Controlling Glucose Levels
Living with Type 2 Diabetes
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American Association of Nurse Practitioners

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What is Diabetes?

- Diabetes affects the way your body uses food
- Most foods are broken down into glucose, a form of sugar in the blood
- Insulin is needed to move glucose to all the cells in your body
- The pancreas makes and releases insulin when you eat
- After eating, glucose travels through the bloodstream, where cells use it for growth and energy
- Diabetes is caused when the pancreas does not make enough insulin or does not use it in the right way; when this happens:
  - Glucose builds up in the blood and overflows into the urine
  - High levels of glucose can damage different parts of the body

1. The stomach changes food into glucose.
2. Glucose enters the bloodstream.
3. The pancreas makes little or no insulin.
4. Little or no insulin enters the bloodstream.
5. Glucose builds up in the bloodstream.
Types of Diabetes

**TYPE 1 DIABETES**

- Cells in the pancreas that make insulin are destroyed by the body’s own immune system
- This causes the pancreas to make little or no insulin
- Affects only 5 of every 100 people with diabetes
- Can occur at any age but most common in children and young adults
- Treated with insulin taken each day

**TYPE 2 DIABETES**

- The pancreas makes too little insulin and the body can’t use insulin as well as it should
- The most common type of diabetes, found in 95 of every 100 people with diabetes
- Can occur at any age but more common in adults
- Rates of type 2 diabetes are rising in children and young people
- Symptoms develop more slowly over time
Risk Factors

• You cannot “catch” type 2 diabetes from someone else
• Being overweight or obese is a leading cause of type 2 diabetes
  • It is expected that 3 out of every 4 people in the US will be overweight or obese by 2020
Other factors can make it more likely that a person will develop type 2 diabetes including:

- Older age
- History of prediabetes
- Little or no physical activity
- Having a baby that weighs more than 9 pounds at birth
- Close family member with diabetes
- History of diabetes when expecting a baby

- Persons who are members of the following race/ethnic groups are more likely to develop type 2 diabetes
  - Native Americans
  - Hispanics/Latinos
  - African Americans
  - Asians
What is Prediabetes?

- Prediabetes is when glucose levels are higher than normal but not high enough to be diabetes
  - Also known as impaired glucose tolerance or impaired fasting glucose
- Prediabetes affects millions of people in the US including:
  - 1 in 3 adults 20 years and older
  - Half of adults 65 years and older
- Prediabetes increases the risk of heart disease and stroke
- People with prediabetes are likely to develop type 2 diabetes within 10 years

Steps to prevent or delay prediabetes from progressing to type 2 diabetes

- WEIGHT LOSS
- PHYSICAL ACTIVITY
- MEDICINE(S)
Diagnosis of Prediabetes

- Prediabetes is diagnosed by blood tests
- The fasting plasma glucose test measures levels of glucose in your blood after not eating for 8 hours
- The oral glucose tolerance test measures your body’s response to a high amount of glucose
- A blood test is done after you don’t eat and repeated 2 hours after you drink something that has a high amount of glucose
- The hemoglobin A1c test shows average glucose levels over past 3 to 4 months

What do the blood test results mean?

<table>
<thead>
<tr>
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<th>Diabetes</th>
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<td>Less than 100 mg/dL</td>
<td>100 mg/dL to 125 mg/dL</td>
<td>126 mg/dL or higher</td>
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<td>5.6% or lower</td>
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<td>6.5% or higher</td>
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Many people have no symptoms of type 2 diabetes

Common signs and symptoms can include:

1. Feeling tired
2. Need to urinate (pee) more often than usual (polyuria)
3. Increased thirst (polydipsia)
4. Increased hunger (polyphagia)
5. Loss of weight without trying
6. Blurry vision
7. Tingling, prickling, or burning feeling in hands or feet (neuropathy)
8. Sores that are slow to heal
9. More infections than usual (such as skin, gum, bladder, and yeast)
Screening for Type 2 Diabetes

Get screened for diabetes if you are overweight or obese and have one or more of these risk factors:

- Not physically active
- Close family member with diabetes
- Blood pressure of 140/90 or higher
- Low levels of good cholesterol (HDL-C)
- High levels of bad cholesterol (LDL-C and triglycerides)
- Impaired glucose tolerance or impaired fasting glucose
- A history of heart disease

Get screened for diabetes if you are overweight or obese and have one or more of these risk factors.
How is Type 2 Diabetes Diagnosed?

• Your healthcare provider will:
  • Go over your personal and family medical history
  • Ask about symptoms
  • Do a physical exam
  • Do blood tests such as:

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• Do other lab tests, as needed (such as kidney and liver tests and cholesterol)

If you are diagnosed with type 2 diabetes, you may be referred to other healthcare providers for:

- Eye Care
- Diet Planning
- Diabetes Education
- Dental Care
Treatment Goals for Type 2 Diabetes

Enjoy an active, healthy lifestyle

- Frequent urination
- Always hungry
- Vaginal infections

Control symptoms

- Sudden weight loss
- Sexual problems
- Numb or tingling hands or feet
- Wounds that won’t heal
- Blurry vision
- Always thirsty

Control your blood glucose levels

- Lower your risk of heart disease and stroke

- Lower your risk of eye, nerve, foot, and kidney problems

- Lower your risk of other health problems

If you smoke, stop
Managing Type 2 Diabetes

• Type 2 diabetes can affect many different parts of the body

• This means that most people with type 2 diabetes may need care from a team of healthcare providers such as a:
  - Diabetes specialist
  - Foot specialist
  - Eye specialist
  - Heart specialist
  - Kidney specialist
  - Pharmacist
  - Mental health specialist
  - Health coach

• If you are expecting a baby, you may have a healthcare provider who is trained to care for women with diabetes who are having a baby

• Work with all the members of your healthcare team to achieve the best health for yourself
Goals for Glucose Levels

Your healthcare provider will work with you to set a goal for your glucose levels based on:

- Less than 180 mg/dL 1 to 2 hours after start of a meal
- 90 to 130 mg/dL after not eating for 8 or more hours
- 80 to 130 mg/dL before eating
- A1c <7% for most people

Your age
How long you have had diabetes
Your overall health
If you have any problems caused by diabetes
Checking and Tracking Blood Glucose Levels

- Self-monitoring blood glucose (SMBG) is part of your treatment plan
- SMBG tells you your glucose level at a selected point in time
- Your healthcare provider decides how often and when you should do SMBG
  - When you do SMBG, you generally:
    - Wash your hands
    - Prick your finger
    - Obtain a drop of blood
    - Follow directions given by the maker of your home glucose monitor to get reading

Doing regular SMBG tells you and your healthcare provider:

- If you are reaching treatment goals
- If your glucose levels are too high or too low
- How diabetes medicines affect your glucose levels
Checking and Tracking Blood Glucose Levels

Your healthcare provider will tell you when and how often to do SMBG.

Times to do SMBG can include:

- When you wake up
- When you notice symptoms of low blood glucose
- Before eating or about 2 hours after eating
- Before or after physical activity

- Keep a daily record of your SMBG results
- Write down the results and the time you checked your glucose level
- Make notes about what might have affected your results
Checking and Tracking Blood Glucose Levels

SMBG results can be affected by:

- The foods you eat
- The amount of stress you feel
- Your level of physical activity
- Medicines you take

- Work with your healthcare provider to set your target blood glucose ranges
- Bring your blood glucose meter and your SMBG records to all visits with your healthcare provider
- Talk with him/her about changes you can make if your blood glucose levels are not in the recommended range
Medicines for Type 2 Diabetes

- Successful treatment for type 2 diabetes includes both lifestyle changes and medicines.
- There are several kinds of medicines to control glucose levels, including:
  - Pills
  - Insulin
  - Medicines given by a shot or breathed in (inhaled)
- You may take one medicine or a combination of medicines.
- Because diabetes progresses over time, your medicines may change.

These medicines target different body systems that are affected by type 2 diabetes as shown here:
Medicines for Type 2 Diabetes

Your healthcare provider will provide information on your medicines.
Medicines for Type 2 Diabetes

• When prescribing medicines for you, your healthcare provider will consider:
  • Current glucose control
  • Other health problems you might have
  • How long you have had type 2 diabetes
  • Your risk for high or low glucose levels
  • Your age
  • Cost and insurance coverage

• Your healthcare provider may prescribe several medicines to:
  • Control your blood glucose levels
  • Lower your blood pressure
  • Lower your cholesterol
Medicines for Type 2 Diabetes

- Ask your healthcare provider if you have any questions about your medicines
- Bring all medicines you take to each appointment with your healthcare provider
  - This includes any supplements, vitamins, and herbs
- Do not stop taking any medicine without first talking with your healthcare provider
Tips to Help You Remember to Take Your Medicines

Medicine Reminder Tips

- Fill out a medicine chart telling you what medicine to take and when
- Use an alarm that rings when it is time to take your medicine
- Use a pillbox with sections for different times of day and days of the week
- Ask someone you trust for help if you find it hard to remember when to take your medicines
Healthy Eating

• Most foods affect your glucose levels

• Eat different kinds of healthy foods that you enjoy such as:
  • High-fiber foods (cereal, vegetables, beans, and grains)
  • Low-fat dairy foods (skim milk)
  • Low-fat meats (chicken, pork, or fish)
  • High-protein foods (chicken, eggs, beans)

• Limit the amount you eat of:
  • High-fat foods such as chips, full-fat cheese, whole milk, and butter
  • Sugar-sweetened drinks such as soda and juices
  • High-salt foods (canned soups, processed meats), especially if you have high blood pressure

• Keeping a daily record of the food and amounts you eat may be helpful

• Your healthcare provider may refer you to a dietitian or nutritionist to help you learn about healthy eating such as:
  • Counting calories
  • Reading food labels
  • Understanding how much to eat
  • Developing a personal meal plan
  • Preventing glucose levels that are too high or too low
Healthy Eating

- Plan your snacks and meals and choose healthy foods
- Eat at regular times during the day, about every 4 to 5 hours when awake
- Use the “plate method” to help you eat the right balance of foods
  - Visually divide your plate into 4 sections
Physical Activity

Physical activity can:

- Improve your body’s use of insulin
- Help keep glucose levels close to normal
- Help you stay at a healthy weight
- Improve your mood
- Lower your cholesterol and blood pressure
- Control stress

- Make physical activity part of your daily life
- Work up to at least 30 minutes per day for 5 or more days per week
- This can be broken down into three 10-minute sessions during the day
- Choose activities that you enjoy
- Working out with a buddy can help you stick with it
- You may need to check your glucose levels before and after physical activity
- Ask your healthcare provider to help you develop an activity plan that works for you
Foot Care

Follow these steps to lower your chances of foot problems

- Wash your feet each day with mild soap and water and dry well, especially between your toes
- Use lotion to prevent dryness and cracking, avoid putting between toes
- Check your feet every day for dry, cracked skin, blisters, sores, cuts, scratches, redness or soreness, callouses, and ingrown toenails
- Always wear properly fitted shoes with cotton, wool, or cotton-wool blend socks; never go barefoot even in the house

• Take care of your toenails
  • Cut toenails straight across with nail clippers, after bathing, when they are soft
  • Smooth rough edges
  • Never use scissors, razors, or other sharp tools
Common Feelings

• People with diabetes may feel sad, stressed, or discouraged at times
• Tell your healthcare provider if you:
  • Lose interest or pleasure in your activities
  • Avoid talking with family and friends about your feelings
  • Sleep most of the time
  • Feel like you can’t take care of yourself
  • Don’t feel that it is important to take care of yourself
• Some strategies that may help you cope with your feelings include:
  - Ask family or friends for support
  - Personal or family counseling
  - Join a support group
  - Get involved with an interesting hobby
  - Get regular exercise
  - Meditate
What to Expect at Routine Visits

• Your healthcare provider will set a regular schedule of visits (about every 3 to 6 months) to track your progress

At routine follow-up visits, your healthcare provider will check your:

- Height and weight
- Glucose control
- Blood pressure
- Diet and physical activity
- Medicines and side effects
- Foot health

• Your healthcare provider will also ask about your feelings

• About once a year, your healthcare provider will do extra tests or refer you to other healthcare providers for:
  • Blood tests to check your cholesterol levels and kidney function
  • An eye exam
  • A dental exam
  • You will also get vaccines to prevent flu, pneumonia, and other illnesses
Managing Type 2 Diabetes When You Are Sick

- Being sick can increase glucose levels and you need to take special care of yourself
- Check your glucose levels more often
  - Call your healthcare provider if glucose levels are too high or too low
- Keep taking all of your medicines
- Try to drink at least ½ to ¾ cup of water, diet soda, or tea without sugar every 30 to 60 minutes
- Try to eat your usual foods
  - If you can’t eat, drink enough liquids or eat soft foods to take the place of foods you usually eat
- Check your temperature, because a fever can be a sign of infection
  - Call your healthcare provider if your fever is above 100°F
- Ask your healthcare provider how often you should check with them when you are sick
What is Low Blood Glucose (Hypoglycemia)?

- Hypoglycemia is caused by very low glucose levels, usually less than 70 mg/dL

Causes and Signs of Low Glucose Levels

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<th>Signs</th>
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<td>Eating less than usual</td>
<td>Sweating or the chills</td>
</tr>
<tr>
<td>Missing a meal</td>
<td>Feeling irritable, angry, stubborn, or sad without reason</td>
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<tr>
<td>Eating later than usual</td>
<td>Feeling confused</td>
</tr>
<tr>
<td>Being more active than usual</td>
<td>Dizzy or lightheaded</td>
</tr>
<tr>
<td>Taking too much diabetes medicine</td>
<td>Fast heartbeat</td>
</tr>
<tr>
<td>Drinking beer, wine, or liquor</td>
<td>Blurry vision, Feeling tired, Losing consciousness</td>
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Wear a diabetes alert bracelet or necklace to let people know that you have diabetes in case you need emergency medical care.
The 15:15 Rule to Treat Hypoglycemia

- Recheck your glucose levels 15 minutes after you eat 15 grams of glucose
- If glucose levels are still low, eat 15 more grams of glucose every 15 minutes until your glucose level is above 80 mg/dL
- Always carry some kind of food or drink with you to treat low glucose
- Check glucose levels before doing important tasks such as driving
- To prevent low glucose levels, don’t skip meals

Examples of 15 Grams of Glucose

- 3 to 4 glucose tablets
- 2 tablespoons of raisins
- Half a cup of juice or non-diet soda
- 3 to 5 pieces of hard candy

Check glucose levels before doing important tasks such as driving.
Many health problems caused by type 2 diabetes can be prevented or delayed by having good glucose control through lifestyle changes and medicines, as needed.

**Type 2 diabetes can lead to:**
- Heart attack and stroke
- High blood pressure (hypertension)
- Nerve damage (neuropathy)
- Eye problems (retinopathy, cataracts, glaucoma)
- Kidney disease (nephropathy)
- Problems having or keeping an erection
- Sleep problems including sleep apnea
- Infections and slow healing
- High-risk pregnancies
- Stomach problems such as heartburn, nausea, early feeling of fullness, and bloating
Be a Partner with Your Healthcare Provider

- Make sure you feel comfortable talking with your healthcare provider
- Don’t miss any routine or periodic follow-up appointments
  - These appointments help you and your healthcare provider know how your treatment is working or if it needs to be changed
- You will also review your SMBG records
- Regular appointments give you the chance to ask all of your questions
- Know when you should call or make an appointment to see your healthcare provider
- Follow through on all referrals to other healthcare providers
- Know the signs and symptoms that mean you need emergency care
Healthy Living with Type 2 Diabetes
Resources for More Information about Type 2 Diabetes

• American Association of Diabetes Educators at www.aadenet.org
• American Diabetes Association at www.diabetes.org
• National Diabetes Information Clearinghouse at www.diabetes.niddk.nih.gov
• National Diabetes Education Program of National Institutes of Health at www.ndep.nih.gov

Diabetes Apps
• Talk with your healthcare provider if you want to learn about apps to help you manage type 2 diabetes