Diabetes To Go
Know About Your Diabetes

**DIABETES BASICS**

What is Diabetes ............................................................................................................4
Why You Should Take Care of Your Diabetes ............................................................5
What Should Your Blood Sugar Be ..............................................................................7
Know Your Diabetes Numbers: Sugar and A1c..........................................................8
Know About Low Blood Sugar: Hypoglycemia ..........................................................9
Know About High Blood Sugar: Hyperglycemia ....................................................11
When to Call Your Doctor Right Away or Go to the Emergency Room ..............12
Healthy Eating Basics ..................................................................................................13
  • The Plate Method
  • Healthy Eating Tips
Taking Care of Diabetes When You Are Sick ............................................................18
Checking Your Blood Sugar ......................................................................................20
Know About Your Diabetes Medicines......................................................................21
  • Diabetes Pills Basics
  • Know About Your Diabetes Shots: Insulin
  • Other Shots for Diabetes

**DIABETES EXTRAS**

Know About Diabetes and Having a Healthy Heart .....................................................33
Know More About Healthy Eating .............................................................................34
Know About Diabetes and the Hospital ....................................................................36
Staying Well with Diabetes: Your Diabetes Care Team ............................................37
Diabetes Care Schedule ............................................................................................38
Diabetes To Go

Diabetes Basics

When you have diabetes, there are things you need to know to keep your blood sugar levels close to the target range. Keeping your blood sugar levels within your target range will help you to stay healthy. We call these basics *survival skills* for those with diabetes.
What is Diabetes

Your body changes much of the food that you eat into sugar. Your body uses sugar for fuel. Sugar is carried by the blood to the body’s cells, where it is used for energy or stored to be used at a later time.

Insulin is normally made in a part of the body called the pancreas. Insulin is like a key. In a person who does not have diabetes, sugar enters cells with the help of insulin, in the same way that a key unlocks a door, so you can open it to get into your house. If your body does not make enough insulin or if the insulin that your body makes does not work well, then sugar cannot get into the cells where it is needed for energy. It stays in the blood. This makes the blood sugar level higher than it should be, causing you to have diabetes.

Let’s look at the most common types of diabetes

Type 1 diabetes

If you have type 1 diabetes, your body does not make insulin. This is a problem because you need insulin to take the sugar from the foods you eat and turn it into energy for your body. You need to take insulin every day to live.

You must ALWAYS take your insulin, or your blood sugar levels will become very high. When this happens, you will become sick in a short period of time—perhaps even in just a few hours.

Have type 1 diabetes?

You MUST ALWAYS take insulin, even when you are sick or not eating

Type 2 diabetes

If you have type 2 diabetes, your body does not make enough or use insulin well. You may need to take pills or insulin to help control your diabetes. Type 2 is the most common type of diabetes.

If you have type 2 diabetes, sugar cannot easily get into your cells. With weight loss, healthy food choices and being active, type 2 diabetes can often be controlled. Medicines, (usually a pill or pills) in addition to a healthy lifestyle, may be needed to control type 2 diabetes. If you have type 2 diabetes, you will likely need insulin at some point in time to help control your blood sugar levels.
Other kinds of diabetes

- Diabetes that occurs with pregnancy is called **gestational diabetes**
- Diabetes that is caused by medicines called glucocorticoids, for example prednisone or hydrocortisone, is called **steroid diabetes**
- If you have had surgery to remove your pancreas (where insulin is made), or if it has been damaged, then you will also have diabetes

**Do you know which type of diabetes you have?**

If not, then **ask** your doctor

**Why You Should Take Care of Your Diabetes**

Taking care of your diabetes means keeping your blood sugar level as close to normal as possible. This is your target sugar.

Blood sugar levels that are too high can cause problems right away, known as the **acute complications** of diabetes, including:

- Blurred eyesight or trouble seeing things
- Loss of body water that can cause low blood pressure (dizziness, passing out) or kidney trouble
- Hard to fight off sickness or infections
- Pain when you pee, itching in the vaginal area, fever and feeling very ill, fever with a cough, and foot infections
- Very high blood sugar levels, known as DKA (diabetic ketoacidosis), if you have type 1 diabetes, or HHS (hyperosmolar coma) if you have type 2 diabetes
Staying in target for many years

If your blood sugars are high for many years, you are at risk for problems known as the chronic or long-term complications of diabetes.

These problems include:

**Changes in your**
- **Eyes**
- **Feet**
- **Gums and teeth**
- **Heart**
- **Kidneys**
- **Nerves**

**Increasing your risk for**
- **Blindness**
- **Loss of a foot**
- **Dental disease**
- **Heart disease/stroke**
- **Dialysis**
- **Loss of sensation**

**There is good news!**

Research has shown that when blood sugar levels are kept as close to target as possible both at home and in the hospital, many of the problems of diabetes will not happen or will not get worse. Working closely with your doctor and your diabetes team, and learning as much as you can about taking care of your diabetes will help prevent your chances of getting diabetes-related problems.

There are four points in your life when it is important to see a diabetes educator and learn more about your diabetes:

1. When you find out you have diabetes
2. Every year
3. If major changes in your life take place
4. If you start to have problems with diabetes
What Should Your Blood Sugar Be

Your blood sugar will change every day, but should not be too high or too low.

Most of the time:

- Your blood sugar BEFORE you eat should be from **80 to 140**
- Your blood sugar AFTER you eat should be **less than 180**
- Blood sugar of **70 or lower is too low**

**Ask your doctor**

What **SHOULD** my blood sugar be most of the time?
Know Your Diabetes Numbers

What is A1c?

Your A1c number tells you the average of your blood sugars in the 3 months before the test is done. It counts the amount of sugar that sticks to the red blood cell.

![Red Blood Cell Sugar](image)

- **High A1c**
- **Low A1c**

<table>
<thead>
<tr>
<th>If your A1c is</th>
<th>Then your average blood sugar is about</th>
<th>What this tells you</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>126</td>
<td>Tightly Controlled</td>
</tr>
<tr>
<td>7</td>
<td>154</td>
<td>At goal</td>
</tr>
<tr>
<td>8*</td>
<td>183</td>
<td>Blood sugar control needs improvement</td>
</tr>
<tr>
<td>9</td>
<td>212</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>240</td>
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<tr>
<td>11</td>
<td>269</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>298</td>
<td></td>
</tr>
</tbody>
</table>

*For some people with diabetes, including older adults, those with advanced kidney disease, trouble feeling low blood sugars, or active heart disease, the target may be 8-8.5%.

American Diabetes Association Standards of Medical Care, Diabetes Care. 2019
Know About Low Blood Sugar: Hypoglycemia

What is low blood sugar?
• Low blood sugar is also called hypoglycemia (sounds like hype-poh-gly-see-mee-uh)
• This means your blood sugar is below 70, which is too low
• Low blood sugar needs to be treated right away

How will you feel if your blood sugar is too low?
• You may feel shaky, sweaty or very hungry, have a fast heartbeat, anxious or nervous, angry, or not thinking clearly
• If you have any of these feelings, check your blood sugar

Low blood sugar levels can be caused by taking your diabetes pills or insulin and skipping a meal, eating less than usual, being more active (exercise or just walking), or taking extra insulin.

How do you prevent low blood sugars?
• Eat your meals on time
• Do not skip meals
• On days that you know you will be more active than usual, take a carbohydrate snack along to eat, such as a granola bar, peanut butter crackers, or a small box of raisins

What should you do if you are feeling low?
Treat low blood sugar right away if you know or feel your blood sugar is low. Low blood sugar is treated with carbohydrates, also called “carbs.” Starches and sugars are carbohydrates which raise your blood sugar level when it is low.
Step 1. Drink or eat 15 grams of carbohydrate or 1 carbohydrate choice, and check your sugar

15 grams of carbohydrate or 1 carbohydrate choice equals:
- 1 cup of milk
- ½ cup of juice
- ½ can or 6 oz. of regular (NOT diet) soda
- 3-4 sugar (glucose) tablets
- 1 tube of sugar (glucose) gel
- 1 tablespoon of honey, sugar, jelly, or syrup
- 4 Starbursts®
- Small box of raisins

Step 2. Check your blood sugar again after 15 minutes

If your sugar level is still lower than 70, eat or drink one more of the same choice to raise your blood sugar until it is over 70.

Step 3. Eat the meal that you missed or a sandwich

Your doctor may want to change your diabetes medicines if you have more than one low blood sugar reading in a single day.

If you have low blood sugar often, call your doctor and ask

Do my diabetes medicines need to be changed so I will not have so many low sugars?
Know About High Blood Sugar: Hyperglycemia

What is high blood sugar?
• High blood sugar is also called hyperglycemia (sounds like hype-per-gly-see-mee-uh)
• This means your blood sugar is over 180 and it is too high

How will I feel if my blood sugar is too high?
• You may feel very tired or thirsty, have blurred vision, or need to pee more often
  - If you have any of these feelings, check your blood sugar
• You may not feel any of these signs of high blood sugar
  - A blood sugar test is the best way to know what your blood sugar really is

What should I do if my blood sugar is too high?
• Drink plenty of water
• If your blood sugar is high because you ate too much food or have been drinking sugary liquids like fruit juice, regular soda, or sweet tea, you need to:
  - Cut down on the amount of food you eat
  - Stop drinking sugary drinks, such as soda, sweet tea, or fruit juices
  - Check your sugar again later in the day to see if this helped
When to Call Your Doctor Right Away or Go to the Emergency Room

If your blood sugar level is running high and you can’t get it back to your target level, call your doctor. If you are unable to reach your doctor, then you should go to the emergency room at the nearest hospital.

This is important if you are having any of the following:

- Two (2) or more blood sugar numbers higher than 400.
- Two (2) or more blood sugar-level readings of less than 70 in one day
- Severe low blood sugar that has left you confused, or that someone had to help you treat, because you could not take care of it by yourself
- Vomiting or diarrhea for more than 6 hours
- Moderate or large urine ketones (if you have type 1 diabetes)
- Any other medical problem that requires immediate help

It is important to know what to do with the blood sugars that you take. Use this table as guide. Always ask your doctor or diabetes educator what you target blood should be and what you should do if it is out of the target range.

<table>
<thead>
<tr>
<th>Range of blood sugar</th>
<th>What you should do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Range</td>
<td>Keep the same dosage</td>
</tr>
<tr>
<td>&lt; 70 two of more time in one day</td>
<td>Call you doctor and ask what to do</td>
</tr>
<tr>
<td>Low blood sugar that did come up by eating for or if you needed help to treat the sugar</td>
<td>Call you doctor right away or go the emergency room</td>
</tr>
<tr>
<td>180-300 more that 2 times in a week</td>
<td>Call you doctor and ask what to do</td>
</tr>
<tr>
<td>300 to 400 more than twice in one day</td>
<td>Call your doctor and ask what to do</td>
</tr>
<tr>
<td>&gt;400 two or more times</td>
<td>Call you doctor right away or go the emergency room</td>
</tr>
</tbody>
</table>
Healthy Eating Basics

Tips for eating healthy

If you have not already seen a dietitian, here are some tips to help keep your blood sugar levels from going high before getting a meal plan that is made especially for you.

**DO**
- Eat 3 meals a day
- Eat your main meals (breakfast, lunch, and dinner) 4 to 5 hours apart
- Eat smaller meals
- Drink calorie-free liquids such as water, diet soda, Crystal-Light®, unsweetened tea or coffee
- Use sugar substitutes, such as Equal®, Sweet ‘N Low®, or Splenda®, instead of sugar

**Avoid**
- Drinking any fruit juice, regular soda or sweet tea
- Eating foods that are high in sugar, such as cake, pie, doughnuts, sweetened cereal, honey, jam, jelly, ice cream, or candy
- Adding sugar to your foods
- Skipping meals
- Eating seconds
- Snacking between meals

**Remember to bring your blood sugar records for your doctor or diabetes educator to review at every visit.**

It is important that you show your sugar record to your doctor. Your doctor will want to review your sugar readings before deciding about making changes to your diabetes medicines.
The Plate Method

The plate method is one way to help make healthy food choices and control portion sizes. Fill half of a 9-inch plate with one cup of non-starchy vegetables; a quarter of the plate with high-protein foods; and a quarter of the plate with carbohydrate-rich foods. Add a small serving of fruit and a serving of dairy.

**Fill half of your plate with non-starchy vegetables,** such as greens, salad, green beans, carrots, or cauliflower

**Fill this section of your plate with 3-4 oz of lean protein** such as chicken, fish, or meat, which is the size of a deck of cards or the palm of your hand

**Fill this section of your plate with one cup of starch,** such as corn, peas, potatoes, pasta, or rice

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**Fruit**
- Choose one small fruit
- OR one cup of melon or berries

**Milk**
- Choose one cup of fat free milk or yogurt
- OR soy or almond milk

**Fat**
- Choose 1 to 2 servings of fat
- 1 serving = 1 teaspoon margarine, oil
- OR 2 tablespoons light salad dressing

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**How do you measure your food when you are eating out?**
- Weighing and measuring foods at home helps you know how much to eat when you eat out
- The hand method is also an easy way to estimate portions sizes

14

- **1 thumb** is close to **1 tablespoon**
- **Your palm** is close to **3 oz.** for protein
- **1 fist** is close to **1 cup** for fruit/vegetables
- **1 thumb tip** is close to **1 teaspoon** for fats
Healthy Eating Tips

Milk & Low Fat Yogurt
- Drink fat-free (skim or non-fat), low-fat (1%), soy milk, or almond milk
- Eat fat-free, lite yogurt (sweetened with sugar substitute) or fat-free Greek yogurt

Fruit
- Eat fresh fruit or canned fruit in its own juice
- Eat small pieces of fruit (size of a tennis ball)
- Eat fruit rather than drink fruit juice. Pieces of fruit are more filling, and contain fiber
- If you drink juice in place of eating a piece of fruit, limit your serving to ½ cup or 4 oz
- Save high-sugar and high-fat fruit desserts, such as cobblers or pies, for special occasions. Be sure to limit your portion size to one small serving

Vegetables
- Eat raw and cooked vegetables without added cream sauces, regular dressings, or dips
- Try low-fat salad dressings or vinegar on raw vegetables or salads
- Steam vegetables, using a small amount of water or low-sodium broth
- For added flavor, add chopped onion, garlic, bell peppers, salt-free seasonings, herbs, spices, vinegar, lemon or lime juice
- Try grilling vegetables as a low fat way to get a lot of smoky flavor
- If using meat to season vegetables, add a small piece of lean ham or smoked turkey, instead of bacon grease or fat back
- If you do use fat, use a small amount of canola oil, olive oil or soft margarine (liquid or tub types), instead of fat from meat, butter, or shortenings

Starches
- Buy whole grain breads and cereals, such as oatmeal, shredded wheat, or Cheerios®
- Avoid all fried, high-fat snack food such as tortilla chips, nachos, potato chips and french fries
Proteins

- Protein includes lean meat, poultry, fish, eggs, tofu, tempeh, low-fat cheese, and peanut butter
- Limit your intake of protein to 3 oz at lunch, and 3 oz at dinner (the size of a deck of cards)
- Limit low-fat breakfast meat (Canadian bacon or low-fat turkey bacon) to 1 time per week
- Choose reduced, low-fat or fat-free cheese
- Limit your intake of egg yolks (the yellow part of the egg) to 3 per week
- Buy cuts of beef, pork, ham, and lamb that have only a little fat on them. Cut off any extra fat before cooking. Choose “round” or “loin” cuts
- Cook eggs with a small amount of fat, or use cooking spray
- Cook and eat chicken or turkey without the skin. Avoid the wings. White meat is lower in fat than dark meat
- Cook meat or meat substitutes in low-fat ways:
  - Broil
  - Stir-fry
  - Steam
  - Grill
  - Roast
  - Stew
- Avoid frying: limit intake of fried foods to one time per week
- To add flavor, use vinegar, lemon juice, low-sodium soy or teriyaki sauce, salsa, ketchup, barbecue sauce, or herbs and spices

Fats

- Limit the amounts of fats you eat
- Use tub, liquid margarine, or non-fat butter spray
- Use cooking spray or small amounts of vegetable oils for cooking
- Limit nuts to 1 to 2 tablespoons per serving
- Avoid animal fats, such as butter, cream, fatback, bacon, bacon grease, lard, and chitterlings
- Avoid shortenings, such as Crisco®
- Use fat-free or reduced fat sour cream, or fat-free plain yogurt, instead of regular sour cream
- Use low-fat mayonnaise, avocado, or mustard instead of mayonnaise on a sandwich
- Use low-fat mayonnaise in potato salad

Alcohol

- Alcohol is high in calories
- Alcohol can cause low blood sugar if you drink on an empty stomach
- If you want to drink alcohol, talk to your doctor or diabetes educator about how it fits into your meal plan
Sample breakfasts

**Sample 1**
- 1 cup of oatmeal or grits
- 1 tablespoon of raisins
- ½ cup of fat-free or 1% milk
- 2 tablespoons of nuts, optional
- Coffee or tea

**Sample 2**
- 1 egg or ½ cup of egg whites
- 2 slices of whole wheat toast
- 1 small orange
- 1 teaspoon of tub margarine
- Coffee or tea

Sample Meals for Lunch or Dinner

**Sample 1**
- 3-4 oz. fish
- 1 medium sweet potato
- ½ plate of broccoli, cauliflower, carrot mix, or greens
- 1 dinner roll
- 1 tsp of tub margarine
- 17 small grapes
- Water or sugar-free beverage

**Sample 3**
- 3-4 oz. pork chop
- 1 cup cooked brown rice
- 1 cup broccoli
- ½ cup unsweetened applesauce
- 1 tsp tub margarine or oil
- Water or sugar-free beverage

**Sample 2**
- 1 turkey sandwich with
- 1 tsp of mayo
- 1 cup non cream based soup
- Large salad
  - 2 cups of greens
  - 1 cup of fresh chopped vegetables
    (mushrooms, tomatoes, cucumbers, carrots)
  - 2 tbsp of light salad dressing
- 1 orange
- Water or sugar free beverage

**Sample 4**
- 3 small meatballs
- 1 tbsp of parmesan cheese
- ⅝ cup pasta
- ½ cup of tomato sauce
- Large salad
  - 2 tbsp of light salad dressing
  - 1 small dinner roll
  - 1 tsp of tub margarine
- Water or sugar-free beverage
Taking Care of Your Diabetes When You Are Sick

When you have type 1 or type 2 diabetes and you become ill or are otherwise stressed, you may notice that your blood sugar levels run high (hyperglycemia). Stress causes the release of hormones that make your blood sugar level rise. Even when you are sick, you need to keep your blood sugar level as close to target as possible.

Know how to take care of your diabetes when you are sick

You need to know how to self-manage your diabetes on days that you are sick or stressed. If you follow sick day rules when your blood sugar levels are running high, you will know what to do and when to call your doctor. It will also be less likely for you to need to go to the emergency room, be admitted into the hospital or miss days from work.

These basics are called sick day rules:

- Know the warning signs of high or low blood sugar
- Know what to eat and drink when you are not able to eat your regular meals
- Know when to check your blood sugars and what your numbers mean
- Know how to take or change your diabetes pill(s) or insulin dose(s)
- Know when to call your doctor, or go to the emergency room

What should your blood sugar numbers be when you are sick?

Your doctor will work with you to decide what your target blood sugar levels should be any time that you are sick, or if your sugars are running high, both in the hospital and at home.

Sick-day foods

If you are not eating your regular meals on a day that you are sick, you still need to try to drink fluids and take in some calories for energy:

- **Drink fluids.** Small amounts of liquids taken as often as you can manage, even just a few sips, will help to stop you from getting dehydrated (low on body water). Try to drink about 1 cup of water, or calorie-free and caffeine-free fluid every hour that you are awake.
- If you can’t eat your usual foods, try sipping small amounts of liquids, such as juice or regular soda (not sugar free) throughout the day.
• If you can eat but do not feel up for your usual foods, then you can try soft, plain foods that are easy to eat when you are sick, such as:
  - Regular (not sugar-free) Jell-O®
  - Applesauce
  - Crackers
  - Clear soup (such as chicken broth)
  - Pudding
  - Toast
  - Hot cereal (like oatmeal or grits)
  - Yogurt with fruit
  - Sherbet
  - Regular Popsicles®

**When to check your sugars on days you are sick**

You should test your blood sugar at least 4 times a day when you are sick.
- If you are eating, check before meals and bedtime
- If you are not eating well, or if your sugar level is running above 200, take a reading every 4 to 6 hours

**What to do with your diabetes medicines on sick days**

*If you take diabetes pills:*
- Some diabetes pills can be taken safely when you are sick
- Some diabetes pills should not be taken when you are sick, particularly if you are not eating

**Ask your Doctor**

Should I take my diabetes pills when I am sick?

*If you take insulin:*
- You ALWAYS need to take your background insulin
- If you are not eating, then you will not take your meal insulin doses
- You may need a change in the number of units of insulin that you take
- You may need extra correction doses of insulin when your sugars are high

**Ask your Doctor**

Should I take a correction dose of insulin on days that my sugars are high? *If yes,*

When should I take a correction dose of insulin? *and* How many units of insulin should I take for a correction dose?
Checking Your Blood Sugar

Using your blood sugar meter

• You use a blood sugar meter to check your blood sugar. This machine uses a small drop of blood from your finger to check your blood sugar. You can get the meter and supplies in a drug store or sent to your house.
  • If you don’t have a blood sugar meter, ask your doctor or nurse for help getting one.

Until you see your doctor, check your blood sugar every day!

• If you are taking pills to help control your diabetes, check your blood sugar 2 times a day. This should be before breakfast and one more time during the day
• If you are taking insulin, check your blood sugar when you wake up and again before each meal and just before bedtime
• If your blood sugar is running high—OR—if you are stressed or sick, check your blood sugar more often, about every 6 hours

Ask your Doctor

How many times a day should I check my blood sugar?

Write down your blood sugar numbers

• Write down your blood sugar number each time you check it
• Ask for a book to write down your blood sugar numbers if you don’t have one
  • Bring your blood sugar book and meter to your diabetes visits

Getting a drop of blood from your finger

• Wash your hands with warm soapy water and dry them or use an alcohol pad to wipe your fingertip
• Let your hand hang down at your side for a few seconds
• Lightly rub the tip of your finger to help the blood flow
• You are now ready to get a drop of your blood to test your sugar
Know About Your Diabetes Medicines

Whether you take pills or shots for your diabetes, it is important that you know about your medicines, so you can take them safely, and so they can work well with your meal and exercise plan to control your blood sugar level.

Diabetes Pills Basics
There are a number of different kinds of pills that can be used to help control blood sugars. Here are the basics of what you need to know to take your diabetes pills safely.

How do diabetes pills work?
Pills that treat diabetes work in one or more of the following ways:

- Helps insulin work better to get sugar into your body cells; this insulin may either be made by your body or received from shots that your doctor tells you to take
- Lowers the amount of blood sugar that the liver makes, which happens while you sleep at night or when you are not eating between meals
- Increases the amount of insulin that your own body makes
- Allows the sugar in the bloodstream to leave your body when you pee

Biguanides stop the liver from making sugar. It also helps the insulin that your body makes, or that you take, to work better to control your sugars. Metformin (Glucophage®) and metformin ER (Glucophage XL®) are both biguanides.

- Helps to control sugars for most people with type 2 diabetes, unless there is a reason you cannot take it
- Usually taken two times a day, with breakfast and with dinner
- Will not make your blood sugars too low if you are not taking it with other diabetes medicines
- May cause mild nausea, stomach upset or loose bowel movements for up to 2 to 3 weeks after you start taking it. After that time, symptoms usually go away
- Can help prevent weight gain
- Cannot be taken if you have heart failure, also known as congestive heart failure
- If you ever get very sick, become short of breath or are admitted to the hospital for any reason while you are taking metformin, STOP taking it until your doctor says it is okay to start it again
- Stop taking your metformin the day of surgery, or when having a medical test with contrast or dye. Your doctor can tell you when to start taking your metformin
Sulfonylureas (SU) help your body release more insulin into the bloodstream to help control your sugars. Glimepiride (Amaryl®), glipizide (Glucotrol®), glipizide ER (Glucotrol XL®) and glyburide (Micronase®, Glynase®, Diabeta®) are sulfonylureas.

- Given or taken once or twice a day
- Main side effect is low blood sugar (hypoglycemia)
- May cause mild stomach upset (nausea)
- Often cause some weight gain, as blood sugars improve
- Avoid low blood sugar by not missing meals
- Increase in physical activity may cause low sugars
- Changes in doses are needed if you have kidney changes due to your diabetes
- Cannot be taken if you have an allergy to sulfa drugs

Meglitinides help your body to release more insulin into the bloodstream, where it can work to help control your sugars. Nateglinide (Starlix®) and repaglinide (Prandin®) are meglitinides.

- Taken at the start of each meal (breakfast, lunch and dinner)
- Do not take meglitinide if you are not going to eat
- Main side effect is low blood sugar (hypoglycemia)
- Change in doses are needed, if you have kidney changes due to your diabetes

TZDs (thiazolidinediones) help the insulin your body makes or that you are taking work better to control your sugars, and also turn down the amount of glucose (sugar) that your liver makes. Pioglitazone (Actos®) and rosiglitazone (Avandia®) are TZDs.

- Taken once or twice daily
- Will not make your blood sugars low, if you are not taking it with another diabetes medicine
- Often cause some weight gain
- May cause ankle swelling
- Cannot be taken if you have:
  - High liver test numbers (AST and ALT)
  - Heart failure, also known as congestive heart failure

If you are short of breath or have chest pain while taking a TZD let your doctor know immediately, or go to your hospital emergency room.
**SGLT2 inhibitors** allow sugar from the blood to leave the body through the pee which results in lower blood sugar levels. Canagliflozin (INVOKANA®), Empagliflozin (Jardiance®), Ertugliflozin (Steglatro®), and Dapagliflozin (Farxgia®) are in this group of diabetes pills.

- Canagliflozin (INVOKANA®) and Empagliflozin (Jardiance®) are taken once a day before the first meal of the day
- Dapagliflozin (Farxgia®) and Ertugliflozin (Steglatro®) are taken once daily with or without food
- Will not cause low sugars if taken as your diabetes pill as they do not cause release of insulin in the body
- Possible side effects include yeast infections, urinary tract infections, mild increase in peeing, dizziness, low blood pressure, increased sensitivity to the sun, a stuffy or runny nose, and sore throat

**DPP-4 Inhibitors** work in two ways to help lower blood sugars. They help release more insulin into the blood stream, where it helps control your sugars. They also lower levels of another hormone, called glucagon which makes blood sugars go up. Sitagliptin (Januvia®), saxagliptin (Onglyza®), linagliptin (Tragenta®), and Alogliptin (Nesina®) are DPP-4 inhibitors.

- Taken once daily
- Does not cause low blood sugars, if taken alone
- Changes in dose are needed if you have kidney changes due to your diabetes
- Side effects may include nausea, stomach pain, or diarrhea
- If you develop severe belly pain, call your doctor or go to the emergency department right away. You may have a condition called pancreatitis (swelling of the pancreas).
**Tips for remembering to take your diabetes and other medicines**

- Take your medicines at the same time of day that you are already always doing something, such as when you brush your teeth or eat a meal
- Keep your medicines visible in the place where you will take them, but not where children will get into them
- It may help to keep all of your pills for the week in a pill box. You can buy a pill box at your pharmacy
- Keep a chart listing all of your medicines. The chart should show the amount of each medicine that you have been directed to take, and the time(s) of day that you are supposed to take it. Check off each dose after you take it
- If you are traveling, or when you know that you will not be at home, take your medicines with you so that you will not miss your dose(s)

**ASK your doctor, nurse, pharmacist, or diabetes educator**

- The **name** of each medicine
- **Why** you are taking it
- Your **dosage**
- **How often** to take it
- **When** it should be taken
- The common **side effects**
Know About Your Diabetes Shots: Insulin

Insulin is a hormone made by the pancreas. With each meal, insulin is released to help your body use or store sugar that you get from food.

Why Do You Need to Take Insulin?
Many persons with diabetes will need insulin to help control blood sugars. People with type 1 diabetes do not make insulin. People with type 2 diabetes make some insulin, but not enough, or the insulin has a hard time working as it should.

Some reasons why you need to take insulin are:
• If you have **type 1 diabetes**, then you **ALWAYS** need to take insulin
• If you have **type 2 diabetes**, then you **may need insulin** to control your blood sugar levels. You may need insulin from the time you found our that you have diabetes, or you may need to start insulin when pills can no longer keep your blood sugar levels in the target range

Types of Insulin
The two main types of insulins are shown on the table below.

<table>
<thead>
<tr>
<th>Type of Insulin</th>
<th>Names</th>
<th>What you should know</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background (Basal) insulin</strong></td>
<td>• Degludec U-100 &amp; U-200 (Tresiba®)</td>
<td>• Controls your sugars between meals and overnight</td>
</tr>
<tr>
<td>24-hour insulin</td>
<td>• Detemir (Levemir®)</td>
<td>• Begin to work slowly and last for many hours</td>
</tr>
<tr>
<td>Long-acting insulin</td>
<td>• Glargine U-100 (Basaglar®, Lantus®)</td>
<td>• Taken one or two times a day</td>
</tr>
<tr>
<td></td>
<td>• Glargine U-300 (Toujeo®)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• NPH* (Novolin N*, Humulin N*, ReliOn®)</td>
<td></td>
</tr>
<tr>
<td><strong>Meal insulin</strong></td>
<td></td>
<td>• Controls your blood sugars after you eat or brings them down when they are high</td>
</tr>
<tr>
<td>also known as correction and bolus dose insulin</td>
<td>• Aspart (Novolog®)</td>
<td>• Is taken with meals or when your sugar is high</td>
</tr>
<tr>
<td></td>
<td>• Glulisine (Apidra®)</td>
<td>• Begin to work quickly and last only a few hours</td>
</tr>
<tr>
<td></td>
<td>• Lispro (Admelog®, Humalog®)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lispro U-200 (Humalog 200*)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Regular (Humalin R®, Novolin R®, Humalin R U-5000®)</td>
<td></td>
</tr>
</tbody>
</table>

*NPH insulin lasts approximately 12 hours.*
Your doctor may recommend a combination of a meal and long acting (basal or background) insulins to control your blood sugars. Most people with diabetes who need to take insulin will take at least one or two shots a day for blood sugar control. To have a more flexible lifestyle and tightly controlled diabetes, some people take three or four shots a day.

Some insulins can be mixed together in the same syringe and given as one shot.

Glargine, degludec, and detemir insulins cannot be mixed with any other insulins.

Storing Insulin
Insulin works best when it is properly stored. Be sure to read the directions on your insulin bottle or pen package insert. To keep your insulin in working condition do the following:

- Keep your unopened supply of insulin in the refrigerator (36-46 degrees F)
- Unopened insulin that you keep in the refrigerator is good until the expiration date
- Opened vials of insulin can be kept at room temperature (59-86 degrees F) or in the refrigerator. Most opened vials of insulin are good for about 28 days. Insulin Levemir® (detemir) is good for 42 days when opened
- Insulin pens you are using can be kept at room temperature. Check your insulin pen instructions for how long you can keep it at room temperature
- Never let your insulin freeze
- Never leave insulin in direct sunlight or in places where it can get hot
Taking Your Insulin

If your insulin comes in a pen

1. Gather all of the supplies that you will need.
2. Wash your hands.
3. Remove the pen cap (see picture A).
4. Wipe the stopper with an alcohol swab or an alcohol-treated cotton ball (see picture B).
5. Take out the new pen needle.
6. Position the needle along the axis of the pen.
7. Pierce the center of the cartridge.
8. Screw on the needle.
9. Pull off the outer and inner shield.
10. Check the pen to make sure it is working, dial 2 units and slowly push the button. A drop of insulin should appear at the end of the needle. If not, then repeat (see picture C).
11. If the pen is working, then dial the pen to the number of units of insulin that you are going to take (see picture D).
12. Wipe the injection site with an alcohol swab. Select your insulin dose.
13. Perform the injection using the recommended technique.
Taking Your Insulin

If your insulin comes in a bottle

1. Gather all of the supplies that you will need.
2. Wash your hands.
3. Roll bottle (only if a cloudy insulin) between your hands (see picture A).
4. Wipe the top of the bottle with an alcohol swab or with an alcohol-treated cotton ball (see picture B).
5. Remove the needle cap from the syringe.
6. Pull the plunger down to fill syringe with air equal to insulin dose (see picture C).
7. Push the needle into center of the rubber top of the insulin bottle (see picture D).
8. Push the plunger down all the way to push air into bottle.
9. With the needle and the syringe still in it, turn the bottle upside down (see picture E).
10. Hold both together at eye level.
11. Pull the plunger down to fill syringe, with the number of units of insulin prescribed by your physician.
12. Without removing needle from bottle, look closely at the syringe, checking for air bubbles. If air bubbles are present, then pull down on the plunger to draw more insulin into syringe. Push the extra insulin into the bottle until you arrive at your recommended dose. Lightly tapping on the syringe allows the bubbles to rise to top of the syringe.
13. Carefully remove the filled syringe and needle from the bottle.
14. Perform the injection following the directions on the next page.
**Giving an Insulin Shot**

Insulin is injected into the fat below the skin, where there are no nerve endings. Today’s insulin syringes and pen needles are so small and thin that most people feel no discomfort at all when giving their injections.

If you are thin or using a short needle there is no need to pinch. Add in if you need to pinch:

1. Pick the injection site.
2. Wipe the skin with an alcohol swab or with an alcohol-treated cotton ball.
3. Pick up the syringe filled with insulin or insulin pen.
4. Pinch up the skin if you are thin or if the needle length is 7mm or greater *(see picture A)*.
5. Hold the syringe or insulin pen at a 90-degree angle to the skin and push the needle straight into the fat pad *(see picture B)*.
6. If you are using a syringe, then press the plunger all the way down. If you are using an insulin pen, then press the pen trigger.
7. If you are using an insulin pen, count to 10 slowly so all of the insulin will remain under the skin.
8. Let go of the pinched skin, and remove the needle.
9. Put the insulin syringe and needle, or the pen needle, into your needle disposal container *(see picture C)*.

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**What you should do with your needles, syringes, and lancets after you use them**

- Use a hard-plastic or metal container with a screw-on or tightly secured lid. Examples found at home are empty plastic laundry detergent containers or milk containers.
- Before throwing this container away, tighten the lid and seal it with heavy-duty tape. Before placing it in either the recycling bin or the regular trash, check with your pharmacist or the Coalition for Safe Community Needle Disposal at 800-643-1643, or visit their site at SafeNeedleDisposal.org.
Where Can You Inject Insulin?

Insulin shots may be given in your abdomen (stomach area), the outer side of your upper arm, or your thigh, as shown in the diagram below.

Tips for Taking Insulin

✅ ALWAYS:
- Take your basal/background insulin (degludec, detemir, glargine, NPH)
- Take your basal/background insulin at the same time(s) each day
- Take your meal insulin if you are going to eat
  - Take rapid insulins (aspart, glulisine, lispro) right before a meal
  - Take regular insulin 30 to 45 minutes before a meal

❌ DO NOT:
- Take your meal insulin if you are not going to eat the meal
- Switch insulin brands without asking your doctor
- Use your insulin after the date it expires
- Use cloudy insulin (NPH and mixes) if you see clumps in it, or if the insulin does not mix well
- Shake your insulin hard or let it get tossed around. Insulin that is handled roughly is more likely to clump or frost (stick to the bottle)
- Inject insulin into scars, moles, or lumps on your skin
Other Shots for Diabetes

**GLP-1 analog** works in several ways to help control blood sugars in type 2 diabetes. It slows stomach emptying after you eat, so your sugars do not go too high. It increases release of insulin into the bloodstream to help to lower your sugars. It also lowers levels of another hormone called glucagon that makes blood sugars go up, and it makes you feel less hungry. The chart belows list this class of drugs.

<table>
<thead>
<tr>
<th>GLP-1 analog type</th>
<th>When is it taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dulaglutide (Trulicity™)</td>
<td>Once weekly at any time of day</td>
</tr>
<tr>
<td>Exenatide (Byetta®)</td>
<td>Two times daily, up to one hour before breakfast and dinner</td>
</tr>
<tr>
<td>Liraglutide (Victoza®)</td>
<td>Once a day, with or without a meal</td>
</tr>
<tr>
<td>Exenatide extended release (Bydureon®)</td>
<td>Every seven days on the same day of the week, with or without food</td>
</tr>
</tbody>
</table>

- Do not take after a meal
- Does not cause weight gain and may cause weight loss as sugars come under control
- Main side effects are:
  - Upset stomach, including mild nausea, for first two to three weeks that it is taken, which usually goes away
  - Possible low blood sugar, when taken with sulfonylureas
- May cause redness at the place you give a shot
- Long-term side effects not yet completely known
- If you develop severe abdominal pain while taking this, then you need to call your doctor or go to the emergency room right away. You may have a condition called pancreatitis

**Pramlintide (Symlin)** works in several ways to help control blood sugars in type 1 and type 2 diabetes. It slows stomach emptying after you eat to help your sugars stay in control; lowers levels of another hormone called glucagon that makes blood sugars go up; and it may make you feel less hungry.

- Taken three times daily, at the start of main meals
- Do not take if you are not going to eat a meal
- Does not cause weight gain; you may experience weight loss, as sugars come under control
- Side effects include:
  - Low blood sugar
  - Redness where you give the shot
  - Nausea
- Long-term side effects not yet completely known
Diabetes To Go: Diabetes Extras
Know About Diabetes and a Healthy Heart

Diabetes increases your risk for heart disease and stroke (brain attack). Keeping your A1c, blood pressure, and LDL (lousy) cholesterol as close to normal as possible, and taking an aspirin each day, can help to prevent heart disease and stroke. Learn as much as you can about diabetes and your heart health, then do all that you can to be heart healthy.

<table>
<thead>
<tr>
<th>Know Your ABCs of Diabetes and Heart Healthy Goals*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1c</strong></td>
</tr>
<tr>
<td><strong>Blood pressure</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Cholesterol-LDL (lousy)</strong></td>
</tr>
</tbody>
</table>

American Diabetes Association Standards of Medical Care, Diabetes Care. 2019.
*Your doctor may suggest other goals based on your health.
** For some people with diabetes, including older adults, those with advanced kidney disease, trouble feeling low blood sugars, or active heart disease, the target may be 8-8.5%.

Know the Warning Signs of Heart Attack

The American Heart Association says these are the warning signs of heart attack:

- **Chest discomfort.** Most heart attacks involve discomfort in the center of the chest that lasts more than a few minutes, or that goes away and comes back. It can feel like pressure, squeezing, fullness, or pain
- **Discomfort in other areas of the upper body,** including pain or discomfort in one or both arms, the back, neck, jaw, or stomach
- **Hard to breathe,** with or without chest pain
- **Other signs** may include breaking out in a cold sweat, nausea, or lightheadedness, and/or getting tired easily when you walk or exercise
Know the Warning Signs of Stroke
The American Stroke Association says these are the warning signs of stroke:

- **Numbness or weakness** of the face, arm or leg, especially on one side of the body
- **Confusion, trouble speaking, or understanding**
- **Trouble seeing** in one or both eyes
- **Trouble walking, dizziness, loss of balance, or coordination**
- **Severe headache** with no known cause

If you have the warning signs of heart attack or stroke, even if you are not sure, then have it checked immediately.

Minutes MATTER!

Fast action can save your life!
Don’t wait more than 5 minutes to call 9-1-1!

Know More About Healthy Eating: Think Beyond Butter and Salt

When you have diabetes, it is important to take steps to keep your diet healthy when it comes to fats and salt. Decreasing your intake of animal fats can help lower your LDL (bad) cholesterol. Decreasing your intake of foods high in salt and not adding salt to your foods will help keep your blood pressure under control. Control of LDL cholesterol and blood pressure helps prevent heart disease and stroke.

The American Medical Association warns that eating too much sodium (salt), as many Americans do without knowing it, or eating a high fat diet, may lead to problems such as hypertension (high blood pressure) and high cholesterol (blood fats). These put you at risk for heart attack and stroke.
What to do to help cut the fat in your foods
Before you see the dietitian, you can take these first steps to cut the fat in your diet:

- Trim all of the fat you can see from meats before you cook them
- Remove chicken or turkey skin before cooking
- Bake, grill, or steam your foods
- Do not fry your foods
- Switch from butter to tub or liquid margarine
- Stay away from whole milk, 2% milk, cream, and ice cream

What you should know about salt in your foods
Most Americans eat about 3,400 milligrams of sodium (salt) a day. The American Heart Association and the American Diabetes Association recommend no more than 1,500-2,300 milligrams or less of sodium (salt) a day as a healthy target.

If you have high blood pressure or have had heart failure, have kidney trouble and/or tend to get swelling in your legs (known as edema), then your doctor may recommend an even lower salt diet to help you stay well.

Stay away from high salt foods including:

- Pickles and olives
- Hot dogs, sausages, and bacon (also high in fat)
- Salted chips, nuts, and pretzels

Do not:
- Add salt when you cook
- Add salt to foods at the table

There are many hidden sources of salt in the foods that we eat. These include:

- Cold cuts and sliced deli meats
- Canned vegetables
- Prepared marinades and salad dressings

Look for foods labeled “Low” or “Reduced” salt/sodium. Rinse canned vegetables with water before cooking to remove most of the salt.
Know About Diabetes and the Hospital

Many people with diabetes spend time in the hospital each year. Studies have shown that controlling blood sugars in the hospital helps the person with diabetes to:

- Go home in as short a time as possible
- Be less likely to need an intensive-care unit (ICU) stay
- Avoid infections and/or kidney trouble
- Do well after being discharged from the hospital, particularly if the reason for being in the hospital was heart surgery or heart attack

Hospitals everywhere are working to control blood sugar levels for patients. The American Diabetes Association (ADA) and the American Association of Clinical Endocrinologists (AACE) have set guidelines for management of blood sugar (glucose) in the hospital.

On general medicine and surgery patient care units, the target blood glucose level is 110-180, as much of the time as possible.

When you are admitted to the hospital, your medical team (doctors, nurses, dietitians, and pharmacists) will be working to keep your blood sugar level within the target range. Your doctors and nurses will also manage your diabetes medicines.

High blood sugar in the hospital is usually treated with insulin.

YOU should take action to be in the know about your blood sugar levels while you are in the hospital. Don’t be shy about asking your nurse or your doctor how your blood sugars are being managed.
Staying Well with Diabetes: Your Diabetes Care Team

Staying well with diabetes begins by learning as much as you can about controlling your blood sugar level, so it doesn’t control you. Your doctor and your diabetes team can help you do this.

**Your diabetes care team should include:**

- **YOU** (you’re #1, the captain of the team!)
- A primary care doctor and/or a diabetes doctor
- A diabetes dietitian
- A diabetes nurse educator
- A social worker, counselor, or psychologist
- A family member, friend, or clergyperson for support

Make sure that you talk to your diabetes team about what works well with your lifestyle. It is very important that your diabetes plan fits YOU.

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*Save this handy guide so you know what to do to take control of your diabetes*

- When you are well
- When your sugars are running high or low
- When you are sick or stressed
## Diabetes Care Schedule*

### Every 3 months
(or as often as your diabetes care team advises)

- Regular office visit
- A1c test (if your blood sugar is not stable)
- Blood pressure check
- Weight check
- Foot check

### Every 6 months
(or as often as your diabetes care team advises)

- A1c test (if your blood sugar is stable)
- Dental office visit

### Every year
(or as often as your diabetes care team advises)

- Physical exam
- Diabetes Educator
- Comprehensive foot exam (needed more often if you have foot problems)
- Blood fat and cholesterol tests (if your levels are normal)
- Kidney tests
- Dilated eye exam
- Flu shot

*These recommendations are based on American Diabetes Association guidelines. Talk with your diabetes care team about the schedule that is right for you.
Notes
MEDSTAR DIABETES INSTITUTE LOCATIONS

In Maryland

MedStar Franklin Square Medical Center
9000 Franklin Square Dr., 1CA
Baltimore, MD 21237
443-777-6528

MedStar Good Samaritan Hospital
5601 Loch Raven Blvd.
Baltimore, MD 21239
443-444-4193

MedStar Harbor Hospital
3001 South Hanover St.
Baltimore, MD 21225
410-350-2555

MedStar Medical Group
90 Olney Sandy Spring Rd.
Olney, MD 20832
301-774-6655

MedStar Southern Maryland Hospital Center
7501 Surratts Road, Suite 304
Clinton, MD 20735
301-877-5560

MedStar St. Mary’s Hospital
25500 Point Lookout Rd., P.O. Box 527
Leonardtown, MD 21208
301-475-6019

MedStar Union Memorial Hospital
201 E University Pkwy. #526
Baltimore, MD 21218
410-554-4511

In Washington, D.C.

MedStar Georgetown University Hospital
3800 Reservoir Rd., NW
Washington, DC 20007
202-444-5528

MedStar Washington Hospital Center
110 Irving St.
Washington, DC 20010
202-877-0333

ABOUT US

Kenneth A. Samet, FACHE
President and Chief Executive Officer, MedStar Health

Stephen Evans, MD
Executive Vice President, Medical Affairs, and Chief Medical Officer, MedStar Health

Michelle Magee, MD
Director, MedStar Diabetes Institute

Gretchen Youssef, MS, RD, CDE
Program Director, MedStar Diabetes Institute

Carine Nassar, MS, RD, CDE
Program Director, MedStar Diabetes Institute

The content of this educational booklet was taken and modified from the National Institute of Diabetes and Digestive and Kidney Diseases website:
https://www.niddk.nih.gov/health-information/diabetes/overview/what-is-diabetes/gestational