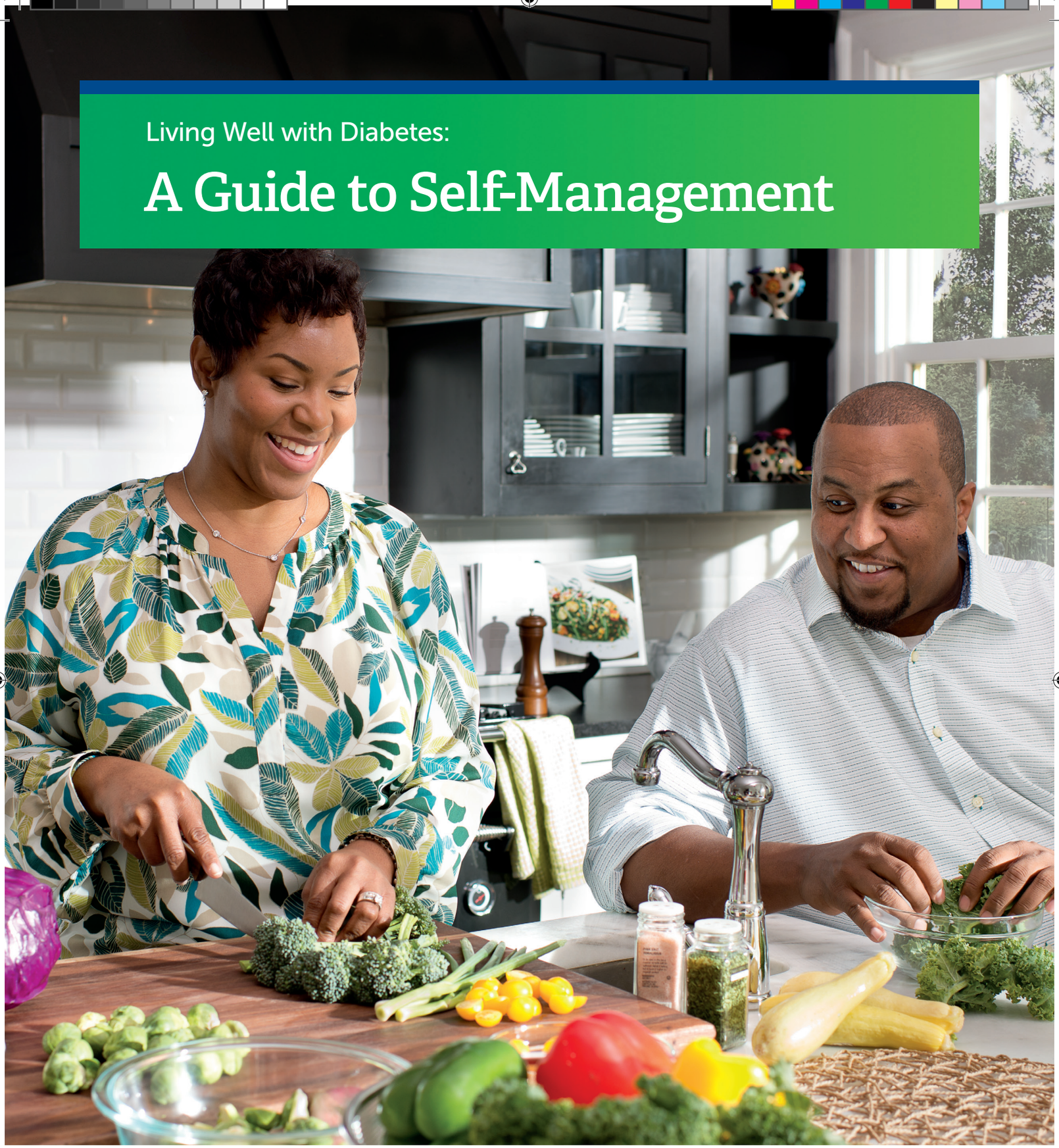
Living Well with Diabetes:

A Guide to Self-Management



Texas Health®

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Understanding Diabetes

At Texas Health, our goal is to help you live well with diabetes. Taking care of yourself — that is, understanding how to manage this disease and keeping your blood sugar (blood glucose) in the target range — can help avoid serious health problems later in life.

We believe that the ADCES7 Self-Care Behaviors®[1] are the seven key areas of managing your diabetes. A diabetes care and education specialist can help you set goals for each of these areas.

Healthy Eating

Having diabetes doesn't mean you have to give up your favorite foods. Finding healthy foods that you enjoy is possible. What you eat — especially carbohydrates — affects your blood sugar. Work with a diabetes care and education specialist and dietitian to create a meal plan fit for you.

Being Active

Being active can help lower cholesterol, improve blood pressure, and improve your mood. Physical activity can also help keep your blood sugar in your target range. Choose activities you enjoy, like walking, swimming, and dancing. Talk to your doctor to know how much activity you should aim for.

Monitoring

Checking your blood sugar lets you know how your diabetes management is going. Understanding your blood sugar will help you make changes that help your body work the way it should.

Taking Medicine

There are several types of medicine that can help people with diabetes. Your doctor might recommend different types of medicine to lower your blood sugar, reduce your risk of complications, and help you feel better.

Problem Solving

Diabetes is a lifelong condition, so problems may happen. But, problem-solving skills can help you prepare for the unexpected — and get past similar challenges in the future.

Reducing Risks

Having diabetes puts you at a higher risk of developing other health problems. However, if you understand the risks, you can take steps now to lower your chance of diabetes-related complications.

Healthy Coping

Diabetes management is full of highs and lows. It's natural to have mixed feelings. It's important to recognize your feelings, and take steps to reduce the negative impact they can have on your self-care.

[1]Association of Diabetes Care & Education Specialists. An effective model of diabetes care and education: revising the ADCES7 self-care behaviors®. Diabetes Educ. 2020;46(2):139-160. Accessed June 8, 2020.

Diabetes Terms

Blood Sugar (Blood Glucose)

- Blood sugar is also called blood glucose.
- Your body uses blood sugar for energy.
- Blood sugar is the amount of glucose (sugar) in your bloodstream.

Diabetes

- Diabetes is a condition that affects how your body handles sugar in the blood.
- When you eat, most of your food breaks down into sugar called blood sugar.
- When this sugar is not used or stored in the right way, it can build up in your blood.
- The buildup of sugar in the blood over time can cause damage to your body.

Gestational Diabetes

- Some women develop gestational diabetes or diabetes during pregnancy.
- For most women, gestational diabetes goes away after the baby is born.
- If not managed, gestational diabetes can harm the baby.
- Women with a history of gestational diabetes have a higher chance of developing type 2 diabetes later in life.

Insulin

- Insulin is a hormone made by your pancreas.
- When blood sugar goes up, such as after you eat, insulin moves this blood sugar into your cells where it becomes available to be used as energy or stored for later use.
- Diabetes happens when your pancreas cannot make enough insulin or is having trouble using the insulin that it is making.

Prediabetes

- Prediabetes is a condition that happens when your blood sugar is higher than a person who does not have diabetes, but not high enough to be considered diabetes.
- This puts you at a higher chance of developing type 2 diabetes.
- Making healthy lifestyle changes can reduce your risk.

Type 1 Diabetes (Insulin Deficiency)

- Type 1 diabetes is an autoimmune disease. The pancreas can't make insulin because the body destroys the cells that make it. This has also been called insulin deficiency.
- In type 1 diabetes, your body stops making insulin.
- People with type 1 diabetes must take insulin for the rest of their life.

Type 2 Diabetes (Insulin Resistance)

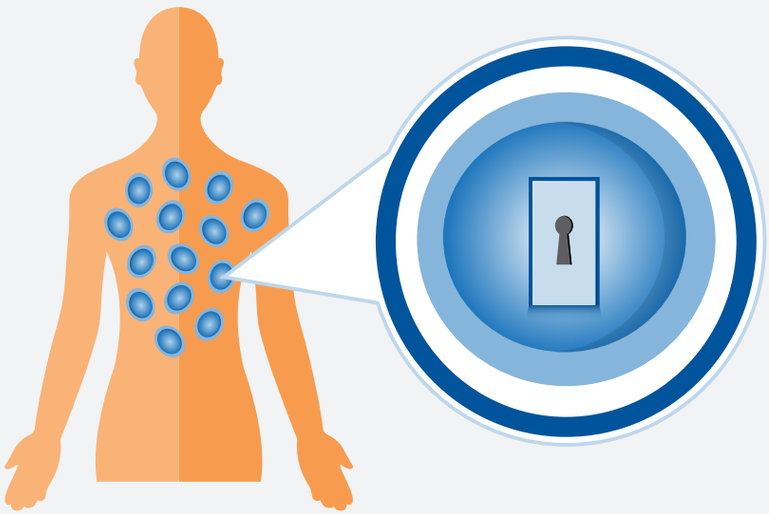
- In type 2 diabetes, your body does not use insulin like it should. This has also been called insulin resistance.
- Either your body does not make enough insulin, or your body does not use the insulin the right way.
- Some people can manage type 2 diabetes with exercise and a healthy diet. Other people will also need to take medicine.
- Type 2 diabetes management can change over time.

American Diabetes Association. Common Terms. Retrieved June 8, 2020 from https://www.diabetes.org/resources/for-students/common-terms.

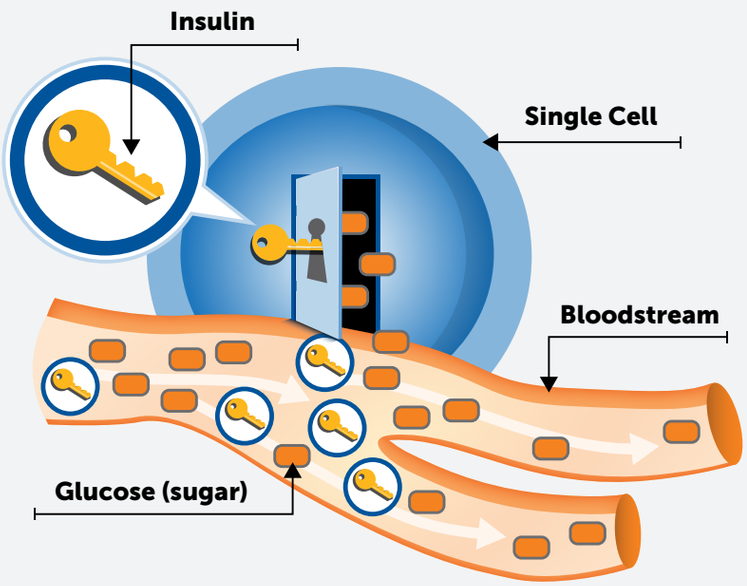
What Happens in Your Body When You Have Diabetes

HOW INSULIN WORKS

You have trillions of cells in your body that help you do different things (breathe, move muscles, digest food). Like a car needs fuel, the cells in your body need glucose (sugar) to power them. Imagine that each of the cells in your body has a door that is closed and locked. The sugar in the bloodstream is not able to enter the cells unless the door is open.

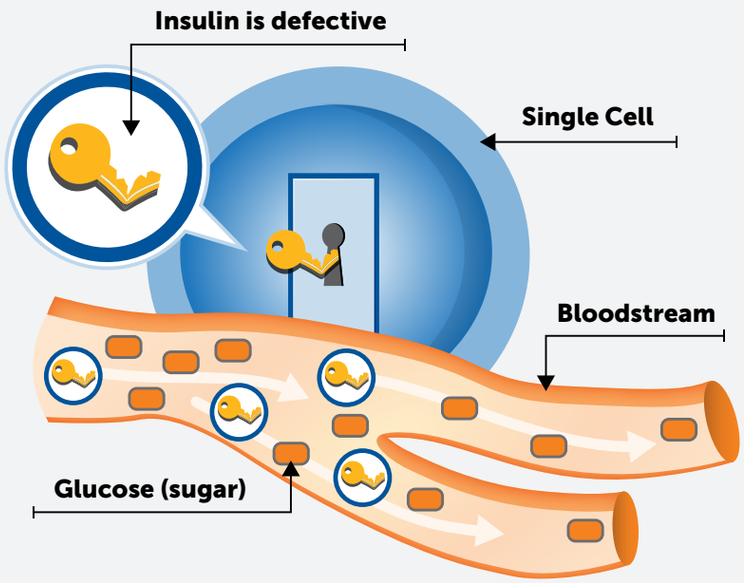


Insulin is the hormone in your body that helps move blood sugar into the cells in your body where it is used as fuel or energy. Insulin acts like a "key" that opens the door to the cell, so that glucose (sugar) can move out of your bloodstream and into cells where it belongs.



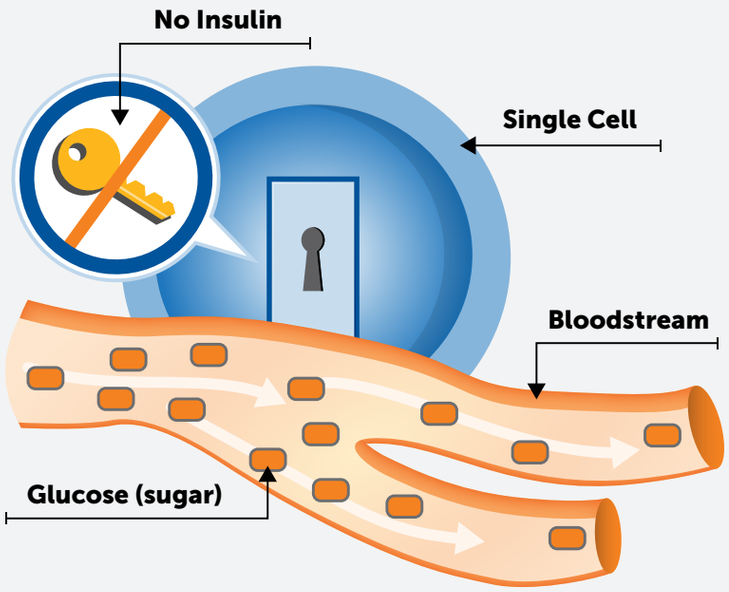
TYPE 2 DIABETES
(Insulin Resistance)

When you have Type 2 diabetes, you often experience insulin resistance. Your body is making insulin (keys) that your cells have trouble using when there is insulin resistance. The doors to your cells are slower to open, so it is harder for blood sugar to get into your cells. This creates a buildup of glucose (sugar) in the bloodstream (high blood sugar). Therefore, preventing the body from getting the energy it needs. Type 2 diabetes can change over time.



TYPE 1 DIABETES
(Insulin Deficiency)

When you have Type 1 diabetes, or insulin deficiency, your body is not making any insulin (keys). Without insulin (keys), the doors to your cells stay shut and glucose (sugar) cannot get into your cells. This creates a buildup of glucose (sugar) in your bloodstream (high blood sugar). Therefore, preventing the body from getting the energy that it needs.



RISKS OF HIGH BLOOD SUGAR

If your blood sugar stays too high for a long time, it can lead to serious health problems. To stay healthy, keep your blood sugar levels in your target range. You may also need to take medicine or inject insulin to give your body the insulin "keys" that it needs.

Understanding A1C

Monitoring A1C

A1C is a blood test that tells you what your average blood sugar has been over the last few months. You and your diabetes care team will set an A1C goal that's right for you.

Why Is the A1C Test Important?

A1C results can help guide you on how to take care of your diabetes. Improving blood sugar over time decreases your chances of diabetes-related problems. Reducing A1C by 1% causes a 25-30% drop in eye, kidney, and nerve damage.[2]

What Are My A1C Goals?

A1C goals are different for every person. The American Diabetes Association recommends an A1C of less than 7% for most people with diabetes. (People without diabetes will test at 5.6% or less.) Talk with your doctor about your A1C goal.

Your doctor might test your A1C every three to six months. Your A1C level is related to an estimated blood sugar level. Look at the chart below to get an idea of what your results mean.

FOCUS: MONITORING

Why is it important to check your blood sugar between A1C testing?

[2]Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications Data Coordinating Center, George Washington University, Biostatistics Center, Bethesda, MD. Corresponding author: David M. Nathan, ude.dravrah.hgm@nahtand. Accessed June 17, 2020 from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3867999/

Compare Your A1C to the Estimated Average Blood Sugar:

A1C RESULTS: _____	ESTIMATED AVERAGE BLOOD SUGAR: _____
14.0%	355 mg/dL
13.5%	341 mg/dL
13.0%	326 mg/dL
12.5%	312 mg/dL
12.0%	298 mg/dL
11.5%	283 mg/dL
11.0%	269 mg/dL
10.5%	255 mg/dL
10.0%	240 mg/dL
9.5%	226 mg/dL
9.0%	212 mg/dL
8.5%	197 mg/dL
8.0%	183 mg/dL
7.5%	169 mg/dL
7.0%	154 mg/dL
6.5%	140 mg/dL
6.0%	126 mg/dL
5.5%	111 mg/dL
5.0%	97 mg/dL
4.5%	82 mg/dL

The American Diabetes Association recommends an A1C of less than 7%

American Diabetes Association. Understanding A1C. Retrieved June 8, 2020 from https://www.diabetes.org/a1c.

Understanding Blood Sugar (Blood Glucose): Measuring

Why Measure My Blood Sugar?

Blood sugar naturally changes throughout the day and is especially sensitive to what and when you eat. Certain foods — lean meats or leafy vegetables — don't have much impact on blood sugar. But carbohydrates (carbs) do. The body changes carbs directly to sugar, causing blood sugar to go up. In people who do not have diabetes, a high level of blood sugar causes the pancreas to release insulin, keeping the blood sugar in the ideal range.

When you have diabetes, your body either cannot make enough insulin to regulate blood sugar or the body is having trouble using the insulin that it is making. Blood sugar that is too high can cause damage to vital organs over a long period of time.

Maintaining a healthy blood sugar is important to managing diabetes. You need to know if your blood sugar is too high or too low so that you can take action.

Checking your blood sugar regularly can help you make informed decisions about food, physical activity, and medicine. Talk to your doctor or diabetes care team about when to check your blood sugar. In time, checking your blood sugar will become part of your daily routine.

What Should My Blood Sugar Level Be?

Your doctor will talk with you about your blood sugar goals. For most people with diabetes, blood sugar should be:

- Between 80-130 mg/dL before meals.
- Less than 180 mg/dL two hours after meals.

Do I Still Need to Check My Blood Sugar Every Day If I Get the A1C Test Regularly?

Yes — both tests are important. The blood sugar tests you do at home will help you make the best choices throughout the day. The A1C test helps your doctor know what is happening in your body over a few months.

Did You Know?

Diabetes is among the top risk factors for heart and blood vessel disease and stroke.

High blood sugar makes your blood thicker and harder to pump, which can stress the heart. Over time, high blood sugar can also weaken the walls of arteries and small blood vessels throughout the body. The damaged vessels, combined with thicker blood, can cause blood clots to form – putting you at higher risk for a heart attack or stroke. Low blood sugar can also cause a greater risk of heart problems.

High blood sugar can also damage blood vessels throughout the body, including the eyes, kidneys, sex organs, gastrointestinal tract, and more. To help protect your heart and blood vessel health, keep your blood sugar in the target range as much as possible.

American Diabetes Association. Stroke. Retrieved September 22, 2020 from http://www.diabetes.org/living-with-diabetes/complications/stroke.html

American Heart Association. Cardiovascular Disease and Diabetes. Retrieved September 22, 2020 from http://www.heart.org/en/health-topics/diabetes/why-diabetes-matters/cardiovascular-disease--diabetes

American Diabetes Association. Understanding blood sugar and control. Retrieved June 8, 2020 from https://www.diabetes.org/diabetes/medication-management/blood-glucose-testing-and-control.

FOCUS: MEASURING

What concerns do you have about checking your blood sugar?

How to Check Blood Sugar (Blood Glucose)

What Are My Blood Sugar Goals?

The American Diabetes Association has created general blood sugar goals, but your doctor will tell you what goal is best for you.

How to Check Your Blood Sugar

1. Wash your hands before you prick your finger.

2. Load a lancet into the lancing device.

3. Insert strip into the meter.

4. Poke the side of your finger with the lancing device.

5. Squeeze out a blood sample.

American Diabetes Association. Checking your blood glucose. Retrieved June 8, 2020 from https://www.diabetes.org/diabetes/medication-management/blood-glucose-testing-and-control/checking-your-blood-glucose.

6 Apply blood to the test strip.

7 In seconds, the blood sugar meter reads your blood sugar level.

8 Dispose of the lancet in a sharps container.

MY BLOOD SUGAR GOALS

Before meals	1-2 hours after a meal

For most people with diabetes, blood sugar levels should be:
Between 80-130 mg/dL before meals.
Less than 180 mg/dL two hours after meals.

Managing High Blood Sugar (Blood Glucose): Hyperglycemia

High blood sugar, also called hyperglycemia, is a condition where there is too much sugar in your blood. High blood sugar can lead to a serious condition called diabetic ketoacidosis (DKA). In extreme cases, DKA can lead to a coma and even death. Your doctor will help you understand your blood sugar goals and what sugar levels are too high for you.

Causes of High Blood Sugar (Hyperglycemia)

- Being less active than usual
- Eating more than usual
- Stress and illness
- Not taking diabetes medicines or insulin (or not taking enough)
- Taking certain medicines, such as steroids

Symptoms of High Blood Sugar

High blood sugar does not always cause symptoms. However, if you do have symptoms, they may include:

Blurry vision	**Feeling very thirsty**	**Having to pee often** (frequent urination)
Increased hunger	**Slow healing**	**Unexplained weight loss**

What to Do If You Have High Blood Sugar

- Check your blood sugar level more often.
- Drink plenty of water or other sugar-free, caffeine-free liquids. Do not drink fruit juices or other drinks with sugar in them.
- If your blood sugar is more than 250 mg/dL and you take insulin, check your blood or urine for ketones by using a ketone test kit from your local pharmacy.
- Talk to your doctor about your high blood sugar. You might need a change in your diet, exercise routine, or medications.

American Diabetes Association. Hyperglycemia. Retrieved June 8, 2020 from https://www.diabetes.org/diabetes/medication-management/blood-glucose-testing-and-control/hyperglycemia.

Understanding Diabetic Ketoacidosis (DKA)

Diabetic ketoacidosis, or DKA, is a serious medical condition that affects some people with diabetes. If you are sick, have not been taking your insulin, or if your insulin pump is not working correctly, your chances of having DKA are higher.

What Is DKA?

With DKA, your body can't use sugar for energy, so it uses fat instead. When fat is used for energy, an acidic substance called ketone forms in the blood and is released in your urine. A blood sugar (blood glucose) of 250 mg/dL or higher for several days or weeks can be a warning sign of DKA. DKA can also happen very quickly when you are sick, if your insulin pump is not working correctly, or if you miss insulin doses. The combination of high blood sugar and ketones can lead to DKA if not treated quickly.

What Are Ketones?

Ketones are acidic substances made when your body does not have enough insulin and starts to burn fat for energy. This can happen when you do not take in enough calories, such as with very low carb diets, when a person is vomiting, or when a person with diabetes does not have enough insulin.

Early Symptoms of DKA

- Blurry vision
- Dry mouth
- Feeling very thirsty
- Feeling very tired
- Having to pee often (frequent urination)

Late Symptoms of DKA

- Breath has a fruity odor
- Fast breathing or heartbeat
- Feeling sick to your stomach (nausea) and vomiting
- Stomach pain
- Weakness

When Your Blood Sugar Is High, Follow These Guidelines to Prevent DKA

- Check blood sugar every two to four hours, or as recommended by your doctor.
- Check for ketones in your blood or urine when blood sugar is higher than 250 mg/dL, or if you are sick.
- Drink more fluids that are sugar-free, alcohol-free, and caffeine-free, like water, broth, and tea without sugar or caffeine.

FOCUS: BEING ACTIVE

Activity can help keep your blood sugar in the target range. What activities could you enjoy?

_____

_____

_____

American Diabetes Association. DKA (Ketoacidosis). Retrieved June 8, 2020 from https://www.diabetes.org/diabetes/complications/dka-ketoacidosis-ketones.

Managing Low Blood Sugar (Blood Glucose): Hypoglycemia

Low blood sugar, or hypoglycemia, happens when your blood sugar is **less than or equal to 70 mg/dL.**

Cause of Low Blood Sugar

- Drinking alcohol
- Increased physical activity
- Kidney or liver problems
- Skipping meals
- Too much diabetes medicine

Symptoms of Low Blood Sugar – Hypoglycemia

Everyone feels low blood sugar in different ways. It is important that you learn and pay attention to your own signs. Taking action early is important. Some common symptoms of low blood sugar include:

Headache	Hungry	Irritable
Lack of coordination	Shaky	Sleepy
Sweaty	Weak	Confused

FOCUS: REDUCING RISKS

Why is it important to you to prevent diabetes-related problems?

What to Do If You Think You Have Low Blood Sugar

TAKE ACTION!

If your blood sugar is low, follow these steps:

1. CHECK

Check your blood sugar right away. If you can't check your blood sugar but think that it might be low, treat it like it is low.

2. TREAT

If your blood sugar is less than or equal to 70 mg/dL, treat with one of the following (15 grams of fast acting carbohydrate):

- Drink a ½ can of regular soda (not diet)
- Drink 4 ounces of fruit juice (orange, apple, or grape juice)
- Eat 5 to 6 hard candies that you can chew quickly
- Take 3 to 4 sugar (glucose) tablets

3. RE-CHECK

Wait 15 minutes and then check your blood sugar again. If it is still low, repeat treatment. If your blood sugar is back above 70 mg/dL, consider eating a meal or a snack.

Check with Your Doctor

Check with your doctor to see if you need a prescription for Glucagon™, which is the emergency treatment for severe low blood sugar.

Practice Safe Behaviors

- Always carry hard candy, sugar (glucose) gel, or tablets with you
- Never drive a vehicle if you think you might have low blood sugar
- Wear a medical ID necklace or bracelet that states you have diabetes

American Diabetes Association. Hypoglycemia. Retrieved June 8, 2020 from https://www.diabetes.org/diabetes/medication-management/blood-glucose-testing-and-control/hypoglycemia.

Have a Sick-Day Plan

Being sick causes your blood sugar (blood glucose) to go up. However, eating less, feeling sick to your stomach (nauseated), or vomiting may cause low blood sugar. Talk with your doctor or diabetes care team about creating a sick-day plan to help manage your diabetes.

What to Do When You're Sick

- Check your blood or urine for ketones. DKA is a medical emergency for people with diabetes.
- Continue to take your diabetes medicines, unless your doctor tells you to stop.
- Drink at least one 8-ounce glass of liquid each hour. If you're not eating according to your meal plan, drink sugar-free drinks.
- Talk with your doctor to see if you need to check your blood sugar more often than usual.

Call Your Doctor If You

- Are having or recently had surgery
- Are unsure what to do
- Are vomiting
- Feel sick to your stomach (nausea)
- Have a fever that is higher than what your doctor recommends for you
- Have stomach pain

FOCUS: PROBLEM SOLVING

What success or challenges have you had with sick days?

American Diabetes Association. Managing sick days. Retrieved June 8, 2020 from https://www.cdc.gov/diabetes/managing/flu-sick-days.html.

Meal Planning

Focus on filling half of a 9-inch plate with non-starchy vegetables, a ¼ of the plate with starchy foods, and a ¼ with lean protein. This is called The Plate Method. It's simple and effective, and you don't need special foods. Draw imaginary lines on your plate, and choose foods you enjoy—in the right amount.

FRUIT/DAIRY

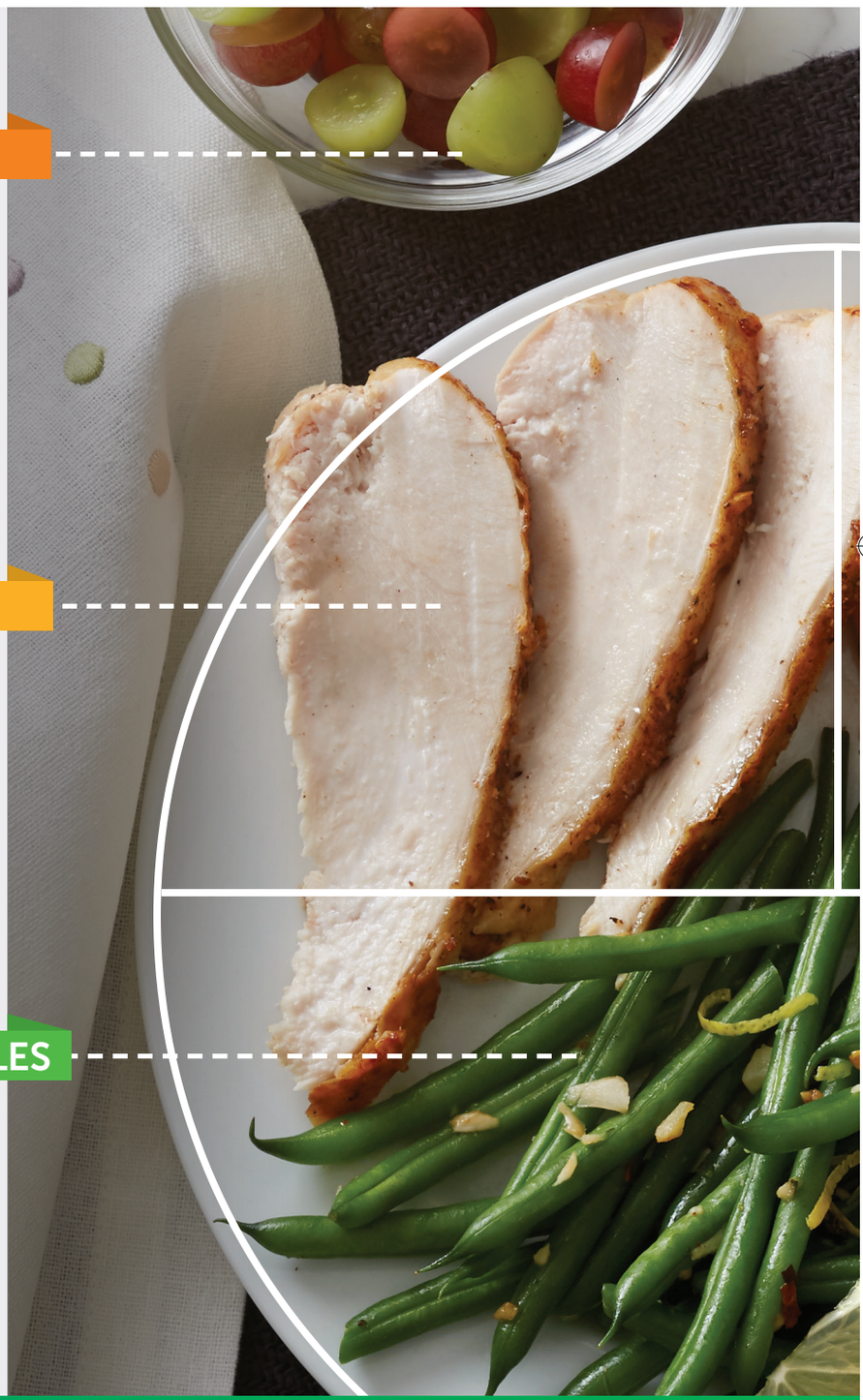
On the side, you can have a small piece of fruit like an orange or an apple. Or, you can have a small serving of dairy, like milk or plain yogurt.

PROTEIN

One-quarter of your plate should be filled with a lean protein, like fish, turkey, chicken, lean beef, eggs, or tofu.

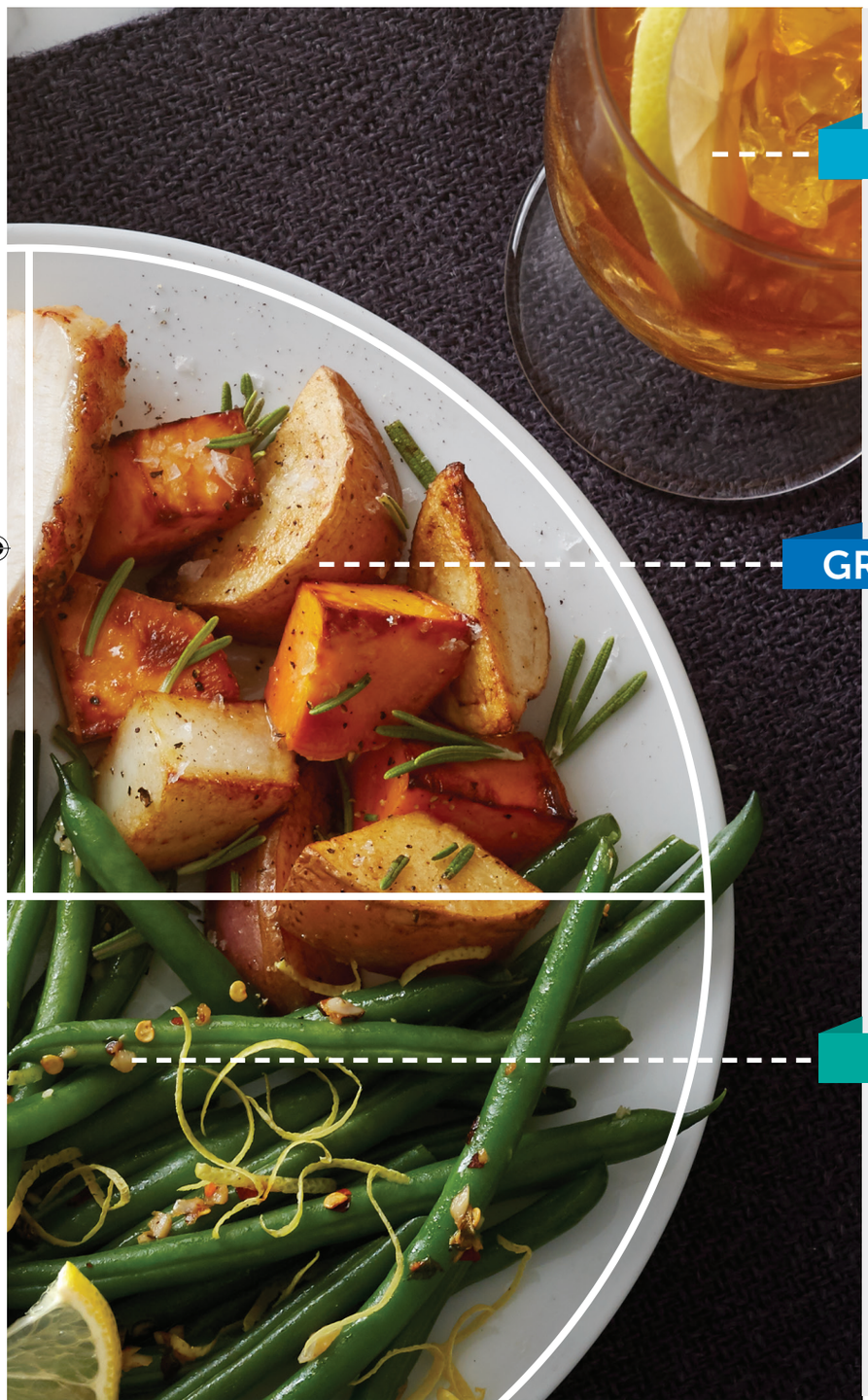
NON-STARCHY VEGETABLES

Half of your plate should be filled with vegetables that are non-starchy, like green beans, carrots, broccoli, cauliflower, lettuce, spinach, salsa, or peppers.



Understanding Carbohydrates

Carbohydrates raise your blood sugar (blood glucose), but they also give you the energy that you need throughout the day. Your doctor or dietitian will help you understand how many carbohydrates you should eat to stay energized without making your blood sugar too high.



DRINK

Add a low-calorie drink like water, unsweetened tea, or coffee.

GRAINS & STARCHY FOODS

The last quarter of your plate can be filled with grains or a starchy carbohydrate, like brown rice, whole-wheat bread, cooked beans, or sweet potatoes.

HEALTHY FATS

Choose healthy fats in small amounts. Use oils for cooking. Healthy choices for salads include nuts, seeds, avocados, and vinaigrette.

Food Guide

Non-starchy Vegetables

1 serving - ½ cup cooked or 1 cup raw

Artichokes
Asparagus
Bean Sprouts
Beets
Broccoli
Brussels sprouts
Cabbage/bok choy
Carrots
Cauliflower
Celery
Cucumbers
Eggplant
Green beans
Greens (collard, turnip, etc.)
Jicama
Mushrooms
Okra
Onions
Peppers
Radishes
Spinach (cooked)
Tomatoes
Turnips
Yellow squash
Zucchini

Protein

1 serving - 3 ounces cooked or ¼ of plate
(about the size of the palm of a hand)

Meat (beef, pork, and lamb)
Poultry (chicken and turkey)
Fish and seafood
Eggs
Cheese and cottage cheese
Paneer
Tofu
Nut butter or nuts

Grains & Starchy Foods

1 serving - 15 grams carbohydrates

¼ of large bagel
⅓ couscous (cooked)
½ cup of lentils/dahl
1 chapatti/roti
1 dosa
1/3 cup of quinoa
1 small biscuit
1 slice of white bread
1 slice of whole-wheat bread
1 small piece of cornbread
½ English muffin
½ of hotdog/hamburger bun
1 roll
4 inch pancake
½ of pita
1 flour or corn tortilla
4 inch waffle
½ cup oatmeal or grits (cooked)
½ cup cream of wheat (cooked)
¾ cup unsweetened cereal
½ cup bran cereal
1 ¼ cups puffed cereal
⅓ cup pasta (cooked)
⅓ cup rice (cooked)
⅓ cup couscous (cooked)
6 saltine crackers
6 round butter crackers
5 whole-wheat crackers
20 oyster crackers
3 cups popcorn
¾ oz pretzels
2 rice cakes
10-15 chips
½ cup peas
½ cup corn
½ cup black beans
¼ baked potato (large)
½ cup mashed potato
1 cup winter squash
½ cup sweet potato
⅓ cup baked beans
½ cup refried beans

Fruit/Dairy

1 serving - 15 grams carbohydrates

Fruit

1 ¼ cup strawberries
1 ¼ cup watermelon
1 cup cantaloupe
1 cup blackberries/raspberries
1 cup cherries
¾ cup blueberries
¾ cup pineapple (fresh)
½ cup grapes
½ cup mango
2 mandarins/cuties
2 plums
1 small apple
1 small orange
1 pear
½ cup kiwi (sliced)
1 peach/nectarine
½ banana
½ grapefruit
½ cup canned fruit in juice
2 Tbsp dried fruit

Dairy

1 cup milk
6 oz light yogurt
½ cup of ice cream

Fats

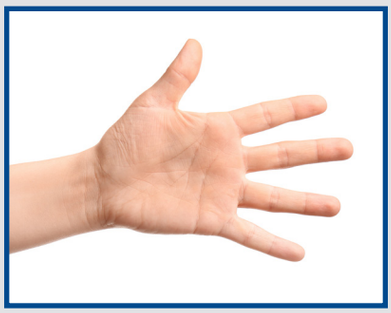
1 fat serving=5 grams of fat

2 Tbsp avocado
1 Tbsp salad dressing
1 tsp margarine
1 Tbsp nuts
1 tsp mayonnaise
1 tsp butter
1 Tbsp cream cheese
2 Tbsp sour cream
2 Tbsp half & half
2 tsp tahini
1 ½ Tbsp coconut milk (canned, thick)
1 tsp coconut oil

Portion Sizes

It's always better to measure out your food, but sometimes you can estimate. Here are some general guides to help you learn portion size.

1 CUP =
about the size of your fist



3 OUNCES =
about the size of your palm

1 OUNCE =
about the size of your thumb

FOCUS: HEALTHY EATING

Think about your favorite food. What can you do to put a healthy twist on it?

_____

_____

_____

U.S. Department of Agriculture. Choose my plate. Retrieved June 8, 2020 from https://www.choosemyplate.gov/.

How to Read a Nutrition Label

Understanding the nutrition labels on food can help you decide what food to shop for, what food to eat, and how much you should eat.

Serving size

Most packages have more than 1 serving. Pay attention to the serving sizes of your packaged food. The information on this label is only based on 1 serving.

Fat

Pay attention to how much fat is in a serving; especially saturated and trans fat.

Total carbohydrates

Make sure you're looking at how many grams of carbohydrates are in each serving.

Added sugar

Try to choose foods with small amounts of added sugars. There are many different names for sugar like sucrose, high-fructose corn syrup, dextrose, maltose, honey, and others.

Nutrition Facts

8 servings per container

Serving size **1 cup (68g)**

Amount Per Serving

Calories **370**

	% Daily Value*
Total Fat 5g	**6%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 150mg	**7%**
Total Carbohydrate 48g	**17%**
Dietary Fiber 5g	**18%**
Total Sugars 13g	
Includes 10g Added Sugars	**20%**
Protein 12g	**24%**
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 0.9mg	4%
Potassium 188mg	4%

* 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.

Managing Diabetes: Oral Medications

Oral Medicines

Your doctor may prescribe diabetes medicine (pills) to help you reach your blood sugar (blood glucose) goals. These pills are not insulin. They are medicines that help lower your blood sugar or help with other issues you may be having.

MEDICINE	HOW IT WORKS	WHEN TO TAKE	POSSIBLE SIDE EFFECTS
Glucophage® (Metformin)	• Helps prevent your liver from releasing too much glucose • Helps your body improve how it uses insulin • Helps preserve the cells that make insulin in your pancreas	With meals	• Diarrhea • Feeling sick to your stomach (nausea) • Vomiting • Gas and bloating • Difficulty breathing
Amaryl® (Glimepiride) DiaBeta® (Glyburide)	• Helps your pancreas make more insulin	With breakfast or first meal	• Low blood sugar • Skin rash • Weight gain
Glucotrol® (Glipizide)	• Helps your pancreas make more insulin	About 30 minutes before meal	• Low blood sugar • Skin rash • Weight gain
Actos® (Pioglitazone)	• Helps your body improve how it uses insulin	With or without meals	• Fast weight gain • Difficulty breathing • Swelling or fluid retention • Unusual tiredness

Please see the manufacturer's prescribing information for complete details, and talk to your doctor or pharmacist about side effects.

American Diabetes Association. Oral medications. Retrieved June 8, 2020 from https://www.diabetes.org/diabetes/medication-management/oral-medication/what-are-my-options.

Managing Diabetes: Insulin

Insulin is a hormone made in the pancreas that lowers blood sugar (blood glucose). It helps move sugar out of the blood and into the cells where it belongs.

Insulin can also be a medicine for people with diabetes. Many people with diabetes take insulin to lower their blood sugar. Insulin medicine works just like the insulin in your body. It helps sugar move from the blood and into your cells. It is injected because that is the best way for your body to use it.

Types of Insulin

There are different types of insulin that affect blood sugar in different ways. Your body may react best to a certain type of insulin, and this may change over time. Your doctor can tell you which type of insulin is best for you. Look at the chart at the end of this guide for the different types of insulin that can help manage your blood sugar.

Stay Safe

- Always have an extra bottle of insulin or an extra insulin pen with you, just in case.
- Never make changes to your dosage without talking to your doctor.
- Do not switch brands or types of insulin without checking with your doctor first.

Check Your Insulin

- All insulin has an expiration date. Check to make sure your insulin has not expired. If you have unopened insulin that has gone out of date, call your doctor. If the insulin is opened, follow the manufacturer's guidelines.
- Check your insulin closely before you use it to make sure it looks right. Look for an unusual color or any floating pieces. If something doesn't seem right, call your doctor.

Storing Your Insulin

- Store insulin in the refrigerator until you are ready to use it.
  - Do not freeze it.
  - Do not leave it in direct sunlight or in the car.
- Before you inject insulin, take it out of the refrigerator. Let it warm to room temperature.

American Diabetes Association. Insulin. Retrieved June 8, 2020 from https://www.diabetes.org/diabetes/medication-management/insulin-other-injectables/insulin-routines.

FOCUS: TAKING MEDICINES

What concerns do you have about taking insulin or other diabetes medications?

Kinds of Insulin

It's Important to Know

- How long it takes to start working (onset)
- When the effect will be greatest (peak)
- How long your insulin lasts (duration)
- When to take insulin
- What insulin to take

GENERIC NAME	BRAND NAME	WHEN TO TAKE	WHEN MEDICINE STARTS TO WORK (ONSET)	WHEN MEDICINE IS STRONGEST (PEAK)	HOW LONG MEDICINE LASTS (DURATION)
RAPID ACTING					
Insulin aspart	Novolog®	15 minutes before eating	10 to 20 min.	30 to 90 min.	3 to 5 hours
Insulin glulisine	Apidra®				
Insulin lispro	Humalog®				
SHORT ACTING					
Regular	Humulin® R	30 minutes before eating	30 to 60 min.	2 to 4 hours	5 to 8 hours
Regular	Novolin® R				
INTERMEDIATE ACTING					
NPH	Humulin® N	Same time each day	1 to 2 hours	4 to 12 hours	14 to 24 hours
NPH	Novolin® N				
LONG ACTING					
Insulin detemir	Levemir®	Same time each day	3 to 4 hours	No peak	6 to 23 hours
Insulin glargine	Lantus®				24 hours or longer
MIXTURES					
75% Insulin protamine / 25% Insulin lispro	Humalog® Mix 75/25	15 minutes before eating	10 to 15 min.	Varies	10 to 16 hours
70% NPH / 30% regular	Humulin® 70/30	30 minutes before eating	30 to 60 min.		

Insulins Available in the United States. Retrieved June 8, 2020 from https://professional.diabetes.org/sites/professional.diabetes.org/files/media/insulin-chart2015.pdf.

Choosing an Injection Site

Places You Can Give an Injection

You can use any of these four main sites:

- Abdomen or stomach (fastest with best absorption)
- Back of upper arms
- Outer side of the thighs (front and upper)
- Upper outer part of the buttocks

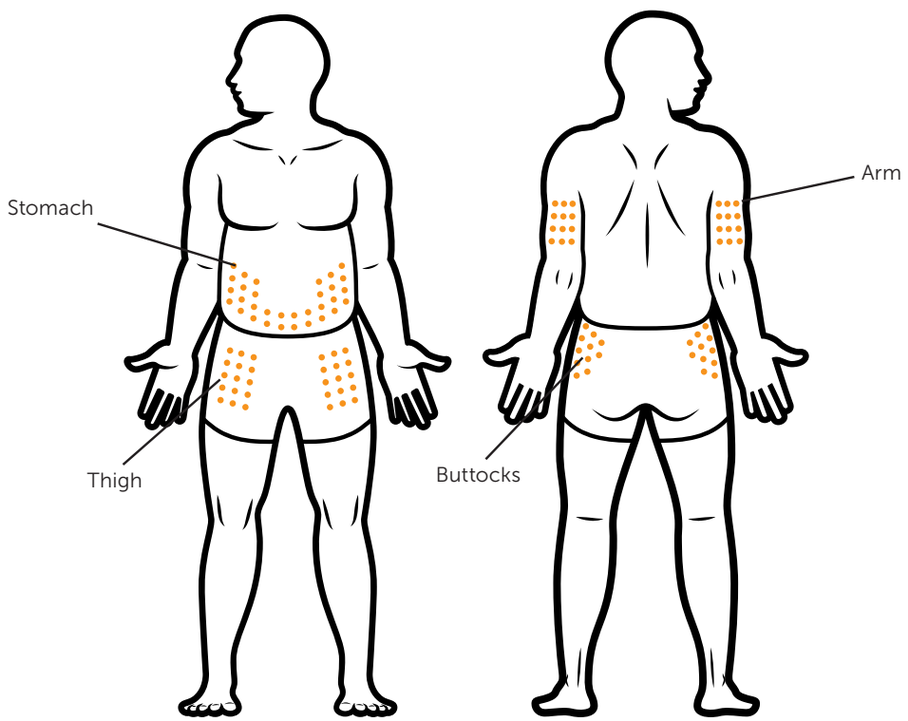
Rotate injection within chosen site for at least a week before using another site.

Places You Should Not Give an Injection

- Do not inject into muscle. Inject into the layer of fat just below the skin (subcutaneous tissue).
- Do not inject in the inner thigh.
- Do not inject in the belly button (navel). Stay at least two inches away from the belly button.
- Do not inject in a scar, mole, or stretch marks.
- Do not inject into the same exact site each time you inject.
- If you take Symlin® (pramlintide acetate), inject Symlin® in your abdomen or thigh. Do not inject Symlin® in your arm.

Rotate Sites

Inject about one inch away from the last injection site.



Association of Diabetes Care & Education Specialists. Insulin injection know-how. Retrieved October 26, 2020 from https://www.diabeteseducator.org/practice/practice-tools/diabetes-management-tools/insulin-injection-resources2

How to Draw up and Administer Insulin Using a Vial and Syringe

1 Wash your hands.

2 Roll the insulin bottle gently several times until well mixed (not necessary for clear insulin).

3 Clean the top of the bottle with an alcohol swab.

4 Draw air into a syringe, equal to the insulin dose you will take.

5 Remove the needle cap from syringe.

6 Put the needle into the bottle and push the air into the insulin bottle.

7

Turn the bottle upside down with the needle still in the bottle. Pull back the plunger to draw the amount of insulin you will need. Tap the syringe and push the bubbles back into the bottle. Pull back the plunger and draw up the needed dose and check for bubbles again. Repeat the process until all bubbles are gone.

8 Set the syringe to the side to prepare injection site. Do not let the needle touch anything.

9 Remove the needle cap and hold syringe like a pencil.

10 Insert needle at 90 degree angle to the injection site. Insert the entire length of the needle into the skin.

11 Push plunger all the way down to inject the insulin

12 After insulin is injected, slowly count to 5, and pull the needle out.
Apply pressure if needed.
Do not massage area.

13 Dispose of insulin syringe in a sharps container

Association of Diabetes Care & Education Specialists. Insulin injection know-how. Retrieved June 8, 2020 from https://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/general/Insulin_Injection_How_To_AADE.pdf.

How to Use an Insulin Pen

1 Wash your hands.

2

Pull off pen cap.

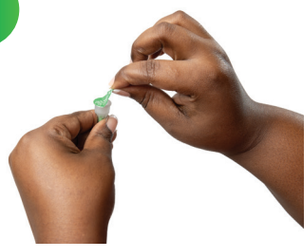
3

Clean rubber end of the pen with alcohol pad. (Check for discoloration/crystals; if found, DO NOT USE and call your pharmacy.)

4

If cloudy, roll to mix.

5



Remove protective wrapper from new disposable needle.

6

Screw pen needle onto your pen until tight.

7

Pull off outer needle cap and keep it for later.

8

Pull off inner needle cap and dispose of it.

9

Prime the pen to get it ready for your injection.

Hold the pen in an upright position and turn the dose selector to select 2 units of insulin.

Association of Diabetes Care & Education Specialists. Insulin injection know-how. Retrieved June 8, 2020 from https://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/general/Insulin_Injection_How_To_AADE.pdf.

10

Slightly tap the side of the pen to get the air out and remove air bubbles.

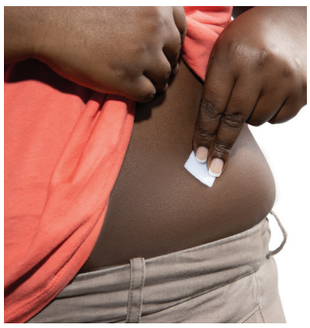
11

Press the push button and watch for the insulin drop to appear. The amount in your syringe is not your actual dose; this just helps get the air out.

12

Turn the selector to select your full dose of insulin. Your pen is now ready to use.

13



Choose your injection site and keep each injection at least one finger's width from the last injection. Clean area with alcohol pad and let dry.

14

Hold insulin pen as shown.

15

Inject at a 90-degree angle, wait 6-10 seconds BEFORE removing the needle from your skin (this ensures absorption of the insulin).

16

After injecting, apply gentle pressure to the site - NO RUBBING.

17

Put outer cap over needle.

18

Unscrew and remove pen needle.

19

Dispose of pen needle in a sharps container.

How to Dispose of Needles

Practice Safe Sharps Disposal

Used needles or pens are also called "sharps." Sharps include lancets, insulin syringes, insulin pens, and pump insertion needles. For safety, sharps must be disposed of properly:

- Put sharps in a hard plastic or metal container with a tightly secured lid.
- You can use an empty bleach or laundry detergent container with a lid.
- You must label the bottle "Sharps," "Syringes," or "Needles."
- When the container gets full, tape the lid shut.
- Never put sharps directly in the trash or recycling bin.
- Never flush sharps down the toilet.
- You can also purchase a puncture-proof container from a local pharmacy.
- Make sure everyone in your house knows where the sharps container is located and what it is used for.
- **Follow your local garbage/sanitation company's rules for disposing of sharps containers.**

Association of Diabetes Care & Education Specialists. Insulin injection know-how. Retrieved June 8, 2020 from https://www.diabeteseducator.org/docs/default-source/legacy-docs/_resources/pdf/general/Insulin_Injection_How_To_AADE.pdf.

My Checklist

☐ Diabetes management follow-up appointment: _____

☐ Diabetes education follow-up appointment: _____

☐ Blood sugar (blood glucose) monitoring

Check your blood sugar _____ times a day.

☐ Before breakfast and ☐ _____ hours after breakfast.

☐ Before lunch and ☐ _____ hours after lunch.

☐ Before dinner and ☐ _____ hours after dinner.

☐ At bedtime.

Other:

_____

☐ Healthy living

I eat _____ meals a day, _____ hours apart.

I should have _____ grams of carbs each meal.

☐ I get _____ minutes of activity a day, _____ days a week.

☐ Today, I feel _____.
If feeling sad or hopeless, I will talk to my diabetes care team about how I'm feeling.

Notes or Questions to Ask:

_____

_____

_____

_____

My Weekly Log

Be sure to check with your diabetes care team for your specific blood sugar (blood glucose) goals.

Meal Log for the Week of _____

	BREAKFAST	LUNCH	DINNER
Mon			
Tues			
Wed			
Thurs			
Fri			
Sat			
Sun			

	BREAKFAST			LUNCH			DINNER			BEDTIME		NIGHT
	Blood Sugar Before	Insulin Units/ Type	Blood Sugar After	Blood Sugar Before	Insulin Units/ Type	Blood Sugar After	Blood Sugar Before	Insulin Units/ Type	Blood Sugar After	Blood Sugar Before	Insulin Units/ Type	Blood Sugar
Mon												
Tues												
Wed												
Thurs												
Fri												
Sat												
Sun												

Understanding Your Health Just Got Easier

Ask Your Texas Health Resources Nurse About Emmi

Texas Health®

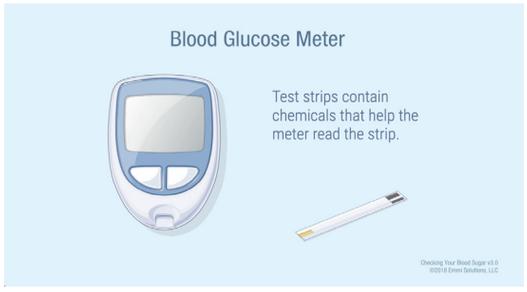
What is Emmi?

Emmi® is a series of free, online programs that walk you through important information about a health topic, condition, or procedure. You can watch Emmi programs as many times as you like, and you can share them with your family and friends.

Learn More About Your Health

Doctors try to explain everything about your health but sometimes it gets confusing. Emmi programs help to answer your questions and make you feel more at ease. You are the most important member of your health care team, so you should have all the information you need.

SCREENSHOTS OF AN EMMI PROGRAM



Where Do I Access my Emmi Program?

You have two easy options:

1: If you have MyChart, please visit
https://mychart.texashealth.org/MyChart

Username: _____

2: If you do NOT have MyChart, please visit
www.startemmi.com

Access Code: _____

Ready to Learn More?

Ask your diabetes care team for the programs that are right for you.

Need help with Emmi?
Email: support@emmisolutions.com
Call 866.294.3664
Need help with MyChart? Call 682.236.6700

emmi® Expertly Designed to Drive Results

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American Heart Association. Cardiovascular Disease and Diabetes. Retrieved September 22, 2020 from http://www.heart.org/en/health-topics/diabetes/why-diabetes-matters/cardiovascular-disease--diabetes.

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Notes

Texas Health®

For more information about outpatient diabetes care, education, and support:

1-800-804-3399

TexasHealth.org/Diabetes

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