

TRANSCRIPT

Water Intake in Summer and Importance of Renal Function

Water comprises approximately 60% of human body weight, while the remaining 40% constitutes lean body mass.

Distribution of body water:

40% is present in the intracellular space.

20% is present in the extracellular space, which includes:

14% in the interstitial space

6% in the intravascular space.

Water metabolism is closely related to sodium levels in body fluids. Changes in sodium concentration depend on water intake and renal handling of water.

The plasma sodium level is maintained within a narrow range of 138–142 mEq/L. Sodium plays an important role in maintaining tonicity, which is measured by serum osmolarity, normally maintained between 285–290 mOsm/L.

Several mechanisms help maintain sodium and water balance in the body:

Stimulation of thirst

Secretion of antidiuretic hormone (ADH)

Receptor sensitivity in the distal convoluted tubules to ADH

Renal handling of water

An increase in plasma osmolarity stimulates ADH secretion. In addition, non-osmotic stimuli such as hypotension and hypovolemia can also stimulate ADH release.

Fluid Management in Dehydration

If a patient with dehydration is unable to consume water orally, hospital admission and intravenous fluid therapy may be required.

1. Normal Saline (0.9% NS – 500 ml):

Very negligible amount enters the intracellular compartment.

The fluid remains mainly in the extracellular compartment:

375 ml goes to the interstitial space

125 ml goes to the intravascular space

2. Glucose-containing crystalloids (DNS or 5% Dextrose – 500 ml):

Two-thirds (≈330 ml) enters the intracellular compartment

One-third (≈165 ml) remains in the extracellular compartment

≈125 ml goes to the interstitial space

≈40 ml goes to the intravascular space

3. Colloids (Albumin, Dextran, Hydroxyethyl starches, Gelatin):

No fluid enters the intracellular compartment

The fluid remains almost entirely in the intravascular space

Minimal or negligible distribution to the interstitial space

Summary

Adequate water intake is essential to maintain fluid balance, sodium homeostasis, and normal renal function. During summer, individuals should consume approximately 2–3 liters of water per day, even in the absence of thirst, to prevent dehydration and electrolyte imbalance.

In patients who cannot take fluids orally, intravenous fluids such as crystalloids or colloids are administered depending on the clinical condition, as they distribute differently within body fluid compartments.



Dr. C. MANOKARAN, M.D.

Regd. No. 36451

Signature of the Resource Person

Department of General Medicine

Sri Manakula Vinayagar Medical College and Hospital
Kattiarthalkuppam, Madagadipet, Pudukkottai-605 107.



PROFESSOR & HEAD
Department of General Medicine
Signature of the HOD
Sri Manakula Vinayagar Medical College & Hospital
Kattiarthalkuppam, Madagadipet,
Pudukkottai-605107.