

Sinclair Community College, Division of Allied Health Technologies

Health Promotion for Community Health Workers – Cardiovascular disease, stroke, and cancer

Class #6 Diabetes
(date)

Course Objectives:

Know risk factors and causes of diabetes

Know the warning signs of diabetes

Know the most common treatments for diseases of the heart and blood vessels, heart attack and stroke, and contributing conditions like high blood pressure, high blood cholesterol, and diabetes.

Show people how to take greater control over their health

Class/Learning Objectives: By the end of this session, students will be able to:

1. Describe the risk factor for diabetes.
2. Describe the signs of diabetes.
3. Describe two tests for diagnosing diabetes.
4. Explain the importance of balancing food, physical activity and medicine.
5. Describe the long-term complications associated with diabetes.

Participants:

Instructor(s)

Students

Materials/Resources Needed:

Flipchart, markers, tape, blackboard, chalk and eraser

Handouts:

- 6-1 What is Diabetes? And How Can I Control It?
- 6-2 Carbohydrates: Starches, Fruits, Milk and Sweets
- 6-3 Medicines for Diabetes
- 6-4 Take Care of Your Heart, Manage Your Diabetes
- 6-5 Checking Your Blood Sugar
- 6-6 Daily Blood Sugar Log
- 6-7 Roadblocks to Checking Blood Sugar
- 6-8 Managing Your Diabetes at Work, School, and During Travel
- 6-9 Taking Care of Yourself When You are Sick
- 6-10 Low Blood Sugar
- 6-11 High Blood Sugar
- 6-12 Taking Care of Yourself and Preventing Complications
- 6-13 My Goals

Class Outline

I. Overview

II. Lesson

- A. What is Diabetes?
- B. Types of Diabetes
- C. What are the Signs of Diabetes?
- D. How is Diabetes Diagnosed?
- E. What is Pre-Diabetes?
- F. How is Diabetes Treated?
- G. How does a Person with Diabetes Control His/Her Blood Sugar?
- H. Why is it important to manage Blood Sugar Levels?
- I. Goal Setting

III. Summary

Plan for the Class:

I. Overview

Diabetes is a growing health problem in the United States. It affects over 18 million people in the United States.

On average, compared to whites of the same age: American Indians and Alaska Natives are 2 to 3 times as likely to have diabetes; Hispanic/Latino Americans are one and a half times more likely to have diabetes and Mexican Americans are over twice as likely to have diabetes; and African Americans are more than one and a half times as likely to have diabetes.

The number of young, overweight woman who have developed diabetes while pregnant has doubled between 1994 and 2004.

Diabetes or high blood sugar, if not controlled, can cause other serious health problems: People with diabetes are two to four times more likely to suffer heart disease and stroke than are those without diabetes; Diabetic eye disease, or retinopathy, is a leading cause of blindness in people under the age of 65; In the United States, each year, diabetes causes more than 50,000 persons to lose a limb, especially feet; kidney disease; gum disease and loss of teeth; and serious nerve damage.

But there's good news for people with diabetes, too. Studies show that keeping blood glucose (also called blood sugar) close to normal helps prevent or at least delay some complications of diabetes, including blindness, kidney disease, nerve damage and serious foot problems.

Much of this lesson is to help you learn more about how to help the people in your community prevent problems related to diabetes. Your encouragement, and your words of explanation, can go a long way.

III. Lesson

A. What is Diabetes?

Diabetes is – simply said – too much glucose, or sugar, in the blood.

Most of the food we eat is turned into glucose for our bodies to use for energy. Sometimes glucose is referred to as “blood sugar”, or just “sugar”.

Blood supplies food and nutrients to all the cells in our bodies and glucose is one of these nutrients. In fact, it is the body’s main source of fuel.

As important as glucose is, it can’t enter and feed the cells without the help of insulin. Insulin is a hormone made by the pancreas to help glucose get into our body cells. The pancreas is an organ near the stomach.

When a person has diabetes, his or her body either doesn’t make enough insulin or can’t use its own insulin very well. This problem keeps glucose from getting into the cells and therefore causes glucose to build up in the blood.

B. Types of Diabetes

While diabetes is always “too much glucose in the blood.” There are three main types of diabetes.

First, there is Type 1 diabetes. The pancreas of a person with Type 1 diabetes produces little or no insulin. Although it can occur at any age, people with Type 1 diabetes usually find out they have diabetes when they are children or young adults. People with Type 1 diabetes must inject insulin every day to live. Scientists are learning more about what causes the body to attack its own beta cells of the pancreas (an autoimmune process) and stop making insulin in people with certain sets of genes.

Second, most people with diabetes – 9 out of 10 – have Type 2 diabetes. In Type 2 diabetes, the pancreas still makes insulin, but it is either not enough or the body isn’t able to use it very well.

Most people with Type 2 find out they have diabetes after age 30 or 40. It can happen even in younger people – some as young as their teens. Type 2 diabetes has increased in recent years for people in their 30s and 40s.

Do you have any idea about why this might be?

(Wait for answer and then say....) That's right, people don't walk and move around as much, we spend more time sitting in front of the TV, we get in our cars to go places and we eat more high-calorie and fast foods and as a result we become more overweight and obese.

Third, some women have diabetes only when they're pregnant. This condition is called gestational diabetes. Pregnant women with gestational diabetes need to keep their glucose as close to normal as they can, with the help of their health care team. It is important for women who have had gestational diabetes to check again for diabetes at least 6 weeks after their baby is born and at regular times for the rest of their lives.

No matter what the type of diabetes – glucose control is the key. The lessons we will cover will help you to support a person to control their diabetes and help to prevent problems.

You may wonder who is most likely to get Type 2 diabetes. Certain risk factors make people more likely to get Type 2 diabetes. Some of these are: A family history of diabetes; Lack of physical activity; Being overweight by 20 pounds or more; Being of African American, American Indian, Alaska Natives, Hispanic/Latino, or Asian/Pacific Islander heritage; and women who had gestational diabetes or delivered a baby that weighed more than 9 pounds.

High blood pressure levels and abnormal cholesterol levels can go along with these risk factors.

Which risk factors can you control with life style changes?

(Wait for answer and then say....) That's right, diet, lack of physical activity, and weight.

Maintaining a healthy weight and staying physically active throughout life can help to prevent diabetes – and also heart disease. Diabetes and heart disease can go hand in hand. So the steps a person takes to prevent diabetes – and heart disease – are worth the effort. It can mean a world of difference for a person and their family – for years to come.

Handout 6-1: What is Diabetes? And How Can I Control It?

Review the handout with the CHWs. Ask how they might use this handout to talk with someone who has been diagnosed with diabetes.

C. What are the Signs of Diabetes?

The warning signs of diabetes are:

- Being very thirsty.
- Urinating a lot – often at night.
- Having blurry vision from time to time.
- Feeling very tired much of the time.
- Losing weight without really trying.
- Having very dry skin.
- Having sores that are slow to heal.
- Getting more infections than usual.
- Losing feeling or getting a tingling feeling in the feet.
- Vomiting.

If a person has one or more of these, he or she should see a doctor very soon.

D. How is Diabetes Diagnosed?

Diagnosing diabetes only takes a simple blood test known as a fasting plasma glucose (FPG) test. This test is sometimes called a fasting blood glucose (FBG) test. A person should have the test done in the morning before they have anything to eat or drink (no food or water for at least 8 hours before the blood test).

Blood for the test is taken from a vein in the arm. If the level is high (more than 126 mg/dL) your doctor may order additional blood tests to confirm a diagnosis of diabetes.

Test results are given as a number representing an amount of glucose in a sample of blood. If the fasting glucose is:

- Less than 100 (mg/dL), the blood sugar is normal.
- 100 to 125, a person has pre-diabetes.
- 126 or more, on 2 different days, a person has diabetes.

E. What is Pre-Diabetes?

Before people develop type 2 diabetes, they almost always have “pre-diabetes” – blood sugar levels that are higher than normal but not yet high enough to be diagnosed as diabetes

Remember, pre-diabetes is a fasting blood glucose from 100 to 125 (milligrams per deciliter).

In the past, doctors did not prescribe treatment for people in the pre-diabetes range but recent research has shown that some long-term damage to the body, especially to the heart and circulatory system, may already be occurring during pre-diabetes.

Studies suggest that weight loss and increased physical activity among people with pre-diabetes prevents or delays diabetes and may return blood sugar levels to normal.

F. How is Diabetes Treated?

To control diabetes, a person needs to keep a balance among three things: (1) food (2) physical activity and (3) medicine, if prescribed.

Let's talk about food first.

What is it that diabetics or people with high blood sugar should eat very little of? (Answer should be sugar or carbohydrates)

That's right, sugar, or really carbohydrates. It's really not enough for people with diabetes to just not eat sweets. You should also eat only the recommended amounts of foods that contain carbohydrates.

What are carbohydrates? (Listen to answer and then,)

Carbohydrates are turned into sugar by your body during digestion and are one of the main sources of energy for our bodies. While carbohydrates are necessary for good health, too many can be bad for us.

Foods that provide carbohydrates are not just sugary items like cakes, cookies, and candy, but also fruit, dairy products like milk and yogurt and starches. Who knows what a starch is? Let's look at Handout 6-2

Handout 6-2: Carbohydrates: Starches, Fruits, Milk and Sweets

Look at the first examples of starches. Ask how many knew it is important for people with diabetes to limit the amount of bread and potatoes they eat. Talk about the healthy ways to eat starches. Ask questions such as, "why should you buy whole breads? Why should you use mustard instead of mayonnaise?" Ask if they can name foods that are NOT carbohydrates.

Healthy eating is important for people with diabetes. What are some healthy eating tips you can offer to people in your community?

(Write answers on flipcharts. If the following are not mentioned, add or discuss these:)

- Eat regular meals.
- Eat less fat. Stay away from fried foods. Foods that are baked, broiled, grilled, boiled, or steamed are healthier. When you eat dairy products (cheese, milk, yogurt) choose these that have little or no fat or cream.
- Eat less sugar. Eat more high-fiber foods, like vegetables, dried beans, fruit, and oatmeal. Drink water and other drinks that have no added sugar.
- Eat fewer foods that have extra sugar, such as cookies, cakes, pastries, candy, brownies and sugared breakfast cereals.

- Eat less salt. Eating less salt may help control blood pressure. Use less salt when you prepare foods. Cut down on processed foods, such as foods you buy in cans and jars, pickled foods, lunch meats (cold cuts) and snack foods, such as chips. Use herbs and spices instead of salt to flavor your food.
- Try to eat the same amount of food at the same time each day.

Just one more tip that's important for everyone, but especially people with diabetes

Drinks containing alcohol may not be a good idea. It adds calories and doesn't give your body any nutrition. Drinking alcohol may cause dangerous reactions with diabetes medicines. Your blood sugar can go down too low if you drink beer, wine, or liquor on any empty stomach. If you want to have a drink once in a while, ask your doctor or nutritionist.

Now let's talk about physical activity.

Regular physical activity is good for almost everyone, but it is especially good for people with diabetes, because it can:

- Lower your blood sugar, blood pressure, and cholesterol.
- Lower your risk for heart disease and stroke.
- Increase energy and relieve stress.
- Help insulin work better and reduce the need for insulin.
- Strengthen your heart, muscles, and bones.
- Improve your blood circulation and tone your muscles.
- Protect against heart disease and stroke.
- Aid in weight management.
- Keep your body and your joints flexible.
- Improve how you look and feel.

But making physical activity part of the daily routine is difficult for many people. They may be in their 40s or 50s when diagnosed with Type 2 diabetes and may never have thought about how important it is to stay physically active.

How do you think you can help people become more physically active? (Allow time for answer. If the CHWs are having difficulty thinking of answers, offer the following tips.)

- Start with a little activity. Walking, working in the yard and dancing are good ways to start. As you get stronger, you can add a few extra minutes. Talk to your doctor about what is best for you.
- Try to do some physical activity every day – even if it's only 10 or 20 minutes a day on some days.

- Choose an activity you enjoy. The more fun it is, the more likely you will do it each day. It's good to be active with a family member or friend.

The third part of diabetes control is medicine. The doctor will probably prescribe medicine to help control diabetes. There are many different types of diabetes medicine and they control diabetes in different ways.

The most important thing people who take medicine for diabetes must remember is... to take their medicine!

Sometimes doctors prescribe more than one kind of medicine. Taking more than one kind of medicine can be confusing. If you, the community health worker, know something about medicines used to treat diabetes you can help those in your community who need to take it. Let's look at handout 6-3

Handout 6-3: Medicines for Diabetes

The medicine bottle may have a brand name instead of the type of diabetes medicine, but the type will be identified on the paper instruction that come with the medicine.

Can you think of some questions people taking these should ask their doctor? (Examples of answers: what is sulfa? If I forget to take a pill should I take more the next time I take my medicine? Does my liver need to be tested? If so, how often? Should this medicine be taken with a meal? Does that mean before the meal or after?)

For people diagnosed with Type 1 diabetes, the doctor will most likely prescribe insulin.

For people who need to inject insulin, the doctor or someone on the healthcare team will teach them:

- How to give themselves injections.
- When the insulin dose needs to be changed.
- How to safely dispose of needles.

Medicine does not take the place of healthy eating and physical activity, but is part of the balance of three things needed to control diabetes

Those are the 3 things a person with diabetes needs to balance to keep their blood sugar in control. Keeping a balance of food, physical activity and medicines helps to keep blood sugar in control.

People with diabetes also need to make sure their cholesterol levels and their blood pressure are kept in check. What is considered an

acceptable level is different for diabetics because of the increased risk of heart disease.

People with diabetes should follow these guidelines for cholesterol levels

- HDL (good cholesterol) – more than 50 for women and more than 40 for men
- LDL (bad cholesterol) – less than 100 (men and women)
- Triglycerides – Less than 150 (men and women)
- Total cholesterol – less than 135 (if over 40, but the lower your cholesterol reading, the better, for all ages).

A doctor may prescribe medicine to help bring down blood pressure and improve cholesterol readings for people with diabetes.

And last but not least, Quit Smoking! People with diabetes who smoke are more likely to have more damage and kidney disease.

Handout 6-4: Take Care of Your Heart, Manage Your Diabetes

Review the handout with the CHWs. Read the three questions to ask your doctor. Ask the CHWs how they can help diabetics in their community with the third questions. (1) What are my blood glucose, blood pressure, and cholesterol numbers? (2) What should they be? (3) What actions should I take to reach these goals?

G. How does a Person with Diabetes control His/Her Blood Sugar?

It is very important to control blood sugar level.

By keeping blood sugar level close to normal, health problems caused by diabetes, such as eye disease, kidney disease, and nerve damage, can be prevented or delayed. One thing that can help control blood sugar level is to keep track of it. This can be done by:

- Testing blood sugar a number of times each day (self-monitoring blood sugar). Many people with diabetes test their blood sugar 2 to 4 times a day
- Getting an A1C test from the doctor or health clinic about every 3 months if you take insulin and at least every 6 months if you don't take insulin

These tests tell if blood sugar is being kept in normal limits.

A test can be done to find out what the blood glucose is at any moment during the day.

Glucose meters usually require a drop of blood obtained by pricking a finger. The drop of blood is placed on a small coated strip and inserted in the monitoring device. The device gives a reading of the blood sugar level.

Handout 6-5: Checking Your Blood Sugar

Review the process for checking blood sugar with a self monitor. Ask the CHWs if they are comfortable helping someone check his or her blood sugar and what questions they may have about monitoring blood sugar.

Blood sugar testing can help people understand how food, physical activity, and diabetes medicine affects their blood levels levels. Testing can help people make day-to-day choices about how to balance these things. It can also tell when the glucose level is too high so that the problem can be treated.

People with diabetes should ask their doctor to give them a range of blood sugar level that is considered normal for them. Most often, this range is between 80 and 140. Write blood sugar levels and the time of day it was checked in a logbook or on a record sheet.

Handout 6-6: Daily Blood Sugar Log

Review the handout. Discuss with the CHWs why someone with diabetes should keep a log of blood sugar reading.

Be sure to write down each blood sugar reading and the date and time it was obtained. The records will reveal a pattern of recent blood sugar control. Keeping track of blood sugar on a day-to-day basis is one of the best ways to take charge of diabetes.

Handout 6-7: Roadblocks to Checking Blood Sugar

Many people with diabetes do not check their blood sugar regularly. But you can't be sure diabetes is under control if you don't check it. According to the American Diabetes Association, blood sugar should be between 90 and 130 in the morning before eating breakfast. Blood sugar 2 hours after the start of a meal should be below 180.

Review this handout and discuss other ways CHWs can help people with diabetes overcome roadblocks to checking their blood sugar on a regular basis.

Taking care of oneself and managing one's diabetes is something that must be done everyday, no matter where a person is are. The next two handouts provide some hints for managing diabetes in special situations such as when away from home or when sick.

Handout 6-8: Managing Your Diabetes at Work, School, and During Travel

People who have recently been diagnosed with diabetes may find self-care over-whelming at first, but with a little practice self-care becomes a part of daily life. Discuss these hints for managing diabetes away from home with the CHWs.

Handout 6-9: Taking Care of Yourself When You are Sick

Being sick can cause additional problems for people with diabetes. It is especially important that they continue to monitor their blood sugar and eat properly even when sick.

H. Why is it Important to Manage Blood Sugar Levels?

Maintaining blood sugar levels is important for everyone. Diabetes is a serious disease that, over time, damages organs and other parts of the body. Diabetes can damage the:

- Eyes,
- Kidneys,
- Nerves,
- Heart and blood vessels,
- Feet,
- Teeth and gums.

Short-term complications of diabetes are a result of blood sugar levels that are either too high or too low. These complications occur when a diabetic loses control over blood sugar levels. To work best with people in your community who have diabetes, you should know and recognize the signs of high and low blood sugar.

Remember, the goal of controlling diabetes is to keep blood sugar levels at a stable, healthy level. When blood sugar levels are balanced, the diabetic will be at optimum health. A person is generally able to control his or her diabetes through diet, exercise and, if necessary, medicine. There are times, however, when control is lost. This can happen when:

- A person skips a meal or eats too much;
- A person exercises more than usual;
- A person has an infection or is sick;
- A person takes more insulin than usual or forgets to take his or her insulin.

If a person is taking insulin to control diabetes, it is very, very important to maintain control of the blood sugar levels. If someone hasn't eaten enough or has taken too much insulin, the blood sugar levels can go too low. This is known as hypoglycemia. There are some pills that can also cause hypoglycemia if meals, physical activity, and medicine are not carefully monitored.

The normal signs of low sugar levels include increased pulse rate, sweating, lightheadedness, dizziness and hunger. As the reaction progresses, the person becomes confused and irritable. If the blood sugar level stays too low, the person can pass out. If they pass out for too long, brain damage can occur. Hypoglycemia is a serious condition that must be treated right away.

If a person feels like his/her blood sugar is getting too low but can't test it right then, play it safe – they should go ahead and treat it. Eat 10 to 15 grams of carbohydrates right away. Examples of foods that equal 10 to 15 grams of carbohydrates are provided in Handout 6-10.

Handout 6-10: Low Blood Sugar

Blood sugar levels should stay within a certain range. Blood sugar levels that are too low can be a serious problem for the diabetic.

Hyperglycemia is what happens if the blood sugar level goes too high.

It can be caused by:

- Too much food,
- Too little insulin,
- Less exercise or physical activity than usual,
- Infection or illness
- Medicine for another health problem, or
- Stress.

The usual signs include excessive hunger or thirst, dry or itchy skin, frequent urination, blurry vision and drowsiness.

In non-insulin-dependent diabetics, hyperglycemia is a sign that the self-care plan for diabetes needs to be followed more carefully.

For insulin-dependent diabetics, however, hyperglycemia can be life threatening and may progress into a coma.

Treatment of hyperglycemia includes:

- Light exercise if the diabetic is not sick
- Fluids without sugar if the diabetic is conscious
- Calling the physician or 911 immediately if the diabetic is unconscious

If hyperglycemia is untreated, it can result in a diabetic coma. The coma can be avoided, however, if the diabetes is brought under control when signs of high blood sugar begin to show.

Handout 6-11: High Blood Sugar

High blood sugar levels can be very dangerous. If the blood sugar is too high a person can slip into a coma and die. CHWs need to make

sure diabetics they work with understand the signs of high blood sugar.

There are a number of long-term health complications with diabetes. Complications can affect the eyes, kidneys, nerves, and blood vessels. Control of blood sugar has been shown to be the best way to reduce the risk of long-term complications, but even the best control may not eliminate the risk.

The complications are usually caused by changes in the nerves and blood vessels. They develop over a long period of time and are long lasting.

The risk of complications associated with diabetes include damage to the:

Heart and blood vessels. Damage to the heart and blood vessels is the biggest problem for a person with diabetes. The walls of the diabetic's blood vessels become thick and hard, and the vessels can become clogged with waste material in the blood. As this happens, his or her risk for heart attacks, high blood pressure, or stroke increase.

To reduce the risk of damage to blood vessels, a person should take care of the diabetes and keep their blood sugar level in control and:

- Get regular exercise.
- Maintain a healthy weight.
- Eat a diet low in fat and salt.
- Don't smoke

Eyes. Diabetes is the main cause of blindness in adults. High blood sugar levels can cause the blood vessels in the eye to bleed. This can result in blurry vision and can eventually lead to blindness.

To protect vision and eye health, a person should:

- Have an eye exam at least once a year.
- Report any blurring of vision or spots to the doctor.
- Keep blood sugar under control.

Kidney. The kidneys filter waste products from the blood and help to keep the right balance of fluid and salt in the body. High levels of blood sugar make the job of the kidneys more difficult. Over a period of time, the high blood sugar can cause the kidneys to stop working.

To prevent kidney problems, a person should:

- Have his/her urine tested once a year to look for kidney damage.

- Ask the doctor or dietitian for diet recommendations.
- See the doctor right away if urine is cloudy or bloody or if urination is painful.
- Keep blood sugar under control

Nerves. Nerve damage is common among people with diabetes. The damage is a result of high blood sugar levels. Nerves that are damaged do not transmit proper signals. Damaged nerves can cause.

- Loss of feeling in the feet;
- Pain in the legs, feet, arms, or hands;
- Problems with eating;
- Problems with going to the bathroom; or
- Problems with sex.

Nerve damage to the feet is a particular risk. It is the main cause of amputations in people with diabetes. A person with diabetes may not feel an injury on her foot. If the blood circulation is poor because of damaged blood vessels, the injury will have difficulty healing and may become infected. If the infection is not treated, the foot may need to be amputated. If the infection spreads, the leg may need to be amputated.

In order to protect against the complications nerve damage can cause a person with diabetes should:

- Keep blood sugar under control.
- Have an annual exam by the health care provider to check for damaged nerves.
- Tell the health care provider about any problems with hands, arms, feet, or legs.
- Tell the health care provider about problems having sex
- Tell the health care provider about problems with eating
- Not smoke.

Teeth and gums. Diabetes can contribute to infections of the gums, because of the associated problems with blood flow. If the teeth are not cared for, painful gum disease can develop. Without treatment, teeth may fall out.

To prevent against gum infections, a person should:

- Keep blood sugar under control.
- Brush and floss teeth twice a day.
- See the dentist twice a year.

Handout 6-12: taking care of yourself and preventing complications

Diabetics must take an active role in caring for themselves. This handout provides tips on the care diabetics should take to avoid complications.

I. Goal Setting

As we've already learned, diabetes is a serious disease that can lead to other serious problems such as kidney failure, blindness, and leg amputations. To keep blood sugar within acceptable limits and to avoid future problems, a person must manage and control his or her diabetes.

Setting goals is a good place to start. If the goal is put in writing, it helps a person stay focused on the end result and stay motivated.

Goals for managing diabetes should be specific things to do. It's hard to really determine if a goal has been achieved if it's something like, "I'll do a better job controlling my diabetes." A specific goal is, "I'll walk for 15 minutes every day" or "I'll check my blood sugar 4 times each day."

Be realistic when setting a goal. Take small steps. People feel better about themselves and are more motivated when they are reaching their goals. Once the set goals are achieved, set new goals.

Handout 6-13: My Goals

Review the handout with the CHWs. Discuss how they can use this handout to help people in the community set goals to control their diabetes.

IV. Summary

What are the risk factors for diabetes?

What are some of the signs of diabetes?

Name two tests for diagnosing diabetes?

Why is it important to balance food, physical activity and medicine when treating diabetes?

What are some of the long-term complications associated with diabetes?

Resources:

American Heart Association. www.americanheart.org

National Heart, Lung, and Blood Institute; National Institutes of Health; Department of Health and Human Services. www.nhlbi.nih.gov

Take Charge of Your Diabetes. 3rd edition. Atlanta: U.S. Center for Disease Control and Prevention. Department of Health and Human Services, 2003. www.cdc.gov/diabetes/pubs/tcyd/index.htm

Getting to the Heart of Diabetes, Our Guide to Understanding CVD, Diabetes, and Insulin Resistance. American Heart Association, 2001.

The Heart of Diabetes: Understanding Insulin Resistance. American Heart Association, 2003. <http://www.s2mw.com/heartofdiabetes/index.html>

Your Game Plan for Preventing Type 2 Diabetes: Healthy Care Provider's Toolkit. National Diabetes Education Program. National Institute of Health and Centers for Disease Control and Prevention. NIH publication No. 03-5334, February 2003. U.S. Department of Health and Human Services. <http://www.ndep.nih.gov/diabetes/pubs/catalog.htm>

American Diabetes Association. www.diabetes.org

Center for Disease Control and Prevention. Diabetes Public Health Resource. www.cdc.gov/diabetes

National Diabetes Education Program. www.ndep.nih.gov

Movimiento Por Su Vida. A music CD created to help everyone incorporate more movement into their lives. National Diabetes Education Program. www.cdc.gov/diabetes/ndep/movimiento.htm