

THE SCIENCE OF HYDRATION AND ITS ROLE IN HEALTHCARE



PROPER HYDRATION IS IMPORTANT IN HEALTHCARE

Understanding the science behind rehydration can:

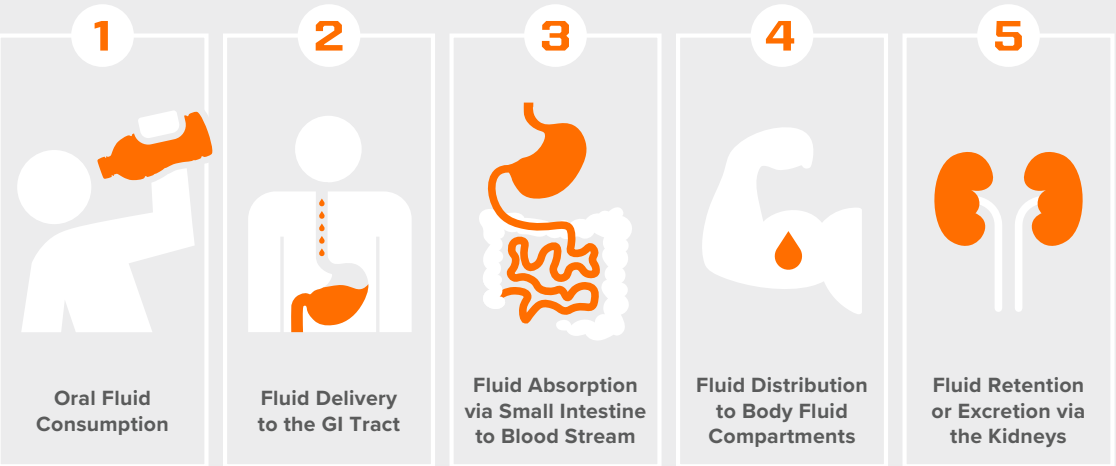
- ▶ Help maximize patient recovery¹
- ▶ Improve health outcomes²
- ▶ Combat renal and cardiovascular complications
- ▶ Promote electrolyte balance³

THE SHIFT TOWARD ORAL HYDRATION

Due to financial considerations and accessibility, hospitals are exploring oral hydration options as an alternative to IV fluids, allowing for greater access, affordability and improved outcomes.⁴

With oral hydration options, patients can effectively manage mild to moderate symptoms, especially in outpatient settings.

THE FLUID REPLACEMENT PROCESS



FLUID ABSORPTION, DISTRIBUTION AND RETENTION

The makeup of a beverage can influence how well fluid is replaced, so it's important to consider carbohydrates, electrolytes and flavor composition of a drink designed for this purpose.⁵



PALATABILITY DRIVES INTAKE

People drink more when beverages are:

- ▶ Cool and flavored
- ▶ Lightly sweetened
- ▶ Contain electrolytes

GLUCOSE PROMOTES ABSORPTION



- ▶ Drinks with 1–3% glucose help speed gastric emptying and fluid delivery*
- ▶ Too little (0%) or too much (>8%) carbohydrate slows this process



GLUCOSE AND SODIUM DRIVE DIFFUSION

- ▶ Water alone moves passively across the intestine
- ▶ Carbohydrate and sodium are absorbed by active co-transport, and this movement draws water with them
- ▶ The greater the concentration gradient (especially carbs), the more water is absorbed



ELECTROLYTES SUPPORT FLUID BALANCE

- ▶ Fluids shift between inside and outside cells based on osmotic gradients
- ▶ Maintaining plasma volume supports cardiovascular function and thermoregulation
- ▶ Sodium is key: as the main extracellular cation, it helps hold water in the plasma



SODIUM LOCKS IN FLUIDS

- ▶ Raises blood sodium concentration which stimulates antidiuretic hormone
- ▶ Stimulates renal water reabsorption
- ▶ Improves overall fluid retention (best results with at least 20-30 mmol/L sodium)⁶

1. Westfall KM et al. (2024) Dis Colon Rectum. 67(2):313-321.
2. Mikulas C et al. (2025) Cureus. 17(3):e80146.
3. The Advisory Board Company. (Pub: 2024, Oct 14) Daily Briefing. <https://www.advisory.com/daily-briefing/2024/10/14/iv-shortage>

4. Traynor K. (2025) Am J Health Syst Pharm. 82(7):3321-3322.
5. Baker LB & AE Jeukendrup. (2014) Comp Physiol. 4(2):575-620.
6. Sawka MN et al. (2007) Med Sci Sport Exerc. 39(2):377-390.



*Compared to drinks that do not have carbohydrate or have higher concentrations (>8%)

The views expressed in this infographic are those of the authors and do not necessarily reflect the position and policy of PepsiCo, Inc.