The Basics

Houston Methodist is recognized nationally and internationally for delivering high-quality, cutting-edge medical care. To us, each patient is an individual with unique needs and concerns. Our mission is to provide the best medical care and service in a caring and spiritual environment. As our patient and guest, you are at the forefront of all we do.

Diabetes affects millions of people. While it is a serious condition, it can be managed. When you have diabetes, your blood sugar (also called blood glucose) can change quickly. Being able to respond to the changes means you will need to know how to self-manage your blood glucose and to keep it in balance. Keeping your blood glucose as close to normal will also mean that you will lower your risk for complications associated with diabetes.

We are providing this resource to help you on your journey toward self-management of your diabetes. The members of your health care team will be guiding you on this journey. We will be teaching you about your diabetes and aiding you in discovering how to best self-manage on a daily basis. This will allow you and your doctor to ensure that you have the least complications from diabetes.

Please ask us questions about your diabetes, as we want to make this a great learning experience for you! Let’s get started.
What is diabetes?

Diabetes is a disease that causes your blood glucose level to become too high. The glucose that is in your blood comes from the food you eat. Glucose is also produced by your liver. Glucose enters your bloodstream and is carried to the cells of your body. The cells use glucose as energy.

Blood glucose cannot enter the cells of your body without help. Insulin – a hormone that is made in your pancreas – helps in this process. The insulin acts like a key that opens the door to the cell to allow blood glucose to enter the cell, which then uses the glucose as fuel to make energy for your body.

Diabetes usually occurs when either your body does not make enough insulin or when the insulin is not able to open the door to the cells. If the blood glucose can’t get inside the cells, the glucose stays in the blood. This may result in blood glucose levels becoming too high. High blood glucose can cause many health complications and can be dangerous.

**MY DIABETES CHECKLIST**

After my visit, I will:

- Have my diabetes medication and begin to take it as prescribed
- Have my diabetes testing supplies. I will begin to check my blood glucose as directed by my health care provider (See page 8)
- Get a quick-acting type of sugar. I will keep it with me at all times, in case I feel as if I have a low blood glucose (See page 6)
- Make an appointment to follow up with my primary diabetes provider. I will always ask whether there are any changes to my diabetes treatment plan before leaving the office
- Ask my diabetes provider to schedule outpatient diabetes education and/or I will plan on attending an outpatient diabetes support group (See list of support groups on page 19)
- Read my diabetes information
How does my health care provider know that I have diabetes?

There are several blood tests that will help your doctor or health care provider determine whether you have diabetes. The American Diabetes Association provides these guidelines:

**Fasting Blood Glucose**

This is a blood test that is performed when you have not had anything to eat or drink (except for water) for at least eight hours. This test is usually performed first thing in the morning.

Normal fasting blood glucose is less than 100 mg/dl.

Prediabetes has a fasting blood glucose range between 100 mg/dl to 125 mg/dl.

If your fasting blood glucose result is 126 mg/dl or more on two separate occasions, you will be diagnosed as having diabetes.

**Oral Glucose Tolerance Test (OGTT)**

This is a two-hour blood test. It checks your blood glucose levels before and two hours after you drink a specially formulated sweet drink. This test shows how the body processes glucose. Check with your doctor or health care provider for specific instructions if you are to have this test.

- A normal result is less than 140 mg/dl two hours after drinking the liquid
- Prediabetes is diagnosed if blood glucose is between 140 mg/dl to 199 mg/dl two hours after drinking the liquid
- Diabetes is diagnosed if blood glucose is equal to or more than 200 mg/dl two hours after drinking the liquid

**A1c or Hemoglobin A1c**

This is a blood test that may be performed any time of the day and fasting is not necessary. The A1c lab test shows how blood glucose is controlled by your body over a three-month period.

- The normal A1c level is less than 5.7 percent
- An A1c result of 5.7-6.4 percent is prediabetes
- Diabetes is diagnosed, if the A1c result of 6.5 percent or higher
- For most people with diabetes, an A1c of less than 7 percent is recommended
- Some people have a higher A1c target number

Your doctor or health care provider will decide your best A1c number, which may be higher or lower than the American Diabetes Association goal of less than 7 percent.

Higher A1c numbers show that your blood glucose is higher.

Higher blood glucose numbers suggest that you may be at risk of complications from diabetes.

**Random Blood Glucose**

This is a blood test that can be done at any time of the day. You do not need to fast. Diabetes is diagnosed if blood glucose is equal to or more than 200 mg/dl.
Types of Diabetes

There are three main types of diabetes:

Type 1 Diabetes
Type 1 diabetes is usually diagnosed in children and people under 30. Sometimes, people over 30 can also develop type 1 diabetes.

When a person develops type 1 diabetes, his or her body stops making insulin. The part of the body that makes insulin is the pancreas. When a person has type 1 diabetes, the pancreas cells that make insulin stop working.

Insulin acts like a key that opens the door to a cell to allow blood glucose to enter the cell, which then uses the glucose as fuel to make energy for the body.

Without insulin, the door to the cell remains locked and no glucose can get inside.

A person with type 1 diabetes must take insulin injections. This insulin is used by the body to move glucose into cells to produce energy.

Type 2 Diabetes
Type 2 diabetes is usually diagnosed in adults, but may also affect children. A person with type 2 diabetes usually makes some insulin, but the insulin may not be working properly. Sometimes, not enough insulin is being made by the pancreas.

A person with type 2 diabetes must learn to choose healthy foods and become active. Sometimes, a person with type 2 diabetes must take medication. The medication may be a pill(s), insulin, and/or another medication (other than insulin) that is injected.

The doctor or health care provider will check the blood tests. This will help to determine which type of medication is best.

Gestational Diabetes
Gestational diabetes is a type of diabetes that may be diagnosed in women when they are pregnant. The body still makes insulin, but — because of the increasing effects of pregnancy hormones toward the latter weeks of pregnancy — the body does not use the insulin properly. Gestational diabetes generally goes away after the baby is born, but sometimes it doesn’t go away. Then it progresses into type 2 diabetes.

After having gestational diabetes, a woman must continue to eat healthy foods and must continue to be active. Having gestational diabetes is a risk factor for developing type 2 diabetes later in life.

WHAT IS PREDIABETES?
People who have a blood glucose level that is only a little above normal may have prediabetes. With prediabetes, there is a high risk of developing type 2 diabetes. The risk of having heart disease and stroke is also higher. The treatment for prediabetes is usually a recommendation to lose weight. The doctor or health care provider will also recommend moderate physical activity. A person who follows this healthy lifestyle may be able to delay or prevent type 2 diabetes.

HOSPITALIZATION AND DIABETES
It is not uncommon for doctors to prescribe insulin if you get admitted to the hospital, even if you have never been on insulin before. This could be due to several reasons. While in the hospital, some of the diabetes pills you take may have to be stopped temporarily because of tests and procedures. Your blood glucose may also increase significantly when you are sick. Insulin may be needed to bring it under control in a timely manner. Just because you are started on insulin during a hospital stay does not necessarily mean you will need to continue insulin upon discharge.
Risk Factors for Diabetes?

The exact cause is not known, but some people are more at risk to develop diabetes than others. The risk factors for Type 2 diabetes include:

- Having family members who have diabetes
- Being overweight
- Not being active
- Having a history of gestational diabetes
- Being over the age of 45
- Having high blood cholesterol
- Having high blood pressure
- Being of African, Asian, Hispanic, Native American or Pacific Island heritage
What are the signs and symptoms of diabetes?

Some people with diabetes do not have any symptoms. Some people have some of the symptoms listed here. If you think you could have diabetes, it is important to talk to your doctor or health care provider. Diabetes can develop very slowly, and sometimes diabetes can develop very quickly. A blood test will tell your doctor whether you have diabetes.

- Blurry eyesight
- Dry skin
- Feeling pins and needles in your feet
- Frequent urination
- Losing weight without trying
- Losing feeling in your feet
- Sores or wounds that heal slowly
- Very hungry
- Very thirsty
- Very tired

Why do you need to take care of your diabetes?

It is important to properly manage your diabetes. There are many complications that can develop as a result of high blood glucose. Diabetes affects many organs in the body and can cause serious problems.

The blood vessels and the nerves of the body are easily affected. Heart disease is the most serious problem that may be caused by diabetes, and a person with diabetes is more at risk of having a stroke or a heart attack. The symptoms of a heart attack can be different and are not easily recognized in a person with diabetes.

High blood glucose can also lead to amputations of the toes or feet. The kidneys and eyes are also easily damaged by high blood glucose.

The best way to take care of your health is to visit your doctor or health care provider regularly. Work with your health care team to create a diabetes plan to manage your blood glucose. Follow through on taking any medications that are ordered, and check your blood glucose often. Know your diabetes target numbers. Call your doctor or health care provider if your blood glucose is not within your target range.
Hypoglycemia, or low blood glucose, occurs when your blood glucose is less than 70 mg/dl. Check your blood glucose, if you have these symptoms:

- Shaking
- Anxiety
- Sweating
- Dizziness
- Hunger
- Fast heartbeat
- Blurred vision
- Fatigue
- Headache
- Irritability

If your blood glucose is less than 70 mg/dl:

1. Eat or drink a simple sugar such as
   - 1 tablespoon honey
   - 1 tablespoon sugar
   - 4 ounces (1/2 cup) fruit juice or regular soda (NOT diet)
   - 3 – 4 glucose tablets

2. Wait 15 minutes, then check your blood glucose again

3. If your blood glucose is still less than 70 mg/dl:
   - Have another serving of simple sugar, and eat a snack of complex carbohydrate with protein such as cheese and crackers or half of a sandwich

If your family or friends find you “sleeping” and cannot wake you, make sure they know to call 911.

How to Prevent Hypoglycemia

- Eat at regular times every day
- Check your blood glucose every day
- Do not skip meals
- Take your medicine as directed

If you continue to have low blood glucose, see your doctor as soon as possible.
Hyperglycemia

Hyperglycemia, or high blood glucose, occurs when your blood glucose is more than 180 mg/dl.

If you have these symptoms, check your blood glucose:

- VERY THIRSTY
- HUNGER
- WEAKNESS
- FATIGUE
- BLURRED VISION
- DRY SKIN
- SLOWLY HEALING
- NAUSEA
- URINATING OFTEN

If your blood glucose is more than 180 mg/dl:

1. Did you eat too much food?
   - If yes, drink 1 cup of water or a sugar-free drink every hour
2. Did you forget to take your medicine?
   - If yes, take your medicine
3. Do you have an infection? Flu? Stress?

IF YOU HAVE HIGH BLOOD GLUCOSE > 180 MG/DL FOR MORE THAN THREE DAYS, CALL YOUR DOCTOR.

How to Prevent Hyperglycemia

- Watch how much you eat
- Take your medicine as directed
- Exercise or move every day
- Check your blood glucose every day
How to Check Your Blood Glucose

You will need:

- Your blood glucose meter (glucometer)
- Test strips to fit your brand of glucometer
- Lancing Needle – called a lancet, which is used to make a small puncture in your finger
- Lancing tool – to use with a lancet

1. Wash your hands with soap and warm water. Rinse well, and towel dry.

2. Gently rub your hands to warm them.

3. Insert lancet into lancing device.

4. Put the test strip into your meter.

5. Prick the side of your finger.

6. Gently squeeze your finger. Release when you see a small drop of blood.

7. Touch your blood drop to the test strip. Do not try to smear the blood on the strip. It will absorb into the strip automatically.

8. Write the results in your blood glucose log book.

What should my blood sugar be?

The American Diabetes Association (ADA) recommends blood sugars be 80-130 mg/dL before meals, and no higher than 180 mg/dL two hours after meals or at other random times. Be sure to check with your doctor, as your individual goals may differ based on your personal health history and/or medications.
How do carbohydrates affect your blood glucose?

Your body is like a car. Your cells are your little gas tanks with locked gas caps. Insulin, produced by your pancreas, is the key that unlocks the gas tanks to get gasoline (glucose) inside the cells. Foods that contain carbohydrates break down into a sugar called glucose. This is what gives you energy.

Glucose is used as fuel for the body. If we eat too much of these carbohydrate-containing foods at one time, it can cause your blood glucose levels to rise too high. Think of this as trying to pump 50 gallons of gasoline into a vehicle that only holds 20 gallons. It will overflow. Think of the glucose overflowing in your bloodstream, if your body is unable to get the glucose into the cells.

Which foods contain carbohydrates

Food is made up of three major nutrients; carbohydrates, protein and fat. Carbohydrates are foods such as starches (breads, rice, cereal, pasta, crackers and grains), all fruits, milk, yogurt, starchy vegetables (potatoes, corn, peas, winter squash and beans) and, of course, sweets (cakes, pies, cookies, ice cream, candy, honey or sugar). See page 10 for a sample list of carbohydrate-containing foods as well as their serving sizes.

Some carbohydrates break down faster in the body than others. These are called simple carbohydrates. Other carbohydrates that contain fiber break down more slowly and prevent glucose levels from rising too fast.

Think about having three strainers in front of you. You put apple juice in one, applesauce in the middle one and a whole apple in the last one. Which one will go through the strainer first? The juice, of course. This is a simple carbohydrate and will raise your blood glucose level fastest. The whole apple will take longer for your body to digest and, therefore, raise your blood glucose level slower. This is what is considered a complex carbohydrate.

Diabetes and Healthy Eating

One of the most important ways to manage your diabetes is by eating the right foods in the right amounts. Learning how to plan meals and snacks and knowing when to eat are also important.

A key part of controlling blood glucose is eating healthy foods every day. You do not have to stop eating the foods you like, but you do need to know how foods affect your blood glucose levels.

A registered dietitian or certified diabetes educator can help get you started with your meal planning.
What is the difference between a serving and a portion?

A **serving** is a *fixed measurement* that food companies use to describe their products. For example, a label on a box of crackers may say eight crackers is one serving.

A **portion** is *how much you are going to eat*. For example, you might eat 16 crackers. This would be two servings.

What is considered a serving of carbohydrate?

On the following pages, you will see common foods that contain carbohydrates along with their serving sizes. The serving size listed next to each food item contains about 15 grams of carbohydrates. Each 15 grams of carbohydrates is considered a “serving” of carbohydrate. Each serving of carbohydrate will raise your blood glucose level about 30-50 points. This is why we limit the amount of carbohydrates you eat at each meal.

As a general rule, most women need between 45-60 grams of carbohydrates per meal and most men need between 60-75 grams of carbohydrates per meal. For snacks between meals, 15 grams for women and 15-30 grams for men is the recommended amount. Your registered dietitian or diabetes educator will tell you the amount that is right for you.

**Carbohydrate-Containing Foods**

Each of the following serving sizes provides approximately 15 grams of carbohydrates unless otherwise noted. This is not a complete list of foods that contain carbohydrates.

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Serving Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Starches</strong></td>
<td></td>
</tr>
<tr>
<td>Bagel (4 ounces)</td>
<td>¼ (approx. 1 ounce)</td>
</tr>
<tr>
<td>Bread</td>
<td>1 slice</td>
</tr>
<tr>
<td>Cereal (cold, unsweetened)</td>
<td>¾ cup</td>
</tr>
<tr>
<td>Cereal (hot, unsweetened)</td>
<td>½ cup</td>
</tr>
<tr>
<td>English muffin, hot dog bun</td>
<td>½ each</td>
</tr>
<tr>
<td>Pancake or waffle (4 inches</td>
<td>1 each</td>
</tr>
<tr>
<td>Rice/pasta (cooked)</td>
<td>1/3 cup</td>
</tr>
<tr>
<td>Tortilla (6 inches round)</td>
<td>1 each</td>
</tr>
<tr>
<td><strong>Starches Vegetables/Beans</strong></td>
<td></td>
</tr>
<tr>
<td>Beans (kidney, lima, navy, pinto,</td>
<td>½ cup</td>
</tr>
<tr>
<td>refried)</td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>½ cup</td>
</tr>
<tr>
<td>Peas (black-eyed, chick)</td>
<td>½ cup</td>
</tr>
<tr>
<td>Potatoes (mashed)</td>
<td>½ cup</td>
</tr>
<tr>
<td>Potatoes (baked, size of a</td>
<td>1 each</td>
</tr>
<tr>
<td>computer mouse)</td>
<td></td>
</tr>
<tr>
<td>Potatoes (french fries)</td>
<td>15 each or 1 cup</td>
</tr>
<tr>
<td><strong>Milk &amp; Yogurt</strong></td>
<td></td>
</tr>
<tr>
<td>Milk (buttermilk, whole, 2%,</td>
<td>1 cup = 8 ounces</td>
</tr>
<tr>
<td>1%, skim, lactaid or soy)</td>
<td></td>
</tr>
<tr>
<td>Yogurt (Greek, light or plain)</td>
<td>2/3 cup = 6 ounces</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Serving Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fruits</strong></td>
<td></td>
</tr>
<tr>
<td>Fresh, whole (size of a tennis</td>
<td>1 piece</td>
</tr>
<tr>
<td>ball – apple, orange, peach,</td>
<td></td>
</tr>
<tr>
<td>pear, plum)</td>
<td></td>
</tr>
<tr>
<td>Fresh, cubed (cantaloupe,</td>
<td>1 cup = 8 ounces</td>
</tr>
<tr>
<td>honeydew, watermelon)</td>
<td></td>
</tr>
<tr>
<td>Fresh, loose (blueberries,</td>
<td>1 cup = 8 ounces</td>
</tr>
<tr>
<td>grapes, raspberries, strawberries</td>
<td></td>
</tr>
<tr>
<td>Canned fruit (water or juice</td>
<td>½ cup = 4 ounces</td>
</tr>
<tr>
<td>packed)</td>
<td></td>
</tr>
<tr>
<td>Dried fruit (apricots, cranberries,</td>
<td>2 tablespoons</td>
</tr>
<tr>
<td>prunes, raisins)</td>
<td></td>
</tr>
<tr>
<td>Fruit juice (unsweetened)</td>
<td>½ cup = 4 ounces</td>
</tr>
<tr>
<td><strong>Desserts &amp; Sweets</strong></td>
<td></td>
</tr>
<tr>
<td>Brownie</td>
<td>1½-inch square</td>
</tr>
<tr>
<td>Cake, unfrosted (1 carbohydrate</td>
<td>2-inch square</td>
</tr>
<tr>
<td>serving)</td>
<td></td>
</tr>
<tr>
<td>Cake, frosted (2 carbohydrate</td>
<td>2-inch square</td>
</tr>
<tr>
<td>servings)</td>
<td></td>
</tr>
<tr>
<td>Honey</td>
<td>1 tablespoon</td>
</tr>
<tr>
<td>Jelly (regular, with sugar</td>
<td>1 tablespoon</td>
</tr>
<tr>
<td>added)</td>
<td></td>
</tr>
<tr>
<td>Pancake syrup</td>
<td>1 tablespoon</td>
</tr>
<tr>
<td>Pie, 2 crust, fruit (2 carbohydrate servings)</td>
<td>1/6 of 8-inch pie</td>
</tr>
<tr>
<td>Pie, 1 crust, pumpkin/custard</td>
<td>1/10 of 8-inch pie</td>
</tr>
<tr>
<td>(1 carbohydrate serving)</td>
<td></td>
</tr>
<tr>
<td>Pudding, sugar-free</td>
<td>½ cup = 4 ounces</td>
</tr>
<tr>
<td>Regular soda</td>
<td>½ cup = 4 ounces</td>
</tr>
</tbody>
</table>
Planning Your Meals

Now that we have reviewed which foods contain carbohydrates, let's plan a meal using the “plate method.” The plate method is a simpler way to limit the amount of carbohydrates you consume per meal.

Using a 9-inch plate, draw an imaginary line down the center of the plate. On one side of the plate, draw an imaginary line to divide that side of the plate in half. You should have one large section to your plate and two smaller sections.

Your plate should look similar to the picture below:

1. Fill the largest section of your plate with non-starchy vegetables such as carrots, green beans, broccoli, cauliflower or salad.
2. In one of the smaller sections, place baked, grilled, boiled or broiled protein food such as lean beef, fish or poultry.
3. In the second smaller section, place starchy vegetables or grain products such as corn, peas, beans, rice, pasta or potatoes.
4. In addition to the items on your plate, you can add a small piece of fresh fruit or ½ cup (4 ounces) canned fruit (juice or water-packed) and 1 cup (8 ounces) of low-fat milk or 6 ounces of light yogurt.
Here are a couple of examples of 3-4 servings (45-60 grams) of carbohydrates per meal.

**BREAKFAST**

<table>
<thead>
<tr>
<th>Amount of Carbohydrates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 slices of toast</td>
<td>30 grams</td>
</tr>
<tr>
<td>8 ounces fat-free milk</td>
<td>15 grams</td>
</tr>
<tr>
<td>½ cup canned pineapple</td>
<td>15 grams</td>
</tr>
<tr>
<td>1 egg</td>
<td>0 grams</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>60 grams</strong></td>
</tr>
</tbody>
</table>

**LUNCH OR DINNER**

<table>
<thead>
<tr>
<th>Amount of Carbohydrates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 medium baked potato</td>
<td>30 grams</td>
</tr>
<tr>
<td>1 small apple</td>
<td>15 grams</td>
</tr>
<tr>
<td>3-4 ounces lean roast beef</td>
<td>0 grams</td>
</tr>
<tr>
<td>1 cup salad</td>
<td>minimal</td>
</tr>
<tr>
<td>8 ounces fat-free milk</td>
<td>15 grams</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>60 grams</strong></td>
</tr>
</tbody>
</table>

**LUNCH OR DINNER**

<table>
<thead>
<tr>
<th>Amount of Carbohydrates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cup mashed potatoes</td>
<td>30 grams</td>
</tr>
<tr>
<td>1 small apple</td>
<td>15 grams</td>
</tr>
<tr>
<td>3-4 ounces lean pork chop</td>
<td>0 grams</td>
</tr>
<tr>
<td>½ cup green beans</td>
<td>minimal</td>
</tr>
<tr>
<td>½ cup carrots</td>
<td>minimal</td>
</tr>
<tr>
<td>16 ounces bottled water</td>
<td>0 grams</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>45 grams</strong></td>
</tr>
</tbody>
</table>

A registered dietitian or diabetes educator can assist you in planning an individualized meal plan that fits your needs. Ask your health care provider about Houston Methodist's Diabetes Self-Management Program.
**Medications**

**How do diabetes medications work?**

Not everyone with diabetes can control their blood glucose levels through diet and physical activity alone. If you cannot reach your target blood glucose levels, you may need diabetes medications. The kind of medicine you take will depend on your type of diabetes. It will also depend on your other health conditions.

Diabetes medications help keep your blood glucose within your target range. The target range is suggested by diabetes experts and your doctor or diabetes educator.

Depending on your treatment goals, you may need to take more than one of these medications to control your diabetes. The different types of medications can work together to help lower blood glucose levels. Diabetes pills do not work for everyone. Sometimes, they do not bring blood glucose levels down enough. Sometimes, they stop working after a few months or years. If your diabetes pills stop working, it does not mean you have failed to control your diabetes. It simply means that your body has changed and needs a different type of treatment.

In addition to diabetes pills, there are diabetes medications that are taken by injection. Some of these are non-insulin injectable medications and some are insulin. Insulin is a hormone produced by the pancreas, and it is responsible for regulating blood glucose levels.

**Injection sites**

- Stomach
- Thigh
- Arm
- Upper Buttocks/Hips
How to inject insulin with an insulin pen

1. Wash your hands with soap and water.
2. Check the insulin pen for expiration date, and remove pen cover or cap. You should not see any clumps/particles inside the pen.
3. If you are using a cloudy insulin, hold the pen securely (see picture, left) and move the pen up and down a few times, until the insulin is uniformly cloudy. This is important to be sure you get the right dose.
4. Wipe the rubber stopper with an alcohol swab, and let it dry.
5. Remove the paper cover from the new, disposable needle, and insert the needle onto the pen. Screw the needle on until secured.
6. Remove the two caps that cover the needle.
7. Turn the dose selector (dial) until “2” aligns with the pointer.
8. Holding the pen with the needle pointing to the ceiling, press the dose button until “0” aligns with pointer. Watch for an insulin drop to appear from the tip of the needle.
9. Dial the dose selector until your prescribed dose is exactly aligned with the pointer.
10. Choose where to give the injection. Clean a small area of skin with an alcohol swab.
11. If your needle size is 8 mm or longer, gently pinch a fold of skin where you are going to give your injection. (If your needle is smaller than 8 mm, this step is not taken).
12. Insert the needle at a 90-degree angle to the injection site (see picture, left). Press the dose button down, slowly releasing your pinch on the skin as you inject the insulin, until the dose indicator reaches “0”. Keep the needle inside your body, and keep pushing down on the dose button, for about 10 seconds, then remove the needle from the skin. Press your finger or an alcohol swab over the spot where you gave the injection.
13. Dispose of the needle safely in a sharps container, hard plastic or metal container with a screw-on lid.
How to inject insulin with a syringe

1. Wash your hands with soap and water.

2. Check the insulin vial for expiration date. You should not see any clumps/particles inside the vial.

3. If you are taking a cloudy insulin, roll the bottle between your hands until it is uniformly cloudy. Never shake a bottle of insulin.

4. If the insulin vial has a plastic cover, take it off. Wipe the top of the bottle with an alcohol swab. Let it dry.

5. Pull the plunger of the syringe down to put air into the syringe equal the units of insulin you plan to inject.

6. Put the needle into and through the rubber top of the insulin bottle.

7. Push the plunger so the air goes into the bottle.

8. Keep the needle in the bottle and turn the bottle upside down.

9. With the tip of the needle in the liquid, pull back on the plunger to get the right dose of insulin into the syringe.

10. Check the syringe for air bubbles. If there are bubbles, push the insulin back into the insulin bottle, then pull back slowly on the plunger to get the right dose.

11. When there are no bubbles, take the syringe out of the bottle.

12. Choose where to give the injection. Clean a small area of skin with an alcohol swab, and let it air dry.

13. If your needle size is 8mm or greater, gently pinch a fold of skin where you are going to give your shot. (If needle is less than 8mm, this step is not necessary.)

14. Insert the needle at a 90-degree angle to the injection site (see picture, left) and inject the insulin, slowly releasing your pinch on the skin as you inject. Make sure you have pushed the plunger down fully, then pull the needle out of your skin. Press your finger or an alcohol swab over the spot where you gave the injection.

15. Dispose of the needle safely in a sharps container, hard plastic or metal container with a screw-on lid.
Foot Care

It is very important for people with diabetes to take good care of their feet. Your doctor should do a medical foot exam at least once a year. There are also some things you need to do at home every day to help keep your feet healthy.

1. Wash your feet with warm water and soap.
2. Dry your feet very well, especially between and under your toes.
3. Apply lotion to your feet to keep the skin soft. Be sure not to put it between your toes!
4. Check your feet every day for any cuts, sores, blisters, bruises, or swelling; anything that looks unusual for your feet. If you find anything wrong, call your doctor right away.
5. Be sure to talk with your doctor or diabetes educator about how to safely trim your toenails. You may be advised to use an emery board instead of clippers or scissors. You may also be advised to only have a foot doctor trim your toenails.
6. Be sure to wear clean, soft socks that fit you well.
7. Always wear shoes that fit you well (closed toe is best) to help protect your feet and keep them warm and dry.
8. Never go barefoot, whether inside or outside.
9. Be sure to always look inside your shoes for anything that may hurt your feet (e.g. cracks in the heel cup, nails, small pebbles) before you put them on.
Sick Day Plan

**ALWAYS ask your diabetes provider for your sick day plan.** The best time to make a plan is before you ever become sick! Check with your health care provider before taking any other medications.

It is important to take your insulin and diabetes medications as directed, even if you are sick, unless your health care provider tells you to stop.

Adjust your insulin or medications according to your sick-day plan, only if your doctor has told you to adjust. Don’t skip, as you still may need insulin, even if you are unable to eat your normal meals. If you are not sure, call your doctor!

**Remember to** check your blood glucose every two to four hours. Write down the numbers. Call your doctor, if your blood glucose is greater than 240 mg/dL for 24 hours, or less than 70 mg/dL for three readings in a row.

Have someone check in on you every few hours in case you need help.

Call your doctor or seek emergency care, if you have:
- Upset stomach, vomiting, or diarrhea for more than four to six hours
- Dry mouth, thirst, decreased urination, and dry flushed skin
- Fever, especially if more than 101°F or lasting more than 24 hours
- Pain that does not go away, or you are sick for more than 1 or 2 days

Be sure to drink something, even if you are ill. Eat, if you can.

If you are able to eat, choose foods that are easy to digest and are allowed on your regular meal plan. Be sure to drink something every one to two hours. Choose sugar-free liquids. Some choices are:

- Water
- Tea (unsweetened or diet)
- Diet soda
- Broth or soup
- Sugar-free popsicles
- Sugar-free Jell-O

If you have an upset stomach and cannot eat the foods on your regular meal plan, try to eat snacks and eat about 15 grams of carbohydrates every hour. Also, be sure to continue to drink 1 cup of sugar-free liquids every hour and have something with sugar in it every one to two hours. Some choices could include:

- ½ cup yogurt
- ½ cup low-fat ice cream
- ½ cup regular soda
- ½ of a regular popsicle
- ½ cup regular Jell-O
- ½ cup cooked cereal
- 1 cup thin, cream soup
- 1 cup low-fat milk
- ½ cup of noodles
- 1 cup low-fat milk
- ½ cup of rice
- ¹⁄³ cup of rice

**Dehydration** is very serious! Signs and symptoms of dehydration are dry mouth, thirst, decreased urination, dry flushed skin and dry lips.

**Ketones.** Check your urine for ketones, especially if you have type 1 diabetes, but it can also happen to people with type 2 diabetes.

Ketones are the waste from burning fat instead of glucose for energy. If you have moderate or large ketones, it is a medical emergency. Be sure to discuss checking ketones with your doctor, and have your doctor or diabetes educator show you how to check for ketones.
Checking for Ketones

Ketones are dangerous waste products that are created from the rapid breakdown of body fat. When you don’t have enough insulin, your body tries to get energy from body fat. The buildup of ketones in the blood can lead to a medical emergency.

Check for ketones in your urine:
- If you have type 1 diabetes, and your blood glucose goes above 240 mg/dl
- When you are ill, such as with a cold or flu; check every four to six hours

How to Test
Ketone test strips are available at your pharmacy. You can buy them without a prescription. Check to be sure that the ketone strips have a valid expiration date. Always read the package directions before you start to test.

- Get a clean disposable cup
- Urinate a sample into this clean disposable cup
- Dip the pad of the ketone strip in the sample of urine
- Gently shake excess urine off the strip
- Wait for the strip pad to change color. Be sure to check the ketone strip directions for how long to wait
- Compare the strip pad to the color chart on the strip bottle. This gives you a range of the amount of ketones in your urine
- Write down your results

If you have moderate to large ketones, you should call your health care provider immediately to determine the best treatment. Your provider may instruct you to go to the nearest emergency room. If you cannot reach your provider, seek emergency help.

Glucagon

Never give food to a person who is unconscious, as choking can occur. If a person with diabetes is found unconscious, a likely cause may be low blood glucose. An injection of glucagon can help raise the level of glucose in the blood until emergency services arrive.

Everyone who uses a fast-acting insulin should consider having a glucagon emergency kit available at all times. The glucagon kit should be kept in a place that is easy to access. Everyone in the family should know where the glucagon kit is located. You will need a prescription for the glucagon kit.

Glucagon, like insulin, must be injected. The kit contains a syringe that is prefilled with a liquid. The kit also contains a vial of powdered glucagon. You must prepare the glucagon at the time you need to use it by mixing the powder and the liquid.

You will need to review the process for mixing the glucagon. Please see the package insert for detailed instructions. Be sure to have your health care provider, pharmacist, or doctor’s office teach you exactly how to mix and inject the glucagon. Glucagon can cause vomiting. Place the person on his or her side prior to injecting, so they do not choke. Call 911 for emergency assistance immediately after injecting glucagon. Once the person has regained consciousness and is able to swallow, food can be given. This will help to prevent another low blood glucose occurrence.
Houston Methodist Diabetes Support Groups

The Diabetes Self-Management Program at Houston Methodist is proud to offer free diabetes support group meetings for people with diabetes, their families and friends. Please join us to discuss diabetes-related topics, gain support and encouragement, build awareness and much more. Free diabetes support groups are offered at the following locations:

Texas Medical Center
6445 Main St.
Outpatient Center (OPC), 23rd Floor
Houston, TX 77030

Sugar Land
16651 Southwest Fwy.
Medical Office Building 1, Suite 450
Sugar Land, TX 77479

Willowbrook
13300 Hargrave Rd.
The Weight Management Center
Hargrave Building, Suite 160
Houston, TX 77070

San Jacinto
4401 Garth Rd.
Garth Community Room
Baytown, TX 77521

The Woodlands
17183 Interstate 45 S.
Medical Office Building 1, Suite 490
The Woodlands, TX 77385

Diabetes Follow-Up Care and Outpatient Self-Management Education

It is very important that you see a doctor regularly (at least every three to six months) for management of your diabetes. Your doctor will tell you how often you need to be seen. Be sure to keep your appointments, and when you go to the doctor, always take your glucose meter and blood sugar log with you.

If you do not have a primary doctor, you can call the Houston Methodist Physician Referral Line at 713.790.3333. We will be happy to help you! Or, you can go online to houstonmethodist.org/pcg and follow the directions there to find a primary doctor and/or endocrinologist (diabetes specialist).

Houston Methodist Diabetes Associates is a team of board-certified endocrinologists, mid-level providers, certified diabetes educators, nurses and pharmacists focused on delivering high-quality and comprehensive patient care across Houston Methodist, in both the hospital and outpatient settings. They offer a full spectrum of services, including assessment for diabetes prevention and/or complications, as well as condition management. For more information or to schedule an appointment with this team of experts, visit houstonmethodist.org/spg/diabetes or call 713.441.7232.

Outpatient diabetes education is also very important to help you learn how to best self-manage your diabetes at home. Your doctor will oversee your care and give you direction for how to best treat your diabetes, but it will be your certified diabetes educator (CDE) who will give you more in-depth information and instruction on the day-to-day skills and problem-solving strategies you need to know to successfully manage your diabetes. Be sure to ask your doctor for a referral to outpatient diabetes education. It is covered by most insurance plans, as long as you have a referral. Houston Methodist has multiple locations available for education in and around the greater Houston area. Go to houstonmethodist.org/weight-management/diabetes-education for further information on our outpatient diabetes education program.
Diabetes follow-up with:

References