

Diabetic Ketoacidosis (DKA) Diagnosis and Labs

Diabetic ketoacidosis (DKA) is a medical emergency and complication of diabetes. Patients have increased insulin requirements, which leads to a shortage. As a response, the body begins burning excess fat (and fatty acids), causing ketone body buildup. Lab values seen in DKA include blood sugars above 250 mg/dL, and anion gap metabolic acidosis with pH below 7.3 and bicarbonate below 18. Patients will also show present plasma ketones. Due to an extracellular shift, patients may be hyperkalemic.



PLAY PICMONIC

Diagnosis

Blood glucose Increased > 250 mg/dL

Blood Glue-bottle with Up-arrow 250 mg/dL

Patients can begin developing ketoacidosis at blood sugars above 250 mg/dL. Physicians usually move on to ketone testing when blood sugars exceed this level.

Anion gap metabolic acidosis

A-neon-sign at Gap with Metal-balls and Acidic-lemons

Patients with DKA may present with an anion gap metabolic acidosis, showing decreased bicarbonate and increased hydrogen ions.

Decreased pH < 7.3

Down-arrow pH-strip with < 7.3

Patients typically are very acidic, due to ketone buildup, and display blood pH levels below 7.3.

Decreased serum bicarbonate < 18

Down-arrow Bi-car-bombs under 18

As patients are experiencing a metabolic acidosis, the bicarbonate levels (HCO_3^-) are below 18.

Plasma ketones

Plasma-TV with Ketone-keys

DKA patients display plasma ketones, and in a 1:1 dilution display 4+ in a nitroprusside reaction. These ketone levels are what distinguishes DKA from nonketotic hyperglycemia.

Other Labs

Hyperkalemia

Hiker-banana

Due to a transcellular shift, patients display hyperkalemia. Normally, insulin helps drive potassium into cells. Because there is a lack of insulin in DKA, intracellular potassium is shifted into the extracellular space, causing hyperkalemia.