

ACID / BASE

MEASURE ARTERIAL pH
and ARTERIAL BLOOD GASES

Arterial pH < 7.35

$\text{PaCO}_2 > 40 \text{ mm Hg}$
PATIENT HAS A
RESPIRATORY
ACIDOSIS

- Establish adequate ventilation
- Determine need for ventilatory assistance
- Correct cause of alveolar hypoventilation
- Discontinue respiratory depressants

$\text{PaCO}_2 > 40 \text{ mm Hg}$
 $\text{HCO}_3^- < 22 \text{ meq/L}$
PATIENT HAS A
METABOLIC
ACIDOSIS

HYPOXIA-INDUCED
ACIDOSIS
 $\text{PaO}_2 < 50 \text{ mm Hg}$

OTHER CAUSES OF
ACIDOSIS
 $\text{PaO}_2 > 50 \text{ mm Hg}$

Oxygenation is
inadequate ?

Perfusion is
inadequate ?

Patient has
hypoxic
hypoxia

Patient has
ischemic or
anemic
hypoxia

Cause of Hypoxia

- Low FIO_2
- Reduced ventilation-perfusion ratio
- Abnormal diffusion

Cause of Hypoxia

- Increased right to left intrapulmonary shunt

Rx

- Increase FIO_2
- Correct underlying pulmonary dysfunction with positive-pressure ventilation if necessary

Rx

- Increase cardiac output with volume replacement, cardiotonic drugs, and transfusions, as needed

Patient has
diabetic
ketoacidosis
glucose >
200 mg/dl
and ketones
are present

Rx

- Treat diabetic with insulin, potassium, phosphorus, and volume retention

Patient has
renal failure and
is unable to
excrete acid load

Rx

- Treat with supportive care, HCO_3^- , and hemodialysis

Patient has
excessive HCO_3^-
loss through
kidneys or GI
tract (diarrhea)

Rx

- Treat underlying problem