

Managing the Highs and Lows of Type 2 Diabetes

Target Audience: People with diabetes

Objectives: Participants will:

1. Be able to recognize and treat high and low blood glucose levels.
2. Be able to better control wide swings in blood glucose values.
3. Be able to instruct co-workers on the symptoms and treatment of high and low blood glucose levels.

Time Required: Approximately 20–30 minutes; for a 15-minute presentation, discuss only hypoglycemia (low blood glucose)

Props: Various blood glucose monitors (you can get a monitor from a diabetic supply store, from a manufacturer of diabetes supplies) and diabetes identification options; blank overhead with marker; 1/2 cup portions of orange and apple juices; 1/3 cup portions of cranberry or grape juice; paper plate with 1 tablespoon portion of corn syrup and honey; 3-4 teaspoons of sugar; 3–4 hard candies; paper plate with 3 graham crackers; small box of raisins; glucose tablets to equal 15 grams; 1 carton skim milk

Handouts: “Prevent Diabetes Problems: Keep Diabetes Under Control,” “Hypoglycemia” and “Your Guide to Diabetes: Type 1 and Type 2”—section entitled “When Your Blood Sugar is Too High or Too Low” (available from the National Institute of Diabetes and Digestive and Kidney Diseases at www.niddk.nih.gov)

AV Equipment: Overhead projector

Lesson Plan

All of us have highs and lows in our lives. We have highs and lows in our careers, our moods, our energy levels, and with our families. With diabetes a person may have a new kind of high and low—the highs and lows of blood glucose (sugar) levels. Although new diabetes tools have helped diabetes control, it is still hard to maintain near normal blood glucose levels.

Because you are at work for most of your waking hours, being able to detect and treat high and low blood glucose levels is vital for your safety and well-being. Your co-workers will also want to know about these two conditions, so they can assist you if you ever need help.

First, let’s start with high blood glucose. Can anyone tell me the medical term for a high blood glucose level? (*Participants answer.*)

(*Show overhead entitled “Hyperglycemia.”*) That’s right. The medical term for high blood glucose is HYPERGLYCEMIA. That’s a big word, but it’s easy to understand once you know what each part means. “Hyper” means high, and “glycemia” means sugar in the blood.

Can anyone tell me why hyperglycemia occurs? (*Participants answer.*)

(*Show overhead entitled “Reasons Hyperglycemia Can Occur.”*) Those are some good answers. Hyperglycemia usually occurs because:

1. You took either too much or too little diabetes medicine, or you took it at the wrong time, or it was out-of-date.
2. You increased your eating.
3. You became less active.
4. You were under stress.
5. You were ill.

Symptoms vary from person to person and may be hard to detect. When you have hyperglycemia what symptoms do you notice? (*Participants answer.*)

(*Show overhead entitled “Common Signs of Hyperglycemia.”*) Sounds like many of you have had hyperglycemia. The common symptoms are extreme thirst, a frequent need to urinate, blurry vision, feeling tired for no reason, or just feeling “strange.”

Very rarely will a person with type 2 diabetes develop a condition called “ketosis.” (*Show overhead entitled “Ketosis.”*) This condition occurs when glucose cannot be used for energy because there is little or no insulin in the body. This causes fat to be broken down into substances called ketones, which can be used as fuel. Although ketones can keep the body working for a while, they cause a chemical imbalance that in the long run can be dangerous.

(*Show overhead entitled “Signs of Ketosis.”*) Ketosis occurs mainly in those who have type 1 diabetes. Ketosis is a very serious condition that requires immediate medical attention. Its symptoms include lack of appetite, upset stomach, a fruity breath odor, difficulty breathing, extreme thirst, dry mouth, frequent urination, flushed skin, blurry vision, fever, and drowsiness. The urine can be tested to see if ketones are present.

What is the best way to know if your blood glucose is too high or low? (*Participants answer.*) Exactly—the best way to know is to test your blood with a blood glucose meter. (*Show variety of blood glucose meters.*) Blood glucose meters are now so small and light that they can be carried in the pocket or purse and used almost anywhere. If you do not check regularly, your diabetes control will be like driving down the road with your windshield covered with mud. You won’t know where you are going and very soon you will end up where you don’t want to be.

When your blood glucose is high, what can you do to lower it? (*Participants answer.*)

(*Show overhead entitled “Ways To Treat Hyperglycemia.”*) Since you have type 2 diabetes and make some insulin, taking a walk can help lower it. If you take insulin, your medical team may have shown you how to take extra insulin. High blood glucose can lead to dehydration, so drinking more water is also smart. If the blood glucose value is over 350 two times in a row, and you have unsuccessfully tried to lower it, call your medical team for help.

High blood glucose readings occur occasionally for everyone with diabetes. The real concern is when the blood glucose is high too often. Frequent high blood glucose levels increase risk for diabetic complications, such as heart disease, kidney failure, stroke, amputation, painful nerve damage, and vision loss.

The other problem is a low blood glucose level. What is the medical term for this condition? (*Participants answer.*)

That's right. It is HYPOGLYCEMIA. Hypo- means low or under. This is only a problem with type 2 diabetes if you take diabetes medication. Have any of you had this happen? Do you know what tends to cause it? (*Participants answer.*)

(*Show overhead entitled "Hypoglycemia."*) Hypoglycemia is usually caused by taking too much diabetes medicine and not eating enough food, and/or being more active than usual. Drinking alcohol on an empty stomach can also cause blood glucose levels to drop.

If you have had hypoglycemia, what symptoms did you have? (*Participants answer and show overhead entitled "Reasons Hypoglycemia Can Occur."*)

(*Show overhead entitled "Signs of Mild Hypoglycemia."*) Common symptoms of mild hypoglycemia are shakiness, heart palpitations, sweating, chills, clamminess, nervousness, anxiety, rapid heartbeat, dizziness, and hunger. (*Show overhead entitled "Signs of More Serious Hypoglycemia."*) If hypoglycemia is severe you may also experience headache, irritability, mood changes, blurred vision, drowsiness, nightmares, nausea, confusion, inability to pay attention, and tingling and numbness of the tongue and lips. Again, different people seem to have different symptoms. If the symptoms go untreated, a loss of consciousness may occur. Because this is possible, you need to always wear diabetes identification that is easily visible. (*Show diabetes ID options.*)

If you experience any of these symptoms and you take diabetes medicine, test your blood glucose. If it is under 70, treat yourself by the RULE OF 15. Consume 15 grams of quick-acting carbohydrate (the nutrient that affects the blood glucose the most) then wait 15 minutes. Test again. If the blood glucose is still less than 70, treat with another 15 grams of carbohydrate. Repeat as needed. (*Distribute the "Examples of Treatments for Hypoglycemia" handout and show samples.*)

You may be tempted to eat more than 15 grams of carbohydrate at a time because you feel so bad, but don't. If you overeat, you may suffer "rebound" hyperglycemia. This means that your blood glucose will go too high because you ate too much carbohydrate. If you cannot for some reason test your blood, treat yourself as if you have hypoglycemia. You do not want the symptoms to get worse.

Most people experience these symptoms only if the blood sugar is less than 70, but some people will also feel bad if their blood glucose is very high and then starts rapidly dropping to normal. The best way to know whether you need to treat for hypoglycemia is to test. If it is not truly low, then wait. You will feel better once your liver releases some stored glucose. If you eat when your blood glucose is not really low, you will just add extra calories and raise your blood glucose even more.

Of course, it is always easier to prevent hyper- or hypoglycemia. What do you think would help prevent these conditions? (*Write down options listed by participants on a blank overhead.*)

Possible options the audience may mention:

1. More frequent testing and keeping detailed records on medication and food; activity that may affect blood glucose levels, especially when ill or under stress.
2. Regular meals with controlled portions.
3. Regular activity taken at regular times.
4. Talking with a pharmacist or doctor about dosage, storage, administration, and potential blood glucose side effects of any drug, whether prescription or over-the-counter.
5. Alcohol use only with doctor's permission and only in limited amounts with food.

Anyone who has diabetes wants to avoid hyper- and hypoglycemia. Even if you can't avoid these conditions completely, they may occur less often if you work with your medical team and keep records of what tends to make them worse or better. (*Distribute handouts entitled "Doing Your Level Best: When Your Blood Sugar Is Too High or Too Low" and "Fighting Diabetes Complications."*)

For more information on hypoglycemia visit:

<http://www.niddk.nih.gov/health/diabetes/pubs/hypo/hypo.htm>