

## Appendix

This appendix was part of the submitted manuscript and has been peer reviewed. It is posted as supplied by the authors.

# SODa-BIC ICU Survey

SODa-BIC ICU: SODium BICarbonate for metabolic acidosis in Intensive Care Unit

We would like to invite you to participate in the SODA-BIC ICU Survey study to determine key points for a future double-blind placebo-controlled randomized clinical trial.

Metabolic acidosis (defined as  $\text{pH} < 7.30 + \text{base excess [BE]} < -4 \text{ mEq/L} + \text{PaCO}_2 < 45 \text{ mmHg}$ ) is a common problem in the Intensive Care Unit. On day one using the ANZICS CORE database, it affects 11% of patients. Such patients have high mortality (20%) and morbidity. A recent French unblinded multicenter randomized trial suggested that the correction of moderate to severe metabolic acidosis may decrease renal failure and the need for renal replacement therapy. However, the study design was open to bias.

Thus, we are planning a double-blind placebo-controlled trial to assess if bicarbonate therapy is potentially useful in this population. To help shape the design of this study, we would like to ask your thoughts on some of its key operational aspects.

- 
- 1) Which solution do you think is best as placebo?
- 5% Dextrose (D5W)
  - Normal saline (N/S)
  - Compound sodium lactate (CSL)
- ((choose the best option in your opinion))
- 
- 2) How do you think sodium bicarbonate should be delivered?
- As repeat boluses (e.g. every 60 minutes until target is achieved)
  - As a continuous infusion (at a rate 50 mmol/hr until target is achieved)
- ((choose the best option in your opinion))
- 
- 3) What should be the target for the intervention?
- A normal pH (7.35 to 7.45)
  - A pH  $> 7.30$
  - Base excess (BE)  $> 0 \text{ mEq/L}$
  - A combination of normal pH (7.35 to 7.45) and BE  $> 0 \text{ mEq/L}$
  - A combination of pH  $> 7.30$  and BE  $> 0 \text{ mEq/L}$
- ((choose the best option in your opinion))
- 
- 4) How often should arterial blood gases be taken during the intervention period?
- Every 2 hours for the first 6 hours and then every 4 hours
  - Every 2 hours until target is reached and then every 4 hours
  - One hour after the first dose has started, then every 2 hours for the first 6 hours and then every 4 hours
  - One hour after the first dose has started, then every 2 hours until the target is reached and then every 4 hours
- ((choose the best option in your opinion))

- 
- 5) How long should the intervention be applied?
- 6 hours
  - 8 hours
  - 12 hours
  - 24 hours
  - 48 hours
  - 72 hours
  - Ceased when the target is achieved
  - Until ICU discharge
- ((choose the best option in your opinion))
- 

- 6) In considering bolus DOSING of bicarbonate, this is estimated at  $1 \text{ mmol/kg} \times 0.4$  for each 1 mEq/L increase in base excess. Thus, for example, in an 80 kg person with a base deficit of 6 mEq/L and a base excess target of 0, this would approximate an initial dose of  $80 \times 0.4 \times 6 = 192 \text{ mmol}$  of bicarbonate. How fast would you prefer to give such a dose?
- Over 1 hour
  - Over 2 hours
  - Over 3 hours
  - Over 4 hours
- ((choose the best option in your opinion))