Insulin is the key our bodies use to open cells, so they can turn glucose into energy. When our bodies do not have enough insulin, glucose builds up in the bloodstream (hyperglycemia) and cells remain locked. The body has to figure out another way to get energy.

For an alternate source of fuel, the liver takes fat from the body and breaks it down into fat and acid. The acids are called ketones.

Ketones may develop because of:

- Fever or Illness
- Missed insulin injections
- Broken insulin pump or bent cannulas
- Bad insulin (ex. expired, previously frozen, exposed to very high temperatures)
- A ketogenic diet (low carbohydrate) with low total daily insulin dose
- Prolonged vigorous exercise where there may be very low insulin levels

When high levels of glucose and ketones build up in the body, a dangerous situation can occur called diabetic ketoacidosis (or DKA). In DKA, the overall pH of the body can drop to a dangerously low level. If left untreated, DKA can be fatal. If ketones are present, closely monitor their levels. If they are moderate or large, call your doctor.

Watch the video on this page to learn more about ketones.

Reviewed by Anastasia Albanese-O'Neill, PhD, APRN, CDCES on 11/26/25

This document is not intended to take the place of the care and attention of your personal physician or other professional medical services. Our aim is to promote active participation in your care and treatment by providing information and education. Questions about individual health concerns or specific treatment options should be discussed with your physician.

Recommended

Monitoring Ketones

Treating Hyperglycemia

[What is DKA?]

Sources

Diabetes and DKA (Ketoacidosis) – American Diabetes Association

Ketones: What you Need to Know

Ketones and Exercise – What You Need to Know — Insulin Nation