Pharmacologic properties:

Sodium bicarbonate is an endogenous anion that reacts with hydrogen ions to form water and carbon dioxide. It is an alkalizing agent used to buffer acids present in the body during periods of metabolic acidosis. Its effect is to raise the serum pH. This effect is favorable in the treatment of pre-existing metabolic acidosis, hyperkalemia, tricyclic anti-depressant/salicylate (aspirin)/or phenobarbital overdose, and after profound hypoxia/prolonged cardiac arrest. Sodium bicarbonate is effective only when administered with adequate ventilation and oxygenation.

Indications:

- Bicarbonate responsive metabolic acidosis precipitating cardiac arrest
- Hyperkalemia
- Tricyclic antidepressant overdose

Contraindications:

- Congestive heart failure
- Alkalotic states
- Hypoxic lactic acidosis

Precautions:

- Excessive bicarbonate therapy inhibits the release of oxygen, induces hyperosmolarity and hypernatremia, and produces paradoxical acidosis in myocardial and cerebral cells
- Bicarbonate does not improve the ability to defibrillate
- May inactivate simultaneously administered catecholamines
- Will precipitate if mixed with calcium chloride

Adverse Reactions:

- Metabolic alkalosis
- Hypernatremia/Hyperosmolality
- Cerebral acidosis (paradoxical effect)
- Sodium and fluid retention which can cause pulmonary edema

Dosage and administration:

Adult

- 1 mEq/kg IVP. Repeat with 0.5 mEq/kg in 10 minutes.

Pediatric

- 1 mEq/kg IVP. Repeat with 0.5 mEq/kg in 10 minutes