

Z. Sodium Bicarbonate

- I. Classification
 - Alkalinizing agent (hydrogen ion buffer)
- II. Actions
 - Combines with hydrogen ions to form carbonic acid
 - Increases blood pH
- III. Indication
 - A. Cardiopulmonary arrest
 - Unsuccessful drug therapy and defibrillation
 - Suspected hyperkalemia (dialysis patients)
 - Suspected tricyclic overdose (ex: amitriptyline (Elavil®), desipramine (Norpramin®), imipramine (Tofranil®), nortriptyline (Pamelor®), and protriptyline (Vivactil®))
 - Cocaine induced wide complex tachycardias
- IV. Contraindications
 - Not significant in above indications
- V. Adverse Effects
 - A. Metabolic
 - Alkalosis**
 - Hypokalemia
 - Hypocalcemia
 - Increased tissue acidosis
 - B. Neurological
 - Headache
 - Confusion
 - Tetany**
 - Seizures**
 - Confusion*
 - C. Respiratory
 - Pulmonary edema*
- VI. Administration
 - A. Adult
 - 1 mEq/kg IV/IO
 - B. Pediatric
 - 1 mEq/kg slow IV/IO at 10 ml/minute
- VII. Onset
 - Immediate
- VIII. Duration
 - Variable
- IX. Precautions
 - A. Precipitates with calcium chloride and Amiodarone, and inactivates catecholamines. Flush IV

tubing before and after administration of sodium bicarbonate.

- B. Causes tissue necrosis if infused into the interstitial space. Verify IV patency prior to administration.
- C. Bicarbonate produces CO_2 which diffuses across the cell membrane more rapidly than bicarbonate and increases intracellular acidosis. Perform effective CPR and adequate ventilation with 100% O_2 to reverse anaerobic metabolism.

X. Note

- Only use sodium bicarbonate after more appropriate treatment has failed, such as: defibrillation, endotracheal intubation, hyperventilation with 100% O_2 and administration of at least two rounds of resuscitation drugs.

The value of sodium bicarbonate is questionable during cardiac arrest, and is not recommended for the routine arrest sequence. Consideration of its use in a dose of 1 mEq/kg is appropriate after prolonged, unsuccessful resuscitation efforts. Make the decision to use sodium bicarbonate only after consultation with the on-line physician. Sodium Bicarbonate is contraindicated if the patient is not maximally ventilated.