

# ASSESSING FLUID REQUIREMENTS: A HEALTH PROFESSIONAL'S REFERENCE SHEET

**T**here are many tools and guidelines available to determine energy and macronutrient needs. However, few guidelines have been established in order to assess fluid status and calculate recommendations for optimal fluid guidelines for healthy individuals, as well as those with medical conditions.

Numerous factors can impact fluid needs, including age (since children and the elderly are at increased risk for dehydration), physical activity, caloric intake, body composition and health

status. Environmental factors, such as ambient temperature, humidity, altitude and indoor heat, can also affect hydration status. Therefore, when assessing fluid requirements, it's important to take all of these elements into consideration.

Use these evidence-based tools to help you assess fluid status and make appropriate fluid recommendations. Use with other available data, such as laboratory values and physical assessment.



## CALORIE-BASED FORMULA

- 1mL/Calorie

If estimated energy requirements are calculated using predictive equations or calorimetry, this formula can be used as a reliable method for developing fluid recommendations in a clinical setting. In fact, the main clinical nutrition standard for enteral and parenteral nutrition is 1mL per calorie.<sup>1</sup> However, for the general population, this formula may underestimate fluid needs among active individuals or those living in hot or humid environments. Exercise increases fluid requirements by up to 2 liters per hour.<sup>2</sup> And, like exercise, heat and humidity also require additional fluids to avoid dehydration.



## 10 Signs and Symptoms of Dehydration

- Increased thirst
- Infrequent urination and low urine output
- Deep yellow or amber color urine
- Dry mouth, skin and nasal passages
- Lack of tears or dry eyes
- Increased heart rate
- Fever
- Lack of skin elasticity
- Tiredness
- Confusion



## BODY WEIGHT-BASED FORMULA

- 30-35 mL/Kg Body Weight (Adults >30 Years Old)
- 40-60mL/Kg (Adolescents)
- 35-40 mL/Kg (16-30 Years Old)

Fluid needs are often calculated on a per body weight basis, with an adult baseline of 30-35mL/Kg.<sup>3</sup> This recommendation is adjusted up or down based on specific medical conditions, such as heart failure, liver or kidney disease, as well as if a patient is taking certain medications. (Refer to a clinical nutrition manual for specific disease-related mL/Kg recommendations.)

One study of elderly subjects revealed that this assessment method may underestimate fluid requirements in those who are underweight and overestimate fluid needs for those who are obese.<sup>4</sup> Infants, children and adolescents have higher mL/Kg requirements, so if working with these populations, refer to a clinical nutrition manual for further recommendations.



## POPULATION-BASED ESTIMATES

- Nine 8-ounce Servings Per Day for Women
- Thirteen 8-ounce Servings Per Day for Men

Based on national food and beverage intake surveys, the National Academy of Medicine (NAM) set Adequate Intake (AI) values for total water from all beverages based on median intakes of a national sample of adults. Because roughly 20% of total water is derived from food, the guidelines provided have been adjusted to reflect fluid intake only. For women, the guideline is approximately **nine** 8-ounce servings (2.2 liters) of fluids per day, and for men, the goal is roughly **thirteen** 8-ounce servings (3 liters) per day for men.<sup>5</sup> All beverages, including coffee, tea, fruit juices, dairy and alcohol count toward daily fluid requirements. Use the [NAM guidelines](#) for more specifics about fluid requirements.

1.Popkin BM, D'Anci KE, Rosenberg IH. Water, Hydration and Health. Nutrition Reviews. 2010;68(8):439-458. 2.American College of Sports Medicine; American Dietetic Association; Dietitians of Canada. Joint Position Statement: nutrition and athletic performance. American College of Sports Medicine, American Dietetic Association, and Dietitians of Canada. Med Sci Sports Exerc. 2000 Dec;32(12):2130-45. 3.Sucher K, Nelms M, Roth et al. Nutrition Therapy and Pathophysiology, Third Edition. Boston, MA: Cengage Learning; 2016. 4.Chidester JC, Spangler AA. Fluid intake in the institutionalized elderly. J Am Diet Assoc. 1997 Jan;97(1):23-8; 29-30. 5.Institute of Medicine. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. Washington, D.C.: National Academies Press; 2004.