

# Low Blood Sugar



Diabetes Done Right™

Sugar is the body's main source of energy and we need it to survive. In fact, the brain consumes ~20% of the body's sugar. Low blood sugar (*hypoglycemia*) happens when blood sugar is low enough to harm you. Sugar is the brain's favorite food and low levels can lead to a "fight or flight" response or even brain dysfunction.

## How low is low

Low blood sugar is usually defined as less than 70 mg/dL, but speak with your healthcare provider about your goal blood sugar range. Hypoglycemia can fit into 3 different categories:

**Level 1 (Mild):** 54-70 mg/dL

**Level 2 (Moderate):** Less than 54 mg/dL

**Level 3 (Severe):** Symptoms so severe that you experience dramatic mental or physical changes that stop you from being able to safely treat yourself. Severe hypoglycemia requires help from another person - usually through glucagon.

## Some causes

Blood sugar varies all day with activities, meals, and medications. Low blood sugar is most common in people with type 1 diabetes or people who take insulin. The average person with type 1 diabetes has two episodes of low blood sugar per week.

## Activities

People who use insulin, like people with type 1 diabetes, are at a higher risk of experiencing low blood sugar with exercise. This is because blood sugar is lowered by both the insulin injected as well as physical activity. Most experts recommend a pre-exercise level of 90-250 mg/dL to avoid these lows. However, be sure to speak to your healthcare provider about a range that is safe for you.

People who are not on insulin are much less likely to experience low blood sugar during exercise. However, starting intense physical activity with a lower starting blood sugar can cause hypoglycemia in these individuals.

## Meals

Skipping meals or drastically lowering your carbohydrate intake can lead to low blood sugar. This is more common in people who are on insulin and can be avoided with dosage adjustments coordinated with your medical provider.

Taking short acting insulin then waiting too long before a meal can lead to low blood sugar. Most people should take insulin ~15 minutes before their meal. Follow your medication instructions to avoid experiencing hypoglycemia.

Drinking too much alcohol can also lead to hypoglycemia. Even though there is sugar in alcohol, there are other chemicals that actually prevent you from using the sugar in your body. The current recommendations for alcohol consumption are the same as for people without diabetes - 1 drink per day for women, and 2 for men.



## Medications

Insulin lowers blood sugar. People who use insulin are more likely to experience low blood sugar. Some people may benefit from flexible insulin dosing that is coordinated alongside their healthcare provider. Continuous glucose monitoring (CGM) can lead to fewer instances of low blood sugar in people who inject insulin multiple times a day.

Other medications like sulfonylureas can also lead to hypoglycemia. Taking these medications with meals can reduce the chances of experiencing low blood sugar.

## What it feels like

Low blood sugar can take on any number of different forms. The most common ones include:

- Anxiety, irritability, or nervousness
- Shakiness or tremors
- Confusion, lightheadedness, or dizziness
- Hunger or nausea
- Fast heartbeat
- Sleepiness, weakness, or low energy
- Blurry vision or tingling around the mouth or face
- Headaches
- Worsening coordination
- Seizures

Hypoglycemia is dangerous because sugar is the brain's favorite food. If blood sugar levels stay low for too long they can affect the way the brain works. This leads to some of the symptoms above like confusion, dizziness, blurry vision, tingling, worsening coordination, seizures or death. This is why hypoglycemia can sometimes resemble a stroke.

Some people have no symptoms at all. This is called hypoglycemia unawareness and is very dangerous. Hypoglycemia unawareness makes someone less likely to recognize and respond to low blood sugar and can happen in people who frequently have low blood sugar or have had uncontrolled diabetes for a long period of time. Fortunately it can usually be reversed. Speak to your doctor about the steps you can take if you experience hypoglycemia unawareness.

## What to do about it

The Rule of 15 should be used when blood sugar is under 70 mg/dL or if you are experiencing symptoms of low blood sugar and are unable to test.

*The Rule of 15 is simple:*

1. Eat 15 grams of quick acting carbohydrates
2. Wait 15 minutes then recheck blood sugar
3. If it's below 70 mg/dL then repeat the above steps
4. When it's above 70mg/dL eat a small, protein containing snack
5. Recheck blood sugar in an hour to be sure it hasn't dropped again

*Quick acting carbs are simple carbs that have a high glycemic index. Examples include:*

- 1 tablespoon of sugar or honey
- ½ cup of fruit juice
- ~4 glucose tablets (*amount varies by brand*)
- ~1 dose glucose gel (*amount varies by brand*)
- Hard candies
- If none of these are available, choose something sugary with 15 grams of carbs.

You should only eat 15g at a time unless otherwise instructed by your healthcare provider. Eating too much could result in high blood sugar.

### **Severe hypoglycemia (level 3)**

Level 3 (Severe): Symptoms so severe that you experience dramatic mental or physical changes that stop you from being able to safely follow the Rule of 15. Severe hypoglycemia requires help from another person - usually through glucagon.

Severe hypoglycemia is usually treated with glucagon. Glucagon and insulin are mirrors of each other. Both are normally produced by the pancreas. Insulin brings blood sugar down, whereas glucagon brings it back up. Glucagon works by releasing sugar that is stored in the liver.

Glucagon can be injected into fat tissue or absorbed through the nose as a powder. Instructions vary by brand - some injectable forms need to be mixed while others come pre-mixed. Anyone using glucagon should carefully follow the package instructions.

It can take up to 15 minutes for someone to regain consciousness and it is normal to experience nausea and vomiting afterwards.

### **What to do next**

The best way to avoid low blood sugar is with good diabetes management. This means taking medications as prescribed, following a consistent meal schedule, and performing physical activity only when your blood sugar is within a safe range.

Life happens and lows happen too.

Check out the **Glucose Guards Hypoglycemia Action Plan** to avoid the serious consequences of untreated or over treated low blood sugar.