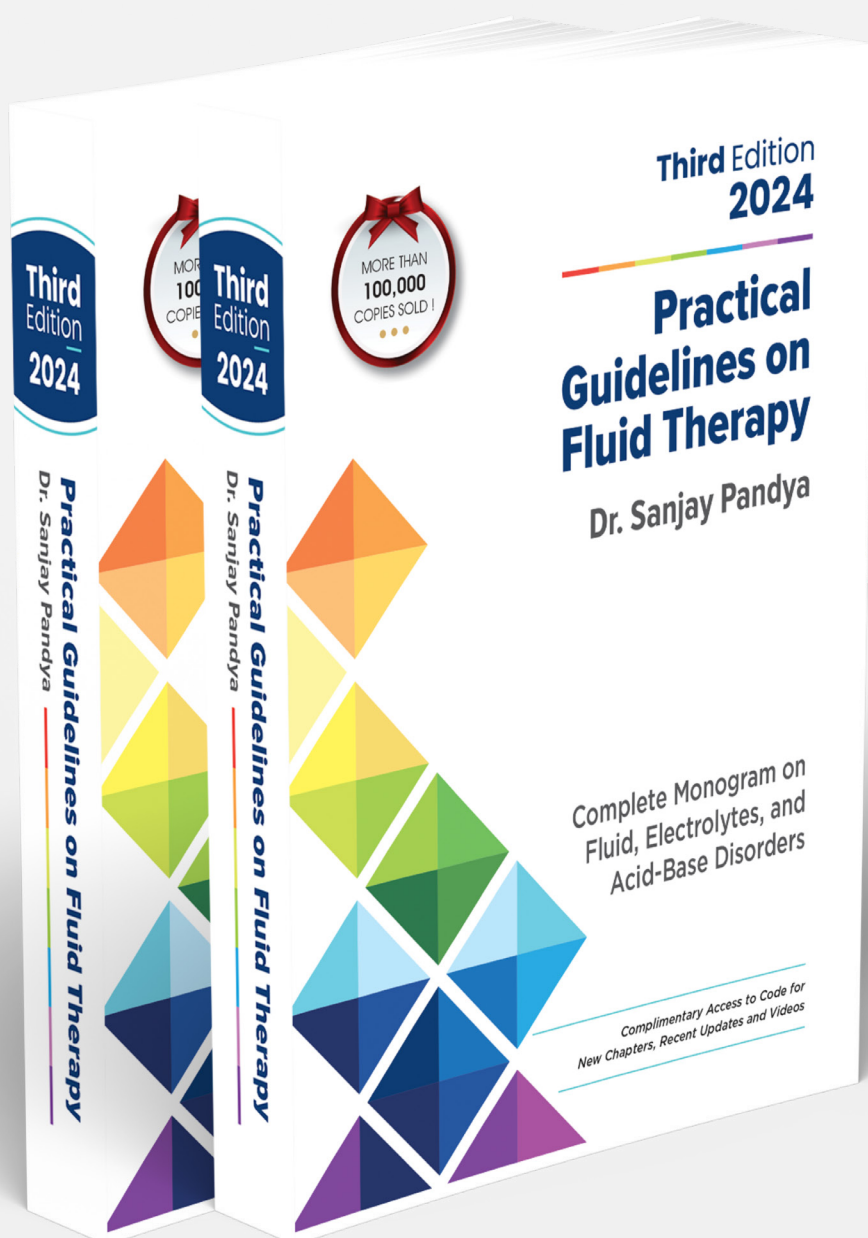


## Chapter 24: Hypocalcemia



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## BASIC PHYSIOLOGY

Calcium (Ca) is essential for bone formation, neuromuscular function, and blood coagulation. If calcium intake is inadequate, it may impair bone mineralization in children and accelerate bone loss in adults.

### Distribution

An average adult's body contains 20 to 25 gm/kg or 1.2 to 1.4 kg of calcium,

so it is the most abundant cation in the body. Out of this, about 99% is present in the bone, 1% in the soft tissue cells, and 0.15% in the extracellular fluid (ECF). As serum calcium concentration constitutes less than 1% of the total body calcium, it is a poor marker of overall total body calcium content.

### Serum calcium

The normal value is about 8.5 to 10.5 mg/dL (4.3 to 5.2 mEq/L, 2.2 to 2.6 mmol/L).

The total ECF calcium exists in three forms:

1. Bound to proteins: About 40% of calcium is bound to protein (mainly albumin) which will not be diffusible and biologically active.
2. Free-ionized: 50% of calcium is in an ionized form which is diffusible and biologically active.
3. Bound to anions: 10% calcium is complexed with the anions of organic acids such as phosphate, bicarbonate, citrate, lactate, or sulfate phosphate. This form of calcium is diffusible but biologically inactive.

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