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ELDER CARE

A Resource for Interprofessional Providers

Recognizing Dehydration in Older Adults

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Dehydration in older adults is common. Two national studies, the National Health and Nutrition Examination Survey (NHANES III) and the Established Populations for Epidemiological Studies of the Elderly (EPESE), estimated that 40% of community-dwelling older adults were under-hydrated, and 20% met the threshold for dehydration as measured by plasma osmolality.

The Agency for Healthcare Research and Quality (AHRQ) has identified dehydration as an “ambulatory sensitive health condition” (a condition for which good outpatient care can potentially avoid the need for hospitalization). There are, however, no definitive tests to detect dehydration. Furthermore, fluid requirements can vary considerably between individuals based on health status, activity levels, and ambient temperatures.

Risk Factors

Older adults are at risk for dehydration because of age-related changes in body composition, higher likelihood of chronic illness, use of medications that affect fluid status, and a diminished capacity of the kidneys to preserve water and electrolytes. Others at higher risk are those from ethnic/racial minority groups, and individuals with marginal housing and homeless elders who have limited access to fluids. Perhaps most importantly, however, thirst perception is decreased with aging, and older adults may not appreciate that they are dehydrated until they become dizzy and fall or suffer medical side effects.

Hydration Habits

Daily hydration habits are also involved. Studies of older adults in the US and Europe show that, on average, fluid intake decreases with every decade of age over 60 years. Reasons for this include decreased levels of activity and declining thirst perception.

In addition, individual hydration habits vary. A typology of hydration habits was developed that applies to both community-dwelling and institutionalized older adults (Table 1). It shows that some individuals “can drink” but don’t drink,

while others “can’t drink” and still others “won’t drink.” Those who “won’t drink” are at highest risk for dehydration. They include, in particular, individuals who won’t drink because they fear incontinence. Women are overwhelmingly in this group, but men with prostatic hypertrophy may also limit fluids.

Can Drink	Doesn't know how much to drink
	Forgets to drink
Can't Drink	Physically unable
	Dysphagic
Won't Drink	“Sipper” only drinks small amounts
	Fears Incontinence

Clinical Signs and Symptoms

Older adults with severe dehydration may present with syncope, near-syncope, or even delirium, and they may have classic signs such as orthostatic hypotension. But, the clinical signs and lab tests traditionally used to determine hydration status are not always accurate in older adults. Specifically, age-related changes, functional changes, and medications can interfere with these clinical signs and tests. For example, because of age-related skin changes, examining skin turgor may not adequately detect dehydration. Traditional blood tests that are diagnostic in younger persons, such as BUN-to-creatinine ratio, may not be a good indicator of dehydration because of the reduction in muscle mass that often occurs in older adults.

In a meta-analysis of clinical signs, symptoms, and tests, only 3 indicators were adequately sensitive and specific for detecting dehydration. These were: expressing fatigue (sensitivity .71, specificity .75); missing drinks between meals (sensitivity 1.00, specificity .77); and bioimpedance analysis (BIA). BIA, measured with a portable device, detects impedance (resistance) to the flow of electrical current through the body. It increases with dehydration. A BIA >50 kHz has a sensitivity of .71-1.00 and specificity of .80-1.00 for detecting dehydration.

TIPS FOR DEALING WITH DEHYDRATION IN OLDER ADULTS

- Be aware that inadequate fluid intake is a common problem, affecting as many as 40% of older adults.
- Keep in mind that some older adults will reduce their fluid consumption, and thus risk dehydration, in an attempt to reduce episodes of urinary incontinence. In evaluating older adults’ fluid intake, it is important to ask about whether they experience incontinence and address the problem if present.
- Work with older adults (and their caregivers when appropriate) to assure that fluid consumption is adequate. Any non-alcoholic, non-caffeine liquid is acceptable. Foods with high water content are also desirable.

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It is important to keep in mind that the aforementioned parameters are single measurements, and that serial measurements may be more predictive, although more costly and difficult to capture.

Salivary osmolality has also been proposed as another, more easily obtained specimen that has shown some ability to detect both water-loss and water-and-solute-loss dehydration in older adults who present to the emergency department or who have been admitted to an acute care setting. However, as of yet there are no clear reference values available for salivary osmolality.

Interventions

Clinicians can ask patients about their hydration habits to better understand if they are at risk for dehydration. To adequately hydrate, however, it is necessary to consider how much, how often, what type of fluid needs to be consumed.

How Much. Current recommendations are that older adults (and their caregivers if applicable) determine the daily fluid goal needed to prevent a dehydration event. A nomogram has been developed that allows determination of daily fluid requirements for nursing home residents based on height and weight. It can be viewed at www.researchgate.net/figure/Nomogram-for-calculation-of-standard-water-Note-Developed-by-Phyllis-Meyer-Gaspar-PhD_fig2_51028896. Older adults and their families/caregivers should also be educated to increase fluid intake when there is an increase in an older individual's level of activity and during hot weather.

How Often. It is better to consume smaller amounts of fluid throughout the day, rather than large amounts all at once. This can avoid exacerbation of health problems such as heart failure, renal insufficiency, or urinary incontinence.

What Type. Although water or other non-sweetened drinks are the preferred liquids, temperature and flavor can be adjusted to encourage intake. For example, chilled water may be preferred by some, while warm water is preferred by others. Fresh fruit can be added to flavor the water. All non-alcoholic beverages count towards the daily fluid goal. In addition, since 20-25% of fluid comes from food, consuming foods high in fluid content should be encouraged (Table 2). Liquids with high caffeine content should be avoided because of caffeine's diuretic effect.

Addressing Barriers

Assessing for "bathroom barriers" such as fear of urinary incontinence is important. As mentioned, individuals with incontinence may avoid drinking to reduce incontinence episodes, but this risks inducing dehydration. Many older persons do not reveal to clinicians that they are experiencing incontinence. Thus, it is important to explicitly ask patients whether incontinence is a concern and institute appropriate treatment. When necessary, referral to a urogynecologist or physical therapist can be helpful.

For persons with chronically low fluid intake, suggesting a reminder system on a smart phone or computer can be helpful. Another useful strategy is to use bottled water or a cup of known volume so that the amount consumed can be tracked. Engaging family members and caregivers, and educating them to help with hydration, is also useful.

Food	Examples/Comments
Fruits	Melons, berries, peaches, grapes, mangoes
Vegetables	Lettuce, tomatoes, celery, cucumbers, squashes
Soups	Broth-based are preferred/watch the salt content
Popsicles/ices	Fruit juice-based/watch sugar content

References and Resources

- Fortes MB, et al. Is this elderly patient dehydrated? Diagnostic accuracy of hydration assessment using physical signs, urine, and saliva markers. *J Am Med Dir Assoc.* 2015;16:221-228.
- Gaspar PM. Comparison of four standards for determining adequate water intake of nursing home residents. *Res Theory Nurs Pract.* 2011; 25:11-22.
- Hooper L, et al. Clinical symptoms, signs and tests for identification of impending and current water loss dehydration in older adults. *Cochrane Database Syst Rev.* 2015; CD009647.
- Mentes, J. A typology of oral hydration problems exhibited by nursing home residents. *J Gerontol Nurs* 2006;32:213-21.
- Stokey, JD. High prevalence of plasma hypertonicity among community dwelling older adults: results from NHANES III. *J Am Diet Assoc.* 2005; 105:1231-1239.
- Stokey, JD, et al. Is the prevalence of dehydration among community-dwelling older adults really low? Informing current debate over fluid requirements for adults aged 70+ years. *Public Health Nutr.* 2005;18:275-1285.

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