



SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIO PULMONARY PERFUSION CARE

TECHNOLOGY

COURSE NAME : Pharmacology Pathology and Clinical Microbiology

II nd YEAR

TOPIC : SODIUM BICARBONATE



Brand Name: Sodium Bicarbonate

Drug Class: Alkalinizing Agents



• **WHAT IS SODIUM BICARBONATE AND HOW DOES IT WORK?**

- Sodium bicarbonate is indicated in the treatment of metabolic acidosis which may occur in severe renal disease, uncontrolled diabetes, circulatory insufficiency due to shock or severe dehydration, extracorporeal circulation of blood, cardiac arrest and severe primary lactic acidosis. Sodium bicarbonate is further indicated in the treatment of certain drug intoxications, including barbiturates (where dissociation of the barbiturate-protein complex is desired), in poisoning by salicylates or methyl alcohol and in hemolytic reactions requiring alkalinization of the urine to diminish nephrotoxicity of hemoglobin and its breakdown products. Sodium bicarbonate also is indicated in severe diarrhea, which is often accompanied by a significant loss of bicarbonate.



Treatment of metabolic acidosis should, if possible, be superimposed on measures designed to control the basic cause of the acidosis – e.g., [insulin](#) in uncomplicated diabetes, blood volume restoration in shock. But since an appreciable time interval may elapse before all of the ancillary effects are brought about, bicarbonate therapy is indicated to minimize risks inherent to the acidosis itself.



Vigorous bicarbonate therapy is required in any form of metabolic acidosis where a rapid increase in plasma total CO₂ content is crucial – e.g., cardiac arrest, circulatory insufficiency due to shock or severe dehydration, and in severe primary lactic acidosis or severe diabetic acidosis.



WHAT ARE DOSAGES OF SODIUM BICARBONATE?

Dosages of Sodium Bicarbonate: Adult and Pediatric Dosage Forms and Strengths

❖ Injectable solution

- 4%
- 4.2%
- 7.5%
- 8.4%

❖ Tablet

- 325 mg
- 650 mg



Cardiac Arrest



- Adult, Initial: 1 mEq/kg/dose intravenous (IV) x1; base subsequent doses on results of arterial [blood pH](#) and PaCO₂ as well as calculation of the base deficit
 - Repeat doses may be considered in the setting of prolonged cardiac arrest only after adequate [alveolar ventilation](#) has been established
- Infants, under 2 years (use 4.2% solution)
- Initial: 1 mEq/kg/min given over 1-2 minutes intravenous/intraosseous (IV/IO), THEN
 - 1 mEq/kg IV q10min of arrest
 - Not to exceed 8 mEq/kg/day
- Children over 2 years
 - Initial: 1 mEq/kg/dose intravenous (IV) x1; base subsequent doses on results of arterial blood pH and PaCO₂ as well as calculation of the base deficit
 - Repeat doses may be considered in the setting of prolonged cardiac arrest only after adequate alveolar ventilation has been established



Hyperkalemia

- 50 mEq intravenous (IV) over 5 minutes

Metabolic Acidosis (Non-Life-Threatening)

- Adult: 2-5 mEq/kg intravenous (IV) infusion over 4-8 hours depending on the severity of acidosis as judged by the lowering of total CO₂ content, clinical condition, and pH
- Older children: 2-5 mEq/kg IV infusion over 4-8 hours depending on the severity of acidosis as judged by the lowering of total CO₂ content, clinical condition, and pH

Severe Metabolic Acidosis (Except Hypercarbic Acidosis)

- 90 to 180 mEq/L (~ 7.5-15 g) at a rate of 1-1.5 L (first hour); adjust for further management as needed

Administration

- Monitor: serum [potassium](#)



WHAT ARE SIDE EFFECTS ASSOCIATED WITH USING SODIUM BICARBONATE?



- Common side effects of sodium_bicarbonate include:
- Aggravated [congestive heart failure \(CHF\)](#)
- Cerebral [hemorrhage](#)
- Swelling (edema)
- High blood sodium levels
- Low blood calcium levels
- Low blood potassium levels
- [Muscle spasms](#) (associated with low calcium levels)
- Metabolic [alkalosis](#)
- [Belching](#)
- Bloating
- Excess fluid in the [lungs \(pulmonary edema\)](#)
- Hyperosmolality
- Intracranial acidosis
- Milk-alkali syndrome



THANK YOU