

Diabetes Self-Care

Home Health Services
S.C. DHEC



South Carolina Department of Health
and Environmental Control

Table of Contents

Introduction.....	2
What is Diabetes?.....	3
Who is at Risk?	4
What are the types of Diabetes?.....	5
Know Your ABC's of Diabetes	6-7
Goals for Control.....	8
Self-Care Behaviors for Diabetes.....	9-29
• Healthy Eating.....	10-14
• Carbohydrate Counting	12
• Reading Food Labels	13
• Being Active	15
• Monitoring Your Blood Sugars.....	16-17
• Taking Medications	18-29
• Pills and Non-Insulin Injectibles.....	19-26
• Insulin.....	27-29
Blood Sugar Problem Solving	30-36
Controlling Stress.....	37-38
Reducing the Risk of Complications	39-46
Blood Sugar Record	47
Notes.....	48
Resources.....	49

Introduction

Diabetes

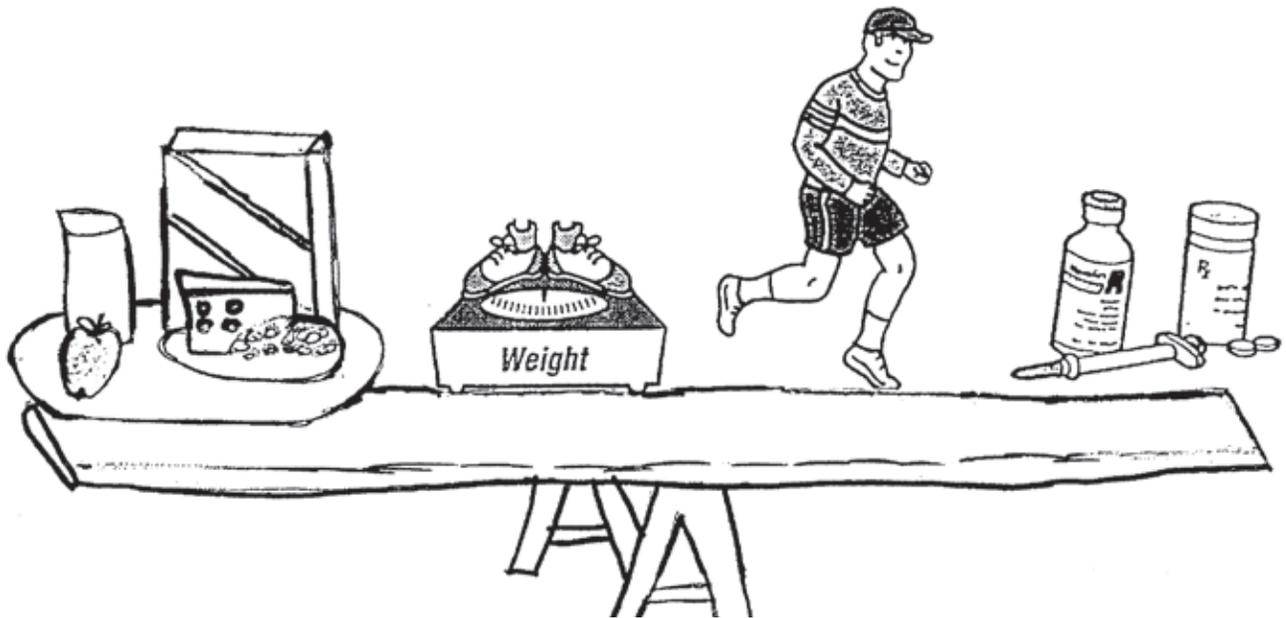
Diabetes is a serious disease that affects how the body uses food. The body changes the food you eat into sugar. The blood carries sugar to the cells of the body. Insulin made by the pancreas helps move sugar from the blood into the body's cells where it can be used for energy.

The amount of sugar in the blood is called the blood sugar or blood glucose level. This blood sugar level needs to stay in a healthy range to prevent the complications of diabetes.

When you have diabetes, the body either does not have enough insulin or the body can't use its insulin correctly to move sugar into the body's cells and muscles for energy. The sugar stays in the blood.

When this happens over time, high blood sugar, or diabetes, develops.

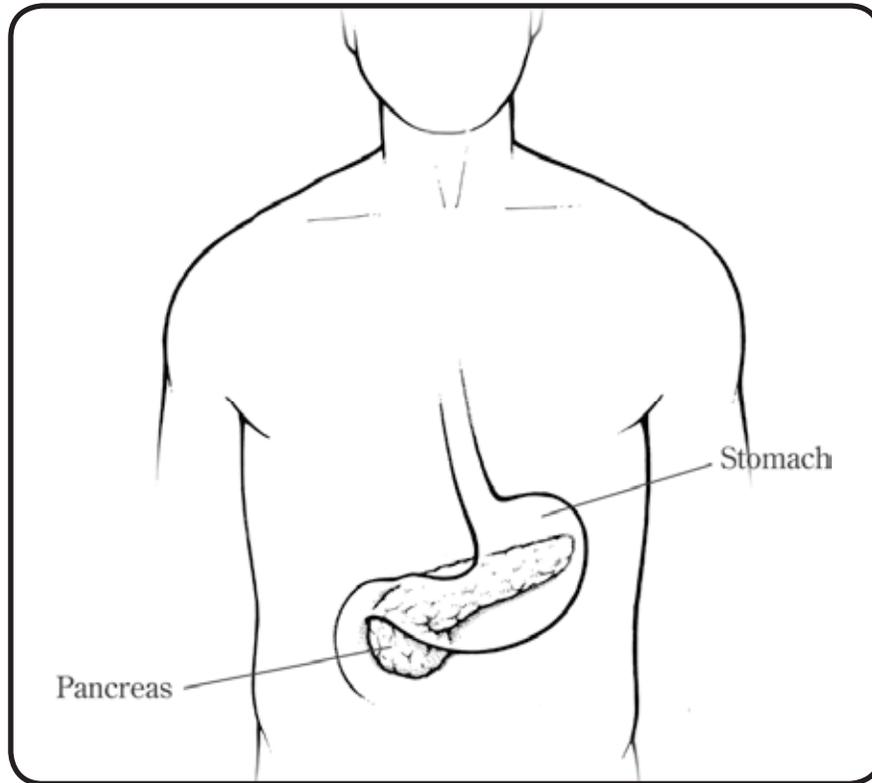
Over time, high levels of sugar or glucose can hurt the body and cause problems to the eyes, heart, kidneys, feet, blood vessels, and nerves. If you have diabetes, it is important to know how to take care of your health to prevent these complications.



Diabetes can hurt my body. I will protect my body and manage my diabetes by eating healthy, being physically active, taking my medicines daily, checking my blood sugars, and watching my weight.

What is Diabetes?

The foods that you eat turn into glucose. Glucose is a kind of sugar. It goes from your stomach into your bloodstream.



Your pancreas makes insulin. This insulin helps your body make energy from the food that you eat.

When you have diabetes, your body cannot use glucose for energy because there is either not enough insulin or the body cannot use its own insulin.

The diagnosis of diabetes is based on

- a fasting blood sugar of 126
- random blood sugar of over 200.

Many people with diabetes also have high blood pressure (hypertension) and high cholesterol (hyperlipidemia).

If I have high blood sugar, I have diabetes. I will ask my health care provider how I can control my blood sugar and other problems caused by diabetes.

Who is at Risk?

Because diabetes runs in families, your family members should know the risk factors for diabetes.

The risk factors for diabetes are:

- Being overweight
- Not exercising regularly
- Having a parent, brother, or sister who has diabetes
- Being African-American, Hispanic/Latino, Native American, Asian, or a Pacific Islander
- Being older than 45 years of age
- Having a baby that weighed more than 9 pounds or having gestational diabetes while you were pregnant.

When Should A Person Be Tested?

Everyone should be tested beginning at age 45, especially if they are overweight. They should repeat these tests every three years.

Early testing is recommended if the person is overweight and has additional risk factors. These risk factors include:

- A physically inactive lifestyle
- An immediate family member who has diabetes
- The high risk ethnic populations of African-American, Hispanic/Latino, Native American, Asian or a Pacific Islander
- Delivery of a baby weighing more than 9 pounds, or diagnosis of gestational diabetes
- Hypertension (140/90 mmHg)
- Abnormal cholesterol levels.

Choosing healthy foods, being active, and keeping my weight down lowers my risk of getting diabetes.

What are the types of diabetes?

Type 1 diabetes

- Accounts for 5-10 percent of all people with diabetes
- Usually occurs in younger people
- Signs and symptoms start quickly
- Requires insulin because the body no longer makes insulin.



Type 2 diabetes

- Accounts for 90-95 percent of all people with diabetes
- Can now occur at any age
- Starts slowly- there may not be any noticeable signs or symptoms
- Caused by insulin resistance (a condition in which the body fails to properly use insulin), combined with decreased insulin production.



Type 2 diabetes in youth

- As many as 80 percent of youths may be overweight at the time of diagnosis.
- Most patients are older than 10 years of age and are in middle to late puberty.
- Most patients have a family history of type 2 diabetes.
- Often, patients are members of a certain racial/ethnic group (African American, Hispanic/Latino and Native American descent).



Gestational diabetes

- Gestational diabetes occurs with 5-8 percent of all pregnancies.
- Gestational diabetes requires special care during pregnancy and at delivery for the baby.
- Women with gestational diabetes have 50-60 percent greater risk of having diabetes later in life.
- Women can reduce their risk of diabetes later in life by eating a healthy diet, losing weight, and being physically active.

Pre-diabetes

- Occurs when a person's blood glucose levels are higher than normal but not high enough for a diagnosis of type 2 diabetes
- Patients can halt or slow the progression of pre-diabetes to diabetes by:
 - Losing weight
 - Eating healthy
 - Being physically active
- Can damage the body.



Some diabetes symptoms include:

Frequent urination

Unusual weight loss

Blurry vision

Excessive thirst

Increased fatigue

Extreme hunger

Irritability



If a member of my family has one or some of these signs, I will have him or her see a health care provider. A simple blood test can tell if someone has diabetes.

Know your ABCs

A= A1C

The A1c is a measure of the amount of sugar that is in your blood. It gives you an average of what your blood sugar has been for the last three months.

Normal A1C	4-6 percent
Good control for diabetes	6-7 percent
Need to make changes	7-8 percent
Danger	Above 8 percent

A new way to show your blood glucose control is by the estimated average glucose (eAG). The relationship of your A1C to your eAG is:

A1C%	eAG (mg/dl)
6	126
6.5	140
7	154
7.5	169
8	183
8.5	197
9	212
9.5	226
10	240

Talk with your doctor about what your A1C goal should be if:

- You have a history of severe hypoglycemia
- You have advanced complications from diabetes
- You are elderly.

Talk with your doctor about how often your A1C is to be checked.

It is recommended that you have it checked:

- When you are first told that you have diabetes
- Every three to six months depending on your A1C value
- As your doctor orders it.

Know your ABCs

B= Blood Pressure

If you have diabetes, your blood pressure should be less than 130/80. Keeping your blood pressure lower than this can help prevent damage to your body.

It is important to have your blood pressure checked by your doctor during each visit. Try to write down your blood pressure each time you have it checked. Talk with your doctor about checking your own blood pressure at home.

C= Cholesterol

Cholesterol is made by your liver and comes from the food you eat. It is important that you wisely choose the types and amount of foods that contain fat and cholesterol.



Triglyceride is bad for you

Triglyceride
should be
Less than
150 mg/dl



HDL Cholesterol is good for you

HDL
should be
Greater than
45 mg/dl



LDL Cholesterol is bad for you

LDL
should be
Less than or
equal to
100 mg/dl

Goals for Control

Target blood sugar levels for people with diabetes

Fasting and before meals	70-130 mg/dl
Two hours after eating	Less than 180 mg/dl
Bedtime blood sugar	Less than 180 mg/dl

Tests required for people who have diabetes

Test	How often to have done	ADA Goal
A1C	Every three to six months	Less than 7 percent
Microalbumin (kidney test)	At least every year	Less than 30 microgram/mg
Cholesterol	At least every year	
Total		Less than 200 mg/dl
HDL		Greater than 40 mg/dl (male) Greater than 50 mg/dl (female)
LDL		Less than 100 mg/dl
Triglycerides		Less than 150 mg/dl
Dilated eye exam	At least every year	No damage to retina of eye
Foot exam	Every MD visit	No damage to foot
Blood pressure	Every MD visit	Less than 130/80 mmHg

Talk with your medical provider about

- Getting a flu shot every year
- Getting a pneumonia shot
- Taking an aspirin daily
- Stopping smoking
- Diabetes education at time of diagnosis and as needed.

These goals/standards were established by the American Diabetes Association (2010)

If I need help in meeting these goals, I can work with my Home Health nurse and doctor.

Self-Care Behaviors for Diabetes



Healthy eating



Being active



Monitoring blood sugar



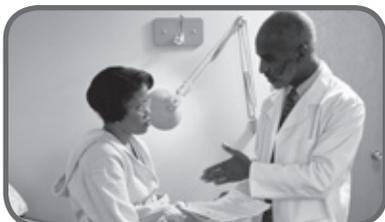
Taking medications



Knowing what to do for high or low blood sugars



Managing stress



Reducing the risks of complications

Know What You're Eating

Carbohydrates is another term for sugar and starch. All starch is broken down into sugar. Your body uses carbohydrates for energy and needs more of this nutrient than any other. Examples of carbohydrates are:

Grains, Breads, Cereals

- 1 ounce bread (1 slice bread, 1/4 large bagel, 6" tortilla, 1/2 English Muffin)
- 1/3 cup cooked dried beans
- 1/3 cup pasta or rice
- 1 cup soup
- 3/4 cup cold cereal
- 1/2 cup cooked cereal
- 2 inch square cornbread

Milk and Yogurt

- 1 cup milk (8 ounces)
- 6 ounces unsweetened yogurt or sweetened with non-caloric sweetener

Fruits

- 1 small fresh fruit
- 1/2 cup fruit
- 1 cup melon or berries
- 1/2 cup fruit juice (4 ounces)
- 1/4 cup dried fruit

Starchy Vegetables

- 1/2 cup potato, peas, or corn
- 1/2 sweet potatoes
- 1/2 cup lima beans
- 1/3 cup cooked dried beans or peas

Sweets and Snack Foods

- 3/4 ounce snack food (*pretzels, chips, 4-6 crackers*)
- 1 ounce sweet snack (*two small sandwich cookies, five vanilla wafers*)
- 1 Tablespoon sugar or honey
- 1/2 cup ice cream

Non-starchy vegetables contain small amounts of carbohydrates also. If you eat 1 1/2 cups cooked or 3 cups raw non-starchy vegetables, it adds up to a serving of carbohydrates. Examples of non-starchy vegetables are:

Beets	Broccoli	Cabbage	Carrots	Cauliflower	Eggplant
Greens	Okra	Peppers	Rutabaga	Spinach	Squash
Tomatoes	Zucchini	Asparagus	Green Beans		

Proteins build and repair muscles, skin, and every cell in the body. Milk and meat groups are high in protein. Small amounts are found in foods from the starch and vegetable groups.

Examples of proteins are:

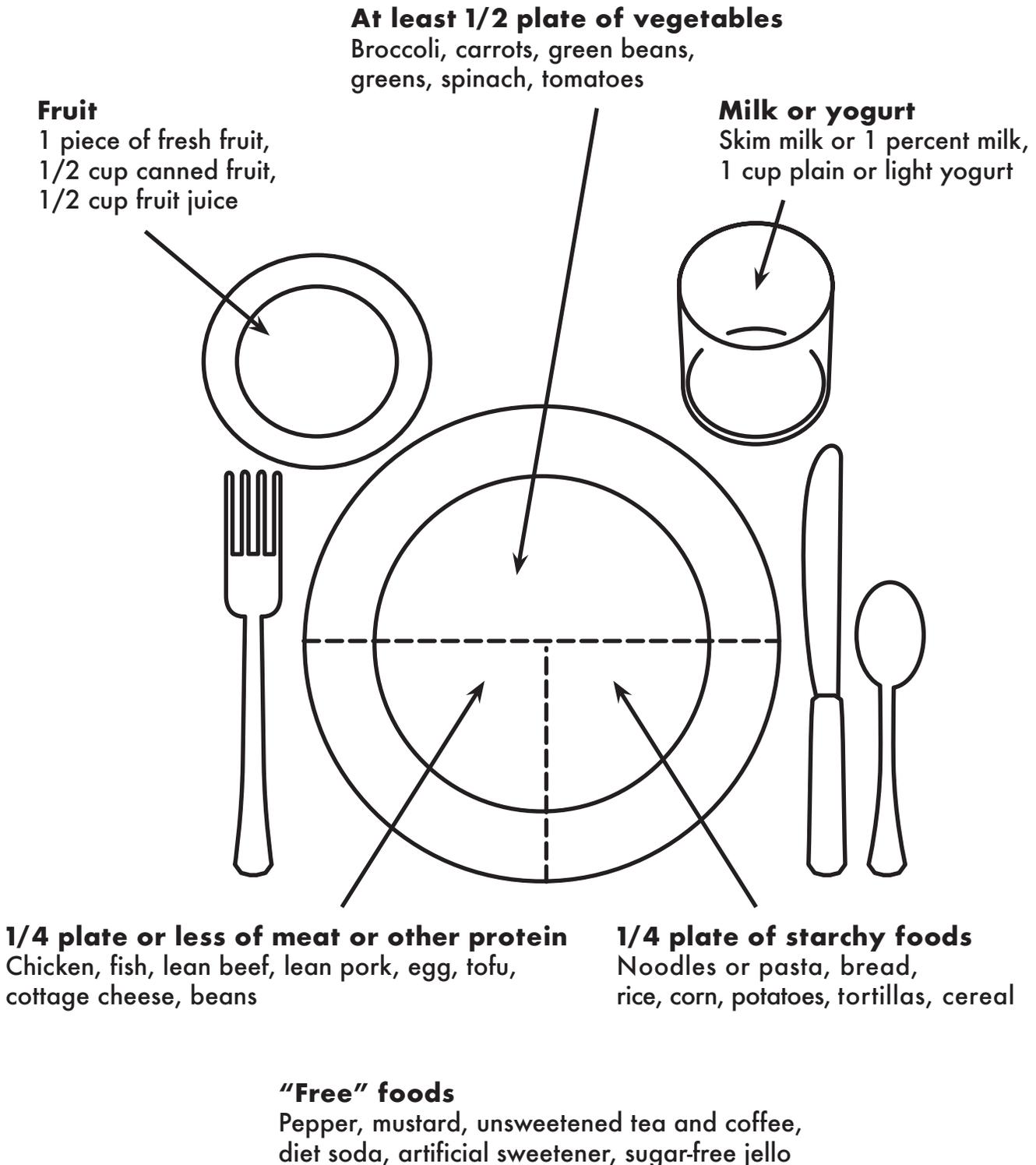
Chicken/Turkey	Lean Beef	Lean Pork	Low-fat Cheese	Fish/Shellfish
Peanut Butter	Eggs	Cottage Cheese		

Fats supply energy, maintain healthy skin, and carries fat-soluble vitamins throughout the body. Fats are high in calories. Examples of fats are:

Mayonnaise	Nuts	Salad Dressings	Butter or margarine	Fat Back
Shortening	Lard	Bacon	Cooking oils	

Healthy Eating

How Should My Plate Look?



I will make healthy choices and control serving sizes.
Food that helps me control diabetes is also healthy for my entire family.

Carb Counting

Important points to remember

1. 1- 15 grams of total carbohydrates = 1 carbohydrate choice
2. Most women need about three to four carbohydrate choices (45 to 60 grams of carbohydrates) at each meal.
3. Men generally need about four to five carbohydrate choices (60 to 75 grams of carbohydrates) at each meal.
4. If you eat snacks, one or two carbohydrate choices (15 to 30 grams of carbohydrates) are reasonable.
5. How many carbohydrate choices you need will depend on your body size and activity level.

Healthy eating is more than just carbohydrate counting.

Eat a variety of foods. Try to include:

- five servings of fruits and vegetables
- six servings of grains (three should be whole grain)
- two servings of low-fat dairy foods.

Foods in the meat and fat groups do not directly affect blood sugar.
Make heart healthy choices for optimal health.

Reading A Food Label

Nutrition Facts

Serving Size: 1 cup (228g)
Servings per container: 2

Nutrition Facts

This is the new label heading

Serving Size Information

Serving sizes are given in both household and metric measures, and reflect the amounts people actually eat.

Calories

Allows you to compare the calorie content per serving. When comparing similar foods be sure to check that the serving sizes are the same.

Amount per serving

Calories 260 Calories from fat 120

% Daily Value*

Total Fat 13g 20%
Saturated Fat 5g 25%
Cholesterol 30mg 10%
Sodium 660mg 28%
Total Carbohydrate 31g 10%
Dietary Fiber 0g 0%
Sugars 5g
Protein 5g

% Daily Value

Shows how a food in the specified amount fits into the overall daily diet.

Nutrition Panel

The nutrients required to appear on the nutrition panel are those most important to the health of people today, most of whom need to worry about getting too much of certain items (fat, for example), rather than too few vitamins or minerals, as in the past.

Vitamin A 4% • Vitamin C 2%
Calcium 15% • Iron 4%

* Percent (%) Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	less than	65 g	80 g
Saturated Fat	less than	20 g	25 g
Cholesterol	less than	300 mg	300 mg
Sodium	less than	2,400 mg	2,400 mg
Total Carbohydrate		300 g	375 g
Dietary Fiber		25 g	30 g

Reference Values

This section helps you learn good diet basics. These figures can be adjusted, depending on a person's calories needs.

Conversion Guide

Reveals the calorie value of the energy-producing nutrients.

Calories per gram:
Fat 9 * Carbohydrate 4 * Protein 4

These materials were adapted from the *Life with Diabetes: A Series of Teaching Outlines*, American Diabetes Association, © 2009.

Healthy Eating

What Can I Eat?

To help control your blood sugar and help you feel better, it is important to watch what and how much you eat and drink. It is also important to eat at about the same time each day.

Here are some tips for making healthy eating choices:

- Eat breakfast, lunch, and dinner each day, with four to five hours between each meal. Don't skip meals.
- Eat a variety of foods at each meal. Limit fried, salty, and "junk" food.
- Choose small serving sizes for starchy vegetables, cereal, bread, rice, grits, pasta, fruits, or dairy products at each meal.
- Eat foods without adding extra salt. Most processed foods are high in salt. Read food labels. Choosing foods lower in sodium or with "no salt added" will help control blood pressure.
- Eat less fried and fatty meat, such as fat back, fried chicken, pork chops, or ribs.
- Limit fats by using no more than 2-3 teaspoons of margarine, sour cream, gravy, salad dressing, or mayonnaise each day.
- Choose low-fat or fat-free milk, cheese, yogurt, and other dairy products.
- Eat small portions of food and avoid second helpings.
- Drink water and sugar free drinks and use sugar substitutes to sweeten drinks.
- Eat less sugar and avoid regular soda, drinks with sugar, candies, cakes, pies, cookies, and other such foods.



Being Active

Regular physical activity is recommended daily.

The best recommended activities are moderate-intensity physical activities.

Moderate-intensity activity is:

- Being able to talk while you are active, but probably not being able to sing a song
- The effort a healthy individual might give while
 - walking briskly
 - mowing the lawn
 - dancing
 - swimming
 - bicycling on level ground.

Be sure to talk with your doctor before beginning a new physical activity plan if:

- you have heart trouble or have had a heart attack
- you take blood pressure or heart medications
- you are over 50 years old and are not used to physical activity
- you have a family history of developing heart disease at a young age
- you have never exercised.

Stop exercising if you:

- have pain or pressure in your chest
- feel faint or dizzy
- become short of breath
- have low blood sugar with or after exercising.

Call your doctor if you have any of these symptoms.

Signs and symptoms of overexertion include:

- shortness of breath
- nausea or vomiting
- excessive fatigue
- fainting or becoming disoriented.



I will check with my health care provider before I start an activity plan.

I will always know what my blood sugar is before I exercise.

I will drink at least 6-8 cups of water each day, unless limited by my health provider.

I will always carry a quick source of sugar with me when I am active because of possible hypoglycemia (low blood sugar).

Monitoring your blood sugar



Checking your blood sugar regularly can also show you that your blood sugar is affected by:

- What you eat
- How much you eat
- Physical activity
- Stress
- Being sick
- Medicines.

It is important to check your blood sugar at different times of the day – **not only** in the morning. Knowing what your blood sugar is two hours after a meal is very important. Talk with your doctor or diabetes educator about the best times to check your blood sugar.

When you travel, take your monitor, strips, and extra batteries.

I will always check to be sure that my strips are not out of date.
I will keep my monitor and strips out of extreme hot or cold weather.

Monitoring your Blood Sugar

Tips for checking your blood sugar

DO

Get all the supplies that you need to check your blood sugar.

Wash your hands in warm water.

Dangle your fingers at your side for 30 seconds before you prick your finger.

Squeeze your finger below the place on your finger you are going to prick until it becomes red.

Keep your hand below the level of your heart while you wait for a drop of blood that is big enough.

Try your thumb or fourth finger. They have a rich blood supply.

Make sure you recap your bottle of strips after you take a strip out.

Clean your meter as your directions describe.

DON'T

Don't prick the middle of the fingertip – use the sides.

Don't use meters, lancets, or other supplies that do not belong to you.

Don't share your meter, lancets, or other supplies.

Don't keep your strips in a place that is too hot, too cold, or is humid, like a bathroom.

Don't use strips if the date on the bottle shows strips are expired.

Don't forget to use check strip and glucose control.

Don't re-use lancet to prick your finger.

When do I need to check my blood sugar?

Your doctor or diabetes educator can help you decide when to check your blood sugar.

There are eight times of the day to choose from:

1. Before breakfast
2. One to two hours after breakfast
3. Before lunch
4. One to two hours after lunch
5. Before supper
6. One to two hours after supper
7. Before bedtime
8. Between 2-3 a.m.

Taking Your Medications

Things to remember when taking diabetes medications

- Know your medicine names, doses, times to take, and why you are taking each medicine.
- Take your pills as prescribed and not just when you think your blood sugar is high.
- Take your medicine at the same time every day.
- Store medicines at room temperature. Do not store your medicines in the bathroom.
- Never use medications after the expiration date.
- Always keep your medications with you when you are traveling (don't keep them in your suitcase). Take along extra medicine and extra prescriptions.
- Keep a list of all the medicines you take in your purse or wallet.
- Consider using a pill pack—it makes life easier.
- When you forget to take your medicine:
 - If it is a once a day medicine and you remember later that day, go ahead and take the pill when you remember.
 - If you take one pill a day and forget your pill, **do not take two pills the next day.**
 - If you take pills two times a day and forget your morning pills, **do not take both doses in the evening.**



Taking Your Medications

Taking diabetes medications regularly is important. Do not change, skip, or stop your medication without first checking with your health care provider.

People with **type 1** diabetes must take insulin.

People with **type 2** diabetes may need to:

- Take pills
- Take insulin shots
- Sometimes take both pills and insulin shots.

There are seven types of medicines for diabetes that you take by mouth. They each work differently.

- **Sulfonylureas** (SUL-fah-nil-YOO-ree-ahs) stimulates your pancreas to make more insulin. These are sometimes used in conjunction with insulin injections.
- **Biguanides** (by-GWAN-ides) decreases the amount of glucose made by your liver.
- **Alpha Glucosidase Inhibitors** (AL-fa gloo-KOS-ih-dayss in-HIB-it-ers) slows the absorption of the starches you eat.
- **D-Phenylalanine Derivatives: Meglitinide Analogues** (meh-GLIT-in-ides) stimulates your pancreas to make more insulin.
- **Thiazolidinediones** (THIGH-ah-ZO-li-deen-DYE-owns) make you more sensitive to insulin.
- **DPP-IV Inhibitors** boost incretin gut hormone production to help lower blood glucose levels.
- **Dopamine Agonist** lowers blood glucose, though the reasons why aren't fully understood.

There are also several "combination" oral medications. These work by putting two different medicines in one pill for convenience and improved action.

The medicines taken by injection include:

- Incretin mimetics act like (mimic) the natural hormones in your body that lower blood sugar.
- Synthetic analog of human amylin decreases the amount of glucose made by your liver.
- Insulin.



Taking Your Medications

Sulfonylureas:

This pill helps your body make more insulin and keeps your liver from making extra glucose. These pills, along with diet and exercise, will lower blood sugar levels in individuals with type 2 diabetes.

Second generation

Glipizide (Glucotrol) 5-40 mg

Glyburide (Diabeta) 2.5-20 mg

Glyburide (Micronase) 2.5-20 mg

Glyburide (Glynase PresTab) 1.5-12 mg

Glipizide extended releases (Glucotrol XL) 5-20 mg

Third generation

Glimepiride (Amaryl) 1-8 mg

SIDE EFFECTS:

Weight gain, constipation, diarrhea, nausea, heartburn, changes in appetite, stomach discomfort, dizziness, drowsiness, and headache. Notify your doctor if you get low blood sugar, high blood sugar, fever, rash, unusual bruising or bleeding, or sore throat.

Duration of Action: Up to 24 hours

COMMENTS:

- Take it 30 minutes before meals.
- You may take it with food if your stomach gets upset.
- Eat three meals daily and a bedtime snack - eat at the same time daily and do not skip meals.
- Discuss with your doctor whether you can drink alcohol.
- It may increase sun sensitivity. Wear sunscreen, sunglasses, and a hat outside.
- Do not take other medications without your doctor's OK.
- Talk with your doctor if you are pregnant or breastfeeding.

WARNING:

In addition, people with the following should not take sulfonylureas: Type 1 diabetes, major surgery, severe trauma or stress, or a history of problems with Sulfa drugs.

Important points for you to know _____

Taking Your Medications

Biguanides:

Dosage: 500 mg to maximum of 2,500 mg per day

This group includes Glucophage, Fortamet, Glumetza, and various forms of Metformin.

This pill limits the amount of glucose made by your liver, as well as decreasing insulin resistance. It will take at least one to two days for this medicine to reach the correct levels in your blood stream. This pill taken by itself will not cause low blood sugar.

SIDE EFFECTS:

Nausea, vomiting, loose stools, gas, or "sick stomach"

COMMENTS:

- Eat three meals and a bedtime snack daily. Eat at the same time daily and do not skip meals.
- Discuss with your doctor whether you can drink alcohol.
- Do not take other medications without your doctor's OK.
- Talk with your doctor if you are pregnant and breastfeeding.
- Gradually increasing the dosage may prevent nausea and vomiting.
- Glucophage XL tablets cannot be crushed or chewed. The tablet cases may be seen in your bowel movements.

WARNING:

Your doctor will need to know how well your liver and kidneys are working before and after you start this pill, so you will need to get regular blood tests.

Do not take this medication if you have:

- Liver problems
- Congestive heart failure
- Acute or chronic lactic acidosis
- A history of alcoholism or binge drinking
- Decreased kidney function.

Check with your doctor if you are:

- Taking a heart pill (procardia/nifedipine)
- Taking a water pill (lasix/furosemide)
- Taking a stomach pill (tagamet/cimetidine).

Let everyone on your health team know you are on this pill before you have X-rays in which dye is used or major surgery.

Important points for you to know _____

Taking Your Medications

Alpha Glucosidase Inhibitors

This group includes Precose (Acarbose) and Miglitol (Glyset). These medications cause the food you eat to change into glucose more slowly, so that blood sugar levels are lower after a meal. This medication is taken with the first bite of food. If this medication is taken by itself, it will not cause low blood sugar. ***If hypoglycemia occurs while taking this pill, you must take glucose tablets, gel, or glucogen. Sugar and/or orange juice will not work.***

Precose (acarbose)

Dosage: 25 mg to 300 mg per day

SIDE EFFECTS:

Precose may cause gas and stomach pain. This may happen when you first start taking it. This side effect can be reduced by slowly increasing the dose of the medicine.

COMMENTS:

- Drink plenty of water, eat slowly, and chew food well.
- Some foods that cause gas and you should avoid include beans, bran cereal, nuts, broccoli, cabbage, beer, and sodas.
- It will take at least one day for this pill to begin working in your blood stream.

WARNINGS:

Check with your doctor if you are taking a stomach pill with enzymes because this may reduce the effects of Precose.

Glyset (miglitol)

Dosage: 25 to 100 mg three times per day at meals

SIDE EFFECTS:

Gas, stomach pain, diarrhea. Side effects usually occur during the first few weeks of therapy and get better over time.

Duration Of Action: Eight Hours

COMMENTS:

- Many people lose weight taking this pill.
- This pill may cause low blood sugar when used with insulin or sulfonylureas.

WARNING:

- Tell your doctor if you have kidney problems.
- Is not recommended if you have
 - Diabetic ketoacidosis
 - Inflammatory bowel disease, colonic ulceration, or partial intestinal obstruction, and in patients predisposed to intestinal obstruction.
- Do not take this medication if you are pregnant or breastfeeding.

Important points for you to know _____

Taking Your Medications

Meglitinide Analogues

This group includes Nateglinide (Starlix) and Repaglinide (Prandin). These drugs are similar to Sulfonylureas in that they stimulate the body to release insulin. They can cause hypoglycemia. Their effects decrease when blood sugar levels are low. These medicines work more quickly than Sulfonylureas.

Starlix (nateglinide)

Dosage: 60mg- 120 mg with each meal

This pill helps your body make more insulin right after meals, which lowers blood sugar. This medication can be used alone or with Metformin (glucophage).

SIDE EFFECTS:

Weight gain, low blood sugar reaction

Duration Of Action: One To two Hours

COMMENTS:

- Check blood sugar frequently.
- Do not take if you skip a meal.
- Take within 30 minutes of a meal.

WARNING:

- This medication should not be used in people taking sulfonylureas.
- You may have higher blood levels of this medication if you have liver problems.
- Do not take this medication if you are pregnant or breastfeeding.

Prandin (repaglinide)

Dosage: 1mg to 16 mg daily

This pill helps your body make insulin right after meals, which lowers blood sugar. Your doctor may give this pill with Metformin (glucophage) or alone.

SIDE EFFECTS:

Numbness and tingling in the arms or hands, dizziness, weight gain, low blood sugar reaction, headache

Duration of Action: One to two hours

COMMENTS:

- Check blood sugar closely and regularly.
- Do not take this medicine if you are going to skip a meal. This pill can cause low blood sugar.
- Take this pill within 15-30 minutes of the meal.
- If you add a meal, you will need to add a dose of this medication.

WARNING:

Do not take this medicine if you are pregnant and breastfeeding.

Important points for you to know _____

Taking Your Medications

Thiazolidinediones

This group includes Pioglitazone (Actos). This medication makes the cells of skeletal muscles more sensitive to insulin so that glucose can enter the cells. It also causes some reduction in glucose production in the liver.

Actos (pioglitazone)

Dosage: 15 mg to 45 mg per day

May be used alone or with Metformin, sulfonylureas or insulin. Take it with or without food one time a day.

GENERAL SIDE EFFECTS:

Sore throat, weight gain, edema, anemia. Contact your doctor immediately if you have bloating or swelling of ankles, feet or hands, chest pain, rapid weight gain, shortness of breath, abdominal pain, loss of appetite, fatigue, unexplained nausea or vomiting, dark urine or yellowing of the skin or eyes.

GENERAL WARNING:

- If you are taking another diabetes medication, this medication could cause hypoglycemia.
- If you are taking birth control pills, this medication may decrease the effectiveness of the birth control pill. This pill could increase the chance of pregnancy by causing ovulation to resume in premenopausal women who have not been ovulating.
- Do not use if you are pregnant or breastfeeding, or if you have congestive heart failure, Type 1 diabetes, diabetic ketoacidosis, or liver disease.
- Your doctor should do a blood test to check your liver function before you start these drugs and regularly thereafter.

Important points for you to know _____

Taking Your Medications

Incretin Mimetics

This group includes Byetta (exenatide), Victoza (liraglutide) and Bydureon (exenatide extended release). These are injection medications for people with Type 2 diabetes who are taking Metformin, a sulfonylurea, or a combination of Metformin and a sulfonylurea but continue to have problems with blood sugar control. They increase insulin secretion. Hypoglycemia can occur if taken with a sulfonylurea. The primary side effect is nausea, which tends to improve over time.

Dosage:

Byetta (exenatide) - 5-10 mcg at morning and evening meals

Victoza (liraglutide) - 0.6-1.8 mg once daily with or without food

Bydureon (exenatide extended release) - 2 mg every 7 days with or without food

SIDE EFFECTS:

Nausea, hypoglycemia when used with sulfonylureas, modest weight loss

COMMENTS:

- The thigh, abdomen, or upper arm should be used for injection sites.
- The dose is to be given within the 60-minute period before the morning and evening meals (or before the two main meals of the day, approximately six hours or more apart). It should not be administered after a meal.
- The dose should be stored refrigerated and protected from light. Do not freeze.
- The pen should be discarded 30 days after first use, even if some drug remains in the pen.
- Bydureon must be administered immediately after powder is mixed with liquid.

WARNING:

These medications are not recommended for use in patients with end-stage renal disease or severe renal impairment.

Important Points for You to know _____

Taking Your Medications

Inhibitors

DPP-4 Inhibitors

This group includes Januvia (sitagliptin phosphate), Onglyza (saxagliptin), and Tradjenta (linagliptin). They enhance a natural body system called the incretin system, which helps to regulate glucose by affecting the pancreas cells. They work only when blood sugar is elevated and so does not cause hypoglycemia. They can be given with Metformin or thiazolidinediones (TZDs).

Dosage:

Januvia (sitagliptin) - 100 mg once daily with or without food

Onglyza (saxagliptin) - 2.5-5 mg once daily with or without food

Tradjenta (linagliptin) - 5 mg once daily with or without food

SIDE EFFECTS:

Stuffy or runny nose and sore throat, upper respiratory infection, and headache

WARNING:

- Should not be used in patients with Type 1 diabetes or for the treatment of diabetic ketoacidosis
- Assessment of renal function is recommended prior to initiation of JANUVIA and periodically thereafter.

Dopamine Agonists

This group includes Cycloset (Bromocriptine mesylate) which improves blood sugar through a mechanism not yet understood. Following a morning dosage of this medication, after meal blood sugars improve without increasing insulin production.

SIDE EFFECTS:

Extreme sleepiness, nausea, fatigue, dizziness, vomiting, and headache

WARNING:

- This medication should not be taken within 2 hours after waking with the first meal of the day.
- Contact your doctor immediately if symptoms such as low blood pressure, dizziness, nausea, or extreme sweating are noticed.
- Blood glucose monitoring should include some pre-meal and post-meal readings to assess effectiveness of this medication.

Bile Acid Sequestrants

This group includes Welchol (Cholestevlam) which may improve or slow down gastrointestinal tract motility, thereby reducing post-meal blood sugars.

SIDE EFFECTS:

Headache, unpleasant taste, nausea, bloating, flatulence and constipation

WARNING:

Should not be used if triglycerides are above 400 mg/dl and liver disease is present or not used as monotherapy when triglycerides are above 250 mg/dl. Caution should be used in renal disease, volume depletion, and chronic constipation.

Taking Your Medications

Insulin

Because insulin is destroyed in the stomach, it must be given as a shot instead of a pill.

Insulin is required for people with Type 1, some Type 2 diabetes, and gestational diabetes.

Insulin Storage:

- Unopened bottles of insulin should be stored in the refrigerator and are good until the expiration date on the box and/or the bottle.
- Insulin can be stored at room temperature (59-86 degrees Fahrenheit) for about one month. The strength of the insulin is altered after that.
- Insulin should never be frozen.
- Keep insulin bottles away from direct sunlight or heat and in a cool, dry place.
- Avoid exposing the bottles to temperature extremes (less than 36 or more than 86 degrees Fahrenheit).
- Once a vial of insulin is opened, you must use it within 28 days.
- Follow package recommendations for insulin pens.

Check your insulin before you use it:

- Rapid, short acting, and long acting insulins should be clear and have no odor. Do not use these types of insulin if it looks cloudy, thickened, slightly colored, or if it has any solid clumps or particles in it.
- All other insulin should be cloudy and have an even appearance after gentle mixing.
- Do not use insulin if insulin clumps in the bottom of the bottle after mixing.
- Do not use insulin if the bottle looks frosted on the inside.

Some insulins can be mixed:

- Rapid acting and NPH - inject within five minutes of mixing.
- Regular and NPH - inject within five minutes after mixing.
- Long Acting Insulins can NOT be mixed.

Taking Your Medications

Insulin

How To Dispose Of Syringes:

- Use an empty bleach or detergent bottle for your lancets and syringes.
- Once the bottle is about 3/4 full, tighten the cap on the bottle and put in the household trash.
- Call DHEC at 1-800-285-5257 for a free supply of “Get the Point” stickers to put on your bottle before putting it in the trash.

How to make the injection more comfortable:

- Let insulin come to room temperature before injecting.
- Make sure there are no air bubbles in the syringe before you inject the insulin.
- Wait until alcohol dries on your skin.
- Relax your muscles in the area.
- Puncture the skin quickly.
- Keep the needle going in the same direction when going in and coming out.
- Do not wipe the needle with alcohol; this removes the slick coating on the needle that helps the needle go in easily.

Guidelines for “reuse” of syringes : (NOT RECOMMENDED)

- a. Recap the needle. Be careful NOT to touch anything.
- b. Do not clean the needle with alcohol. This action wipes the protective coating off the needle and results in more pain during injection.
- c. Do not reuse a needle that is bent or dull.
- d. Store the empty syringe to be reused at room temperature.
- e. Never use anyone else’s syringe or let anyone use your syringe.

Pre-filling syringes: (NOT RECOMMENDED)

In unusual circumstances, insulin syringes may be pre-filled. Persons who cannot draw up their insulin can have someone pre-fill their syringes. Your Home Health Nurse can provide instructions for pre-filling syringes. A better alternative would be to change to insulin pens. Ask your doctor if this is an option.

Taking Your Medications

Insulin Action

Insulin action has three parts:

- 1 Onset - when insulin starts to work
- 2 Peak - when insulin is working the hardest
- 3 Duration - how long insulin works.

Type	Color	The action of insulin			Role in blood glucose management
		Begins Working	Working Hardest	End	
Rapid Acting <i>Humalog (Lispro)</i> <i>Novolog (Aspart)</i> <i>Apidra (Glulisine)</i>	<i>clear</i>	<i>5-15 minutes</i>	<i>1/2-1 hours</i>	<i>2-4 hours</i>	Covers insulin needs for meals eaten at time of the injection. Used with longer-acting insulin.
Short Acting <i>Regular</i>	<i>clear</i>	<i>1/2 hour</i>	<i>2-5 hours</i>	<i>6-8 hours</i>	Covers insulin needs for meals eaten within 30-60 minutes.
Intermediate Acting <i>NPH</i>	<i>cloudy</i>	<i>1 1/2 hours</i>	<i>4-12 hours</i>	<i>14-18 hours</i>	Covers insulin needs for about half the day or overnight. Often combined with rapid or short-acting insulin.
Long Acting/Basal <i>Lantus (Glargine)</i> <i>Levemir (Detemir)</i>	<i>clear</i>	<i>2-4 hours</i>	<i>No peak</i>	<i>24+ hours</i>	Covers insulin needs for about one full day. Can be combined with rapid or short acting insulin. Do not mix with another type of insulin.
Pre-Mixed <i>Humulin 70/30</i> <i>Novolin 70/30</i> <i>Novolog Mix 70/30</i> <i>Humalog Mix 75/25</i> <i>Humalog Mix 50/50</i>	<i>cloudy</i>	<i>30 minutes</i> <i>30 minutes</i> <i>10-20 minutes</i>	<i>hours:</i> <i>2-12</i> <i>2-12</i> <i>1-4</i>	<i>hours:</i> <i>24</i> <i>24</i> <i>24</i>	These products are generally taken twice a day before mealtimes.

Blood Sugar Problem Solving

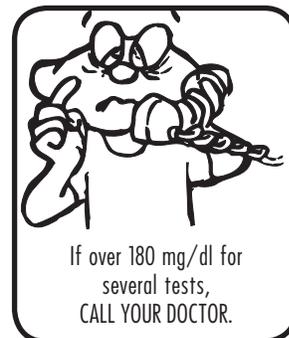
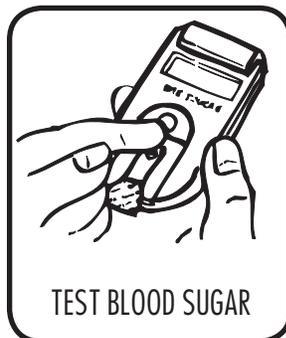
Hyperglycemia is high blood sugar.

- Causes:**
- Too much food
 - Too little insulin or diabetes medicine
 - Illness
 - Stress

Starts: Little by little, may lead to coma

Blood Sugar: Above 180 mg/dl

Symptoms: See pictures



Over time, high blood sugar levels will damage my body even though I feel well.

Blood Sugar Problem Solving

What can cause my blood sugar to go too high?



Eating too much food



Exercising less



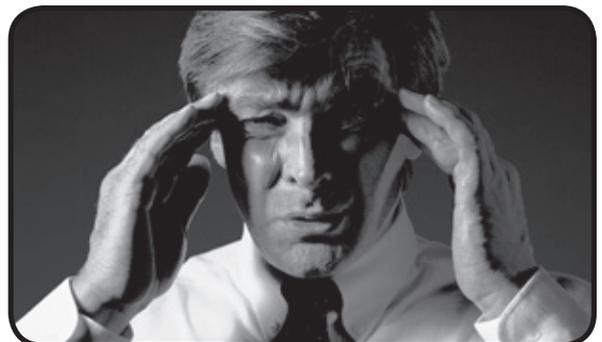
Not taking my
diabetes medication



Not taking enough
diabetes medication



Getting sick



Stress

Blood Sugar Problem Solving

What can I do to prevent or manage high blood sugars?



Follow your meal plan



Physical activity



Take the right amount of diabetes medication every day



Test your blood sugar



Wear Medic-Alert jewelry or carry wallet card



Tell a friend about the signs of high blood sugar

Blood Sugar Problem Solving

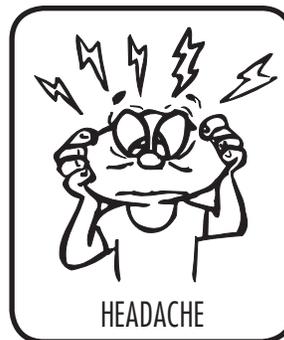
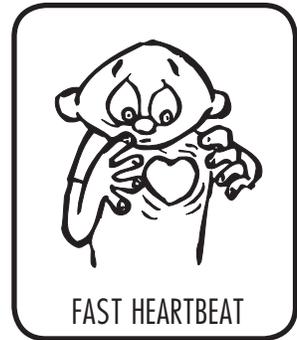
Hypoglycemia is low blood sugar.

- Causes:**
- Too little food
 - Too much insulin or diabetes medicine
 - Being more active

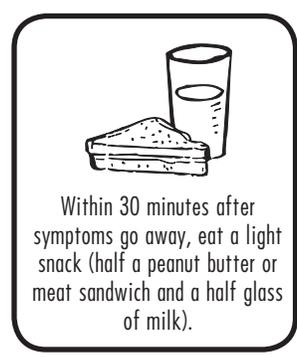
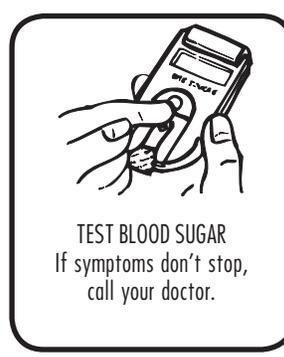
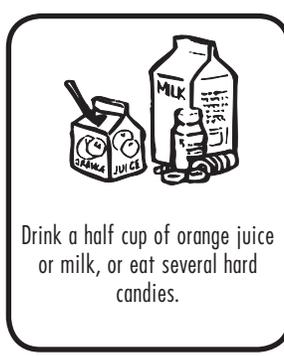
Start: Sudden, may progress to shock

Blood Sugar: Below 70 mg/dl

Symptoms: See Pictures



Here's what you can do...



Blood Sugar Problem Solving

How to treat hypoglycemia

If you are experiencing signs and symptoms of hypoglycemia, follow the following steps:

Step # 1 Check blood sugar if you have your monitor (if you don't have your monitor nearby, treat as below).

- If your blood sugar is **less than 70 mg/dl**, treat with 15 grams of carbohydrates.
- If your blood sugar is **less than 50 mg/dl**, treat with 30 grams of carbohydrates.

Step # 2 **Wait 15 minutes and re-check blood sugar.**

Step # 3 If blood sugar is **greater than 90 mg/dl** (and your next meal is more than 1 hour away), eat a protein containing snack. If it is time for your next meal, eat the meal.

Step # 4 If blood sugar is still **less than 90 mg/dl**, re-treat as in Step # 1 above.

Examples of 15 grams of Carbohydrates

Food	Amount
Fruit Juice	1/2 Cup (4 ounces)
Regular Soft Drink (Soda)	1/2 Cup (4 ounces)
Hard Candy	3-5 pieces
Glucose Gel	1 tube
Glucose Tablets	3-4 tablets
Cake icing	1 small tube

I will teach someone in the house how to check and treat low blood sugar.
I will talk with my doctor or diabetes educator about a glucagon kit.

Blood Sugar Problem Solving

What can you do to keep your blood sugar from dropping too low?

- Eat on time.
- Do not skip meals or snacks.
- Check your blood sugar on schedule.
- Do extra tests when you feel different.
- Check your blood sugar before exercising, driving, or doing heavy work.
- Eat a snack if your blood sugar is less than 100 mg/dl before you exercise or drive any distance.
- Do not take too much medicine.

General Guidelines

- Learn your body's warning signs.
- Treat low blood sugar quickly.
- Always carry something with you to treat your blood sugar if it drops too low.
- Wear Medic-Alert jewelry.
- Educate your friends and family on how low blood sugar makes you feel and act. Tell them how to treat low blood sugar. When you feel sick or have the flu, your blood sugar may be higher.

Call your health care provider right away if:

- You vomit more than once
- You have diarrhea more than five times or it persists longer than six hours
- You have a fever or your breath smells fruity
- Your blood sugar is 180 mg/dl or higher on several tests
- You have ketones in your urine.

Blood Sugar Problem Solving

Sick Day Rules

- Continue to take your insulin or diabetes pills.
- Check your blood sugar at least every four hours.
- Drink 8 ounces of calorie-free liquids every hour.
- Test your urine for ketones if you are on insulin.
(Talk with your doctor about ketone testing.)
- If vomiting, try small frequent feedings every one to two hours.
These foods/drinks are a source of 15 grams of carbohydrates:

1/2 cup apple juice	Five lifesavers
One slice dry toast	Six saltines
1/3 cup frozen yogurt	1/4 cup sherbet
1/4 cup regular pudding	1 cup nonfat, sugar free yogurt
1/2 cup regular soft drink	3/4 of double stick Popsicle
1/2 cup cooked cereal	1 cup broth soup
1 cup Gatorade	1/2 cup regular ice cream
1/2 cup regular Jell-O	Milkshake (1/3 cup low fat milk + 1/4 cup ice cream)

Problem solving for high and low blood sugar

When Traveling or Visiting Family:

Traveling can be fun and exciting, but it often changes a person's regular eating and activity patterns.

- Have prescriptions for medicines and supplies
- Take extra testing supplies (include batteries)
- Carry sugar source for low blood sugar
- Pack snacks

Controlling Stress

Stress can make your blood sugar go up.

Kinds of stress:

- Problems with your marriage or family
- Worrying about money
- Problems or changes at work
- Illness or death in your family
- Worrying about your children
- Moving
- Getting married or divorced
- Going to the doctor
- New job responsibilities
- Teaching Sunday school class
- Cooking Sunday dinner for a large group
- Winning the lottery
- The birth of a child.



Controlling Stress

Resources and tips for dealing with stress

Change the situation

- Try to reduce your major life events and daily hassles.
- Set goals and develop contracts/action plan.
- Learn to say “no” when you can’t do things.

Change your mind

- Do a reality check.
- Use self-talk.
- Develop support systems.
- Develop safety-valve activities.
- Become a “hardy” person who appreciates changes.

Change your body

- Do deep breathing.
- Try other relaxation techniques.
- Pray or meditate.

Maintain a “wellness” lifestyle

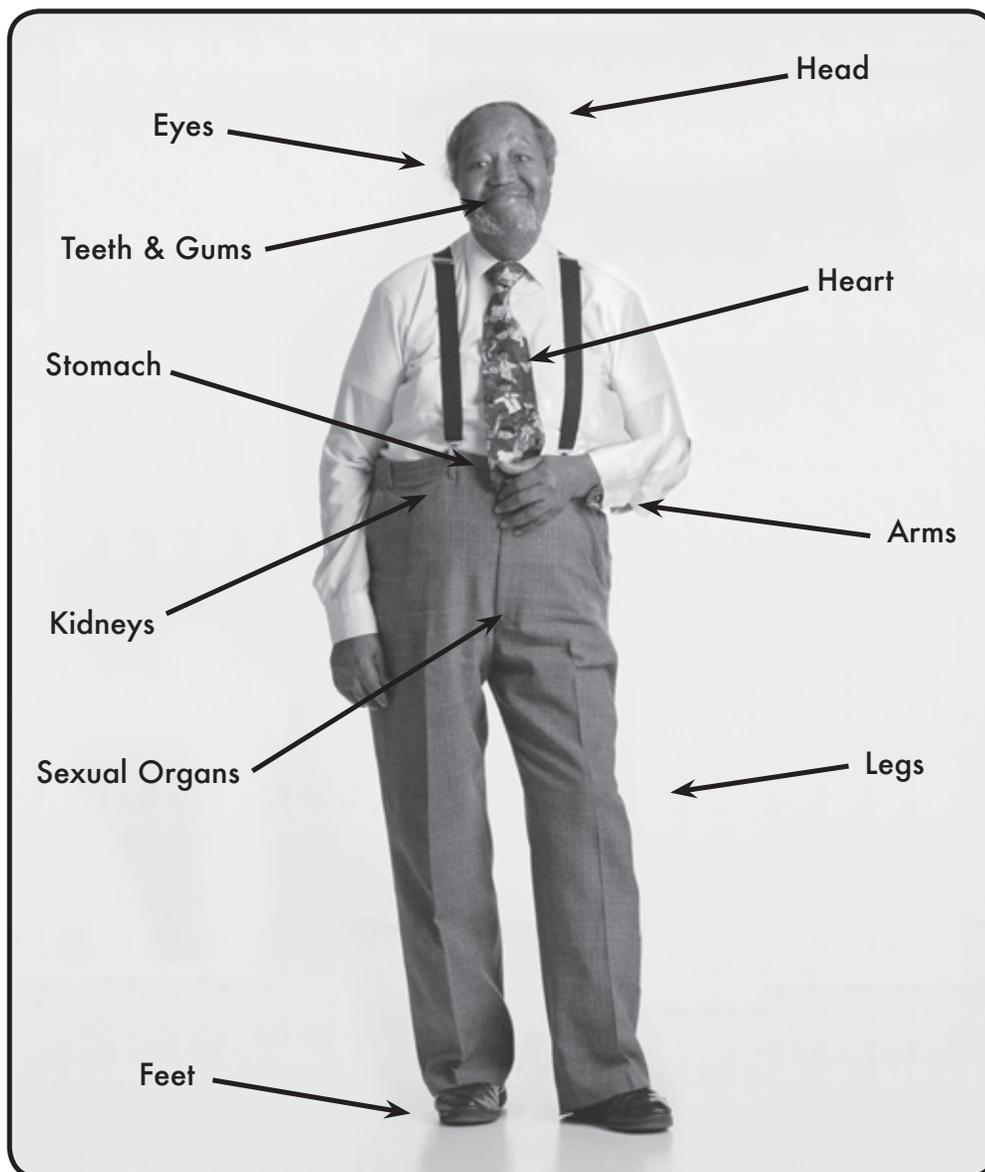
- Balanced diet
- Exercise
- Avoid smoking, recreational drugs, and excessive alcohol
- Enough rest and sleep/energy-saving tips
- “Uplifting” activities.

Reducing the Risks of Complications

Diabetes can cause many complications such as: blindness, heart attack, stroke, kidney failure, poor blood circulation, and amputation.

Your blood vessels carry blood through your body. High blood sugar can damage the blood vessels. This can change how the blood gets to certain parts of your body.

High blood sugar can also cause damage to nerves throughout the body. This damage can cause pain and poor functioning.



Keeping my blood sugar under control and my A1C below 7 percent can prevent these complications.

Reducing the Risks of Complications

How can you prevent damage to your body?



Eat less fat



Exercise



Take medication
as ordered



Buy the right foods



Lose weight if necessary

Reducing the Risks of Complications

- To control blood pressure
 - Take your medicine every day.
 - Avoid foods high in salt.
 - Avoid stress.
 - Don't smoke.
- To lower risk of kidney damage
 - Keep blood pressure under control.
 - Avoid foods high in salt.
 - Don't smoke.
 - Ask about a kidney test (microalbumin) every year.
- To lower cholesterol
 - Be physically active.
 - Take medications daily if ordered.
 - Eat a healthy diet and avoid fatty foods, especially animal fats.
- To protect your feet
 - Check your feet every day for cuts, cracks, and sores. Report any problem to your doctor immediately.
 - Always wear shoes.
 - Ask your doctor to check your feet each visit.
- To protect your eyes
 - Have a dilated eye exam every year.
 - Don't smoke.
- To protect your teeth and gums
 - Brush your teeth at least two times a day.
 - Floss your teeth daily.
 - See your dentist at least every six months.

A flu shot is needed every year.
The pneumonia vaccine is usually good for a lifetime. I will talk with my doctor about when I need this vaccine.

Reducing the Risks of Complications

Check your feet every day.

1. Use good light.
2. Use a mirror if you need to.
3. Check for
 - tender spots or ingrown toenails
 - any swelling
 - any cracks, corns or callouses (check between the toes)
 - any changes in color - redness or dark color
 - any cuts or blisters
 - any insect bites.
4. Look for any sores that are slow to heal or have drainage.

If you have any of these problems call your doctor.



Reducing the Risks of Complications

Foot care

Daily Foot care

1. Wash using lukewarm water.
2. Dry feet well, and don't forget between the toes.
3. Put lotion on your feet but not between the toes.
4. You can put powder between the toes.
5. Wear shoes with clean socks every day.
6. Empty and check your shoes before you put them on.
7. Use an emery board to file your nails if needed.
8. Cut toenails straight across.

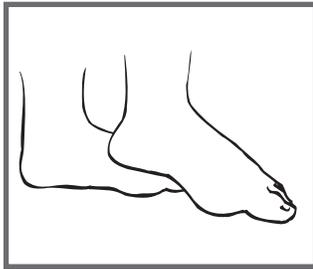
Be sure to ask your doctor to check your feet every office visit.



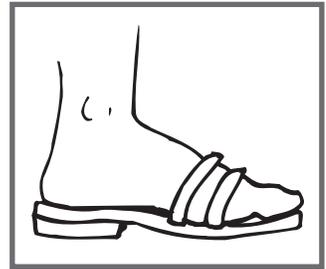
Reducing the Risks of Complications



No smoking



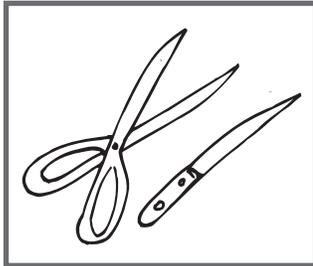
No bare feet



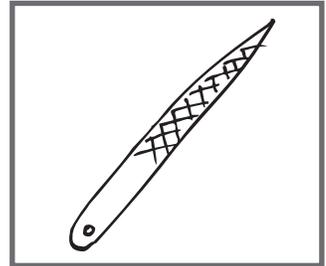
No open toe shoes



No electric socks, heating pads, electric blankets, or hot water bottles.



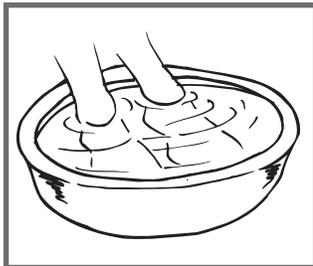
No bathroom surgery



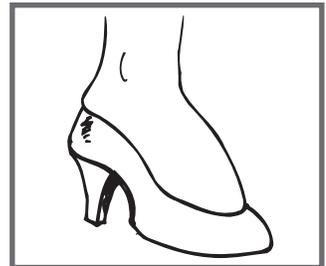
No metal files



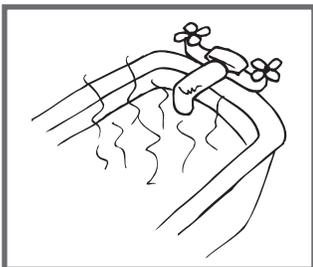
No over the counter corn removers



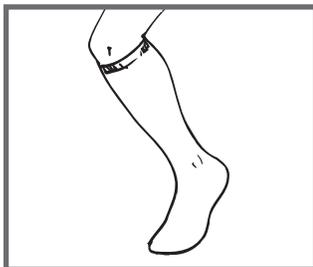
No soaking of the feet



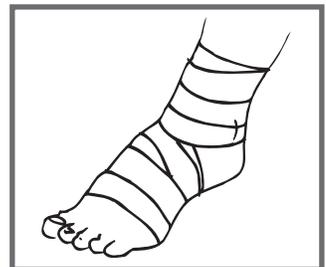
No tight shoes, or worn shoes



No hot water



No tight socks or knee highs



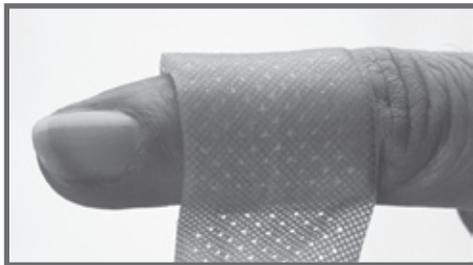
No tight shoes or bandages

Reducing the Risks of Complications

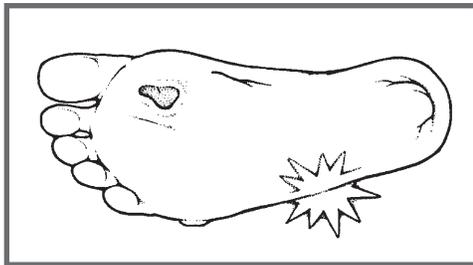
What would you do for a small cut?



Clean well.



Use a dressing or bandage.



Watch for infection
(redness, pus, soreness or
tenderness, swelling).

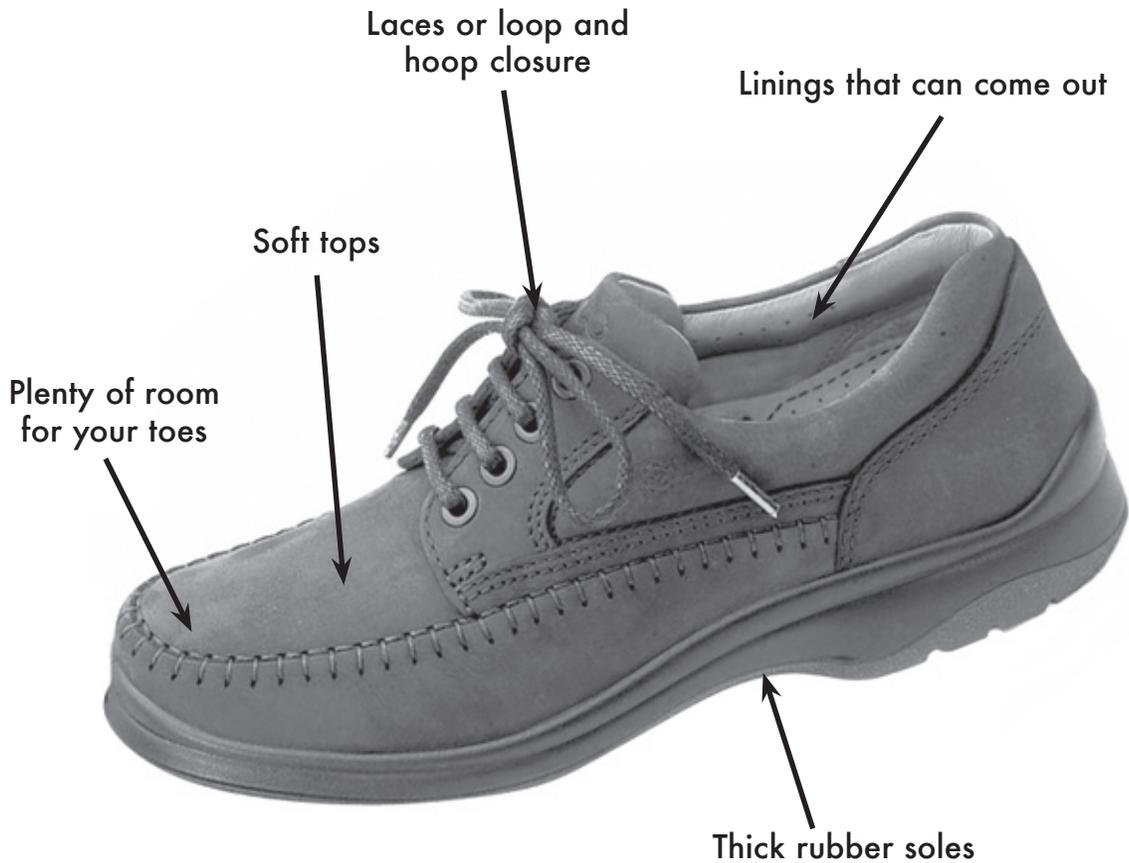


Call your doctor if not healing fast.

Reducing the Risks of Complications

Footwear tips

Buy good walking shoes; they're worth the money.



Shop for shoes in the afternoon when your feet are a little swollen.

Wear thick athletic socks or special padded socks when you go to buy your shoes.

Resources

- 1. American Association Diabetes Educators** (800) 383-3633
<http://www.aadenet.org>
 This association offers information to health care professionals and the public on many issue of diabetes.
- 2. American Diabetes Association (ADA)** (800) 232-2383
<http://www.diabetes.org>
 The leading national non-profit organization providing diabetes information, research, and advocacy to prevent and cure diabetes. The ADA will put you in contact with your local chapter, and link you with excellent diabetes education programs.
- 3. American Dietetic Association** (800) 877-1600
<http://www.eatright.org>
 This professional association of registered dietitians offers assistance to the public on diabetes and other nutritional concerns.
- 4. Centers for Disease Control and Prevention**
<http://www.cdc.gov/nccdphp/>
 The national agency offers a wealth of information on diabetes for professionals and the public.
- 5. Commun-I-Care** (800) 763-0059
<http://www.comun-l-care.org> (803) 933-9183
 Provides primary health care services and medication to working adults who do not have Medicare or Medicaid, do not qualify for Veterans Health Benefits, cannot afford any health insurance, and meet income guidelines.
 Ken Trogden, Executive Director - Post Office Box 186 - Columbia, S.C. 29202-0186
- 6. Juvenile Diabetes Foundation/Kids Site**
<http://www.jdf.org>
- 7. National Diabetes Information Clearinghouse**
<http://catalog.niddk.nih.gov>
 This national organization provides downloadable publications on many aspects of diabetes.
- 8. S.C. Commission for the Blind** <http://www.sccb.state.sc.us> (800) 922-2222
 This agency provides eye medical services to people who cannot afford care.
 Prevention of Blindness Services – Post Office Box 79 - Columbia, S.C. 29202-0079
- 9. S.C. DHEC Division of Diabetes, Heart Disease, Obesity and School Health**
<http://www.scdhec.gov/diabetes> (803) 898-1646
 Supports community diabetes education, health systems intervention, and coalition development to help reduce the incidence and severity of diabetes in South Carolina. "Diabetes Today," an interactive program, gives community leaders guidance on addressing community issues related to diabetes.
- 10. S.C. Lions Inc.** (803) 796-1304
 This organization offers eye care support in our state.
 Richard Black, Executive Director - 110 Medical Circle - West Columbia, S.C. 29169
- 11. S.C. Vocational Rehabilitation** (803) 896-6500
<http://www.scvrd.net> (800) 832-7526
 Diabetes Consultant - S.C. Vocational Rehabilitation Department - 1410 Boston Avenue - West Columbia, S.C. 29170
 This state agency offers support to clients as they transition into jobs that best suit their abilities and needs.



PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

www.scdhec.gov

*We promote and protect the health
of the public and the environment.*

CR-006544 12/13