

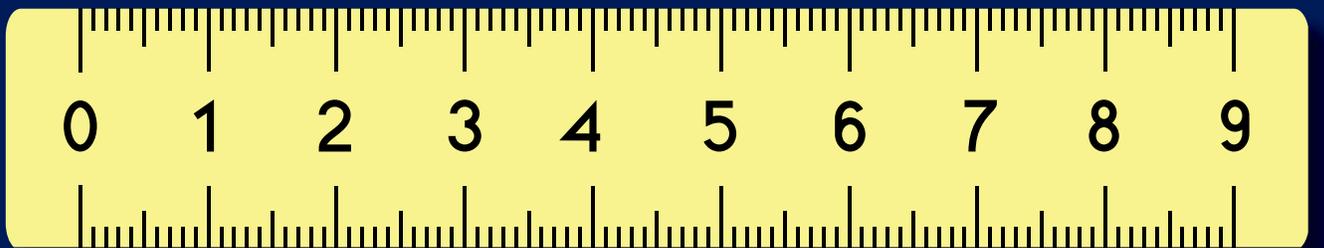
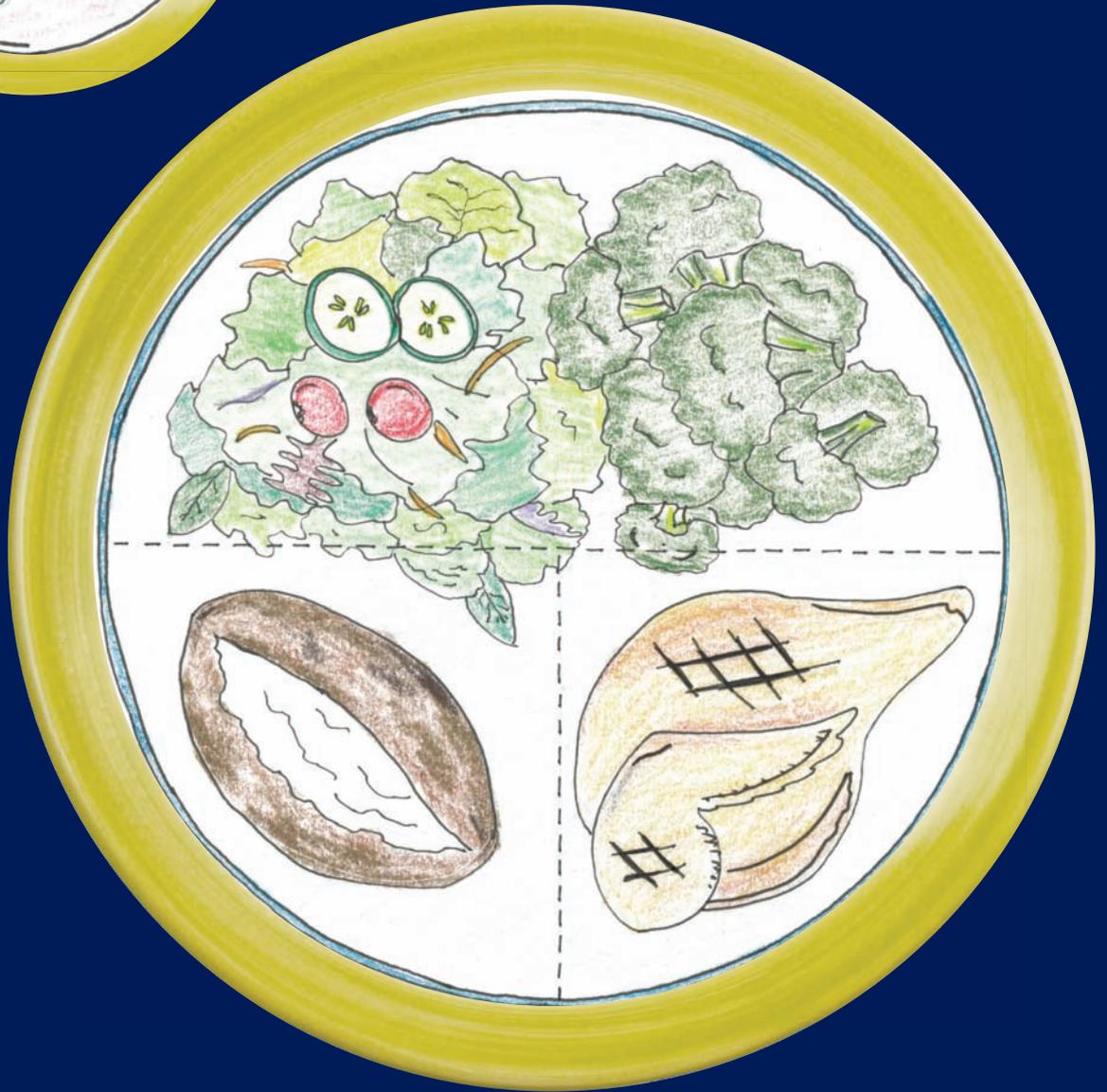
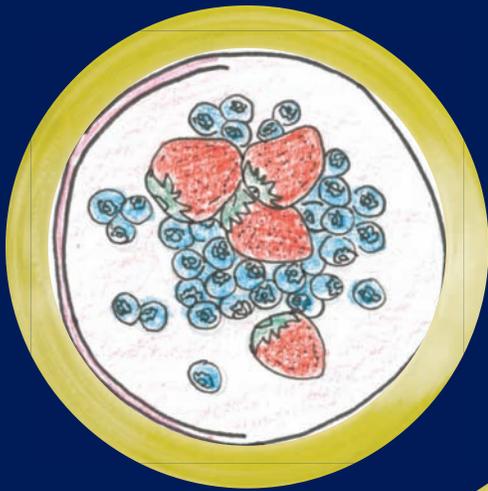
# Diabetes 101



## TAKING

## CHARGE





# Acknowledgements

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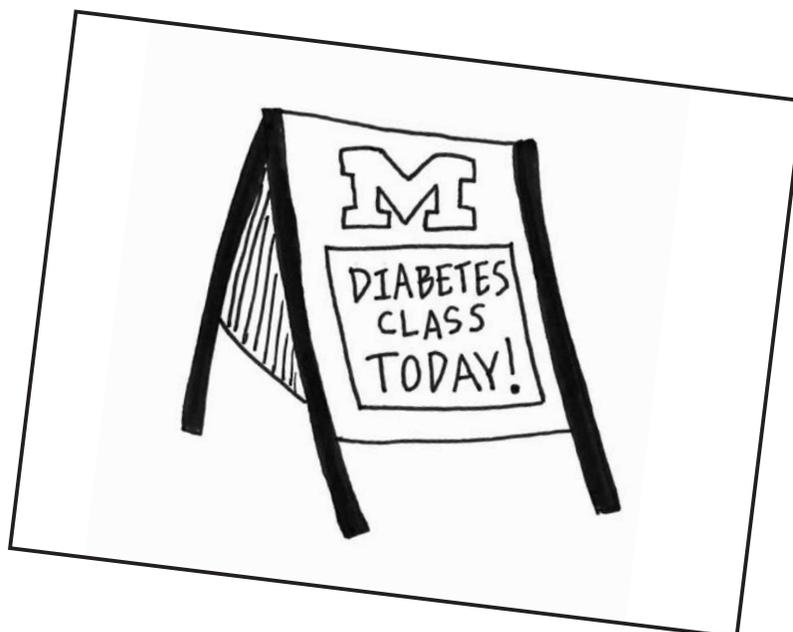
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## Coping & Support

***Diabetes affects your whole life—not just your body. It can affect your feelings about yourself and how you get along with others. An important step in learning to live with diabetes is to become aware of how you are feeling.***

### Q How did you feel when you found out you had diabetes?

Each person has different feelings about having diabetes. Some common feelings are:

- **Denial**—Some people find it hard to believe they have diabetes. They may also think that by ignoring diabetes they won't have to deal with it or it will go away (but it won't).
- **Anger**—When people feel angry about having diabetes, they may wonder, "Why me"? They may act angry at family, friends or health care professionals. In fact, they are angry about having diabetes.
- **Depression**—Some people keep their feelings about diabetes bottled up inside. As time goes on, they begin to feel very sad and blue—even hopeless. If you feel depressed, tell your health care provider. There are treatments for depression that are very effective.
- **Acceptance**—Gradually people adjust or adapt to having diabetes. They still don't like it, but they are able to handle it and enjoy life.

Many people find that it helps to talk about their feelings. Family and friends can help by listening. Most of the time, other people want to help. It's up to you to let them know the best way they can be helpful.

Many areas have support groups especially for people with diabetes and their families. These are groups of people who talk about what it's like to have diabetes and ways to handle problems. Ask your doctor, nurse or dietitian for help finding support groups in your area.



"Feelings about Diabetes" Adapted from the Michigan Diabetes Research and Training Center, 2009

## Diabetes: Myths and Facts



**I can't really have diabetes, I have no symptoms!**

**FACT:** Many people with diabetes have no symptoms. You can have diabetes for many years and not know it. Even if you do not have any symptoms, diabetes can cause damage to your body.



**Now that I have diabetes, I am likely to have low blood sugars. If I feel funny I should probably eat some candy.**

**FACT:** There are some diabetes medications that could cause a low blood sugar. It is important for you to understand how your medicine works. If you feel funny, you should check your blood sugar to see if it is too low. If your blood sugar is low, then follow the "rule of 15" on page 20.



**I can never drink alcohol (beer, wine or liquor) again.**

**FACT:** Most people with diabetes can still enjoy alcohol in moderation. (1-2 standard drinks in a day). Ask your doctor to be sure.



**As long as it is whole wheat pasta, I can eat all I want.**

**FACT:** Even though whole grains are a good source of fiber, they still contain carbohydrates that do affect your blood sugar. Whole grains are a part of a healthy meal plan for everyone, but watch your serving size.



**It is dangerous for people with diabetes to exercise.**

**FACT:** Exercise is an important part of staying healthy for everyone, especially people with diabetes. Learn about how exercise affects your blood sugar and plan ahead.



**Avoiding all "white" foods (white bread, potatoes, pasta) will cure my diabetes.**

**FACT:** Diabetes does not just go away and there is room for all foods in a healthy meal plan. Whole grains are higher in fiber and more healthy than processed foods.



**Diabetes always causes blindness (or kidney disease, or amputations).**

**FACT:** Research has shown that diabetes can cause blindness, kidney disease, or amputations, but when blood sugars are well managed you greatly reduce your chances of these diabetes complications. Many people with diabetes live a long, healthy life.



**I've tried to quit smoking 100 times. I'll never be able to quit.**

**FACT:** Don't quit quitting! It may take many tries to break this habit, but there are huge benefits. Try this resource for help: [www.michigan.gov/tobacco](http://www.michigan.gov/tobacco).



**Taking insulin means your diabetes is out of control.**

**FACT:** For some people, oral medications are not the answer to managing their blood sugars—insulin may be the best way to manage blood sugars.



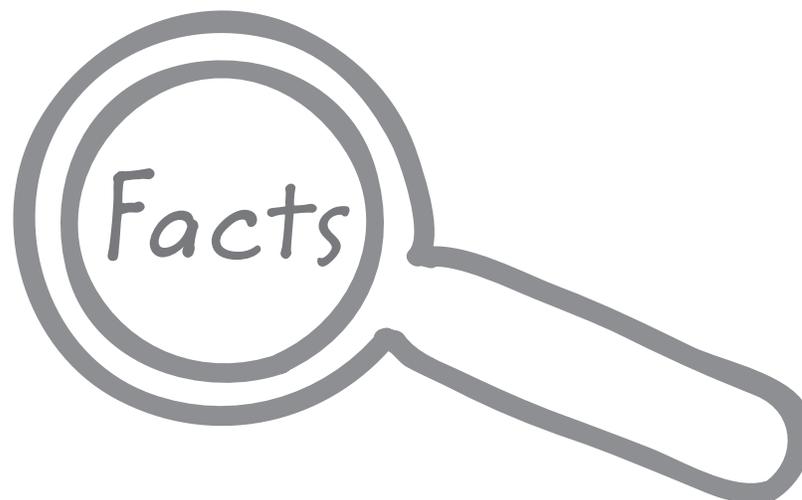
**Diabetes is not "life threatening".**

**FACT:** Diabetes is a serious disease. The more you learn about diabetes, the better you can take care of yourself and prevent complications. Diabetes is the 7th leading cause of death in the United States and is a major cause of heart disease and stroke.



**Insulin will make me gain weight.**

**FACT:** Eating too many calories will make you gain weight. Insulin is a natural hormone that helps regulate your blood sugar and gives your body energy.



# Diabetes: Understanding the Basics

## Q What is Diabetes?

- Diabetes is a disease that affects how your body handles sugar (glucose).
- There are many types of diabetes including Type 1, Type 2 and Gestational.
- Diabetes can also be caused by certain medicine including steroids, chemotherapy and others.

## Q What is the difference between Type 1 and Type 2?

**Type 1 Diabetes** is an autoimmune disease caused when your immune system attacks the cells (beta cells) in your pancreas that make insulin. People with Type 1 diabetes need to take insulin to replace what their body can no longer make.

**Type 2 Diabetes** occurs over time. Family history, weight gain, lack of physical activity, and stress can increase your risk of developing Type 2. In Type 2 diabetes, your pancreas still makes insulin, but your body doesn't use it well. The cells in your body are "resistant", making your pancreas work harder to keep blood sugar levels normal. People with Type 2 can take care of their diabetes with exercise, eating healthy, pills, and sometimes insulin.

## Q What is gestational diabetes?

**Gestational diabetes** can occur when you are pregnant. Most pregnant women are screened for Gestational Diabetes. Pregnancy hormones cause the body to become resistant to insulin leading to higher blood sugar levels. This can often be managed with a specific meal plan, but may also require insulin. It may go away after you have the baby, but is a sign that you are at higher risk for getting Type 2 diabetes in the future.

## Q What is Glucose?

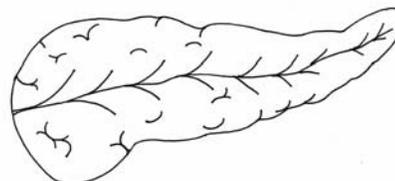
**Glucose (sugar)** is our body's main source of energy—like gasoline is to a car. Glucose comes from the food we eat (carbohydrates). The liver also stores glucose and releases it into your blood.

**Q What is Insulin?**

**Insulin** is a hormone made in your pancreas. It works like a key to unlock your cells and allow glucose (sugar) into the cell. Without insulin, the sugar just stays in your blood. All humans need insulin to live.

**Q What is the Pancreas?**

The **pancreas** is an organ in your body. The pancreas makes insulin and other hormones needed to break down and get energy from the foods you eat.



**Q What is A1C?**

**Hemoglobin A1C** is a blood test done in the lab that will give your average blood sugar over the last 3 months. The general goal for patients with diabetes is to maintain an A1C less than 7%.

Estimated Blood sugar	A1C
298 .....	12%
269 .....	11%
240 .....	10%
212.....	9%
183.....	8%
154.....	7%
140.....	6.5%
126.....	6%

# Intro to Nutrition — Some Questions to Ask Yourself About Your Eating Habits

## Q Am I eating a variety of foods?

A healthy meal plan includes vegetables, fruits, whole grains, low fat milk products, lean meat or meat alternatives.

## Q Am I skipping meals? Do I go longer than 4-6 hours without eating anything? Am I snacking around the clock?

Eating 3 balanced meals and maybe one snack around the same times each day can make it easier to manage your blood sugar.

## Q How much am I really eating?

Check the nutrition facts labels and measure some portions to learn more about your serving sizes. A general guideline of 45-75 grams of carbohydrates per meal and maybe a snack with 15-30 grams of carbohydrates can be a good starting point. Ask your doctor for a referral to a dietitian to tailor a plan for you.

## Q What am I drinking?

Regular soda/pop, juice, sport drinks or any beverages that contain calories/carbohydrates will raise your blood sugar very quickly and can add up to more carbohydrates than a whole meal. Water, flavored water, or artificially sweetened beverages that contain 0g carbohydrate will not affect your blood sugar.

## Q How does food affect my blood sugar?

**Check regularly.** Foods that contain carbohydrates raise your blood sugar, but carbs are still a very important part of a healthy meal plan. Checking your blood sugar (using the guide on page 16 and logbook on page 50) can help you learn how many carbs will work for you.

Keep a record of your blood sugars and work with your health care team to correct levels that are too high or too low.

## Q What about carbohydrates?

Carbohydrates or “carbs” provide your body with the energy it needs for physical activity and healthy organ function—you need carbs!

Eating too many carbs can cause **high blood sugar**; not eating enough carbs can cause **low blood sugar**.

Learn what the right balance is for you by checking your blood sugar before and about 2 hours after meals. (See page 16.)

**Where do your carbs come from?** Food sources of carbohydrates include grains (bread, rice, pasta, corn, wheat and others), fruits, starchy vegetables (i.e. potatoes, corn, and peas), legumes (beans and lentils), milk, yogurt and milk products (i.e. soy milk, rice milk), sweets and many drinks.

## Q What else can affect my blood sugar?

Exercise lowers blood sugar. Stress raises blood sugar. Certain medications can also affect blood sugar.

## Q Can I set aside 30 minutes a day for exercise?

Exercise daily: Get moving every day—dance, bike, swim, walk, do yoga, chair exercises, the options are endless! Walking is a great way to start! (Even 10-15 minutes can make a difference).

## Q What about my medicine?

Talk with your doctor, pharmacist or dietitian about side effects and how to take your medicine. Timing can make a difference.

# Label Reading

Use the Nutrition Facts on food labels to figure out how to work a food into your meal plan. Learn about what foods are healthier choices by looking at the label.

**Look at the *SERVING SIZE* and the *TOTAL CARBOHYDRATE (carbs)*.**

<b>Nutrition Facts</b>	
<b>Serving Size 1 cup (35g)</b>	
Servings Per Container 12	
Amount Per Serving	
<b>Calories 130</b>	Calories from Fat 27
	<b>% Daily Value</b>
<b>Total Fat 4g</b>	7%
Saturated Fat 1g	5%
Trans Fat 1g	
<b>Cholesterol 30mg</b>	10%
<b>Sodium 200mg</b>	8%
<b>Total Carbohydrate 30g</b>	<b>10%</b>
Dietary Fiber 4g	16%
Sugars 18g	
Sugar Alcohols 2g	
<b>Protein 3g</b>	
Vitamin A	25%
Vitamin C	25%
Calcium	0%
Iron	10%



## **SERVING SIZE:**

**Check the serving size and compare to what you are eating.**

## **Calories:**

3500 calories = 1 pound body fat.

Subtract 500 calories per day from what you are eating now to lose about 1 pound per week.

## **Saturated Fat ☹️:**

Raises LDL (bad) cholesterol.

## **Trans Fat ☹️:**

Raises LDL and lowers HDL (good) cholesterol.- check ingredient list for hydrogenated oils.

## **Sodium:**

Aim for less than 1500mg per day.



## **TOTAL CARBOHYDRATE:**

**Important fuel for your body.**

"Please see Appendix for Carbohydrate list and sample meal plans"

## **Dietary Fiber ☺️:**

Aim for at least 25-35g per day. (3-5g per serving of carbs)

## **Sugar Alcohols:**

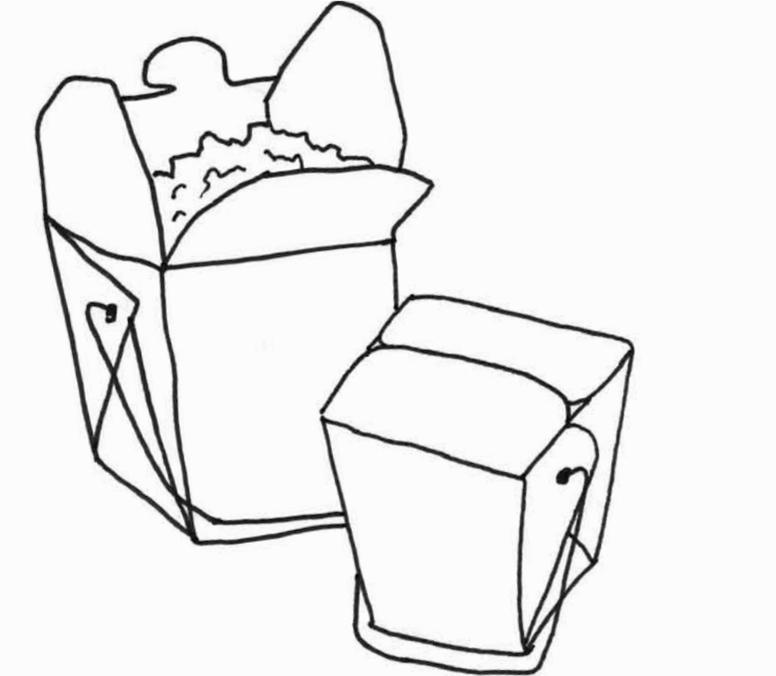
These can also affect blood glucose/sugar.

Most "sugar-free" foods are NOT carb free and will still raise blood sugar. Be sure to read the label.

Ingredients: UNBLEACHED ENRICHED FLOUR (WHEAT FLOUR, NIACIN, REDUCED IRON, THIAMINE MONONITRATE {VITAMIN B1}, RIBOFLAVIN {VITAMIN B2}, FOLIC ACID), SOYBEAN OIL, PARTIALLY HYDROGENATED COTTONSEED OIL, SEA SALT, SALT, MALTED BARLEY FLOUR, BAKING SODA, YEAST. CONTAINS: WHEAT.

Ingredients are listed by weight

## Tips for Eating Out



Eating out can be one of life's pleasures. You can enjoy yourself and still take care of your diabetes. It takes some planning and asking for what you need to achieve this goal. The more you measure food portions at home the better you can estimate portion sizes when eating out. Here are some tips to get you started!

Choose a restaurant that offers heart healthy options. Some helpful websites to find one are listed on the next page.

- Some restaurants have their own websites you can review or ask for a nutrition guide.
- Ask how a food is prepared and steer away from gravies and cream sauces.
- Read the menu and think about what you want to eat. How will your choices fit with the goals you have set for yourself? Are there options that fit better with your goals? Can you order fresh fruit from the breakfast menu, or choose an appetizer and a salad as a dinner entrée?
- Choose a smaller portion from the lunch menu, or split a meal with someone.
- To control portions, ask for a "to go container" to be served with your meal and when your meal arrives, portion out what you would like to eat, then put the rest in the container.
- Ask for changes. If your meal comes with french fries, ask if you can substitute vegetables or a salad.

- Choose no calorie beverages such as water, club soda or diet pop.
- Be choosy at salad bars. Choose greens, vegetables, and beans. Limit the higher calorie foods such as prepared salads (for example, potato or macaroni salad).
- Plan ahead for desserts and eat slowly; share your dessert with someone.
- Avoid the “value-sized” options (supersized, jumbo, giant, deluxe) and order a regular or junior sized sandwich instead.
- Choose grilled chicken instead of breaded, fried chicken.

*Enjoy Your Meal!*



**FREE ONLINE  
NUTRITION RESOURCES**

- [www.diabetes.org](http://www.diabetes.org) (MyFoodAdvisor)
- [www.myfitnesspal.com](http://www.myfitnesspal.com)
- [www.sparkpeople.com](http://www.sparkpeople.com)
- [www.caloriecount.about.com](http://www.caloriecount.about.com)
- [www.calorieking.com](http://www.calorieking.com)

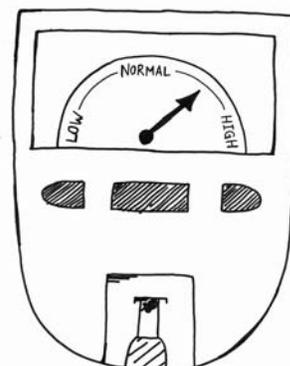
# Blood Glucose/Sugar Monitoring

## Q What is a glucose meter and do I need one?

A glucose meter is a small battery powered machine. Meters measure your blood sugar and your blood glucose level is then shown on a small screen. There are a variety of meters to choose from.

Your doctor, diabetes educator, other nurses and your pharmacist can talk with you about the meters available. Many pharmacies have the meters on display so you can see them to compare features.

*Diabetes Forecast* magazine has an issue each fall that reviews the different products available for diabetes management, including meters, lancets, and lancing devices.



## Q How do I select a meter?

Your diabetes educator, doctor, nurse or pharmacist can help you choose a meter.

Look for the features that work best for you when choosing a meter such as size, memory, battery type, and how easily you can read the screen (Is the screen bright enough to see in the dark? Are the numbers big enough to see?)

## Q How much will it cost?

Strips may cost 75 cents to over \$1 each and this is going to be an ongoing cost. Be sure the strips you buy are for your meter because they are not all the same.

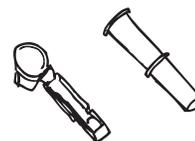
Check with your insurance to see which meter is covered by your plan. Some insurance companies may have you get your meter and supplies from a certain supplier and others may give you a set amount to cover the expenses. Most insurance plans and Medicare will cover at least part of the cost of the meter and strips. If you are having trouble, ask for help.

## Q What supplies do I need?

- ✓ Glucose test strips
- ✓ Lancets
- ✓ Glucose meter
- ✓ Lancing device

**Q What are lancets?**

The lancets are the needles used to stick your skin to get the drop of blood for testing.



**Q What is a lancing device?**

The lancing device holds the lancet and gives you a controlled stick to reduce pain and prevent skin damage. You can adjust the depth of the poke on most devices.



**Q Do test strips expire?**

Yes, each bottle will have an expiration date. Never use strips if the date has expired. Check product insert for details.

**Q How do I store my test strips?**

Make sure the cap fits snugly on the glucose strip bottle. Sunlight and moisture can damage the strips. Store at room temperature in a dry place.

**Q What is coding?**

Some meters require “coding”. If so, you will find the code with each new bottle of test strips.

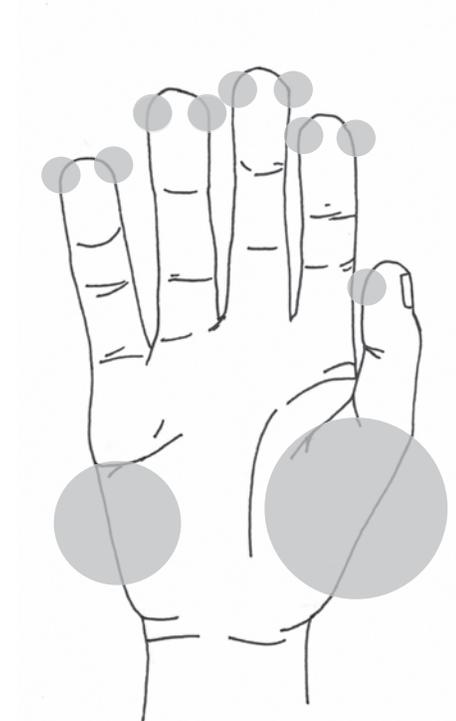
**Q What is control solution?**

This is a special liquid to test if your meter is working properly. The liquid reacts with the chemicals in the strip to give a reading. Your test strips will have a range marked on the bottle or on a paper in the box. If the reading falls in the range, the machine is working correctly. The control solution often expires several months after it has been opened.

## Q Where can I get a drop of blood?

You can get a drop of blood from:

- The side(s) of your fingers / thumbs and palm of your hand.
- Your earlobe.
- Forearms or top of legs can be used with alternate site meters, but should not be used when blood sugar is changing quickly or if you think you are having a low BG.
- Most people use their fingers.



## Q What problems might happen with glucose testing?

### ***Sore fingers***

- Use only the sides of the fingers or thumbs.
- Always use a lancing device.
- Use a different finger or thumb for each test.
- Lightly place the lancing device against the side of your finger.
- Consider alternate site testing.
- Adjust the depth on the lancing device.

### ***Blood drop too small***

- Shake your hand and lower it below heart level before lancing your finger.
- Do not use lancets without a lancing device.
- Adjust the depth on the lancing device.
- Wash your hands with warm, soapy water before testing.
- Squeeze / milk 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.

### ***What is on your hands?***

- Hand sanitizer (like Purell) or other things on your hands can affect the reading. Make sure your hands are clean and dry before checking your blood sugar.

## Q When?

When to check your blood sugar depends on your situation and what medicine you take to manage your diabetes.

You and your doctor will figure out the most useful times to check your blood sugar depending on your medicine, daily life and insurance.

Blood sugar goals vary from person to person depending on many things, so it's a good idea to check with your doctor to find out what your personal goal will be. Here are the target ranges from the American Diabetes Association:

Fasting	Before Meals	2 hrs after meals
80-120mg/dL	80-140mg/dL	Less than 180mg/dL

Keeping your blood sugar in these ranges will help you reach and maintain an A1C less than 7%

**Fasting:** First thing in the morning before you eat or drink anything.

\*Bedtime and Fasting blood sugar numbers should be almost the same number.

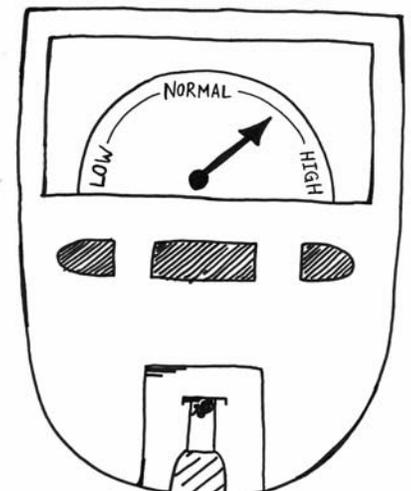
**Before meals:** Before you eat but at least 3-4 hours since you last ate or drank anything (other than water).

**1-2 hours after meals:** This can show you how the meal affected your blood sugar and/or how well your medicine worked.

**Bedtime:** Before going to sleep. (Be sure to write down if you snacked in the evening.)

**3 am (or your middle of the night):** Checking in the middle of the night can help you see how your medicine or insulin is working with your body while you sleep.

**Anytime you don't feel "right":** Rule out if it might be your blood sugar.



## Q What do I do with this information?

We learn a lot from a few small drops of blood:

- How different foods affect your blood sugar
- How exercise affects your blood sugar
- How your medicine is working for you
- Think of **one thing to change** and see how it affects your blood sugar.
- **Testing in pairs:** checking your blood sugar before and after things like meals, snacks, exercise, medicine, and stressful events can help you learn how those things affect your blood sugar.
- You may want to check your blood sugar more often about a week before your next clinic visit and write down your results to discuss with your doctor or diabetes educator.
- Use what you learn to make a plan and set goals to help manage your diabetes.



**EXAMPLE 1.** Before and 2 hours after a meal such as lunch.

Monday: Ate cheeseburger and fries fast food for lunch: BG before 126, after 202.

Tuesday: Ate a small sandwich, salad and an apple for lunch: BG before 132, after 146.

**What did I find?** *Wow, what I choose to eat really makes a difference in my blood sugar.*

**Now what?** *I set a new goal to eat lunch at home at least 3x per week.*



**EXAMPLE 2.** Before bed and first thing in the morning.

Monday: Watched TV all evening: BG 162 before bed and 204 in the morning.

Tuesday: Watched TV all evening: BG 127 before bed and 166 in the morning.

**What did I find:** *My blood sugar rises overnight.*

**Now what?** *Call my doctor and discuss how my medication is working.*

*Poking your fingers is not fun, so get the most out of it!*



**EXAMPLE 3.** How does exercise affect my blood sugar?

Went for a 30 minute walk 3 days in a row and checked my BG before and after.

**What did I find?** *My BG goes down an average of 35 points after walking.*

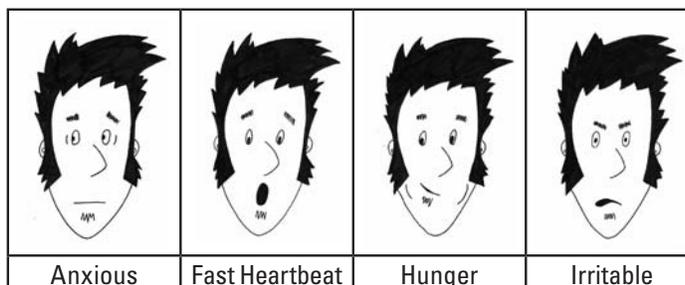
**Now what?** *I'm going to try and take a walk 3 days a week after lunch.*

**Ask your doctor, nurse or dietitian.**

- *How is my medicine working?*
- *When would be the best time for me to check my blood sugar?*

# Low Blood Sugar (Hypoglycemia)

Although people usually think about the long-term complications when it comes to diabetes, short-term or acute problems can also occur. Both low blood sugar levels (hypoglycemia) and high blood sugar levels (hyperglycemia) are acute problems.



## Q What is a low blood sugar?

Usually, a blood sugar level of less than 70 mg/dL is considered too low and needs to be treated.

Anything that lowers your blood sugar can cause hypoglycemia. Too much insulin, the wrong kind or dose of your diabetes pills, too much exercise, or too little food can cause your blood sugar to go too low.

## Q How will I feel when my blood sugar is too low?

When the blood sugar is too low, you will feel certain symptoms. This is called a reaction. You might feel:

- sweaty
- confused
- nervous
- anxious
- a fast heartbeat
- irritated
- weak
- headache
- hungry
- numb around nose/mouth

Sometimes other people notice you are having a reaction before you do. They might notice you are:

- irritable
- not thinking clearly
- slurring your words
- confused
- acting groggy/sleepy
- not sleeping well/having nightmares

## Q Will I have all of these signs and symptoms?

Everyone has slightly different signs and feelings when their blood sugar is too low. You may have several of these symptoms or you may have different ones. You will usually have the same feelings each time you have a reaction.

## Q Do these feelings always mean that I am having a reaction?

You may have signs of a reaction when your blood sugar is coming down, even though your blood sugar is not below 70 mg/dL. This can also happen if your blood sugar has been high for a time. You can't always count on the way you feel to tell you if your blood sugar is really low. Checking your blood sugar is the only way to be sure.

Never drive when your blood sugar is low. Driving with a low blood sugar is just like driving drunk. If you feel as if you are having a reaction, pull over, treat the reaction and wait until your blood sugar is on target before you drive again.

## Q How do I treat low blood sugar? Rule of 15:

**If your blood sugar is 50-70 mg/dL, take 15 grams of carbohydrate.**

**If your blood sugar is less than 50 mg/dL, take 30 grams of carbohydrate.**

**Wait 15 minutes and re-check your blood sugar. If your blood sugar is still less than 70 mg/dL, take another 15 grams of carbohydrate.**

What to Take	Amount (15 grams of carbohydrate)
Glucose tablets.....	3 to 4
Regular soft drinks.....	1/2 cup (4 ounces)
Orange or apple juice.....	1/2 cup (4 ounces)
Grape or cranberry juice.....	1/3 cup (3 ounces)
Milk (no fat or low-fat).....	1 cup (8 ounces)
Raisins.....	2 tablespoons
Sugar packets.....	3 packets
Regular gelatin snack cup.....	3.5 ounces
Fruit cup, in its own juice.....	4 ounces
Fruit Roll-up.....	1 large roll

**Q What should I do after a reaction?**

Once you are sure the reaction is over, make a note in your record. Write down what your blood sugars were, the symptoms you felt, and how you treated the reaction. If you have two or more reactions in a week, call your doctor. Your medicines may need to be adjusted.

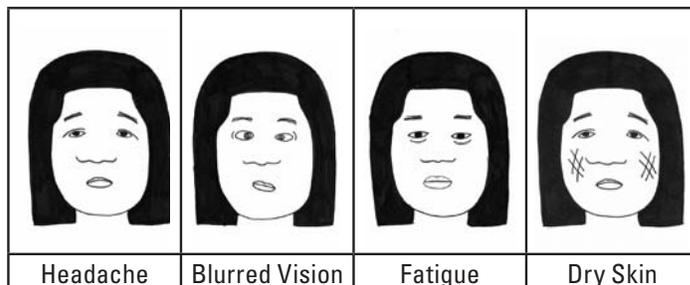
**Whenever you have a reaction, ask yourself these questions.**

- 1. What was I doing before the reaction?*
- 2. What do I think caused the reaction?*
- 3. Did the treatment work?*
- 4. Was my blood sugar on target for the rest of the day after the reaction?*

Developed by the Michigan Diabetes Research and Training Center, (NIH grant P60DK02572), 2012

## High Blood Sugar (Hyperglycemia)

Although people usually think about the long-term complications when it comes to diabetes, short-term problems can also occur. Both low blood sugar levels (hypoglycemia) and high blood sugar levels (hyperglycemia) are short-term problems.



Although most people have heard about low blood sugar levels and may be worried it will happen to them, high blood sugar levels are also serious. Over time, these greatly increase the risk for the long-term complications of diabetes.

### Q What is high blood sugar?

In general, a blood sugar reading of more than 180 mg/dL or any reading above your target range is too high. A blood sugar reading of 300 mg/dL or more can be dangerous. If you have 2 readings in a row of 300 or more, call your doctor.

### Q What causes high blood sugar?

Anything that can raise your blood sugar can cause it to go too high. Not having the right dose or kind of diabetes medicine, being ill or stressed, forgetting to take your diabetes pills or insulin, doing less exercise than usual, or eating more carbohydrates than usual are all things that can cause your blood sugar to go too high. Although it is frustrating, blood sugar levels can also be too high for no clear reason. Sometimes these high levels may be the first sign of an infection, illness or stress.

Blood sugar levels can go very high when you are ill, talk with your health care team about creating a 'sick day plan' to manage your diabetes when you have a cold, flu or other illness.

### Q How will I feel when my blood sugar is too high?

At times you might not notice any symptoms of high blood sugar. Other times, you may feel the way you did when you first had diabetes. You may:

- feel weak and tired
- have blurred vision
- go to the bathroom more often
- have a dry mouth
- be thirsty
- feel nauseated and vomit

If you have any of these symptoms, check your blood sugar level to see if that is the problem. If your blood sugar levels are high for several days, you may also feel hungry, nauseated or dizzy when you stand. If your blood sugar keeps going higher, other people may notice that you act confused. This is an emergency, and you need to go to the hospital right away. If you aren't treated, you can go into a coma.

## Q How can I treat hyperglycemia?

First, drink plenty of water or sugar-free fluid to help “flush” the sugar from your bloodstream.

Think about why your blood sugar is high! Blood sugar can be high due to:

- illness or infection
- stress
- less activity than normal
- eating more carbohydrates
- missed diabetes medicine
- a new medicine

If you've just not been in your usual routine, your blood sugar should go back to normal once your routine goes back to normal.

But if you feel ill, see blood sugar over 300 twice in a row, or see blood sugar above your target range for more than a week, then you should call your doctor.

## Ask your doctor, nurse or dietitian.

- *What is the target range for my blood sugar readings?*
- *What should I do when my blood sugar readings are too high?*
- *When should I call you about high blood sugar levels?*
- *Can you help me to make a sick day plan?*

Developed by the Michigan Diabetes Research and Training Center, NIH grant P60DK02572), 2012

## Simple Sick Day Guide

Blood sugars usually rise when you are sick. This is because of the physical stress on the body. Sometimes, the blood sugars will increase before you actually feel sick! Talk to your medical team ahead of time so you'll be prepared to handle sick days! Here are some suggestions to help also:

- Discuss what to do with your doctor before you are sick, so you have a plan for your medicine.
- Check your blood sugars more often (every 2-4 hours). Let your doctor know if they are running significantly higher than usual.
- You will need to have carbohydrates throughout the day. If your blood sugars are running close to 100, you should have liquids with carbs. If your blood sugars are running higher (>150), you should have carbs at meal times but your liquids do not have to have carbs in them.
- Drink plenty of fluids to prevent dehydration. Have small sips every 15 minutes or so.
- Have a supply of "sick day foods" on hand. Examples would be clear liquids like regular soda (Vernor's® ginger ale of course!), regular jello or popsicles. You'll have other favorites also!
- Have a supply of "over the counter" sick day meds on hand. Discuss with your doctor ahead of time what you should use for cold/flu/etc.
- If you wear an insulin pump, be sure to change your infusion set and troubleshoot your pump. You may not be sick but may be having pump problems!
- Call your doctor if you have persistent vomiting, diarrhea (more than 3 times in 24 hours) or fever (over 101 for 24 hours).

Chase, Peter. Understanding Diabetes, 11th edition, 2006. [www.BarbaraDavisCenter.org](http://www.BarbaraDavisCenter.org)

## Special considerations for sick days with Type 1 Diabetes: Diabetic Ketoacidosis (DKA)

- DKA occurs when there is not enough insulin available to meet the body's needs.
- When the body does not have enough insulin, sugar cannot be used for energy. The body uses fat instead, producing dangerous levels of ketones.
- Ketones are an acid made when the body is breaking down fat. Small amounts of ketones may be normal if someone is fasting for many hours. However, if a person's body is breaking down lots of fat because they don't have enough insulin, ketones start to rise in the blood and then spill over into the urine. You can measure these "urine ketones". If urine ketones are "large" that suggests very high levels of ketones in the blood. These high levels of ketones can cause the blood to become acidic—"Diabetic Ketoacidosis".
- DKA is the cause of 85% of re-admissions to the hospital for someone with known diabetes. It is a very dangerous complication of **Type 1 diabetes** and can lead to coma or even death. The good news is that DKA is 98% preventable!

### How DKA Develops:

Lack of insulin → Higher blood sugars → Dehydration develops → Fat broken down for energy → Ketones in blood → Ketones in urine → Diabetic Ketoacidosis

### Prevention/Treatment:

- Check ketones if you are sick or your blood sugar is over 300mg/dL
- Increase fluid intake if your blood sugar is over 300m/gL or you are sick
- Take your insulin-extra insulin (along with about 10-15g of carbs) is needed with ketones; call for help.

#### Possible Causes:

- Stress
- Illness
- Lack of insulin
- Dehydration
- Insulin pump problems
- Chronic high blood sugars

#### Symptoms:

- Upset stomach or pain
- Vomiting
- Fatigue/drowsiness
- Sweet/fruity breath
- **Shortness of Breath or Deep Breathing: Go to ER!**

# Diabetes and Physical Activity

## Q How can physical activity help me?

- Lower blood sugars for 24-48 hours.
- Lower insulin needs.
- Less stress related changes in blood sugars.
- Lower risk of heart disease.
- Improve mood, increase energy level, better quality sleep.



## Q Where can I begin? Aerobic Activity!

Goal of 30 minutes (or more) moderate activity on 5 (or more) days per week.

- Walking, swimming, and biking are all good choices. Running is not necessary, but okay for more trained athletes.
- Start slow: If you haven't been active at all, then 2-3 minutes/day might be a good start. Work up to 5 minutes. Wait and see how you feel the next day before increasing.
- Choose activities you enjoy.
- Find a walking partner or join a group.
- If you are too busy for 30 minutes all at once, try 10-15 minutes two or three times per day.

## Q What about weight lifting or yoga?

- These are non-aerobic activities that are also important for better balance, more flexibility and less stress.



## Exercise Safety!

- Carry something with you such as glucose tablets or a juice box in case your blood sugar drops.
- Drink plenty of water.
- Check feet before and after exercise.
- If taking a sulfonyurea or insulin: have a medical ID with you!
- Monitor blood sugar to learn how your activities affect your blood sugar.

**Caution: Check with your doctor before starting any new physical activity.**

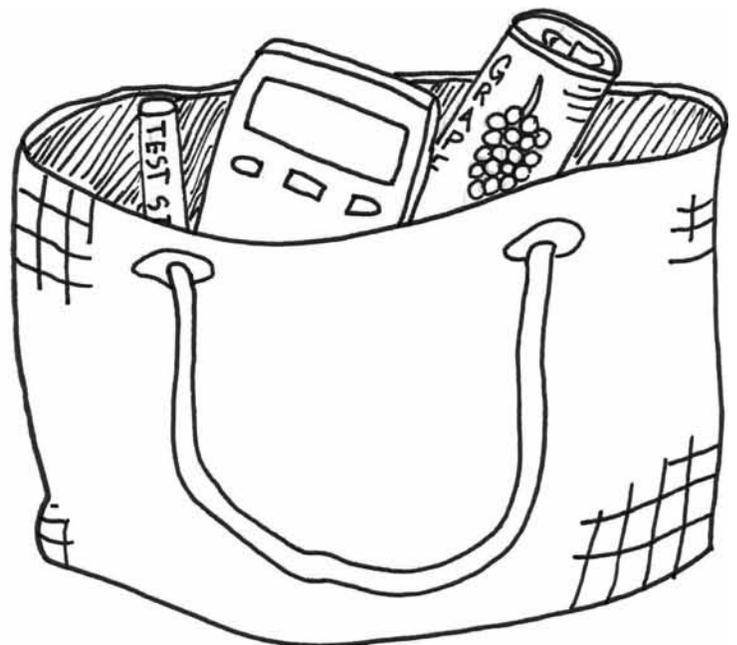
***If you take insulin, keep a log of your blood sugars to find out your pattern and share with your diabetes educator or doctor.***

Do 2-3 trials with new activity and write down results.

Check blood sugar:

- About 30-60 minutes prior to activity
- Immediately before activity.
- Every 30 minutes during activity.
- Shortly after (5-15 minutes).
- Middle of the night (especially after strenuous exercise).
- Next 24 hours as usual.

You may need to adjust your insulin dose and/or eat more carbohydrates before, during or after physical activity.



## Goal Setting

The 7 areas that you can work on to improve your diabetes are:

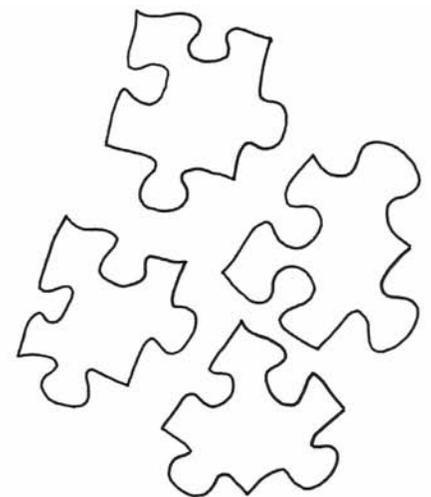
- **Healthy Eating**—Decrease portions, eat at regular times, add whole grains, fruits and vegetables.
- **Being Active**—Increase activity by walking, swimming or biking, take the stairs, park farther away.
- **Monitoring**—Check blood sugar, record results, keep a journal. Monitoring can also include weight and blood pressure.
- **Taking Medicines**—Take the right amount at the right time, learn how your medicine works and what the side effects are.
- **Problem Solving**—Take care of high and low blood sugars, sick days, know who to call and when.
- **Reducing Risks**—Stop smoking and start preventive care: get dilated eye exams, foot care, flu and pneumonia shots, and dental care.
- **Healthy Coping**—Know when to ask for help and who you can talk to when you feel stressed or overwhelmed.

***Pick something important to you and break your larger goals down into small steps that you can really achieve!***

**Caring for diabetes takes time and commitment, but it's worth it!** Keep in mind that change takes time. Once you choose a goal, break down the steps you will take this week to reach that goal. Think of these as experiments, or things you will try to see if they work. Think about why and what you will do differently next week if something didn't work.

***Be patient with yourself and take it one day at a time.***

Adapted from the Michigan Diabetes Research and Training Center (NIH grant P60DK02572), 2012.



# Having an Outpatient Test? Plan Ahead!

For patients with diabetes, any test or procedure that causes you to miss a meal or change how you eat will require special planning to safely manage your blood sugar. Because the timing of your meals and medicines will be different than usual, your blood sugar level is also likely to be different than usual and you will want to watch it closely.

- Try to schedule your test early in the day so you'll be able to resume eating along with your medicine as close to your usual time as possible.
- Test your blood sugar more often—at least before meals and bedtime and if you think it's high or low.
- On the day of the test, check your blood sugars every few hours before the test and until you are ready to eat again. Take your blood sugar meter and test strips with you.
- Be sure to tell the medical staff if you think you are having a low blood sugar during the procedure. Bring a fast acting clear liquid carb like apple juice or Sprite with you.
- If you have Type I diabetes, also check your urine for ketones when your blood sugars are over 300mg/dl. If ketones are moderate or large, contact your health care provider for advice.
- If you have a low blood sugar reaction while preparing for a test, you must treat it. You can use a clear liquid containing carbohydrates like ½ cup apple juice or ½ cup of regular Sprite.

## What if you take insulin?

You may need to decrease the dose during the days before the test and the night before the test. If you take fast acting insulin at meals, you probably will not need as much if you are only having clear liquids. Most people are instructed not to take any fast acting insulin the morning of their test. You will be able to resume your fast acting insulin when you eat after the test. Your medical team will help you decide how to adjust your insulin before the test and when to take it after the test.

**Q What if you take pills?**

You may be instructed not to take your pill the morning of your test, but to take it right after the test. Some of the pills for diabetes (Glipizide, Glyburide and Amaryl) make your pancreas secrete insulin, which could cause a low blood sugar if you are not eating. Your medical team will help you decide if you should stop taking your pills, and when you should start taking them again.

**Q What if you take metformin (Glucophage)?**

If you take metformin or any pills containing metformin, you should not take them the morning of the test. For any tests that inject dye (CT scans, IVP, some Angio procedures), you will be instructed not to take your Metformin containing pills the entire day of the test and for two days after the test. A blood test for kidney function may need to be done before you restart these pills. Please speak to your doctor or nurse about this.

**Q What if your prep calls for clear liquids?**

You will be replacing all of your carbohydrates with clear liquids—those are the ones that you can see through. You will need to have some clear liquids with carbohydrates. These are digested more rapidly and you will be more likely to have a low blood sugar reaction. Therefore it’s a good idea to have your clear liquids in small amounts throughout the day. Drink the liquids at breakfast time, mid-morning, lunch time, mid-afternoon, dinner, and bedtime. Do NOT use liquids that are red or purple.

**The following clear liquids are recommended:**

<b>Liquid:</b> .....	<b>Grams of Carbohydrate:</b>	
Chicken or beef broth .....	1 cup.....	0 grams
Apple juice.....	½ cup.....	15 grams
White grape juice.....	½ cup.....	15 grams
Jello ( <b>no red or purple</b> ) .....	½ cup.....	20 grams
Popsicles ( <b>no red or purple</b> ).....	see Nutrition label	
Kool-Aid ( <b>no red or purple</b> ).....	½ cup.....	10 grams
Regular sodas, not diet.....	½ cup.....	10 grams
Sports Drinks (Gatorade®).....	see Nutrition label	

\*Coffee (no cream or milk), tea, broth, clear diet sodas and water may be taken at any time.

**These are general guidelines. Please call the healthcare provider who manages your diabetes for more specific instructions.**

**The following pages are intended for people who take insulin.**

Some people with Type 2 diabetes take insulin to manage their diabetes.

All people with Type 1 diabetes require insulin.

Insulin is a hormone made in your pancreas. Please remember: If you do need to take insulin, this is not a failure on your part. It is an essential treatment to manage your diabetes. If you have any concerns, please talk with your physician, nurse or diabetes educator.

# Insulin Education

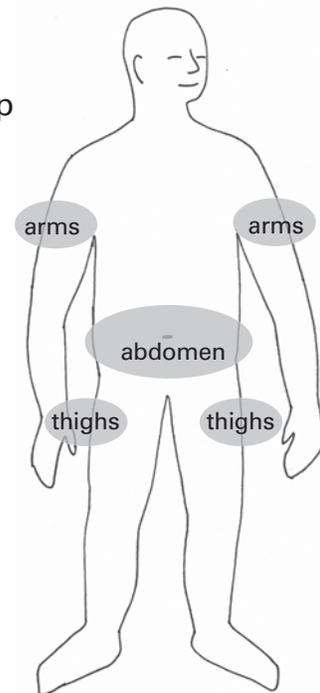
# Insulin: The Basics

**Insulin** is a hormone that your body naturally produces.

Starting insulin does not mean you are a failure—it may be the best way to keep your blood sugar in the target range. *How do you feel about taking insulin?*

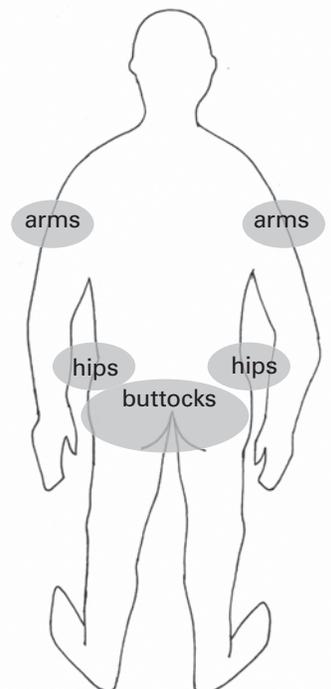
## How to care for insulin:

- Unopened bottles and pens should be stored in the door of the refrigerator and are good until the expiration date.
- Read package insert to check how long your insulin is stable at room temperature.
- In general insulin pens that you are using can be kept at room temperature 7-42 days depending on the type of insulin—discuss with your pharmacist.
- Store the insulin you are using at room temperature (less than 86 degrees) and out of direct sunlight. If insulin becomes frozen, throw it away as it will not work.
- Remove the needle from the pen right after you give your shot.



## Site Rotation:

- Absorption is affected by body part, scar tissue, temperature, length of needle and physical activity.
- Sites: abdomen, buttocks, arms, legs (outside hip area), even those love handles!
- Always inject into fat tissue, not muscle—can you pinch an inch?
- Be sure to use different sites for with each shot.
- Stay two finger widths away from belly button.
- Using the same site too often can cause scar tissue and the insulin can't absorb into the body, making blood sugars high and causing you to need more insulin.
- Check sites for scar tissue by feeling for lumpy, hard spots under skin.



# Drawing Up One Insulin From a Vial

To manage your diabetes you need to take a shot of insulin. Your doctor has ordered the following insulin for you:

Name of insulin: \_\_\_\_\_ Brand: \_\_\_\_\_

Dose of insulin: \_\_\_\_\_

Syringe used: \_\_\_\_\_

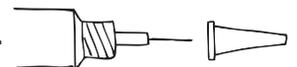
Time your insulin is to be taken: \_\_\_\_\_

## Q What will I need?

- ✓ Insulin
- ✓ Insulin syringe
- ✓ Alcohol pad

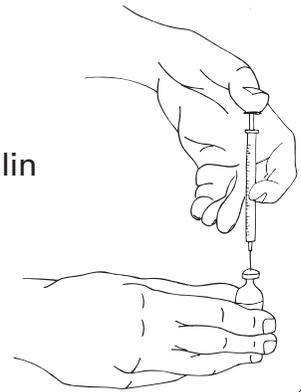
## Q How do I draw up the insulin?

1. Wash your hands with soap and water.
2. Always check the label on the insulin bottle to make sure you are taking the right insulin. Regular, Humalog (Lispro), Novolog (Aspart), Apidra, Levemir and Lantus insulin are clear. NPH, 70/30, or 75/25 insulin should be cloudy.
3. Check the expiration date on your insulin bottle. Do not use expired insulin.
4. ONLY IF YOU ARE USING CLOUDY INSULIN (NPH, 70/30, or 75/25): Gently roll the bottle of insulin between your hands until it is mixed. Do not shake the insulin bottle as this can cause air bubbles.
5. Take the syringe out of its package or remove the plastic end cap.
6. Take off the needle cap and place it on the table.
7. Pull the plunger of the syringe down to the number of units of insulin you need ( \_\_\_\_\_ units). In doing this you will fill the syringe with air.



Insulin Education

8. Carefully put the needle through the rubber stopper of the insulin bottle and push the air into the bottle.

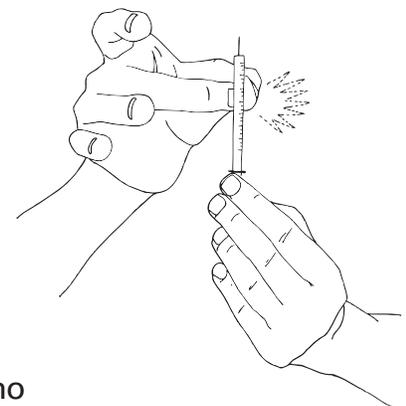


9. Be careful to support the needle in the bottle so does not bend. Turn the insulin bottle upside down with the syringe still in place. Pull the plunger down to the number of units of insulin you need ( \_\_\_\_\_ units). Take the needle out of the insulin bottle.



10. Check for air bubbles in the syringe.

- If you see air bubbles in the syringe, remove syringe from insulin bottle and tap the syringe firmly with your fingernail or a pen to move the bubbles to the top and center of the syringe.
- Push the plunger up a few units until the air bubbles are gone.
- Put the needle back into the rubber stopper of the insulin vial and pull down on the plunger and fill the syringe with the correct amount of insulin ( \_\_\_\_\_ units).
- Check again for air bubbles. If present, repeat the steps above.
- 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.



11. Take the needle out of the insulin bottle and give yourself the insulin.

# How to Give an Insulin Shot

**Q Where on my body am I going to inject?**

Fatty areas of your body such as stomach, arm, thigh or buttock.

Insulin is absorbed best from the belly/stomach area.

**Q Can I use the same spot every time?**

No, make sure to rotate shot sites. Ask your nurse or diabetes educator how to best rotate sites.

**Q What supplies will I need?**

- ✓ Insulin Vial or Insulin Pen
- ✓ Syringe or pen needle

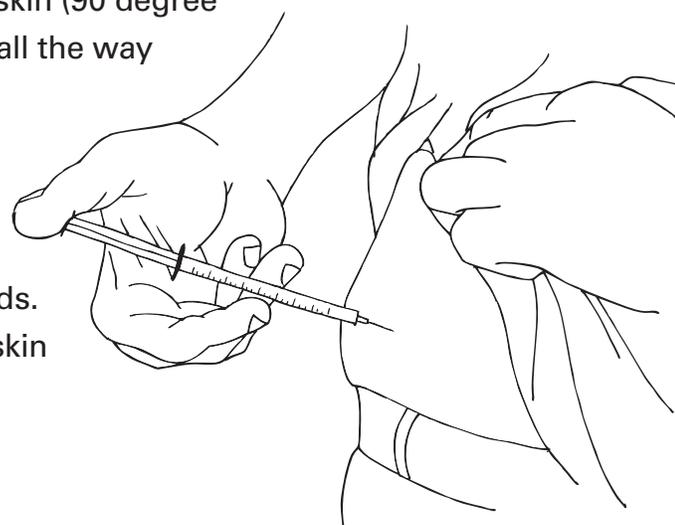
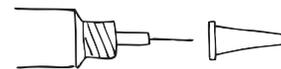
**Q How do I keep things sterile and clean?**

Wash your hands with soap and water.

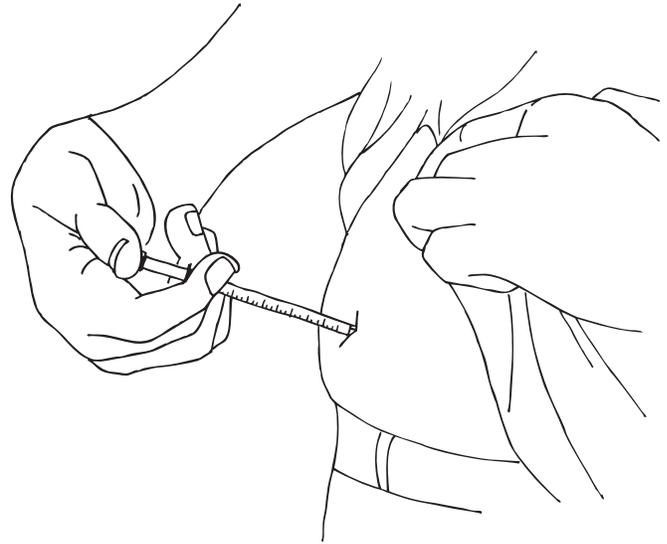


**Q How do I use a syringe?**

1. Find a clean dry area of your skin.
2. Take the needle cap off of the syringe and place only the cap on the table.
3. Put the needle straight into the skin (90 degree angle) quickly. Push the needle all the way into the skin.
4. Using your index finger, push the plunger all the way down until all the insulin is in.  
This usually takes 5 to 10 seconds.  
(Make sure the needle is in the skin before giving the insulin.)



5. Count to 5.
6. Pull out the needle.



### **Getting Rid of Needles Safely**

#### **The American Diabetes Association information on Insulin Storage and Syringe Safety:**

[www.diabetes.org/living-with-diabetes/treatment-and-care/medication/insulin/insulin-storage-and-syringe.html](http://www.diabetes.org/living-with-diabetes/treatment-and-care/medication/insulin/insulin-storage-and-syringe.html)

#### **The CDC Link for Safe Community Needle Disposal:**

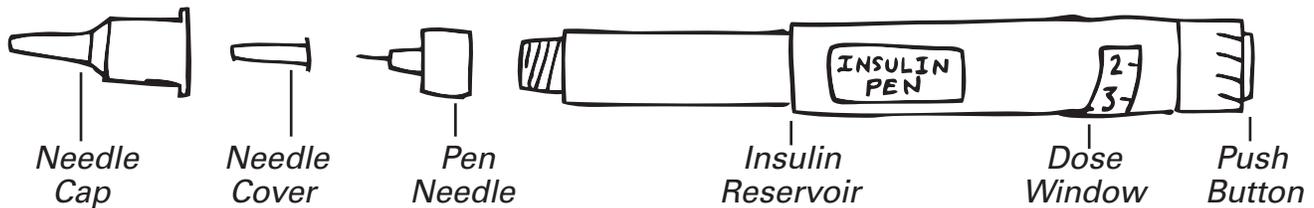
[www.cdc.gov/needledisposal](http://www.cdc.gov/needledisposal)

#### **For Michigan:**

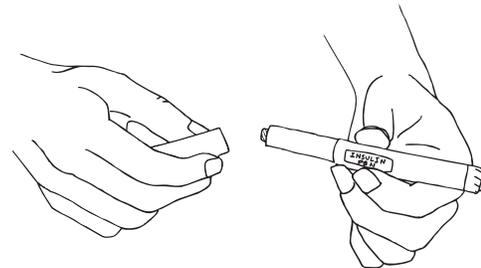
[www.cdc.gov/needledisposal/mi/index.htm](http://www.cdc.gov/needledisposal/mi/index.htm)

# How Do I Use an Insulin Pen?

1. Find a clean dry area of your skin.
2. Remove the cover from the pen. You will be able to see the insulin in the pen.

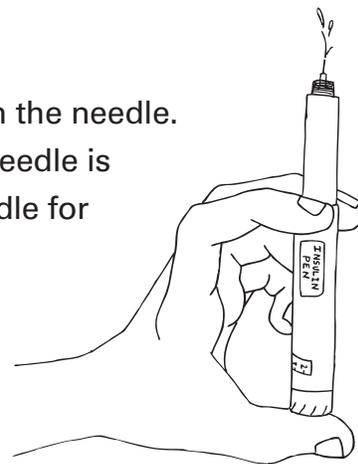


3. If you are using a cloudy insulin (NPH, 75/25, or 70/30), turn it up and down to mix the insulin.



4. Attach a new needle by peeling back the paper cover and screwing it onto the pen. It should be snug but not too tight.

5. Prime the pen (remove air). To do this, remove the cap from the needle. Turn the knob dose dial to 2 units. Holding the pen so the needle is up in the air, push the dial knob in. Watch the tip of the needle for a drop of insulin.



6. You may need to repeat the dialing to 2 units and pushing a few times until you see the drop on the needle.

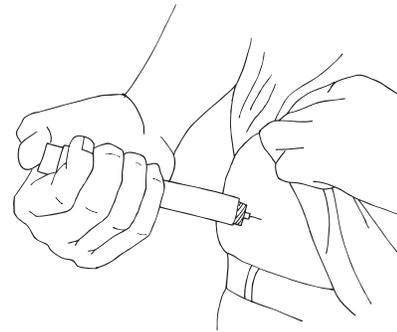
7. Dial in your insulin dose by turning the knob clockwise until you see the right number for your dose.

8. Put the needle straight into the skin quickly. The needle should be all the way into your skin.

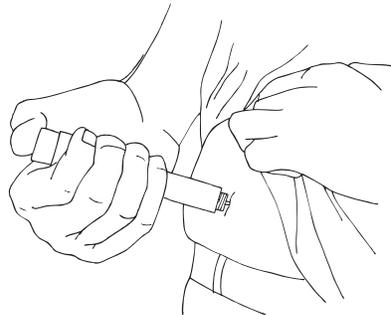
Insulin Education

9. Using your thumb, push the knob down slowly until all the insulin is in.

10. Count to 5 (wait about 5-10 seconds) before pulling the needle out to ensure all the insulin is delivered.



11. Pull the needle out of the skin.



12. Always remove the needle from the pen immediately after use.

13. Always put the cover back on your insulin pen.

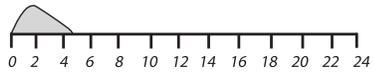
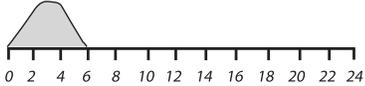
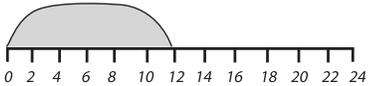
### **Clean Up**

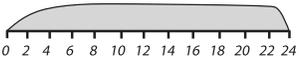
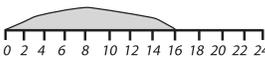
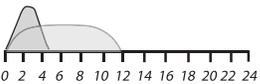
1. With one hand “scoop” the cap back onto the syringe.
2. Place syringe or pen needle into a heavy plastic container (bleach, detergent or fabric softener bottle). Throw away this container when it is 3/4 full.
3. Keep extra insulin in the door of refrigerator and your current vial or pen at room temperature, for 7-42 days-check package insert.

# Notes

## Insulin Education

## Insulin Products

	<b>Rapid-Acting</b>	<b>Short-Acting</b>	<b>Intermediate-Acting</b>	
	<b>(Meal Time and Correction Scale Coverage)</b>	<b>(Meal Time and Correction Scale Coverage)</b>	<b>(Basal Coverage)</b>	
<b>Brand Name</b>	Apidra <sup>®</sup> , Novolog <sup>®</sup> , Humalog <sup>®</sup>	Humulin R <sup>®</sup> , Novolin R <sup>®</sup>	Novolin N <sup>®</sup>	Humulin N <sup>®</sup>
<b>Generic name</b>	Glulisine, Aspart, Lispro	Regular	NPH	
<b>Formulations</b>	Vial, Pen	Vial	Vial	Vial, Pen
<b>Color</b>	Clear	Clear	Cloudy	
<b>Action Curve</b>				
<b>Onset</b>	20 minutes	30 to 60 minutes	2 to 4 hours	
<b>Peak</b>	1 to 3 hours	2 to 3 hours	6 to 10 hours	
<b>Duration</b>	3 to 5 hours	6 hours	10 to 12 hours	
<b>Notes</b>	May need to take 15-30 minutes before meal	Take 1 hour before meal		

	Long-acting		Combination Insulins	
	(Basal Coverage)			
<b>Brand Name</b>	Lantus®	Levemir®	Novolog® 70/30 Humalog® 75/25	Novolin® 70/30
<b>Generic name</b>	Glargine	Detemir		
<b>Formulations</b>	Vial, Pen	Vial, Pen	Vial, Pen	Vial
<b>Color</b>	Clear	Clear	Cloudy	Cloudy
<b>Action Curve</b>				
<b>Onset</b>	Begins working in 1 hour. Reaches full activity within 4 to 5 hours and continues at a constant level for 24 hours.	50 to 120 minutes	10 to 20 minutes	30 to 60 minutes
<b>Peak</b>		6 to 8 hours	1 to 3 hrs & 6 to 10 hrs	2 to 3 hrs & 6 to 10 hrs
<b>Duration</b>		16 hours	10 to 12 hours	10 to 12 hours
<b>Notes</b>	Do not mix with other insulin. Given once or twice daily.		Do not mix with other insulin. Mixing could alter insulin action.	

# *Notes*

# Appendix

## Carbohydrate Food List

<b>1. Bread Products</b>	<b>Portion Size</b>	<b>Carbs (g)</b>
Bagel - Lender's frozen	1 plain bagel	30
Bagel - Panera	1 plain bagel	60
Bread	1 regular slice	15-23
Bread Stuffing	½ Cup	20
Breadstick-soft	1 bread stick	15-25
Bun: Hamburger or Hot dog	1 regular size	15-30
Corn Bread	2" cube	15
Croissant	Medium 2 oz	25
Croutons: from Italian Restaurant	½ Cup	15
Croutons: pkg from fast food restaurant	1 pkg	10
Dinner Roll	Small	15
English Muffin	1 whole	30
Pancake	6" diameter (avg size)	30
Pita bread	Large 6"-9"	30-45
Tortilla-corn	7"	15
Waffle (frozen type)	1	15
Wrap	Various sizes	See label

<b>2. Cereals/Beans/Grains/Pasta</b>	<b>Portion Size</b>	<b>Carbs (g)</b>
Beans: refried	½ Cup	18
Oatmeal, cooked	½ Cup	10
Cream of Wheat, cooked	½ Cup	15
Cornmeal: dry	3 Tbsp	15
Beans/legumes/lentils as prepared	½ Cup	15
Flour: dry	3 Tbsp	15
Hummus	½ Cup	10-15
Pasta, cooked	1 Cup	45
Rice, cooked	1 Cup	45

<b>3. Starchy Vegetables</b>	<b>Portion Size</b>	<b>Carbs (g)</b>
Corn: cooked or canned	½ Cup	15
Corn Cob	6"-9"	30-45
Peas	½ Cup	15
Potato - Wendy's	Avg baked (10 oz)	60
Potatoes (hashed, mashed)	½ Cup	15
Squash (winter type: acorn, Hubbard, etc)	1 Cup	10-30
Sweet Potato/Yams-plain cooked	10oz baked	60

4. Milk & Yogurt	Portion Size	Carbs (g)
Cow's milk (fat-free, 1%, 2%, Whole)	1 Cup	12
Rice Milk- flavored	1 Cup	See label
Rice Milk-Plain	1 Cup	20
Soy Milk (flavored-vanilla, chocolate, etc)	1 Cup	See label
Soy Milk (plain)	1 Cup	8
Yogurt (plain)	1 Cup	12
Yogurt- Dannon Light & Fit	1 serving (6oz)	10
Yogurt-Yoplait Light (blue top)	1 serving (6 oz)	19

5. Fruit	Portion Size	Carbs (g)
Apple	4-8 oz	15-30
Applesauce-unsweetened	½ Cup	15
Apricots, dried	7 pieces	15
Banana	6" - 9"	30-45
Blackberries, Blueberries	1 Cup	20
Canned Fruit Cocktail-in its own juice	½ Cup	15
Cantaloupe, Honeydew Melons	1 Cup	15
Cherries	12	15
Dates-dried Medjool type	1	15
Grapefruit	½ Large	15
Grapes	15 small	15
Kiwi	1 small	15
Orange	1 medium	15
Peaches (canned-in its own juice)	½ Cup	15
Pear	6 oz	20
Pineapple	1 Cup diced	20
Prunes- dried	3	15
Raisins	35 or 1/8 Cup (2 Tbsp.)	15
Raspberries	1 Cup	15
Strawberries-fresh	1 Cup halves	12
Watermelon	1 Cup diced	12

6. Fruit/Vegetable Juice	Portion Size	Carbs (g)
Apple Juice 100%	½ Cup	15
Carrot Juice	1 Cup	12
Cranberry Juice Cocktail 100%	½ Cup	12
Cranberry Juice Cocktail- Light	1 Cup	10
Grape Juice 100%	½ Cup (4 oz)	15
Orange Juice	½ Cup	13
Tomato or V8 juice	1 Cup (8oz)	10

<b>7. Baked Goods</b>	<b>Portion Size</b>	<b>Carbs (g)</b>
Biscuit (large Bob Evans)	1	30
Biscuit (small Pillsbury)	1	10
Brownie-large (Zimmerman's)	1	70
Cake 2 layer frosted	4" square	80
Chocolate Chip cookie-refrigerator dough	1	15
Cupcake with frosting (Hostess)	1	30
Danish (large bakery type)	1	45
Donut (Dunkin Donuts-plain or jelly filled)	1	25-40
Donut (Krispy Kreme)	1	20
Apple Crisp	½ Cup	70
Fruit pie	1/8 of 9" pie	50
Muffin (homemade standard size)	1	20-30
Muffins (bakery type)	1	60-75

<b>8. Snack Foods</b>	<b>Portion Size</b>	<b>Carbs (g)</b>
Dark Chocolate	1 oz	15
Dove Chocolate	3 pieces	15
French Fries-crinkle cut frozen type	10	15
French Fries-diner style	Side order	60
French Fries-fast food	Small order	30
Graham Cracker	3 squares	15
Granola: SEE LABEL	½ Cup	15-45
Hershey Kisses	5	15
Ice Cream- No Sugar Added	½ Cup	12-15
Ice Cream- plain vanilla	½ Cup	15
Jell-O	½ Cup	20
Jell-O-Sugar Free	½ Cup	0
Oyster Crackers	½ Cup	15
Popcorn	3 Cups	15
Potato Chips	1 oz (10-15 chips)	15
Pretzels	11 small	15
Pudding-Regular	1 snack pack	30
Pudding-Sugar Free	1 snack pack	15
Saltine Crackers	7 squares	15
Sherbet	½ Cup	30
Sorbet	½ Cup	35-40
Tortilla Chips	1 oz (10-15 chips)	20

<b>9. Sauce/Condiments</b>		
Apple Butter	2 Tbsp	15
Barbeque Sauce BBQ	2 Tbsp	15
Cranberry Sauce-jellied	¼ Cup	25
Fat Free Mayo/Salad Dressing	2 Tbsp	5

Fruit Jam or Jelly	1 Tbsp	15
Fruit Spread- Jam- 100% Fruit-less sugar	1 Tbsp	10
Fruit Spread-Jams-Sugar Free	1 Tbsp	5
Gravy-brown prepared from mix	1 Cup	15
Hoisin Sauce	2 Tbsp	15
Hollandaise Sauce made from mix	2 Tbsp	5
Honey	1 Tbsp	15
Honey Mustard	2 Tbsp	7
Ketchup	¼ Cup	15
Marinara Sauce	½ Cup	15
Plum Sauce	2 Tbsp	15
Ranch- fat free	2 Tbsp	8
Ranch- regular	2 Tbsp	2
Sloppy Joe Sauce	¼ Cup	15
Sugar	1 Tbsp	15
Sweet and Sour Sauce	2-3 Tbsp	15
Syrup	1 Tbsp	15
Syrup- Lite	2 Tbsp	15
Szechuan sauce	1/3 Cup	15

<b>10. Combination Foods</b>	<b>Portion Size</b>	<b>Carbs (g)</b>
Bean Soup (split pea, lentil, etc)	1 Cup	30
Beans & Cheese Burrito- avg frozen type	6 oz	45-60
Cabbage Roll with meat and rice	1 avg roll	15
Chicken Noodle Soup- from can	1 Cup	15
Chili with beans & meat	1 Cup	25
Chili-vegetarian	1 Cup	30-50
Cream Soup	1 Cup	15
Dumpling- Chinese type	3	15-20
Egg Roll	1 avg roll	15-25
Lasagna from restaurant	Avg serving	50-80
Macaroni & Cheese	1 Cup	45
Pizza (individual pan)	1 whole pizza	75
Pizza 12"	1 avg slice	30
Pot pie (small frozen)	1	30
Red Beans & Rice	1 Cup	45
Tuna Noodle Casserole	1 Cup	30

DISCLAIMER: This document is for informational purposes only and is not intended to take the place of the care and attention of your personal physician or other professional medical services. Talk with your doctor if you have questions about individual health concerns or specific treatment options.

### Diabetes: Meal Plan Ideas 45-60g Carbs per meal

This sample menu provides ~1400 calories and meets guidelines of the American Heart Association and the American Diabetes Association for fat and sodium content and is intended for weight loss.

	Monday	Tuesday	Wednesday
<b>Breakfast</b>	2 frz whole wheat waffles (26g) 2 Tbsp Sugar-Free syrup (4g) 2 Tbsp walnuts ½ C blueberries (21g) <b>Total: 53g Carbs</b>	2 Whole grain pancakes (25g) 2 Tbsp sugar free syrup (4g) 1C Mixed berries (17g) <b>Total: 46g Carbs</b>	1 ½ C Cheerios (33g) 1 C fat free milk (12g) ¼ C almonds <b>Total: 53g Carbs</b>
<b>Lunch</b>	1 C Chicken Noodle Soup (7g) 1 small Wheat Roll (15g) 1 Plain Bread Stick (14g) ½ C Canned Peaches in own juice (14g) <b>Total: 50g Carbs</b>	2 oz Low sodium deli turkey - Boar's Head 2 slices Whole Wheat Bread (30g) 1 TBS Mayonnaise-Light 1 slice American Cheese 1 oz Baked Potato Chips (23g) <b>Total: 56g Carbs</b>	1 Lean Cuisine - Chicken with Basil Cream Sauce frozen entrée (28g) 1 Pear (22g) 1 Tbsp Ranch Dressing ½ C Cherry Tomatoes (2g) <b>Total: 53g Carbs</b>
<b>Dinner</b>	3 oz Grilled Chicken Breast 1 C Squash-Winter (22g) ½ C Spinach-cooked 1 Wheat Roll (15g) 1 Tbsp Butter Spread <b>Total: 41g Carbs</b>	Amy's Black Bean Vegetable Enchiladas-Frozen Entrée (22g) 2 C Mixed greens 2 Tbsp Ranch Dressing (2g) ¾ C Pineapple (26g) <b>Total: 53g Carbs</b>	4 oz Salmon ½ Baked Potato (17g) 1 C Carrots (12g) 1small Wheat Roll (15g) ½ Tbsp Butter Spread 1 Chocolate Chip Cookie (9g) <b>Total: 53g Carbs</b>
	Thursday	Friday	Saturday
<b>Breakfast</b>	1 English Muffin (26g) 1 Tbsp Jam-reduced sugar (5g) 1 Poached Egg 1 Apple (20g) <b>Total: 51g Carbs</b>	1 C Oatmeal (28g) ½ C Raspberries (7g) 6 oz Dannon Light yogurt(16g) <b>Total: 51g Carbs</b>	2 Tbsp Whipped Cream Cheese ½ Whole Wheat Bagel (25g) ½ Banana (25g) <b>Total: 50g Carbs</b>
<b>Lunch</b>	Wendy's Grilled Chicken Wrap (17g) 1 plain Wendy's Potato (30g) 1 Tbsp butter spread 12 grapes (12g) <b>Total: 59g Carbs</b>	1 Panera BBQ Chopped Chicken Salad (49g) ½ C raspberries (7g) <b>Total: 56g Carbs</b>	1 Lean Turkey Burger 1 Whole Wheat Bun (23g) 10 French Fries - Baked (16g) ½ C Blueberries (11g) <b>Total: 50g Carbs</b>
<b>Dinner</b>	1 ½ C Health Valley Turkey Chili with beans (51g) 2 Tbsp Shredded cheese 2 C Mixed greens 2 Tbsp Low Fat Italian Dressing (4g) <b>Total: 64g Carbs</b>	1 C Spaghetti(43g) 2 Tbsp Pesto Sauce (5g) 2 C Mixed greens 2 Tbsp Ranch Dressing <b>Total: 64g Carbs</b>	3 oz Grilled Chicken Breast ¾ C Mixed Vegetables (18g) 1 Tbsp Canola Oil 2 Tbsp Sweet & Sour Sauce (14g) ½ C Cooked Brown Rice (23g) <b>Total: 64g Carbs</b>
<b>Snack</b>	3 C popped popcorn (19g) 1 tsp canola oil 2 Laughing Cow lowfat cheese wedges 7 Whole Wheat crackers (14g)	½ C strawberries (11g) 2 pieces dark chocolate (10g) ½ banana (25g) 1 oz string cheese	6oz light yogurt (16g) ½ C blueberries (10g) 1 C apple slices (15g) 1 Tbsp peanut butter (3g)

**Snacks may be needed when meals are more than 4-6 hours apart or until medicine is titrated. This meal plan allows for one snack per day.**

## Diabetes: Meal Plan Ideas 60-75g Carbs per meal

This sample menu provides ~1800 calories and meets guidelines of the American Heart Association and the American Diabetes Association for fat and sodium content and is intended for weight loss.

	Monday	Tuesday	Wednesday
<b>Breakfast</b>	1 slice banana nut bread (30g) 1 Tbsp peanut butter (3g) ½ banana (25g) 1C fat free milk (12g) <b>Total: 70g Carbs</b>	3 whole grain pancakes (38g) ¼ C sugar free syrup (7g) ¼ C pecans 1C blueberries (21g) <b>Total: 70g Carbs</b>	1 ½ C Cheerios (33g) 1 C fat free milk (12g) ½ C strawberries (11g) ¼ C almonds <b>Total: 64g Carbs</b>
<b>Lunch</b>	1 can Campbell's Chunky Beef Vegetable Soup (17g) ¼ C shredded cheese 10 tortilla chips (28g) 2 Tbsp salsa ½C pineapple (17g) <b>Total: 65g Carbs</b>	6" turkey sub sandwich (46g) ¼ C almonds 1 Tbsp light mayonnaise 1 small apple (20g) <b>Total: 74g Carbs</b>	1 Lean Cuisine Chicken with Basil Cream Sauce (28g) 2 plain bread sticks (14g) 2C mixed greens 2Tbsp balsamic dressing ½ banana (25g) <b>Total: 76g Carbs</b>
<b>Dinner</b>	3oz grilled chicken breast 1 cup baked squash (22g) ½ cup cooked spinach 1 small whole wheat roll (15g) 1TBS butter spread 30 grapes (30g) <b>Total: 71g Carbs</b>	2 Amy's Black Bean Vegetable Enchiladas (22g) 2C mixed greens 1C brown rice (46g) 2 Tbsp raspberry vinaigrette (7g) <b>Total: 78g Carbs</b>	4oz salmon ½ baked potato (12g) 1C carrots 1 small wheat roll (15g) 1 small chocolate chip cookie (9g) <b>Total: 53g Carbs</b>

	Thursday	Friday	Saturday
<b>Breakfast</b>	1 whole wheat bagel (50g) 2 Tbsp peanut butter (6g) 1 small banana (20g) <b>Total: 76g Carbs</b>	1 ½ C Cinnamon Chex (50g) 1 C fat free milk (12g) <b>Total: 62g Carbs</b>	2 whole wheat waffles (26g) ¼ C sugar free syrup (7g) ¾ C blueberries (6g) ¼ C walnuts 1 C fat free milk (12g) <b>Total: 61g Carbs</b>
<b>Lunch</b>	1 Wendy's Gr Chicken Wrap (17g) 1 plain Wendy's Bk Potato (30g) 1 Tbsp butter spread 15 grapes (15g) <b>Total: 62g Carbs</b>	1 Panera BBQ Chopped Chicken Salad (49g) ½ C raspberries (7g) <b>Total: 56g Carbs</b>	1 lean turkey burger 1 whole wheat bun (23g) 20 baked French fries (32g) 12 cherries (12g) <b>Total: 67g Carbs</b>
<b>Dinner</b>	1C Health Valley Turkey Chili with Beans (34g) ¼ C shredded cheese 10 tortilla chips (28g) ½ C watermelon (6g) <b>Total: 69g Carbs</b>	1C spaghetti (43g) 2 Tbsp pesto sauce (5g) 2C mixed greens 2Tbsp ranch dressing <b>Total: 52g Carbs</b>	3oz grilled chicken breast ¾ C mixed vegetables (18g) 2 tsp canola oil 2 Tbsp sweet and sour sauce (14g) ¾ C brown rice (35g) <b>Total: 67g Carbs</b>
<b>Snack</b>	3 C popped popcorn (19g) 1 tsp canola oil 2 Laughing Cow lowfat cheese wedges 7 Whole Wheat crackers (14g)	½ C strawberries (11g) 2 pieces dark chocolate (10g) ½ banana (25g) 1 oz string cheese	6oz light yogurt (16g) ½ C blueberries (10g) 1 C apple slices (15g) 1 Tbsp peanut butter (3g)

**Snacks may be needed when meals are more than 4-6 hours apart or until medicine is titrated. This meal plan allows for one snack per day.**





# Living With Diabetes

Classes for people with type 1 and type 2 diabetes

Meet with other people with diabetes and learn:

- How diabetes **affects your body**
- What and how to **eat** with diabetes
- How to **prevent complications** that affect your heart, eyes, kidneys, feet and nerves
- How **medications** work with diabetes
- How to set **realistic goals** and much more!

These classes may be covered by your insurance.

## FOR MORE INFORMATION:

Ask your doctor for a referral  
or call **734-998-2475**.

University of Michigan  
Outpatient Diabetes Education Program

[www.med.umich.edu/diabetes/education](http://www.med.umich.edu/diabetes/education)

This program is certified by the  
American Diabetes Association and the  
Michigan Department of Community Health

## Type 1

Domino's Farms

- Tuesdays
- 5 - 7:30 pm

## Type 2

Domino's Farms

- Mondays  
9:30 am - 12 noon
- Wednesdays  
5 - 7:30 pm

## Type 2 Rotating Classes

Brighton Health Center  
Canton Health Center  
Chelsea Health Center

- Tuesdays  
9:30 am - 12 noon

## Support Groups

**We offer FREE support groups for patients and their families**

Living with Type 1 Diabetes Adult Support Group

Living with Type 2 Diabetes Adult Support Group

Diabetes Support Group for Seniors 60+

**FOR MORE INFORMATION CALL 734-998-2475**

# University of Michigan Health System Resources

## **Adult Outpatient Comprehensive Diabetes Education Program**

Located in Domino's Farms MEND clinic, near Lobby C entrance  
Ann Arbor, MI 48105

**734-998-2475**

**email: [MEND-Diabetes@med.umich.edu](mailto:MEND-Diabetes@med.umich.edu)  
[www.med.umich.edu/diabetes/patients](http://www.med.umich.edu/diabetes/patients)**

## **Tobacco Consultation Service**

2025 Traverwood, Suite A3  
Ann Arbor, MI 48105

**734-998-6222**

**email: [quitsmoking@med.umich.edu](mailto:quitsmoking@med.umich.edu)  
[www.mhealthy.umich.edu/tobacco](http://www.mhealthy.umich.edu/tobacco)**

## **Stress Management, Exercise Programs, The Hunger Within and Metabolic Fitness Program Preventive Cardiology Services**

24 Frank Lloyd Wright Dr.  
Ann Arbor, MI 48106

**734-998-7400**

## **University of Michigan Comprehensive Depression Center**

Rachel Upjohn Building  
4250 Plymouth Road, SPC 5763  
Ann Arbor, MI 48109-2700

**1-800-475-MICH (6424) or 734-936-4400**

**email: [depression@umich.edu](mailto:depression@umich.edu)**

## **MHealthy's Fit-Script Program**

Offering patients with chronic illness guidance to start a medically based exercise program

**734-647-7888**

**[www.mhealthy.umich.edu/fitscript](http://www.mhealthy.umich.edu/fitscript)**

## **Comprehensive Ophthalmology**

U-M Kellogg Eye Center in Ann Arbor  
1000 Wall Street  
Ann Arbor, MI 48105

**734-764-4190**

**734-647-8052 Fax**

Routine eye examinations and complex diagnosis and treatment of vision disorders

## **U of M Podiatry**

Domino Farms  
24 Frank Lloyd Wright Drive, Lobby C  
Ann Arbor, MI 48105

**734-647-5871**

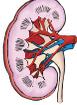
**734-232-2294 Fax**

## **FOR MORE ONLINE INFORMATION**

including videos and additional education materials, please visit the UMHS Patient Education Clearinghouse

**[www.med.umich.edu/careguides](http://www.med.umich.edu/careguides)**

# Diabetes Care: The ABCs to Better Health

		How often	Ideal level	Your result
	<b>A</b> 1c measures blood sugar control <i>Lowering your A1c reduces diabetes complications</i>	Every 3-6 months	Less than 7%	
	<b>B</b> lood pressure control <i>Lowering your blood pressure reduces strokes</i>	Every visit	Less than 135/80	
	<b>C</b> holesterol (LDL) level <i>Lowering your LDL level reduces heart attacks</i>	Every year	Less than 100 mg/dL	
	<b>D</b> iabetes kidney microalbumin test <i>Treating early kidney damage may prevent dialysis</i>	Every year	Less than 30 mg/gm	
	<b>E</b> ye exam If your last eye exam was abnormal If your last eye exam was normal <i>Detecting early eye damage may prevent blindness</i>	Every year Every 2 years		
	<b>F</b> oot exam <input checked="" type="checkbox"/> Observe the feet <input checked="" type="checkbox"/> Check pulses <input checked="" type="checkbox"/> Test sensation <i>Helps prevent serious foot infections and amputations</i>	Every year		
	<b>G</b> oal for self-management <input checked="" type="checkbox"/> My goal: _____ <i>Choosing your own goal will help you succeed</i>	Every visit		
	<b>H</b> ome glucose testing <i>Ask your doctor is this is right for you</i>	Varies		
	<b>I</b> mmunizations and heart medications <input checked="" type="checkbox"/> Influenza (flu vaccine) <input checked="" type="checkbox"/> Pneumonia (Pnevovax) <input checked="" type="checkbox"/> Statins and aspirin <i>Immunization helps prevent serious infections and heart medications reduce heart attacks</i>	Every year At least once Daily if needed		
	<b>J</b> ust ask for a referral to: <input checked="" type="checkbox"/> Diabetes education classes <input checked="" type="checkbox"/> Nutritional counseling <input checked="" type="checkbox"/> Weight management program <input checked="" type="checkbox"/> Smoking cessation program	Varies		
	<b>K</b> ids in your future? <input checked="" type="checkbox"/> Folic acid supplement <i>Controlling your blood sugar reduces risks to your baby</i>	Daily		

# University of Michigan Comprehensive Diabetes Center

## **Executive Officers of the University of Michigan Health System**

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or learn more about diabetes education at the University of Michigan visit:

**[www.uofmhealth.org/diabetes101](http://www.uofmhealth.org/diabetes101)**

