ACID BASE MNEMONIC (ROME)

**R** Respiratory
**O** Opposite

- pH $\uparrow$ PCO$_2$ $\downarrow$ Alkalosis
- pH $\downarrow$ PCO$_2$ $\uparrow$ Acidosis

**M** Metabolic
**E** Equal

- pH $\uparrow$ HCO$_3$ $\uparrow$ Alkalosis
- pH $\downarrow$ HCO$_3$ $\downarrow$ Acidosis

INFLAMMATION

**H** Heat
**I** Induration
**P** Pain
**E** Edema
**R** Redness
**METABOLIC ACIDOSIS**

- Headache
- Decreased BP
- Hyperkalemia
- Muscle Twitching
- Warm, Flushed Skin (Vasodilation)
- Nausea, Vomiting, Diarrhea

Changes in LOC (Confusion, Drowsiness)

Kussmaul Respirations (Compensatory Hyperventilation)

Causes:
- DKA
- Severe Diarrhea
- Renal Failure
- Shock

**METABOLIC ALKALOSIS**

- Restlessness Followed by Lethargy
- Dyssrhythmias (Tachycardia)
- Compensatory Hypoventilation

Confusion (↓ LOC, Dizzy, Irritable)

Nausea, Vomiting, Diarrhea

Tremors, Muscle Cramps, Tingling of Fingers & Toes

Causes:
- Severe Vomiting
- Excessive GI Suctioning
- Diuretics
- Excessive NaHCO₃

↓ Acid or ↑ in Base

Hypokalemia
RESPIRATORY ACIDOSIS

- Hypoventilation → Hypoxia

- Rapid, Shallow Respirations

- ↓ BP with Vasodilation

- Dyspnea

- Headache

- Hyperkalemia

- Dysrhythmias (↑K)

I can’t catch my breath.

- Drowsiness, Dizziness, Disorientation

- Muscle Weakness, Hyperreflexia

- Causes:
  - ↓ Respiratory Stimuli (Anesthesia, Drug Overdose)
  - COPD
  - Pneumonia
  - Atelectasis

Retention of CO₂ by Lungs

ACIDOSIS - ALKALOSIS

ALKALOSIS

pH ↑7.4

Kickin’ The pH Up

ACIDOSIS

pH ↓7.4

Slidin’ The pH Down
CALCIUM-PHOSPHORUS RELATIONSHIP
- The Ups and Down -

Serum Calcium - 9.0 - 11.0 mg/dl
Phosphorus - 3.0 - 4.5 mg/dl

CAUSES OF ACIDOSIS

ACIDOSIS - pH ↓ 7.4

Diabetic Ketoacidosis
Salicylate OD
Metabolic Acidosis pH ↓ HCO₃⁻
Severe Diarrhea
Sepsis
Shock
Renal Failure

Hypoventilation
Results in...
Drug Overdose
Pulmonary Edema
Respiratory Acidosis pH ↓ CO₂
Airway Obstruction
COPD
Chest Trauma
Neuromuscular Disease

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CAUSES OF ALKALOSIS

HYPERVERVENTILATION

Respiratory Alkalosis

Results In...

Anxiety

High Altitudes

Initial Stages of Pulmonary Emboli

Hypoxia

Pregnancy

Fever

ALKALOSIS - pH 7.4

Metabolic Alkalosis

Loss of Gastric Juices

Rx

Antacid

Overuse of Antacids

Potassium Wasting Diuretics

(† Loss of H+)

HEAT EXHAUSTION

* Headache
* Fatigue
* Weakness
* Skin Moist
* Sweating
* ↓ BP - Orthostatic
* ↑ Pulse
* Anxiety - Confusion

(Management - Salt & Water Replacement, Rest)

CAUSES:

* ↓ Fluid Intake
* ↑ Heat Exposure
* ↑ Activity

* Body Temp
  ↓ 38.8° C
  or 102° F

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HEAT STROKE

* Anxiety - Confusion
* Skin Hot & Dry
* Impaired Sweating
* Listlessness
*↑ Body Temperature (≥ 100.6°F or 38.1°C)
*↑ Pulse & Resp Rate
* Hypotension

Cerebral Edema:
* Seizures
* Delirium
* Coma

(Management - Cooling, Rest, Fluid & Electrolyte Support.)

HYPERKALEMIA

* Muscle Twitches → Cramps → Paresthesia
* Irritability & Anxiety
*↓ BP
* EKG Changes
* Dysrhythmias - Irregular Rhythm
* Abdominal Cramping
* Diarrhea
* Alkalosis

* Shallow Respirations
* Irritability
* Confusion, Drowsiness

* Weakness, Fatigue
* Arrhythmias - Irregular rate, Tachycardia
* Lethargy
* Thready Pulse

* ↓ Intestinal Motility
  Nausea
  Vomiting
  Ileus