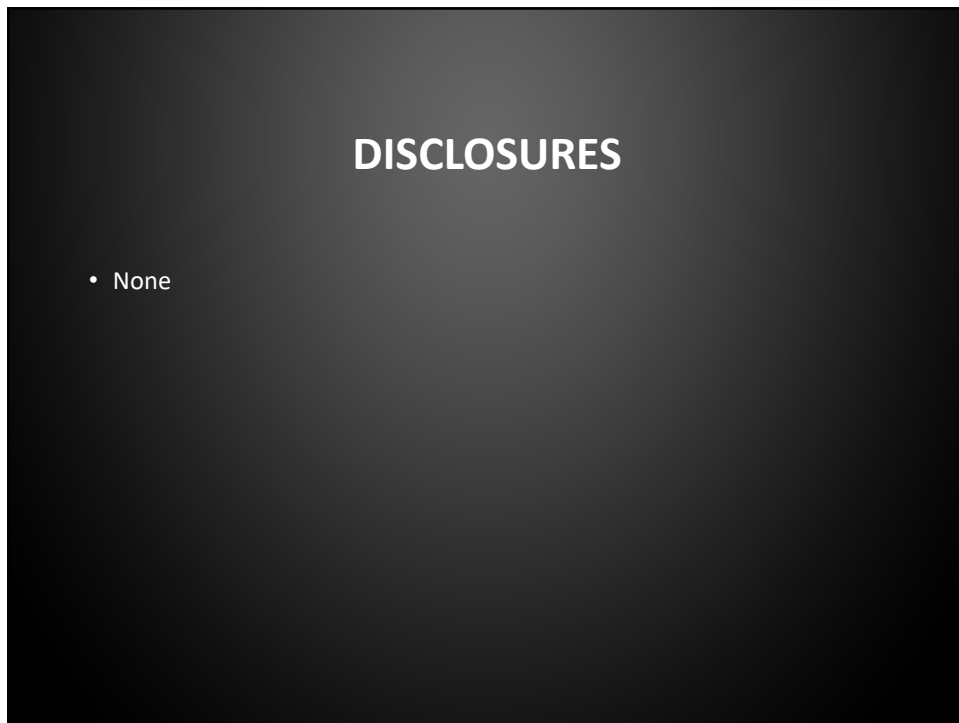


1

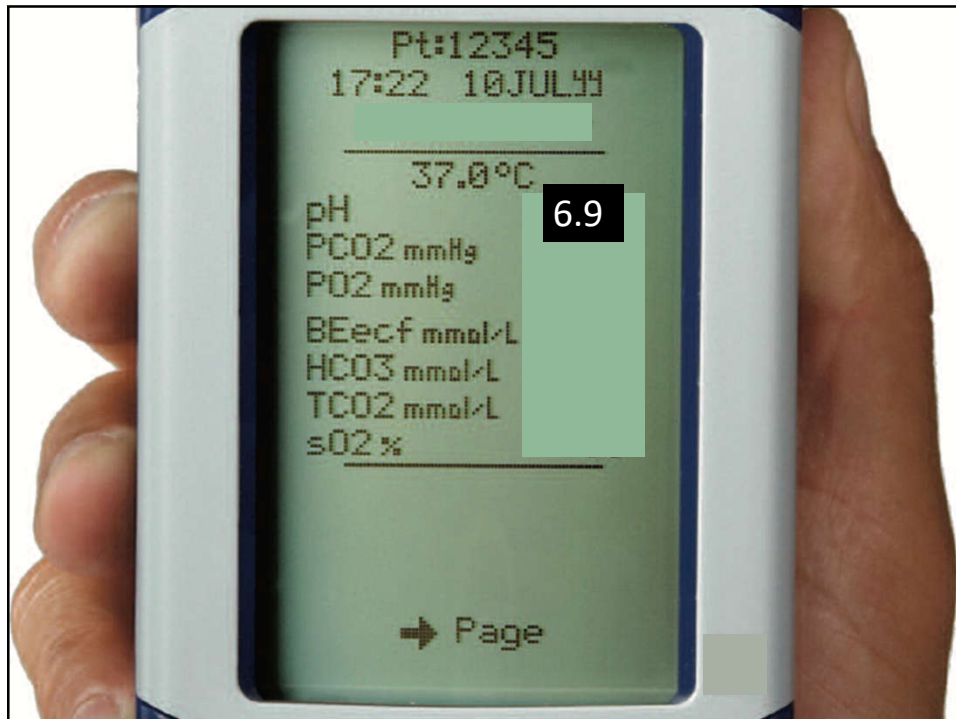


2

OBJECTIVES

- Discuss the physiologic effects of bicarbonate administration
- Discuss misconceptions surrounding bicarbonate administration
- Identify the indications for bicarbonate administration in the critical ill patient

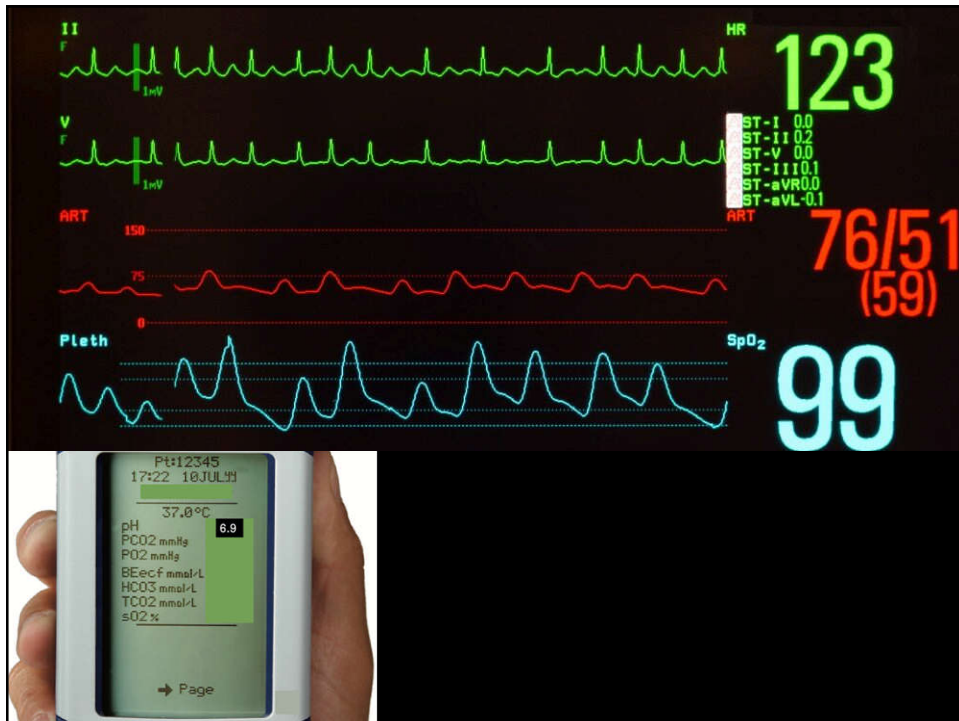
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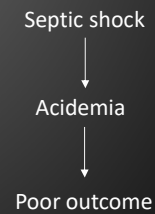
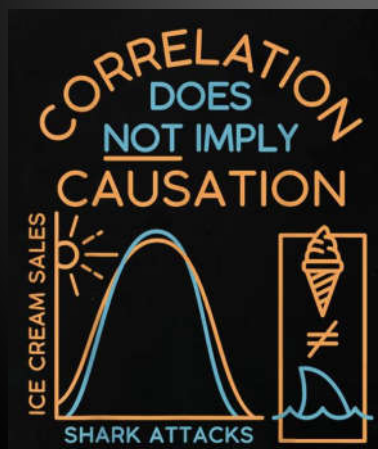
10

METABOLIC ACIDOSIS

- Severe metabolic acidosis
 - $\text{pH} \leq 7.20$
 - $\text{PaCO}_2 \leq 45 \text{ mmHg}$
 - $\text{HCO}_3^- \leq 20 \text{ mmol/l}$
 - Total sequential organ failure assessment (SOFA) score ≥ 4 or lactate $\geq 2 \text{ mmol/l}$

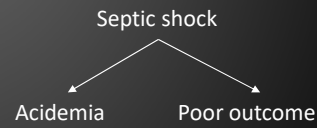
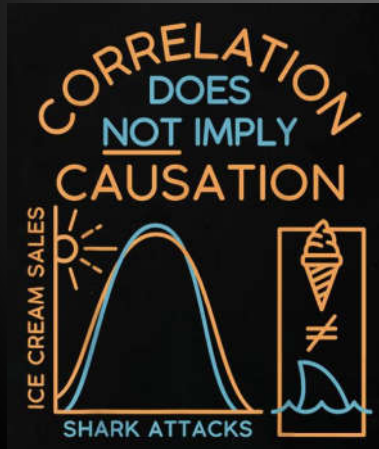
11

METABOLIC ACIDOSIS



12

METABOLIC ACIDOSIS



13



14

BICARBONATE

[Na+].[O-]C(=O)O

The infographic features a central bowl of white powder with a wooden spoon and two white pills. Six rays emanate from the bowl to six different illustrations, each with a text label below it:

- Whitens teeth:** Illustration of a mouth with blue spots on the teeth.
- Relieves heartburn:** Illustration of a person's torso with a red arrow pointing to the stomach area.
- Enhances athletic performance:** Illustration of a person running on a track.
- Treats canker sores:** Illustration of a mouth with a red sore and a syringe applying liquid to it.
- Fights mouth infections:** Illustration of a mouth with a red, inflamed tongue.

15

The monitor displays the following data:

- ECG:** Shows two leads (II and V) with a 1mV scale bar.
- HR (Heart Rate):** 123
- ART (Arterial Blood Pressure):** 76/51 (59)
- SpO₂ (Oxygen Saturation):** 99
- Pleth (Plethysmography):** Shows a cyan-colored waveform.

ST segment data is also visible:

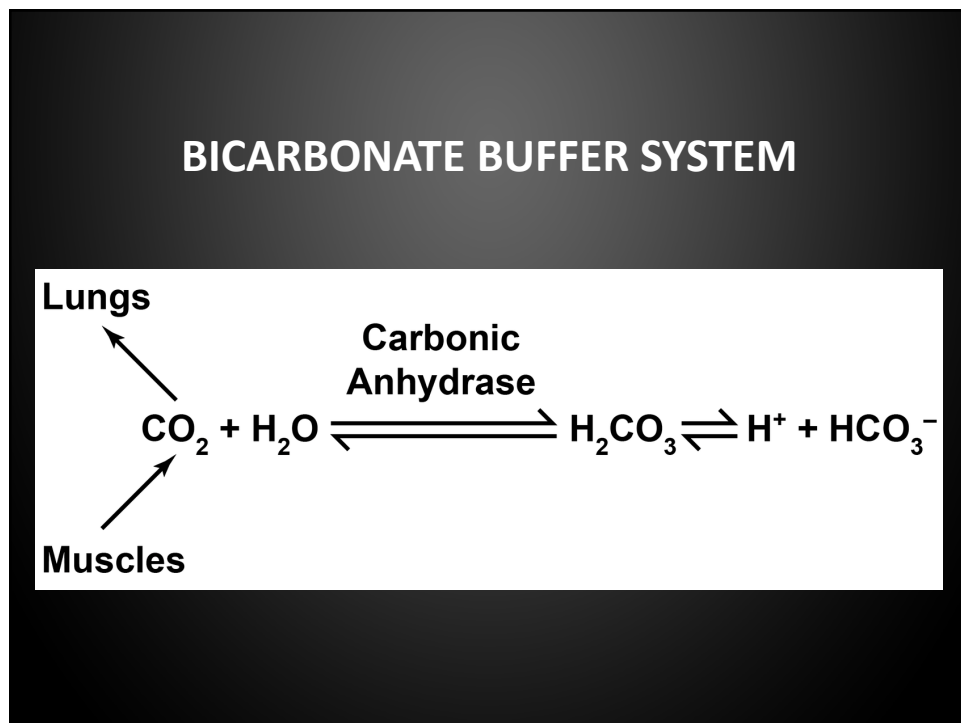
ST-I	0.0
ST-II	0.2
ST-V	0.0
ST-II1	0.1
ST-aVR	0.0
ST-aVL	-0.1

Below the monitor is a photograph of a dog in a white protective garment, being held by a person in a clinical setting.

16



17



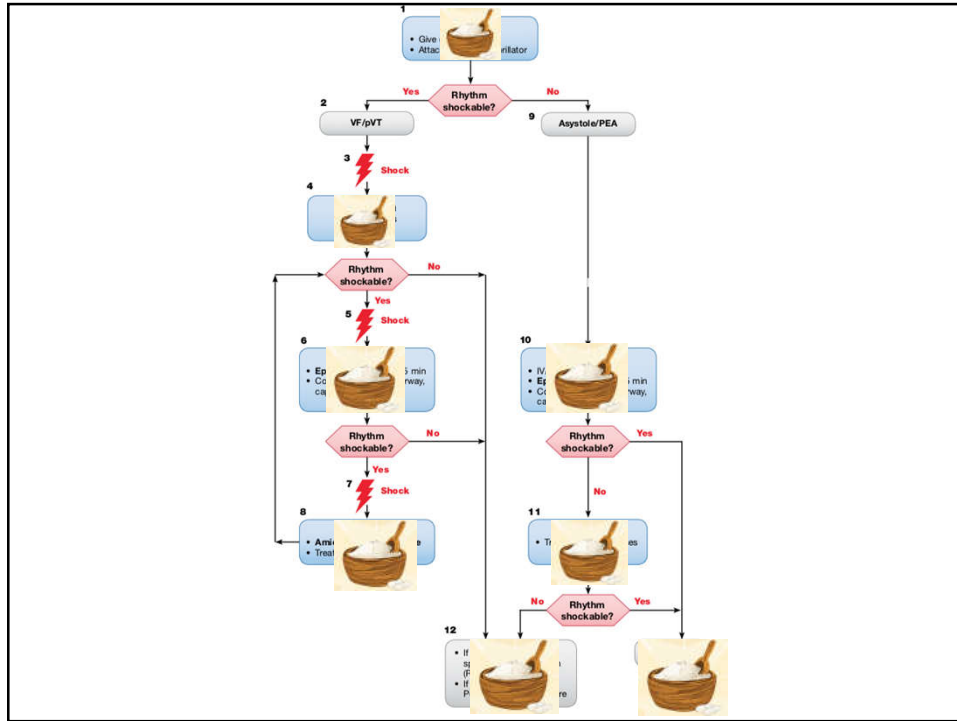
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19



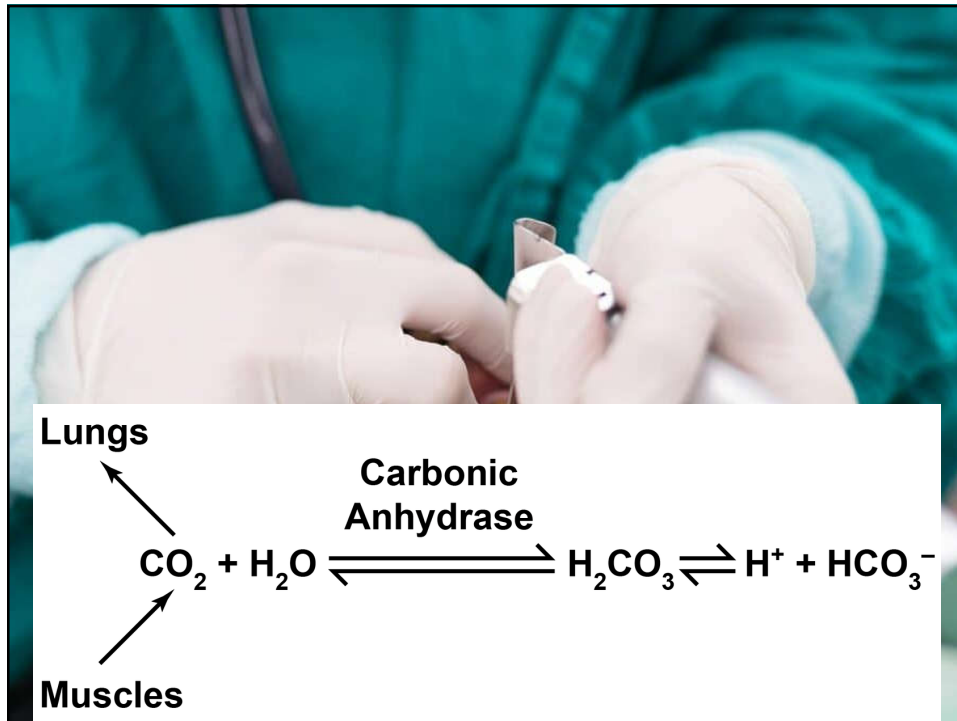
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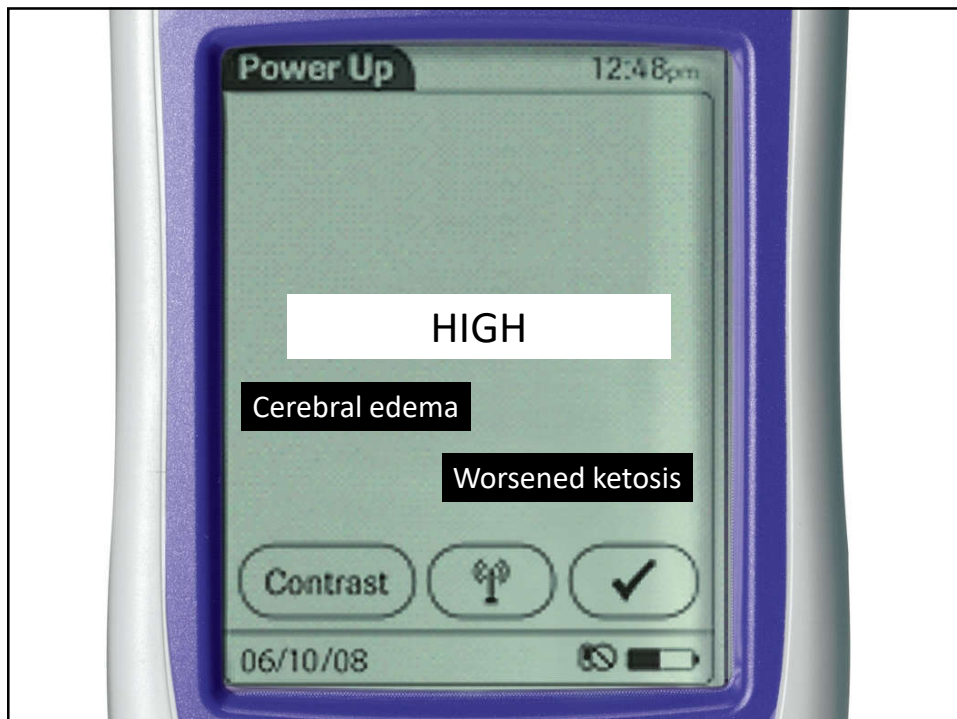
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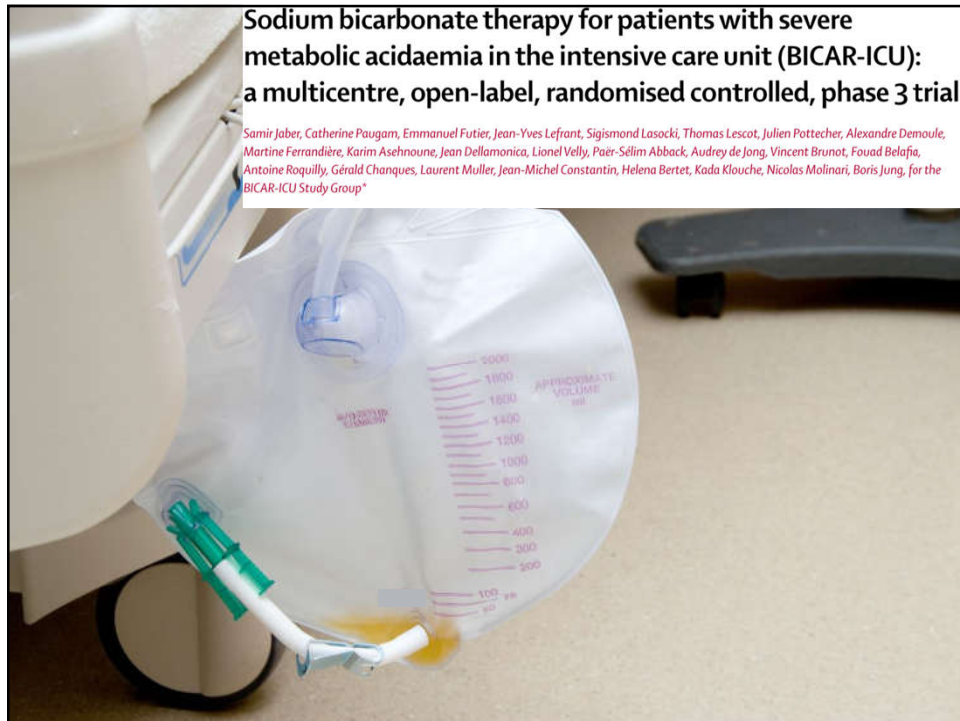
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24



25

Tricyclic antidepressants

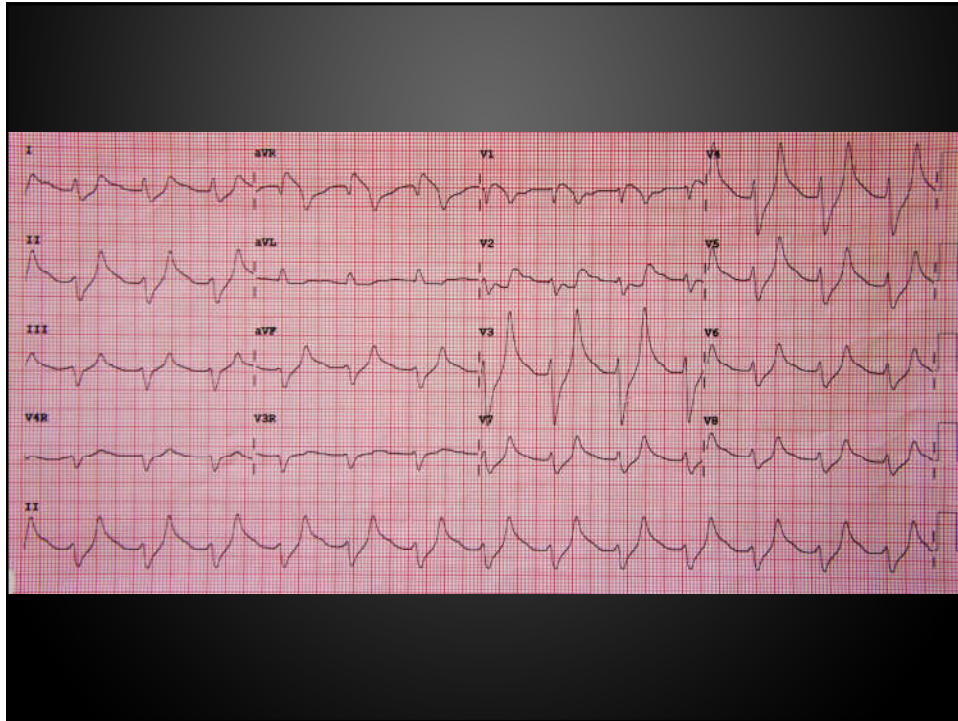
Salicylates

alkalinization

O=C(O)c1cc(O)ccc1>>[O-]C(=O)c1cc(O)ccc1

The Internet Book of Critical Care, by @PulmCrit

26



27

TAKE HOME POINTS

- Bicarbonate administration may increase pH, but doesn't really change patient outcomes in most situations (and can be harmful in others)
- Treat the underlying cause of the acidosis!
- Continue to administer bicarbonate in your TCA/salicylate overdose or hyperK patients (and maybe those with AKI)

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