

In the Know's Inservice Club  
presents

A Disease Process Module:

# Understanding Diabetes



## *Instructions for the Learner*

We hope you enjoy this Inservice, prepared especially for nursing assistants like you. You work very hard, and we appreciate the effort you make to complete these educational materials. It shows your desire to continue learning and growing in your profession!

*After finishing this inservice, you will be able to:*

- Describe the connection between insulin and diabetes.
- Compare the risk factors for Type 1 and Type 2 Diabetes.
- Name at least five symptoms of diabetes.
- Discuss how to help diabetic clients prevent hypoglycemia.
- Describe how diet, exercise and medications work together to treat diabetes.
- Demonstrate ways in your daily work that you can help your clients prevent diabetic complications.

If you are studying the inservice on your own, please:

- Read through all the attached materials. You may find it useful to have a highlighting marker nearby as you read. Highlight any information that is new to you or that you feel is especially important.
- If you have questions about anything you read, please ask \_\_\_\_\_.
- Take the quiz. Think about each statement and fill in the best answer.
- Check with your supervisor for the right answers. You pass the quiz with at least eight correct answers! Print your name, write in the date, and then sign your name.
- Keep the inservice information for yourself, and turn in the quiz page to \_\_\_\_\_ no later than \_\_\_\_\_.
- Show your Inservice Club Membership Card to \_\_\_\_\_ so that it can be initialed.

**THANK YOU!**



**Keep reading to learn more about:**

- The connection between diabetes and insulin.
- The symptoms of diabetes.
- How you can help your diabetic clients.

## Understanding Diabetes

**A**s a health care worker, it is very important for you to learn all you can about diabetes. Why?

Consider these facts:

- Diabetes is the 7th leading cause of death in the United States. Every year, almost 200,000 people die from diabetes.
- Right now, there are **over 10 million Americans** who have been diagnosed with diabetes. *But, there are at least 5 million more people who have the disease and don't know it!*
- Diabetes can happen to anyone...regardless of age, sex or racial background.
- **Almost 20% of people over age 65 have diabetes.** So, if you work with the elderly, one out of every five of your clients will have diabetes.
- The American Diabetes Association guesses that the U. S. spends nearly \$100 billion every year on this one illness alone!
- By 2025, doctors say that there will be 300 million people with diabetes around the world!
- Diabetes is the leading cause of **blindness** for people ages 20 to 74. Up to 24,000 people every year go blind from diabetes.

- This disease is also the leading cause of irreversible **kidney disease**. Every year, about 28,000 develop this life-threatening complication.
- Diabetes causes 67,000 people every year to have a foot or leg **amputated**.
- People with diabetes are 2 to 4 times more likely to develop **heart disease** or **stroke** than people without diabetes.

**A**ll this sounds pretty bad, doesn't it? But there is good news, too. Nearly every complication of diabetes can be prevented—especially with your help! With good care, people with diabetes can live long, productive lives and avoid problems like blindness and amputation. The more you know about diabetes, the better you'll be able to help your diabetic clients avoid serious complications.



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# What Is Diabetes?

**D**iabetes is a disease that develops when the body does not produce enough insulin or doesn't use insulin in the right way.

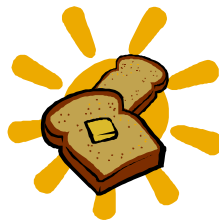
## What is insulin?

You've heard of insulin as a medication given to diabetics. But, did you know that insulin is actually a hormone produced by our bodies? It's true. In people *without* diabetes, insulin is produced in healthy amounts by the pancreas.

The number of people in the world who have diabetes may **double** in the next ten years!

## What does insulin have to do with diabetes?

Let's start with a piece of bread...



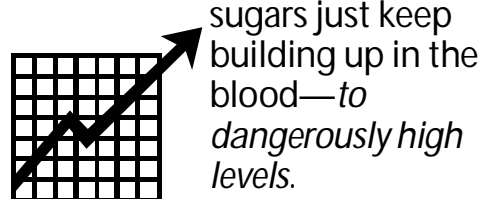
- When you swallow bread, it passes from your stomach into your intestines.
- In the intestines, the carbohydrates in the bread get broken down into sugars.



- These sugars (also called "glucose") pass into the bloodstream so they can be carried all around your body and used as energy food by your cells.
- But, there's a catch! The only way that sugars can move from your blood into your cells is when they "buddy up" with insulin. (Insulin is like a key that

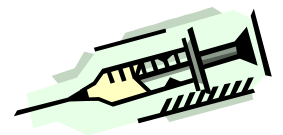
unlocks the door of each cell in your body.)

- If your body doesn't make enough insulin or doesn't use it correctly (like with diabetes), the



- And, at the same time, your cells begin to starve to death because they aren't getting any sugar.

**S**o, people with diabetes have a problem with insulin. Their bodies may not make any insulin at all. This is known as **Type 1 diabetes**. Only 5 to 10% of diabetics have Type 1 diabetes. People with Type 1 diabetes must take insulin shots every day to stay alive.



**M**ost diabetics have **Type 2 diabetes**. Their bodies may not make *enough* insulin or may not be using the insulin properly. People with Type 2 diabetes may or may not have to take insulin shots. But with *both* Type 1 and Type 2, the important thing is to keep the amount of insulin **balanced** with the amount of sugar in the blood.

# Who Gets Diabetes?



In some Native American tribes, 50% of the people have diabetes. And, one out of every four African American women over age 55 has diabetes.

## The risk factors for Type 1 Diabetes include:

- Being a child or adolescent. (The average age for developing Type 1 diabetes is twelve.)
- Having a brother or sister (especially an identical twin) with Type 1 diabetes.
- Being white. (Whites develop Type 1 diabetes more than any other racial group.)

## The risk factors for Type 2 diabetes include:

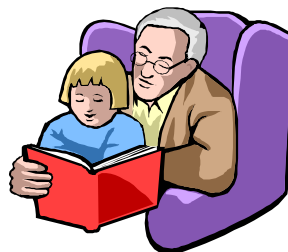
- Being over age 45.
- Having a family history of developing Type 2 diabetes.
- Being overweight. (Over 90% of Type 2 diabetics are overweight.)
- Going without exercise.
- Having a high cholesterol level.
- Being of a certain racial or ethnic group, especially African American, Hispanic, Asian, and Native American.
- Being a woman who had "temporary" diabetes during pregnancy. (This happens in 2 to 5% of all pregnancies.)

## What Causes Diabetes?

### Type 1 Diabetes

The cause of this disease is unknown, but doctors do know that it is an "autoimmune" disease. This means that the body is fighting against itself, causing the pancreas to stop making insulin.

Some doctors believe that an unknown virus causes Type 1 diabetes. But it may also be a problem passed down in families.



### Type 2 Diabetes

This type of diabetes is often called "old age diabetes" because senior citizens tend to develop it.

Remember, about 90% of diabetics have Type 2 diabetes. This is because the disease is caused partly by unhealthy lifestyle choices. If people eat too much (especially fatty foods) and don't exercise, they increase their chances of developing Type 2 diabetes.

## What Are the Symptoms of Diabetes?

The symptoms of diabetes include:

- Frequent urination



- Extreme thirst and hunger

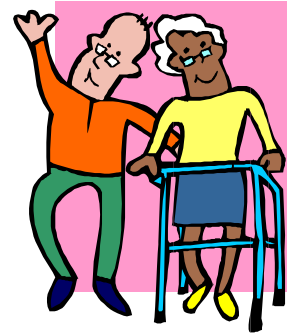
- Losing weight for no reason
- Sudden vision changes
- Tiredness
- Irritability
- Very dry, itchy skin
- Sores that are slow to heal
- More skin, gum or bladder infections than usual
- Tingling or numbness in the hands or feet

Many people with *Type 2 diabetes* don't know they have the disease until they develop a serious complication. That's why diabetes is called the "silent killer".

For Type 1 diabetes (which usually comes on in childhood), the first signs can be a flu-like illness.



For Type 2 diabetes (which often comes on after age 40), the symptoms usually develop very slowly...and some people don't have any symptoms at all.



## What About Low & High Blood Sugar?

Low blood sugar is also called *hypoglycemia*. A diabetic whose blood sugar gets too low might:

- Be shaky, dizzy & weak
- Have pale, clammy skin
- Be hungry
- Act confused and moody
- Be forgetful
- Walk and move slowly

**REMEMBER:** *Low = Slow*

High blood sugar is also called *hyperglycemia*. A diabetic with high blood sugar may:

- Urinate frequently
- Be very thirsty
- Have dry skin
- Have a dry mouth
- Be short of breath and nauseous
- Have breath that smells fruity

**REMEMBER:** *High = Dry*

# What Makes Blood Sugar Go Up?



## Food

Foods that are high in carbohydrates (like cake, cookies, bread, sugary cereals, etc.) increase the level of sugar in the blood.

## Exercise

If diabetics exercise really hard or for a really long time, their livers might let go of some of that extra "emergency" sugar.



## Stress

Stress causes the body to produce hormones that make the blood sugar go sky high! Often, diabetics who are under a lot of stress have to take extra insulin to get rid of all that extra sugar.

## Illness

Sometimes when diabetics are sick—even if they eat less than usual—their blood sugar level can rise. This is because their bodies release extra sugar that has been saved up in the liver for "emergencies" like illness.



## Early Morning

To give the body enough energy to get up and start the day, the liver releases extra sugar *early* every morning. This morning increase in blood sugar is called the "dawn phenomenon".

## Certain Medications

Some prescription and even non-prescription drugs can increase blood sugar levels. These include steroids, thyroid medicines, birth control pills, and some "water pills" and heart pills.

Keeping their blood sugar at a normal level is a real challenge for your diabetic clients.

That's why they need your help!

# What Makes Blood Sugar Go Down?

## Insulin

Remember that insulin buddies up with sugar in the blood and lets the sugar move into the cells. This means that insulin lowers the blood sugar level.



## Oral Diabetic Medications

There are five types of pills that treat diabetes and all of them lower the level of sugar in the blood.

## Exercise

Moderate exercise—without overdoing it—causes muscles to use up sugar. This lowers the level in the blood.

## Menstruation

The normal hormone changes that occur during a woman's period can cause the blood sugar level to go down. (However, keep in mind that hormonal changes can also make blood sugar go up!)

# Helping Clients With Low Blood Sugar

*To help your diabetic clients deal with low blood sugar (hypoglycemia), follow these tips:*

- Report any signs of hypoglycemia immediately! (See page 4 for a list of the signs.)
- Your supervisor may instruct you to give the client a cup of juice or soda or a tablespoon of honey. This is to bring the blood sugar back up to a normal level.



- If a diabetic client passes out, do not try to give them any juice and do not put your fingers in the client's mouth. Get help immediately!

Most diabetics are instructed by their doctor to carry some kind of sugar with them: a packet of sugar, pieces of hard candy, etc.—just in case they begin to experience low blood sugar.

Ask your diabetic clients what their doctors told them about hypoglycemia.

## Preventing Low Blood Sugar

To help your clients prevent hypoglycemia, remember these tips:

- Help your diabetic clients stick to their prescribed diet. It is very important that they eat at regular times every day. **NO SKIPPING MEALS!**
- Discourage your clients from having alcohol or caffeine.
- Make sure your clients with diabetes eat something before they exercise.
- Watch for signs of low blood sugar (especially nausea and headache) in the mornings.

Your client may need to eat a bedtime snack to avoid waking up with low blood sugar.



## Treating Diabetes With Diet

People with diabetes need regular well-balanced meals—just like everyone else. They need to eat healthy foods in the right amounts to keep their blood sugar under control. Some people with Type 2 diabetes can control their disease without medication—just by following a diabetic diet.

*Foods that should be limited in a diabetic diet include:*

### Fat

Fat can be very harmful to people with diabetes. Since they have a greater chance of developing heart disease and hardening of the arteries, they need to limit the fat in their diet.



### Salt

A little salt goes a long way!

### Sugar

Cake, cookies, pie, sugar in tea or coffee, syrup on pancakes...these all should be eaten very rarely or in very small

amounts by a diabetic. Sugar adds up in a hurry. Just one can of (non-diet) cola contains nine teaspoons of sugar!



### Alcohol

All alcoholic beverages are full of carbohydrates and sugars—and have no protein, vitamins or minerals. That's why alcoholic beverages are said to be full of "empty" calories.

Remember...many diabetics still need to take medication, even if they watch what they eat. But, diet is always a very important treatment for every diabetic because the more they follow their prescribed diet, the less medication they will need to take. **Note:** If you prepare food for diabetic clients, be sure you know how to follow their eating plan.



Ask your supervisor if you aren't sure.

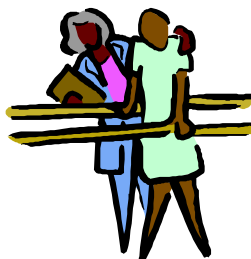
Almost all people with Type 2 diabetes are overweight!



## Treating Diabetes With Exercise

Moderate exercise is an important part of treating diabetes because it:

- Makes muscles stronger.
- Helps keep blood sugar under control.
- Keeps blood flowing to the legs and feet to prevent problems that might lead to amputation.



- Helps the body use food and insulin better.
- Increases the pumping power of the heart.

To really help with diabetes, exercise needs to be done regularly—at least several days a week. Exercising just every once in a while doesn't do much good.



# Treating Diabetes With Medications

## Insulin

- Some diabetics need to have insulin shots one or more times each day. This is to replace the insulin that their bodies are not making for themselves.
- Insulin can't be taken as a pill. It must be injected into the fat just under the skin.
- There are about 30 different kinds of insulin medication. Some come from animals and some are created in labs.
- A doctor will prescribe the best insulin for each diabetic depending on how the client reacts to the insulin. (Some insulins bring the blood sugar down faster than others.)



## Oral Medications

- There are many different types of diabetes pills. A doctor will prescribe the best one for each person with diabetes.
- Medications work along with diet and exercise—not instead of them! Drugs won't help much if a diabetic client doesn't eat right, exercise and stay at a healthy weight.
- Some diabetics need to switch from pills to insulin shots when they are sick or stressed out. Usually, they can go back to the pills when they are back to feeling better.



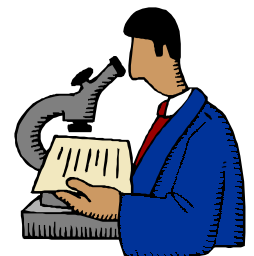
60% of the people with Type 2 diabetes can take a diabetic pill instead of insulin shots.

## The Future of Diabetes Treatment

Scientists are working on lots of ideas for treating diabetes, including:

- Insulin patches—to wear like a band aid—that will take the place of shots.
- Pills for Type 1 diabetics.
- Transplants of those special cells in the pancreas that make insulin.
- Blood sugar testing machines that don't need blood. (No more dreaded finger sticks!)

- Insulin in an inhaler—similar to an asthma inhaler.
- Insulin in a nasal spray.

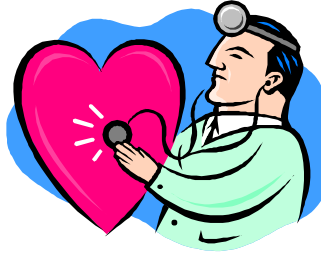


And doctors are also working on trying to prevent diabetes. If they figure out exactly why people develop diabetes, they might be able to keep it from happening.

## Preventing Diabetic Complications: Heart Disease

*To help your diabetic clients prevent heart disease, remember these tips:*

- Assist them to maintain a healthy weight. If they are trying to lose weight, praise them even for losing one pound!
- Encourage your diabetic clients to stick to their prescribed diet. This will probably include foods that are low in fat and high in fiber.
- If you prepare meals for your clients, be sure to trim the fat

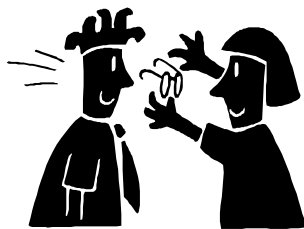


from meats before cooking them. And, prepare lots of vegetables for your clients.

- Help your clients who smoke to quit.
- Make sure your clients get some kind of exercise.
- Check your clients' blood pressure ((if assigned) and report any abnormal results.
- Report chest pain, shortness of breath or swollen ankles.

Diabetics who smoke are much more likely to have serious complications. Most of the diabetics who have heart attacks, become blind or who have amputations are smokers.

## Preventing Diabetic Complications: Blindness



*To help your diabetic clients prevent blindness, keep these tips in mind:*

- Encourage your clients to wear any glasses or contacts that have been prescribed for them.
- Report any changes you notice in your clients' vision, especially if they complain of blurred vision, seeing "spots"; seeing "double"; or of having pain in one or both eyes.
- Try to help your clients quit smoking!

(If they don't, they might not notice when their vision is changing.)

"Diabetes complications" are medical problems that happen frequently to people with diabetes. Most diabetes complications happen because high blood sugar causes problems for blood vessels and/or nerves throughout the body.

## Preventing Diabetic Complications: Gum Disease

*To help your diabetic clients prevent gum disease, remember these tips:*

- Provide complete mouth care to clients who can't do it themselves. Be sure to brush the tongue, too, and don't forget to floss the teeth.



- For clients who do their own mouth care, be sure to remind them to take care of their teeth and gums every day—especially after meals.

- Report any mouth problems like soreness, bleeding, pus, gums that pull away from the teeth, red swollen gums, poorly fitting denture, or white patches on the gums, tongue or roof of mouth.

The basic warning signs of diabetes complications include:

- Blurred vision
- Tiredness
- Pale skin
- Numbness or tingling in hands or feet
- Repeated infections
- Slow healing of wounds
- Chest pain
- Vaginal itching
- Constant headaches

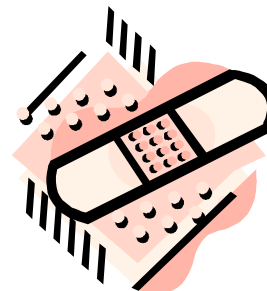
## Preventing Diabetic Complications: Wounds/Infections

*To help your clients prevent problems with their skin, follow these tips:*

- Check your clients daily for cuts and irritated areas. Remember that most diabetics heal very slowly, so the best thing is to catch cuts and scrapes early—before they have a chance to get infected.
- Avoid very hot baths or showers—they dry the skin.
- After bathing, make sure to dry skin well, especially between the toes and other places where skin touches skin.
- Discourage your clients from

scratching their skin.

- Report any skin problems you notice including rashes, blisters, signs of athlete's foot or a vaginal infection, or hot, swollen, red and tender areas.



- Avoid using electric blankets or heating pads. Some diabetics have problems feeling hot and cold

temperatures, so they might leave a heating pad on too long and get burned.

## Preventing Diabetic Complications: Amputations

*To help your diabetic clients prevent problems with their feet and legs, remember these tips:*

- Make sure your clients don't step into bath water that's too hot. (They might not be able to tell.)
- Help your clients dry their feet well, especially between the toes. Apply lotion to the feet—but *not* in between the toes since it would stay too moist.
- It's common for diabetics to get open sores on the bottoms of their feet and on the top of the big toe. Be sure to check these areas.
- **DON'T CUT THE TOENAILS OF A DIABETIC CLIENT!** Gently filing the nails is probably okay, but ask your supervisor to be sure.
- Have your clients wear clean cotton socks. Many diabetics find that wearing clean socks to bed helps keep their feet warm.



- Encourage diabetic clients to wear shoes whenever they are out of bed. This keeps them from foot injuries (like stubbing their toes). Make sure the shoes fit properly—that they

aren't too tight and don't rub.

- Discourage your diabetic clients from wearing tight garters and from sitting with their legs crossed. This reduces the blood flow to the feet.
- Encourage clients to exercise their feet and ankles. If they are unable to do much walking, try range of motion exercises.
- Discourage smoking! Remember that most amputees are smokers.
- Report any problems you notice such as an ingrown toenail, open sores, signs of infection, muscle weakness in the legs, cramps in the calves when walking, pain in the toes or feet, or numbness and tingling in the feet or legs.

Diabetes kills more Americans than AIDS and breast cancer combined.



## Preventing Diabetic Complications: Kidney Disease

*To help your clients prevent problems with kidney disease, follow these tips:*

- Remember that signs of kidney disease usually don't show up until the problem is very serious. It often requires clients to have kidney transplants or dialysis. 50% more men than women get kidney disease.
- One important thing you can do is to watch your clients for signs of a urinary tract infection (burning and pain when urinating; bloody or cloudy urine).
- Be sure to report any fluid buildup (edema), tiredness or increased blood pressure to your supervisor.

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presents  
A Disease Process Module:  
**Understanding Diabetes**



## Are You "In the Know" About Diabetes?

**Finish each statement with one of the words from the list below.**

**Then check your answers with your supervisor!**

*(Hint: You will not use every word on the list.)*

Smoking  
Kidney Disease  
High  
Slowly  
Weight gain  
Type 2 Diabetes

Death  
Insulin  
Urination  
Type 1 Diabetes  
Blindness

Quickly  
Exercise  
Low  
Sleep  
Vomiting

1. Diabetes is the 7th leading cause of \_\_\_\_\_ in the United States.
2. A person with diabetes does not produce enough \_\_\_\_\_ in the pancreas.
3. People with \_\_\_\_\_ must take insulin shots in order to stay alive.
4. Frequent \_\_\_\_\_ is one of the symptoms of diabetes.
5. Having a low blood sugar level can make a person walk and move \_\_\_\_\_.
6. Some people with \_\_\_\_\_ can control their disease with diet.
7. A diabetic with fruity smelling breath probably has \_\_\_\_\_ blood sugar.
8. Encouraging a diabetic client to quit \_\_\_\_\_ is one good way to help prevent complications.
9. Reporting signs of a urinary infection may help prevent your diabetic client from developing \_\_\_\_\_.
10. Diabetics will have better control of their disease if they eat right and \_\_\_\_\_.

EMPLOYEE NAME \_\_\_\_\_ DATE \_\_\_\_\_

***I understand the information presented in this inservice. I have completed this inservice and answered at least six of the test questions correctly.***

Employee Signature \_\_\_\_\_ Inservice Credit: 1 hour  
Supervisor Signature \_\_\_\_\_ Self Study \_\_\_\_\_  
Group Study \_\_\_\_\_

*File completed test in employee's personnel file.*