



METABOLIC ACIDOSIS

WATCH VIDEO



Definition

- An accumulation of acid in the body caused by either increased acid generation, loss of bicarbonate, or diminished renal acid excretion
- Excess acid and decreased bicarbonate lead to pH imbalance.

Common causes



Renal failure



ASA/antifreeze overdose



Diarrhea

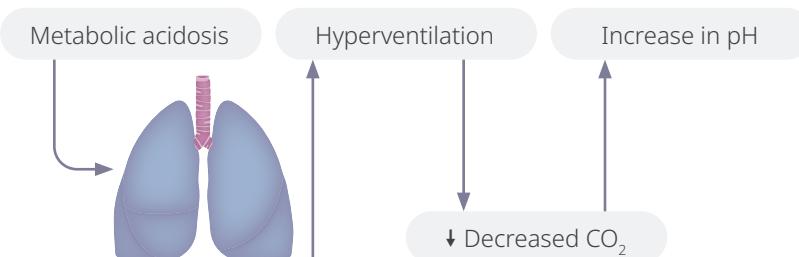


Diabetic ketoacidosis

Lab values

Disturbance	pH	CO ₂	HCO ₃ ⁻	Cause	Compensation
Metabolic acidosis	↓ Decreased	Normal or ↓ decreased	↓ Decreased	Kidneys control HCO ₃ ⁻	Lungs excrete CO ₂
Normal values	7.35–7.45	35–45 mm Hg	22–26 mmol/L	O ₂ levels are not part of ABG imbalance determination	

Compensation



Kussmaul breathing: an abnormal rapid, deep breathing pattern that helps the body blow off extra CO₂; often seen in DKA

Uncompensated:

Opposite system is not responding, pH remains imbalanced.

Partial compensation:

Opposite system is working to correct imbalance, pH not yet normalized.

Full compensation:

Homeostasis achieved, all lab values return to normal.

Example

Steps:

- Identify pH (acidosis or alkalosis).
- Identify CO₂ (↑, ↓, normal).
- Identify HCO₃⁻ (↑, ↓, normal).
- Which label matches pH?
- Look at opposite system, evaluate if it is bringing pH back to normal.

Disturbance	pH	CO ₂	HCO ₃ ⁻
???	7.25	32	18

Answer:

Metabolic acidosis partially compensated
- CO₂ level (32 mmHg) is low, which is an attempt by the respiratory system to compensate for the metabolic acidosis. The body "blows off" CO₂ (an acid) to raise the pH closer to the normal range.

Treatment



Fix the underlying cause.



Consider sodium bicarbonate IV.



Body increases respiratory rate to decrease CO₂.