

## Diabetes Survival Skills



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## Introduction

**You have diabetes.** When you first heard this, it may have come as a total surprise to you or you may have thought receiving this diagnosis was just a matter of time. Your reaction to the news may have released a wide range of emotions. How do you feel about having diabetes? You may have feelings such as shock, fear, denial, confusion, sadness or even depression. Or do you feel determined, empowered and accepting of diabetes? All of these feelings are normal and you can expect them to change over time.

The good news is that although diabetes is a lifelong disease, with the right approach it can be managed and you can lead a healthy life. It requires that you be the manager of your diabetes. *You are in charge!*



**Managing your diabetes will take time and practice.** You will learn how to manage your diabetes with the help of your health care team. You will work together to learn how to:

- › Eat healthfully.
- › Be physically active.
- › Take medications safely.
- › Monitor your blood sugar and interpret results.
- › Problem solve challenges confidently.
- › Reduce risks of diabetes complications.
- › Cope with the changes you need to make to manage your diabetes.

**Managing your diabetes means keeping your glucose level within the target range.**

Doing so helps reduce the risk of developing complications, including:

Heart attacks | Strokes | Eye problems | Kidney disease | Nerve damage

**Diabetes education is the first step in managing your diabetes.**

The following are ways you can learn about diabetes:

- › Attend diabetes self-management education (DSME).
- › Meet with a diabetes care and education specialist at diagnosis and once a year after that.
- › Ask questions of your health care providers.
- › Visit trusted websites.

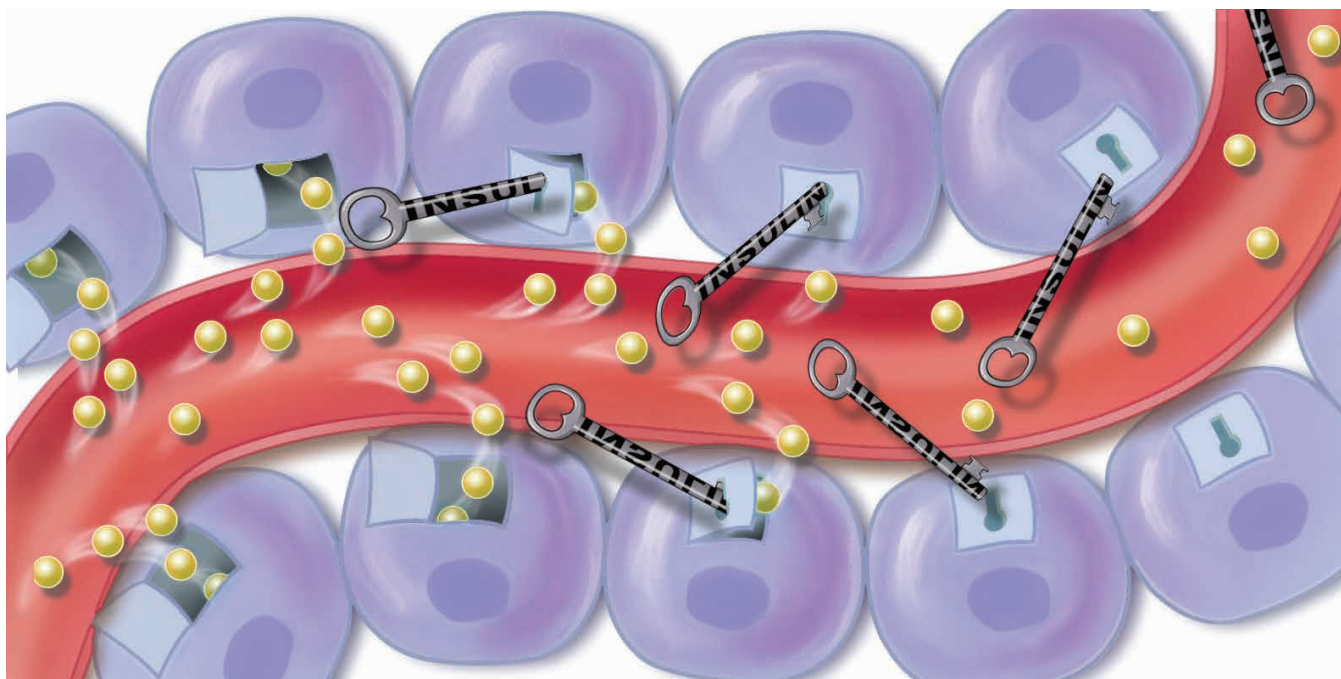


## Diabetes Basics

Diabetes is a disease in which the body:

- › Does not make enough insulin  
and/or
- › Does not use insulin correctly (insulin resistance)

The pancreas is the organ that releases insulin. Insulin helps the body use sugar (glucose) for energy. Glucose in the blood comes from both food and your body's own natural release of stored glucose.



The yellow dots represent glucose, the keys represent insulin, and the purple areas are cells.

Think of insulin as the key that opens the doors of the cells in your body. Once insulin opens the cell doors, sugar can leave the bloodstream and move into the cells where it will be used for energy. When there is not enough insulin or the insulin is being used incorrectly, glucose can't get into the cells and instead builds up in the blood.

## Common Types of Diabetes

	Type 1	Type 2
<b>Age at onset</b>	Usually under age 30, but can develop at any age	Usually over age 40, but is increasing in younger people
<b>Development of symptoms</b>	Rapid	Slow
<b>Frequency</b>	5%-10% of total people diagnosed	90%-95% of total people diagnosed
<b>Symptoms</b>	<ul style="list-style-type: none"> <li>• Increased urination</li> <li>• Increased thirst</li> <li>• Increased hunger</li> <li>• Weight loss</li> <li>• Sometimes blurred vision</li> </ul>	<ul style="list-style-type: none"> <li>• Same symptoms as Type 1</li> <li>• No noticeable symptoms</li> <li>• Nerve damage or heart disease</li> </ul>
<b>Family history</b>	Less common	Common
<b>Ethnicity</b>	More common in Caucasians	More common in non-white people; highest in Native Americans
<b>Medical treatment</b>	<ul style="list-style-type: none"> <li>• Insulin is necessary for life</li> <li>• Being physically active</li> <li>• Healthy eating</li> <li>• Non-insulin injectable medication</li> </ul>	<ul style="list-style-type: none"> <li>• Healthy eating</li> <li>• Being physically active</li> <li>• Oral medications</li> <li>• Non-insulin injectable medication</li> <li>• Insulin</li> </ul>

## Monitoring Your Diabetes

Monitoring your glucose gives you information on how to manage your diabetes on a daily basis. It tells you how well your diabetes treatment is working. Glucose levels can be monitored using either a **fingerstick meter** or a **continuous glucose monitor (CGM)**. A fingerstick meter measures the amount of glucose in a single drop of blood taken from the finger. A CGM uses a sensor inserted under the skin to measure the amount of glucose in the fluid between your body cells. CGMs are worn 24 hours a day, and most sensors last 10-15 days.



### CGM

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- › One sensor provides 10-15 days of glucose readings.
- › Coverage is improving, but it is costly if you do not have coverage.
- › Alarms can warn you when glucose is too high or too low.
- › Can see where glucose level was, where it is and where it is going.



### Fingersticks

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- › One fingerstick provides one glucose reading.
- › Most insurances cover supplies for all types of diabetes. Low-cost options are available.
- › No alarms.
- › Cannot see what is happening between glucose checks.

Keeping glucose levels in the target range is the best way to decrease the risk of diabetes-related complications.

## Glucose Targets

The healthiest glucose level may be different for each person, and can change throughout the day.

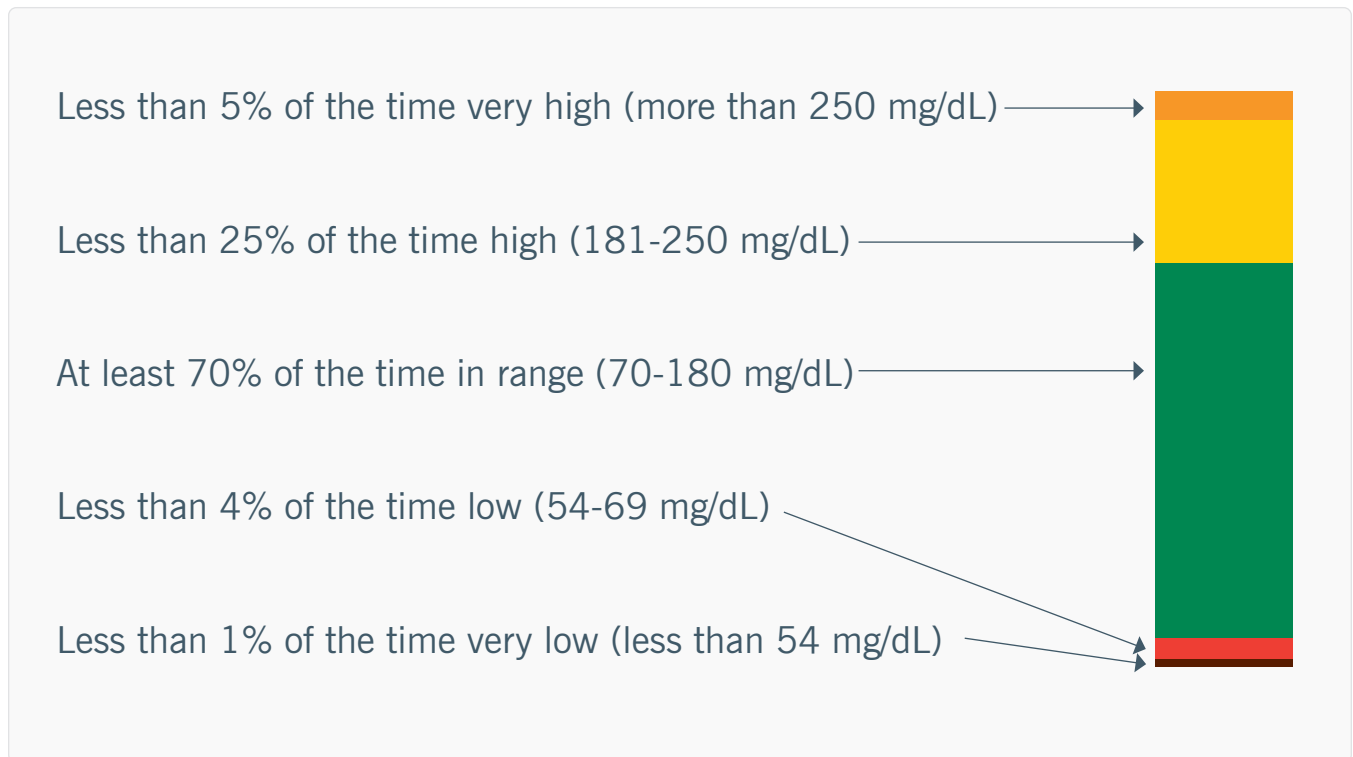
Your healthcare provider will tell you what range is best for you.

This chart shows common glucose targets for most non-pregnant adults.

A CGM can show you your time in range (TIR). TIR is the percent of time in a 24-hour period that your glucose level is in the target ranges. If your TIR is low, it means that high or low blood glucose levels may be affecting your health.

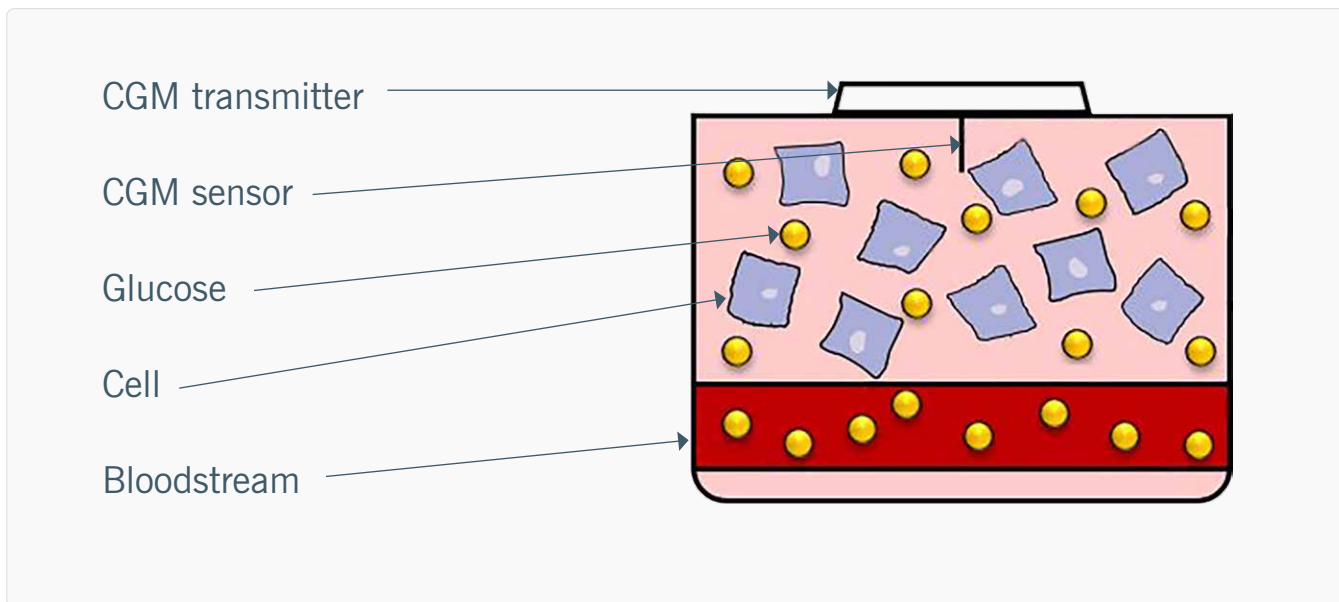
The graph below shows how much of the time CGM readings should be in certain ranges for most non-pregnant adults.

Time	Common Targets
<b>Before each meal</b>	80-130 mg/dL
<b>1-2 hours after the start of a meal</b>	Less than 180 mg/dL
<b>Before bedtime</b>	100-150 mg/dL





Instead of showing the glucose level in your blood, CGMs show the amount of glucose between your cells. This is one of the reasons fingerstick and CGM readings aren't exactly the same. If you are using a CGM and the way you feel doesn't match the CGM reading, check your glucose with a fingerstick meter.



## Using a Fingertick Meter

1. Wash your hands with soap and warm water.  
If you are not able to wash with soap and water, use an alcohol wipe. Dry your hands completely. Do not use hand sanitizers.
- 



2. Place a new lancet into the lancing device using instructions in the user manual.



3. Insert a test strip into the meter.
- 

4. Place the lancing device firmly on the side of your fingertip. Press the button on the lancing device to obtain a drop of blood.
- 



5. Place the testing strip against the drop of blood and allow the strip to absorb it.
- 



6. Read the result from the meter. Write down your blood sugar in your log book. Throw the lancet away in a hard plastic container.
- 



## Things That Can Change Glucose Levels

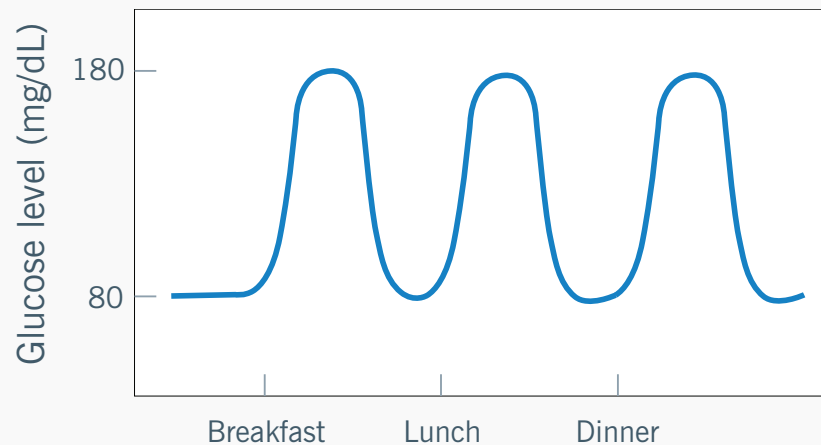
### RAISE

- Too much food
- Skipping or not taking your diabetes medication
- Illness, surgery, stress
- Less activity than usual

- Skipped meals or eating less than normal
- Too much diabetes medication
- Drinking alcohol without eating
- More activity than usual







### LOWER

Carbohydrates (carbs) are a food nutrient that turns into glucose (sugar) in your body. As a result, your glucose level increases when you eat carbs. But with the help of extra insulin either released from your pancreas or taken as an injection, your glucose should return to your pre-meal target range within the next four hours. This means that the amount of carbohydrate you eat or drink at meals and snacks will affect the amount of insulin your body needs in order to maintain target glucose levels.



## Problem Solving

### High Glucose (Hyperglycemia) and Low Glucose (Hypoglycemia)

	High Glucose (Hyperglycemia)	Low Glucose (Hypoglycemia)
What is it?	A glucose level higher than your target	A glucose level less than 70 mg/dL
Possible symptoms	Thirst Blurry vision Fatigue Frequent urination Hunger No symptoms at all	Sleepiness Shaking Sweating Dizziness Hunger No symptoms at all (hypoglycemia unawareness)
Treatment	Drink water to prevent dehydration.  If your glucose is less than 240 mg/dL, do some light activity.  Call your healthcare provider if your glucose is greater than 150 mg/dL for more than one week, or if you have two readings in a row greater than 300 mg/dL. 	Eat/drink 15 grams of fast-acting carbs.  Wait 15 minutes. If still less than 70mg/dL, repeat treatment.  If glucose level does not come up after three treatments, call 911.  <b>If you take insulin or a sulfonylurea, talk to your healthcare provider about glucagon for severe hypoglycemia.</b>

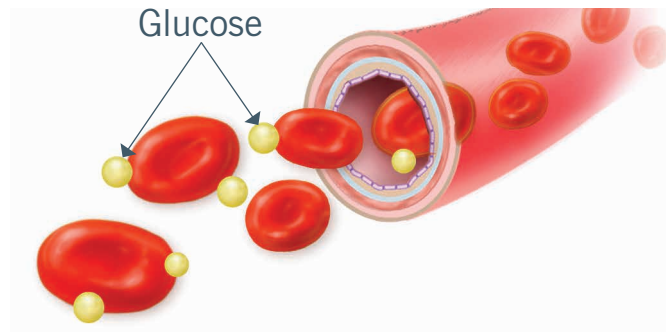
## A1C

The A1C is a blood test that is done in a lab. It measures how much glucose has been stuck to your red blood cells over the past 2-3 months. You should have an A1C drawn every 3-6 months.

The A1C tells you if your treatment plan is working over time. If your level is too high, your treatment may need to be changed.

A target A1C for most non-pregnant adults is less than 7%. This is a glucose average of 154 mg/dL. Some people may have a different target. Talk to your health care provider about the best A1C target for you.

The A1C is an important number but it does not replace the need for home glucose monitoring.



Relationship of A1C and Estimated Average Glucose (eAG)

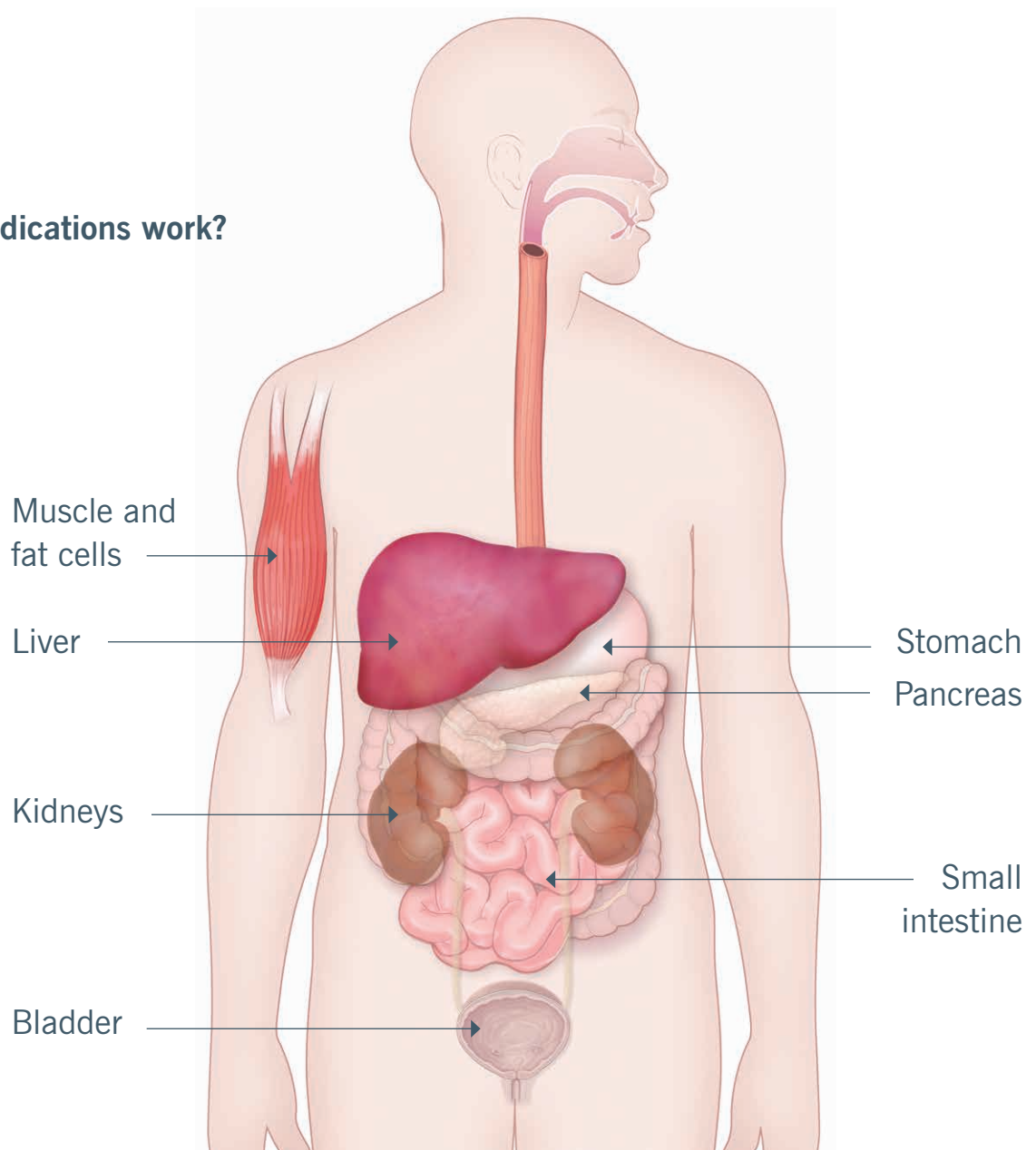
	<b>A1C%</b>	<b>eAG mg/dL</b>
	12	298
	11.5	283
	11	269
	10.5	255
	10	240
	9.5	226
	9	212
	8.5	197
	8	183
	7.5	169
<b>Target</b>	<b>7</b>	<b>154</b>
	<b>6.5</b>	<b>140</b>
	<b>6</b>	<b>126</b>
	<b>5.5</b>	<b>111</b>
	<b>5</b>	<b>97</b>



## Medications

Along with healthy eating and being physically active, your health care provider may order medications to keep your glucose in the target range. Because different medications affect different parts of the body, more than one medication may be needed for the best glucose management. In addition, the type and amount of medication you need may change over time. The best plan for you will be the one that works to keep your glucose in the target ranges.

### Where do medications work?



## Oral Medications

Biguanides			
Examples		Action	Comments/Instructions
<u>Generic</u> metformin	<u>Brand</u> Glucophage Glucophage XR Glumetza Fortamet Riomet	Improves insulin's action in the body and lowers the amount of glucose released by the liver	<ul style="list-style-type: none"> <li>• Take with food.</li> <li>• Avoid alcohol intake.</li> <li>• Requires regular liver and kidney function tests.</li> <li>• Check with your healthcare provider about temporarily stopping before surgery and after some radiology procedures.</li> </ul>
		<b>Side Effects</b>	
		<ul style="list-style-type: none"> <li>• Diarrhea/nausea</li> <li>• Metallic taste in mouth</li> <li>• Low B12 level</li> </ul>	

Sulfonylureas			
Examples		Action	Comments/Instructions
<u>Generic</u> glimepiride	<u>Brand</u> Amaryl	Stimulates the pancreas to release more insulin	<ul style="list-style-type: none"> <li>• Take 30 minutes before food.</li> <li>• Do not take if fasting.</li> </ul>
glipizide	Glucotrol Glucotrol XR	<b>Side Effects</b>	
glyburide	DiaBeta Micronase Glynase	<ul style="list-style-type: none"> <li>• Low blood sugar</li> <li>• Weight gain</li> <li>• Stomach upset</li> <li>• Skin rash/itching</li> </ul>	

DPP-4 Inhibitors			
Examples		Action	Comments/Instructions
<u>Generic</u> alogliptin linagliptin saxagliptin sitagliptin	<u>Brand</u> Nesina Trajenta Januvia	Increases insulin released after eating and lowers the amount of glucose released by the liver	<ul style="list-style-type: none"> <li>• Requires regular kidney function tests.</li> <li>• Can be taken with or without food.</li> </ul>
		<b>Side Effects</b>	
		<ul style="list-style-type: none"> <li>• Stuffy or runny nose</li> <li>• Sore throat</li> <li>• Headache</li> </ul>	

## Oral Medications *continued*

Thiazolidinediones (TZDs)			
Examples		Action	Comments/Instructions
<u>Generic</u>	<u>Brand</u>	Improves insulin's action in the body	<ul style="list-style-type: none"> <li>• Can be taken with or without food.</li> <li>• Report new swelling or shortness of breath to your healthcare provider.</li> </ul>
pioglitazone	Actos		
rosiglitazone	Avandia		
		Side Effects	
		<ul style="list-style-type: none"> <li>• Swelling</li> <li>• Weight gain</li> </ul>	

Alpha-Glucosidase Inhibitors			
Examples		Action	Comments/Instructions
<u>Generic</u>	<u>Brand</u>	Slows the breakdown of carbohydrate in the gut to slow the rise of blood sugar	<ul style="list-style-type: none"> <li>• Take with first bite of meal.</li> <li>• Do not take if meal is skipped.</li> <li>• Treat low blood sugar with glucose tabs or gel.</li> </ul>
acarbose	Precose		
miglitol	Glyset		
		Side Effects	
		<ul style="list-style-type: none"> <li>• Stomach upset (gas, diarrhea, nausea, cramps)</li> </ul>	

Meglitinides			
Examples		Action	Comments/Instructions
<u>Generic</u>	<u>Brand</u>	Stimulates the pancreas to release more insulin after you eat	<ul style="list-style-type: none"> <li>• Take before meals.</li> <li>• Do not take if meal is skipped.</li> </ul>
nateglinide	Starlix		
repaglinide	Prandin		
		Side Effects	
		<ul style="list-style-type: none"> <li>• Low blood sugar</li> <li>• Stomach upset</li> </ul>	

## Oral Medications *continued*

Bile Acid Sequestrants						
Examples	Action	Comments/Instructions				
<table border="0"> <tr> <td><u>Generic</u></td> <td><u>Brand</u></td> </tr> <tr> <td>colesevelam</td> <td>Welchol</td> </tr> </table>	<u>Generic</u>	<u>Brand</u>	colesevelam	Welchol	<p>The effect on blood sugar is not well understood</p>	<ul style="list-style-type: none"> <li>• Take with meals and a full glass of water.</li> <li>• This medication is also used to lower cholesterol.</li> </ul>
<u>Generic</u>	<u>Brand</u>					
colesevelam	Welchol					
	<p><b>Side Effects</b></p> <ul style="list-style-type: none"> <li>• Constipation</li> <li>• Stomach upset</li> </ul>					

Dopamine Agonists						
Examples	Action	Comments/Instructions				
<table border="0"> <tr> <td><u>Generic</u></td> <td><u>Brand</u></td> </tr> <tr> <td>bromocriptine</td> <td>Cycloset</td> </tr> </table>	<u>Generic</u>	<u>Brand</u>	bromocriptine	Cycloset	<p>Lowers the amount of glucose released by the liver</p>	<ul style="list-style-type: none"> <li>• Take with food within two hours of waking up.</li> </ul>
<u>Generic</u>	<u>Brand</u>					
bromocriptine	Cycloset					
	<p><b>Side Effects</b></p> <ul style="list-style-type: none"> <li>• Low blood pressure</li> <li>• Dizziness</li> </ul>					

SGLT2 Inhibitors																
Examples	Action	Comments/Instructions														
<table border="0"> <tr> <td><u>Generic</u></td> <td><u>Brand</u></td> </tr> <tr> <td>bexagliflozin</td> <td>Brenzavvy</td> </tr> <tr> <td>canagliflozin</td> <td>Invokana</td> </tr> <tr> <td>dapagliflozin</td> <td>Farxiga</td> </tr> <tr> <td>empagliflozin</td> <td>Jardiance</td> </tr> <tr> <td>ertugliflozin</td> <td>Steglatro</td> </tr> <tr> <td>sotagliflozin</td> <td>Inpefa</td> </tr> </table>	<u>Generic</u>	<u>Brand</u>	bexagliflozin	Brenzavvy	canagliflozin	Invokana	dapagliflozin	Farxiga	empagliflozin	Jardiance	ertugliflozin	Steglatro	sotagliflozin	Inpefa	<p>Works through the kidneys to remove extra sugar from the body.</p>	<ul style="list-style-type: none"> <li>• Take once daily before the first meal of the day.</li> <li>• Medications in this category have shown heart and kidney benefits.</li> <li>• Check with your healthcare provider about temporarily stopping before surgery.</li> </ul>
<u>Generic</u>	<u>Brand</u>															
bexagliflozin	Brenzavvy															
canagliflozin	Invokana															
dapagliflozin	Farxiga															
empagliflozin	Jardiance															
ertugliflozin	Steglatro															
sotagliflozin	Inpefa															
	<p><b>Side Effects</b></p> <ul style="list-style-type: none"> <li>• Yeast infections</li> <li>• Urinary tract infections</li> <li>• Urinating more often</li> <li>• Low blood pressure</li> </ul>															

## Non-Insulin Injectables

GLP-1 Agonists			
Examples		Action	Comments/Instructions
<u>Generic</u>	<u>Brand</u>	Keeps food in stomach longer, increases insulin release after eating, lowers the amount of glucose released by the liver	<ul style="list-style-type: none"> <li>• These medications help with weight loss and have heart benefits.</li> <li>• Take Rybelsus in the morning with 4 oz plain water, at least 30 minutes before other intake.</li> <li>• Other medications in this class can be taken with or without food.</li> <li>• Check with your healthcare provider about temporarily stopping before surgery.</li> </ul>
dulaglutide	Trulicity		
exenatide ER	Bydureon	<b>Side Effects</b> <ul style="list-style-type: none"> <li>• Nausea/vomiting</li> <li>• Headache</li> <li>• Diarrhea</li> <li>• Decreased appetite</li> </ul>	
liraglutide	Victoza		
lixisenatide	Adlyxin		
semaglutide	Ozempic Rybelsus*		
tirzepatide	Mounjaro**		

\*Rybelsus is a pill. The rest are injections. | \*\*Mounjaro is a GLP-1 and GIP agonist.

Amylin Agonists			
Examples		Action	Comments/Instructions
<u>Generic</u>	<u>Brand</u>	Keeps food in the stomach longer, lowers the amount of glucose released by the liver	<ul style="list-style-type: none"> <li>• Take immediately before meals.</li> </ul>
pramlintide	Symlin		
		<b>Side Effects</b> <ul style="list-style-type: none"> <li>• Nausea/vomiting</li> <li>• Decreased appetite</li> </ul>	

Glucagon			
Examples		Action	Comments/Instructions
<u>Generic</u>	<u>Brand</u>	Increases the amount of glucose released by the liver	<ul style="list-style-type: none"> <li>• Glucagon increases blood sugar levels if you lose consciousness (pass out) from low blood sugar.</li> <li>• Close family or friends should know how to give you glucagon and where you keep it.</li> <li>• The person giving glucagon should also call 911.</li> </ul>
dasiglucagon	Zegalogue		
glucagon	Gvoke Baqsimi*	<b>Side Effects</b> <ul style="list-style-type: none"> <li>• Nausea/vomiting</li> <li>• Headache</li> <li>• Stuffy/runny nose (Baqsimi)</li> </ul>	

\*Baqsimi is a nasal spray. The rest are injections.



## Insulin\*

### Background insulin

Background insulin, sometimes called basal insulin, is used to manage the glucose in your body that comes from your liver. Most background insulins are long-acting, so they are typically only needed once a day. Neutral Protamine Hagedorn (NPH) is one background insulin that doesn't work as long as the others, so most people take NPH twice a day. One important thing to remember about all background insulin is that it should be taken at the same time every day.

Background Insulin					
Generic	Brand	Onset	Peak	Duration	When to take
degludec	Tresiba	—————	none	Up to 42 hrs	Once daily
degludec U200	Tresiba				
glargine	Basaglar				
	Lantus				
	Rezvoglar				
	Semglee				
glargine U300	Toujeo	Up to 36 hrs			
NPH		1-2 hrs	4-12 hrs	14-24 hrs	Usually twice daily

\* Insulin is U100 unless otherwise noted.

## Mealtime and Correction Insulin

Mealtime insulin, sometimes called prandial insulin, is used to manage the glucose in your body that comes from food. These rapid- and fast-acting insulins start working soon after they're taken and they only last a few hours in your body. In addition to being used for food, these insulins can be used to correct high blood glucose levels with dosing instructions from your healthcare provider (sometimes called a sliding scale or a sensitivity factor).

Mealtime and Correction Insulin					
Generic	Brand	Onset	Peak	Duration	When to take
aspart	Novolog	5-20 min	1-3 hrs	3-5 hrs	5-15 min before eating
	Fiasp	2.5-20 min	1.5-2.5 hrs	5-7 hrs	At start of meal
glulisine	Apidra	5-20 min	1.5-2.5 hrs	3-5 hrs	5-15 min before eating
lispro	Admelog	5-20 min	1-3 hrs	3-5 hrs	5-15 min before eating
	Humalog	5-20 min	1-3 hrs	3-5 hrs	5-15 min before eating
	Lyumjev	2.5-20 min	1.5-2.5 hrs	5-7 hrs	At start of meal
lispro U200	Humalog	5-20 min	1-3 hrs	3-5 hrs	5-15 min before eating
	Lyumjev	2.5-20 min	1.5-2.5 hrs	5-7 hrs	At start of meal
Regular	Humulin	30-60 min	2-4 hrs	5-8 hrs	30 min before eating
	Novolin	30-60 min	2-4 hrs	5-8 hrs	30 min before eating

## Inhaled Insulin

Unlike the other insulins that are injected into subcutaneous (fatty) tissue, Afrezza is a rapid-acting insulin that can be inhaled. People who are using inhaled insulin for mealtime and/or correction insulin needs usually also need a daily injection of long-acting insulin to meet their background insulin needs.

Inhaled Insulin				
Brand	Onset	Peak	Duration	When to take
Afrezza	10-15 min	Less than 1 hr	2-3 hrs	With first bite of food

## U500 Insulin

Regular U500 is a concentrated insulin that has features of both mealtime and background insulin. It is usually taken at mealtimes to manage the glucose from food and from your liver.

U500 Insulin				
Brand	Onset	Peak	Duration	When to take
Regular U500	30 min	2.5-5 hrs	Up to 24 hrs	2-3 times daily, 30 min before meals

## Mixed Insulin (Mealtime + Background)

Some background and mealtime insulins are available in pre-mixed pens or vials. These pre-mixed options can help limit the number of injections needed each day, but it is important not to skip or delay meals when taking these types of insulins. To decrease the risk of low glucose when using mixed insulin, eat the same amount of carbohydrates at each meal. You may also need to include 1-2 snacks per day in your meal plan.

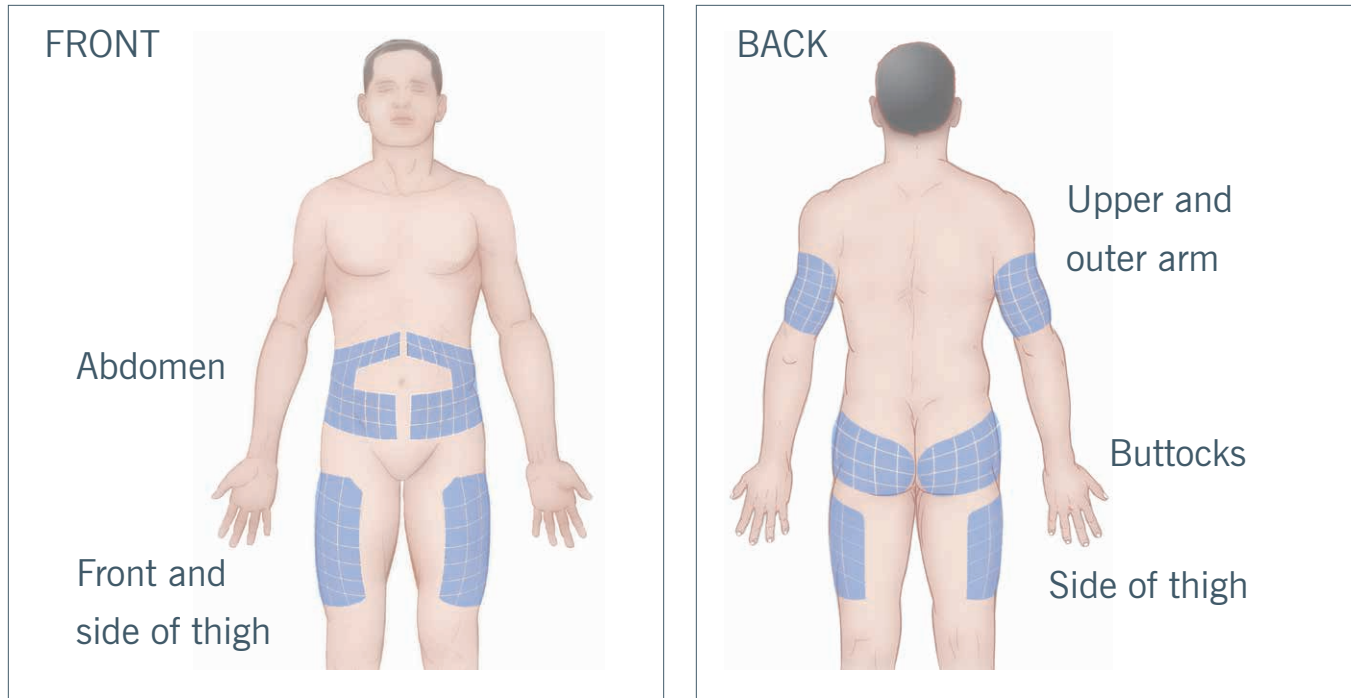
Mixed Insulin				
Brand	Onset	Peak	Duration	When to take
Humulin 70/30	30 min	2-12 hrs	10-16 hrs	30 min before morning and evening meals
Novolin 70/30				
Humalog Mix 75/25	5-20 min	1-2 hrs		5-20 min before morning and evening meals
Humalog Mix 50/50				
Novolog Mix 70/30				

## Insulin + GLP-1

Combinations of background insulin and GLP-1 medications are available for people with Type 2 diabetes. Similar to stand-alone background insulins, these combinations should be taken at the same time every day.

Insulin + GLP-1			
Brand	Peak	Duration	When to take
Soliqua (glargine/lixisenatide)	1-3.5 hrs	Up to 24 hrs	Within 1 hr before 1st meal
Xultophy (degludec/liraglutide)	8-12 hrs	Up to 42 hrs	Once daily

## Recommended Injection Sites



## Insulin Side Effects

- The most common side effect of insulin is low glucose.

## Storing Your Insulin Pens and Vials (Bottles)

### IN USE

- Write the date on the pen or vial when you first open it.
- Keep the pen or vial you are using at room temperature.
- Avoid temperature extremes (very hot or very cold temperatures will change how the insulin works)\*.

### NOT IN USE

- Store unused and unopened insulin in the refrigerator.
- The insulin will be good until the expiration date printed on the box.

\*Throw away any insulin that changes color or looks like it has clumps or anything floating in it.

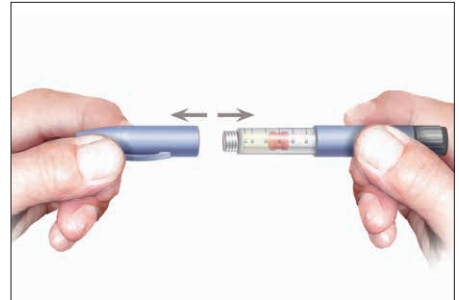


## Instructions for Injections Using a Pen

1. Wash your hands and gather supplies: insulin pen, pen needle and alcohol swab.
- 



2. Remove the pen cap.
- 



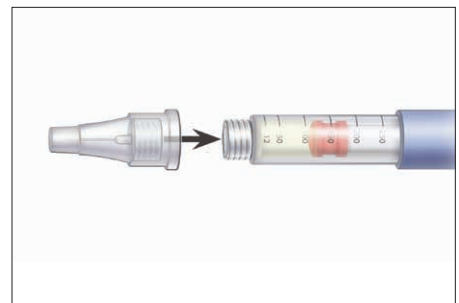
3. Wipe stopper with alcohol swab.
- 



4. If insulin is cloudy roll the pen (do not shake) in your hands and turn from side to side for one full minute. Rolling is not necessary if insulin is completely clear.
- 



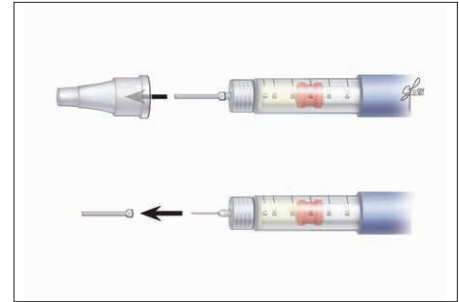
5. Attach new pen needle to pen.
- 



\* Pen needles come in a variety of sizes. Talk to your health care provider to choose the pen needle that is best for you.

## Instructions for Injections Using a Pen *continued*

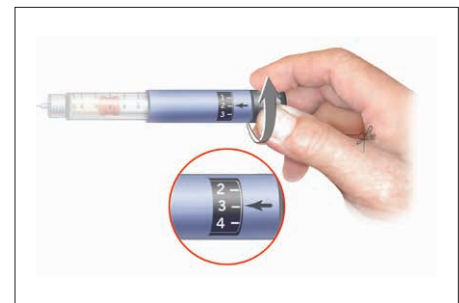
6. Pull off the outer and inner needle caps.\*



7. Follow the pen manufacturer's directions to prepare or prime your pen.



8. Select dose of medication.



9. Prepare the injection site by cleaning with alcohol swab. Perform the injection using the recommended technique.

Hold for 6-10 seconds.



10. Place the outer cap on the needle and remove the disposable needle from the pen. Throw the needle away in a hard plastic container. Replace pen cap.



\* Pen needles come in a variety of sizes. Talk to your health care provider to choose the pen needle that is best for you.

## Instructions for Injections Using a Vial (Bottle) and Syringe

1. Wash your hands and gather supplies: insulin bottle, syringe, and alcohol swab.



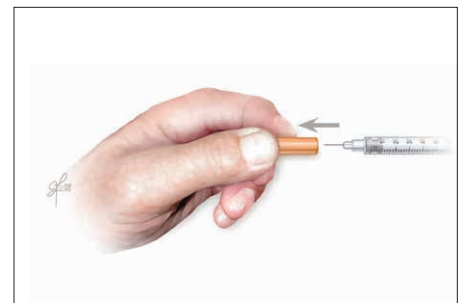
2. If insulin is cloudy roll the bottle (do not shake) in your hands and turn from side to side for one full minute. Rolling is not necessary with completely clear insulins.



3. If opening a new bottle remove the plastic cap (it will not be replaced). Wipe the top of the bottle with an alcohol swab.



4. Remove the caps from both the top and bottom of the insulin syringe. Do not touch the needle.



5. Pull the plunger down to the correct unit mark for the insulin dose ordered for you.



## Instructions for Injections Using a Vial (Bottle) and Syringe *continued*

6. Insert the needle into the top of the bottle with the bottle on the table. Push the plunger down to inject the air into the bottle.



7. Turn the bottle upside down with the needle still in it. Hold the bottle at eye level. Make sure the needle is in the insulin and no air is in the syringe.



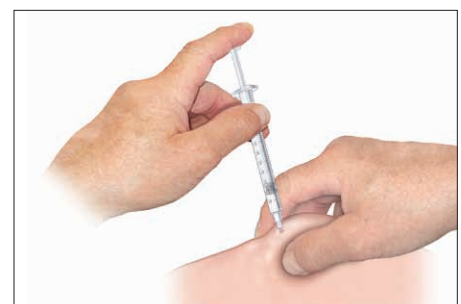
8. Pull the plunger down to the correct unit mark for the insulin dose ordered for you.



9. Check that the dose is correct, then pull the needle out of the bottle. Set the syringe down without letting the needle touch anything. Prepare the injection site by cleaning with the alcohol swab.



10. Holding the syringe like a pencil, insert the needle into the skin at a 90 degree angle. Make sure the needle is all the way through the skin. Push plunger until all insulin is injected and hold for 6-10 seconds. Throw the syringe away in a hard plastic container.



## Healthy Eating with Diabetes

Having diabetes does not mean that you have to give up the foods that you like. The best meal plan for diabetes is one that includes foods and flavors you enjoy, fits into your lifestyle, and helps you to manage your glucose levels. Since there is no eating pattern that will work for everyone, meeting with a registered dietitian is one of the most important steps in finding the best meal plan for you.

Whatever meal plan you choose, understanding carbohydrates (carbs) will be an important part of managing your glucose levels. Carbs, protein and fat are the main nutrients in food. Carbs raise your glucose because they turn into sugar in the body.

**Foods with carbs**  
raise glucose levels  
the most.

- › Sweetened drinks
- › Sweets, desserts, snack foods
- › Fruit (fresh, canned, dried, juice)
- › Milk, yogurt
- › Potatoes, corn, peas, starchy beans
- › Bread, rice, pasta, cereal, whole grains

**Lower-carb foods**  
raise glucose levels a  
very small amount.

- › Non-starchy vegetables

**Proteins and fats** are  
not carbs so they  
raise glucose levels  
the least.

- › Meat, poultry, seafood
- › Cheese, eggs
- › Nuts, seeds, soy products
- › Fats (ex: olive oil, avocado, butter)



## Carbs as Part of a Healthy Meal Plan

Although they raise glucose levels, carbs are fuel for the body and part of a healthy well-balanced meal plan. The amount of carbohydrate needed at meals and snacks is different for each of us. It can vary from person to person depending on a variety of factors, including current weight and activity level.

If you have not had a chance to meet with a registered dietitian yet, here are some tips that can help with glucose management until your first visit:

- › Aim for 30-60g of carb (2-4 carb choices) at each meal.
- › Try to eat three meals per day.
- › Aim for fresh fruits, fresh vegetables and high-fiber foods.
- › Include protein in any meal or snack that contains carbs.
- › Avoid sweets, sweet drinks (including juice), and processed foods.
- › Avoid foods for which you have a difficult time limiting the portion size.
- › Plan your meals so your plate looks like the plate shown later in this book.

## Carb Grams vs. Carb Choices

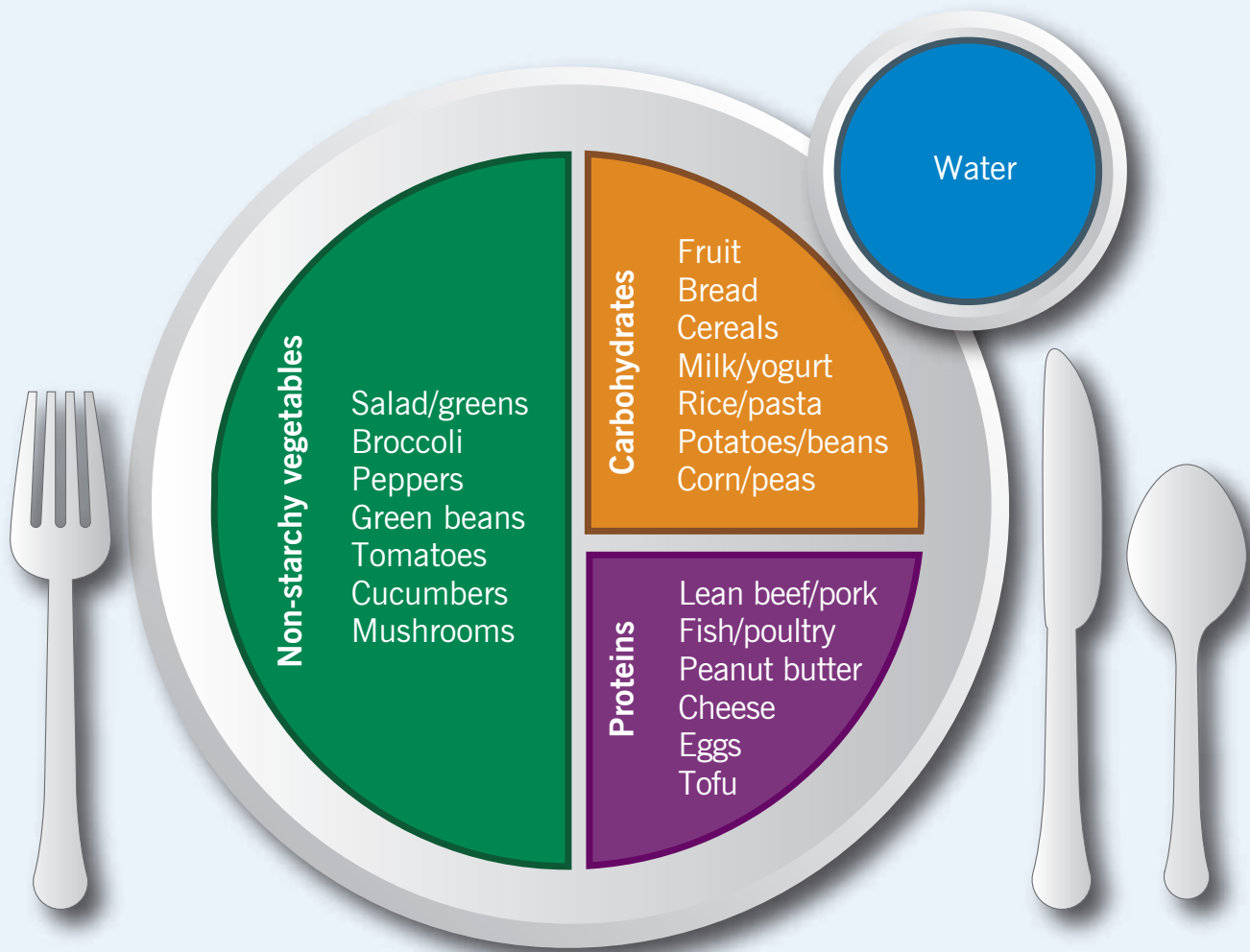
A gram is the carb measurement that is listed on all nutrition facts labels. It is the most common way of measuring the amount of carbohydrate in foods. Carb choices are measurements of carbohydrate found on some food packages and in some food lists for people with diabetes. One carb choice is the same as 15 grams of carbohydrate.

## Food and Medication Safety

If you use set doses of mealtime insulin or medications called sulfonylureas (for example: glyburide, glipizide or glimepiride) follow these guidelines to avoid low glucose related to meal planning:

- Do not skip or delay meals.
- Eat carbs at each meal.
- Aim for the same amount of carbs at each meal every day.

## Planning Healthy Meals



## Using Nutrition Information to Count Carbs

1. Look at the **servicing size**. If you are eating more or less than the serving size listed, then adjust the number of carb grams you are counting.
2. Aim for foods that are **very low in added sugars**.
3. Look at the **total carbohydrate grams (g)**. If your carb target is in grams, then the number listed is the amount of grams for this food. If your target is in choices, then go to step 4.
4. Divide the carb grams by 15 to determine the number of carb choices to count for this food.

### Nutrition Facts

8 servings per container

**Serving size** 1 cup (120g)

**Amount Per Serving**

**Calories** 180

% Daily Value\*

**Total Fat** 2.5g 3%

Saturated Fat 1g 5%

*Trans* Fat 0g

**Cholesterol** 10mg 3%

**Sodium** 430mg 19%

**Total Carbohydrate** 34g 12%

Dietary Fiber 2g 7%

Total Sugars 3g

Includes 0g Added Sugars 0%

**Protein** 7g 14%

Vitamin D 0.8mcg 4%

Calcium 78mg 6%

Iron 0.36mg 2%

Potassium 376mg 8%

\*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.

Serving size

Total Carbohydrate

Added Sugars

## Managing Sick Days

Illness, infection and any other stress on the body can cause glucose levels to increase. These high glucose levels can further weaken the body's immune system, making it harder for your body to fight the infection or illness. Below are some guidelines that will help with glucose levels when you are sick:

- › Check your glucose level every 2-4 hours.
- › Do not stop taking your diabetes pills and/or insulin, even if you cannot eat.
- › If you are unable to keep down solid food, drink something with 15 grams of carbohydrates, plus one cup of water or a sugar-free beverage every hour. Every 3-4 hours, drink a beverage that contains sodium and minerals needed by your body during sick days.
- › If you are able to keep down solid food, follow your regular meal plan and have 1 cup of water or a sugar-free beverage every hour.
- › Take your temperature.
- › If you need to take over-the-counter medicines, ask your doctor or pharmacist for a list of sugar-free products.
- › **Check your urine for ketones\* using ketone test strips.**
  - Do this every 4 hours when:**
  - 1. Your glucose level is higher than 250 mg/dL**
  - 2. You are vomiting**
  - 3. You have diarrhea**

**Call your health care provider if there are ketones in your urine.**

\*If your body is not able to use glucose for energy, it will break down its own fat for energy. When fat is broken down in this way, ketones can appear in your urine. Ketones in your urine can be dangerous.

## Physical Activity and Diabetes

Physical activity is one of the best ways to lower your glucose level. Being active is as important as taking your medicine, checking your glucose and planning your meals.

Be sure that the activity you are planning is safe for your health. **Before you begin an exercise program, talk with your health care provider.** Your goal should be at least 30 minutes, five days per week. One 30-minute session may be broken into three 10-minute sessions.

Here are some tips for exercise safety:

- Exercise with someone else, if possible.
- Carry a cell phone.
- Wear your medical alert tag.
- Carry a fast-acting carb with you.
- Bring your blood sugar monitoring supplies.
- Check your blood sugar before and after exercising.
- Wear the proper shoes and socks for exercising. Check your feet for sores before and after you exercise.



# Notes

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**To schedule a diabetes education visit at a  
Cleveland Clinic location near you, call one of the  
following numbers:**

Ashtabula, Conneaut or Jefferson ..... **440.994.7598**

Union Hospital ..... **330.364.0854**

All other northeast Ohio locations .... **216.444.6568**

