Name: _____ Date: _____

Email Address: _____

Quiz:

1. What percentage of the body's weight is made up of water?
 - a. Between 25 to 35%.
 - b. Between 50 to 70%.**
 - c. Between 75 to 100%.
 - d. None of the body's weight is made up of water.
2. Consuming adequate amounts of water helps the body to...
 - a. Maintain a temperature within normal range.
 - b. Lubricate and cushion joints.
 - c. Protect and act as a shock absorber for organs, muscles, tissues and bones.
 - d. Eliminate wastes through urination, perspiration, and bowel movement.
 - e. All of the above.**
3. The balance between the fluids an individual takes in and puts out during normal body functioning within a 24-hour period is referred to as?
 - a. Input and Output, or "I&O".**
 - b. Culture and Sensitivity, or "C&S".
 - c. Fluid body weight.
 - d. 24-hour urine.
4. An individual's recommended total daily fluid intake varies based on...
 - a. Age.
 - b. Kidney function.
 - c. Weight.
 - d. Activity level
 - e. Environment.
 - f. Height.
 - g. Gender.
 - h. All of the above.**
5. Dehydration is defined as...
 - a. The loss of 1% or more of the body's fluid weight.**
 - b. The increase of 1% or more of the body's fluid weight.
 - c. The loss of 10% or more of the body's fluid weight.
 - d. None of the above.
6. The body loses fluid through...
 - a. Breathing.
 - b. Urinating.
 - c. Sweating.
 - d. Defecating.
 - e. Menstruating.
 - f. All of the above.**
7. Signs and symptoms of severe dehydration are...
 - a. Dark amber colored urine.
 - b. Dizziness.
 - c. Rapid heartbeat.
 - d. Rapid breathing.
 - e. Sunken eyes.
 - f. Fainting.
 - g. Loss of consciousness or delirium.
 - h. All of the above.**

Dehydration Quiz/Evaluation

Name: _____ Date: _____

Email Address: _____

8. Urine color, smell and number of voids in a day is an easy way to tell if a person is...
 - a. Hungry.
 - b. Happy.
 - c. Hydrated.
 - d. Hysterical.
9. People at highest risk for dehydration are...
 - a. Infants.
 - b. Elderly.
 - c. Intellectual and developmentally disabled.
 - d. All of the above
10. Which factors put individuals with IDD at even higher risk for dehydration?
 - a. Swallowing difficulties (Dysphagia).
 - b. Immobility or decreased mobility.
 - c. Inability to communicate using words.
 - d. All of the above.
11. Which medications increase dehydration risk?
 - a. Diuretics.
 - b. Anticholinergics
 - c. Antipsychotics.
 - d. All of the above.
12. What are the signs and symptoms of hypovolemic shock?
 - a. Very fast breathing.
 - b. Lower than normal blood pressure and temperature.
 - c. Higher than normal heart rate or pulse.
 - d. All of the above.
13. How can caregivers help individuals to consume more water?
 - a. Add flavorings to water.
 - b. Include drinking breaks as part of the daily schedule.
 - c. Offer more fruits and vegetables, especially those higher in water content.
 - d. All of the above.
14. Sports drinks...
 - a. Can replace electrolytes.
 - b. May contain extra added sugars.
 - c. Can rehydrate *mildly* dehydrated individuals.
 - d. All of the above.
15. Severe dehydration or hypovolemic shock...
 - a. Is a medical emergency.
 - b. Requires IV fluids to correct.
 - c. Can lead to death if not corrected quickly.
 - d. All of the above.

Evaluation:

1. Was the information presented in this Health & Safety Alert helpful?
 - a. Yes
 - b. No
2. Will you use this Health & Safety Alert information to train other staff?
 - a. Yes
 - b. No
3. What topic(s) would you like to have presented in a Health & Safety Alert for CNE's?
