

Diabetes: Low Blood Sugar (Hypoglycemia)

What is low blood sugar?

Blood sugar is considered to be too low if it is lower than 70 milligrams per deciliter (mg/dL), or 4 millimoles per liter (mmol/L). If low blood sugar is not treated right away, you could pass out, have a seizure, go into a coma, or even die.

When you have diabetes, it's important to watch your blood sugar level closely. This is especially important if you are newly diagnosed and are learning how to regulate your medicine (if any), diet, and exercise. Regular testing of your blood sugar, as recommended by your healthcare provider, may allow you to detect and treat low blood sugar before it causes serious symptoms. You may be able to prevent ever having low blood sugar.

The medical term for low blood sugar is hypoglycemia. If you are taking insulin, very low blood sugar is sometimes called an insulin reaction or insulin shock.

What is the cause?

Low blood sugar is usually a side effect of diabetes treatment. It can also result from medicines or other conditions or diseases.

When you have diabetes, low blood sugar can be caused by too much insulin or other diabetes medicine. If you are using insulin, it may happen because:

- You have accidentally used too much or the wrong type of insulin.
- Your insulin is no longer good because it has expired or was not stored properly.
- You have an insulin pump that is not working properly.

Some other things that can cause abnormally low blood sugar when you have diabetes are:

- Exercising more than usual
- Skipping or delaying meals or snacks
- Having a meal or snack that is too small
- Dieting to lose weight
- Not taking diabetes medicines at the right time
- Side effects of other medicines
- Drinking alcohol
- Diarrhea or vomiting

Low blood sugar from these other causes is usually not as low and not as dangerous as low blood sugar caused by too much insulin or other diabetes medicine.

What are the symptoms?

It is important to recognize low blood sugar as soon as possible, before it gets dangerously low and causes a severe reaction.

Symptoms of low blood sugar may include:

- Hunger
- Nervousness
- Sweating
- Shakiness
- Lightheadedness
- Nausea
- Headache
- Fast pulse
- Confusion (feeling or looking dazed)

For some people, a blood sugar below 90 mg/dL (5 mmol/L) can cause these symptoms. For others, symptoms may not start until the blood sugar level is below 70 mg/dL (4 mmol/L).

Some high blood pressure medicines called beta blockers can hide the symptoms of low blood sugar. If you are taking medicine for high blood pressure, ask your healthcare provider if the medicines you are taking could have this effect.

Know the difference between the symptoms of low blood sugar and high blood sugar. High blood sugar doesn't always cause symptoms, but when it does, the symptoms may include blurry vision, extreme thirst, and a lot of urination. When you are not feeling "right," always check your sugar.

How is it treated?

If you have diabetes, you need to know how to recognize and treat low blood sugar right away to bring it back up to a healthy range. You should not go to bed until you have raised your sugar back into your normal, after-meals range.

If you often have symptoms of low blood sugar, talk to your healthcare provider about it. When you see your provider, be sure to take your records of all of the results of your recent blood sugar checks. This helps your provider know whether you are on the right medicines and are taking the right dose at the right times of day. Without this record, it's harder for your provider to help you figure out the cause of your symptoms.

Your provider will give you guidelines for treating low blood sugar when you are having symptoms. Here are some examples of guidelines your provider may give you:

- If you think your blood sugar may be too low, check it with your home glucose meter before treating yourself, if possible.
- Always carry some form of sugar that you can eat as soon as you have any symptoms of low blood sugar. The following amounts and types of foods will help your blood sugar get higher:

- 3 to 4 glucose tablets
- 1/2 cup (4 oz) fruit juice
- 1/2 cup (4 oz) regular (**not** diet) soda (about half a can)
- 8 ounces of skim milk
- 1/4 to 1/3 cup of raisins
- 5 to 7 pieces of hard candy like Lifesavers
- A tube of glucose in gel form (such as InstaGel or MonGel)
- 1 tablespoon of molasses, corn syrup, or honey

The diabetes medicines Precose (acarbose) and Glyset (miglitol) keep your body from absorbing some types of sugar. If you take these medicines and have low blood sugar, you must use glucose tablets or gel, honey, or fruit to raise your blood sugar.

- If you still have symptoms 10 to 15 minutes after eating or drinking one of these foods, you may need to eat or drink another portion.
- If you are about to eat a meal, eat the fruit or drink the juice first and then eat the rest of your meal.
- After 15 minutes, check your blood sugar again. If it's still lower than 70 mg/dL (4 mmol/L), take another serving of one of the foods on the list. Repeat these steps until your blood sugar is above 70 mg/dL (4 mmol/L) or until you feel better. You may need to eat a protein snack (like peanuts, peanut butter, or cheese) or a meal soon after you feel better to keep your blood sugar from getting too low again.

If your symptoms get worse despite treatment, call your healthcare provider or have a family member or friend call 911. Emergency treatment may include a shot of glucose or a medicine called glucagon to raise your blood sugar. You may need to go to the hospital to be treated with IV glucose. Being at the hospital will allow your healthcare provider to watch your reaction to treatment, determine why your blood sugar got too low, and, if necessary, change your medicines.

If you tend to often have episodes of low blood sugar, ask your healthcare provider if you should keep glucagon on hand. It can be given as a shot by a family member when you are having low blood sugar and are not alert enough to safely take some food or give yourself the shot. It makes your blood sugar rise quickly. Your family members should also know how to use your glucose meter to check your blood sugar when you are not able to.

If you lose consciousness, someone should call 911 to get help on the way before checking for or treating low blood sugar.

How can I take care of myself?

- Take all medicines exactly as prescribed.
- Take your glucose meter and equipment with you whenever you leave the house.
- Know when to check your blood sugar and when to call for help.

- Check your blood sugar more often when you are exercising more or eating less, or when you are sick, according to your healthcare provider's recommendations.
- Keep some sugar or hard candy always with you so if your blood sugar gets too low you can treat it right away.
- Recheck your blood sugar 20 to 30 minutes after treatment for low blood sugar to make sure it goes back up (especially at bedtime or during the night).
- Carry a medical ID (such as a card or bracelet) that says you have diabetes.
- When your blood sugar is low, be careful not to drive or do anything that requires good reflexes and your full attention. Driving with a low blood sugar is very dangerous, both for you and for others. The effect of a low blood sugar on your judgment, reflexes, and ability to react are similar to those of a person driving under the influence of alcohol. It's a good idea to check your sugar before you get in the driver's seat, especially on long trips. Pull over to the side of the road right away if you start feeling symptoms of low blood sugar and take your emergency sugar. Don't try to treat low blood sugar while you are driving.
- If you are taking insulin, ask your healthcare provider if you should carry glucagon with you at all times. A family member or friend can be taught how to give you a shot of glucagon if you become unconscious or unable to swallow liquids or food safely. (They should also call 911.) The glucagon should raise your blood sugar enough for you to become conscious in a few minutes. Then, when you are awake enough, you can eat or drink something sweet, such as orange juice.
- Ask your healthcare provider what symptoms or problems you should watch for and what to do if you have them.

How can I help prevent low blood sugar?

- Check your blood sugar regularly.
- Know what causes low blood sugar.
- Eat at regular mealtimes. Don't delay or skip meals and don't eat partial meals.
- Take all medicines exactly as prescribed.
- Check your blood sugar more often when you are exercising more or eating less, or when you are sick, according to your healthcare provider's recommendations.
- Keep your follow-up appointments with your provider and take your glucose meter or sugar log to show your provider at your checkups.

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