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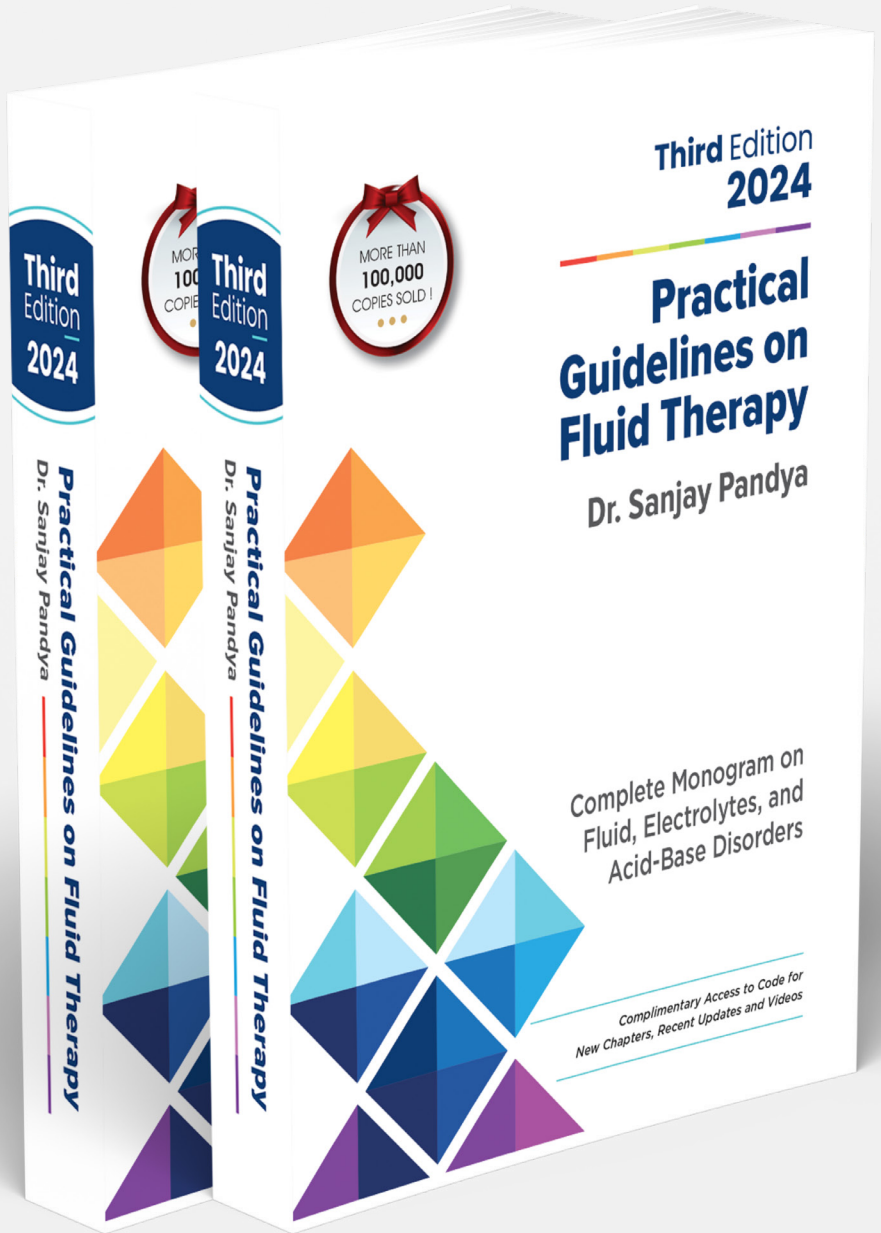
Chapter 14:
Sodium Bicarbonate



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Sodium Bicarbonate ($NaHCO_3$) injection is an alkalinizing agent used to correct metabolic acidosis, manage electrolyte imbalances, and in the treatment of severe diarrhea and poisoning.

INJECTION SODIUM BICARBONATE

COMPOSITION

Inj. 8.4% Sodium Bicarbonate

Each ml contains:

Sodium	1 mEq or mmol
Bicarbonate	1 mEq or mmol
Sodium	23 mg
Bicarbonate	61 mg
$NaHCO_3$	84 mg
Osmolarity	2000 mOsmol/L

Inj. 7.5% Sodium Bicarbonate

Each ml contains:

Sodium	0.89 mEq or mmol
Bicarbonate	0.89 mEq or mmol
$NaHCO_3$	75 mg
Osmolarity	1786 mOsmol/L

Inj. 4.2% Sodium Bicarbonate

Each ml contains:

Sodium	0.5 mEq or mmol
Bicarbonate	0.5 mEq or mmol
$NaHCO_3$	42 mg
Osmolarity	1000 mOsmol/L

Table 14.1 Sodium bicarbonate solutions: different strengths and composition

Strength	4.2% $NaHCO_3$		7.5% $NaHCO_3$				8.4% $NaHCO_3$			
Volume (mL)	1.0	500	1.0	10	25	50	1.0	10	25	50
Sodium (mEq)	0.5	250	0.89	8.9	22.5	44.5	1.0	10	25	50
Bicarbonate (mEq)	0.5	250	0.89	8.9	22.5	44.5	1.0	10	25	50
Osmolality	1000 mOsm/L		1786 mOsm/L				2000 mOsm/L			

Electrolyte contents and osmolality of different strengths and volumes of solutions are summarized in Table 14.1.

PHARMACOLOGICAL BASIS

The administration of sodium bicarbonate intravenously dissociates in the body to form sodium and bicarbonate. Bicarbonate anions act as a buffer and correct metabolic acidosis by combining with hydrogen ions ($HCO_3 + H^+ = H_2CO_3^-$ carbonic acid). In addition, by increasing pH and shifting potassium intracellularly, bicarbonate corrects hyperkalemia.

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