Diabetic Ketoacidosis

A plain-English guide for you and your family

WHAT IS HAPPENING

In diabetes, the body has trouble letting sugar into its cells. Sugar is the body's normal fuel. Without a hormone called insulin (the key that unlocks the cell door), that fuel cannot get inside. The cells think they are starving even though the blood is loaded with sugar. So the body starts burning fat instead. Burning fat that way makes acids called ketones. Too many ketones make the blood acidic. That is DKA (diabetic ketoacidosis). It can happen fast, and it is dangerous — but it is fixable when caught early. Common triggers are missed insulin doses, new diabetes (before anyone knew), infections, or illness. Signs include very high thirst, peeing a lot, belly pain, fruity-smelling breath, fast deep breathing, and confusion. If you or your child has diabetes and these signs appear, go to the hospital right away. Treatment is insulin, fluids through an IV, and careful watching to keep the body safe while it heals.

What you might feel

- Extreme thirst
- Peeing constantly (polyuria)
- Nausea and vomiting
- Belly pain
- Deep, fast breathing (Kussmaul breathing)
- Fruity or acetone breath
- Confusion, drowsiness, or hard to wake
- Weakness and fatigue
- Weight loss

Call the doctor right away if...

- Breathing slowing down or becoming shallow in a patient who is still acidotic—the respiratory muscles are tiring out and respiratory arrest may be next

- Sudden severe headache, worsening confusion, vomiting, or decline in mental status during treatment (especially in children under 18)—warns of cerebral swelling (edema), brain swelling that can be fatal
- Blood sugar dropping quickly but the anion gap still wide and bicarbonate still low—ketoacid is still being made or not cleared, do not stop insulin even if glucose is normal
- Chest pain, new trouble breathing, troponin elevation, or signs of heart failure—a heart attack or severe infection may have triggered the DKA and needs urgent treatment alongside DKA care
- Blood pressure staying low or dropping despite fluid—suggests septic shock, cardiogenic shock, or severe volume depletion; needs immediate ICU-level support

What the care team will do

- Check potassium BEFORE the first insulin bolus or infusion
- Titrate fluids and insulin per protocol; hourly finger sticks
- Watch mental status every hour, especially in kids
- Do NOT stop insulin when glucose normalizes if the anion gap is still open
- Look for and treat the trigger

Medicines you may be given — and why

Regular insulin (IV infusion)

The missing key that unlocks the cell's door so sugar can get inside and be used for energy. When you give it into the vein, it tells the body to stop burning fat (which makes ketones, the acid that builds up in DKA). It also turns off the liver's ketone factory.

Potassium chloride (KCl)

Puts potassium back into the blood before insulin pushes it into cells. In DKA, the body is running low on total potassium (even if the blood test looks normal at first) because of vomiting, peeing a lot, and high acid. Replacing it protects the heart.

0.9% sodium chloride (normal saline, IV fluids)

Replaces the huge amount of water and salt the body has lost through vomiting and peeing. Fills the blood vessels back up so blood pressure stays stable and the kidneys can start clearing ketones and acid.

Sodium bicarbonate (IV, rarely used)

Temporarily buffers (neutralizes) the acid in the blood when the pH is dangerously low (below 6.9) and the heart rhythm or breathing is at risk. It does not fix the root cause. Insulin and fluids do the real work.

Where this information comes from

- ADA Standards of Care in Diabetes 2024
- ISPAD Clinical Practice Consensus Guidelines: Diabetic Ketoacidosis and Hyperglycemic Hyperosmolar State 2022
- American Diabetes Association: Hyperglycemic Crises in Diabetes (Diabetes Care)
- UpToDate: Diabetic Ketoacidosis and Hyperosmolar Hyperglycemic State in Adults

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