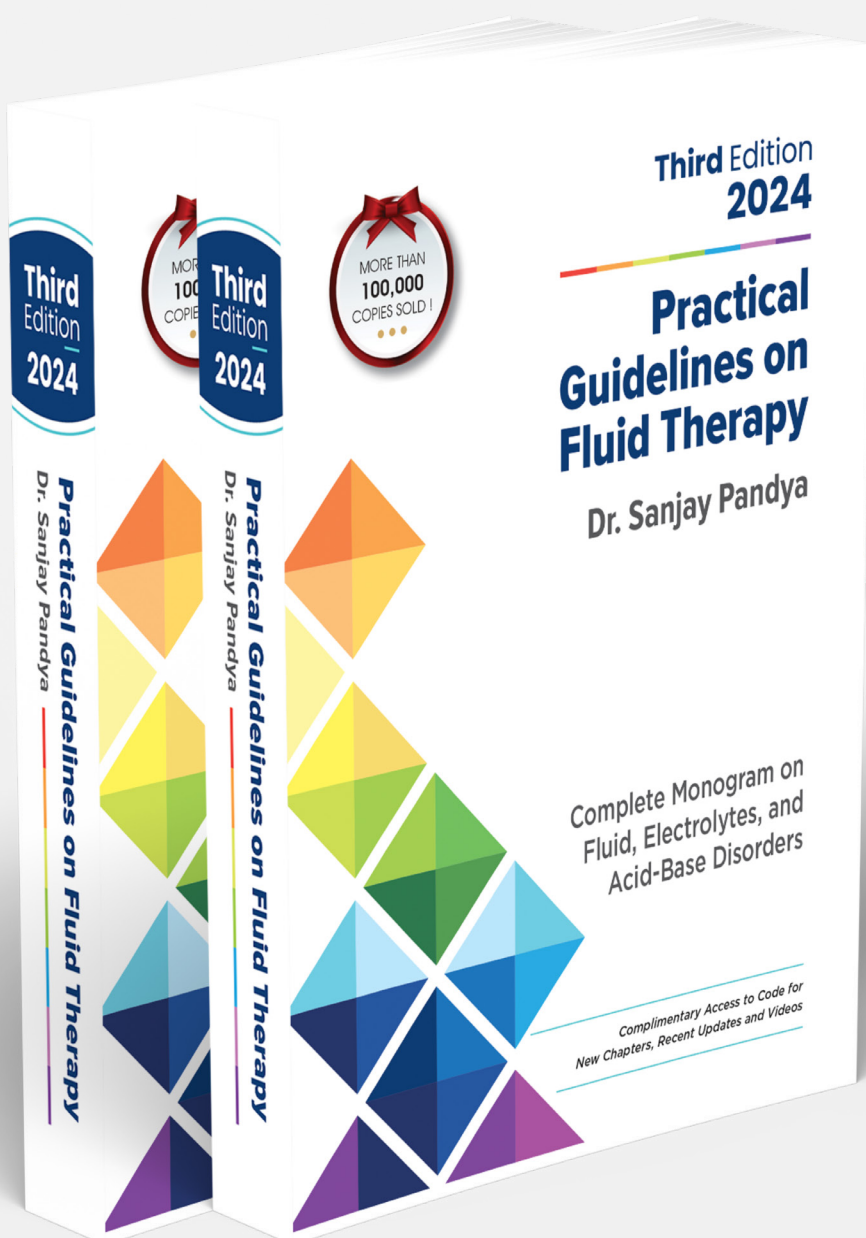


Chapter 26: Hypophosphatemia



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SERUM PHOSPHATE

Phosphorus is a vital component of all body tissues and plays an essential role in various body functions. The terms phosphate and phosphorus are commonly used interchangeably.

BASIC PHYSIOLOGY

- Phosphate is the most abundant intracellular anion, the second-largest mineral in the body after calcium, and comprises approximately 1% of the body weight.
- Distribution: Most (about 85%) of the body's phosphorus is found within bone and teeth as hydroxyapatite, and the rest is distributed in tissues throughout the body. As only 1% of total body phosphorus is found in the extracellular fluid (ECF), the value of serum phosphorus may not necessarily reflect total body phosphorus content. In addition, even a change in pH leads to a shift of phosphate (acidosis shifts phosphate from intracellular fluid (ICF) to ECF) and affects the value of serum phosphorus.
- Normal value: Normal serum phosphorus levels in adults range from 2.5 to 4.5 mg/dL (0.75 to 1.45 mmol/L). It is best measured in the fasting state since there is as much as 50% diurnal variation (lower value in the morning and higher at night and after meals). Clinically, serum phosphorus level reflects nutritional status.
- Function: Phosphorus plays a major role in bone formation and is involved in cellular energy metabolism for

almost all cellular functions (e.g., cell membranes, phospholipids, nucleic acids, acid buffering, enzyme

systems, the energy carrier ATP-adenosine triphosphate, etc.).

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