

The logo consists of the letters 'RX' in a white, serif font, centered within a dark gray square.

Drug Name: Sodium Bicarbonate

Trade Name: Bicarb, NaHCO₃

Class: Alkalinizing Agent

Mechanism of Action:

In the presence of hydrogen ions, sodium bicarbonate dissociates to sodium and carbonic acid, the carbonic acid picks up a hydrogen ion changing to bicarbonate and then dissociates into water and CO₂, functioning as an effective buffer and alkalinizing the blood. In summary, increases plasma bicarbonate, which can buffer metabolic acids and move TCAs and phenobarbital off receptor sites and back into circulation.

Indications:

- Preexisting Metabolic Acidosis (severe hypoxia, late cardiac arrest)
- Hyperkalemia
- Tricyclic or Phenobarbital Overdose

Contraindications:

None when used in severe hypoxia and late cardiac arrest
Metabolic & Respiratory alkalosis
Severe pulmonary edema (*administration of sodium may be detrimental*)
Hypokalemia
Hypocalcemia
Hypernatremia (*administration of sodium may be detrimental*)

Precautions:

Bicarbonate administration produces CO₂, which crosses cell membranes more rapidly than bicarbonate, potentially worsening intracellular acidosis.
CHF (*may worsen*)
Pregnancy (C)
Infiltration can cause tissue necrosis
Renal disease

Dosage:

Adults:

1.0 mEq/kg IV bolus, may repeat ½ dose 10 minutes thereafter.

- OPTIONAL TCA Overdose/CRUSH Injury INFUSION: 50-100 mEq/1000 cc, run at 150 cc/hr, titrated for effect

Pediatrics:

1.0 mEq/kg IV bolus, may repeat ½ dose 10 minutes thereafter

- OPTIONAL TCA Overdose INFUSION: 50-100 mEq/1000 cc, run at 150cc/hr, titrated for effect

Onset:

- IV—2-10 minutes

Duration:

- IV—30-60 minutes

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Side Effects:

- Alkalosis
- Hyperirritability, Seizures
- Tetany (electrolyte imbalance)
- Hyponatremia
- Hyperosmolality
- Cardiac & respiratory arrest
- Lowering of serum K
- Increased binding of calcium to serum proteins
- Decreased fibrillation threshold
- Sodium and water overload
- Inhibition of oxygen release to tissue

Interactions:

- Calcium salts will form a precipitate and clog the IV line
- Most sympathomimetics will be deactivated by alkaline solutions
- Use relatively early in the setting of confirmed TCA overdoses, tachycardia (even before QRS widening) & CNS depression are symptomatic enough to initiate alkalinization. By the time you get to hypotension, you often are close to seizures and may be too late
- Ensure IV is patent to avoid tissue sloughing at the injection site
- Also be sure to flush IV line before & after administration to avoid inactivating sympathomimetics & precipitating with CaCl