Sodium bicarbonate is used to treat an acidotic state. It can reduce stomach acid when taken orally. It can increase the pH in metabolic acidosis. It can enhance metabolism of acidic drugs. This effect plays an important role in some drug overdoses, such as tricyclic antidepressants, because it speeds up the elimination of the drug from the body.

Indications and Administration

1. Tricyclic overdose with tachydysrhythmias, ectopy or QRS duration > 0.12 seconds.
    a. **Adult -** 1 mEq/kg IV push. Give ½ initial dose every 10-15 min. The ED may decide to make a bicarb drip.
    b. **Pediatric -** 0.5-1.0 mEq/kg IV or IO. Give ½ initial dose every 10-15 min. May dilute in equal parts normal saline for very small infants.
2. Acidotic states, such as in prolonged cardiac arrest or severe DKA.
    a. **Adult** – 1 mEq/kg IV push x one. Further doses need guidance from a blood gas (ABG).
    b. **Pediatric** – 0.5 mEq/kg IV or IO push x one. Many pediatricians do not recommend this treatment.
3. Moderate to severe hyperkalemia usually seen in renal failure pts.
    a. **Adult** – 1 mEq/kg or 50 mEq IV over 2 mins.

Notes

1. The value of sodium bicarbonate in cardiac arrest is questionable. It is not recommended for the routine cardiac arrest sequence. Bicarbonate should be used, if at all, only after defibrillation, intubation, epinephrine and anti-dysrhythmics. Bicarbonate is not even considered appropriate initial therapy for the unwitnessed cardiac arrest. However, when the cardiac arrest of a renal failure pt who may have hyperkalemia as the cause of the arrest, bicarb probably has its greatest possible utility.
2. Bicarb can inactivate catecholamines and precipitate with calcium solutions. So always flush the IV line before and after bicarb administration.
3. Ensuring adequate alveolar ventilation is the mainstay of the control of acid-base balance. The use of bicarb to raise an acidotic pH is discouraged except when the pH is very low e.g. 6.90 to 7.00.