



Diabetes 101

Diabetes Prevention and
Control Program
S.C. DHEC



South Carolina Department of Health
and Environmental Control

Diabetes: It's a Balancing Act

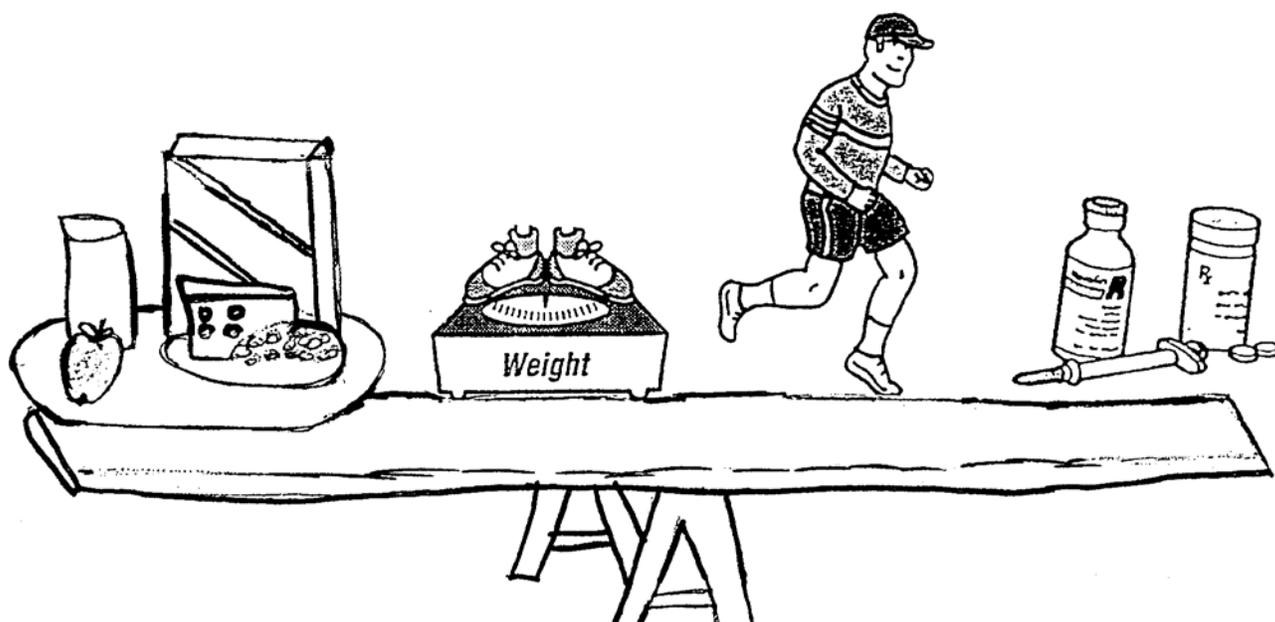
Diabetes is a serious disease that affects how the body uses food. The body changes the food you eat into sugar. The blood carries sugar to the cells of the body. Insulin made by the pancreas helps move sugar from the blood into the body cells where it can be used for energy.

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 so the body can't 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.

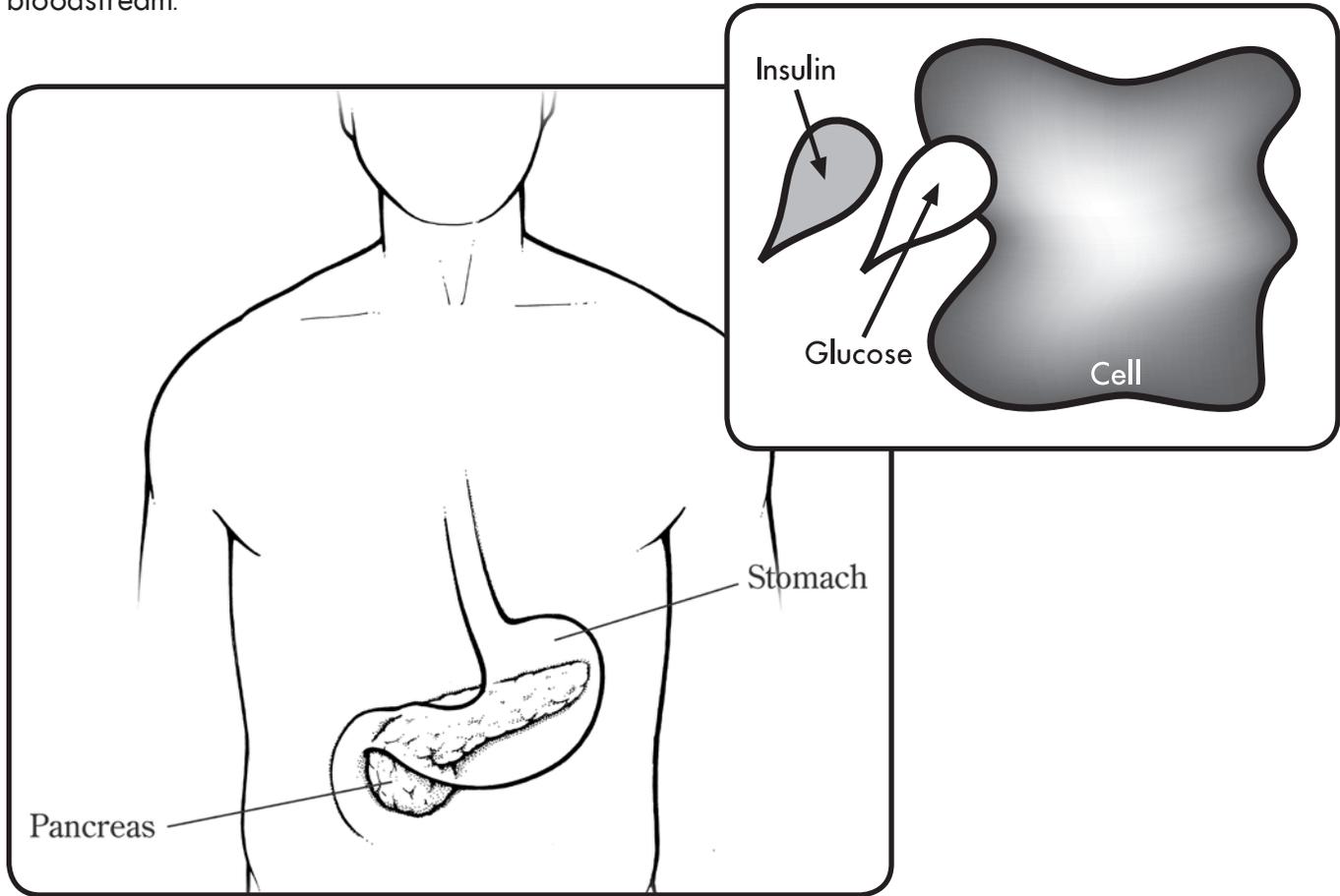
Over time, high levels of sugar or glucose can hurt the body and cause problems to the eyes, heart, kidneys, feet, blood vessels, and nerves. If you have diabetes, it is important to know how to take care of your health to prevent these complications.



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 reaching and maintaining a healthy 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.



Insulin helps glucose move into your body's cells. Your body then uses the glucose for energy.

Pre-diabetes occurs before the onset of type 2 diabetes. When you have pre-diabetes, you have insulin resistance. This means that your body resists the use of its own insulin.

If you are diagnosed with diabetes, you still have insulin resistance, and your body will slowly lose the ability to make enough insulin.

A fasting bloodsugar of 126 mg/dl or more or a random blood sugar of 200 mg/dl or more makes a diagnosis of diabetes.

We now know that diabetes, hypertension (high blood pressure) and high cholesterol are three different diseases, but they seem to occur together. More and more research points out that there are mutual causes for these three different diseases.

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.

Am I at Risk?

These simple questions will help you determine your risk for having pre-diabetes or diabetes:

- | | YES | NO |
|---|-------|-------|
| • Are you less than 43 years of age AND are overweight according to the "at-risk weight" chart? | _____ | _____ |
| • Have you ever developed diabetes during pregnancy? | _____ | _____ |
| • Are you 43-56 years old AND | | |
| • Any other race/ethnicity than white? | _____ | _____ |
| • Your mother, father, sister(s) or brother(s) have diabetes? | _____ | _____ |
| • You have high blood pressure? | _____ | _____ |
| • Are you more than 56 years of age? | _____ | _____ |

*One "YES" puts you at risk for diabetes.
Talk to your doctor about getting tested.*

Height	Weight
4'10	148 lbs.
4'11	153 lbs.
5'0	158 lbs.
5'1	164 lbs.
5'2	169 lbs.
5'3	175 lbs.
5'4	180 lbs.
5'5	186 lbs.
5'6	192 lbs.
5'7	198 lbs.
5'8	203 lbs.
5'9	209 lbs.
5'10	216 lbs.
5'11	222 lbs.
6'0	228 lbs.
6'1	235 lbs.
6'2	241 lbs.
6'3	248 lbs.
6'4	254 lbs.

When Should I Be Tested?

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

Earlier testing is recommend 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
 - Membership in a high-risk ethnic population (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
 - Delivery of a baby weighing more than 9 pounds, or diagnosis of gestational diabetes
 - Hypertension (140/90 mmHg)
 - Abnormal cholesterol levels

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..



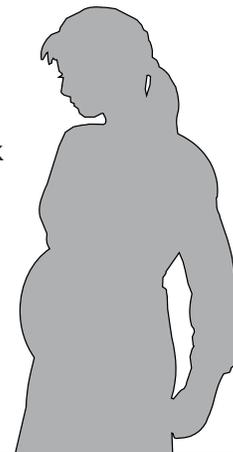
Type 2 diabetes in youth

- As many as 80 percent of youth 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

- 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

Pre-diabetes is a serious medical condition that can be treated. This condition is based on elevated blood sugars that are not yet at the level for diabetes. Some long-term damage to the body, especially the heart and circulatory system, may already be occurring during pre-diabetes.

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. A blood glucose between 100 to 126 mg/dl is the diagnosis for pre-diabetes.

Diabetes and pre-diabetes increases your risk for heart disease.

- People with pre-diabetes have a 1.5 increased risk of heart disease
- People with diabetes have a 2- to 4-increased risk of heart disease

The good news is that people with pre-diabetes can prevent or delay the onset of type 2 diabetes. Making changes in your diet and increasing your level of physical activity does work. Modest weight loss and regular exercise can actually turn back the clock and return high blood sugars to the normal range.



People with pre-diabetes don't often have symptoms. In fact, symptoms develop so slowly, people often don't recognize them. Some people have no symptoms at all.

There are two different blood tests your doctor can use to determine whether you have pre-diabetes. If you think you are at risk, talk with your doctor about being tested.

Some diabetes/pre-diabetes symptoms include:

Frequent urination

Excessive thirst

Extreme hunger

Unusual weight loss

Increased fatigue

Irritability

Blurry vision

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.

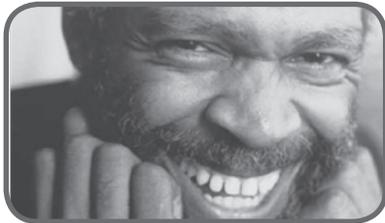
Self-Care Behaviors to Prevent and Control Diabetes



Healthy Eating



Being Active



Managing Stress



Knowing what to do for high or low blood sugars



Monitoring blood sugar



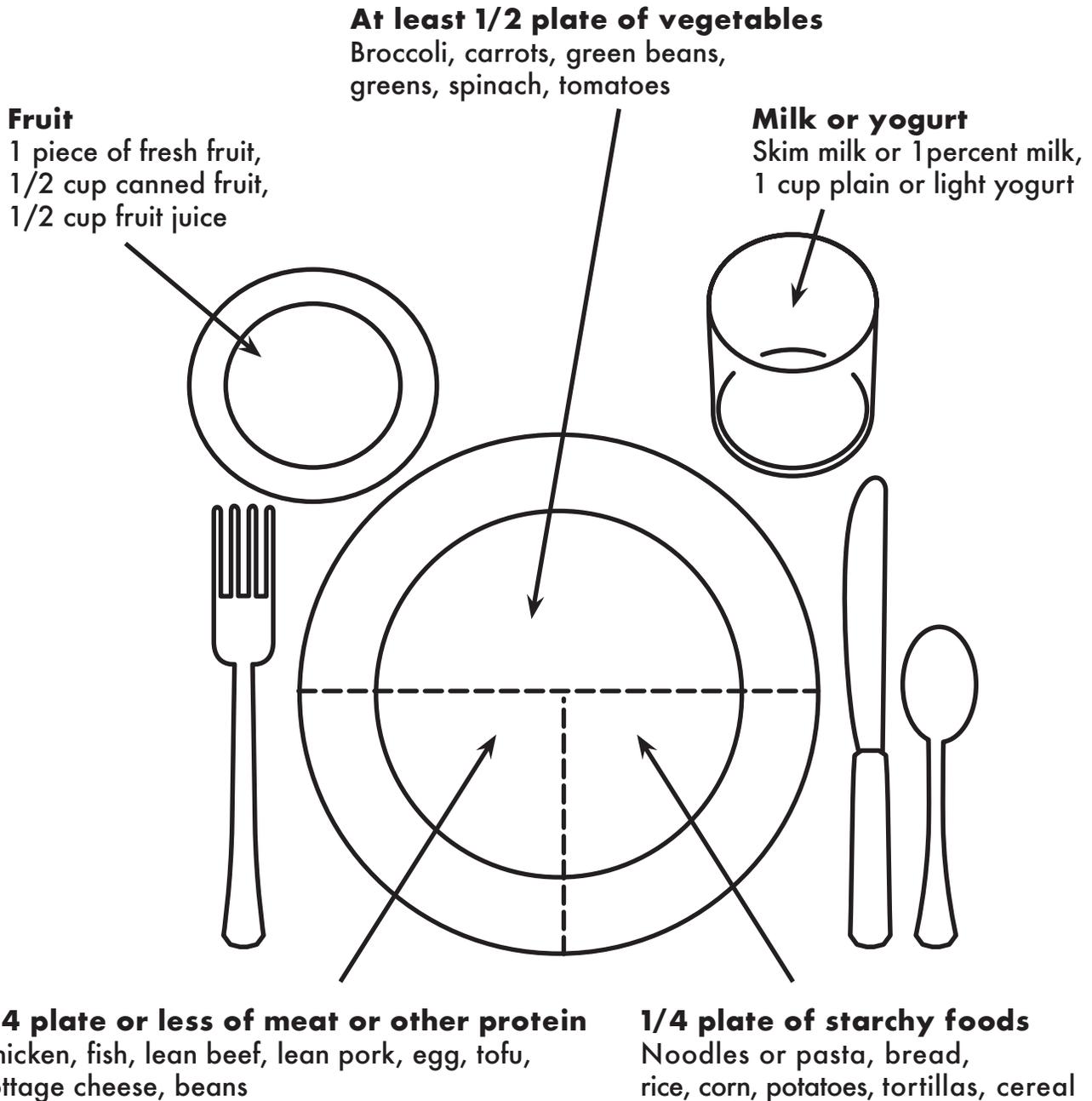
Taking medications



Reducing the risks of complications

Healthy Eating

How Should My Plate Look?



A snack may be used between meals if needed. I will make healthy choices and control serving sizes. Food that helps me control diabetes is also healthy for my entire family.

Healthy Eating

Know What You Are Eating

Know Your Carbohydrates

Grains, Breads, Cereals

- Bread, bagel, tortilla
- Pasta or rice
- Cold cereal
- Soup
- Cooked cereal (grits, oatmeal)

Fruits

- Small fresh fruit
- Fruit-canned in light syrup
- Melon or berries
- Fruit juice
- Dried fruit

Milk and milk products

- Low Fat milk
- Unsweetened yogurt

Sweets and Snack Foods

- Pretzels, chips
- Snack crackers
- Ice cream
- Desserts

Starchy Vegetables

- Potato, peas or corn
- Cooked dried beans and peas

Know Your Proteins

- Chicken
- Lean Beef
- Lean Pork and Sausage
- Low Fat Cheese
- Fish
- Shrimp/shellfish
- Eggs
- Cottage Cheese

Know Your Fats

- Mayonnaise
- Butter
- Nuts
- Salad Dressings/oils
- Fat Back
- Lard
- Bacon
- Chocolate candy bars

Know Your Vegetables

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

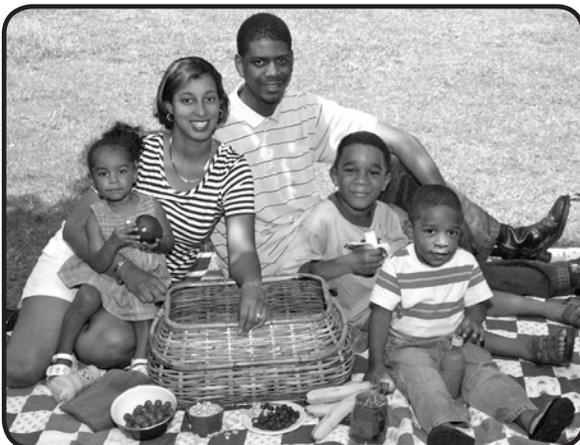
Healthy Eating

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 fruits and vegetables every day.
- 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, fruit 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, sugar free drinks or use sugar substitutes to sweeten drinks.
- Eat less sugar and avoid regular soda, drinks with sugar, candies, cakes, pies, cookies, and other such foods.
- Limit alcohol .



Being Active

What Kind of Physical Activity is Good?

Many daily activities are forms of exercise. Moderate physical activity five days a week is your goal. You can do this by:

- Moving body or body parts
- Walking
- Doing chair exercises
- Dancing
- Gardening
- Cleaning the house or car
- Yard work



Why be active?

- To control your weight
- To lower your blood pressure
- To build strong muscles and bones
- To cut down on stress
- To prevent heart disease
- To help you sleep better
- To make you feel and look good
- To reduce your blood sugar



If I have diabetes, I will:

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

always know what my blood sugar is before I exercise.

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

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

Managing Stress

Resources and Tips for Dealing With Stress

Change the situation

- Try to reduce your major life events and daily hassles
- Learn to say “no” when you can’t do things

Change your mind

- Do a reality check
- Be able to accept change

Change your body

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

Maintain a “wellness” lifestyle

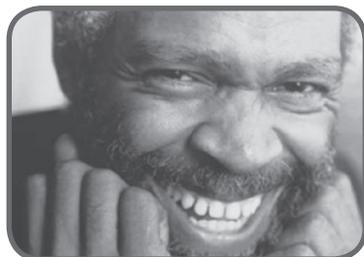
- Balanced diet
- Exercise
- Avoid smoking, recreational drugs and excessive alcohol
- Get enough rest and sleep
- Do “uplifting” activities



Learn to relax



Take up a hobby



Laugh



Talk with someone

If you already have 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

You should ask your doctor how often he plans to check your A1C. 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

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
40 mg/dl for men
50 mg/dl for women



LDL Cholesterol is bad for you

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

When you have diabetes: Monitor your blood sugar

Checking your blood sugar regularly can help you manage your diabetes.

Check your blood sugar. It will show you that your blood sugar is affected by:

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

Take your diabetes medicines correctly

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



Taking Your Medicines

Things to remember when taking any prescribed medicines

- 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.
- 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 helps you remember when to take your medicines.
- If you are sick, do not stop taking your pills or insulin.



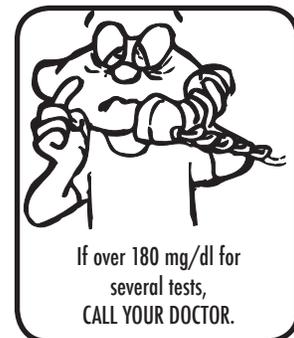
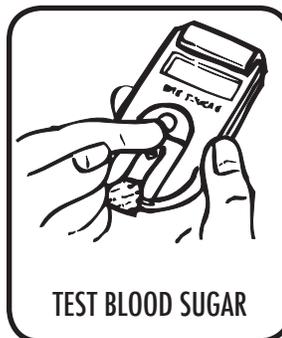
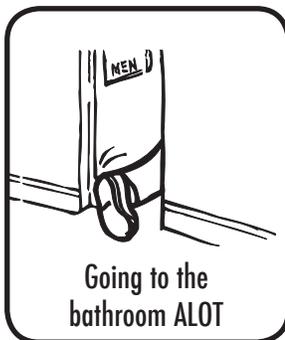
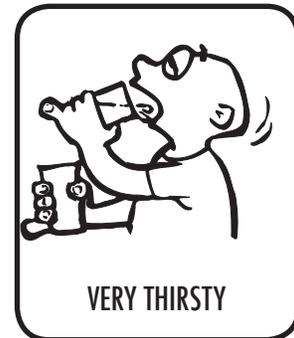
Blood Sugar Problem Solving

Hyperglycemia is high blood sugar. It occurs BEFORE a person is diagnosed with diabetes. It can also occur when diabetes is not well controlled.

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

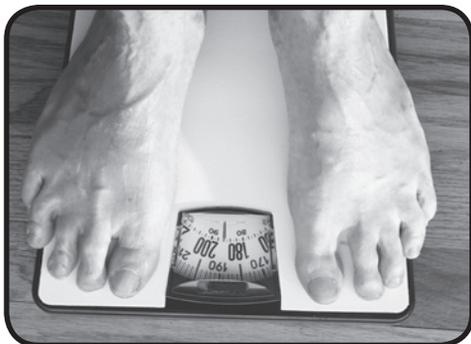
What can you do to prevent or manage high blood sugars?



Eat healthy



Be active



Maintain a healthy weight



Do not smoke



Manage your stress



Take your medicines for pre-diabetes/diabetes every day



Test your blood sugar if you have diabetes/pre-diabetes

Blood Sugar Problem Solving

Hypoglycemia is low blood sugar. This can sometimes happen to a person who already has diabetes. It is important to prevent and treat low blood sugar.

Causes:

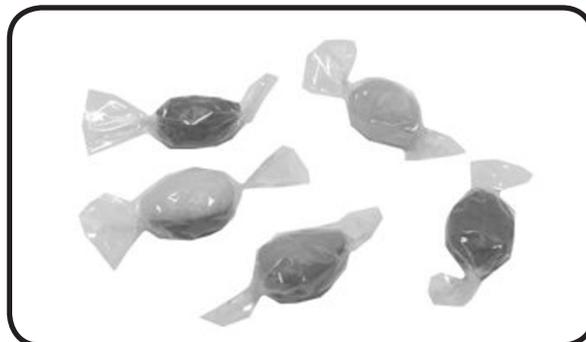
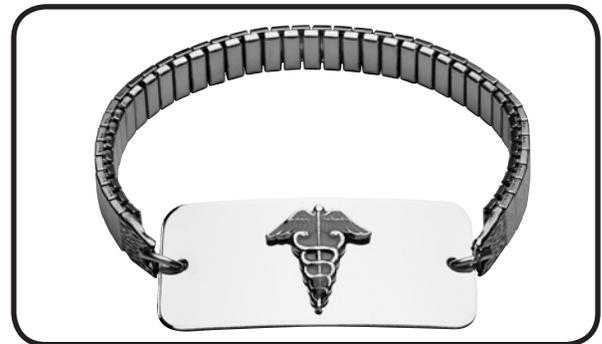
- Too little food
- Too much insulin or diabetes medicine
- Being more active

Start: Sudden, may progress to shock

Blood Sugar: Below 70 mg/dl

General Guidelines

- Know 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.
- Know what your blood sugar is before you drive, exercise or do heavy work.
- Wear medical 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.

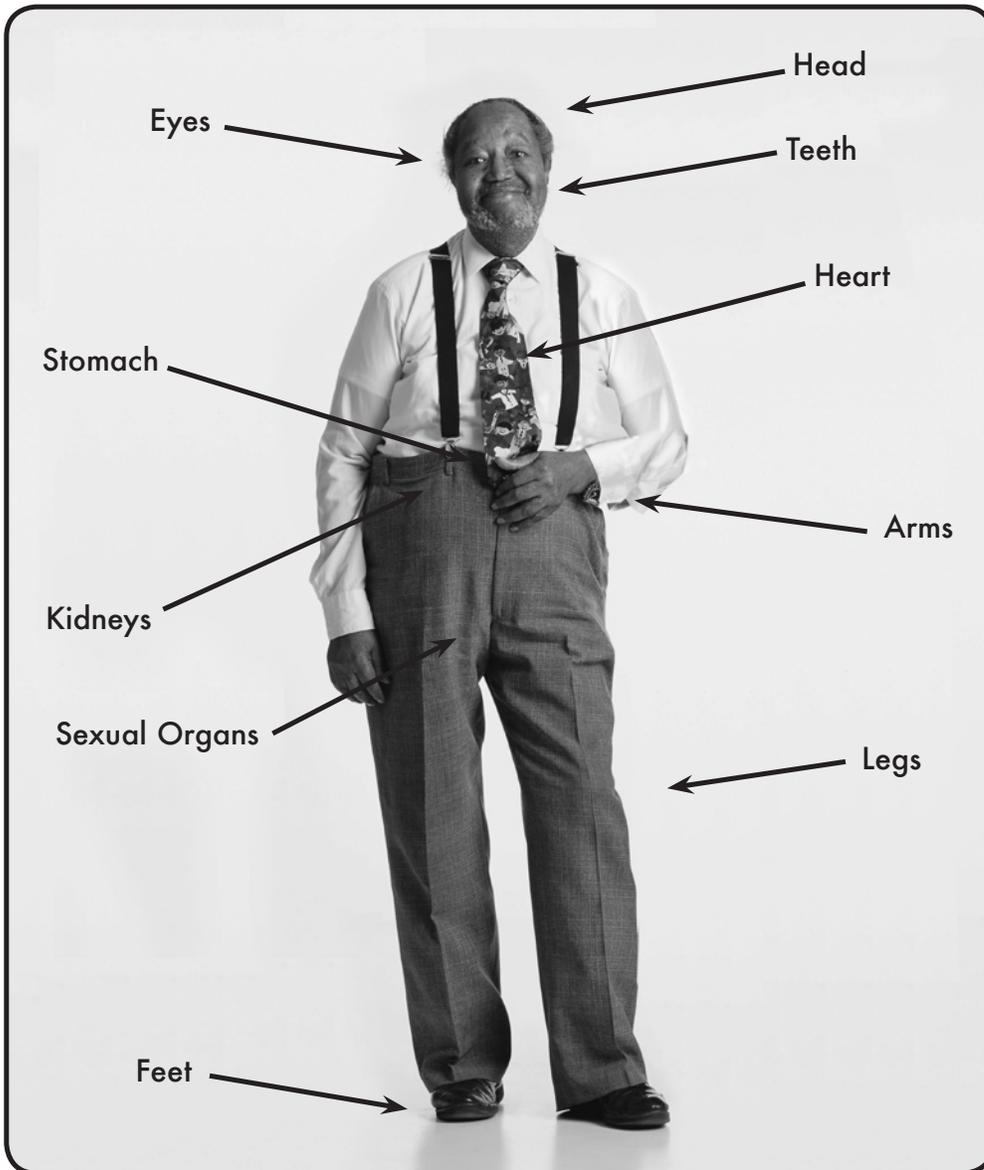


Reducing Diabetes Complications

Diabetes can cause many complications: blindness, heart attack, stroke, kidney failure, poor blood circulation, 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 which causes damage.

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



Keeping your blood sugar under control and your A1c below 6.5 percent can prevent these complications. It is important to see your doctor regularly and to follow through with all recommended testing to prevent these complications.

Reducing Diabetes Complications

How can you control your blood glucose to prevent damage to your body?



Eat a balanced diet



Be physically active



Take medication
as ordered



Buy healthy foods



Lose weight if necessary

Reducing Diabetes Complications

What are good health habits for people with diabetes to prevent complications?

- To control blood pressure
 - Take your medicine every day
 - Avoid foods high in salt
 - Avoid stress
 - Don't smoke
- To protect your kidneys
 - Keep blood pressure under control
 - Avoid foods high in salt
 - Don't smoke
 - Ask about a kidney test (microalbumin) every year
- To protect your heart
 - Lower your cholesterol if it is high
 - Don't smoke
 - 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 immediately.
 - Always wear shoes
 - Ask your doctor to check your feet each visit
 - See a podiatrist (foot doctor) if you have problems with your feet.
- To protect your eyes
 - Have a dilated eye exam by your eye doctor 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
- Adult vaccines are important. Talk with your doctor about:
 - annual flu shot
 - pneumonia vaccine
 - shingles vaccine
 - DPT vaccine (diphtheria, pertussis, tetanus)

Goals for Control of Diabetes

Target blood sugar levels

When	People without Diabetes	People with Diabetes
Fasting and before meals	70-115 mg/dl	Less than 110 mg/dl
Two hours after eating	70-120 mg/dl	Less than 140 mg/dl
Hemoglobin A1c	Less than 6 percent	Less than 6.5 percent

Test	Goal
Fasting/Pre-meal glucose	Less than 110 mg/dL
Two hour Post-meal glucose	Less than 140 mg/dL
A1c	Less than 6.5 percent
Blood Pressure	Less than 130/80 mmHg
Microalbumin (protein in urine)	Less than 30 microgram/mg
Lipids	
LDL Cholesterol	Less than 100 mg/dL
HDL Cholesterol	Greater than 40 mg/dL (male) Greater than 50 mg/dL (female)
Total Cholesterol	Less than 200 mg/dL
Triglycerides	Less than 150 mg/dL

These goals were established by the American College of Endocrinology (2007)

Talk with your doctor about what your numbers are and should be.

If you would like to learn how to self-manage your diabetes, ask about diabetes education in your area.

Resources

1. American Association Diabetes Educators (800) 338-3633
www.diabeteseducator.org

This association offers information to health care professionals and the public on many issue of diabetes.

2. American Diabetes Association (ADA) (800) 342-2383
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 you local chapter, and link you with excellent diabetes education programs.

3. American Dietetic Association (800) 877-1600
www.eatright.org

This profession association of Registered Dietitians offers assistance to the public on diabetes and other nutritional concerns.

4. Center for Disease Control and Prevention (800) 232-4636
www.cdc.gov

The national agency offers a wealth of information on diabetes for professionals and the public.

5. Welvista (800) 763-0059
www.welvista.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.

6. Juvenile Diabetes Foundation (803) 782-1477
www.jdf.org (864) 770-0279

7. National Diabetes Education Program (888) 693-NDEP
www.ndep.nih.gov (6337)

NDEP translates the latest science and spreads the word that diabetes is serious, common, and costly, yet controllable and, for type 2, preventable.

8. National Diabetes Information Clearinghouse
www.niddk.nih.gov

This national organization provides down-loadable flyers on many aspects of diabetes.

Resources

9. S.C. Commission for the Blind
www.sccb.state.sc.us

(800) 922-2222
(803) 898-8751

This agency provides eye medical services to people who cannot afford care. Prevention of Blindness Services –

10. S.C. DHEC Diabetes Prevention and Control Program **(803) 545-4471**
www.scdhec.gov

Supports community diabetes education, health systems intervention, and partnership development to help reduce the incidence and severity of diabetes in S.C. Diabetes 101 presentations available upon request.

11. S.C. Lions Inc.

(803) 796-1304

This organization offers eye care support in our state.

12. S.C. Vocational Rehabilitation
www.scvrd.net

(803) 896-6570

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 special needs.

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South Carolina Department of Health
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www.scdhec.gov

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

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