

Sodium bicarbonate promotes ionization and excretion of acidic drugs and prevents reabsorption across the renal tubular epithelium.

Indications:

1. Acute salicylate toxicity (*see Salicylate guideline*)

- Significant symptoms including tinnitus, vomiting, any acid-base disturbance
- Features of severe toxicity (dialysis also indicated)

2. Others

- May be useful in selected cases of phenobarbitone or chlorophenoxy herbicide toxicity (including MCPA)

Complications:

- Alkalaemia
- $\uparrow\text{Na}^+$, $\downarrow\text{K}^+$, $\downarrow\text{Ca}^{2+}$
- Fluid overload/pulmonary oedema

Method of administration:

Requires intensive fluid / electrolyte / acid base monitoring, and therefore should be undertaken in a clinical environment capable of achieving this

Indwelling urinary catheter is mandatory to monitor adequate urine output and regular urine pH testing

Administer Hartmans solution (CSL) to maintain urine output of 1-2 mL/kg/hour

Sodium bicarbonate: (1 mL 8.4% NaHCO_3 = 1 mmol NaHCO_3)

(8.4% NaHCO_3 should NOT be mixed with crystalloid and should be administered in a separate IV line)

- Administer 1-2 mL/kg 8.4% NaHCO_3 over 5-10 minutes
- Add 150 mL of 8.4% NaHCO_3 to 850 mL 5% dextrose and commence infusion at 166 mL/hour
- Check urine and serum pH every 1-2 hours. Titrate NaHCO_3 infusion rate (max 250 mL/hour) to achieve pH >7.5 (do not exceed serum pH >7.5) and urine output 1-2 mL/kg/hour

K⁺ replacement (*Hypokalemia impedes urinary alkalinisation*)

- Correct hypokalaemia
- Administer 5-10 mmol KCl per hour to maintain serum K^+ 3.5 - 4.5 mmol/L
- Check serum pH and K^+ (VBG) every 2 - 4 hours.

Therapeutic endpoints:

- Resolving clinical symptoms AND
- Resolution of biochemical abnormalities eg. metabolic acidosis AND
- In the case of salicylate toxicity, evidence of two down trending serum salicylate concentrations