



Diabetes Education



THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER



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This book is for informational purposes only. Talk to your healthcare provider if you have any questions about your care.

For more health information, go to wexnermedical.osu.edu/patiented or contact the Library for Health Information at 614-293-3707 or health-info@osu.edu.

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For a digital copy of this book, please visit go.osu.edu/pted3577.

Welcome

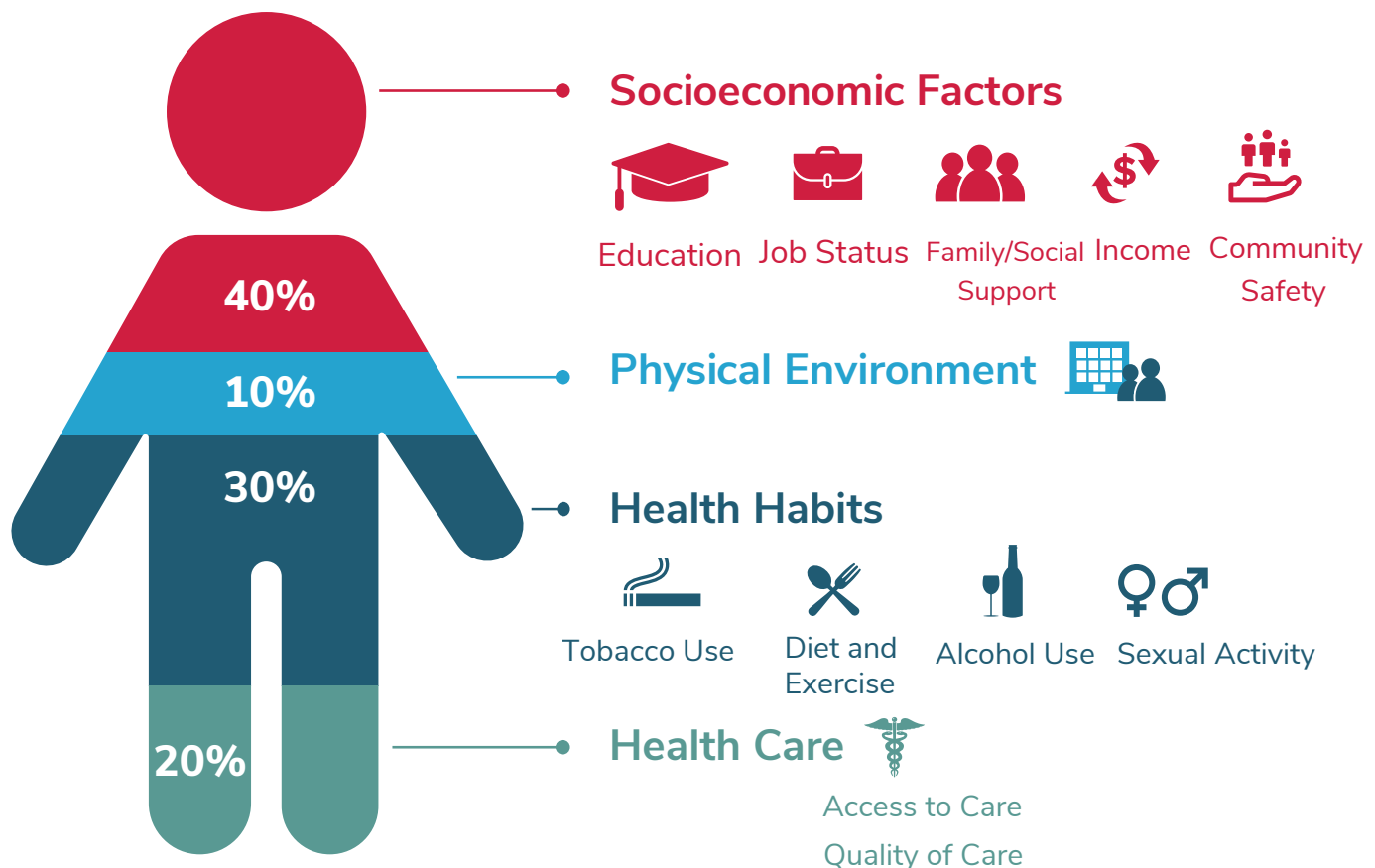
Specialists at The Ohio State University Wexner Medical Center help people improve their health through better management of type 1 diabetes, type 2 diabetes, and prediabetes.

As you read through the education in this book, please ask questions of your healthcare providers. We are here to help you to manage your diabetes and find the resources you need to improve your health and well-being.

Social determinants of health

We care about all parts of your health and well-being. Did you know your health is determined by more than just your medical care? Social determinants of health are those conditions in which you are born, grow, live, work, and age. It is how and where you learn, worship, and enjoy life. All these play a role in how healthy you are.

We may ask you questions during your visit to assess your whole health and address your needs. We are here to help. Please ask us about our community resources.



Source: Hood, CM, Gennuso, KP, Swain, GR, & Catlin, BB. (2015). County health rankings: Relationships between determinant factors and health outcomes. American Journal of Preventive Medicine.

Outpatient diabetes education classes

The **Scarlet and Gray Way to Diabetes Self-Management Education Program** offers comprehensive services for patients with type 1 diabetes, type 2 diabetes, and prediabetes. Our goal is to provide instruction and technologies to help patients manage diabetes to the best of their ability. We believe that through education, people living with diabetes can achieve therapeutic goals and, in the long run, prevent long term diabetes complications.

Classes are available at several locations at the Ohio State Wexner Medical Center.

Please visit wexnermedical.osu.edu/diabetes-endocrinology/diabetes-education/classes for more information. **All patients require a physician referral before being scheduled for diabetes education classes.** If you have any questions or would like to schedule an appointment, please call 614-688-6251.



Understanding Diabetes

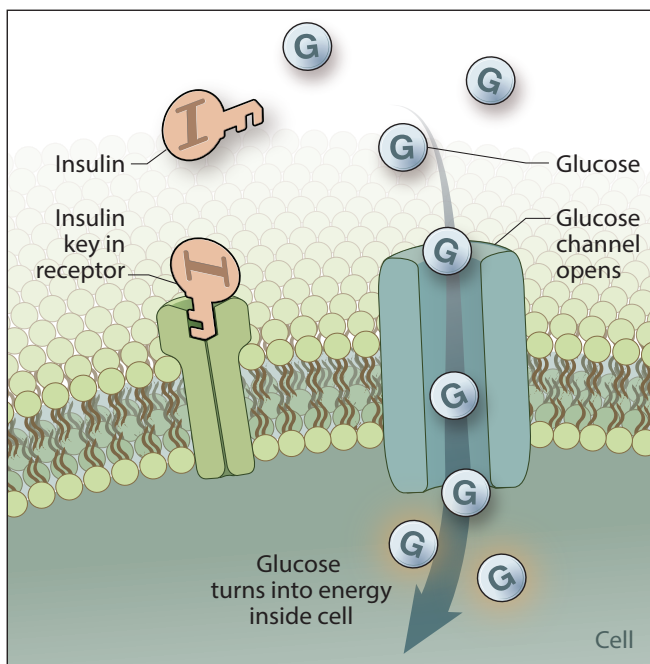
Whether you have had diabetes for many years or have just been told you have diabetes, you are not alone. 38.4 million people in the United States (11.6%) have diabetes. The information in this book will help you understand more about diabetes and how to live successfully with it.

About diabetes

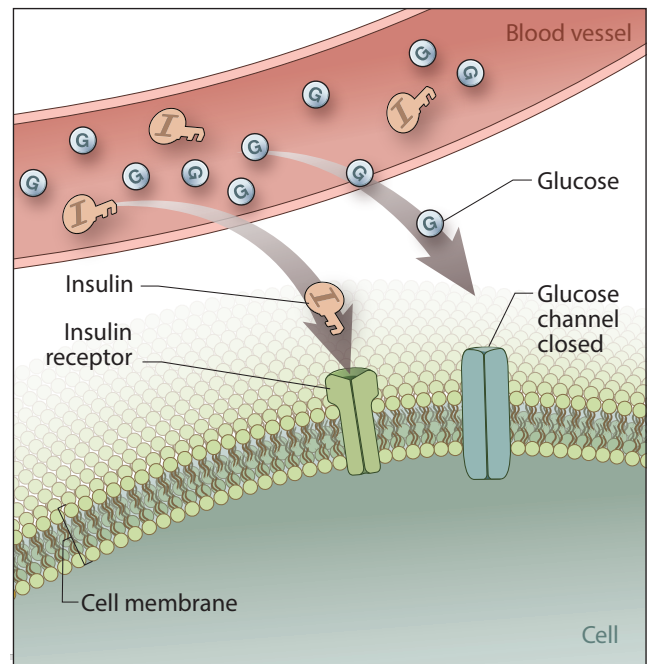
Diabetes is a disease in which your blood glucose, or blood sugar, levels can get too high. Glucose comes from the foods you eat. Insulin is a hormone, produced by the pancreas, that helps the glucose get into your cells to give them energy.

- With **type 1 diabetes**, your body does not make insulin.
- With **type 2 diabetes**, the more common type, your body does not make enough insulin or your body is not able to use the insulin it makes. Without enough insulin, the glucose stays in your blood.
- With **prediabetes**, your blood sugar is higher than normal, but not high enough to be called diabetes. Having prediabetes puts you at a higher risk of getting type 2 diabetes.

Over time, having too much glucose in your blood can cause serious problems. It can damage your eyes, kidneys, and nerves. Diabetes can also cause heart disease, stroke, and even the need to remove a limb. People can also get diabetes during pregnancy, called **gestational diabetes**.



Insulin acts like a key to open the glucose channel, so the glucose gets into your cells and turns into energy.



With diabetes, there are not enough insulin keys or the insulin keys are not working right. Glucose is not able to enter the cells, so blood sugar is higher.

Warning signs of diabetes

Everyone responds differently to diabetes. Some of the common warning signs are:

- Having to go to the bathroom often to pass urine
- Feeling thirsty, even though you are drinking fluids
- Losing weight
- Blurry vision
- Healing is slow for cuts or scrapes on your skin
- Feeling tired
- Feeling hungry
- Being irritable or grumpy

Often people may not notice any signs of diabetes. 1 in 4 people with diabetes do not know they have it.

Diagnosing diabetes

Your healthcare provider will do a physical exam and ask you about your signs. Blood tests will be done to check for diabetes:

- An **A1C test**, also called the hemoglobin A1C, HbA1c, or glycohemoglobin test, measures blood sugar over the last 2 to 3 months. An A1C of 6.5% or higher indicates diabetes.
- A **fasting plasma glucose (FPG) test**, also called fasting blood glucose, measures blood sugar. You will need to fast, so you are not able to eat or drink anything except for water for at least 8 hours before the test. An FPG of 126 mg/dL or above on 2 testing occasions indicates diabetes.
- A **glucose tolerance test (GTT)** measures blood sugar. You will need to fast for at least 8 hours before the test and for 2 or 3 hours after drinking a sweet tasting orange drink. A blood sugar level of 200 mg/dL or higher indicates diabetes.

Prediabetes

If you have blood sugar levels that are higher than normal, but not high enough to be diabetes, you have prediabetes. 97.6 million adults in the U.S. (38.0%) have prediabetes. Without treatment, prediabetes often leads to type 2 diabetes within 5 years.

To prevent or delay type 2 diabetes:

- Lose weight. Losing just 5% to 10% of your body weight can reduce your diabetes risk.
- Eat a healthy diet that is low in fat and calories.
- Increase your physical activity. Exercise at least 30 minutes, 5 days a week. Brisk walking and strength training are good activities you can do most anywhere, and they do not require much special equipment.
- See your healthcare provider regularly for wellness check-ups.

Treating diabetes

If your blood sugar level indicates diabetes, your provider will work with you to develop a plan of care for you. The goal of treatment is to keep your blood sugar level as near to normal as possible (80 to 130 mg/dL fasting). To do this, a balance of food, medicine, and exercise is needed.

How to manage your diabetes:

- Follow your meal plan.
- Take your insulin or other diabetes medicines as ordered.
- Exercise most days of the week, such as walking briskly for 30 minutes, 5 days a week.
- Maintain a healthy weight.
- Learn how to check and record your blood sugar levels.
- Learn how to recognize when your blood sugar level is too high or too low.
- Keep all of your appointments with your doctors, nurses, and dietitians.
- Attend diabetes education classes.

Learn as much as you can about diabetes. The more you know about your diabetes, the better you will be able to manage your blood sugar.

How to Check Your Blood Sugar

A blood glucose monitoring device, also called a blood sugar meter or monitor, allows you to measure the amount of sugar, called glucose, in your blood. Some devices use a drop of your blood on a test strip, which is inserted into the device. Others are worn on the skin.

By knowing your blood sugar levels, you and your healthcare team can make changes in your current medicine, diet, and exercise plan to help keep your blood sugar in a safe range. Checking your blood sugar can help you to treat high or low blood sugar before it becomes a problem or an emergency.

Ask your diabetes educator, pharmacist, nurse, or doctor to show you how to use your blood sugar meter if you have any problems.



Blood sugar target range

Keeping your blood sugar in a safe range can help protect against diabetes complications that affect the eyes, kidneys, heart, blood vessels, and nerves. **Talk with your healthcare provider about what target range is best for you** based on your age, type of diabetes, and other health conditions that you have.

You may be told to **keep your blood sugar in a target range of 80 to 130 mg/dL before meals and 180 mg/dL or less after meals.**

If you are pregnant, you may be told to keep your blood sugar:

- At 95 mg/dL or less before meals.
- At 140 mg/dL or less 1 hour after a meal.
- At 120 mg/dL or less 2 hours after a meal.

If your blood sugar is not currently in a safe range, do not expect this to change overnight. Start slowly and work with your doctors, nurses, and dietitians to get your blood sugar in the target range and learn to live well with diabetes.

High and Low Ranges

Blood sugar above your target range, called **high blood sugar**, may lead to diabetes complications. High blood sugar **can result from eating too much, not exercising enough, stress, illness, or not enough medicine.**

Blood sugar below your target range, called **low blood sugar**, may lead to seizures, coma, and even death. Low blood sugar **can result from not eating enough carbohydrates, too much insulin or diabetes medicine, or too much or unplanned exercise.**

low blood sugar	target range	high blood sugar
less than 70	80-130	greater than 130

When to check your blood sugar

Your healthcare provider will tell you how often to check your blood sugar. **The checks are often done before mealtimes and before bedtime.**

You will need to check your blood sugar more often during times of stress, illness, infection, menstrual cycles, or surgery. This may be as often as every 1, 2, or 4 hours.

If you are pregnant, you may need to check your blood sugar up to 8 times a day: before and after meals, at bedtime, and at 3:00 a.m.

Using a blood sugar meter

Supplies

A variety of blood sugar meters, glucose strips, lancets, and lancing devices are available. Check with your insurance company to see if they cover the cost for certain brands of meters. Meters are often on sale or rebates may be available. The cost of the test strips will be the larger expense, so it may be best to know what your insurance will cover.

Your diabetes educator, doctor, nurse, or pharmacist can help you choose the best meter and supplies for you.

You will need the following supplies:

- Blood sugar meter
- Glucose test strips that match your meter
- Lancing device
- Lancets
- Alcohol swab
- 1 to 2 cotton balls (optional)
- Your "Blood Sugar Record," which is included at the back of this book
- Sharps disposal container

With these supplies, you will need to:

- Check the expiration date on your test strip bottle. Never use the strips if the date has expired. Date the bottle when you open it. **Throw away any strips that have not been used by 3 months** after the bottle has been opened.
- Make sure the cap fits snugly on the test strip bottle. If you use foil wrapped strips, check to make sure the foil wrap has not been opened or damaged. Sunlight and moisture can damage them.
- Code the meter with each new bottle or box of strips if needed.
- Use the control solutions for your meter when you open a new bottle or box of strips to make sure the strips are good, so your result will be correct.
- Safely throw away used lancets in a sharps or needle disposal container. Lancets are single use only. Do not reuse lancets.



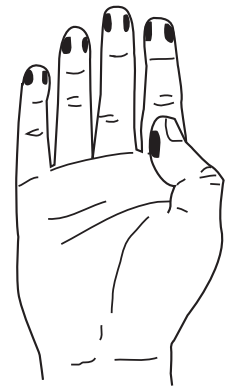
Sites to Use to Check Your Blood Sugar

You can get a drop of blood from:

- The sides of your fingers and thumbs.
- Forearms or top of legs if an alternate site meter is used.

Most people use their fingers. Use a different finger each time you do a blood sugar check to avoid infection, soreness, and calluses. Avoid using the tip of your finger, as this is the most sensitive area of the finger, and you may feel more pain here. **Never use your feet or toes.**

Wash your hands with warm water and soap before you do a check.



If Problems Occur

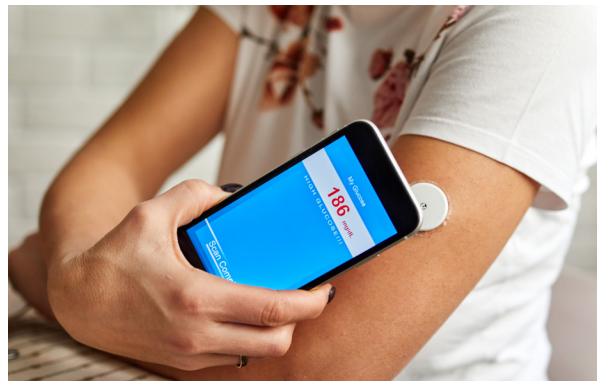
Most people have no problems. Checking blood sugar is easy and nearly painless. The chart below has some helpful hints to help you avoid problems.

Problem	What to do
Sore fingers	<ul style="list-style-type: none">• Use only the sides of your fingers and thumbs.• Use a lancing device with an adjustable cap or depth.• Use a different finger or thumb for each blood sugar check.• Use a micro fine lancet (30 to 33 gauge).• Lightly place the lancing device against the side of your finger.• Consider alternate site checks.
Blood drop is too small	<ul style="list-style-type: none">• Shake your hand and lower it below heart level before lancing your finger.• Do NOT use lancets without a lancing device.• If using a micro fine lancet, try another gauge lancet.• Wash your hands with warm, soapy water before lancing.• Squeeze your finger until it turns pink before using the lancing device.• Squeeze your finger after using the lancing device to get a bigger drop of blood.

Using a continuous glucose monitor (CGM)

Your healthcare provider or diabetes educator may discuss other options to test your blood glucose (sugar), such as a continuous glucose monitor (CGM). This device continuously measures your blood glucose. It is worn on the skin, most often on the stomach or back of the upper arm.

Follow the instructions that come with your device for where to place it on your body and how long it can be worn. Most are worn for 1 to 2 weeks, or longer.



Based on the device used, some measure glucose every minute while others measure every 5 minutes. Some of these devices still require a finger stick at times for calibration.

CGM can be a useful option for people with diabetes. This is especially true for those who give themselves 4 or more injections of insulin per day, which often requires frequent glucose monitoring.

Supplies

- **Sensor:** A small catheter placed under the skin at home or in an office (implantable sensor).
- **Transmitter:** The transmitter is taped on top of the skin. It connects to the sensor. Some transmitters are used 1 time, while others can be used for 3 months or a year. Some are rechargeable.
- **Receiver:** A receiver displays the blood sugar number, and tells you how fast and in what direction that blood sugar number is moving. Some receivers send data on demand, while others send data automatically. Some receivers use a separate device, while others may be used with compatible smartphones.

For More Information

To learn about diabetes technologies, including CGMs and insulin pumps, scan this QR code to watch the "Diabetes Technology Information Session."



To learn about CGMs, scan this QR code to watch the "Continuous Glucose Monitoring Information Session."



You may also visit wexnermedical.osu.edu/diabetes-endocrinology/diabetes-education to view these videos.

Record your blood sugar readings

Keep a record of your blood sugar readings, so you and your healthcare provider can see patterns of low and high blood sugar. Make copies of the record sheet included in the back of this book or create your own record. Add comments to further personalize your record. It may be helpful to develop codes for diet, activity, illness, weight (weekly), and anything else that would serve as a cue to you as you review your blood sugar levels. Bring your record sheet with you to all appointments.

Some blood sugar meters have special features that allow you to download your results into a computer or smartphone for reports. Check the manufacturer's instructions that came with your meter to see if it has these functions.

A1C test





An A1C test, also called the hemoglobin A1C, HbA1c, or glycohemoglobin test, measures your blood sugar over the last 2 to 3 months.

The A1C test is a partner to daily blood sugar checks. A1C cannot identify patterns of high or low blood sugar. Using a blood sugar meter daily to check your blood sugar lets you see patterns of high and low blood sugar.

You and your healthcare team will look at both your A1C and daily blood sugar check results to determine what changes are needed to your medicines, diet, or exercise to keep your blood sugar in a safe range. **A1C levels should be checked every 3 to 6 months.**



Diabetes

An A1C of 7% or less shows that your diabetes is likely in a safe range. Keeping your A1C between 6% to 7% is important to prevent complications of diabetes.

A1C (%) and Estimated Average Blood Sugar (mg/dL)									
Safe     Dangerous									
A1C	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
Blood Sugar	126	140	154	169	183	197	212	226	240
A1C	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5
Blood Sugar	255	269	283	298	312	326	341	355	369

Prediabetes

If you have an A1C test result between 5.7% and 6.4%, you have prediabetes. Your blood sugar levels are higher than normal, but not high enough to be diabetes. Without treatment, prediabetes can lead to type 2 diabetes within 5 years. Discuss with your healthcare provider what lifestyle changes can return your blood sugar to a healthy range.

A1C (%) and Estimated Average Blood Sugar (mg/dL)									
Healthy   Prediabetes									
A1C	5.0	5.1	5.2	5.3	5.4	5.5	5.6		
Blood Sugar	97	100	103	105	108	111	114		
A1C	5.7	5.8	5.9	6.0	6.1	6.2	6.3	6.4	
Blood Sugar	117	120	123	126	128	131	134	137	

High Blood Sugar

About high blood sugar

High blood sugar, also called **hyperglycemia**, happens when there is too much blood sugar, called glucose, in the body. People with diabetes can get hyperglycemia from not eating the right foods or not taking medicines correctly. Other problems that can raise blood sugar include infections, certain medicines, hormone imbalances, stress, or severe illnesses. High blood sugar can damage your nerves, blood vessels, and organs. **Talk with your healthcare provider if your blood sugar is not managed with your current medicine, diet, and exercise plan.**

Blood sugar levels

Use this table to review general blood sugar levels. **Any time your blood sugar before meals is above 140, it is too high.** You may have different treatment goals or have a tighter glucose range. Follow the goals set for you by your provider.

Target Blood Sugar Range for People with Diabetes		
Check Blood Sugar	Goal	Take Action
Fasting	80 - 130	Less than 70 Greater than 140
Before meal	80 - 130	Less than 70 Greater than 140
2 hours after meals	Less than 180	Less than 80 Greater than 180
Bedtime	100 - 140	Less than 100 Greater than 180
A1C test	Less than 7%	Greater than 7%

High blood sugar risk

High blood sugar is more likely to occur when you:

- Are first diagnosed with diabetes.
- Do not take enough medicine.
- Miss, skip, or delay medicines.
- Take steroid medicines.
- Eat more food than your meal plan allows.
- Eat foods high in carbohydrates.
- Get too little exercise.
- Have infection or illness.
- Have stress.
- Have hereditary or genetic factors.
- Are pregnant.

Signs of high blood sugar

High blood sugar affects each person differently. Think about how you feel when blood sugar is high. Record these signs and notice if they return.

Warning signs may appear any time blood sugar is not well managed. Blood sugar can slowly rise over hours, days, and even weeks. It is important to check blood sugar often to stay within a safe range.

Signs may be noticed by others before you notice them. Talk to family and friends about your signs of high blood sugar, which may include:

- Extreme thirst
- Frequent urination
- Increased appetite
- Fatigue or lack of energy
- Blurred vision
- Impotence
- Weight changes – loss or gain
- Skin itching
- Skin infections, such as boils
- Feeling tired or sleepy
- Feeling moody or grumpy
- Delayed healing of wounds, cuts, or blisters
- Numbness in feet or hands
- Vaginal itching or frequent vaginal infections

Treatment for high blood sugar

Short term actions to take:

- Drink plenty of water, at least 8, 8-ounce glasses a day.
- Exercise if your blood sugar level is less than 250.
- Recheck your blood sugar level in 2 hours.
- Reduce your carbohydrate intake at your next meal if your blood sugar is still high.
- Contact your provider for advice.
- See the handout "Testing Urine for Ketones" for more information about ketones and when to test.

Long term actions to take:

- **Follow your treatment plan.** Review your "Blood Sugar Record," diabetes medicines, meal plans, and activity of the last few days. Look for any changes that might explain high blood sugar. **Contact your provider if your blood sugar is not being managed with your current treatment plan.**
 - › **Check your blood sugar level 4 times a day** and record the results in your "Blood Sugar Record."
 - › **Take your insulin and oral diabetes medicines as directed.** Do not skip doses or take more medicine than needed unless directed to do so by your provider.
 - › **Follow your meal plan.** Eat a variety of whole grain foods, fruits, and vegetables each day. Limit foods that are high in carbohydrates. Eat less fat. Eat smaller portions spread throughout the day. Use less salt. Limit alcohol.
 - › **Exercise for at least 150 minutes each week.** This is about 30 minutes of moderate exercise, 5 days a week.

- **Contact your provider if you have illness, infection, or other health changes** that can increase blood sugar. If you have type 1 diabetes and your blood sugar is 240 or higher, your provider may have you check for ketones in your urine.
- **Follow your sick day diabetes care plan as needed.** See the handouts "Dealing with Sick Days" and "Sick Day Carbohydrate Replacement" for more information. Different sick day plans are used for general illness and for illness during pregnancy.

Treatment problems

Do not ignore high blood sugar. If not treated, high blood sugar can lead to:

- Damage to major organs and nerves, including kidneys, heart, and eyes. Nerve damage can affect the feet and the ability to walk and have balance.
- Wounds that do not heal well.
- A coma. This is also called diabetic ketoacidosis (DKA) or hyperglycemic hyperosmolar state (HHS).
- Death.

If you have any questions or concerns, talk with your healthcare team to help you with the management of your high blood sugar.

Family and friends

Your spouse, family members, roommates, friends, and co-workers should know that you have diabetes. It is up to you to decide who you tell and how much you tell them about diabetes. They should know that you can have high blood sugar and what they can do when it happens.

Low Blood Sugar

Low blood sugar is also called **hypoglycemia**, insulin shock, and insulin reaction. It means that there is not enough blood sugar, called glucose, in the body. Glucose is the major fuel needed to feed the body's cells. **Low blood sugar for people with diabetes means that glucose is below 70.**

Low blood sugar risk

Low blood sugar is more likely to occur when you:

- Take too much insulin or oral diabetes medicine.
- Skip, miss, or delay meals.
- Do too much exercise or unplanned exercise.

There may also be times when you do not know why your blood sugar is low.

Signs of low blood sugar

Low blood sugar affects each person differently. Some people have warning signs while other people have none. It is more common in people who have had diabetes for many years to not have warning signs. **Learn how you feel when your blood sugar is too low.**

Sometimes low blood sugar develops slowly while other times it happens within minutes. **Signs may be noticed by others before you notice them. Talk to your family and friends about your signs of low blood sugar, which may include:**

- Sweating
- Feeling shaky
- Feeling weak or tired
- Feeling dizzy or light-headed
- A fast heartbeat
- Feeling moody or grumpy
- Numbness around the mouth or lips
- Being unable to speak
- Feeling hungry
- Feeling nervous
- A headache
- Blurred vision
- Not thinking clearly



Treatment for low blood sugar

Short term actions to take:

- **Eat or drink some food with sugar (15 grams of carbs),** such as:
 - Chew 3 to 4 glucose tablets or 1 package of oral glucose gel
 - 1 tablespoon of sugar
 - ½ cup or 4 ounces of juice or regular soda (not diet)
 - 3 squares of graham crackers
 - 2 teaspoons of honey or syrup
 - 5 to 6 mini jelly beans
 - 2 to 3 gumdrop candies or regular size jelly beans
- **Wait 15 minutes and check your blood sugar.**
 - If your blood sugar is still less than 100 or if you are not feeling better, eat or drink another serving of food or drink from the list.
- **Wait another 15 minutes and recheck your blood sugar.**
 - If your blood sugar is 100 or more, you will be fine. You may feel tired for awhile. If it is time for your next meal soon, go ahead and sit down and eat. If your next meal time is more than 1 hour away, eat a snack of ½ sandwich and 1 cup of milk.
 - If you check your blood sugar and it is 100 or more and you are still not feeling better, call 911. It may not be a problem with your blood sugar, and you may need more help.
- **Be careful not to over treat.** If you panic and start to eat or drink until you feel better, your blood sugar may go too high.
- **Call your healthcare provider if you have low blood sugar more than 2 times in a week.**

Long term actions to take:

- **Follow your treatment plan.** Review your "Blood Sugar Record," diabetes medicines, meal plans, and activity of the last few days. Look for any changes that may explain low blood sugar.
 - Check your blood sugar level 4 times a day and record the results in your "Blood Sugar Record."
 - Take your insulin and oral diabetes medicines as directed. Do not take extra medicine unless directed to do so by your provider.
 - Follow your meal plan. Eat meals and snacks at the same time each day. Do not miss, skip, or delay meals.
 - Exercise for at least 150 minutes each week. This is about 30 minutes of moderate exercise, 5 days a week.
- **Keep food like glucose tablets, glucose gels, or juice with you at all times** at work, in your car, and when you exercise.
- Talk with your healthcare provider and dietitian **before** starting a weight loss diet.
- **Call your provider if you have low blood sugar more than 2 times in a week or wide swings from high to low blood sugar.**

Let others know you have diabetes

Your spouse, family members, roommates, friends, and co-workers should know that you have diabetes. It is up to you to decide who you tell and how much you tell them about diabetes. Tell them that you can have low blood sugar and what they can do when it happens.

Always wear some form of medical identification, such as a medical ID bracelet or carry a wallet card.

Glucagon

If you take insulin, a family member, roommate, or coworker should learn how to give glucagon. Glucagon is a hormone that raises your blood sugar. **It is used as a medicine for severe low blood sugar when you might be found unconscious.** Liquids and food should never be given to someone who is not alert or awake.

Your healthcare provider will teach your spouse, family member, or friend how to give glucagon. You will need a prescription. Glucagon is available as an injection (shot) or as a nasal powder.

- Get a prescription from your provider for glucagon.
- Keep glucagon with you. If you use a kit, ask about getting more kits to keep at home, work, or school.
- Pick family, friends, and coworkers who could give you this emergency medicine. Show these helpers where you keep the medicine and have them learn how to use it.

Glucagon Injection

Glucagon injection comes as either:

- A **prefilled syringe**, or
- A **kit** that has liquid in a syringe and powder in a vial. The liquid and powder is mixed together and injected with a small needle. It has to be given immediately after being mixed.

People you have asked to help you need to learn about how to give you an injection ahead of time. They should practice by giving you an insulin shot, so they are able to take action in an emergency.

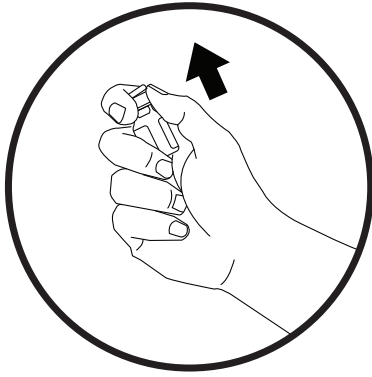
Glucagon prefilled syringe instructions:

Follow these instructions for how to give a glucagon injection if you have a **prefilled syringe**. Ask your pharmacist or nurse if you have any questions.

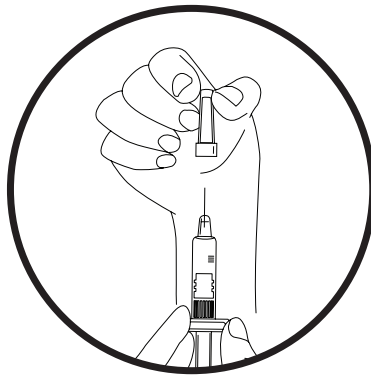
1. Pull the needle cap straight off the syringe.
2. Pinch the skin of the chosen site (upper arm, stomach, or thigh). Hold the pinch for the entire injection.
3. Insert the needle into the skin at a 90 degree angle.
4. Push the plunger down as far as it will go to inject all of the medicine.
5. Remove the syringe from the skin, lifting it straight up from the injection site.
6. Turn the person on their side. Throwing up (vomiting) may happen after glucagon is given.
7. Call 911.
8. Throw away the syringe in a needle disposal box. Do not throw it away in the trash.

Glucagon kit instructions:

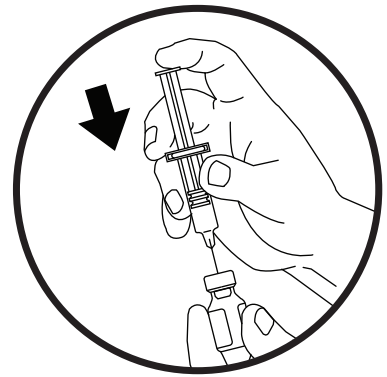
Follow these general instructions and the instructions that come with your **kit** for how to give a glucagon injection. Ask your pharmacist or nurse if you have any questions.



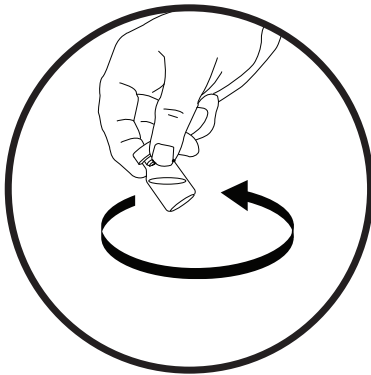
1. Remove the cap from the vial with the glucagon powder.



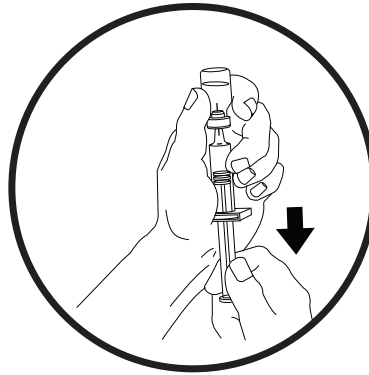
2. Remove the cap from the needle on the syringe.



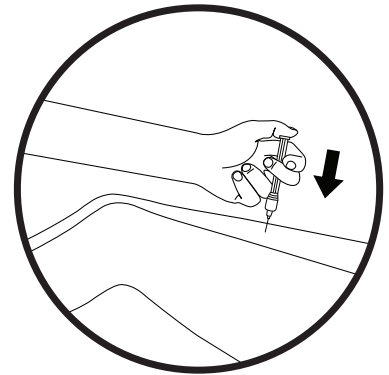
3. Inject all liquid in the syringe into the vial with the powder.



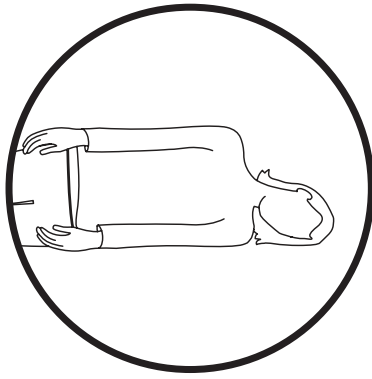
4. Remove the syringe or keep it in the vial, according to your kit's instructions. Swirl the vial gently until the solution is clear. If you keep the needle in the vial while mixing, be careful not to bend it.



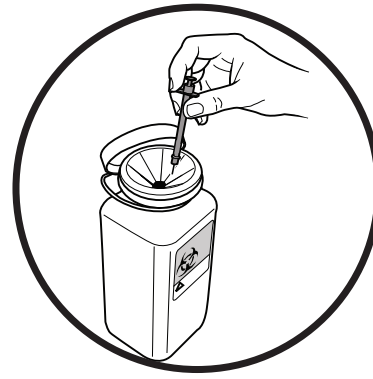
5. Slowly withdraw all the liquid into the syringe. (This is for an adult. Children may get a different amount of medicine.)



6. Stick the needle straight into the upper arm, upper leg, or buttocks. Push the plunger down to give the medicine, and then remove the needle.



7. Turn the person on their side. Throwing up (vomiting) may happen after glucagon is given. Call 911.



8. Throw away the needle in a needle disposal box. Do not throw it away in the trash.

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Glucagon Nasal Powder

Glucagon powder comes in a wrapped container to prevent exposure to moisture. Only open the tube when you need to use the medicine. This medicine is only to be given in the nose.

Make sure your caregiver, family, and friends know where you keep this medicine and have them review these instructions. They need to know how to use the medicine before an emergency would happen to you.

- Store the sealed tube until ready for use. Avoid temperatures over 86 degrees F or 30 degrees C.
- **Replace before the expiration date** on the tube or package.
- Keep this medicine out of reach of children and pets.

Glucagon nasal powder instructions:

1. Pull the red strip to remove the shrink wrap from the tube.
2. Open the lid of the tube and remove the device, being careful not to push the plunger.
3. Hold the device between your fingers and your thumb. The green line should be by your thumb with your fingers on either side of the tip of the device.
4. Gently insert the tip in 1 side of the person's nose until your fingers touch the nose.
5. Push the plunger firmly with your thumb until the green line disappears into the device.
6. Turn the person on their side. Throwing up (vomiting) may happen after glucagon is given. Call 911.
7. Throw away the used device and tube in the trash or in a needle disposal box.

For more information and images for how to use glucagon nasal powder, go to pi.lilly.com/us/baqsimi-us-ifu.pdf.

Taking Medicine for Diabetes

Based on the type of diabetes you have, you may be able to take diabetes medicine by mouth. You will also need to follow diet and exercise guidelines to keep your blood sugar in a safe range. Your healthcare provider will determine the best medicine for your type of diabetes. **Ask your provider or pharmacist to give you information about the medicine that has been prescribed for you.**

There may be times when you need more than 1 type of diabetes medicine. You may need to take insulin in addition to diabetes pills during times when your blood sugar is not in a safe range. Testing your blood sugar regularly and reporting how you are feeling will help your provider determine the best medicine for you.

Before taking any medicine, tell your provider:

- **If you have ever had an allergic or unusual reaction to any medicine, food, or other substance.** Ask your provider or pharmacist if you have questions.
- **If you are pregnant or if you plan to become pregnant.** The use of any medicine during pregnancy must be carefully considered. Your obstetrician or pharmacist will be able to tell you about the safety of any medicines you take during pregnancy.
- **If you are breastfeeding.** Some medicines pass into breast milk and can cause side effects to your baby.
- **If you are taking any prescription or over the counter medicines, including vitamins or herbal supplements.** Certain medicines can change how your diabetes medicine works.



What you should know about your medicine

- Please ask questions about the medicines you are taking. Write down your questions and take them with you when you visit your healthcare provider. Your pharmacist can also answer questions about the medicine when the prescription is filled.
- Learn the medicine's generic and brand names.
- Take your prescribed medicine at the same time every day according to the directions given to you by your provider.

- **Do not skip meals when you are taking diabetes medicine.** This can cause a low blood sugar reaction, which can be very dangerous.
- Ask for a refill of your medicine several days before your supply is gone.
- Talk with your pharmacist before taking any over the counter medicine. Some medicines can interfere with the way your diabetes medicine works.
- Avoid alcohol while taking diabetes medicine. Alcohol can cause some very serious side effects. **Talk to your provider about alcohol use.**
- If you miss a dose of your medicine, take the missed dose as soon as possible. Skip the missed dose if it is almost time for the next dose. Do not take 2 doses at the same time.
- Always read the label before taking any medicine. Check the date on the bottle and throw away medicines that have expired.
- Keep your medicines tightly capped in their original bottles. Never put different medicines in 1 bottle to store for a long time.
- Store your medicines away from heat and direct sunlight.
- Do not put medicines in a bathroom cabinet because heat and moisture from showers may cause them to change.
- Never store medicines in your car due to temperature extremes.
- When you travel, keep your medicines with you. Do not check them with your luggage. If your luggage is lost or delayed, you will have your medicines with you.

Precautions

- Some medicines used for diabetes can cause low blood sugar, especially if you miss a meal, exercise, or drink alcohol. You need to know the symptoms of low blood sugar and how to treat it right away.
- Keep a record of your blood sugar results and take it to each appointment with your provider.
- Ask your provider or pharmacist about side effects that should be reported.
- Do not share your prescription medicine with others. This can be very dangerous, and it is against the law. The medicine is for you and may not be the right treatment for another person.
- Keep a list in your wallet of all of the medicines you are taking. Your provider will want to see this list whenever you have an appointment.
- Before you have tests, surgery, or emergency treatment, tell your provider or dentist about all of the medicines you are taking.
 - **Follow your provider's instructions for how to adjust your diabetes medicines before tests or surgery.**
- If you take more than is prescribed, call your provider, pharmacist, or Poison Control Centers' Poison Help Line at 1-800-222-1222 right away. The Poison Help Line offers free, confidential medical advice 24 hours a day, 7 days a week.

Oral Diabetes Medicines

Many people with type 2 diabetes, steroid-induced diabetes, and pre-diabetes take oral diabetes medicines. These are pills that are used along with meal planning and exercise to help keep your blood sugar in a safe range. The pills are not insulin and cannot be used to treat type 1 diabetes. There are several groups of oral medicines for treating diabetes.

Biguanides

This medicine helps your cells be more sensitive to insulin, so your body can use your own insulin better to lower your blood sugar.

- **Metformin**, also known by the brand name **Glucophage** (most often taken 2 times each day) and **Glucophage XR** (most often taken 1 time each day)

Metformin also keeps your liver from releasing too much glucose into your system. The medicine is taken every day whether you eat or not, but taking it with food lowers the risk of side effects. Weight gain or loss is not expected as a direct effect of this medicine.

People taking **metformin** may have diarrhea, nausea, vomiting, or gas as their body adjusts to these medicines, but these effects often go away within the first week of treatment.

People taking the extended release (XR/ER) version often have much less risk of these effects.

Your provider will order blood tests to check your kidney function. This medicine does not affect the kidneys, but people with kidney problems may need a lower dose.

Sodium Glucose Cotransporter-2 (SGLT-2) Inhibitors

These medicines help your body get rid of more glucose during urination.

The medicines in this group include:

- **Canagliflozin**, also known by the brand name **Invokana**
- **Dapagliflozin**, also known by the brand name **Farxiga**
- **Empagliflozin**, also known by the brand name **Jardiance**
- **Ertugliflozin**, also known by the brand name **Steglatro**

All these medicines should be taken 1 time each day by mouth with or without food. They have also been linked with some weight loss and improvement in blood pressure. The major side effect seen with this is an increase in yeast infections. As a result, these medicines are not recommended in patients with a history of frequent yeast infections. Practice good personal hygiene while on this medicine: wear cotton underwear; change out of wet clothes; do not wear tight clothing; always wipe from front to back; and change tampons, pads, and panty liners often.

Some of these medicines may have additional benefits on reducing the risk of complications from cardiovascular disease or chronic kidney disease. More details can be found in the "Medicines Often Recommended" handouts later in this book.

Glucagon-Like Peptide 1 (GLP-1) Receptor Agonists

These medicines are used for patients with type 2 diabetes and may be used by themselves or with other medicines for diabetes. Most of these medicines are injectable. However, one is a pill taken by mouth. Please see the handout, *Injectable Diabetes Medicines (Non-Insulin)*, for a full description.

The oral medicine in this group includes:

- **Semaglutide**, also known by the brand name **Rybelsus**

This medicine should be taken on an empty stomach at least 30 minutes before first food, drink, or other oral medicines with no more than 4 oz of plain water. It is important to eat 30 to 60 minutes after taking this medicine.

Dipeptidyl Peptidase-4 (DPP-4) Inhibitors

These medicines increase insulin release from the pancreas and decrease glucagon production in the liver.

The medicines in this group include:

- **Sitagliptin**, also known by the brand name **Januvia**
- **Saxagliptin**, also known by the brand name **Onglyza**
- **Linagliptin**, also known by the brand name **Tradjenta**
- **Alogliptin**, also known by the brand name **Nesina**

These medicines lower blood sugar, especially after meals. These medicines work only when blood sugar is high, not when blood sugar is low, meaning it is less likely to cause low blood sugar. Your provider will order blood tests to check your kidney function if you take **Januvia**, **Onglyza**, or **Nesina**, but not **Tradjenta**. People with kidney problems will need blood tests and a lower dose. All of these medicines should be taken 1 time each day by mouth with or without food. These medicines are often well tolerated, but some people have reported headaches or upper respiratory infections. Weight gain or loss is not expected as a direct effect of this medicine.

Thiazolidinediones (TZD)

These medicines improve your cells' response to your own insulin.

The medicines in this group include:

- **Pioglitazone**, also known by the brand name **Actos**
- **Rosiglitazone**, also known by the brand name **Avandia**

TZD decreases the release of glucose from your liver and increases insulin action in your muscles. Blood tests will be done to check liver enzymes before starting these medicines and at regular times after you start the medicine. Most often, these medicines are taken 1 time each day at breakfast. Although very effective, some serious side effects have been linked to these medicines. People taking **Avandia** or **Actos** may have weight gain, fluid retention, headaches, and be at an increased risk of heart failure and broken bones (most often in the upper arm, hand, or foot). **Avandia** may increase LDL (bad) cholesterol.

Sulfonylureas (SU)

These medicines lower blood sugar mainly by causing the pancreas to produce more insulin. The pills in this group are taken 1 or 2 times each day, often before breakfast and dinner.

Some of the most often used drugs in this group include:

- **Glipizide**, also known by the brand names **Glucotrol**, **Glucotrol XL**, and **Glucotrol XR**
- **Glyburide**, also known by the brand names of **Micronase**, **Glynase**, or **DiaBeta**
- **Glimeperide**, also known by the brand name **Amaryl**

Low blood sugar, also called hypoglycemia, can be a side effect of these medicines.

Eat within 30 minutes of taking medicines in this group to reduce the chance of low blood sugar. If you take the medicine and skip meals or drink alcohol, you may have more problems with low blood sugar.

Some signs of low blood sugar are feeling weak, shaky, confused, or hungry. These medicines also may cause some weight gain, so healthy eating habits are important. People with sulfa allergies may not be able to use this group of medicines.

Your provider will order blood tests to check your kidney function. These medicines do not affect the kidneys, but people with kidney problems may need a lower dose.

Talk with your provider about which medicine or medicines are best for you to take to help keep your blood sugar in a safe range.

Tell your provider and pharmacist if you are taking any other medicines before starting any diabetes pills. This includes prescription and over the counter medicines and any vitamin or herbal supplements you may be taking.

Injectable Diabetes Medicines (Non-Insulin)

Besides insulin, there are 2 medicines given by shot or injection to treat diabetes. Each of these medicines is a man made form of hormones that is also made in your body. If you are to take any of these medicines, you will be taught how to do the injections.

Glucagon-Like Peptide 1 (GLP-1) Receptor Agonists

These medicines are used for patients with type 2 diabetes and may be used by themselves or with other medicines for diabetes.

The medicines in this group include:

- **Exenatide**, also known by the brand name **Byetta** (2 times each day) or **Bydureon** (1 time each week)
- **Liraglutide**, also known by the brand name **Victoza** (1 time each day)
- **Lixisenatide**, also known by the brand name **Adlyxin** (1 time each day)
- **Dulaglutide**, also known by the brand name **Trulicity** (1 time each week)
- **Semaglutide**, also known by the brand name **Ozempic** (1 time each week)

These medicines are used to help:

- Increase insulin secretion
- Decrease glucagon production from the liver
- Slow how quickly your stomach empties
- Trigger the sense of fullness

These medicines may cause some weight loss. The most common side effects are nausea, diarrhea, and upset stomach. These side effects often get better after the first few days. Eating smaller meals/snacks more often throughout the day can lower the risk of these effects.

Glucose-Dependent Insulinotropic Polypeptide (GIP)/Glucagon-Like Peptide 1 (GLP-1) Receptor Agonists

This medicine is used for patients with type 2 diabetes and may be used by itself or with other medicines for diabetes

The medicine in this group includes:

- **Tirzepatide**, also known by the brand name **Mounjaro** (1 time each week)

This medicine is used to help:

- Increase insulin secretion
- Decrease glucagon production from the liver
- Slow how quickly your stomach empties
- Trigger the sense of fullness

This medicine may cause some weight loss. The most common side effects are nausea, diarrhea, and upset stomach. These side effects typically get better after the first few days. Eating smaller meals/snacks more often throughout the day can lower the risk of these effects.

Insulin

Insulin is a hormone made by the pancreas. The pancreas is a small organ that lies behind and below the stomach. Insulin works like a key to open the body's cells. This allows glucose from food you eat to go into the body's cells for energy. A person cannot live without insulin.

Your healthcare provider may prescribe insulin to treat your diabetes because your body:

- Does not make insulin (type 1 diabetes).
- Does not make enough insulin (type 2 diabetes).
- Is not able to use the insulin it makes (type 2 diabetes).

Insulin is most often taken as a shot using an injector pen, syringe, V-Go device, or insulin pump. There is an inhaled form of insulin available as well.

Taking insulin for diabetes

- In the United States, insulin is human insulin. It is made from harmless bacteria through DNA engineering.
- Some people with diabetes only need to take insulin for a short time. It may be needed due to stress, pregnancy, illness, infection, surgery, or when taking certain medicines, such as steroids.
- With **type 2 diabetes**, you may or may not need insulin to keep your blood sugar in a safe range. This is because your body still makes some insulin. You may or may not take oral medicine to work with the insulin.
- With **type 1 diabetes**, you will need insulin for the rest of your life. This is because your body does not make any insulin. You will probably need 2 or more shots of insulin each day. You and your provider will decide how many shots and how much insulin you will need to take.

Supplies

You will need these supplies to take your insulin, depending on what type you take. There are 4 different options for injecting your insulin. Keep at least a week's supply on hand at all times.

Option 1 — Injector Pen

- Insulin pen or cartridges
- Pen needles — standard or safety type
- Alcohol swabs

Safety with injector pens:

- Insulin pens may say “for single patient use only.” That means **you are not to share your pen** with anyone else, but know that your **pen and cartridges have multiple doses** for your use.

- NEVER reuse pen needles and NEVER leave pen needles attached to the pen. This can result in an increased risk of infection and irritation at the site of injection.
- Each time you get pen needles, **know the type of needle you have (standard or safety)** and how to use it safely.
 - **Standard pen needles have an outer cover and a needle cover that must be removed before use.** This type of needle is often used at home.
 - **Safety pen needles have an outer cover that must be removed before use.** A needle shield stays in place over the needle. The needle shield pulls down when the needle is placed into the skin. The needle shield comes back over the needle when the injection is done. This type of needle is often used in the hospital.

Option 2 — Syringe

- Insulin bottle or vial
- Syringes with needles (never reuse a syringe!)
- Alcohol swabs

Option 3 — Insulin Patch Delivery Device

- Insulin bottle or vial
- V-Go device (with EZ Fill) or CeQur Simplicity
 - V-Go replaces both long and rapid acting insulin injections
 - CeQur Simplicity replaces ONLY rapid acting insulin injections
- Alcohol swabs

V-Go device provides a small, continuous dose of insulin throughout the day with the ability to give added insulin at mealtimes. It is **not an insulin pump**, but acts in a similar way. CeQur Simplicity allows a user to give rapid acting insulin as needed. (You will likely need to give injections of long acting insulin.)

Option 4 — Insulin Pump

Supplies needed to keep on hand for an insulin pump will be discussed with you.

Things to know about your insulin

1. **Your provider will choose the kind and amount of insulin you need.** Check the labels on your insulin bottles or pens to be sure you have the right kind.
2. **Learn the following information about your insulin:**
 - Name: such as **NPH, Regular, 70/30, 75/25, Humalog, Lantus, or Novolog**
 - Strength: U-100 (most common), U-200, U-300, and U-500
 - Brand: such as Novo-Nordisk, Eli Lilly, or Sanofi
 - Expiration date: do not use expired insulin

Do not change the name, strength, or brand of your insulin. Only your provider should make these changes.

3. All unopened bottles or pens of insulin should be stored in the refrigerator. Avoid exposing your insulin to extreme temperatures (hot or cold) and direct sunlight.
4. After the bottle of insulin or insulin pen is used for the first time, it can be safely stored at room temperature, but only for a specific time. Most bottles and pens can be kept for about 28 to 31 days, but some can be safely kept longer. **Always check with your pharmacist** to know when the opened insulin should be thrown away.

The following 3 **medicines in pens are only good for 14 days** at room temperature:

- **Humulin N pen**
- **Novolin N pen**
- **Novolog Mix 70/30 pen**

5. **Travel:**

- When traveling, keep your insulin and supplies with you in case your luggage gets lost.
- NEVER leave your supplies in a car to avoid temperature extremes.

6. **There are 4 types of injectable insulin:**

- Rapid acting (meal time): **Admelog, Apidra, Fiasp, Humalog, Lyumjev, and Novolog**
- Short acting: **Regular (Humulin R, Novolin R)**
- Intermediate acting: **NPH (Humulin N, Novolin N)**
- Long acting (basal): **Basaglar, Lantus, Semglee, Toujeo, and Tresiba**
 - Long acting insulin cannot be mixed in a syringe with other insulins

7. **Insulin is also available in premixed combinations:**

- Premixed:
 - **Novolin 70/30 or Humulin 70/30** = 70% NPH and 30% Regular
 - **Humalog Mix 75/25** = 75% intermediate acting and 25% rapid acting
 - **Humalog Mix 50/50** = 50% intermediate acting and 50% rapid acting
 - **Novolog Mix 70/30** = 70% intermediate acting and 30% rapid acting

8. **One form of insulin is available for inhalation:**

- **Afrezza** is a powder insulin that is inhaled. It is used as a mealtime insulin. The cartridges contain 4, 8, or 12 units. You may need more than 1 inhalation, based on your dose.

Combination Insulin/Glucagon-Like Peptide 1 (GLP-1) Receptor Agonists

The medicines in this group combine a long-acting (basal) insulin with a GLP-1 receptor agonist. You receive the benefits of both medicines with a single injection. The doses for each drug in this medicine are fixed, so it does not work for all people. The medicine is given 1 time each day.

The medicines in this group include:

- Insulin **Glargine/Lixisenatide**, brand name **Soliqua**
- Insulin **Degludec/Liraglutide**, brand name **Xultophy**

Insulin action

This table lists the different types of injectable insulins and how quickly each insulin will start to work, when it works hardest, and how long it will last.

Type	Concentration	Starts	Works hardest/ peaks	Duration
Rapid Acting				
Admelog (Lispro)	U-100	45 minutes	2.1 hours	Less than 6.9 hours
Apidra (Glulisine)	U-100	12 to 30 minutes	1.6 to 2.8 hours	3 to 4 hours
Fiasp (Aspart)	U-100	21 to 24 minutes	2.5 hours	5 to 7 hours
Humalog (Lispro)	U-100, U-200	45 minutes	2.4 to 2.8 hours	Less than 6.7 hours
Lyumjev (Lispro-aabc)	U-100	32 minutes	2.0 to 2.9 hours	Less than 6.7 hours
Novolog (Aspart)	U-100	12 to 18 minutes	1 to 3 hours	3 to 7.2 hours
Short Acting				
Humulin/Novolin R (regular)	U-100	15 to 30 minutes	2.5 to 5 hours	4 to 12 hours
Humulin/Novolin R (regular)	U-500	15 to 30 minutes	4 to 8 hours	13 to 24 hours
Intermediate Acting				
Humulin/Novolin N (NPH)	U-100	1 to 2 hours	4 to 12 hours	14 to 24 hours
Long Acting				
Basaglar (Glargine)	U-100	3 to 4 hours	Nearly peakless	10.8 to greater than 24 hours
Lantus (Glargine)	U-100	3 to 4 hours	Nearly peakless	10.8 to greater than 24 hours
Rezvoglar (Glargine-aglr)	U-100	3 to 4 hours	Nearly peakless	10.8 to great than 24 hours
Semglee (Glargine-yfgn)	U-100	3 to 4 hours	Nearly peakless	10.8 to greater than 24 hours
Toujeo (Glargine)	U-300	6 hours	Peakless	Greater than 24 hours
Tresiba (Degludec)	U-100, U-200	1 hour	Peakless	Greater than 24 hours
Premixed				
Humulin/Novolin 70/30	U-100	30 minutes	2 to 12 hours	18 to 24 hours
Humalog 50/50	U-100	15 to 30 minutes	0.8 to 4.8 hours	14 to 24 hours
Humalog 75/25	U-100	15 to 30 minutes	1 to 6.5 hours	14 to 24 hours
Novolog 70/30	U-100	10 to 20 minutes	1 to 4 hours	18 to 24 hours

Take your insulin at the same time(s) each day

- Do not vary the time of your long acting injection by more than 1 hour. The only exception would be **Tresiba**.
 - **Tresiba** does not need to be taken at the same time every day, but consistency is still important.
- If you are taking short acting insulin, such as **Regular**, take your insulin 30 to 45 minutes before eating.
- If you take rapid acting insulin, such as **Humalog** or **Novolog**, take your insulin within 5 to 10 minutes of eating.
 - **Apidra, Fiasp, and Lyumjev** may be taken up to 20 minutes after eating, but taking it before meals is still preferred.

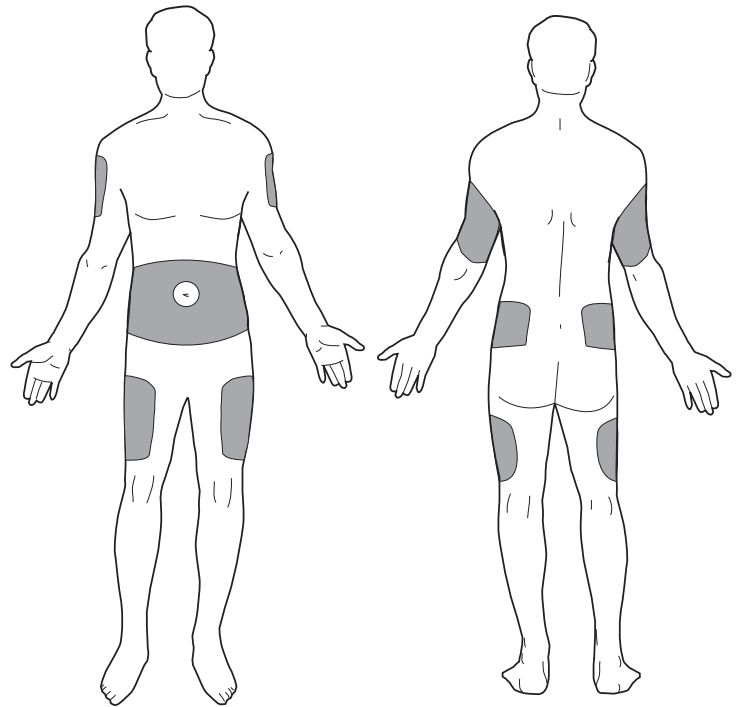
Talk with your provider if you have any of these problems:

- Bruising
- Dimpled areas
- Itching
- Redness
- Hard, lumpy areas

How to Take Your Insulin

Getting ready

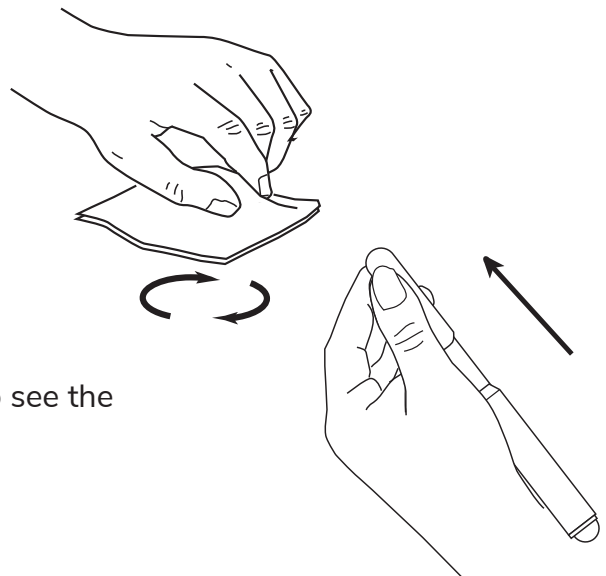
1. Wash your hands well with soap and water.
2. Gather your supplies:
 - Insulin either by pen, cartridge, or bottle (vial)
 - Pen needle or syringe
 - Alcohol pad
 - Sharps disposal container
3. Select a site for your shot on an area of your body:
 - Insulin is absorbed differently throughout your body. **Fastest absorption is in your abdomen** followed by your arms, thighs, and upper buttocks.
 - **Pick a site about 1 inch away from your last injection site**, such as moving slightly left to right or slightly higher or lower. You can also pick a new area of the body.
 - If you are giving the injection in your abdomen, stay 2 inches away from your belly button.



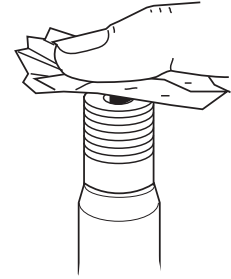
Giving insulin with an insulin pen

Follow these steps to give yourself insulin with an insulin pen.

1. Clean the area with an alcohol pad using a circular motion. Let the alcohol air dry.
2. Remove the cover from the pen. You will be able to see the insulin in the pen.

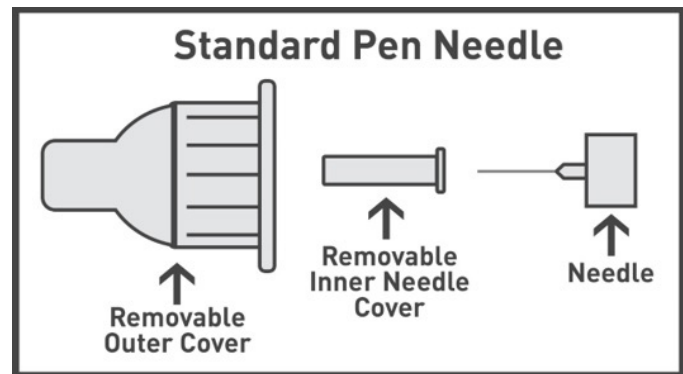


3. If you are using a cloudy insulin (**NPH, 75/25, or 70/30**), gently roll the pen between your hands or turn it up and down to mix the insulin.
4. Clean the end of the pen with an alcohol pad where the needle twists on.
5. Attach a new needle by peeling back the paper cover and screwing it onto the pen. It should be snug but not too tight.

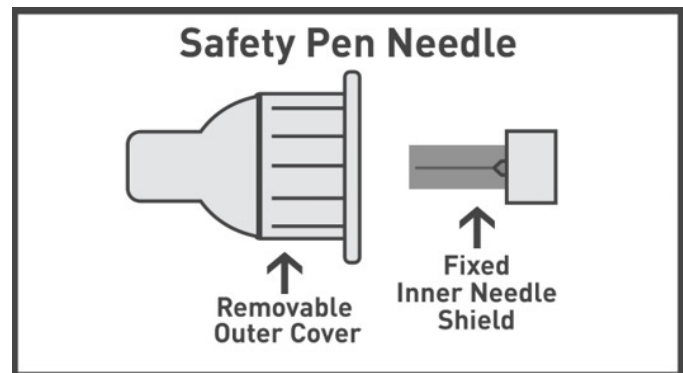


6. Prepare the pen needle:

- **If you are using a standard pen needle, remove both the outer cover and inner needle cover**, so you can see the needle.

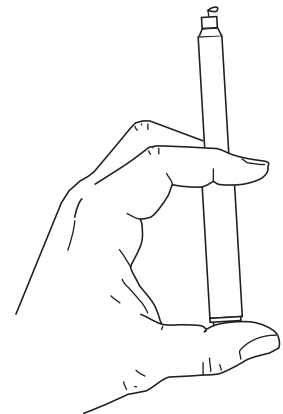


- **If you are using a safety pen needle, remove the outer cover only**. The inner needle shield stays in place. Most often, these are the type of needles used in hospitals.

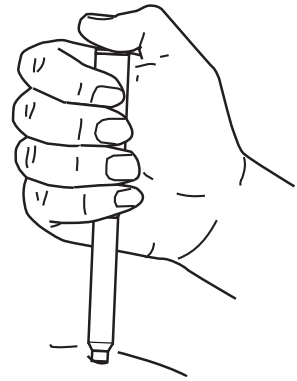


Ask your pharmacist, nurse, or diabetes educator if you have questions about this or check the manufacturer's instructions for more information.

7. Clear the air out of the pen or prime the pen.
 - Turn the knob dose dial to 2 units.
 - Hold the pen with the needle up in the air and push the dial knob in. Watch the tip of the needle for a drop of insulin.
 - You may need to repeat the dialing to 2 units and push a few times until you see the drop on the needle, so you know you have no air in the pen.
 - Dial in your insulin dose by turning the knob clockwise until you see the right number for your dose.



8. Put the needle straight into the skin at a 90-degree angle in a quick motion. Push the needle all the way into the skin.
9. Using your thumb, push the knob down slowly to inject the insulin. Hold the needle in place for a count of 10 before removing. Check that the pen is back to zero, and then pull out the needle.
10. Check the area for any redness, bleeding, or bruising.
11. Remove the needle from the pen, using the big clear cap to unscrew it.
12. Throw the needle into your needle disposal container.
 - **To protect yourself and others, never throw needles into the trash.**
 - **Buy a sharps or needle disposal container** at the drug store or use an empty, heavy plastic bottle with a lid.
 - Keep the container out of the reach of children and pets.
 - Ask your pharmacist or nurse how you should throw away your container of used needles. You can also check with your trash collector.
13. Put the cover back on your insulin pen.

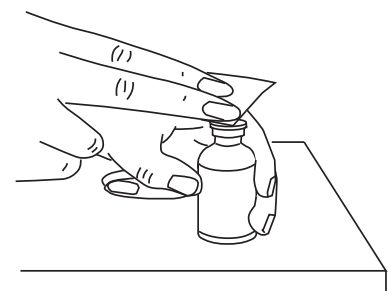
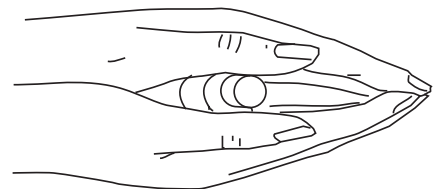


Giving insulin with a syringe

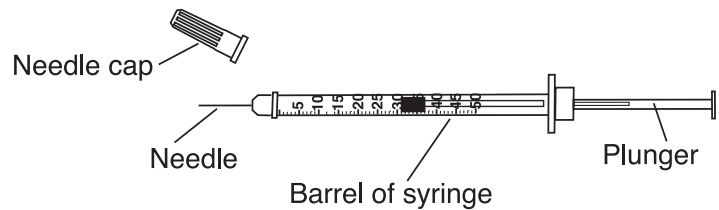
Drawing Up 1 Insulin

Follow these steps if you need to fill a syringe with insulin.

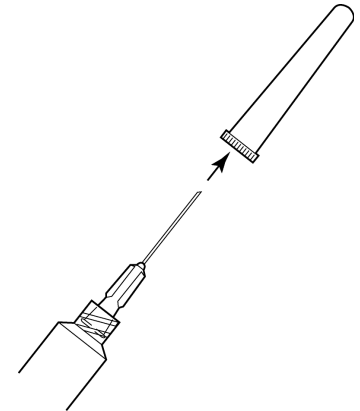
1. Check the label on the insulin bottle to make sure you are using the **correct insulin**. Also **check the expiration date** on your insulin bottle. **Do not** use expired insulin.
2. If you have cloudy insulin, gently roll the bottle of insulin between your hands until it is mixed. Do not shake the insulin bottle because this can cause air bubbles.
3. If the bottle of insulin is new, remove its plastic cap. You will see the rubber stopper on top of the bottle.
4. Wipe off the top of the bottle with an alcohol pad, and then do not touch the top of the bottle.



5. Take the syringe out of its package or box and remove the plastic cap from the plunger end.

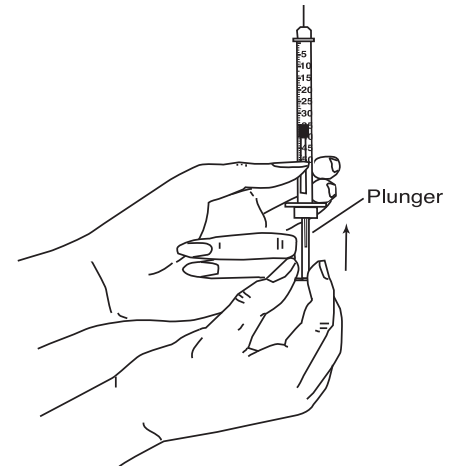


6. Take off the needle cap and place the cap on the table.

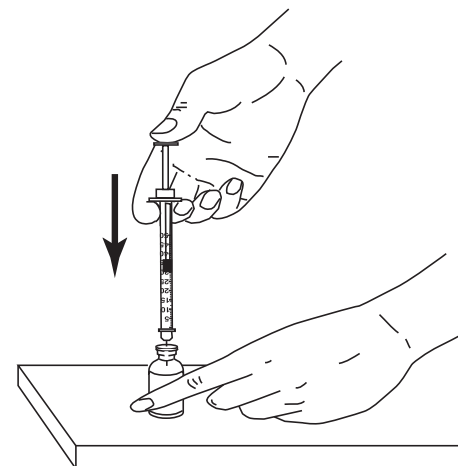


7. Pull the plunger of the syringe down to the number of units of insulin you need. The syringe will fill with air.

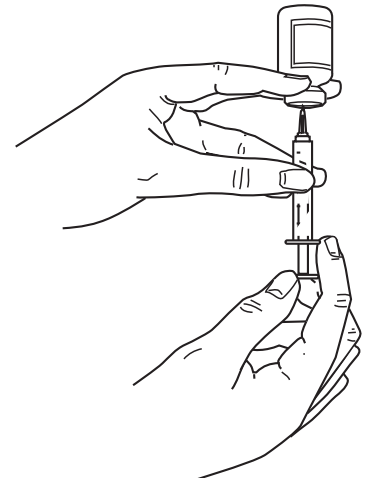
- The syringe has small lines and numbers. The space between each line on the syringe is 1 unit. If you are using a 100-unit syringe, the space between each line is 2 units.
- Move the plunger, so the dark end closest to the needle matches the number of units you need.



8. Carefully put the needle through the rubber stopper of the insulin bottle. Push the air into the bottle by pushing the plunger all the way down. Putting air in the bottle makes it easier to get the insulin out of the bottle.

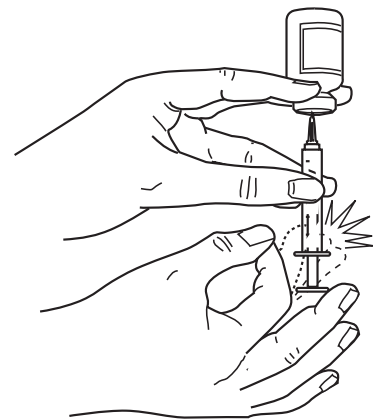


9. Turn the insulin bottle upside down with the syringe still in place. Support the needle in the bottle, so it does not bend. Pull the plunger down to the number of units of insulin you need.



10. Check for air bubbles in the syringe. Air bubbles will not hurt you, but will take the place of insulin. This could cause you to get less insulin than you need because there is no insulin in the air bubble. If you see air bubbles:

- Tap the syringe firmly with your fingertip to move the bubbles to the top of the syringe.
- Push the plunger up a few units until the air bubbles go back into the insulin bottle.
- Pull down on the plunger again and fill the syringe with the correct amount of insulin.
- Check again for air bubbles. Repeat until all air bubbles are gone.



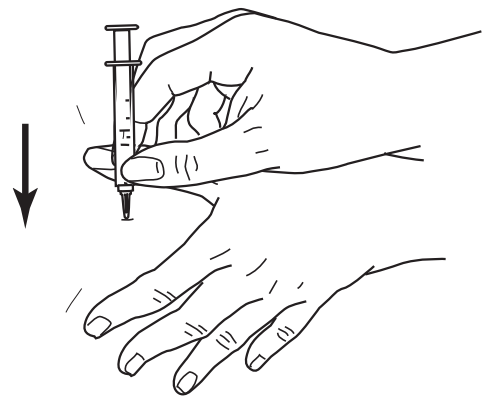
11. Take the needle out of the insulin bottle and set the syringe down. Follow the steps for "Giving insulin with a syringe" in the next section.

How to Give Yourself Insulin With a Syringe

1. Clean the site with an alcohol pad using a circular motion. Do not blow on or fan the area to help it dry. Let the alcohol air dry.



2. Pinch up and hold the skin of the site with 1 hand if you are using a 12 mm needle. If you are using the shorter 8 mm syringe needle, you do not need to pinch the skin unless you are very lean.
3. Put the needle straight into the skin at a 90-degree angle in a quick motion. Push the needle all of the way into the skin.
4. Using your index finger, push the plunger all the way down to inject the insulin. Hold the needle in place for a count of 10 before removing.
5. Pull out the needle.
6. Check the area for any redness, bleeding, or bruising.
7. Throw the needle and syringe into a sharps disposal container.
 - **To protect yourself and others, never throw needles into the trash.**
 - **Buy a sharps or needle disposal container** at the drug store or use an empty, heavy plastic bottle with a lid.
 - Keep the container out of the reach of children and pets.
 - Ask your pharmacist or nurse how you should throw away your container of used needles. You can also check with your trash collector.



Medicines Often Recommended to Lower the Risk of Cardiovascular Disease

If you are age 40 or older

Your healthcare provider may recommend that you take a statin, regardless of your cholesterol levels. This is because statins are a group of medicines that reduce the risk of heart attack and stroke even in people who do not have high cholesterol.

- **HMG-CoA reductase inhibitors (also known as statins) include:**
 - Atorvastatin (Lipitor)
 - Fluvastatin (Lescol XL)
 - Lovastatin (Altoprev)
 - Pitavastatin (Livalo)
 - Pravastatin (Pravachol)
 - Rosuvastatin (Crestor)
 - Simvastatin (Zocor)
- **If your LDL cholesterol (“bad cholesterol”) remains above 100 mg/dL while on a statin**, your provider may also recommend other medicines to lower your risk of cardiovascular events.
- **If your triglycerides are high**, your provider may also recommend the use of a medicine to help protect your heart.
 - Icosapent ethyl (Vascepa)

If you have heart disease or are at high risk for a cardiovascular event

Your healthcare provider may recommend the use of a medicine to help lower this risk. These medicines sometimes are used to help lower blood sugars, but they can also be used for protection even if blood sugars are in a safe range. Both medicines can also be used together.

- **Glucagon-like peptide 1 (GLP-1) receptor agonists:**
 - Dulaglutide (Trulicity)
 - Liraglutide (Victoza)
 - Semaglutide (Ozempic)
- **Sodium glucose cotransporter-2 (SGLT2) inhibitors:**
 - Canagliflozin (Invokana)
 - Empagliflozin (Jardiance)

If you have heart failure

Your healthcare provider may recommend the use of a medicine to help lower the risk of hospitalization and/or death from heart failure. These medicines sometimes are used to help lower blood sugars, but they can also be used for protection even if your blood sugars are in a safe range.

- **Sodium glucose cotransporter-2 (SGLT2) inhibitors:**
 - Dapagliflozin (Farxiga)
 - Empagliflozin (Jardiance)

Medicines Often Recommended to Lower the Risk of Chronic Kidney Disease

If you have high blood pressure or high levels of protein in your urine

Your healthcare provider may recommend that you use an angiotensin-converting enzyme (ACE) inhibitor or angiotensin II receptor (ARB) blocker to help protect your kidneys.

- **Angiotensin-converting enzyme (ACE) inhibitors include:**
 - Benazepril (Lotensin)
 - Captopril (Capoten)
 - Enalapril (Vasotec)
 - Fosinopril (Monopril)
 - Lisinopril (Prinivil, Zestril)
 - Moexipril (Univasc)
 - Perindopril (Aceon)
 - Quinapril (Accupril)
 - Ramipril (Altace)
 - Trandolapril (Mavik)
- **Angiotensin II receptor (ARB) blockers include:**
 - Azilsartan (Edarbi)
 - Candesartan (Atacand)
 - Eprosartan (Teveten)
 - Irbesartan (Avapro)
 - Losartan (Cozaar)
 - Olmesartan (Benicar)
 - Telmisartan (Micardis)
 - Valsartan (Diovan)

If you have kidney disease and are at high risk for a cardiovascular event or worsening of your kidney disease

Your healthcare provider may recommend the use of a medicine to help protect your kidneys and lower this risk. These medicines sometimes are used to help lower blood sugars, but they can also be used for protection even if your blood sugars are in a safe range.

- **Sodium glucose cotransporter-2 (SGLT2) inhibitors**
 - Canagliflozin (Invokana)
 - Dapagliflozin (Farxiga)
 - Emagliflozin (Jardiance)

If you have kidney disease and are at high risk for a cardiovascular event or worsening of your kidney disease

Your healthcare provider may also recommend the use of a medicine to help protect your kidneys.

- **Non-steroidal mineralocorticoid receptor antagonist (MRA)**
 - Finerenone (Kerendia)

Carbohydrate Counting

Carbohydrate counting, also called carb counting, is a meal planning tool for people living with diabetes. Carb counting involves using food labels and estimating portion sizes of foods to keep track of the amount of carbohydrates you eat at each meal or snack.

Carbohydrates are 1 of the main nutrients found in food and drinks. Protein and fat are the other main nutrients. Carbohydrates include starches, fiber, and sugars. Carb counting can help keep your blood sugar levels in a safe range because carbohydrates affect your blood sugar more than other nutrients. Please note that a ketogenic diet (a very low carb, high fat diet) is not recommended for people with type 1 diabetes.

The amount of carbohydrates you need in your diet

The amount of carbohydrates you need is based on your height, weight, activity level, and blood sugar levels. Most people do well in the following ranges:

- **People with female anatomy need 30 to 45 grams per meal** (2 or 3 servings of carbohydrates per meal).
- **People with male anatomy need 45 to 60 grams per meal** (3 or 4 servings of carbohydrates per meal).
- Snacks may be needed to satisfy hunger and carbohydrate needs. Your dietitian can provide you with recommendations for your needs. **You may be told to keep snacks around 0 to 20 grams.**

15 grams of carbohydrate = 1 carb choice or serving.

How to count carbohydrates

When reading food labels, use these tips to help you count carbohydrates:

1. **Check the serving size.** All nutritional information on the label is based on 1 serving. Look at the common measure, such as cups or tablespoons. The grams (g) listed here are the weight of the serving. The serving size for this product is 1 cup or 140 g.
2. **Look for total carbohydrates in grams.** This includes the fiber, sugars, and other carbohydrates in the food. Use this number when counting carbohydrates.

There are 22 grams of carbohydrate in this product per serving. If you ate 2 servings of this food, you would be getting 44 grams of carbohydrate.

➤

➤

Nutrition Facts	
6 servings per container	
Serving size	1 cup (140g)
Amount per serving	
Calories	170
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 3g	15%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 5mg	0%
Total Carbohydrate 22g	8%
Dietary Fiber 2g	7%
Total Sugars 16g	
Includes 8g Added Sugars	16%
Protein 2g	
Vitamin D 0mcg	0%
Calcium 20mg	2%
Iron 1mg	6%
Potassium 240mg	6%
*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

- 3. Compare food labels.** Start by comparing the serving sizes of products you eat, and then compare the grams of total carbohydrate. Look at the fiber and sugar content.

Please note that products marked as “sugar free,” “reduced sugar,” or “no sugar added” are not necessarily carbohydrate-free. Read the product’s food label to understand how many carbs you are eating.

Carbohydrate serving sizes

If you have a food exchange book or list, you can use it to look up carbohydrate grams for foods. Otherwise, read the product’s food label. If no food label is available, use the estimates on the next pages to calculate the carbohydrate grams for a food. Be aware that carbohydrate amounts can vary greatly between different types of the same food. For example, some breads have 15 grams of carbohydrates per slice while others are closer to 25 grams per slice.

Starch Group – 1 serving equals 15 grams of carbohydrate or 1 carb choice

Choose whole grains over refined grains.

1 serving =

- 1 (1 ounce) slice of bread
- 1 (1 ounce) small roll
- ¼ (1 ounce) bagel
- ½ hamburger bun or English muffin
- 1, 6-inch tortilla
- 1/3 cup cooked rice, pasta, barley or couscous
- ½ cup cooked bulgur wheat, lentils or legumes (dried beans or peas)
- ½ cup corn, sweet potato or green peas
- 3 ounce baked sweet or white potato
- ½ cup unsweetened cooked cereal
- ¾ cup unsweetened dry cereal
- ¾ ounce pretzels
- 3 cups hot air popped or microwave popcorn with no more than 3 grams of fat per serving



Fruit Group – 1 serving equals 15 grams of carbohydrate or 1 carb choice

1 serving =

- 1 small apple, orange or nectarine
- 1 medium peach
- ½ banana, large pear, grapefruit, or mango
- 1 kiwi
- 1 cup fresh berries
- 1 cup fresh melon cubes
- 17 small grapes (3 ounces)
- ½ cup canned fruit in juice or light syrup
- ½ cup fruit juice
- 2 tablespoons (Tbsp) dried fruit



Milk Group – 1 serving equals 15 grams of carbohydrate or 1 carb choice

1 serving =

- 1 cup (8 ounces) fat free or low fat milk
- 1 cup (8 ounces) plain yogurt
- 6 ounces light or plain Greek yogurt



Sweets and Added Sugars

Limit the amount of sweets you eat. They are high in carbohydrates and often high in calories and fat. This includes limiting the amount of cake, ice cream, pie, syrup, cookies, candies, and doughnuts you eat. Try to avoid adding table sugar, honey, or other sweeteners to your foods or beverages. Limiting sweets will help to keep your blood sugar in a healthier range.

For people with male anatomy, limit sugar to no more than 150 calories or about 3 tablespoons (38 grams) per day. For people with female anatomy, limit sugar to no more than 100 calories or about 2 tablespoons (25 grams) per day.

Fiber

A high fiber diet can help you have healthier blood sugar levels. Choose whole grains that are high in fiber as well as fruits, vegetables, beans, and lentils. Talk with your dietitian about how to increase fiber in your diet.

Foods that have little effect on blood sugar

Non-Starchy Vegetable Group — 1 serving equals 5 grams of carbohydrate

1 serving =

- 1 cup raw vegetables or salad greens
- ½ cup cooked vegetables
- ½ cup vegetable juice

These vegetables have few carbohydrate and little impact on your blood sugar.

Examples of non-starchy vegetables include:

- | | | |
|--------------------|-------------------------|-------------------|
| • Artichoke | • Cauliflower | • Snow peas |
| • Asparagus | • Celery | • Sugar snap peas |
| • Bean sprouts | • Cucumber | • Tomatoes |
| • Beets | • Green or yellow beans | • Turnips |
| • Bok choy | • Salad greens | • Yellow squash |
| • Broccoli | • Mushrooms | • Zucchini |
| • Brussels sprouts | • Onions | |
| • Cabbage | • Peppers | |
| • Carrots | • Radish | |



Meat and Meat Substitutes Group

Avoid meats that are high in saturated fat, such as bacon and sausage.

1 serving =

- 1 egg, 2 egg whites, or $\frac{1}{4}$ cup egg substitute
- 1 ounce turkey breast or chicken breast, skin removed
- 1 ounce lean lunch meat (with 3 grams or less of fat per ounce)
- 1 ounce fish fillet
- 1 ounce canned tuna in water
- 1 ounce shellfish
- 1 ounce lean beef, lamb, or pork (limit to 1 to 2 times per week)
- 1 ounce of cheese (limit cheese to 1 to 2 ounces per day)
- $\frac{1}{4}$ cup nonfat or low fat cottage cheese
- $\frac{1}{2}$ cup cooked beans (black beans, kidney, chickpeas or lentils): count as 1 serving of starch and 1 serving of meat
- 4 ounces tofu
- 2 tablespoons peanut butter
- 2 tablespoons seeds
- 1 ounce nuts



Fats

Limit the amount of fats you eat. Fats are high in calories and some contain saturated fats, trans fats, and cholesterol that increase your risk for heart disease.

1 serving (5 grams of fat) =

- 1 teaspoon oil (vegetable, corn, canola, olive, etc.)
- 1 teaspoon butter or margarine
- 1 teaspoon mayonnaise
- 1 tablespoon salad dressing
- 1 tablespoon cream cheese
- 2 tablespoons avocado
- 8 to 10 large olives
- 1 slice bacon



Sample menu for 45 grams of carbohydrate per meal

Breakfast				
1 whole wheat waffle	or	1 slice of toast	=	15 grams
1 cup low fat milk	or	1 tablespoon jelly	=	15 grams
½ large banana	or	1 small orange	=	15 grams
2 tablespoons natural peanut butter	or	1 hard boiled egg	=	0
Lunch				
3 ounces tuna fish	or	2 tablespoon natural peanut butter	=	0
½ bagel (2 ounces)	or	2 slices of bread	=	30 grams
1 tablespoon light mayonnaise	or	2 tablespoons hummus	=	0
½ cup cooked broccoli	or	1 cup celery sticks	=	0
½ cup fruit cocktail	or	¾ cup blueberries	=	15 grams
Snack				
½ cup vegetable juice	or	1 cup raw carrots	=	0
2 tablespoons sunflower seeds	or	1 tablespoon salad dressing	=	0
Dinner				
1 medium baked potato (6 ounces)	or	2 small dinner rolls	=	30 grams
3 ounces grilled chicken	or	3 ounces steak	=	0
1 tablespoon fat free sour cream	or	1 tablespoon salad dressing	=	0
½ cup California mixed vegetables (broccoli and carrots)	or	1 cup salad	=	0
1 cup strawberries	or	1 cup low fat milk	=	15 grams
Snack				
Sugar free gelatin	or	Sugar free popsicle	=	0
Total grams of carbohydrate for day			=	135 grams

Sample menu for 60 grams of carbohydrate per meal

Breakfast				
1 English muffin	or	1 cup unsweetened cooked cereal, such as oatmeal	=	30 grams
1 teaspoon margarine	or	4 English walnut halves	=	0
1 cup plain yogurt	or	1 cup fat free milk	=	15 grams
1 cup strawberries	or	1 small apple	=	15 grams
1 hard boiled egg	or	1 ounce turkey sausage	=	0
Lunch				
3 ounce low sodium turkey lunch meat	or	3 ounce lean ground beef or other meat	=	0
2 slices of bread	or	$\frac{2}{3}$ cup rice	=	30 grams
1 cup low fat milk	or	$\frac{1}{2}$ cup black beans	=	15 grams
1 cup salad greens	or	Cooked peppers, onions, tomatoes (no limit)	=	0
1 tablespoon salad dressing	or	1 tablespoon fat free sour cream	=	0
$\frac{1}{2}$ banana	or	1, 6-inch tortilla	=	15 grams
Snack				
1 cup sliced cucumbers	or	1 cup celery sticks	=	0
1 tablespoon salad dressing	or	2 tablespoons natural peanut butter	=	0
Dinner				
$\frac{1}{2}$ cup mashed potatoes	or	1, 6-inch tortilla	=	15 grams
3 ounces roasted, baked or broiled meat, fish or chicken	or	2 ounces lean ground beef or chicken	=	0
2 teaspoons margarine	or	1 ounce jack cheese	=	0
Salad with non-starchy vegetables and 1 tablespoon salad dressing	or	$\frac{1}{4}$ cup salsa	=	0
1 slice bread	or	$\frac{1}{2}$ cup refried beans	=	15 grams
$\frac{1}{2}$ cup corn	or	1 cup vegetable soup	=	15 grams
$\frac{1}{2}$ cup unsweetened canned fruit	or	$\frac{1}{2}$ small fresh mango	=	15 grams
Snack				
1 ounce cheese	or	Sugar free popsicle	=	0
Total grams of carbohydrate for day			=	185 grams

Healthy Meals for Healthy Blood Sugar



The Plate Method

The Plate Method is a simple way to keep carbohydrates to a moderate amount to improve blood sugar levels.

Calories come from carbohydrates, protein, or fat. Carbohydrates have the largest and quickest effect on blood sugar. Carbohydrate foods include:

- Whole grains and starchy vegetables
- Fruit
- Milk and yogurt

Sugar is a concentrated form of carbohydrate. Limit foods high in sugar in your diet.

Follow these 5 steps to eat meals with the Plate Method

1. Divide a 9-inch plate into 3 equal parts. Fill the first part of the plate with non-starchy vegetables.

These include:

- Artichoke
- Asparagus
- Bean sprouts
- Beets
- Bok choy
- Broccoli
- Brussels sprouts
- Cabbage
- Carrots
- Cauliflower
- Celery
- Cucumber
- Green or yellow beans
- Salad greens
- Mushrooms
- Onions
- Peppers
- Radish
- Snow peas
- Sugar snap peas
- Tomatoes
- Turnips
- Yellow squash
- Zucchini

Choose fresh or frozen vegetables that have no or little added salt, sugar, or fat in a variety of colors to get a variety of vitamins and minerals.

2. Fill the second part of the plate with whole grains, starchy vegetables, fruit, milk, or yogurt.

☐ Whole grain options include:

- Barley
- Brown rice
- Bulgur
- Oats, oatmeal
- Polenta
- Quinoa
- Whole grain breads
- Whole grain cereals
- Whole wheat couscous
- Whole wheat pasta
- Wild rice

☐ Starchy vegetable options include:

- Beans, such as black, great northern, kidney, navy, and pinto beans
- Black-eyed peas
- Corn
- Lentils
- Peas
- Potatoes with skin
- Sweet potatoes with skin

☐ Fruit options include:

- Apples
- Bananas
- Berries
- Grapefruit
- Grapes
- Kiwis
- Mango
- Melons
- Nectarines
- Oranges
- Peaches
- Pears
- Canned fruit in juice or light syrup
- 100% fruit juice, unsweetened
- Dried fruit

☐ Milk or yogurt options include:

- Fat free or low fat milk
- Light or plain Greek yogurt
- Plain yogurt

3. Fill the third part of the plate with protein foods.

These include:

- Beef, round and loin cuts, fat trimmed
- Cheese
- Chicken, no skin
- Cottage cheese, low fat
- Eggs
- Fish (eat fish at least 2 times per week)
- Pork, loin cuts, fat trimmed
- Turkey, no skin

4. Keep added fats to small amounts.

Fats improve the taste of many foods, help us feel full longer and provide essential nutrients. All fats are high in calories, so keep portions small:

- 1 to 2 teaspoons of oil, margarine, butter, or mayonnaise
- 1 tablespoon of salad dressing
- 1 to 2 tablespoons of avocado
- ¼ cup of nuts or seeds

5. Drink mostly water with meals and snacks.

Aim for at least 8, 8-ounce, glasses of water each day. Water:

- Is calorie free and has no carbohydrates.
- Is essential for your body's cells, tissues, and organs.

Plain coffee and tea are also calorie free and often will not raise your blood sugar. However, **caffeine can have an impact on blood sugar for some people with diabetes**. You may want to limit the amount of caffeine in your diet to see if it keeps your blood sugar in a safe range.

General tips

- Cook at home as much as possible, using low fat cooking methods, such as bake, broil, microwave, roast, steam, sauté, or grill. Restaurant foods and processed foods often have added sugar and more sodium.
- Choose fresh fruit or yogurt for dessert or try a low carbohydrate dessert recipe.
- Eat breakfast daily and space meals about 3 to 5 hours apart. Eat snacks if meals are more than 3 to 5 hours apart. Do not skip meals.
- Read food labels and ingredient lists on packaged foods. Avoid foods that have trans fats and partially hydrogenated oils.

Healthy Snacks for Healthy Blood Sugar

Snacking can be part of a healthy diet. This helps to control appetite. It also helps manage blood sugar, which is important if you have diabetes. **A snack, as opposed to a treat, is a “mini meal” meant to provide nutrients your body needs. Snacks that combine carbohydrates with fiber and protein and that are low in sugar are better at managing blood sugar and appetite.** These snacks can be healthy choices for everyone regardless if they have blood sugar problems.

Healthy snacks with about 15 grams of carbohydrate or 1 carb serving

- 1 small apple slices topped with 1 tablespoon natural peanut butter
- ½ cup tuna, chicken, or egg salad made with light mayonnaise in ½ of a 100% whole wheat pita
- ½ large banana with a hard boiled egg
- ½ cup cooked oatmeal with ¼ cup chopped nuts
- 5 to 6 whole wheat crackers with 1 ounce cheese
- 1 cup non-starchy vegetables (carrots, cucumber, sugar snap peas, bell pepper strips) and ⅓ cup hummus
- 2 tablespoons raisins and ¼ cup roasted unsalted almonds
- ½ cup low fat cottage cheese and ½ cup fruit, such as pineapple or peaches
- ¾ cup blueberries and ¼ cup walnuts
- Celery topped with 1 tablespoon natural peanut butter and 2 tablespoons raisins
- 1 slice 100% whole wheat toast with 1 scrambled egg and ½ teaspoon butter
- ½ cup grapes and 1 ounce cheese
- ½ whole wheat toasted English muffin, topped with 1 tablespoon cashew butter
- 3 cups popcorn with less than 3 grams of fat per serving and 1 ounce cheese



Standard portions

When you are away from home and do not have measuring cups and spoons handy, it helps to know what a standard portion looks like.



1 teaspoon



1 tablespoon



2 tablespoons



$\frac{1}{4}$ cup



$\frac{1}{2}$ cup



1 cup



1 ounce

Alcohol and Diabetes

People with diabetes must be extra cautious as they consider whether to drink alcohol. Alcohol may have negative effects on your blood sugar and overall health. The American Diabetes Association suggests that you ask yourself these basic questions before drinking:

- Am I able to keep my blood sugar in a safe range?
- Does my healthcare provider agree that I do not have health problems that alcohol could make worse?
- Do I know how alcohol can affect me and my diabetes?

If you answer “yes” to all 3 questions, it is OK to have a drink now and then, but we recommended that you select drinks that are lower in alcohol and sugar.

Your body and alcohol

After you drink, alcohol goes from your stomach straight into your bloodstream. It then goes to your liver where it is slowly broken down. It takes about 2 hours for a 150 pound person to break down 1 drink. 2 drinks would take twice as long. If you drink alcohol faster than your body breaks it down, the alcohol affects your brain, and you may feel or act drunk. If you drink 3 or more drinks each day, you may develop liver disease and other health problems.

Some people with diabetes should not drink alcohol:

- If you have nerve damage from diabetes, drinking can make it worse.
- If you have diabetic eye disease, heavy drinking (3 or more drinks per day) may make the disease worse.
- If you have a high level of fat, called triglycerides, in the blood, drinking can make it worse.

Effects of alcohol on blood sugar

Drinking alcohol can raise your blood sugar if you have drinks mixed with sweet mixers or fruit juices. Examples include daiquiris, grenadine, fruit juices, margaritas, ice cream drinks, and wine coolers. Liqueurs and port wines are also high in sugar. It is wise to avoid these types of drinks.

Alcohol can also have the opposite effect and cause low blood sugar. If you have diabetes and take insulin or diabetes pills, you risk low blood sugar when you drink alcohol. Normally, when no alcohol is in the blood, your liver helps to keep blood sugar from going too low by slowly releasing glucose into your bloodstream. Alcohol prevents this release of glucose because the liver is too busy breaking down the alcohol. **To protect yourself, never drink on an empty stomach.** Drinking after exercise may further increase your risk of having low blood sugar because exercise helps to lower your blood sugar.

Heavy drinking over time can hurt your liver, so it is not able to make glucose as well. When this happens, your blood sugar will be harder to keep in a safe range.

Glucagon does not help low blood sugar caused by drinking. Glucagon works by getting your liver to release more glucose into your bloodstream, but alcohol stops this process. You will need to treat your low blood sugar with simple carbohydrates, such as glucose tablets or gels. If you pass out, you will need medical help.

Alcohol and weight management

Alcohol is very high in calories, so it is not a good choice if you are trying to control your weight. Alcohol has almost twice as many calories as carbohydrates and protein.

Alcohol and serving sizes

People with female anatomy should have no more than 1 drink a day, and people with male anatomy should have no more than 2 drinks a day.

Alcoholic Beverage	Serving Size (1 drink)
Beer: various light, draft, and craft brewed	12 fluid ounces
Distilled spirits: vodka, rum, gin, whiskey (80 or 86 proof)	1½ fluid ounces
Liqueur, coffee (53 proof)	1 fluid ounce
Sake	1 fluid ounce
Wine: <ul style="list-style-type: none">Dessert (sherry)Dry, red, or white (10%)	3½ fluid ounces 5 fluid ounces

Better choices

Some drinks are better choices for people with diabetes. **Select drinks that are lower in alcohol and sugar**, such as:

- Distilled liquors, like gin, vodka, or whiskey with sugar free mixers (club soda, seltzer, diet tonic, diet soda, or water)
- Light beer
- Dry wines or wine spritzers (2 ounces of wine mixed with sparkling water, club soda, or diet soda)

Tips for safe alcohol use

- Check with your healthcare provider or pharmacist to see if alcohol is allowed with your prescribed medicine.
- Drink only when you are able to keep your blood sugar within a safe range.
- Limit alcoholic drinks to 1 per day for people with female anatomy and 2 per day for people with male anatomy.
- Sip slowly to make the drink last.
- Never drink on an empty stomach, especially if you take insulin or pills for your diabetes.
- Choose distilled liquors with sugar free mixers, light beer, dry white wine, or wine spritzers. Avoid sweetened drinks.
- Check your blood sugar after you drink to see how alcohol affects you. Remember, this may be as much as 6 to 12 hours later.
- Wear medical identification. If you have low blood sugar, you want others to know that you have diabetes and are not drunk.
- Do not drink and drive.

Diabetes and Exercise

Exercise is key to managing your diabetes

Getting started

If you have not been exercising, **talk with your healthcare team before you start** to understand any special precautions or limitations. For your safety, follow suggested limits and stop exercising right away if you feel pain or pressure in your chest, neck, or jaw; feel dizzy or light headed; have irregular heartbeats; or become too tired.

Benefits of consistent exercise

- May reduce need for diabetes medicines.
- Improves blood sugar levels.
- Improves your body's ability to use its own insulin.
- Helps you feel better and have more energy.
- Lessens your risk of diabetes complications.
- May help lower lipid levels (cholesterol and triglycerides).

Testing your blood sugar

You should test and record your blood sugar levels both before and after exercise to understand the effect. This is particularly important any time you start or increase your exercise routine. For some people with diabetes, especially those taking insulin, **there may be a risk of hypoglycemia or low blood sugar with exercise.** The amount or type of insulin may need to be adjusted or a carbohydrate snack may be used to increase blood sugar.



Your exercise plan

- **Begin slowly and increase the time and intensity of your exercise over time.**
- Choose comfortable exercises that you like.
- There is no need to spend a lot of money on exercise equipment.
- Walking, swimming, biking, running, and jogging are all good choices.
- Check with your local recreation center or YMCA for available group exercise classes.
- Wear socks and shoes that fit well and support your feet.
- Dress in layers that can be removed as you warm up.

For best results

- **Get 150 minutes of moderate intensity, cardiovascular exercise each week.** Break this time into increments that work best for you, such as 30 minutes, 5 times a week.
- **Start any exercise program slowly.** For example, begin with 5 to 10 minutes, 2 to 3 times a week. Each week following, add 1 day, as well as 5 minutes per session until you reach 150 minutes total.
- **Include a warm up and cool down period with every session** to prevent injury and allow your body to adjust to your activity. It is also a good idea to stretch after cooling down to help with flexibility and reduce risk of injury.
- **Add strength training exercises to your exercise program 2 to 3 days per week** for additional weight loss and improved insulin sensitivity. Examples include using resistance bands, lifting weights, using weight machines, or using your body for resistance.
- Work up to a consistent, comfortable weekly schedule that works for you, remembering that some level of daily exercise will better balance your blood sugar.

Exercise at the right pace

Do not push yourself too hard. If you are walking, you should be able to say hello to your neighbor or a person passing you on the sidewalk without feeling short of breath. Exercise at a pace that makes your body work, but does not cause you pain or exhaustion.

Part of your routine

You may see some weight loss when you first begin to exercise, but then it seems to stop. Do not be discouraged. Fat takes up more space than muscle. As you exercise and build up muscle, you will become more fit. This helps your body use insulin better. You may not see many pounds come off, but you may notice that your clothes fit better, and your blood sugar stays in a safe range.

Finding time to work exercise into your daily routine can be hard. Stick with it, and you will see your effort rewarded. Choose something you feel good about doing. Find a friend who is willing to be your exercise buddy, so you can keep each other on track and motivated. The benefits of exercise are worth the effort. Your blood sugar and total body health will be better for it.



Dealing with Sick Days

How being sick can impact blood sugar

Although no one plans it, everyone gets sick from time to time. The fall and winter months are the most common times of the year for illness. The person with diabetes, like everyone else, will have minor illnesses such as:

- Colds
- Viruses
- Diarrhea
- Flu
- Sore throats
- Infections
- Sun burns

Minor illnesses like these can make your blood sugar become too high or low. People with female anatomy may also notice changes in blood sugar levels during their menstrual cycles.

To understand how illness or a menstrual cycle can affect blood sugar levels, think of them as a stress on the body. Stress usually raises blood sugar. The person with diabetes works hard to balance medicine (insulin or pills), diet, and exercise. The added stress of a cold or other illness upsets this balance. Your usual medicine, diet, and exercise are then less effective keeping your blood sugar levels in a health range.

Think about prevention, planning ahead, and being prepared for sick days. This will make them easier to manage.

Prevention

Use these guidelines to help you create a plan to prevent illness:

- 1. Talk to your healthcare provider about the vaccines you need to maintain your good health.** Vaccines they may recommend include:
 - COVID-19
 - Hepatitis B
 - Influenza (for flu)
 - PCV20 or PCV15 (for pneumonia)
 - PPSV23 (for pneumonia)
 - RSV (for respiratory syncytial virus)
 - Tdap (for tetanus, diptheria, and pertussis)
 - Zoster (for shingles)
- 2. Keep blood sugar levels in your “target range” (80 to 130 mg/dL fasting).** Watch for patterns of high or low blood sugar. Work with your provider to change your diabetes medicines (insulin oral), diet, and exercise to keep your blood sugar in a safe range. Many people find that they are more likely to get ill when their blood sugar stays outside the target range.
- 3. Drink at least 8, 8-ounce glasses of water or other liquids each day.**
- 4. Take all of your medicines as prescribed.** Do not skip or double up on any medicine unless you are advised to do so by your provider.

5. **Treat any illness in its early stages to prevent it from getting worse.** Report signs of illness or infection early to your provider. These include:
- A fever of more than 100.5 degrees F or 38 degrees C for more than 24 hours
 - Nausea
 - Vomiting
 - Diarrhea
6. **Always wear some form of medical identification.** A medical ID speaks for you when you are not able to. Good choices include:
- **A bracelet:** This is the best choice since it can be easily seen.
 - **A wallet card:** Place this card next to your driver's license. It should list your:
 - Name
 - Address and phone number
 - Healthcare provider's name and phone number
 - All of the medicines you are taking
 - Emergency contact's name and phone number
 - **Medical ID app:** Medical ID is pre-installed on iPhone as part of the Health app. It is free to download for Android phones. The app is visible on your phone's lock screen, allowing first responders to access your medical information and emergency contacts.



Preparing for sick days

1. **Keep at least a week's worth of diabetes supplies on hand.** This includes:
- Glucose test strips
 - Lancets
 - Alcohol swabs
 - Cotton balls
 - Diabetes medicines (insulin or oral)
 - Syringes or pen needles
 - Extra batteries for glucose meter or insulin pump
 - Ketostix (type 1 diabetes)
 - Glucagon emergency kit (type 1 diabetes)
 - Insulin pump supplies (for pump users)
2. **If you do not already have a sick day meal plan, make an appointment with a dietitian to make an individualized plan.** Stock your kitchen with soft and liquid foods that can be used in your sick day meal plan. Some good choices include:
- Bouillon cubes and broth soups
 - Gelatin and pudding (sugar free and regular)
 - Hot cereals like Cream of Wheat
 - Hot chocolate (sugar free and regular)
 - Instant custard mix
 - Instant mashed potatoes
 - Popsicles (sugar free and regular)
 - Saltine and graham crackers
 - Diet sodas like Diet 7UP, Diet Pepsi
 - Regular sodas like Coke, Sprite, Ginger Ale
 - Tea bags
 - Unsweetened fruit juices

3. Check the supplies in your medicine cabinet. Keep the following on hand:

- Thermometer
- Antacid
- Aspirin
- Acetaminophen (Tylenol)
- Lip balm/petroleum jelly
- Kaopectate anti-diarrheal medicine
- Vaporizer/humidifier
- Sugar free cough syrup or lozenges
- Rectal suppositories (for nausea)
- Glucagon (for severe low sugar — insulin users)

Talk with your healthcare provider or pharmacist for help in choosing over the counter products. Remember, many of these products have sugar, alcohol, and other drugs in them. These can raise both your blood sugar and blood pressure.

4. Make a list of the following phone numbers. Keep this list by the phone for quick and easy use. Include:

- Healthcare provider's office number
- Pharmacy or pharmacist
- Local family member
- Friend or neighbor
- Local hospital emergency room
- Diabetes nurse

Sick day plan

Now that you have reviewed how to prevent and plan ahead for sick days, it is time to review what to do when you become ill. At the first sign of illness, begin using your sick day plan. Remember, even a minor illness or stress can lead to a diabetes emergency that may require a hospital stay.

You may also want to put your sick day plan into use for:

- Dental work
- Tooth removal
- Oral surgery
- Tests/procedures
- X-rays of stomach or bowel area
- Same day or outpatient surgery

Your prompt action can and will make a difference. These sick day guidelines will help you:

- 1. Check your blood sugar more often – at least every 4 hours.** Aim to keep your blood sugar under 200 mg/dL. There may be times when you will need to check your blood sugar hourly. Record all blood sugar levels. Keep this record by the phone, so you are ready to share it with your provider.
- 2. If you have type 1 diabetes, check your urine ketones.** Use a foil wrapped strip, such as Ketostix, to check every time you urinate. Record these results in your "Blood Sugar Record." Talk with your provider if you do not know how to check your ketones.
- 3. NEVER stop taking your diabetes medicine (insulin or oral).** Take your usual dose(s) unless your provider has told you differently. When ill, you may need more diabetes medicine to help manage your blood sugar. Some people wrongly believe that because they are ill and eating less, they need little or no medicine. High blood sugar can lead to a diabetes emergency. You may need more insulin or extra shots when ill. Your body sees the illness as a stress and usually more medicine (insulin or oral) is needed to manage your blood sugar.
- 4. Follow your sick day meal plan:**
 - **Eat frequent small meals (every 2 to 3 hours).** You need to eat the same amount of carbohydrate that you normally do. Soft and liquid foods may be more easily tolerated by your stomach. See the handout, "Sick Day Carbohydrate Replacement," for some "replacement" carbohydrates on sick days.
 - **Drink more liquids when ill.** Try to drink 12, 8-ounce glasses of liquid each day. Take small sips of liquids or suck on ice chips if you are nauseated.
 - A loss of body fluid (dehydration) and sodium and potassium (electrolytes) can cause serious problems when you have a fever, diarrhea, or vomiting. Weigh yourself every day when ill to see if you are losing weight and **drink liquids that contain sodium and potassium** to replace these minerals in your body. **Liquids high in sodium** include sports drinks like Gatorade and Powerade, club soda, tomato juice, broth, or bouillon. **Liquids high in potassium** include sports drinks, grapefruit juice, orange juice, or tomato juice.
 - › **Drink 4 to 6 ounces ($\frac{1}{2}$ to $\frac{3}{4}$ cup) of sugar free liquids every hour if your blood sugar is 240 mg/dL or higher.** Liquids include water, ice chips, club soda, sports drinks, coffee, tea, and broth.
 - › **Drink 4 to 6 ounces ($\frac{1}{2}$ to $\frac{3}{4}$ cup) of liquids with sugar every hour if you cannot eat your usual diet or soft foods and your blood sugar is below 240 mg/dL.** Liquids with sugar include 7UP, Sprite, tea with honey, and Kool-Aid. This will help you get some calories with your fluids.
 - › Write down your fluids and amounts you are drinking in your "Sick Day Record."
 - **If you are vomiting:**
 - › **Stop drinking liquids for 1 hour.** This will let your stomach rest.
 - › Take a suppository for nausea. If nausea happens often, talk with your provider about getting a prescription for use at home.
 - › Rest in a reclining chair. Do not lie flat.
 - › **After 1 hour**, try small sips of lemon-lime soda, such as 7UP or Sprite, over ice chips every 10 to 15 minutes.
 - › **If vomiting continues for 4 or more hours**, call your provider or go to the emergency department.

5. **Keep a list of how you are feeling.** Write down your signs and symptoms in your "Sick Day Record." Be ready to share this information with your provider.
- **Temperature:** Current temperature? Is fever present? How long? How high? Have you taken aspirin or acetaminophen (Tylenol)?
 - **Vomiting:** How many times? How long since you last vomited? Have you been able to eat or drink anything? Have you taken any medicine for nausea or vomiting?
 - **Cough:** Are you coughing up yellow or green mucous? Have you taken cough syrup or lozenges?
 - **Diarrhea:** How many times? How long since last episode? Have you taken anti-diarrheal medicine?
 - **Ketones:** Do you have a moderate or large level of ketones in your urine?
6. **Call your provider early in the illness.** Together you can work to relieve symptoms and manage your blood sugar. If you are unable to reach your provider by phone, call or go to the nearest emergency department. This is very important if you have been vomiting or have had diarrhea for 4 or more hours.
- Call your provider if you are unsure of what to do or have:**
- Blood sugar greater than 240 mg/dL for more than 1 day
 - Moderate or large ketones
 - Vomiting or diarrhea for 4 or more hours
 - Severe pain of any kind
 - Fever of more than 100.5 degrees F or 38 degrees C
7. **If you live alone,** call a family member or close friend. Let them know you are at home and sick. **Set up a calling system, so you are in touch by phone every 2 to 4 hours.** Sometimes you may not realize how ill you are. You may need someone to come and stay with you.
8. **Stay at home and get plenty of rest.** Do not risk your health or the health of others by going to work ill. 1 or 2 days of rest at the start of an illness may prevent the loss of several days work later on.
9. **Do not exercise when you are ill.** Postpone exercise until you are well.

Although sick days do not happen often, the person with diabetes can learn how to manage them. Take time now to review your personal sick day plan. Being prepared to handle ill days and putting into action your sick day plan is a good way to begin.

By following these sick day tips, you may be able to avoid going to the hospital. You can make a difference. Your healthcare team can help you get started.

Sick Day Carbohydrate Replacement

When you are sick, look for ways to balance carbohydrates and protein to get the nutrition that your body needs.

- Eat the same amount of carbohydrates as you do on days that you are well. People with female anatomy need about 30 to 45 grams per meal. People with male anatomy need about 45 to 60 grams per meal.
- Try to drink 12, 8-ounce glasses of liquid each day.
- Eat small meals of carbohydrates if you have nausea or a poor appetite.

Follow a carbohydrate replacement plan. To use, replace the carbohydrate servings from your usual meal plan with any of the carbohydrate foods listed below. These carbs are easier on your stomach when you are sick.

Carbohydrate

All items listed are a 15 gram serving.

Note that some items are not diet or sugar free to get more carbohydrates in smaller amounts of food.

Starch Replacement

- ½ cup regular sweetened Jell-O or other brand gelatin (not diet or sugar free)
- ½ cup or 4 ounces of regular soda (not diet)
- 1 slice toast
- 2 slices light bread, toasted
- 3 graham cracker squares
- 5 vanilla wafers
- 6 saltine crackers
- ¾ cup dry unsweetened cereal
- 1 cup broth soup
- ¾ cup cream soup
- ½ cup mashed potatoes
- ⅓ cup plain rice
- ½ cup cooked cereal

Fruit Replacement

- ½ cup unsweetened applesauce
- 1 regular popsicle (half of 2 stick popsicle)
- 1 frozen fruit juice bar
- ⅓ cup cranberry, grape, or prune juice
- ½ cup apple, grapefruit, orange, or pineapple juice
- 2 teaspoons honey or sugar

Milk Replacement

- ½ cup baked custard
- ½ cup vanilla ice cream
- ¼ cup regular pudding
- ½ cup sugar free pudding
- ½ cup eggnog
- 1 cup sugar free fruited yogurt

Protein

If your stomach can tolerate it, include foods from the Meat/Meat Substitutes Group, such as eggs, cottage cheese, baked chicken, turkey, or ground beef.

Testing Urine for Ketones

With type 1 diabetes, it is important to check your urine for ketones. In addition to learning what ketones are, you will also need to know when, why, and how to check for them. Your nurse will teach you how to check for ketones.

About ketones

Ketones are a warning sign that the body is using fat for energy. Normally, ketones are not found in the bloodstream or urine. When ketones are found in people with diabetes, it is a sign that there is not enough insulin and blood sugar levels are too high.

Your body is made up of many different kinds of cells. These cells need energy to grow and live. The energy comes from the foods you eat. Most of the food you eat is broken down into a form of energy called glucose. For glucose to get into your body's cells, insulin is needed. When there is not enough insulin, your body uses other energy sources, such as fat.

Fat is the most available source of energy for your body to use. Ketones are the substances that are made when fat is broken down by the body. Since the body has no use for ketones, it filters them from the bloodstream through the kidneys and into your urine.

When there are too many ketones in the blood, dehydration or loss of body fluids occurs. The kidneys cannot handle the large amount of ketones, and they build up in the blood. This can lead to a diabetes emergency, called **diabetic ketoacidosis (DKA)**, that needs treatment right away.

When to check for ketones

Follow the instructions from your healthcare provider as to how often to check your urine for ketones.

- **If you have type 1 diabetes**, check your urine for ketones:
 - Any time your blood sugar is greater than 300 mg/dL or more than 200 mg/dL during pregnancy.
 - If you are sick with nausea, vomiting, diarrhea, or other illnesses that cause fluid loss.
 - Every morning if you are pregnant.

Remember, ketones in your urine are a warning sign. Ketones in small amounts are usually not harmful. However, they may be the first sign of diabetic ketoacidosis (DKA).

- **If you have type 2 diabetes**, you probably will not need to check for ketones. Your provider will go over this with you if it is needed.
- **If you are pregnant**, ketones may be a warning sign that you are not eating enough. This may mean that you need to eat more for your bedtime snack. Review your meal plan with your dietitian.

Ketone testing products

Ketone tests can be purchased at your local pharmacy. There are several products available. We recommend that you select foil wrapped strips, such as Ketostix, because foil wrapped strips store longer. If you use another product, carefully read the product's directions for use. Replace if the expiration date has passed, which is often 6 months after opening the container.

How to check for ketones

1. Wash your hands with soap and water.
2. Gather your supplies: timer or clock with second hand, test strip, and urine sample. Check the expiration date of the test strip. Do not use if expired.
3. Remove the test strip from the foil package. Be careful not to touch the test pad area.
4. Collect a sample of your urine in a clean container.
5. Dip the strip's test pad into the urine and remove it quickly. You may also pass the test pad through your urine stream.
6. Tap the test strip to remove extra urine.
7. Wait 15 seconds or as directed by the package instructions for the test pad to change color.
8. Compare the test pad to the color chart on the test strip bottle. This gives you a range of the amount of ketones in your urine. Ignore any color changes that happen after 15 seconds.
9. Discard the used test strip.
10. Record your results.

Test results

Ketones in small or trace amounts may mean that ketone buildup is starting. Retest your urine for ketones in a few hours.

Call your provider right away if your result is moderate to large. Moderate to large results are a dangerous sign that your blood sugar is not staying in a safe range. You may need more insulin and liquids, especially water. Never exercise when your ketones are moderate to large and your blood sugar is high. Recheck your blood sugar level until it is 200 mg/dL or less.

Stress and Diabetes

About stress

Stress is any feeling that bothers you or puts a strain on your body or mind. Some people describe stress as an uncomfortable feeling of tension. Others describe it as a feeling of excitement and challenge. Stress is a part of everyday life and everyone has it. Life is not perfect and many of its challenges can be stressful.

Stress can be both good and bad:

- Examples of “good” stress include getting married, the birth of a grandchild, or a promotion. These types of stress can add interest and excitement to your life.
- Examples of “bad” stress include traffic tickets, doing poorly on a test in school, going through a divorce, or the death of a loved one. These types of stress can be upsetting and hard to deal with.

The body’s response to stress

When the body is under stress, it releases hormones made by the endocrine glands. The body also has a rise in heartbeat, blood pressure, and blood sugar. You may have heard this reaction called the “fight or flight” response. Release of these hormones gives a quick source of energy for coping with stress.

These body changes can be harmful for anyone, but high blood sugar can be especially dangerous for people with diabetes. **Stress can easily upset the balance of medicine, diet, and exercise you use to manage your blood sugar.** Not keeping your blood sugar in a safe range may lead to diabetes emergencies and complications over time.

Signs of stress

High blood sugar caused by stress often causes warning signs. Learn to identify how your body shows signs of stress. Recognizing stress is the first step in dealing with it.

Do any of these signs of stress sound familiar?

- | | | |
|-----------------------------|-------------------------------|------------------------------|
| • Lacks emotion or interest | • Feeling discouraged | • Prolonged frustration |
| • Avoiding people | • Feeling helpless | • Rapid heartbeat |
| • Clenched teeth | • Frequent self criticism | • Rapid or shallow breathing |
| • Constant tiredness | • Headaches | • Sweating |
| • Crying spells | • Hunched, tight shoulders | • Tight mouth or jaw |
| • Diarrhea | • Neck stiffness or tightness | • Tightened fists |
| • Emptiness | • Nervous laughter | • Twitching |
| • Feeling bored often | • Problems sleeping | • Upset stomach |

You may have only a few or several signs of stress. Knowing how you feel when you are under stress is an important step toward learning to deal with it. Take time to answer the following questions for yourself:

- Can you tell when you are under stress?
- What causes stress for you?
- What situations are stressful for you?
- What are 2 or 3 personal signs of stress for you?
- How do you usually deal with stress?
- Do you feel overwhelmed or like you are running on empty? How do you handle these feelings?

Ask your provider for a referral to talk to a mental health specialist if you are having signs of stress, anxiety, or depression for more than 2 weeks.

Diabetes and stress

It is common to feel overwhelmed about managing diabetes with everything else that is going on in your life. You may feel your body is no longer under your control. It is natural to sometimes feel angry, guilty, depressed, frustrated, and helpless about having diabetes and managing it day by day.

Your thoughts, feelings, and attitudes about diabetes and taking care of yourself have a powerful effect on your body. A good place to start is to accept diabetes as a challenge. Next, make a plan for how to live well with diabetes and manage stress. Your plan should include:

- A healthy diet
- Exercise
- Ways to stay positive
- Relaxation techniques and stress management
- A commitment to lifelong learning

You may want some help to learn how to deal with stress. Challenge yourself to learn how to relax. Use stress management techniques and exercises, such as meditation or guided imagery. Look in your community for courses on a variety of stress or behavior modification techniques. Ohio State Integrative Health also has free resources to help: wexnermedical.osu.edu/integrative-health/resources.

10 ideas to help cope with stress

The best way to live with stress is to prevent it. When that is not possible, learn to reduce it as well as control how you respond to it.

1. **Prevent or avoid stress.** Do not put yourself in situations or with people who you know cause stress. Try to catch yourself before you overreact or get angry. Anger can change energy from positive to negative. Although you cannot always change what happens to you, you can control how you react or respond to what happens.
2. **Think positively.** Negative thoughts often end up as negative results. Try to find at least 1 positive thing, even in the most challenging situations. Practice saying “I can,” “I will,” and “I will give it a try.” Positive thoughts often lead to positive results.

3. **Find someone you can talk to.** Talk openly to someone you trust when something is bothering you. Suffering in silence causes stress to build up inside. Do not be afraid to ask for what you want. Sometimes finding a good listener lets you “think out loud.” This can be very helpful and lets you look at a problem differently. After thinking out loud, learn to listen to suggestions and advice. Your good listener may be your spouse, friend, co-worker, spiritual leader, or a mental health specialist.
4. **Make time for yourself.** Plan some time every day just for you. If you are not used to doing this, start with 15 minutes a day. Take time to read that book you have had for 6 months, treat yourself to a movie, or indulge in a leisurely bubble bath. Be adventurous! Try a new hobby or get involved with a club you want to join. Find time to enjoy life’s simple pleasures and learn how to be kind to yourself.
5. **Set realistic goals.** Do not set yourself up for failure by setting unrealistic goals. Begin with daily goals then move to weekly or monthly goals. Start with small goals and celebrate your successes. Keep your goals simple, practical, and just for you. Soon they will become part of your daily routine. Part of goal setting is being able to identify what is most important. Do you often feel that the clock or other people set your agenda? Take time to concentrate on what is important to you. You will probably find several things that you do out of habit, which are not necessary and a waste of time and energy. Finally, recognize that you are human. If you do not reach your goal, reevaluate, and start again. Remember, each day is a new beginning.
6. **Exercise.** An exercise program is a great way to relieve stress. Exercise also helps control weight and blood sugar levels. Both are important in managing diabetes. Exercise also gives you an opportunity for time to yourself. If you have not been exercising, check with your provider first. Choose an activity you enjoy doing. Be sure to include a warmup and cool down period. Slowly work up to exercising at least 30 minutes, 5 days a week. Be sure to protect your feet and wear comfortable clothes. There also are some simple exercises you can use when you feel stressed. These include muscle relaxation, deep breathing, yoga, and meditation. Consider a YMCA, community center, or local school for group sports.
7. **Get support.** Join a diabetes support group in your community. Many communities also have support groups for families of people with diabetes. Many support groups are directed by local or national diabetes organizations. Diabetes support groups allow you to meet other people who face some of the same challenges you do living with diabetes. Community and spiritual groups can also provide an opportunity to meet people, make new friends, and take a few minutes to do something just for you.
8. **Follow a healthy diet.** What we eat affects our health. People with diabetes see this every day as they check their blood sugar levels. Part of having a healthy mind is a healthy body. Diet is the cornerstone of diabetes management. It is also an area of challenge. It is important to follow your diabetes meal plan. If you are having problems or have questions, make an appointment with a dietitian (preferably a Certified Diabetes Care and Education Specialist or CDCES). Together, you will review and change your meal plan as needed. A dietitian can make suggestions for changes and give you new ideas to make your meal plan more realistic to follow.
9. **Embrace humor.** Every day we have opportunities to laugh at ourselves. Laughter helps reduce stress and tension. It is important to find humor in life’s everyday challenges. Make sure you know the difference between laughing at or with someone. Humor begins with you. Can you laugh at yourself? Can you share laughter?

10. Commit to lifelong learning. New information, research, and technologies are being discovered every day about diabetes. To learn more about diabetes:

- Keep all appointments with your healthcare providers. Most people see their diabetes provider every 3 to 4 months. This is a good time to ask questions and learn more about diabetes.
- Make an appointment with a diabetes educator to review your diabetes plan, learn a new skill, or just talk about your diabetes. You may be pleasantly surprised to learn about new foods and products (sugar substitutes), new glucose meters that are quicker and easier to use, and better ways to take your medicines (insulin by pumps, timing, etc.). If you have an interested spouse, family member, or friend, bring them along and make it a family affair.
- Attend diabetes meetings and classes.
- Join a diabetes support group in your community or online.
- Become a volunteer at a local diabetes agency.
- Subscribe to diabetes magazines, such as "Diabetes Self-Management" or "Diabetic Living."

In summary

Nothing stays the same for very long and change is a part of life. Change is closely linked with stress. Although we cannot always control the changes and stresses in our lives, we can choose how to respond to them. Imagine how boring our lives would be if we never had change!

Your emotional health is closely linked with your physical health. Health in both areas requires learning how to recognize and manage stress. Since stress is a natural part of everyone's life, it is important for you to think about what causes you stress, whether it is diabetes or another part of your life. Learning how to recognize your own personal stress symptoms is the first step. Begin to take an active role in decreasing the effects of stress on your body and in your life.

Daily Foot Care and Foot Safety

Your feet are very important. Having healthy feet takes work, but it is well worth the time and effort. The healthy habits you begin today can help protect your feet for years to come. To take good care of your feet, have a plan for daily care, nail care, and first aid, choose good footwear, and have your healthcare provider check your feet at each visit.

Daily care

Every day:

1. **Look at your feet** and pay special attention to the:

- Tops and bottoms
- Sides and heels
- Toes and toe nails
- Between each toe

You may need to use a mirror or a magnifier to help you see parts of your feet and toes. If you cannot reach or see your feet, ask a family member, friend, or caregiver to check your feet.

Watch for these changes:

- Redness
- Infection, sores
- Ingrown toe nails
- Dryness
- Cracks in the skin
- Blisters

If you notice any of these changes, contact your provider.

2. **Wash all parts of your feet** with a mild, superfatted soap, such as Dove or Basis, a clean wash cloth, and warm water. Be sure to rinse off all the soap because it can build up and dry out your skin.
3. **Dry your feet well** using a clean towel. Gently pat dry all areas of the foot and **carefully dry between your toes**.
4. **Apply lotion to your feet.** Do not put lotion in between your toes. Choose a lotion that has lanolin and is alcohol-free. If sweaty feet are a problem, lightly sprinkle on cornstarch, arrowroot powder, or baking soda after drying.

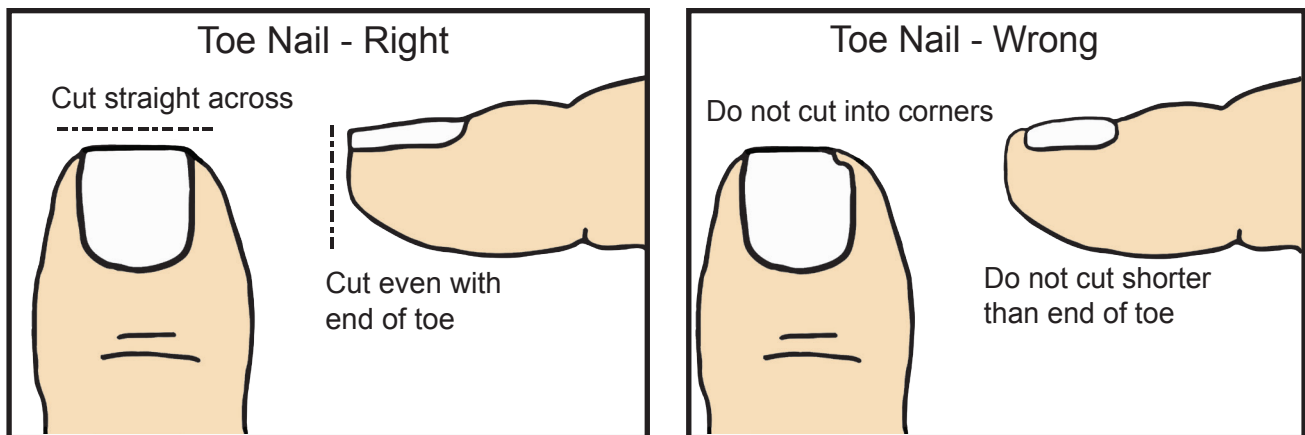


Nail care

Trimming your toe nails can be hard to do if they are thick or brittle. If you have poor vision or cannot reach your feet, it may also be hard to trim your own nails. If you have any of these problems, a family member or foot doctor (podiatrist) will need to help you with your toe nail care.

If you can trim your own nails, follow these guidelines:

- File your toe nails straight across using an emery board. File your nail to the shape of your toe.
- Avoid filing your toe nails too short as this can lead to ingrown nails.
- If your toe nails are thick and hard, cut the nails after a bath or shower when the nails are softer.
- Never use sharp or pointed objects to cut your toe nails. Even a metal file can be dangerous.
- Use good light when trimming or filing your nails.
- Be careful and cut your toe nails and not your toes or feet.



First aid for feet

Accidents and injuries can happen to anyone. Check your feet daily so that you can treat foot sores or injuries early. If you injure your foot or notice a sore, follow these guidelines:

1. Clean the area with mild soap and warm water.
2. Pat the area dry with a clean towel.
3. Do not use antibiotic ointments, such as Neosporin or Bacitracin, unless ordered by your provider.
4. Cover the area with a plain gauze pad.
5. Wrap gauze around your foot and secure the gauze with tape.
6. Do not put tape on your skin.
7. Stay off of your feet.

Contact your provider if:

- You see signs of infection, such as redness, foul smell, or pus.
- Your foot sore or injury is not better in 24 hours.

Protect your feet

Feet are prone to injury, and it is very important to protect them.

- **Do not** go barefoot.
- **Do not** use heating pads, space heaters, or hot water bottles on or near your feet.
- **Do not** use harsh chemicals, such as iodine, corn removers, betadine, alcohol, or hydrogen peroxide. These can burn your healthy skin.
- See your foot doctor (podiatrist) regularly.
- Gently file calluses with a pumice stone, file, or emery board.
- Carefully file your toe nails straight across using an emery board.
- **Do not** wear tight fitting clothes, such as girdles, garters, slacks, hose, or socks. These can decrease circulation to your feet.
- **Never** soak your feet. This dries out the skin.
- **Do not** cut your calluses or corns.
- **Do not** expose your feet to very hot or cold temperatures.

Choose good footwear

Socks

- Wear socks that are made up of 70% to 90% natural fibers, such as cotton, silk, or wool. They allow your feet to breathe. Synthetic fibers trap moisture against your feet.
- Wear white socks, so you can easily see drainage or blood.
- Wear clean socks every day.
- Do not wear socks that have been patched, have holes, or have thick seams. These areas can cause pressure and could lead to a foot sore.
- Do not wear tight socks or hose.
- Wear socks that match the shape of your foot.
- Always wear socks with shoes.

Shoes

Every day:

- Check the inside of each shoe for objects, such as stones, before putting on your shoes.
- Check your feet after taking off your shoes for red areas. Red areas could mean the shoes are too tight.
- Avoid heels over 1 inch high.
- Never go barefoot indoors or outdoors.
- If possible, do not wear the same shoes every day.
- Change your shoes and socks if you are on your feet for more than 4 hours at a time.



CDC/Amanda Mills

When buying new shoes:

- Always have both feet measured.
- Choose a tie shoe that you can adjust.
- Check the toe box area to be sure it is wide enough.
- Choose soft leather or canvas, which let your feet breathe.
- Choose a shoe that matches the shape of your feet.
- Choose a crepe or rubber sole. This helps absorb the shock or pressure of the hard ground.
- Choose a low heel of 1 inch or less.
- Never wear new shoes for more than 1 to 2 hours a day until they are “broken in.”
- If you have foot problems, such as hammer toes or bunions, you may need special shoes.
- If you have decreased feeling or numbness in your feet, tell the sales person.
- If you are not sure, bring your shoes in for your provider to see if they fit properly.
- Ask your provider or diabetes educator about shoe stores and brands of shoes that may best meet the needs of your feet.

Appointments

Caring for your feet is a team effort. Work with your healthcare team to take care of your feet and prevent problems.

At visits, you can expect your provider to:

- Check your feet.
- Check if your shoes fit properly.
- Check for both nerve damage and poor circulation.
- Recommend that you see a foot doctor (podiatrist) if needed.
- Recommend special tests to check the nerves and circulation in your feet.
- Recommend special shoes if you need them.

Use your appointment with your provider to learn more about your feet. You should:

- Always take off your shoes and socks at each visit.
- Discuss any foot problems you have had since your last appointment.
- Ask questions about what you can do to protect your feet.



Your Checklist for Living Well

Below are things you should do to stay healthy if you have diabetes. Talk with your healthcare provider or diabetes educator about your goals for managing your diabetes and other health problems.

Things to do throughout your life

- ☐ Do not smoke or use tobacco.
- ☐ **Call your healthcare provider when:**
 - ☐ You are sick.
 - ☐ Your blood sugar is very high or very low.
 - ☐ You have a sore or wound that does not heal or is infected.
 - ☐ You have frequent low blood sugar reactions or you pass out.
- ☐ **If you have type 1 diabetes**, test your urine for ketones when your blood sugar is over 300 mg/dL. Test more often when you are sick.

Things to do every day

- ☐ Check and record blood sugar levels as often as directed.
- ☐ Take your diabetes medicines as directed.
- ☐ Follow your diabetes meal plan. Talk to your healthcare provider or a dietitian if you are not sure what to eat.
- ☐ Exercise for at least 30 minutes.
- ☐ Take care of your feet. Wash them, trim toe nails, and check for signs of injury or infection. Use a mirror to see the bottom of your feet and between your toes. Ask for help if you are unable to trim your toe nails.
- ☐ Brush and floss your teeth.

Things to do every 3 to 6 months

- ☐ Visit your healthcare provider.
 - ☐ Have your blood pressure checked at every visit. Follow your provider's advice for keeping your blood pressure in your goal range.
 - ☐ Have your feet checked for sores at every visit. Take off your shoes and socks at the beginning of every visit as a reminder. Have your provider do a thorough foot exam at least once a year.
 - ☐ Have your hemoglobin A1C checked at least twice a year to determine what your average blood sugar level was for the past 2 to 3 months.
 - ☐ Review your "Blood Sugar Record." Discuss your blood sugar levels with your provider. Learn the signs of high and low blood sugar levels and what you can do to prevent and treat blood sugar levels that are too high or too low.

- ☐ Discuss strategies to get to a healthy weight.
- ☐ Discuss any problems with managing your diabetes.
- ☐ Discuss any feelings of anxiety, depression, stress, etc.
- ☐ Visit your dentist every 6 months to look for signs of gum disease or tooth decay.
- ☐ Identify changes in behavior that will improve your overall health.
- ☐ Review your diabetes goals and ways to achieve them. Meet with a diabetes educator to review your personalized plan. Discuss your plan with your family.

Things to do every year

- ☐ Visit an eye doctor to have a dilated eye exam to look for signs of eye disease from diabetes.
- ☐ Visit your healthcare provider.
 - ☐ Have your urine albumin, or protein, measured to detect signs of kidney disease from diabetes.
 - ☐ Have your cholesterol, HDL, LDL, and triglyceride levels checked.
 - ☐ Discuss needed vaccines:
 - ☐ Get a flu shot each year.
 - ☐ Get a pneumonia shot, if you have not had one. If you are older than 65, you may need a second pneumonia shot.
 - ☐ Talk to your provider about vaccines for COVID-19. Having either type 1 or type 2 diabetes can make you more likely to get severely ill from COVID-19.
 - ☐ Review your goals with your provider.
 - ☐ Ask what else can be done to lower your risk of developing complications from diabetes.

Things to do if you plan to become pregnant

People with diabetes who are planning to become pregnant need to keep their blood sugar within healthy limits first, and then keep it in an even tighter range during pregnancy. Babies who are born to people with diabetes whose blood sugar is not managed and outside of a safe range are at greater risk for birth defects. There are risks for pregnant people with diabetes as well, including worsening of diabetes complications like infections and eye and kidney problems.

Talk to your healthcare team about your desire to become pregnant. A physical exam will be done. The exam may include:

- An A1C test.
- Checking for high blood pressure, heart disease, and kidney, nerve and eye damage. If you have type 1 diabetes, your healthcare provider may also check your thyroid function.
- Reviewing the prescription and over the counter medicines and vitamin and herbal supplements you take to ensure that they are safe to take during pregnancy. Some medicines may need to be changed.

It is recommended that blood sugar is managed well and in a safe range for 3 to 6 months and healthy living habits be in place before becoming pregnant. You should also take a folic acid supplement every day to boost your preconception health. Talk to your provider for more information.

Diabetes Resources

Apps

Search your smartphone's app store for apps to help you manage diabetes, track exercise, and track the foods you eat. Here are some suggestions:

- CalorieKing Food Search – free
- Fooducate: Nutrition Coach – free
- Glucose Buddy Diabetes Tracker – free
- My DiabetesConnect – free
- MyID – Medical ID Profile – free
- MyFitnessPal: Calorie Counter – free
- MySugr – Diabetes Tracker – free
- One Drop: Better Health Today – free



Website

MedlinePlus: Diabetes

Website: medlineplus.gov/diabetes.html

Find information about diabetes, living with diabetes, and ways to reduce a person's risk for the disease. Resources are available in both English and Spanish (español).

Organizations

Academy of Nutrition and Dietetics

Website: eatright.org

Find information about making food choices and developing positive eating and physical activity behaviors.

American Diabetes Association

Toll Free: 1-800-DIABETES (1-800-342-2383)

Email: askada@diabetes.org

Website: diabetes.org

Find information about managing symptoms, advice on a healthy diet and exercise, as well as diabetes care at school and work.

American Heart Association: Diabetes

Toll Free: 1-800-AHA-USA1 (1-800-242-8721)

Website: heart.org/en/health-topics/diabetes

Untreated diabetes can lead to cardiovascular disease and other serious medical problems. Learn more about diabetes, including diabetes risk factors and how to prevent and treat the disease.

Breakthrough T1D (Formerly JDRF)

Tollfree: 800-533-CURE (800-533-2873)

Email: info@BreakthroughT1D.org

Website: breakthrought1d.org

Website focuses on type 1 diabetes and includes connecting with others, tips, news, and resources in English and Spanish (español).

Centers for Disease Control and Prevention (CDC)

Toll Free: 800-CDC-INFO (1-800-232-4636)

Website: cdc.gov/diabetes

Learn about diabetes, including risk factors and how to manage it.

Central Ohio Diabetes Association Provided by LifeCare Alliance

Diabetes Services

Phone: 614-437-2912

Website: lifecarealliance.org/programs/coda

Provides diabetes education and management services, including nutrition support.

Diabetes and Metabolism Research Center (DMRC)

Website: medicine.osu.edu/departments/internal-medicine/dmrc

The Ohio State University Wexner Medical Center's Diabetes and Metabolism Research Center is committed to conducting clinical trials and basic research that translate to managing, preventing, and curing diabetes. Their patients have access to take part in clinical trials for new drugs and technologies as well as diabetes education programs. Visit their website for more information.

National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

Toll Free: 800-860-8747

TTY: 711

Email: healthinfo@niddk.nih.gov

Website: niddk.nih.gov/health-information/diabetes

Information on diagnosis, treatment and managing diabetes. Fact sheets, research, referrals, and resources in English and Spanish (español).

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Correction Factor	
1 unit for every _____ mg/dL for blood sugar > _____ mg/dL	
Target Blood Sugar	
_____ to _____ mg/dL	
Insulin on Board	
_____ hours	

Insulin to Carbohydrate Ratio	
AM	1 unit per _____ grams
Noon	1 unit per _____ grams
PM	1 unit per _____ grams
Bedtime	1 unit per _____ grams

Basal Rates		
Time	Rate	Changes Made/Date
_____ to _____	_____ units/hour	
_____ to _____	_____ units/hour	
_____ to _____	_____ units/hour	
_____ to _____	_____ units/hour	
_____ to _____	_____ units/hour	
_____ to _____	_____ units/hour	
_____ to _____	_____ units/hour	
Basal Rate Total	_____ units	

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Sick Day Record



Time	Blood Sugar (check at least every 4 hours)	Urine Ketones (for persons with type 1 diabetes only)	Fluids Taken (kind and how much)	Symptoms (fever, nausea, vomiting, diarrhea, etc.)	Actions (what you did, such as called your provider, used over the counter medicines, etc.)	Medicine/Insulin Adjustment (name and dose)

Diabetes Action Plan

Keeping Your Blood Sugar in a Safe Range

Diabetes is a long term health problem where your body does not make enough insulin or cannot use the insulin it makes. Blood sugar (glucose) levels can get too high, causing serious problems over time. When treating diabetes with medicines, sometimes blood sugar may also drop too low. Use this action plan to help keep your blood sugar in a safe range.



Red Zone: EMERGENCY! Call 911.

- My glucose monitor reads “low” or “high” (number is outside of monitor’s range).
- I have double vision, convulsions, or seizures.
- Others think I am confused or disoriented, or I am unconscious.
- My symptoms are worse and I cannot reach my healthcare provider.
- I was given glucagon emergency medicine.
- My wound has a bad odor, pus, or red streaks.



Yellow Zone: This is a warning – call my healthcare provider.

- My morning (fasting) blood sugar is over 130 for more than 1 week.
- My blood sugar after eating is usually 180 or more.
- If I have a continuous glucose monitor (CGM) and my time above range has been above 25% for the last 2 weeks.
- If I have a CGM and my time below range has been above 5% for the last 2 weeks.
- I have high blood sugar with unexplained weight loss, nausea, vomiting, or increased urine output.
- I needed someone to bring me food or drink to bring up my blood sugar.
- My blood sugar stays under 70 after treating for low blood sugar (follow directions on next page).
- I have had low blood sugar more than 2 times in 1 week.
- I have a new blister or wound on my foot.



Green Zone: My diabetes is in a safe range.

- Most of my morning (fasting) blood sugars are under 130.
- My blood sugars 2 hours after eating are no lower than 70 and no higher than 180.
- If I have a CGM and my time in range is above 70%.
- My hemoglobin A1C is less than 7%.
- I am keeping my appointments as scheduled.

Treatment for low blood sugar

- **Eat or drink some food with sugar (15 grams of carbs),** such as (choose 1):
 - Chew 3 to 4 glucose tablets or 1 package of oral glucose gel
 - 1 tablespoon of sugar
 - ½ cup or 4 ounces of juice or regular soda (not diet)
 - 3 squares of graham crackers
 - 2 teaspoons of honey or syrup
 - 5 to 6 mini jelly beans
 - 2 to 3 gumbdrop candies or regular size jelly beans
- **Wait 15 minutes and check your blood sugar.**
 - If your blood sugar is still less than 100, or if you are not feeling better, eat or drink another serving of food or drink from the list.
- **Wait another 15 minutes and recheck your blood sugar.**
 - **If your blood sugar is 100 or more, this is better.** You may feel tired for awhile. If it is time for your next meal soon, go ahead and sit down and eat. If your next meal time is more than an hour away, eat a snack of ½ sandwich and 1 cup of milk.
 - **If you check your blood sugar and it is 100 or more and you are still not feeling better, call 911.** It may not be a problem with your blood sugar and you may need more help.
 - **If you check your blood sugar and it stays under 70 after following these steps, call 911.**
- **Be careful not to over treat.** If you panic and start to eat or drink until you feel better, your blood sugar may go too high.



**Warning:
Blood Sugar Under 70**

If you are found unconscious:

Your helper will need to give you glucagon. This a prescription medicine (injection or nasal powder) that is used for severe low blood sugar when you might be found unconscious. Keep glucagon with you. Show your family members, friends, and coworkers where you keep the medicine and have them learn how to use it.

Call your health care provider if you have:

- Low blood sugar more than 2 times in 1 week
- Wild swings from high to low blood sugar



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