

**TEACHING PLAN**

This lesson is designed to help home health staff learn about diabetes. To use this lesson for self-study, the learner **should** read the materials, do the case study activity and take the test.

For **group** study, the leader should give every learner a copy of the learning guide and use the suggested group **activities** to teach the lesson.

**LEARNING OBJECTIVES**

Participants will be able to:

- Explain what diabetes is and does.
- Describe the four key elements of treatment for diabetes.
- List the symptoms of low blood sugar and high blood sugar.
- Know how to respond to a diabetic emergency.

Teaching tip

When lecturing, move around the room a little to provide visual interest. Focus attention by writing main points on a board.

**SUGGESTED GROUP ACTIVITIES****Introductory activity**

Give the learners a copy of the case study activity. Ask them to read the case studies and think about their responses. **Explain** that they will learn answers to these problems today.

What diabetes is and does

Go over the material in the lesson guide about what diabetes is, the two types of diabetes and the long-term effects of **diabetes**. You can do this as a mini-lecture. Point out that the pancreas is located behind the stomach, in front of the **lower part** of the backbone.

The four key elements of treatment

Review and discuss the material together, asking learners to read portions of the lesson aloud to the others. Emphasize the points that are of particular concern for your agency.

Diabetic emergencies

Ask the workers to study the symptoms of low blood sugar and high blood sugar for a minute. Quiz them by calling out a symptom and asking whether it means high blood sugar or low blood sugar. For fun, throw a small piece of candy to the first person to call out the correct answer. Observe that some similar symptoms occur in both conditions, but low blood sugar happens suddenly. High blood sugar symptoms usually appear gradually and become worse.

Ask the learners to tell you how to respond to each type of diabetic emergency. Be sure they know that low blood sugar can cause heart attacks and strokes if not treated promptly.



THE LESSON

Review the material in the lesson with participants. Allow for discussion.



CONCLUSION

Have participants take the test. Review the answers together. Award certificates to those who answer at least seven (70%) of the test questions correctly.



TEST ANSWERS

- | | |
|---|-----------|
| 1. Before meals, 80–130; At bedtime, 100–150 | 6. True |
| 2. a. diet, b. exercise, c. medication, d. monitoring | 7. 70 |
| 3. b | 8. 180 |
| 4. False | 9. True |
| 5. c | 10. False |

DIABETES

Diabetes is a disease that changes the way our bodies use food. It causes the level of sugar in the blood to be too high. The extra sugar harms the blood vessels and other organs in the body over time. Diabetes can cause great damage before any symptoms appear.

When we eat, our bodies digest the food and turn it into sugar, or *glucose*. In a normal healthy person, an organ called the *pancreas* produces *insulin*, a hormone. Insulin helps the body's cells use glucose to produce energy. The cells use this energy to keep our bodies healthy.

In someone with diabetes, either the pancreas is not producing enough insulin or the body does not use its insulin effectively. The cells cannot turn sugar into energy, and the sugar builds up in the blood. The cells are starved for energy, and the blood carries dangerously high levels of sugar that can't be used.

Main Types of Diabetes

Type 1 means that the pancreas is not producing insulin or is producing very little. This type *always* requires shots of insulin injected into the body every day.

Type 2 means that the pancreas is producing insulin, but not enough, *or* that the body does not use its insulin effectively.

Nine out of 10 cases of diabetes are Type 2. It usually occurs in people who are overweight and over age 45. Type 2 diabetes is on the rise in children believed to be due to the increase in childhood obesity. It can be treated by diet, exercise and/or medications that are taken by mouth. Sometimes it also requires insulin injections.

Importance of Controlling Diabetes

The goal of treatment for diabetes is to keep the individual's blood sugar as close to normal as possible for that person. Doing this will lower the person's chances of getting:

- Stroke
- Heart disease
- Kidney failure

- Stomach disease
- High blood pressure
- Eye disease, loss of vision or blindness
- Nerve damage, with pain or loss of feeling in hands, feet, legs or other parts of the body
- Decreased blood flow to the lower extremities, which may lead to slow wound healing or amputation

A high level of sugar in the blood over a long period of time causes these problems.

Diabetic Treatment

There are four parts to diabetic treatment:

1. Diet
2. Exercise
3. Medicine
4. Monitoring

We will discuss each of these elements of treatment. Anyone who helps a diabetic person should be familiar with the medicine, exercise regimen, monitoring program and diet that the individual is supposed to follow.

Diet

There is no one diabetic diet designed for every diabetic person. There are guidelines to help diabetics with food choices. These guidelines are very similar to the kind of eating that is healthy for anyone. The following are the main rules that should be followed:

1. Limit carbohydrates such as breads, sweets and starchy foods.
2. Eat less fat, especially saturated fat and cholesterol (butter, margarine, oils).
3. Eat a variety of fresh fruits, vegetables, lean meats and fish.
4. Eat just enough calories to stay at a healthy weight.

The exact number of servings a diabetic should have from each food group depends on individual calorie and nutrition needs, weight goals, exercise level and preferences.

Diabetes

Many people think diabetics are not allowed to eat sugar of any kind. This is no longer required. Sugar is a carbohydrate like bread or potatoes, and it can be part of the diabetic's food plan. However, most sugary foods provide calories without many vitamins or minerals, and they are often high in fat. It is better to eat more foods rich in nutrients, like vegetables and fruits, and very few fatty, sweet foods like ice cream and candy.

Dietitians sometimes teach diabetics and those who care for them to use exchange lists. These lists are a way to plan meals by putting foods in a category, such as a starch exchange or fruit exchange. Foods on a list can be substituted for each other and sometimes for foods on other exchange lists. The diabetic person eats only a certain number of each type of exchange every day, as ordered by a doctor or established by the dietitian.

Exercise

Exercise usually lowers blood sugar and may help insulin work better. It helps control weight, it improves blood flow and it strengthens the heart. People with diabetes should exercise at least three times per week. Before a diabetic starts a new exercise program, a doctor should approve the type, frequency and length of the exercises. Elderly and disabled people need to exercise also and should be helped to find an exercise they can do.

It is important that a diabetic not develop low blood sugar while exercising. Since the body burns sugar during exercise, the diabetic should "fuel up" with a piece of fruit or half a sandwich within an hour before starting any exercise. It is also a good idea for the diabetic to check his or her blood sugar level before beginning to exercise. If the blood sugar reading is less than 70, the person should eat something and wait for the blood sugar level to come up over 70 before exercising.

If a diabetic feels faint, sweaty, dizzy or confused while doing any activity, the person should stop what he or she is doing and immediately drink fruit juice or a sweet (not diet) soft drink. The person must respond quickly to this feeling, because it means the blood sugar level is too low.

Medication

People with diabetes might receive insulin shots, non-insulin injections designed to improve glucose control, or they may take pills by mouth. Some patients may have an insulin pump either connected by tubing or implanted in their abdomen. Only a doctor can decide what medication and how much of it a diabetic should receive. It can be *very* dangerous to change a diabetic's medication in any way unless it is ordered by a doctor. Diabetics must receive the exact amount of medicine their doctor has ordered, at the times the doctor has ordered. Timing of medicine and meals is important to prevent low blood sugar.

Monitoring

Close monitoring of a diabetic's blood sugar level is one of the best ways for him or her to prevent long-term complications from the disease. Diabetics check their blood sugar by pricking a finger with a needle and testing a drop of blood with a special blood glucose meter. The meter, also called a monitor, gives a number that tells the level of glucose in the blood. These monitors must be kept clean and should be checked for accuracy periodically.

Most diabetics need their blood sugar level tested at least once per day, usually in the morning before breakfast. Depending on the type of diabetes, the age of the person and other factors, the individual may need his or her blood glucose tested as much as five times per day. Sometimes insulin dosages are adjusted depending on the blood sugar level. This chart from the National Diabetes Education Program shows the recommended blood sugar levels at different times of the day:

Before meals	80–130
At bedtime	100–150

A doctor must set the acceptable ranges *for each person*, and *they might differ from the normal ranges* given in the chart. When a blood glucose level falls outside the range set by the doctor, the doctor must be notified as soon as possible. If you are assisting a diabetic with monitoring his or her blood sugar, be sure you know the correct range for the person.

Another important part of monitoring is watching the feet and skin of a diabetic due to a decrease in blood circulation. Diabetes can turn a small sore or wound into a very large problem. Sores, blisters and wounds on a patient's feet and skin must always be reported to your supervisor or a nurse.

Diabetic Emergencies and How to Respond

Diabetes can cause both long-term and short-term problems. Blood sugar that is too low or extremely high can lead rapidly to unconsciousness and even death. You must know the symptoms of both conditions and know how to respond.

Hypoglycemia means that the level of sugar in the blood is too low (less than 70). Too much insulin or oral medication, too much exercise, not eating enough food, or drinking alcohol can cause it. Hypoglycemia can cause strokes and heart attacks in the elderly. This problem is also called **insulin reaction** or **insulin shock**.

Symptoms and treatment of low blood sugar

The following symptoms occur suddenly and without warning:

- **Shakiness** or nervousness
- **Sweatiness** and chills
- **Pale, clammy** skin
- **Weakness** and tiredness/drowsiness
- **Sudden** hunger
- **Blurred** or double vision
- **Tingling** of hands, lips or tongue
- **Confusion**
- **Personality** change
- **Slurred** speech
- **Loss** of consciousness
- **Dizziness** or a staggering walk
- **Nausea**
- **Headache**
- **Fast** heartbeat
- **Itching**

Note: Elderly people and people with other diseases and disabilities can be especially sensitive to low blood sugar, and it can be very dangerous for them. Some people may have a reaction even when their blood sugar is not below 70. Any diabetic suddenly showing any of the signs listed above must receive *immediate* attention.

To treat low blood sugar, the person should drink a sweet drink, such as sugar-sweetened coffee or tea, orange juice or non-diet soda. He or she could also eat sugar, corn syrup, candy or glucose tablets. Once the blood sugar is back to normal, make sure the person eats a snack or small meal to stabilize their blood sugar.

Hyperglycemia means that the level of sugar in the blood is too high (above 180). It can be caused by infections, illness, stress, injury, not enough insulin, not enough exercise or eating too much food. Very high levels of sugar can cause coma and death.

Symptoms and treatment of high blood sugar

The following symptoms occur gradually and get worse over time:

1. Extreme thirst and/or hunger
2. Rapid weight loss
3. Frequent urination
4. Vision changes
5. Dry skin and mouth
6. Fatigue, drowsiness
7. Nausea
8. Fruity-smelling breath
9. Very deep, gasping breathing
10. Unconsciousness

The first seven symptoms in this list should be reported to your supervisor or a nurse as soon as possible. Fruity-smelling breath, deep gasping breathing and unconsciousness are worse — they are emergency symptoms that can lead quickly to death. Call 911 or access emergency medical care at once.

Case Study Activity

The following case studies are examples of things that sometimes happen to those receiving care in their homes. Read each case study and discuss possible ways of handling the situation. If you are doing this lesson by yourself, think about what you should do and how you would respond to these situations. You can write your ideas below.

Case study 1

Mrs. Jarvis is diabetic. One day, as you are assisting her with her shower, you notice that she seems confused. She doesn't seem to understand what you say to her, and she acts nervous. Her skin feels cool and damp and looks paler than usual.

What do you think might be happening to Mrs. Jarvis? What, if anything, should you do?

Case study 2

One morning, Mr. Young's blood sugar reading is 250. He seems fine and says he feels great. Mr. Young's doctor said his blood sugar should not go above 220.

What should you do in this situation?

Case study 3

Mrs. Bond checks her blood sugar and gives herself insulin every morning. You are supposed to remind her to do this. When you remind her, she always tells you that she has done it or is about to do it. Lately you've noticed that Mrs. Bond seems to be losing weight. You watch to be sure she is eating, and you see that she is eating a large amount of food. She has started urinating on herself sometimes, and when you help her get cleaned up, she says that she is urinating a lot and sometimes she just can't make it to the bathroom. When you suggest that she should cut back on the water she is drinking, she tells you that she is thirsty all the time.

What is going on with Mrs. Bond? What action, if any, should you take?

Case Study Activity Answers

The following are the suggested answers for the case study activity. You might need to add additional information because of specific protocols and procedures at your agency.

Case study 1

Mrs. Jarvis is probably suffering from low blood sugar. She should be given a drink of fruit juice or other sweetened drink (tea or coffee with sugar, non-diet soda) or assisted to take some sugar cubes or glucose tablets. If possible, her blood sugar should be checked.

If Mrs. Jarvis does not get better or gets worse, or if her blood sugar is outside her approved range and does not improve when rechecked, medical assistance should be summoned.

Case study 2

Mr. Young's blood sugar is too high and must be reported to his physician. Even though he has no symptoms, this condition could worsen without treatment. In addition, a blood sugar this high is causing hidden long-term problems in his body. Follow your agency's protocol for notifying your supervisor, a nurse or the doctor.

Case study 3

Mrs. Bond might have an inaccurate glucose monitor machine, she might not be taking her insulin correctly, or she might be forgetting to take it despite your reminders. Her symptoms indicate that her blood sugar is too high. Her blood sugar should be checked. Even if her blood sugar is normal, these symptoms must be reported to her doctor.

April

TEST Diabetes

Name _____ Date _____ Score _____

Directions: Answer each question. Seven correct answers required.**1. Fill in the chart of normal recommended blood sugar levels with the missing numbers:**

Before meals
At bedtime

2. Write the four parts of diabetic treatment:

a. _____ b. _____ c. _____ d. _____

3. If a diabetic person becomes weak, tired and dizzy, you should first: (circle one)

- a. Have the person lie down until it wears off.
- b. Give the person something sweet to drink.
- c. Call 911.

4. Diabetics should never eat candy, ice cream or cake. True or False**5. You should call 911 if a diabetic has the following symptoms: (circle one)**

- a. Confusion and personality change.
- b. Weakness and dizziness.
- c. Fruity-smelling breath or deep, gasping breathing.
- d. Itchy skin.

6. Having high levels of sugar in the blood over a long period of time can cause heart disease, blindness and loss of feeling in the feet. True or False**7. For most people, blood sugar is too low if it reads less than _____ on a glucose meter.****8. For most people, blood sugar is too high if it reads more than _____ on a glucose meter.****9. All Type 1 diabetics must take insulin shots. True or False****10. All diabetics should monitor their blood sugar, control their diet, exercise and take their medicines. True or False**