SODIUM BICARBONATE for Intermittent IV infusion

Presentation

- Sodium Bicarbonate 8.4%= 1mmol in 1ml (10ml ampoules, 100ml polyfusor, 100ml vials)

Prescribing

Prior to prescribing bicarbonate read clinical information section below.
For acute acidosis correction prescribe on the once only section.
For patients needing regular replacement prescribe on the regular section of the drug chart.

For ½ correction dose in mmol bicarbonate:

$$\frac{(0.3 \times \text{base excess} \times \text{pt weight in kg})}{2}$$

For replacement: initial dose as per BNFc then according to patients serum bicarbonate levels.

For cardiac arrest/VT: 1mmol/kg (max 50mmol) STAT.

Storage

Room temperature

Preparation/ Dilution

For peripheral use dilute to 2.1% or 0.25mmol/ml using water for injection (1 in 4 dilution). Ensure good peripheral access. Other diluents that can be used are glucose 5% or sodium chloride 0.9%.

For central use does not require dilution.

Route of Administration

Preferred route central.
Peripherally- maximum 0.25mmol in 1ml (2.1%)
Centrally- may be given undiluted

Rate of Administration

For ½ correction give over 30- 60 minutes.
For regular replacement give at rate of 1-2mmol/kg/hour

In cardiac arrest situation only give as IV bolus.

Stability

Use immediately- assign 24 hour expiry to IV additive label.

Flushes

Sodium chloride 0.9%, glucose 5%

Common Compatibilities at Terminal Y-site

Maintenance IV fluids containing glucose 5%/ sodium chloride with potassium chloride. Contact pharmacist for further advice.

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Monitoring/ Other comments

Extravasation will cause local ischaemia and tissue necrosis.
Each ml of 8.4% will give 1mmol sodium in addition to 1mmol bicarbonate.
For patients with hypernatraemia consider potassium acetate or THAM to correct acidosis.
Monitor for low calcium and potassium associated with bicarbonate therapy.

Extravasation Risk

Extreme of pH	Hyperosmolar	Vasoactive	Vesicant
Yes- pH 7-8.5	8.4%	No	No
	2.1%		

2.1% = 500mosmol/L when diluted with water for injections

Links to other protocols/ guidelines

See Injectable Guide for THAM and POTASSIUM ACETATE

Calculation example

7kg with base excess of -14 needs ½ correction as discussed with consultant. Patient only has peripheral access.

Prescribe on the once only section as 15mmol sodium bicarbonate diluted to 0.25mmol/ml over 1 hour.

To administer: Draw up 15mmol= 15ml sodium bicarbonate 8.4%. Dilute with water for injection to 60ml, giving 0.25mmol in 1ml. Label as per Trust Policy. Attach to patient and set pump to give at a rate of 60ml/hour.

Clinical Information

Use of bicarbonate should be based upon the pathophysiology of the specific acidosis, the clinical state of the patient, and the degree of acidosis.
Treating the underlying conditions in high anion gap metabolic acidosis states usually is sufficient in reversing the acidosis.
Treatment with bicarbonate is unnecessary, except in extreme cases of acidosis when the pH is less than 7.1 (H+>80) and or haemodynamic instability.
Optimise perfusion with fluids and consider inotropes if necessary.
Administering bicarbonate can increase PCO2 hence ensure adequate ventilation before administering bicarbonate.
Sodium Bicarbonate therapy can cause hypertonicity, hyperosmolality, fluid overload, pulmonary oedema and worsening cardiac failure, hypercapnoea, paradoxical intracellular acidosis, reduced tissue oxygen delivery and rebound/ overshoot alkalosis.
In diabetic ketoacidosis, the role of bicarbonate is controversial, regardless of the pH and bicarbonate administration is not recommended.