



Health Facts for You



Staying healthy with
diabetes

UWHealth

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About Diabetes

Type 1 diabetes means that your body no longer makes insulin. It is often diagnosed early in life but can occur at any age. Insulin must be taken to stay alive. Without insulin, blood sugar builds up in the bloodstream and cannot get into your cells.

Type 2 diabetes means that your body does not respond to insulin as it should. Over time, the body may stop making enough insulin to keep glucose levels in a normal range. When this happens, insulin is needed. Type 2 is the most common type of diabetes. Risk factors include:

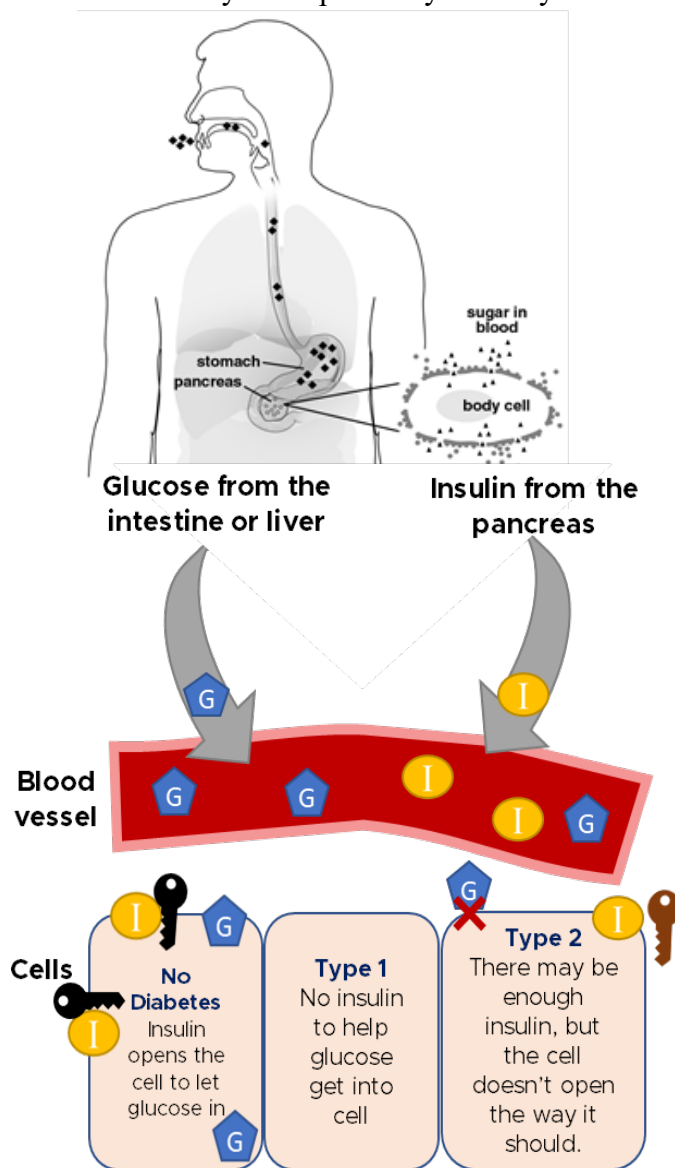
- Over age 35
- Family history
- Ethnicity (African American, Latino, Native American, Asian American and Pacific Islander)
- Overweight
- Diabetes during pregnancy (gestational diabetes)
- Sedentary lifestyle

Prediabetes means that blood sugar levels are higher than normal but not high enough to be diagnosed with type 2 diabetes. If action is taken and blood glucose levels are managed, type 2 diabetes can be delayed or even prevented.

Medicine-induced diabetes means that certain medicines, like steroids, can cause blood sugar levels to rise above normal.

Gestational diabetes means that blood sugar levels rise higher than normal during pregnancy.

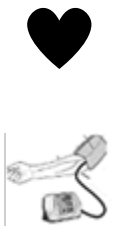
With all types of diabetes, glucose can build up in the bloodstream. Over time, this can cause damage to your heart, eyes, kidneys, nerves and many other parts of your body.



Staying Healthy with Diabetes

Diabetes and Your Heart

Heart disease and stroke are most common if you have diabetes. Lower your risk by keeping your blood sugars, blood pressure, and cholesterol in normal ranges.



If you use tobacco, make a quit plan. Call toll free, **1-800-QUIT-NOW** (800-784-8669) to talk to counselors about how to quit. These steps will keep your blood vessels healthy and also lower your risk for eye problems and kidney disease.



Healthy Eating

Talk with a dietitian to create a meal plan that works for you. Find more tips on page 6-7.

Be Active

Activity helps control your blood glucose levels. Here are some key points to follow:



- Have a check-up first! You may need to start slowly.
- Choose activities you enjoy.
- Check blood glucose before and after activity. Low blood glucose can happen hours later. Be prepared to treat low blood glucoses.
- Stay hydrated.
- Carry identification.

Prevent Nerve Damage

High blood sugar levels can cause nerve damage. This can happen to the nerves in your hands, feet, ears, eyes, digestive tract, and other parts of your body. Managing your blood sugars is the best way to prevent nerve damage.

Tips for Foot Care

- Wear well-fitting shoes and socks.
- Look at your feet daily. If you have trouble seeing your feet, use a mirror or ask a family member to look for you.
- Be sure to report any signs of cuts, sores, redness, or drainage.
- Ask for help from your doctor if you need help cutting your nails. You might need help from a podiatrist (foot doctor).
- Get a complete foot exam every year.



Immunizations and Preventive Care

Regular check-ups and immunizations go a long way in keeping you healthy. Ask about flu, pneumonia, and other vaccines. Other screening tests needed:



- **A1C** to measure average glucose over 2-3 months
- **Eye exams** to check for small blood vessel and/or nerve damage
- **Dental exams** to check for tooth or gum problems
- **Kidney tests** to check the health of your kidneys



Taking Care of Your Emotional Health

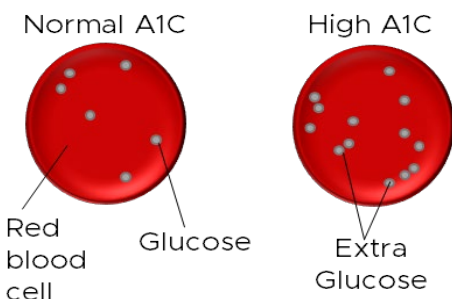
Dealing with diabetes or any chronic condition can be overwhelming. Be sure to find others who can provide support. This might include family, friends, and your diabetes care team. Find ways to manage the stress you might have. Emotional stress can even affect your blood glucose levels.

If you are feeling helpless or hopeless, or have trouble sleeping or eating, talk with your provider. These can be signs of depression.

Checking Blood Glucose (Sugar)

A1C Test

This blood test measures how much glucose or sugar is on the red blood cells during the past 2-3 months. A high A1C means you have too much sugar in your blood. Any decrease in A1C reduces your risk of long-term problems from diabetes.



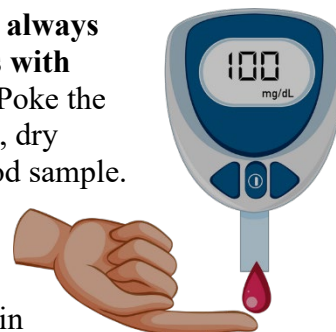
The chart below shows how your A1C value relates to estimated Average Glucose (eAG). You and your diabetes care team will decide on your A1C goal.

	A1C (%)	eAG (mg/dL)
Take Action	14 -17%	355-441
	13 %	326
	12 %	298
	11 %	269
	10 %	240
	9 %	212
	8 %	183
Goal	7 %	154
Diabetes	6.5 %	140
Prediabetes	5.7 - 6.4 %	117-137

Blood Glucose (Sugar) Monitoring

You can check your blood glucose (sugar) levels at home using a glucose meter. The results tell you what your glucose levels are at certain times of the day. Your food/drink choices, activity level, medicines, stress, pain, illness, and other factors will affect the results.

Before checking, always wash your hands with soap and water. Poke the side of your clean, dry finger for the blood sample. Apply the drop of blood to the test strip. You will have a result in about 5 seconds.



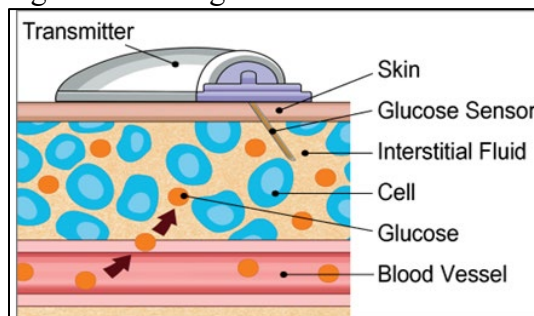
Your Glucose Goals

The glucose goals below apply to most people with diabetes. Talk with your health care team about goals that are right for you.

When to Check (usual goal)	Your Goal
Before meals (80-130 mg/dL)	
After meals (180 mg/dL or less)	
Bedtime/Before Driving or Exercise (100-140 mg/dL)	

Continuous Glucose Monitors

Continuous glucose monitors (also known as CGMs or sensors) are devices that measure glucose, or sugar, in the body. CGMs use a tiny wire under the skin to measure the sugar between the cells. They give sugar values every 1-5 minutes. CGMs also show how quickly the sugar level is going up or down. Some CGMs have alerts if sugar levels are high or low. These features help find sugar patterns and may help reduce the number of high and low sugars.



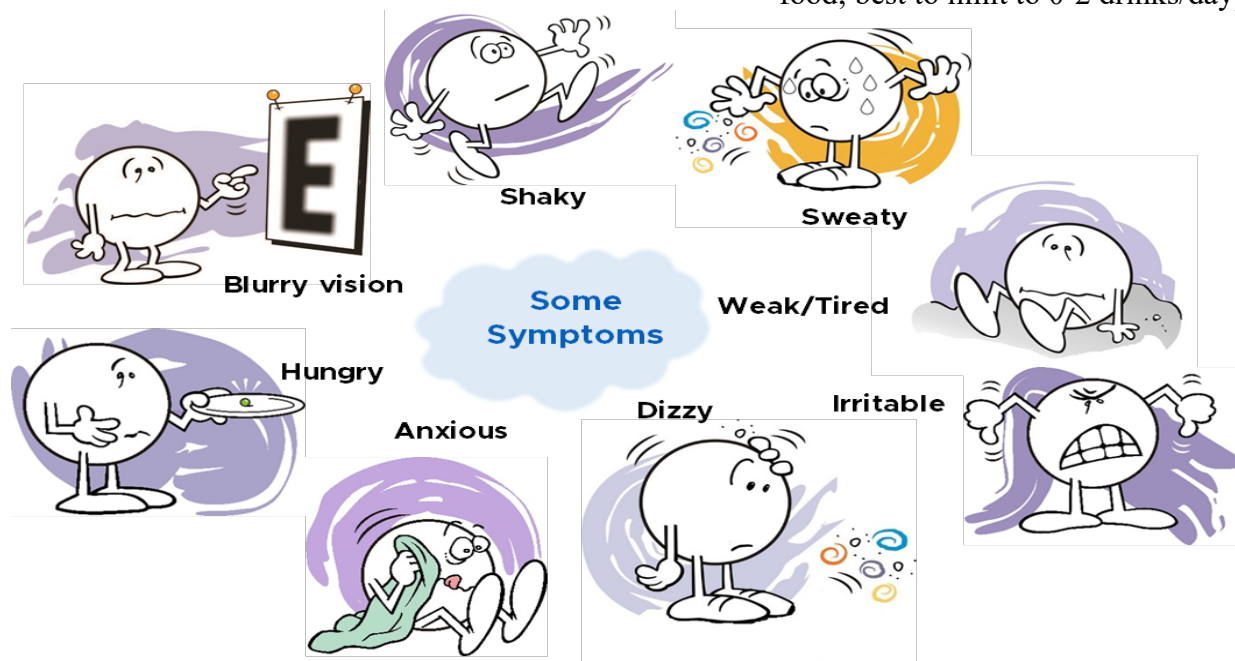
High and Low Blood Glucoses

Low Blood Sugar (Hypoglycemia)

This is when blood sugars are less than 70 mg/dL. It can happen suddenly and may progress quickly without treatment.

Causes may include:

- Late/skipped meal or smaller than usual meal
- Too much diabetes medicine
- More activity than usual
- Drinking alcohol (especially without food; best to limit to 0-2 drinks/day)



What to Do

Get treatment quickly. Take 15 grams of quick-acting carbohydrate (sugar) if able to swallow safely. Avoid chocolate since the fat slows down the rise in blood sugars.

Examples:

- 4 oz. ($\frac{1}{2}$ cup) juice or regular (non-diet) soda
- Glucose liquid or gel (read label for amount)
- 4 glucose tablets (chew them)
- Soft, chewable candy like Skittles, jellybeans (amount varies)
- 1 tablespoon sugar, honey, regular syrup

Glucagon is an option if you cannot swallow safely. Someone else would need to give this to you.

Check your blood glucose 15 minutes after treatment. If your glucose is still below 70 mg/dL, repeat treatment. When your blood sugar is greater than 70, if possible, eat your next meal within an hour. If that is not possible, eat a light snack.

Call 911 if you get more sleepy and less alert or if the glucose levels stay below 70 mg/dL after treatment.

Tell Others

Wear a Medical Alert bracelet or necklace that is easy to see by others. Carry a wallet card that states that you have diabetes. It should include your current list of medicines.

High Blood Sugar (Hyperglycemia)

This is when blood sugars are more than 140-180 mg/dL.

Causes may include:

- Overeating
- Inactivity
- Too little diabetes medicine
- Illness or stress (physical or emotional)
- Certain medicines, like steroids



What to Do

Check your glucose levels often. Don't miss your diabetes medicines. Talk with your doctor about changing your medicine plan. Talk with a dietitian about your meal plan. Stay active. Call your doctor if you are sick.

Sick Days

If you get sick with a cold or flu or if you have an infection, you may need to check your blood glucose levels as often as every 2 hours. Stay in close contact with your health care team during these times.

- Keep taking your diabetes pills or insulin unless your doctor tells you to stop.
- Drink at least 4 oz (1/2 cup) of fluids every 30 minutes. If you cannot eat a

meal, then fluids should contain sugar.

- If you have type 1 diabetes or history of diabetic ketoacidosis (DKA), check for ketones every 4-6 hours if you are sick.

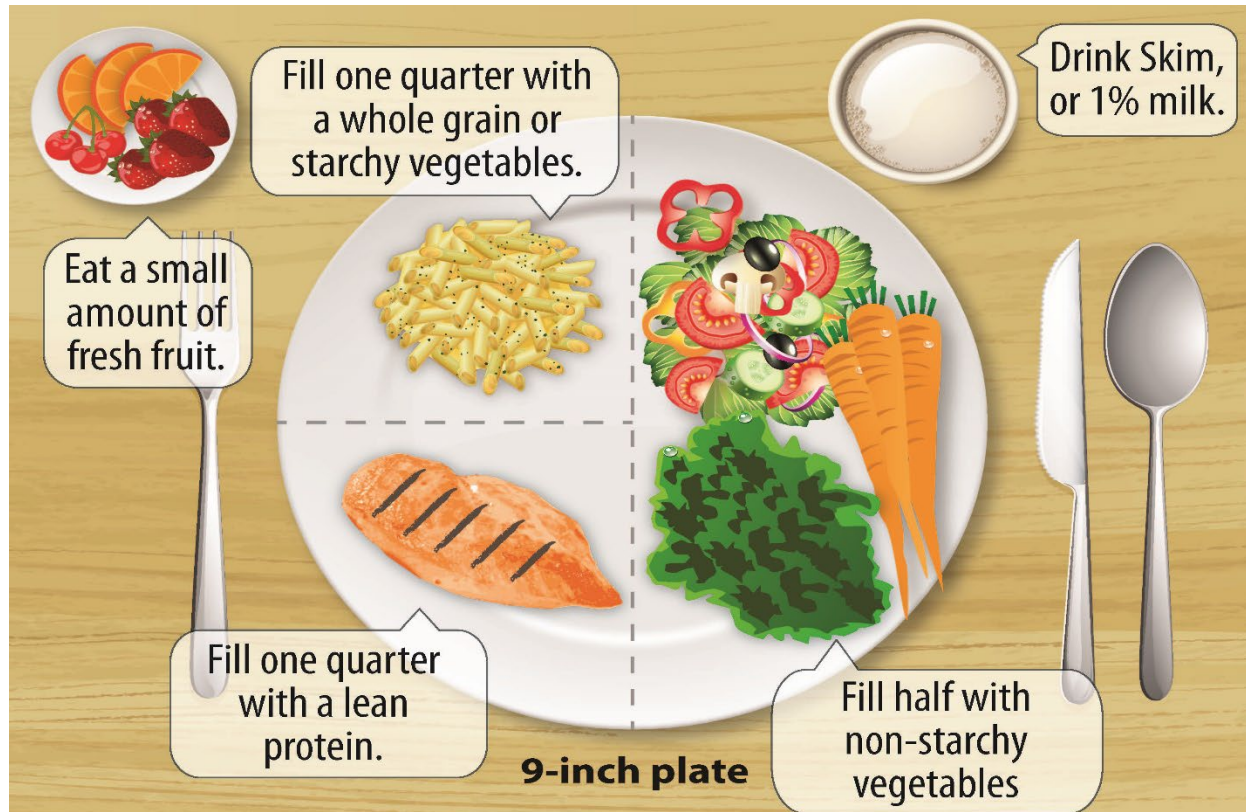
When to Call Your Doctor

- If you have had vomiting or diarrhea for more than 6 hours
- If your glucose stays above 300 mg/dL for more than 6 hours or below 70 mg/dL after repeated treatment
- If you have moderate to large ketones

Basics of Healthy Eating

Planning Your Meals

Use this image to guide your portion sizes. Choose a variety of foods at each meal to help your body get the nutrition it needs.



Source: Centers for Disease Control and Prevention: https://www.cdc.gov/diabetes/pdfs/library/features/Diabetes_Food_Plate.pdf

Tips for Healthy Eating

Aim to eat meals and snacks at about the same time each day. Avoid skipping meals. This will prevent you from getting too hungry and overeating.

Choose lower calorie options when you eat out. Share a meal or bring home left-overs to control portions.

Limit foods high in fat. Use foods with less saturated and trans fat, sugar and sodium.

Choose unsweetened drinks. Use jams, jellies and syrup made with low sugar or no sugar.

If you need to lose weight, eat smaller portions and become more active!

- Losing 5-10 percent of your weight can improve your blood glucose levels, blood pressure, and cholesterol.
- Start by cutting out 100 calories a day (8 oz regular soda, 1 tablespoon butter, margarine or regular salad dressing).
- Walk 10 minutes more each day. Small changes count!

Carbohydrates

Foods contain carbohydrates, proteins, and fats. All three are part of a well-balanced meal plan. Carbohydrates raise blood sugar while protein and fat do not. You still need to eat carbohydrates for many reasons.

- They are a good source of energy for the body, especially the brain and red blood cells.
- They can be a great source of fiber, vitamins and minerals.
- They taste good!

Examples of Carbohydrates

- Breads, cereals, rice, and pasta
- Starchy vegetables (white and sweet potatoes, corn, green peas, and winter squash) and legumes (dried beans, lentils, and split peas)
- Fruits and fruit juice
- Milk and yogurt
- Sweets and snacks such as cakes, ice cream, cookies, chips, and pretzels
- Regular sodas, jelly, syrup, honey, and table sugar

Carbohydrate Counting

Carbohydrate (“carb”) counting is a method of meal planning. It is used to help improve glucose results. It is not a special diet, nor does it cut out any of your favorite foods. In fact, it is just a way to keep track of the foods you eat that contain carbohydrate.

Getting Started

Aim for consistent carbohydrate amounts with meals and snacks. This should help you meet your blood glucose goals.

Generally, adults with type 2 diabetes, eat:

- 135-180 grams per day
- 45-60 grams per meal
- 0-30 grams per snack

Food Labels

- Read food labels carefully. Be sure to look at the serving size and the **Total Carbohydrate** line. You don’t need to look at the grams of sugar because they are included in the Total Carbohydrate grams.
- Sugar-free foods may still contain carbohydrate, so be sure to check the total carbohydrate content.
- Sugar alcohols like sorbitol or mannitol are used in sugar-free gum and candy. Sugar alcohols can cause stomach cramping or diarrhea if eaten in large amounts.
- Foods with less than 20 calories or less than 5 grams of total carbohydrate per serving will have little effect on your blood sugar levels, if used in small amounts.

Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%
* The % Daily Value (DV) 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.	

Image source: U.S. Food and Drug Administration, <https://www.fda.gov/food/food-labeling-nutrition/changes-nutrition-facts-label>, 3/7/2022

Working with a Dietitian

One of the first things to do is decide on a meal plan with a dietitian. Based on your usual intake, weight, height, activity level, and age, they will suggest how many carbohydrate servings you should have each day and how to divide them between meals and snacks.

Diabetes Medicines

Oral Agents (Pills)

There are many medicines taken by mouth to manage type 2 diabetes. These may also be called “oral agents.” They are used along with healthy eating and activity. If oral agents are prescribed for you, be sure to find out more about how each one works.

Non-Insulin Injectables

Some treatment options are injectable but are not insulin. These medicines help to release insulin after eating. They slow down stomach emptying which makes you feel full sooner. Your care team will share more about these medicines if prescribed.

Insulin

You may need insulin to manage your blood sugars. See page 10 for details about how the different types of insulin work.

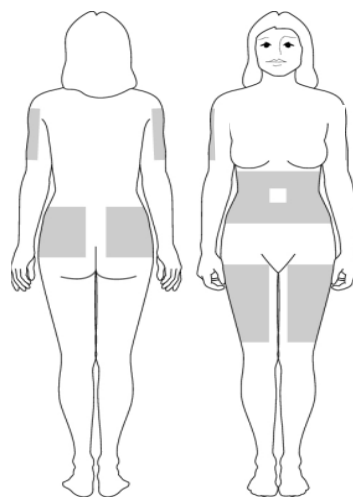
How to Prepare and Give Insulin

Insulin can be given using a syringe and vial or a pen device. Use the pictures and steps listed on the next page to learn how to use your pen.

Where to Inject Insulin

Injections are given into fatty tissue. (See shaded areas below.) Rotate your injection sites to prevent tissue damage.

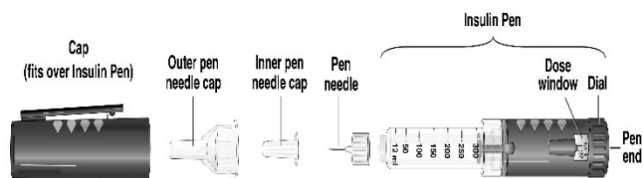
- **Abdomen:** Do not use areas within one inch of your belly button. Avoid scar tissue.
- **Arms:** Use the back side of your upper arm. It can be hard to reach this area yourself.
- **Thighs:** Use middle and outer areas where there is more fatty tissue.
- **Buttocks:** Inject into fatty tissue. This site may also be hard to reach.



Site Rotation

Rotate your injection sites to prevent tissue damage. If tissue is damaged, the insulin may not absorb as well. This may make it harder to control your blood sugars. Some people keep a record of where their last shot was given to avoid these problems. If you choose one site, like the abdomen only, be sure to rotate shots within that site.

Parts of an Insulin Pen

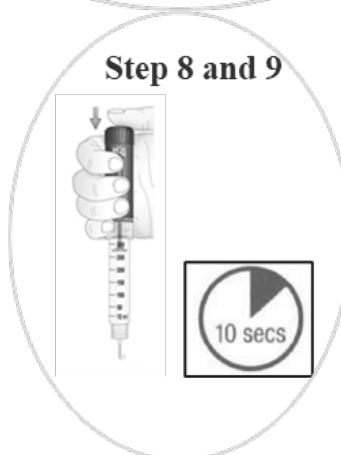
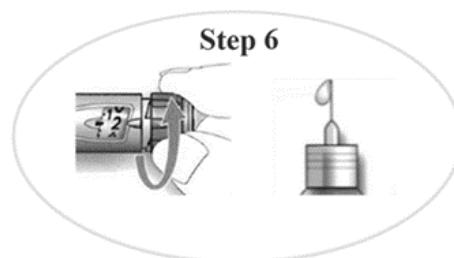


Steps for Using an Insulin Pen

- 1 Wash your hands and be sure the injection site is clean.**
- 2 Check the pen label to make sure you are using the correct type of insulin.** If using a mixed insulin, roll the pen between your hands 10 times. The insulin should look cloudy/milky white after mixing.
- 3 Clean the rubber stopper on your pen with an alcohol wipe.**
- 4 Remove the foil seal on the pen needle. Push the pen needle into the rubber stopper and twist to tighten.**
- 5 Pull off the 2 pen needle covers.**
- 6 Prime the pen by dialing in 2 units (or 5 units if using the U-500 pen).** This is sometimes called the "air shot" test and should be done with every new needle. Point the pen needle up. Push the button of your pen and watch for at least 1 drop of insulin at the needle tip. If you don't see a drop, repeat this step up to 4 times. Try a new needle if no drop is seen.
- 7 Turn the dial to the number of insulin units you need.**
- 8 Inject the needle into your skin at a 90 degree angle.**
- 9 Push the button down all the way until dose reads "0".**
- 10 Count to 10. Pull the needle out of your skin.**
- 11 Unscrew the pen needle and dispose in a Sharps box. Use a new needle with each injection.**

When Insulin Gets Low or Empty

You will not be able to turn the dial beyond the number of units left in the pen. If you need to give a partial dose, write down the number of units you are giving. Use a new pen to give the rest of your dose. When the pen is empty, throw away in the trash. Pens do expire. Ask your nurse or pharmacist about this since it varies based on insulin type.

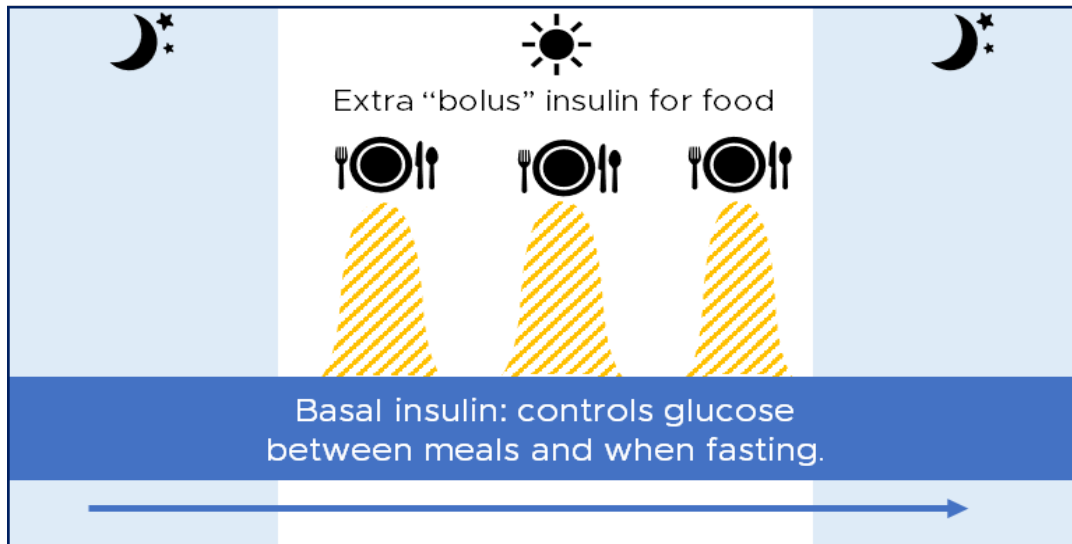


Needle Disposal

Drop the used syringe or pen needle into the "sharps box" or other hard plastic container. Close the lid and move the box out of the reach of children and pets. For more information visit, <http://www.fda.gov/safesharpsdisposal>.

How Insulin Works

Your body always needs some insulin even when you are not eating. This is called “**basal**” insulin. You need extra when you eat and when blood sugars rise for other reasons. This is called “**bolus**” insulin. Insulin lowers your blood sugar.

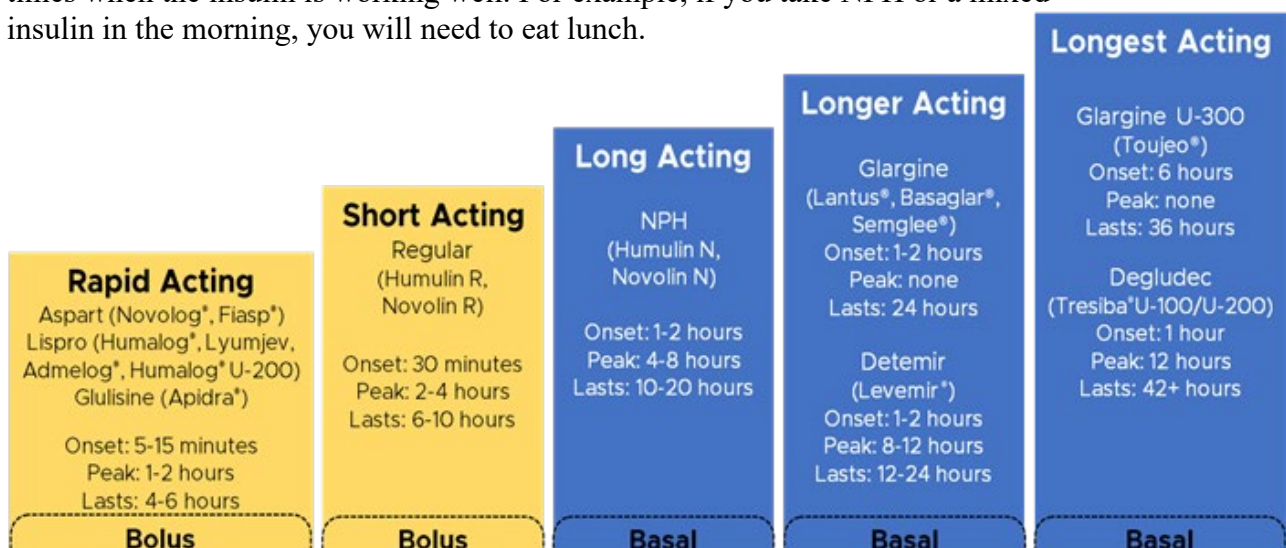


Types of Insulin

There are many types of insulin. Some work quickly and some are very long-lasting. Most types of insulin are shown below. Some types of insulin combine basal (long-acting) and bolus (rapid- or short-acting) insulins together.

Insulin Plans

An insulin plan will be made based on your needs. Some people need one type of insulin; others need two types of insulin. Some need insulin multiple times a day to keep blood sugars in a healthy range; others need insulin only when blood sugars get too high (“correction” insulin). Some types of insulin require you to eat at certain times when the insulin is working well. For example, if you take NPH or a mixed insulin in the morning, you will need to eat lunch.



Storage

- Keep your **unopened** insulin in the refrigerator (36°F-46°F).
- Keep your **opened** insulin at room temperature (56°F-80°F).
- See below for expiration dates if you leave your non-insulin injectables at room temperature.
- Do not freeze your insulin or leave it in a hot car or in direct sunlight.

Expiration

Mark your vial/pen with the date of first use. Expiration dates shown here are based on **date of first use**. Follow the manufacturer expiration date printed on the vial/pen if unopened/unused.

Non-Insulin Injectables

Keep your unopened medicine in the refrigerator (36°F-46°F). Discard after _____ if stored at room temperature after opening:

- Exenatide (Byetta®): 30 days
- Exenatide XR (Bydureon BCise®): 4 weeks
- Liraglutide (Victoza®): 30 days
- Semaglutide (Ozempic®): 56 days
- Dulaglutide (Trulicity®): 14 days
- Lixisenatide (Adlyxin®): 14 days
- Tirzepatide (Mounjaro®): 21 days

Insulin Vials

- Humulin Regular and NPH: 31 days
- Novolin Regular and NPH: 42 days
- Levemir®: 42 days
- Tresiba®: 56 days
- Humulin U-500: 40 days
- All other insulin types: 28 days

Insulin Pens

- Humulin N Kwikpen: 14 days
- Levemir® and Toujeo®: 42 days
- Tresiba®: 56 days
- Humalog 75/25, 50/50: 10 days
- Novolog 70/30: 14 days
- All other insulin types: 28 days

Insulin Cartridges

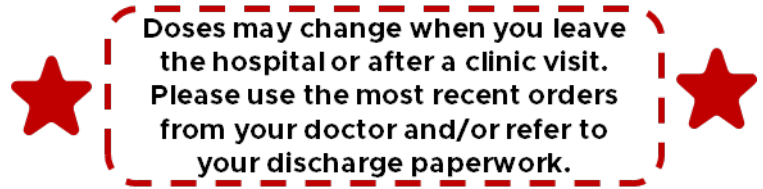
- All available insulin types: 28 days

My Insulin Plan – Practice Only

Type of Insulin	Breakfast	Lunch	Dinner	Bedtime
Long-acting insulin (basal):				
Rapid/short acting insulin (bolus):	_____ units	_____ units	_____ units	
	<input type="checkbox"/> Skip usual meal dose if you skip a meal. <input type="checkbox"/> Take ½ of your usual meal dose if you eat less than half of your meal.			
Mixed insulin	_____ units at _____ (time)		_____ units at _____ (time)	
Correction insulin:	With meals? <input type="checkbox"/> Yes <input type="checkbox"/> No		At Bedtime? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person's health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 12/2022 University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#6671

Your Diabetes Plan



Date: _____ (Please update as changes are made.)

Blood sugar goals: _____ (before meals) _____ (at bedtime)

Check blood sugar: ☐ Before meals ☐ Bedtime
☐ Anytime you have signs or symptoms of low or high blood sugar
☐ 2:00AM ☐ Before/during/after exercise

Medicine Plan

Type of Insulin	Breakfast	Lunch	Dinner	Bedtime
Long-acting insulin (basal):				
Rapid/short acting insulin (bolus):	_____ units	_____ units	_____ units	
	<div><input type="checkbox"/> Skip usual meal dose if you skip a meal.</div> <div><input type="checkbox"/> Take ½ of your usual meal dose if you eat less than half of your meal.</div>			
Mixed insulin	_____ units at _____ (time)		_____ units at _____ (time)	
Correction insulin:	With meals? <input type="checkbox"/> Yes <input type="checkbox"/> No <div>At Bedtime? <input type="checkbox"/> Yes <input type="checkbox"/> No</div>			
Other diabetes medicines				

Correction Insulin

If you need to use correction insulin daily, for 3 or more days in a row, call your health care team. Your usual doses may need to be changed.

With Meals	
If Blood Glucose is:	Add this much extra insulin:
Less than 150 mg/dL	No extra insulin
151 - 200	_____ units
201 - 250	_____ units
251 - 300	_____ units
301 - 350	_____ units
351 - 400	_____ units

At Bedtime	
If Blood Glucose is:	Add this much extra insulin:
Less than 200 mg/dL	No extra insulin
201 - 250	_____ units
251 - 300	_____ units
301 - 350	_____ units
351 - 400	_____ units
More than 400	_____ units