

HOW TO CARE FOR A PATIENT WITH DIABETES

INTRODUCTION

Diabetes is one of the most common diseases in the United States, and diabetes is **a disease that affects the way the body handles blood sugar**. Approximately 24 million Americans have diabetes. There is no cure for diabetes. However, it is a disease that can be controlled with proper care. But without good management, diabetes can cause devastating and irreversible complications.

Diabetes can be either *Type I* or *Type II* (more about these classifications later), and the Type II is much more common. In both types of diabetes, the body lacks a hormone called *insulin* that helps move *glucose* into the cells where it can be burned for energy. (The terms glucose and blood sugar are often used interchangeably). As a result, the blood sugar level of a person with diabetes can become very elevated. In order to control the blood sugar levels, diabetic patients must follow a special diet, watch their weight, and try and stay active. For some diabetics, these measures aren't enough and they need to take oral medications. People with Type I diabetes must take daily injections of insulin.

OBJECTIVES

When the student has finished this module, he/she will be able to:

1. Identify a basic definition of diabetes.
2. Identify the two types of diabetes.
3. Identify the hormone involved in diabetes and what it does.
4. Identify the consequence of the lack of insulin.
5. Explain the difference between Type I and Type II diabetes.
6. Identify signs and symptoms of high blood sugar in a Type II diabetic.
7. Identify the signs and symptoms of low blood sugar.
8. Identify three complications of diabetes.
9. Identify two types of medications that can be used to control diabetes.
10. Identify three important aspects of caring for a person with diabetes.

BLOOD SUGAR, INSULIN AND DIABETES

Blood sugar, or glucose, is the final breakdown product of many foods that we eat. It is a very important source of energy. It is, in a sense, one of the most important "fuels" that our bodies need to operate.

However, glucose/blood sugar cannot be used by the cells and tissues of our bodies without *insulin*. Insulin is a compound that is produced by the pancreas, a small organ located in the left side of the abdominal cavity. Insulin has several functions. *But the most important thing insulin does is to help move glucose into the cells and tissues so it can be used for energy*. Without insulin, we simply would not be able to use the energy that is in the food we eat.

Learning Break: If there is no insulin, glucose *cannot* move into the cells and the tissues and the blood sugar level will rise.

TYPE I AND TYPE II DIABETES: WHY THEY HAPPEN AND WHAT MAKES THEM DIFFERENT

It was mentioned earlier that there are two types of diabetes, Type I and Type II. But there is actually a third type of diabetes which is called gestational diabetes. This form of diabetes occurs in a small percentage of women during pregnancy and usually goes away after the baby is delivered. Because the vast majority of diabetics you will care for in your career will have Type I or Type II diabetes, gestational diabetes will not be discussed here.

Type I diabetes is also called *juvenile diabetes*, because most people (but not all) develop Type I diabetes in late childhood or their early teens. These people do not produce *any* insulin at all, and they will need to inject insulin in some manner for their entire lives in order to control their blood sugar level. Type I diabetes is an *autoimmune disease*. Although it is not known exactly how it happens, either an infection or some type of environmental influence causes the body to produce antibodies that destroy the portion of the pancreas that produces insulin. (Note: Antibodies are part of the immune system that the body uses, normally, to destroy bacteria and viruses. Autoimmune diseases happen when the body produces antibodies against its own structures and organs)

Type II diabetes is also called *adult onset*, or *non-insulin dependent diabetes mellitus* (This is frequently abbreviated as *NIDDM*). This type of diabetes most often develops later in life. People with Type II diabetes do produce some insulin, but not enough. It is also thought that their bodies do not completely utilize the insulin they do produce. *Type II diabetes is thought to be caused by a combination of genetics and lifestyle*. Certain people inherit the genetic tendency for diabetes. However, a lack of exercise, obesity, and diet then combine with this inherited problem, and these people develop Type II diabetes.

When people first develop Type I diabetes, it is very clear they have the disease because they begin to exhibit several very characteristic signs and symptoms. They need to urinate far more often than is normal, they are often hungry, and they are excessively thirsty.

It is much more difficult to detect when people begin to develop Type II diabetes. Type II diabetes is often discovered during a routine blood test. Unfortunately, without a blood test, many people with Type II diabetes may have the disease for many years and be unaware that their blood sugar is high.

Learning Break: Type I diabetes is an autoimmune disease. Type II diabetes is caused by genetic and lifestyle factors.

Learning Break: People with Type I diabetes do not produce insulin. People with Type II diabetes produce some insulin, but not enough.

COMPLICATIONS OF DIABETES

There is no cure for diabetes. But with proper diet, exercise, and the right medications (when needed), diabetes can be controlled. But if the person with diabetes does not take proper care and follow the physician's advice, diabetes can cause very serious complications.

- Blindness
- Heart disease
- Stroke
- Kidney disease
- Nerve damage
- Wound and skin infections
- Amputations
- Hypoglycemia
- Hyperglycemia

Learning Break: Diabetes is one of the leading causes of blindness, and it is an important cause of heart disease, stroke, and amputations.

SIGNS AND SYMPTOMS OF ABNORMAL BLOOD SUGAR LEVELS

After it has been established that someone has diabetes – either Type I or Type II – it is very important that those who are caring for the diabetic client know the signs and symptoms of abnormal levels of blood sugar.

A low blood sugar level is called *hypoglycemia*. In both Type I and Type II diabetes, it is usually very easy to know when the blood sugar level is very low. Remember, blood sugar is one of the primary fuels that our bodies need to function. The brain in particular is almost completely dependent on blood sugar for energy. So when blood sugar levels get very low, the body and brain become very stressed. The typical signs and symptoms of a low blood sugar are:

- Confusion
- Anxiety
- Weakness
- Rapid heart rate
- Sweating
- Pale, cool skin
- Tremors

Low blood sugar can be caused by poor diet control by the diabetic, or an excess of their diabetic medications. It often occurs when the diabetic is active and neglects to eat. It is more common in Type I diabetics because their blood sugar levels are usually much more difficult to control and can vary widely.

Learning Break: Knowing and recognizing the signs and symptoms of hypoglycemia is very important. *If the blood sugar becomes too low, the diabetic can suffer a seizure and brain death. Hypoglycemia can be a medical emergency.*

An elevated blood sugar level is called *hyperglycemia*. For people with Type I diabetes, high blood sugar levels will cause the signs and symptoms mentioned above: excessive thirst, excessive hunger, and excessive urination.

For people with type II diabetes, blood sugar levels may not become as high as is possible with people with Type I diabetes, and the levels may take longer to become elevated. For those reasons, there may not be any signs or symptoms, or the signs and symptoms may be very subtle.

However, the situation in people with Type II diabetes can get a bit confusing at times. People with Type II diabetes who have a high blood sugar level that been rising over a period of days or weeks may develop a condition called *diabetic ketoacidosis* (This is often abbreviated as DKA). Because the body can't use glucose, it starts to break down fats for energy. This gradual change in metabolism can cause confusion, weakness, tremors, and rapid heart rate – *many of the signs and symptoms of low blood sugar.*

Learning Break: Some of the signs and symptoms of hypoglycemia and hyperglycemia are identical. The only way to definitely distinguish between hypoglycemia and hyperglycemia is to obtain a blood sample and measure the glucose.

You need to get a blood sugar level in order to know if the confusion, weakness, rapid heart rate, etc. a diabetic is experiencing is due to a high or a low blood sugar. *However, if you know the diabetic and know his/her lifestyle, you can often be relatively certain which it is.* If the person is a Type I diabetic and he/she has been exercising, hasn't eaten most of the day, and suddenly develops symptoms, the blood sugar is almost certainly low. If the person is a Type II diabetic, has gradually gotten symptomatic, and you suspect or know that person has not been following a proper diet and hasn't been compliant with the medication regimen, the blood sugar is almost certainly high.

Learning Break: Giving a small amount of sugar to someone who has hyperglycemia will not cause harm, but it may be very helpful to someone who has hypoglycemia. However, if you suspect someone has a very low or very high blood sugar, notify a physician immediately.

BASIC CARE OF THE DIABETIC: MONITORING THE BLOOD SUGAR

Normal blood sugar is measured using units called milligrams per deciliter, and this is abbreviated as mg/dL. **Normal blood sugar is considered to be from 60 to 110 mg/dL.** The blood sugar can be measured by taking blood and having the sample sent to a laboratory. But as a CNA caring for diabetic patients, you will either be using, or helping your clients use, a monitoring system that only requires a small drop of blood. These can be used by anyone, anywhere. (There are several of these systems that are sold. One of the most common is the Accu-Chek®)

Most diabetics will check their blood sugar several times a day; usually, they will check it the first thing in the morning, an hour or two before meals, perhaps after meals, and at night before going to bed. Each person will follow his/her own specific schedule. The blood sugar can also be checked if it is suspected that it may be high or low.

Using these monitoring systems is easy. After cleaning the skin, a small lancet (basically a tiny knife) is used to penetrate the skin on the tip of a finger and a drop of blood is squeezed onto a small strip of paper. The strip is inserted into the monitoring unit, and there is a digital display of the blood sugar level. The process is quick and simple, and all of the monitoring systems have instructional manuals that make them simple to use.

Learning Break: Notify your supervisor immediately if the blood sugar is below or above the normal limits.

DIABETIC FOOT CARE

Diabetes interferes with circulation and causes nerve damage, so the feet of a person with diabetes are very susceptible to injury and infection. If the damage is not detected, the consequences can be severe, so diabetic foot care is very important.

Learning Break: Remember, diabetes is one of the leading causes of amputations.

The diabetic or the person caring for the diabetic should examine the feet every day. Look for cracks in the skin, blisters, or swelling, and ask if there is any pain. Wash the feet gently with warm – not hot – water, and pat them dry: don't rub them. If the toenails need cutting, *make sure* that you or the client is allowed to do so: some diabetics have their toenails cut by a podiatrist. If you do cut them, do so after a bath when they are soft. Cut them straight across. The person with diabetes should not walk barefoot and should wear loose fitting, comfortable shoes.

DIABETIC CARE: THREE CRUCIAL POINTS YOU NEED TO KNOW

Caring for a client with diabetes involves attention to many details, but there are three crucial issues you are responsible for:

- You must know and be able to recognize the signs and symptoms of low or high blood sugar.
- You must understand the importance of diabetic foot care.
- You must understand that any illness that affects diet, fluid intake, or causes vomiting or dehydration can be more serious for a diabetic. **These situations can drastically affect blood sugar levels.**

SUMMARY

For people with Type I diabetes and for many people with Type II diabetes, the blood sugar cannot be controlled by diet and exercise. *The person with Type I diabetes must inject insulin (how often during the day will depend on several factors) and will need to do so forever* (Insulin must be injected. It cannot be taken by mouth). *People with Type II can take a variety of oral medications.* And every diabetic must be careful to follow a lifestyle that includes exercise, weight control, avoidance of alcohol and tobacco, and a special diet.

These restrictions can be difficult to follow. But many, many people with diabetes live full, active lives. And without good care, it is almost certain that a diabetic will suffer from complications such as kidney failure, blindness, heart disease and amputations. Whenever you can, encourage the person with diabetes to follow a healthy lifestyle and comply with the doctor's plan.

- Diabetes is a disease that affects how the body uses blood sugar/glucose.
- Diabetes is caused by a lack of insulin.
- Insulin is a hormone that helps move glucose into the cells and tissues where it can be used for energy.
- There are basically two types of diabetes: Type I and Type II.
- Type I diabetes is an autoimmune disease.
- Type II diabetes is caused by genetics and lifestyle factors.
- There is no cure for diabetes.
- Diabetes can cause stroke, blindness, heart disease, nerve damage, kidney damage, and amputations.
- High blood sugar is called hyperglycemia.
- Low blood sugar is called hypoglycemia.
- Signs and symptoms of low blood sugar include confusion, anxiety, sweating, rapid heart rate, tremors, and cool, pale skin.
- Hypoglycemia can be a medical emergency and cause seizures and coma.
- High or low blood sugars should be reported immediately.
- Type I diabetics must inject insulin every day.
- Type II diabetics can be controlled with diet and exercise, but often need to take oral medications.
- Good foot care, knowing the signs and symptoms of high or low blood sugar, and always reporting any illnesses that cause fever or dehydration are very important aspects of caring for a person with diabetes.