ACIDOSIS - ALKALOSIS

ALKALOSIS

PH ↑ 7.4

Kickin' The pH Up

ACIDOSIS

PH ↓ 7.4

Slidin' The pH Down

Diagnostic Studies

- Arterial blood gas (ABG)
  - Acid-base status
  - Underlying cause of imbalance
  - Body’s ability to regulate pH
  - Overall oxygen status

- Q & A Nursing Responsibilities?
ACID-BASE MNEMONIC — ROME

- **Respiratory**
- **Opposite**
  - Alkalosis $\uparrow$ pH $\downarrow$ PaCO$_2$
  - Acidosis $\downarrow$ pH $\uparrow$ PaCO$_2$
- **Metabolic**
- **Equal**
  - Acidosis $\downarrow$ pH $\downarrow$ HCO$_3$^-
  - Alkalosis $\uparrow$ pH $\uparrow$ HCO$_3$^-
Q&A What imbalance does the patient have?
INTERPRETATION OF ABGS

Patient A
- pH 7.60
- PaCO₂ 30 mm Hg
- PaO₂ 60 mm Hg
- HCO₃⁻ 22 mEq/L

Patient B
- pH 7.58
- PaCO₂ 35 mm Hg
- PaO₂ 75 mm Hg
- HCO₃⁻ 50 mEq/L

Q&A What imbalance does the patient have?
• pH 7.28
• PaCO$_2$ 28 mm Hg
• PaO$_2$ 70 mm Hg
• HCO$_3^-$ 18 mEq/L

• Interpret the ABG results?
A patient with an acid-base imbalance has an altered potassium level. The nurse recognizes that the potassium level is altered because:

1. Potassium is returned to extracellular fluid when metabolic acidosis is corrected.
2. Hyperkalemia causes an alkalosis that results in potassium being shifted into the cells.
3. Acidosis causes hydrogen ions in the blood to be exchanged for potassium from the cells.
4. In alkalosis, potassium is shifted into extracellular fluid to bind excessive bicarbonate.
A patient has the following arterial blood gas (ABG) results: pH 7.48, PaO₂ 86 mm Hg, PaCO₂ 44 mm Hg, HCO₃⁻ 29 mEq/L. When assessing the patient, the nurse would expect the patient to experience:

1. Warm, flushed skin.
2. Respiratory rate of 36.
4. Hypertonic muscles with cramping.
CASE STUDY 1: JERI

- Jeri’s been on a 3-day party binge.
- Friends are unable to awaken her.
- Assessment reveals level of consciousness difficult to arouse.
  - Respiratory rate 8
- Shallow breathing pattern
- Diminished breath sounds

1. What ABGs do you expect?
2. What is your treatment?
CASE STUDY 2: MAYNA

• Presented to the ED after a sexual assault
• Examination reveals hysteria and emotional distress.
• Respiratory rate 38
• Lungs clear
• \( O_2 \) sat 96%

1. What ABGs do you expect?
2. What is your treatment?
CASE STUDY 3: GLEN

- History of fever, aches, and chills
- Generally feeling ill
- Cough productive of yellow, thick sputum for the past 4 days
- Examination reveals temp 38.4°C
- Respiratory rate 20
- Lungs with crackles in left lower lobes

1. Describe a patient who would have these ABGs, including history and assessment.
2. What is the treatment?
CASE STUDY 4: ALAN

- 17 years old
- History of
  - Feeling bad
  - Fatigue
  - Constant thirst
  - Frequent urination

- Blood sugar is 484 mg/dL.
- Respirations are 28 and deep.
- Breath has a fruity odor.
- Lungs are clear.

1. Describe a patient who would have these ABGs, including history and assessment.

2. What is the treatment?
CASE STUDY 5: ANTHONY

- History of nausea and vomiting for the past week
- Has been self-medicating himself with baking soda to control his abdominal discomfort

1. What ABG do you expect?
2. What is the treatment?
CASE STUDY 6: SUSAN

- ABG results are as follows:
  - pH 7.20
  - PaCO$_2$ 58 mm Hg
  - PaO$_2$ 59 mm Hg
  - HCO$_3^-$ 24 mEq/L

1. Describe a patient who would have these ABGs, including history and assessment.

2. What is the treatment?
CASE STUDY 7: FERNANDO

ABG results are as follows:
- pH 7.39
- PaCO₂ 38 mm Hg
- PaO₂ 44 mm Hg
- HCO₃⁻ 24 mEq/L

1. Describe a patient who would have these ABGs, including history and assessment.

2. What is the treatment?
CASE STUDY 8: BRIANNA

ABG results are as follows:
- pH 7.36
- PaCO$_2$ 58 mm Hg
- PaO$_2$ 50 mm Hg
- HCO$_3^-$ 33 mEq/L

1. Describe a patient who would have these ABGs, including history and assessment.

2. What is the treatment?
CASE STUDY 9: MONICA

ABG results are as follows:
- pH 7.50
- PaCO₂ 28 mm Hg
- PaO₂ 85 mm Hg
- HCO₃⁻ 24 mEq/L

1. Describe a patient who would have these ABGs, including history and assessment.

2. What is the treatment?
CASE STUDY 10: MIKE

ABG results are as follows:
- pH 7.20
- PaCO₂ 28 mm Hg
- PaO₂ 81 mm Hg
- HCO₃⁻ 18 mEq/L

1. Describe a patient who would have these ABGs, including history and assessment.

2. What is the treatment?
CASE STUDY 11: JEREMY

ABG results are as follows:
- pH 7.57
- PaCO₂ 46 mm Hg
- PaO₂ 87 mm Hg
- HCO₃⁻ 38 mEq/L

1. Describe a patient who would have these ABGs, including history and assessment.

2. What is the treatment?