# TABLE OF CONTENTS

- WELCOME ......................................................................................................................... 1
- MISSION STATEMENT ........................................................................................................ 1
- I HAVE DIABETES ............................................................................................................... 2
- MONITORING .................................................................................................................... 5
  - A1C ................................................................................................................................... 11
- LOW BLOOD SUGAR (HYPOGLYCEMIA) ......................................................................... 12
- HIGH BLOOD SUGAR (HYPERGLYCEMIA) ......................................................................... 15
- SICK DAYS ....................................................................................................................... 17
- HEALTHY EATING ............................................................................................................. 19
- BEING ACTIVE .................................................................................................................. 25
- TAKING MEDICATIONS ..................................................................................................... 28
  - USING A VIAL AND SYRINGE ..................................................................................... 36
  - USING AN INSULIN PEN ............................................................................................... 38
- INSULIN PUMPS ............................................................................................................... 40
- REDUCING RISKS .............................................................................................................. 42
- KEEPING ON TRACK, STANDARD GUIDELINES FOR DIABETES CARE ....................... 46
- HEALTHY COPING ......................................................................................................... 47
- LIFESTYLE ........................................................................................................................ 49
- TRAVELING ....................................................................................................................... 51
- MY RIGHTS AT WORK ........................................................................................................ 52
- FINANCIAL ASSISTANCE ................................................................................................. 53
- MY DIABETES TEAM ......................................................................................................... 54
- RESOURCES ...................................................................................................................... 55
- GLOSSARY ........................................................................................................................ 56
WELCOME

Hello! We are so glad you are reading the Navigating Diabetes handbook. The educators and providers have worked to provide you with a tool to help you understand and manage your diabetes based on the American Association of Diabetes Educators (AADE)™. The seven healthy behaviors supported by AADE are: Healthy Eating, Being Active, Monitoring, Taking Medication, Healthy Coping, Reducing Risks, and Problem Solving.

As you navigate through this book it will begin with an explanation of how someone is diagnosed with diabetes, what diabetes is, and what tools are used to manage diabetes.

As you learn more about diabetes, write down any questions you have. You can use the "Notes" section at the end of this booklet. Then ask your provider to refer you to one of the diabetes educators in our accredited diabetes education program to help answer questions.

In addition, the diabetes educator will:

- Listen to your concerns.
- Develop a diabetes management plan according to your lifestyle needs.
- Improve your ability to manage your diabetes.
- Improve your confidence by helping you to understand and use current treatment guidelines.
- Instruct you on meal planning, exercise, medications, blood glucose monitoring, continuous glucose monitoring, and insulin pumps.

We look forward to working with you and assisting you on your journey. For more information call the Penn State Diabetes Program at 717-531-8395.

MISSION STATEMENT

Our mission is to provide education that will empower patients to improve diabetes self-management and their interaction with the healthcare team, helping patients to achieve an improved quality of life.

Goals:
- Provide current, evidence-based education in an open and conducive environment.
- Identify educational needs in the context of one's social, ethnic, and religious beliefs.
- Assess personal preferences and barriers for learning and self-care.
- Empower those we serve to take charge of their health and healthcare through interactive education, self-management coaching, motivational interviewing, and goal-setting.
- Encourage our patients to take an active role in the assessment and improvement of our education program.

Team up with a Diabetes Educator who will:
- Assist you in identifying your goals
- Empower you through education, encouragement, and support to reach those goals

"I am no longer afraid of storms for I am learning to sail my ship."
— Louisa May Alcott
I HAVE DIABETES

Simple words to read. Have you said them out loud? Now that you have your diagnosis, you probably have a lot of questions. The good news is that you have come to the right place. We will help you answer those questions, so that you will be well on your way to learning what it means to say, “I have diabetes.”

What is diabetes?
When you eat food made of carbohydrates, your body breaks it down into sugar. This sugar is called glucose. The sugar travels through your bloodstream and throughout your body. In order for glucose to be used as energy, it needs to enter your cells, which are the engines of your body.

The pancreas, an organ located in the abdomen, makes a hormone called insulin. Insulin works like a key to unlock the doors of your cells. Once the doors open, the sugar enters into the cells to be used as energy, which lowers glucose levels in the blood.

Having diabetes means that your body has trouble controlling the amount of sugar (glucose) in your blood. Medical professionals call this your “blood glucose,” but you’ll also see it called “blood sugar.” We’ll use both terms in this booklet.

If you are told you have diabetes, it means your medical team found too much sugar in your blood. You are not getting the energy you need to feel your best. Learning how to help your body control glucose can help prevent the long-term health problems from diabetes.

What are the symptoms of diabetes?
Sometimes people do not feel any physical symptoms from diabetes. If that is the case, you might have been told you have diabetes following blood work at your doctor’s office, or maybe you have noticed:

- Being thirsty/hungry
- Being tired/cranky
- Having blurred eyesight
- Experiencing weight loss
- Urinating more frequently
- Having infections that do not go away

What are the common risk factors for diabetes?
- Family history—a parent, brother or sister who has diabetes
- Ethnicity—African-American, Hispanic/Latino, Native American, Asian American, or Pacific Islander
- Having had gestational diabetes
- Have high blood pressure (>140/90)*
- Have low HDL (<40)*
- Have high triglycerides (>150)*
- Have poly-cystic ovarian syndrome (PCOS)

*=>higher than, <=lower than

Is there a cure?
There is no cure for diabetes yet, but research to treat and to cure diabetes is all around us. People can and do live healthy and happy lives with diabetes. So, while research continues, you can learn many ways to control your diabetes now and perhaps prevent future health problems.
How is diabetes diagnosed?

The following tests can diagnose diabetes. If any of these test results are abnormal, testing should be repeated on a different day to confirm the diagnosis.

<table>
<thead>
<tr>
<th>BLOOD TEST</th>
<th>WITHOUT DIABETES</th>
<th>PRE-DIABETES</th>
<th>WITH DIABETES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting blood sugar</td>
<td>Less than 100 mg/dL</td>
<td>100-125 mg/dL</td>
<td>126 mg/dL or greater</td>
</tr>
<tr>
<td>Oral glucose tolerance test</td>
<td>Less than 140 mg/dL after 2 hrs.</td>
<td>140-199 mg/dL after 2 hrs.</td>
<td>200 mg/dL or greater after 2 hrs.</td>
</tr>
<tr>
<td>Random blood sugar</td>
<td>Less than 140 mg/dL</td>
<td>140-199 mg/dL</td>
<td>200 mg/dL or greater</td>
</tr>
<tr>
<td>Hemoglobin A1C</td>
<td>Less than 5.7%</td>
<td>5.7%-6.4%</td>
<td>6.5% or greater</td>
</tr>
</tbody>
</table>

Is there more than one type of diabetes?

Yes, there is more than one type of diabetes.

**Type 1 diabetes** occurs when your body attacks your insulin-producing cells. Without these cells, you cannot make insulin. Without insulin, your body is not able to use the sugar in your blood. People with type 1 diabetes need to inject insulin so they can live and stay healthy.

*Pre-Diabetes* is diagnosed when a person’s blood glucose level is higher than normal, but not high enough to be called diabetes.

**Type 2 diabetes** occurs when your body has trouble using the insulin it makes (called insulin resistance) or when your pancreas cannot make enough insulin, and the sugar remains in the bloodstream. People with type 2 diabetes often control their diabetes with diet, exercise, and medications. About 90% of Americans with diabetes have type 2.

**Gestational diabetes** is caused by changes in hormones during pregnancy. It is usually diagnosed in the second or third trimester. This places women at a higher risk for developing type 2 diabetes later in life.

**LADA** stands for Latent Autoimmune Diabetes of the Adult. LADA is similar to type 1 diabetes, but occurs as an adult. Insulin is needed to control blood sugar.

**CFRD—Cystic Fibrosis Related Diabetes.** Cystic fibrosis can affect the functioning of the pancreas and lead to diabetes.

**Other**—Some medications (such as steroids) and some other disease processes may increase the risk of diabetes. This type of diabetes is much less common.
What's next?

• Consider your thoughts, feelings, and concerns as you navigate through this booklet.
• Make a list of questions to ask your diabetes healthcare team. Make sure you know the names of your diabetes team members and how to contact them.
• Consider who you want to include on your journey of diabetes management.
  www.diabeticlivingonline.com/newly-diagnosed/coping/i-have-diabetes-how-to-talk-about-it
• Remember to take it one day at a time and that we all may have a setback from time to time.
• Carry medical identification that tells others you have diabetes. If you were to pass out, this will identify your medical condition and may save your life. You can buy medical identification at most drug stores, find them online by searching for “medical identification,” or even make one at home. At the very least, keep your information with your driver’s license/photo ID.

Online resources for medical identification items:
  www.laurenhope.com/
  www.americanmedical-id.com
  www.medicalert.org

It’s important to remember that help is available when you need it.
Please refer to Resources on page 55.
MONITORING

What if my blood sugar is not in control?
Your blood is thin, like water. Picture pouring 20 cups of sugar into the water. That is what happens when the glucose gets stuck in your blood stream. The blood becomes thicker and grittier, like syrup. This thicker blood may cause damage to arteries, veins, nerves, eyes, kidneys, and more. Too much or too little glucose can make you feel sick. To feel your best and prevent long-term health problems, it is important to keep your blood glucose in a good range.

How do I know my blood sugar?
You can check your blood sugar with a glucose meter (also called a monitor). These are small devices that you can take with you no matter how active you are.

What increases blood sugar?
- Food
- Stress
- Infection
- Not enough diabetes medication
- Side effects from other medications
- Changes in hormones (monthly period or pregnancy)

What decreases blood sugar?
- Activity/exercise
- Too much diabetes medication
- Alcohol
- Difficulty with digestion
- Skipping a meal
- Weight loss
Why should I check my blood sugar?

Managing your diabetes is important. Monitoring your blood sugar is an important tool used to:

- See how well your treatment plan is working.
- Help you make decisions about your diabetes management.
- Assess what affects your diabetes, such as:
  - Food
  - Activity/exercise
  - Sick days
  - Alcohol
  - Weight loss/gain
  - Medication
  - Stress
  - Changes in hormone (monthly period or pregnancy)
  - Difficulty with digestion

Checking blood sugar at different times of the day is helpful to see how well controlled your diabetes is throughout the day. This will also help look for blood sugar patterns or trends. Ask your provider how often and at what time of day you should check your blood sugar. Everyone’s plan will be based on their unique needs. Times to consider checking your blood sugar include:

- First thing in the morning before eating any food
- Before meals and before bed
- Two hours after eating a meal
- Before and after exercise
- Before driving
- When not feeling well or having symptoms of a high or low blood sugar or when ill (cold, flu, etc.)

Always bring your blood glucose meter with you to all diabetes appointments, including when you see your doctor, physician assistant, nurse practitioner, diabetes educator, or registered dietitian.

How do I choose a blood glucose meter?

There are many meters that you can use. Before you buy one, talk to your diabetes educator. An educator can help you choose the meter that is right for you. He or she will teach you how to use it, identify patterns, and set personal goals. If you are unable to meet with your diabetes educator, questions to ask are:

- How much will test supplies cost?
- Will my insurance pay for the test supplies?
- Do I need to get my supplies through a pharmacy or a durable medical equipment company?
How do I check my blood sugar?
Gather the following supplies: blood glucose meter, test strips, lancet, lancing device, and glucose logbook.

- Wash your hands with soap and water, and dry with a clean towel.
- Load a new lancet into the lancing device.
- Place test strip into meter. Make sure the strips are not out of date, that they are the correct strips for your meter, and that the meter is coded to match the strips, if applicable.
- Obtain your blood sample, and apply the blood on the test strip according to the manufacturer’s instructions.
- Record your results in your glucose log.
- Dispose of the lancets according to your local and state medical waste guidelines.
- If you need more help, refer to your owner’s manual or contact the meter’s toll-free customer service number. This telephone number can usually be found on the back of the meter. A representative is typically available 24 hours a day, 7 days a week.

What should my blood sugar be when I check it?

**Blood Sugar Goals:**

<table>
<thead>
<tr>
<th>Before you eat</th>
<th>80-130 mg/dL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hours after you eat</td>
<td>Less than 180 mg/dL</td>
</tr>
</tbody>
</table>

These values are the 2017 ADA (American Diabetes Association) standards.

What is a glucose log?

A glucose log is a way to keep track of your blood sugar to see if you can find patterns. Examples of a glucose log include:

- Logbook—a small book that comes with your meter.
- Glucose log sheet—a single sheet of paper that can be faxed or mailed to your provider (see examples on the pages that follow).
- Downloaded logbook—a way of downloading your glucose results from your meter to your computer.
- Phone App Logs—some meters link to phone apps which show you your numbers.

Whatever method you choose, it is important to **bring your glucose log and meter to every appointment** with a diabetes medical team member.

"You wouldn’t go to the vet without your pet. Why go to a diabetes appointment without your meter?"

— Anonymous
<table>
<thead>
<tr>
<th>Date</th>
<th>Morning</th>
<th>Lunchtime</th>
<th>Evening Meal</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time</td>
<td>Glucose</td>
<td>Insulin</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Glucose</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Insulin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Glucose</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Insulin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Glucose</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Insulin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time</td>
</tr>
</tbody>
</table>

Name: ____________________________  Mail to: ____________________________

My Phone Number: ____________________________  Fax: ____________________________

My Diabetes Team Member: ____________________________
## Blood Sugar Log

<table>
<thead>
<tr>
<th>Date</th>
<th>Morning</th>
<th>Lunchtime</th>
<th>Evening Meal</th>
<th>2 Hours After a Meal</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
<td>Glucose</td>
<td>Time</td>
</tr>
</tbody>
</table>

**Name:**

**My Phone Number:**

**My Diabetes Team Member:**

**Mail to:**

**Fax:**
Continuous Glucose Monitoring (CGM)

Continuous glucose monitors (CGMs) measure the sugar that is around our cells. These monitors use a small sensor that is inserted under the skin.

A CGM is helpful for looking at glucose trends and can be programmed to alarm at certain low and high levels. This can alert you to the speed and direction of your blood sugar so it can be treated before reaching extremes. Some CGMs are for personal, everyday use, and some are for professional use. Professional use allows your provider to assess your trends and patterns. A CGM is most appropriate for those who take multiple daily doses of insulin or use insulin pumps.

Not all insurance plans cover CGMs.
A1C

What is an A1C?

An A1C (also known as glycohemoglobin) is a simple blood test ordered by your healthcare team to provide an average blood sugar for three months. A1C measures how much sugar is attached to a red blood cell and red blood cells live for three months. That is how the average is determined. An A1C of 6-7% is great control. Goals are individualized to the person, however, and may be different depending on your risk factors. Check with your healthcare provider for your A1C goal.

Why is an A1C of 6% to 7% a goal for most people?

While there is no level below which the health risks disappear, keeping an A1C between 6-7% can reduce your chance of various risks, such as:

- Heart attack
- Kidney disease
- Sexual dysfunction
- Stroke
- Infections
- Dental disease
- Eye disease
- Nerve damage

Is there a way to roughly compare my blood sugar to my A1C?

The chart below gives you an idea of where your A1C will be, based on your home blood sugar checks.

If I can get an A1C, why should I check with my glucose meter daily?

While your A1C is important for knowing your long-term control, it does not tell you what factors affect your sugars or what time of day your sugars are not in target range. For example, an A1C of 7% is great if your blood sugars run between 80-180 mg/dL. Your sugars can run between 40-500 mg/dL, however, and still average 7% on your A1C. This wider range of blood sugars is morely likely to occur if your diabetes is uncontrolled or if you have taken too much or too little of your medicine. This is why it is important to know the trends of your blood sugars. Logging the trend of your blood sugar helps your provider better manage your diabetes care plan. Knowing both your A1C and your daily blood sugar readings will best guide you and your provider in your diabetes management.
Blood sugar of less than 70 mg/dL on your glucose meter is called hypoglycemia. This means your body does not have the sugar it needs to work, just like a car running out of gas.

While it is rare, you can have a seizure, pass out, or die from a severe or untreated low blood sugar.

Knowing how to recognize when your blood sugar is too low and making a plan in advance is a great way to remain in control. Some medications have a greater chance of causing low blood sugar. Ask your provider or diabetes educator if your medication can cause low blood sugar.

What can cause low blood sugar?

• Skipping and/or delaying a meal or snack
• Not eating at the right time if you take diabetes medication
• Exercising longer or harder than usual
• Taking too much diabetes medication
• Drinking alcohol

How will I feel if this happens?

No two low blood sugars may feel the same. Sometimes you may not feel any symptoms, or you may feel any of the following symptoms:

• Hungry/sweaty
• Headaches
• Weakness
• Dizzy/confused
• Fast heartbeat

• Cranky/irritable
• Anxious
• Clumsy/shaky
• Tingling feelings around the mouth/slurred speech
• Impaired vision

What can I do if I feel my blood sugar dropping?

1. Check your blood sugar, if you can.
2. If less than 70 mg/dL, follow the Rule of 15.
Rule of 15

1. Take 15 grams of a rapid-acting carbohydrate. Carbohydrates are foods that turn to sugar when you eat them. Rapid-acting carbohydrates are made of sugar and have little or no protein, fat, or fiber.

Examples of 15g rapid-acting carbohydrates:
• Eight ounces (one cup) of skim (fat-free) milk
• Four ounces (one-half cup) of fruit juice (not diet)
• Four ounces of regular (not diet) soda
• Four teaspoons of table sugar
• One tablespoon of honey or syrup (3 teaspoons=1 tablespoon)
• Two tablespoons of raisins
• 3-4 glucose tablets

2. Wait 15 minutes.

3. Recheck blood sugar. It should be above 70 mg/dL.

4. If blood sugar is not above 70 mg/dL, repeat all steps.

5. If blood sugar is not above 70 mg/dL after two treatments with a rapid-acting carbohydrate, call your doctor or 911.

Note: After your blood sugar returns to normal and if it will be more than 30 minutes until your next meal, eat a snack that contains protein and carbohydrates. (Protein and carbohydrate examples are given in the Healthy Eating section of this book.)

What if I don’t have food within reach?

You should always have 15 grams of carbohydrates nearby. If food is not possible, consider glucose tablets or glucose gels. They do not require a prescription and can be bought at most stores. You can keep them anywhere—your coat pocket, your purse, your bedside table, your workstation, or the glove compartment in your car.

If you begin to feel bad, but can talk and swallow, have someone help you follow the Rule of 15.

If you cannot talk/swallow, or if you have passed out, your family and friends should know several pointers:
• DO NOT put food, candies, liquids, or solid objects in your mouth. This could cause you to choke.
• Know how to use a glucagon injection kit (see the next page for a picture of a kit.) This is something that your healthcare team can teach you and others to use. In case of an emergency, it helps your body raise blood sugar and release stored sugar into the blood.
• Call 911 in an emergency.
**What is a glucagon injection kit?**

- Glucagon is a hormone made in the pancreas that raises blood sugar when levels drop too low. It helps your liver release stores of sugar.
- When you are not able to swallow a fast-acting carbohydrate, glucagon can be given by injection.
- The glucagon injection kit must be prescribed by a healthcare provider.
- A family member, friend, or co-worker needs to learn how to give the injection.
- The glucagon kit is only used in an emergency.
- Store at room temperature.
- Always check its expiration date.
- Teach others how to use it before you need it.

**How can I prevent a low blood sugar?**

- Do not skip meals.
- Only drink alcohol with food containing carbohydrates, and monitor blood glucose closely.
- Take medication as prescribed.
- Have a snack before exercising. (Refer to the Exercise section of this book.)
- Keep a blood sugar log to find patterns or trends and identify causes of your low blood sugar.
- Learn more about your diabetes management.
- Tell your diabetes team if you are having unexplained low blood sugars more than once a week.

**MEDICAL EMERGENCY PLAN**

- You should have a medical emergency plan in place just in case you are not able to manage your low blood sugar. Below is what should be in your emergency plan.
- Identify your support system.
- Teach your support system the symptoms of low blood sugar and how they can help you treat it.
- Teach your support system how to use Glucagon.
- HAVE AVAILABLE FOODS OR GLUCOSE TABLETS THAT CONTAIN 15 GRAMS OF CARBOHYDRATES.
  OR a glucagon kit if you have frequent low blood sugars.
- CALL 911 IN A MEDICAL EMERGENCY.

**When should I notify my healthcare team?**

- If you are having more than one low blood sugar weekly
- If you have a severe low blood sugar under 55
- If you have a severe low blood sugar requiring assistance to treat or use of glucagon.
HIGH BLOOD SUGAR (HYPERGLYCEMIA)

Too much sugar in your blood makes your blood thick and sticky. When this happens, it can damage the arteries in your body and make your heart pump harder than normal. Over time, uncontrolled blood sugar can lead to complications such as heart attack, stroke, blindness, infections, amputations, kidney damage, or nerve damage.

High blood sugar = blood sugar greater than target range:

• Greater than 130 mg/dL before a meal.
• Greater than 180 mg/dL two hours after a meal.

What can cause high blood sugar?

• Skipping medication or needing a change in dose
• Eating more food than usual
• Getting less exercise than usual
• Emotional stress
• Illness, including infections
• Changes in hormones (monthly period/pregnancy)
• Medications such as steroids
• Injecting Insulin into scar tissue
• Repeated use of same injection spot

What are some signs that my blood sugar is high?

• Blurred vision
• Increased urination
• Increased hunger
• Increased thirst
• Feeling tired
• Developing an infection
• Dry itchy skin
• Slow-healing cut

What should I do if my blood sugar is high?

• Check your blood sugar more often.
• Drink plenty of water.
• Ask your provider if your medication needs to be adjusted.
• Call your provider right away if your blood sugar reading stays above 250 mg/dL for most of the day.
• Follow your sick day plan. Refer to page 17 for more information on "sick days."
• People with type 1 diabetes should check for ketones in their urine using ketone test strips. Ketone test strips are dipsticks that can be bought over the counter and are used to measure ketones in your urine. Moderate to high ketone levels in the urine are a sign of ketoacidosis.
What is Ketoacidosis?

Ketoacidosis is a medical emergency and can be life-threatening. When your body does not have enough insulin, it cannot use the sugar in your blood for energy. Your body then finds other sources of energy and begins to break down fat and muscles. This sounds like a good thing, but it is not burning fat for energy the same way exercising does. It is using fat and muscles as emergency fuel. When this happens, a waste called ketones is created. Your body will try to get rid of ketones in your urine, but if they build up too quickly, you can develop ketoacidosis, or too many ketones in your bloodstream. This usually occurs only in people with type 1 diabetes, but can occur in people who have type 2 diabetes. Being sick or having too little insulin can put you more at risk. If you are having symptoms of ketoacidosis, use ketone test strips to check your urine for ketones.

What are the warning signs of ketoacidosis?

- High blood sugar
- Abdominal pain, cramping, and/or vomiting
- Fruity, acidic breath
- Rapid, labored breathing
- Moderate to large urine ketone levels

When should I notify my healthcare team?

- If you feel sick for more than one or two days and are not getting better.
- If you feel very sick or have a high fever for more than one day.
- If you cannot eat or drink.
- If you have vomiting or diarrhea for more than six hours.
- If your blood glucose stays above 250 mg/dL for 24 hours or if you have moderate-large ketone levels in your urine.
- If you have signs of dehydration (dry mouth, cracked lips, sunken eyes, or weight loss).
- If you are developing signs of ketoacidosis (stomach pain, nausea, vomiting, changes in breath, chest pain, or trouble staying awake). If you cannot reach your provider and suspect you are developing ketoacidosis, go to the nearest emergency department, or call 911.
SICK DAYS

When you are not feeling well because of illness, an injury, a wound, or stress, we call it a sick day. Sick days can make your sugars change. Usually, sugar levels will rise as your body releases hormones to fight infections or as a response to stress. These hormones make it hard for your body to use insulin. The best time to think about your sick day plan is when you feel well. Planning ahead will help you manage your diabetes and get well faster.

What are factors that might affect my diabetes?

- Colds and flu
- Dental work or infections
- A wound, injury, or surgery
- Vomiting and diarrhea
- Severe pain or emotional stress
- A wound, injury, or surgery

How often should I check my blood sugar when I am sick?

Every two to four hours until you are feeling better or as instructed by your provider.

What if I am not hungry?

Try to choose foods from your meal plan that provide at least 15 grams of carbohydrates each hour. Here are some examples:

- Fruit juice bar (three ounces)
- Cooked cereal (one-half cup)
- Soup (one cup)
- Applesauce (one-half cup)
- Gelatin (one-half cup)
- Toast (one slice)
- Rice (one-third cup)
What if I cannot eat?

Extra fluids can prevent dehydration (8 to 12 cups per day or 8 to 12 ounces per hour).

If your blood sugar runs high, try sugar-free liquids:
- Water
- Sugar-free ginger ale
- Tea
- Broth (chicken, beef, or vegetable)

If your blood sugar runs low, try liquids with about 15 grams of carbohydrates:
- Non-diet beverages (one-half cup)
- Popsicle
- Milk (one cup)
- Gelatin (one-half cup)
- Juice (one-half cup)

Do not skip medication. You may be eating less, but you still need your medications to balance out the hormones that are helping you fight the illness.

Rest. Do not exercise.

Be aware of the effects of certain types of medications on your blood sugar. Over-the-counter medications such as supplements, lozenges, and cough syrups can raise your sugar. On the other hand, aspirin at high doses can lower your blood sugar. Check with the pharmacist before taking any extra medications. Prescribed steroid pills or steroid injections can raise your blood sugar as well.

When should I contact my medical team?

- If you feel sick for more than one or two days and are not getting better.
- If you feel very sick or have a high fever more than one day.
- If you cannot eat or drink.
- If you have vomiting or diarrhea for more than six hours.
- If your blood sugar goes below 70 mg/dL and you have difficulty eating.
- If your blood sugar goes above 250 mg/dL consistently.
- If you have signs of dehydration (dry mouth, cracked lips, sunken eyes, or weight loss).
- If you have moderate or large ketone levels in your urine.
- If you are developing signs of ketoacidosis, such as stomach pain, nausea, vomiting, changes in breath, chest pain, or trouble staying awake. Refer to page 16 for information on ketoacidosis.
HEALTHY EATING

What foods are recommended for people with diabetes?

Navigating diabetes can be difficult. This section includes some nutritional guidance until you have a chance to meet with a registered dietitian. Eating healthy foods in the right portions helps to control blood sugar, blood pressure, and cholesterol. Carbohydrates (foods that turn to sugar when you eat them) have the most effect on your blood sugar.

Before we talk about carbohydrates, let’s talk about some basic guidelines to help you manage your diabetes with diet.

Healthy eating guidelines:

• First, enjoy the foods you eat.
• Try not to skip meals.
• Try to keep a schedule with meals and snacks.
• Eat a variety of foods from all food groups.
• Eat whole grains, fruits, and vegetables (high fiber foods).
• Watch portions—the first bite is the best.

Carbohydrates, fat, and protein are the main nutrients in foods. Carbohydrates are in many foods, such as starches, starchy vegetables, fruits, milk and yogurt, desserts, and sugar-sweetened drinks.
Here is a guide to help you learn which foods contain carbohydrates (carbs) and examples of serving sizes.

<table>
<thead>
<tr>
<th>FOOD GROUP</th>
<th>EXAMPLE OF A SERVING/CHOICE</th>
<th>TRADE FOR A SERVING OF...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starches* (one serving = 15g carbs)</td>
<td>1 slice of bread</td>
<td>1 small potato 3/4 cup dry cereal flakes 1/2 cup cooked cereal 1 (6-inch) tortilla</td>
</tr>
<tr>
<td>Non-starchy Vegetables (one serving = 5g carbs)</td>
<td>1/2 cup cooked carrots</td>
<td>1/2 cup cooked green beans/broccoli/or cauliflower 1 cup salad or other fresh vegetables 1/2 cup vegetable juice</td>
</tr>
<tr>
<td>Fruits* (one serving = 15g carbs)</td>
<td>1 small apple</td>
<td>2 tablespoons dried fruits (e.g., raisins, cherries) small orange 1/2 cup canned light fruit 11/4 cups whole strawberries 1/2 cup 100% fruit juice</td>
</tr>
<tr>
<td>Milk* (one serving = 12g carbs, 8g protein)</td>
<td>1 cup fat-free or 1% milk</td>
<td>1 cup fat-free, light yogurt 1 cup low-fat yogurt</td>
</tr>
<tr>
<td>Meat &amp; Meat Substitutes (measured in ounces) (1 oz serving)</td>
<td>1 oz. of cooked meat</td>
<td>1 oz. of cooked chicken 1 oz. cooked fish 1 slice (1 oz.) turkey 1 egg 1 slice (1 oz.) low-fat cheese 2 tablespoons peanut butter, etc.</td>
</tr>
<tr>
<td>Fats (one serving = 5g fat)</td>
<td>1 teaspoon of oil</td>
<td>1 strip of bacon 1 tablespoon regular salad dressing 2 tablespoons reduced-fat salad dressing, etc.</td>
</tr>
<tr>
<td>Sweets* (one serving = 15g carbs)</td>
<td>1 tablespoon of maple syrup</td>
<td>1 (3-inch) cookie 1 plain doughnut 1/2 cup light ice cream</td>
</tr>
</tbody>
</table>

*These food groups contain the most carbohydrates (g = grams).
Blood sugar can be maintained when you follow a meal plan that contains set amount of carbohydrates spread throughout each day. The following are general guidelines for you to begin planning meals to manage blood sugar. If you have not seen a dietitian, you can use these general guidelines until you make an appointment. If you have had an appointment with a dietitian, use the personalized guidelines from that visit.

Here is a guide for the suggested amount of carbs you should eat at meals:

<table>
<thead>
<tr>
<th>IF YOU ARE...</th>
<th>AMOUNT PER MEAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male and not overweight</td>
<td>60-75g or 4-5 carb choices/servings</td>
</tr>
<tr>
<td>Female and not overweight</td>
<td>45-60g or 3-4 carb choices/servings</td>
</tr>
<tr>
<td>Overweight (more than 10 lbs.)</td>
<td>Subtract 15g or 1 carb choice per meal</td>
</tr>
<tr>
<td>Aerobic exercise</td>
<td>Add 15g or 1 carb choice to meal before exercise</td>
</tr>
</tbody>
</table>

Each food choice of 15 grams (g) total carbohydrate = 1 carb choice/serving
This is a sample meal plan to get started.
Schedule an appointment with a registered dietitian for a personalized meal plan by calling 717-531-8885.

### Snack List
If you choose to have a snack, here are some things to consider—What is your blood sugar? Are you trying to lose weight? Are you really hungry?

#### 1 CARBOHYDRATE CHOICE
OR 15 GRAMS CARB

- 1/2 cup cooked unsweetened oatmeal
- 3/4 cup unsweetened ready-to-eat cereal
- 8 animal crackers
- Three 2 ½ inch squares of graham crackers
- 3 cups of low fat popcorn
- 3/4 oz. pretzels (2-3 average)
- Two 4-inch rice cakes
- 6 saltines
- 3/4 oz. (15-20 average) fat-free or baked snack chips
- 1 low-fat snack bar (check label)
- 100 calorie snack packs (check label)
- 1 small fresh fruit (apple, pear, orange, etc.)
- 1/2 cup canned fruit—light syrup or own juice
- 8 dried apricot halves
- 3/4 cup of blueberries
- 12 cherries, fresh
- 11/4 cup whole strawberries
- 1 cup skim or 1% milk
- 2/3 cup low-fat artificially sweetened fruit or plain yogurt

#### NON-CARBOHYDRATE CHOICE (PROTEIN)
EACH SERVING ADDS ABOUT 100 CALORIES

- 25 pistachios
- 8 walnut or pecan halves
- 12 almonds or cashews
- 20 peanuts (unsalted)
- 1/2 Tbsp. peanut butter
- 1 oz. part-skim mozzarella cheese
- 2 oz. chicken or turkey breast
- 2 oz. baked flounder, haddock, or crab
- 2 oz. low fat/low sodium luncheon meat—98% fat-free
- 1/2 cup fat-free or low-fat cottage cheese
- 3 oz. canned light tuna in water (look for low sodium)

#### LOW-CARBOHYDRATES (relatively few calories)
Low carbohydrate vegetables (non-starchy): 1 cup raw or 1/2 cup cooked—celery, carrots, cauliflower, peppers, cucumbers, radishes, broccoli, tomatoes, 1/2 cup sugar-free Jell-O with 1 Tbsp. of light whipped topping or sugar-free popsicles (check label, <25 calories), 1/4 cup salsa
How to read labels

Original Label

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size: 2/3 cup (55g)</td>
</tr>
<tr>
<td>Servings Per Container: About 8</td>
</tr>
<tr>
<td>Amount Per Serving</td>
</tr>
<tr>
<td>Calories: 230</td>
</tr>
<tr>
<td>Total Fat: 8g</td>
</tr>
<tr>
<td>Saturated Fat: 1g</td>
</tr>
<tr>
<td>Trans Fat: 0g</td>
</tr>
<tr>
<td>Cholesterol: 0mg</td>
</tr>
<tr>
<td>Sodium: 160mg</td>
</tr>
<tr>
<td>Total Carbohydrate: 37g</td>
</tr>
<tr>
<td>Dietary Fiber: 4g</td>
</tr>
<tr>
<td>Sugars: 1g</td>
</tr>
<tr>
<td>Protein: 3g</td>
</tr>
</tbody>
</table>

Vitamin A: 10%  
Vitamin C: 8%  
Calcium: 20%  
Iron: 45%

* Percent Daily Values are based on a 2,000 calorie diet.  
Your daily value may be higher or lower depending on your calorie needs.

<table>
<thead>
<tr>
<th>Calories: 2,000</th>
<th>2,500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fat: Less than 65g</td>
<td>Less than 80g</td>
</tr>
<tr>
<td>Sat Fat: Less than 20g</td>
<td>Less than 25g</td>
</tr>
<tr>
<td>Cholesterol: Less than 300mg</td>
<td>Less than 300mg</td>
</tr>
<tr>
<td>Sodium: Less than 2,400mg</td>
<td>Less than 2,400mg</td>
</tr>
<tr>
<td>Total Carbohydrate: 30g</td>
<td>37g</td>
</tr>
<tr>
<td>Dietary Fiber: 25g</td>
<td>30g</td>
</tr>
</tbody>
</table>

New Label

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 servings per container</td>
</tr>
<tr>
<td>Serving size: 2/3 cup (55g)</td>
</tr>
<tr>
<td>Amount per serving</td>
</tr>
<tr>
<td>Calories: 230</td>
</tr>
<tr>
<td>Total Fat: 8g</td>
</tr>
<tr>
<td>Saturated Fat: 1g</td>
</tr>
<tr>
<td>Trans Fat: 0g</td>
</tr>
<tr>
<td>Cholesterol: 0mg</td>
</tr>
<tr>
<td>Sodium: 160mg</td>
</tr>
<tr>
<td>Total Carbohydrate: 37g</td>
</tr>
<tr>
<td>Dietary Fiber: 4g</td>
</tr>
<tr>
<td>Total Sugars: 12g</td>
</tr>
<tr>
<td>Protein: 3g</td>
</tr>
</tbody>
</table>

| Vitamin D: 2mcg | % Daily Value: 10% |
| Calcium: 260mg | % Daily Value: 20% |
| Iron: 8mg | % Daily Value: 45% |
| Potassium: 235mg | % Daily Value: 6% |

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

1. Look at the serving size—remember one serving of total carbohydrates equals 15 grams of carbohydrate or one carb choice.
2. Use **Total Carbohydrates** for the carbohydrate serving (37 grams carb = 2 1/2 carb servings).

This guide will help you:

- 0-5 grams—do not count
- 6-10 grams—count as 1/2 carb choice/serving
- 11-20 grams—count as 1 carb choice/serving
- 21-25 grams—count as 1 1/2 carb choices/servings
- 26-35 grams—count as 2 carb choices/servings
- 36-40 grams—counts as 2 1/2 carb choices/servings

3. Fat—low fat is 3 grams per serving or per 100 calories. Avoid foods with trans fats and saturated fats.
4. Find foods with 2 to 3 grams/serving of dietary fiber or more (this food has 4 grams—good!)
5. Sodium—low sodium is 140 mg or less; find foods with at least 300 mg or less per serving. Aim for 2000 mg or less total sodium per day.
6. 7 grams of protein is equal to 1 ounce of protein.
Hopefully, this information will help you begin the journey to better diabetes control. Don’t forget to make an appointment with a registered dietitian to answer your questions and teach you more about diabetes nutrition.

**Nutrition Resources**

- [www.diabetes.org](http://www.diabetes.org)—The American Diabetes Association has the American Diabetes Exchange list
- [www.eatright.org](http://www.eatright.org)—The Academy of Nutrition and Dietetics has evidenced-based nutrition information
- [www.chooosemyplate.gov](http://www.chooosemyplate.gov)—Menus, recipes, and record-keeping
- [www.ndep.nih.gov](http://www.ndep.nih.gov)—National Diabetes Education Program; free education materials
- [www.calorieking.com](http://www.calorieking.com)—Free search engine for all types of foods
- [GoMeals](http://www.gomeals.com)—Free phone application

**Can I drink alcohol?**

Yes, there are a few things to keep in mind if you are of legal age and deciding to drink alcohol. Many drinks with alcohol also have carbohydrates, so those drinks can affect your blood sugars. Plus, your liver breaks down alcohol and helps make sugar if you do not have enough. If you have low blood sugar after you drink alcohol, the liver might be too busy breaking down the alcohol to help raise your blood sugar.

Finally, sometimes those who have low blood sugar may seem like they are drunk. They may act confused or have slurred speech. They might have trouble answering questions or pass out. Family and friends may decide to let them “sleep off the alcohol” instead of helping them treat the low blood sugar. This can quickly become life-threatening.

**What are some guidelines if I choose to drink alcohol?**

- If your diabetes is well controlled, you may include one to two servings of alcohol per day. One serving is equal to 5 ounces of wine, a 12-ounce light beer, or 1.5 ounces of 80-proof distilled spirits.
- Drink alcohol close to or with a meal. It may cause low blood sugars on an empty stomach.
- Use sugar-free drink mixers, such as club soda, unsweetened fruit juices, or vegetable juice mixers.
- Drink low-sugar alcohols like light beer or dry wine. Avoid liqueurs, sweet wines, wine coolers, or lagers.
- Discuss the use of alcohol with your healthcare team first. Alcohol can be dangerous for a number of health conditions or when mixed with medications.
- Avoid alcohol if you are on a weight-loss diet. It makes you hungry and takes the place of calories that provide nutrients in your diet.
- Make sure you wear medical identification in case of emergency.
- Your risk of having a low blood sugar can continue for 24 hours after drinking alcohol.
- Never drink and drive.
- Hung over? Throwing up? Not eating? If you have concerns, call your diabetes team or seek medical attention.
BEING ACTIVE

What about exercise?

EXERCISE IS ANY ACTIVITY THAT GETS YOUR BODY MOVING. Regular activity is a key part of managing diabetes. When you are active, your cells become more sensitive to insulin, and the insulin can work more effectively. Exercising consistently can lower your blood glucose and improve your A1C. Overall, this may help reduce diabetes medications or doses, improve cardiovascular health, and improve blood circulation and healing. Research has shown that sitting too much is harmful to your health. Take every opportunity to get up and move every 30 minutes.

There are three types of exercises:

1. **AEROBIC** strengthens your heart and lungs. (Examples: walking, swimming, biking, dancing, water aerobics)
2. **STRENGTH TRAINING** strengthens your muscles and maintains bone density. (Examples: lifting free weights or using machines, resistance bands, sit-ups/push-ups)
3. **STRETCHING** helps prevent injury and improves flexibility. It is recommended before and after an exercise routine. (Examples: Yoga, Pilates)

The American Diabetes Association (ADA) recommends 150 minutes of moderate intensity aerobic activity per week. An easy way to structure an exercise routine is to break it into 30 minutes per day, five days per week. Muscle-strengthening activities that involve all muscle groups are recommended two or more days per week. For older adults, balance and flexibility exercises are important and recommended.

In addition to lowering your blood glucose and A1C, exercise has many other health benefits:

- Lowers your blood pressure and cholesterol.
- Reduces your risk for heart disease and stroke.
- Helps you maintain or lose weight.
- Helps you sleep better.
- Relieves stress and reduces symptoms of depression.
- Strengthens your muscles and bones.
- Improves mood.
What should I consider when starting an exercise program?

• Always check with your doctor before beginning an exercise program. Autonomic or peripheral neuropathy can increase risks for injury during exercise. (Neuropathy is explained in the Reducing Risks of Complications section of this booklet.)
• Blood glucose monitoring will be important to help you determine your body’s blood glucose response to different activities. Always have your meter and supplies available.
• If you have neuropathy, check your feet before and after your exercise routine.
• Make sure your shoes and socks fit properly to prevent a foot injury.
• If you have a foot injury, try upper body exercises or chair exercises to allow your foot to heal.
• If you have eye problems, avoid vigorous exercise that may increase eye pressure. Ask your eye doctor how you can exercise safely.
• Wear medical identification.
• Always have plenty of water available.
• Take your phone if exercising alone and tell a family member or friend where you will be.
• Always have glucose tablets or rapidly acting carbohydrates available to treat a low blood sugar.

How should I design my exercise program?

• Choose the exercise you like. Walking is considered an excellent activity for most people with diabetes.
• If you are unable to walk, have balance issues, or other medical issues that prevent you from standing for too long, consider upper body exercises seated in a chair.
• Consider what motivates you. Does music energize you? Or, does wearing a step counter or fitness watch, or logging your time and distance encourage you?
• If you have not been active recently, you can begin with 5 or 10 minutes of activity per day. Increase your activity sessions by a few minutes each week. Over time, your fitness will improve.
• Seek out friends or neighbors to join you, or take a fitness class to help you stay motivated. Include your children, and turn exercise into family-time.
• Your blood sugar will need to be monitored before, during, and after your exercise routine, so determine how you will carry your glucose meter and a treatment for low blood sugar.

How can I manage my blood sugar during exercise?

• Planning ahead and knowing your body’s typical blood sugar response to exercise can help you keep your blood sugar from going too low or too high. If you are having frequent lows with exercise, talk to your provider for advice.
• To learn how different types of activity affect you, frequently check your blood sugar before, during, and after an exercise session. Record these readings.
• Keep records of your exercise routine, foods eaten, and medications taken along with your blood sugar response.
• Consider any changes you have made to your insulin dosing or diabetes medications.
• It is very important to show all of the records and logs you keep to your provider for expert advice on managing your medication or insulin.
Remember, your blood sugar response during and after exercise will depend on:
- Your blood sugar prior to exercise.
- The active insulin or other diabetes medications in your body.
- The type and amount of foods you ate before and during your exercise.
- The intensity and duration of your activity.

Based on your exercise plan and blood sugar, a carbohydrate snack may be recommended. The following table shows general guidelines for grams (g) of carbohydrates needed to maintain blood sugar during exercise.

<table>
<thead>
<tr>
<th>DURATION</th>
<th>INTENSITY</th>
<th>BLOOD SUGAR BEFORE EXERCISE</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 minutes</td>
<td>Low</td>
<td>&lt; 100</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>5-10g</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>0-15g</td>
</tr>
<tr>
<td>30 minutes</td>
<td>Low</td>
<td>5-10g</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>10-25g</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>15-35g</td>
</tr>
<tr>
<td>45 minutes</td>
<td>Low</td>
<td>5-15g</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>15-35g</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>20-40g</td>
</tr>
<tr>
<td>60 minutes</td>
<td>Low</td>
<td>10-15g</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>20-50g</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>30-45g</td>
</tr>
</tbody>
</table>

This table is adapted from the Diabetic Athlete’s Handbook by Sheri Colberg, PhD.

For blood sugars greater than 250 or if ketones are present, do not exercise. Additional insulin may be required, and you should get advice from your provider.

“To enjoy the glow of good health, you must exercise” – Gene Tunney
**TAKING MEDICATIONS**

**Will I need to take medicine to control my diabetes?**

Most people with diabetes will need medication, such as pills, non-insulin injectables, and/or insulin. Diet and exercise are great ways to help manage your diabetes, but are not enough for most people, particularly if you have type 1 diabetes. People with type 1 diabetes must be treated with multiple-dose insulin injections of long-acting and mealtime insulin or use a continuous subcutaneous insulin infusion (insulin pump). Those with type 2 diabetes generally begin with pills, but may eventually need insulin as well. Needing medication does not mean your diabetes is worse than someone else’s. It’s a tool needed to control diabetes and reduce your risk of developing complications.

**Some important points to remember about your diabetes medications:**

- Know the name of your diabetes medication, how your medication works, and when to take it, as well as possible side effects and special considerations.
- If you cannot afford your medications, ask your provider if you would qualify for special help.
- If your diabetes medication is not listed in these charts, it may be a new or combination medication. Ask your healthcare provider to explain how it works.
- Keep your healthcare team updated on any significant changes in your blood sugar. Your healthcare team will help you determine the right medication, right dose, and any adjustments that may be needed.
- Meeting with a diabetes educator will help you understand your medication and treatment plan.

**What are the names of pills used to control diabetes? How do they work?**

There are different categories of diabetes pills that work in different ways to treat diabetes. Use the tables below to find your diabetes medication.

<table>
<thead>
<tr>
<th><strong>SULFONYLUREAS</strong></th>
<th><strong>HOW THESE PILLS WORK: HELP THE PANCREAS RELEASE INSULIN</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of Pill</strong></td>
<td><strong>When to Take</strong></td>
</tr>
<tr>
<td>Amaryl® (glimepiride)</td>
<td>With the first meal of the day</td>
</tr>
<tr>
<td>DiaBeta® (glyburide)</td>
<td>½ hour to 1 hour before meals*</td>
</tr>
<tr>
<td>Micronase®</td>
<td></td>
</tr>
<tr>
<td>Glynase® (micronized glyburide)</td>
<td>½ hour to 1 hour before meals*</td>
</tr>
<tr>
<td>Glucotrol®(glipizide)</td>
<td>½ hour to 1 hour before meals*</td>
</tr>
<tr>
<td>Glucotrol XL® (glipizide)</td>
<td>½ hour to 1 hour before meals*</td>
</tr>
</tbody>
</table>

* If you skip a meal, skip that dose.

<table>
<thead>
<tr>
<th><strong>MEGLITINIDES</strong></th>
<th><strong>HOW THESE PILLS WORK: HELP PANCREAS RELEASE INSULIN</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of Pill</strong></td>
<td><strong>When to Take</strong></td>
</tr>
<tr>
<td>Starlix® (nateglinide)</td>
<td>5-30 minutes before meals*</td>
</tr>
<tr>
<td>Prandin® (repaglinide)</td>
<td>15 minutes before meals*</td>
</tr>
</tbody>
</table>

*If you skip a meal, skip that dose.
### ALPHA GLUCOSIDASE INHIBITORS
**HOW THESE PILLS WORK: SLOW THE ABSORPTION OF CARBOHYDRATES FROM THE STOMACH AND INTESTINES**

<table>
<thead>
<tr>
<th>Name of Pill</th>
<th>When to Take</th>
<th>Doses</th>
<th>Possible Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precose (acarbose)</td>
<td>With first bite of meal*</td>
<td>50 mg, 100 mg Max: 300 mg</td>
<td>Nausea, diarrhea, gas</td>
</tr>
<tr>
<td>Glyset (miglitol)</td>
<td>With first bite of meal*</td>
<td>25 mg, 50 mg, 100 mg Max: 300 mg</td>
<td></td>
</tr>
</tbody>
</table>

*If you skip a meal, skip that dose. Must use glucose gel, tablets, or honey to treat low blood sugar due to how the medicine works.

### BIGUANIDES*
**HOW THESE PILLS WORK: DECREASE THE AMOUNT OF GLUCOSE PRODUCED BY THE LIVER AND HELP CELLS USE INSULIN BETTER**

<table>
<thead>
<tr>
<th>Name of Pill</th>
<th>When to Take</th>
<th>Doses</th>
<th>Possible Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucophage, Riomet (metformin)</td>
<td>Metformin: usually twice a day with breakfast and evening meal.</td>
<td>500-2500 mg</td>
<td>Bloating, gas, diarrhea, upset stomach, loss of appetite. In rare cases, lactic acidosis may occur. Take with food to minimize symptoms or consider extended release.</td>
</tr>
<tr>
<td>Glucophage XR, Glumetza, Fortamet (metformin)</td>
<td>Metformin extended release (XR): usually once a day, in the morning</td>
<td>500-2000 mg daily 500-2000 mg daily 500-2500 mg daily</td>
<td></td>
</tr>
</tbody>
</table>

*You may be asked to stop taking this medication if you are having a dye study or surgical procedure.

### TZDs
**HOW THESE PILLS WORK: IMPROVE INSULIN SENSITIVITY, WHICH INCREASES THE UPTAKE OF GLUCOSE INTO CELLS**

<table>
<thead>
<tr>
<th>Name of Pill</th>
<th>When to Take</th>
<th>Doses</th>
<th>Possible Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actos (pioglitazone)</td>
<td>With or without meals</td>
<td>15 mg, 30 mg, 45 mg Max: 45 mg</td>
<td>Anemia, swelling, weight gain</td>
</tr>
<tr>
<td>Avandia (rosiglitazone)</td>
<td>With or without meals</td>
<td>4-8 mg daily</td>
<td></td>
</tr>
</tbody>
</table>

TZDs may cause or worsen heart failure; increased peripheral fracture risk.
### SGLT2 Inhibitors

**How these pills work:** Decrease glucose reabsorption in kidneys; increase glucosuria

<table>
<thead>
<tr>
<th>Name of Pill</th>
<th>When to Take</th>
<th>Doses</th>
<th>Possible Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invokana (canagliflozin)</td>
<td>Upon rising</td>
<td>100-300 mg daily</td>
<td>Low blood pressure, urinary track infections, increased urination, genital infections</td>
</tr>
<tr>
<td>Farxiga (dapagliflozin)</td>
<td>Upon rising</td>
<td>5-10 mg daily</td>
<td></td>
</tr>
<tr>
<td>Jardiance (empagliflozin)</td>
<td>Upon rising</td>
<td>10-25 mg daily</td>
<td></td>
</tr>
</tbody>
</table>

### DPP4 Inhibitors

**How these pills work:** Prevent break down of GLP1 digestive hormone which increases insulin secretion and slows emptying of stomach

<table>
<thead>
<tr>
<th>Name of Pill</th>
<th>When to Take</th>
<th>Doses</th>
<th>Possible Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Januvia (Sitagliptin)</td>
<td>Upon rising</td>
<td>100mg daily</td>
<td>Possible pancreatitis, nasopharyngitis, headache and upper respiratory infections</td>
</tr>
<tr>
<td>Onglyza (saxagliptin)</td>
<td>Upon rising</td>
<td>Up to 5mg daily</td>
<td></td>
</tr>
<tr>
<td>Tradjenta (linagliptin)</td>
<td>Upon rising</td>
<td>5mg once daily</td>
<td></td>
</tr>
<tr>
<td>Nesina (alogliptin)</td>
<td>Upon rising</td>
<td>25mg once daily</td>
<td></td>
</tr>
</tbody>
</table>

### Dopamine 2 Agonists

**How these pills work:** Reset circadian rhythm; increase insulin sensitivity

<table>
<thead>
<tr>
<th>Name of Pill</th>
<th>When to Take</th>
<th>Doses</th>
<th>Possible Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycloset®, (Bromocriptine mesylate)</td>
<td>Within 2 hours of waking</td>
<td>1.6-4.8 mg daily</td>
<td>Low blood sugar, nausea, headache, fatigue, dizziness</td>
</tr>
</tbody>
</table>
What are the non-insulin injectables used to treat diabetes?

### GLP1 AGONISTS

**HOW THESE INJECTABLES WORK:** INCREASE INSULIN SECRETION WITH FOOD, PREVENT THE LIVER FROM RELEASING BLOOD SUGAR, SLOWS DIGESTION, DECREASES APPETITE, AND MAY CONTRIBUTE TO WEIGHT LOSS

<table>
<thead>
<tr>
<th>Brand/Generic Name</th>
<th>When to Use</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byetta® (Exenatide)</td>
<td>0-60 minutes before morning and evening meals, 5 or 10mcg twice a day</td>
<td>Nausea, vomiting, constipation, decreased appetite</td>
</tr>
<tr>
<td>Bydureon® (Exenatide extended release)</td>
<td>2mg once weekly</td>
<td></td>
</tr>
<tr>
<td>Tanzeum® (Albiglutide)</td>
<td>30 or 50mg once weekly</td>
<td></td>
</tr>
<tr>
<td>Trulicity® (Dulaglutide)</td>
<td>0.75-1.5mg once weekly</td>
<td></td>
</tr>
<tr>
<td>Victoza® (Liraglutide)</td>
<td>0.6, 1.2 or 1.8mg once daily</td>
<td></td>
</tr>
</tbody>
</table>

### AMYLIN MIMETICS

**HOW THESE INJECTABLES WORK:** SLOW DIGESTION AND STOMACH EMPTYING, DECREASES APPETITE, PREVENTS LIVER FROM RELEASING BLOOD SUGAR, AND DECREASES AMOUNT OF INSULIN NEEDED

<table>
<thead>
<tr>
<th>Brand/Generic Name</th>
<th>When to Use</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symlin® (Pramlintide Acetate)</td>
<td>At mealtime; used with insulin Type 1: 15-60 mcg Type 2: 60-120 mcg</td>
<td>Low blood sugar, nausea, vomiting</td>
</tr>
</tbody>
</table>

*Acceptable injection sites vary. Discuss where to inject with your provider, educator, or pharmacist or refer to the package insert.*
What about insulin?

Insulin is a hormone that is made in the pancreas. It is essential for life. If your pancreas is not making any insulin or not enough insulin, taking it by injection is necessary. The amount of insulin prescribed varies from person to person and can depend on your sensitivity to insulin, how much you eat, and how active you are. If you need insulin, this does not mean that your diabetes is worse than someone else’s. The worst type of diabetes to have is uncontrolled diabetes.

Most insulins come in a vial. A syringe is needed to draw out the insulin and inject it under the skin. Many insulins also are available in a pen and use a pen needle for injection. Pens tend to be more convenient than using a vial and syringe, but personal preference and insurance coverage can affect which method is used. Insulin pumps are a third option for administering insulin. Pumps are mechanical devices that offer advanced features for blood sugar management. Much education is involved in learning how to care for and use an insulin pump. If you are interested in an insulin pump, talk to your healthcare team for more information. Refer to page 40 for more information about insulin pumps.
<table>
<thead>
<tr>
<th>INSULIN TYPE</th>
<th>BRAND NAME</th>
<th>GENERIC NAME</th>
<th>WHEN TO USE/HOW IT WORKS</th>
<th>SIDE EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid-Acting Insulin</td>
<td>Apidra®, Afrezza®* (Inhaled)</td>
<td>Insulin glulisine</td>
<td>Before you eat; starts working within 5-15 minutes. Lasts up to 4 hours.</td>
<td>Low blood sugar, weight gain</td>
</tr>
<tr>
<td></td>
<td>Humalog®, Humalog U200, NovoLog®</td>
<td>Insulin Human rDNA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insulin lispro</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insulin lispro U200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insulin aspart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-Acting Insulin</td>
<td>Humulin R, Novolin R, ReliOn R</td>
<td>Regular</td>
<td>Before you eat; starts working within ½-1 hour and lasts up to 8 hours.</td>
<td></td>
</tr>
<tr>
<td>Intermediate-Acting Insulin</td>
<td>Humulin N, Novolin N, ReliOn N</td>
<td>NPH Isophane</td>
<td>In morning and evening; lasts 10-12 hours.</td>
<td></td>
</tr>
<tr>
<td>Long-Acting Insulin</td>
<td>Lantus®, Toujeo, Basaglar, Levemir®, Tresiba</td>
<td>Insulin glargine</td>
<td>slow, steady release of background insulin. Usually given once a day.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insulin glargine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insulin glargine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insulin detemire</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insulin Degludec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-mixed Insulins</td>
<td>Humalog 75/25, Humalog 50/50, Novolog 70/30, Humulin 70/30, Novolin 70/30, ReliOn 70/30</td>
<td>Lispro 75/25, Lispro 50/50, Aspart 70/30, NPH/R 70/30, NPH/R 70/30, NPH/R 70/30</td>
<td>Usually given before breakfast and evening meal. Begins to work in 15-30 minutes and lasts up to 12 hours.</td>
<td></td>
</tr>
<tr>
<td>Concentrated Regular Insulin</td>
<td>Humulin R 500, Regular U 500</td>
<td></td>
<td>Has similarities of both short-acting and long-acting insulin. Begins working in 30 minutes and can last up to 24 hours. Given before meals 2-3 times per day.</td>
<td>hypoglycemia, nausea, diarrhea, sore throat, upper respiratory infection</td>
</tr>
<tr>
<td>Combination Insulin</td>
<td>Soliqua</td>
<td>Insulin glargine and lixisenatide</td>
<td>Once daily, one hour before the 1st meal of the day. Provides long acting insulin and a GLP 1 Agonist.</td>
<td>hypoglycemia, nausea, diarrhea, sore throat, upper respiratory infection</td>
</tr>
<tr>
<td>Combination Insulin</td>
<td>Xultophy</td>
<td>Degludec and Liraglutide</td>
<td>Some time once daily regardless of meals. Provides long acting insulin and a GLP1 Agonist</td>
<td>hypoglycemia, nasopharyngitis, headache, nausea, diarrhea, upper respiratory infection</td>
</tr>
</tbody>
</table>
How do I store and handle insulin?

All unopened insulin should be kept in the refrigerator at 36°-46°F (2.2°-7.7°C). Once insulin is in use it should be kept at room temperature (less than 86°F/30°C). If insulin is not stored properly, it may not work effectively, which could cause unpredictable blood glucose values.

- Make sure the type of insulin you received is what your healthcare provider ordered.
- Be sure to prepare your insulin as instructed.
- Examine your insulin. If it does not look right, do not use it.
- Check the expiration date (before opened).
- Check the use-by date (after opened).
- Insulin will spoil if it gets above 90°F (32.2°C) or if it freezes.
- Insulin bottles and pens should not be left in a car.
- Cooling packs are available for traveling.

Throw insulin away if:

- Clumps of insulin are sticking to the side of the bottle
- Clear, rapid-acting insulin becomes cloudy.
- The insulin is past the expiration date.

What is the use-by date for my insulin after it is opened or kept at room temperature?

<table>
<thead>
<tr>
<th>SANOFI AVENTIS</th>
<th>HOW LONG IN-USE INSULIN LASTS AT ROOM TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Insulin glulisine (Apidra) pen or vial</td>
<td>28 days</td>
</tr>
<tr>
<td>Glargine (Lantus) pen or vial</td>
<td>28 days</td>
</tr>
<tr>
<td>Glargine U300 (Toujeo) pen</td>
<td>42 days</td>
</tr>
<tr>
<td>Glargine/Lixisenatide (Soliqua)</td>
<td>14 days</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOVO NORDISK</th>
<th>HOW LONG IN-USE INSULIN LASTS AT ROOM TEMPERATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Novolin R vial</td>
<td>42 days</td>
</tr>
<tr>
<td>*Novolin N vial</td>
<td>42 days</td>
</tr>
<tr>
<td>*Novolin 70/30 vial</td>
<td>42 days</td>
</tr>
<tr>
<td>Aspart (Novolog) Mix 70/30 pen</td>
<td>14 days</td>
</tr>
<tr>
<td>Aspart (Novolog) Mix 70/30 vial</td>
<td>28 days</td>
</tr>
<tr>
<td>Aspart (Novolog) pen</td>
<td>28 days</td>
</tr>
<tr>
<td>Aspart (Novolog) vial</td>
<td>28 days</td>
</tr>
<tr>
<td>*Determir (Levemir) pen</td>
<td>42 days</td>
</tr>
<tr>
<td>*Determir (Levemir) vial</td>
<td>42 days</td>
</tr>
<tr>
<td>Degludec (Tresiba) pen (U100 or U200)</td>
<td>56 days</td>
</tr>
<tr>
<td>Degludec/Liraglutide (Xultophy)</td>
<td>21 days</td>
</tr>
</tbody>
</table>

* These insulins must be stored below 77°F (25°C)
<table>
<thead>
<tr>
<th>Eli Lilly</th>
<th>How Long In-Use Insulin Lasts at Room Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humulin R vial (U 100)</td>
<td>31 days</td>
</tr>
<tr>
<td>Humulin N pen</td>
<td>14 days</td>
</tr>
<tr>
<td>Humulin N vial</td>
<td>31 days</td>
</tr>
<tr>
<td>Humulin 70/30 pen</td>
<td>10 days</td>
</tr>
<tr>
<td>Humulin 70/30 vial</td>
<td>31 days</td>
</tr>
<tr>
<td>Lispro (Humalog) Mix 50/50 pen</td>
<td>10 days</td>
</tr>
<tr>
<td>Lispro (Humalog) Mix 50/50 vial</td>
<td>28 days</td>
</tr>
<tr>
<td>Lispro (Humalog) Mix 75/25 pen</td>
<td>10 days</td>
</tr>
<tr>
<td>Lispro (Humalog) Mix 75/25 vial</td>
<td>28 days</td>
</tr>
<tr>
<td>Lispro (Humalog) pen (U 100)</td>
<td>28 days</td>
</tr>
<tr>
<td>Lispro (Humalog) vial (U 100)</td>
<td>28 days</td>
</tr>
<tr>
<td>Lispro U200 (Humalog) Pen</td>
<td>28 days</td>
</tr>
<tr>
<td>Humulin R U500 Pen</td>
<td>28 days</td>
</tr>
<tr>
<td>Humulin R U500 vial</td>
<td>40 days</td>
</tr>
<tr>
<td>Giargine (Basaglar) Pen</td>
<td>28 days</td>
</tr>
</tbody>
</table>

**How and where do I choose a site to inject my insulin?**

Knowing where to give your injections is very important. The chart below shows sites for your injectable medication.

Using a different site each time you inject your medication is very important. Overusing the same spot can increase the risk of tissue damage, which can change how well the insulin works.
How do I fill an insulin syringe or use an insulin pen?

In-person education is best as you are able to practice using an insulin vial or pen. Your diabetes educator will help you learn how to use these. The following directions are meant to support this education. Some insulins can be mixed in the same syringe. This involves a special technique which your educator can teach you. DO NOT mix two types of insulins before discussing with your provider or diabetes educator.

**Using a Vial and Syringe**

1. Wash your hands.
2. If your insulin is a pre-mixed or intermediate acting insulin and appears cloudy, gently roll the vial to mix the insulin evenly.
3. Remove and discard the cap from the vial. Swab the top of vial with an alcohol swab.
4. Remove the cap from your insulin syringe and pull the plunger down until at the prescribed units. This is intended to fill the syringe with air.
5. With the insulin vial on the table, insert the syringe needle into the vial. Push the plunger down to insert air into the vial.
6. Keeping the syringe in the vial, pick up the vial, and turn it upside down.
Pull the plunger half way down the syringe, filling it with insulin.

Choose an injection site and clean your skin with soap and water or wipe with an alcohol swab.

Insert the syringe needle gently and push the plunger down all the way to deliver your insulin dose.

Hold the insulin syringe in place for 10 seconds before removing the needle from your skin.

Push the insulin back into the bottle. This helps remove air bubbles.

Dispose of the syringe in a sharps container.
Using an Insulin Pen

1. Wash your hands.

2. If your insulin is a pre-mixed or intermediate acting insulin and appears cloudy, gently roll the pen to mix the insulin evenly.

3. Remove the cap from the pen and swab the end with an alcohol swab.

4. Remove the paper from the pen needle, attach to end of pen and turn clockwise to secure.

5. Remove the outer and inner cover from the pen needles, exposing the injection needle.

6. Dial the pen to 2 units. Holding the pen upright, depress the button at the end opposite the injection needle. Look for drops of insulin. If none are seen, repeat this step. This is called “priming” the pen.
7 Dial the pen to your prescribed dose.

8 Choose an injection site and clean your skin with soap and water, or wipe with an alcohol swab.

9 Insert the injection needle gently, and depress the button at the opposite end to deliver your insulin dose.

10 Remove your finger from the delivery button but hold the insulin pen in place for 10 seconds before removing the needle from your skin.

11 Remove the pen needle from the pen by turning counter clockwise. Dispose of pen needle in a sharps container. Recap your pen. Do not reuse pen needles.
Insulin Pumps

Insulin pumps are another way insulin can be delivered. A pump is a small, computerized device that is programmed to deliver insulin. There is a reservoir/cartridge that holds insulin inside the pump. There also is an infusion set, which is a small plastic tube (cannula) or small needle that is inserted under the skin where insulin is absorbed. The pump user will change the infusion set and reservoir/cartridge every 2-3 days. The pump uses only fast-acting insulin.

There are two ways that an insulin pump delivers insulin:

1. Basal delivery—The pump delivers insulin continuously over a 24-hour period. This can be programmed in very small, precise doses and can be adjusted hourly. It can better match a person’s insulin needs throughout the day and is more similar to how a functioning pancreas works.

2. Bolus delivery—A pump can give a dose of insulin in addition to the basal delivery. This bolus dose is given before a meal. The amount is calculated by the pump based on the size of the meal, current blood sugar and the person’s sensitivity to insulin. Pumps also offer several advanced features that may help a person gain better control and have more flexibility in their lifestyle.

If you are considering an insulin pump, the first steps are to check blood sugars frequently—at least four times a day—and learn how to count the number of carbohydrates you are eating. There are several different insulin pumps available. Ask your healthcare provider if you are interested in learning more about insulin pump.
How do I dispose of syringes, pen needles, lancets, and pump supplies?

- Syringes, pen needles, and lancets should be thrown away immediately after use. They should be placed into a heavy, puncture-proof, non-breakable container that contains a lid or cap. An empty detergent container or coffee can should be used if you do not have an actual sharps container.
- Dispose of the container and its contents according to local and state medical waste rules.
- Do not recycle your sharps container.


Have your medications and supplies ready in case of a disaster or emergency!

It is important to be prepared for emergencies by keeping a “disaster kit.” This should be an insulated, waterproof kit that includes:

- Prescription numbers/medication names and dosages or pump settings
- Glucose meter, testing supplies and alcohol wipes
- Logbook
- ID card and medical ID
- If you use insulin, include syringes and pen needles or reservoirs and infusion sets
- Ketone testing strips
- Glucagon emergency kit
- Glucose tablets
- Emergency contact numbers
- Batteries for glucose meter and/or insulin pump
- Emergency blanket and flashlight
- Bottled water
People with diabetes can live long and healthy lives, but it comes with the responsibility of controlling their blood sugars. When blood sugars are too high for long periods of time, they can lead to many health problems. You can prevent or delay complications (listed on the right) by managing your blood sugar and other factors, such as cholesterol and blood pressure.

<table>
<thead>
<tr>
<th>BODY SYSTEM</th>
<th>COMPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart &amp; Blood Vessels (Cardiovascular system)</td>
<td>Heart Attack Stroke Peripheral Vascular Disease (PVD)</td>
</tr>
<tr>
<td>Nerves</td>
<td>Peripheral Neuropathy Autonomic Neuropathy Gastroparesis Sexual problems / Erectile Dysfunction</td>
</tr>
<tr>
<td>Kidneys</td>
<td>Nephropathy Chronic Kidney Disease</td>
</tr>
<tr>
<td>Eyes</td>
<td>Retinopathy Cataracts</td>
</tr>
<tr>
<td>Feet</td>
<td>Ulcers Charcot Foot</td>
</tr>
<tr>
<td>Teeth &amp; Gums</td>
<td>Dental infections</td>
</tr>
</tbody>
</table>

How can I keep my heart, arteries and veins healthy?

Heart Attack and Stroke
Thick and sticky blood from high blood sugar is harder for your heart to pump and can damage your arteries and veins. This increases your risk for a heart attack and stroke. If you also have high blood pressure and/or high cholesterol, you have an even greater risk for these problems. High blood pressure can damage your vessel walls, leading to scarred and narrowed vessels during the healing process. Cholesterol then can build up on the scarred blood vessel walls, forming plaques. These cholesterol plaques can further narrow your vessel walls. This narrowing leads to blockages that prevent proper blood flow to the heart and/or brain, causing a heart attack or stroke. A heart attack or stroke is life-threatening, and you should know the warning signs.

Warning Signs of a Heart Attack
- Chest discomfort
- Shortness of breath
- Pain in the jaw, neck, or arms
- Sweating, lightheadedness, or nausea

Think S.T.O.P.
- Shortness of breath
- Tightness of the chest or pressure
- Other symptoms such as cold sweats, weakness, heart palpitations, dizziness, and even loss of consciousness
- Pain in the chest, neck, throat, jaw, or back

Warning Signs of a Stroke
- Numbness or weakness in the face, arms, or legs
- Confusion, difficulty speaking or understanding
- Vision changes
- Difficulty walking, loss of balance
- Severe headache

Think F.A.S.T.
- Facial drooping
- Arm weakness
- Speech difficulties
- Time to call 911
Peripheral Vascular Disease (PVD)

Peripheral Vascular Disease occurs when there is decreased blood flow in the legs or arms due to damage to those blood vessels. This damage occurs much in the same way that damage occurs to the heart and brain vessels from high blood sugar, high cholesterol, and high blood pressure. This may cause pain or numbness in the legs or arms. It may also prevent proper healing of infections or wounds.

<table>
<thead>
<tr>
<th>YOUR NUMBERS</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure</td>
<td>Less than 140/90</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>Less than 200</td>
</tr>
</tbody>
</table>
| LDL (bad cholesterol)| Less than 100 with diabetes
|                      | Less than 70 with diabetes and heart disease |
| HDL (good cholesterol)| Greater than 40 in men
|                      | Greater than 50 in women                    |
| Triglycerides        | Less than 150                              |

Guidelines established by the ADA (American Diabetes Association), 2017.

What you can do to control your blood pressure and cholesterol

- Monitor your blood sugar as directed, and notify your healthcare team when your blood sugars do not reach your determined goal.
- Get a cholesterol screening once a year. Discuss your results with the provider and if the current medication is right for you.
- Have your blood pressure checked once a year. Discuss the results with your provider and if the current medication is right for you.
- Work with the dietitian to choose foods low in saturated fat and cholesterol.
- Exercise regularly or be more active.
- Maintain a healthy weight.
- Quit smoking. There are many smoking cessation programs available.
- Limit alcohol drinks to no more than 1-2 a day.
- Decrease stress if possible.

How can I keep my nerves healthy?

Your nerves send signals from your brain to all parts of your body. When blood sugar is too high for long periods of time, the sugar may stick to the nerves and cause problems. Damage to the nerves is called neuropathy.

Peripheral Neuropathy usually affects the hands and feet and may cause tingling, burning, pain, or numbness. It may result in lack of feeling in the hands and feet. This can lead to injuries that you may not notice.

Gastroparesis is nerve damage in the stomach or digestive tract. This causes your digestion to slow down and may make you feel bloated. Other symptoms may include nausea, constipation, or feeling full before you have finished your meal.

Autonomic Neuropathy is when the nerves associated with the heart and blood vessels are affected. This can cause lightheadedness or dizziness and can affect your blood pressure. Autonomic neuropathy may also decrease your ability to sweat or feel the side effects of low blood sugar.

Sexual Problems may occur in men and women. Men may experience erectile dysfunction due to nerve and/or blood vessel damage. Women may experience vaginal dryness and have a higher rate of vaginal infections.

What you can do

- Keep your blood sugar under good control.
- Learn proper foot care; visit a podiatrist (foot doctor), if needed.
- Talk to your healthcare team if you are having any of the symptoms mentioned above. There are medications that can alleviate symptoms of peripheral neuropathy, gastroparesis, and sexual problems.
How can I keep my kidneys healthy?

Your kidneys work to filter out all the waste from your blood. High blood sugars can stick to the walls of the arteries and veins in your kidneys, causing them to be blocked or leaky. Some of the important proteins and nutrients that should stay in the blood are then lost into the urine. When too much protein is lost in the urine, it is called diabetic nephropathy, which can lead to permanent kidney damage.

What you can do

- Keep your blood sugar under good control.
- Have routine testing of your blood (creatinine) and urine (microalbumin) once every year.
- Maintain good blood pressure control.
- Maintain good cholesterol control.
- Consider medications such as ACE inhibitors or ARBs, which you can discuss with your healthcare provider.

How can I keep my eyes healthy

Changes in blood sugar can make your eyesight blurry for short periods of time. If blood sugar levels stay high for long periods of time, the thick and sticky blood can damage the tiny arteries and veins in your eyes. These blood vessels can become weak and start to leak fluid or blood, which is called diabetic retinopathy. It can lead to permanent eye damage and is the number one cause of blindness in the United States. There are treatments available that include injections and laser treatments. Cataracts, which are a clouding of the lens in the eye, also are more common with diabetes.

What you can do

- Keep your blood sugar under good control.
- Have a dilated eye exam every year.
- Maintain good blood pressure control.
- Call your eye doctor whenever you notice trouble with your eyesight.

How can I keep my feet healthy

High blood sugar can cause damage to the arteries, veins, and nerves in your feet. You may be more susceptible to infections and cuts may heal more slowly. You may not notice the pressure from tight shoes, which can lead to blisters when walking. You also might not notice injuries such as scrapes and cuts, which may result in infections.

Charcot Foot is a serious condition in which the bones of the foot can abnormally move or break. The foot may look swollen, red, or be warm to the touch. Quick treatment is important to prevent permanent foot damage from occurring.

What you can do

- Check your feet every day. Look for cracks, red areas, corns/calluses, or minor cuts.
- Apply a moisturizer to prevent dry and cracked skin. Avoid applying moisturizer between the toes.
- Wash your feet daily with warm water and pat dry. Do not soak your feet.
- Do not use over-the-counter corn/callus remedies.
- Keep toenails trimmed. If you have trouble, see a podiatrist (foot doctor) for help.
- Wear shoes that are the correct size, and check your shoes before putting them on for damage or foreign objects inside each shoe.
- Wear cotton or wool socks without elastic.
- Have your feet examined every year by your healthcare team.
How can I keep my teeth and gums healthy?

Everyone gets plaque on his or her teeth. Plaque is a sticky film that comes from chewing food. It is filled with germs, and high blood sugar can help these germs grow. Watch for red, sore, or swollen gums; bleeding gums; bad breath; and tooth loss.

What you can do
• Keep your blood sugar under good control.
• Brush your teeth twice a day.
• Floss regularly.
• See the dentist every six months.

Which vaccines should I get?

People who have diabetes are at a greater risk for getting Influenza (flu) and other infections, such as pneumonia. These infections can lead to serious consequences and hospitalizations. Additional chronic conditions can raise this risk even more. Having diabetes also can make it harder to heal from these infections, so it is important to do all you can to prevent them. Flu and pneumonia are conditions that can be prevented through vaccines. The flu vaccine is recommended every year during the fall/winter seasons. There are different types of pneumonia vaccines, and their administration depends on your age and other health conditions you may have. Talk to your provider about receiving your pneumonia vaccine.

Hepatitis is another infection that can be prevented through a vaccine. While many people are vaccinated at birth, the ADA recommends people with diabetes (who have not been vaccinated) get the hepatitis B vaccine. Talk to your provider to determine if you need the Hepatitis B vaccine.

What are some issues for women with diabetes?

Your menstrual cycle, or monthly period, can affect your blood sugar. If you find your sugars are different when you have your period, talk to your medical team.

You can have a healthy pregnancy when you have diabetes. It is important to have excellent control of your blood sugar before becoming pregnant and to keep your blood sugar under tighter control during pregnancy. Your goal blood sugar range is generally lowered when you are pregnant. This will help make sure you and your baby stay healthy. Several pills and insulins are not safe during pregnancy. If you are thinking about becoming pregnant, or if you recently learned that you are pregnant, talk to your provider.

"Discipline is the bridge between goals and accomplishment" – Jim Rohn
# KEEPING ON TRACK

## STANDARD GUIDELINES FOR DIABETES CARE

<table>
<thead>
<tr>
<th>Test</th>
<th>Frequency</th>
<th>Target</th>
<th>Date</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Review Blood Sugar Records</strong></td>
<td>(every visit)</td>
<td>ADA Goal: pre-meals 80-130 mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Target (pre-meals)</strong></td>
<td></td>
<td>ADA Goal: 2 hours after meals &lt;180 mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Target (post-meals)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blood pressure</strong></td>
<td>(every visit)</td>
<td>ADA Goal: Sys &lt;140 Dia &lt;90 mmHg</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>(every visit)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Thorough Foot Exam</strong></td>
<td>(visually examined every visit)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HbA1C</strong></td>
<td></td>
<td>Blood test to measure past 3 months’ blood sugar levels (2 or more times a year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Target</strong></td>
<td></td>
<td>ADA Goal &lt;7.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Microalbuminuria</strong></td>
<td></td>
<td>Urine kidney test (once a year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Creatinine</strong></td>
<td></td>
<td>Blood kidney test (once a year)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dilated Eye Exam</strong></td>
<td>(once a year)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>(every 1-2 years, based on risk)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Triglycerides</strong></td>
<td>(every 1-2 years, based on risk)</td>
<td>ADA Goal: &lt;150mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HDL and LDL</strong></td>
<td>(every 1-2 years, based on risk)</td>
<td>HDL Men &gt;40 mg/dL Women &gt;50 mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Target</strong></td>
<td></td>
<td>LDL &lt;100 mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flu shots</strong></td>
<td>(once a year)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pneumonia vaccine</strong></td>
<td>(ask your provider)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hepatitis vaccine</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diabetes Education</strong></td>
<td>(annually)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*These are based on the American Diabetes Association’s Clinical Practice Guidelines. Only your healthcare provider can recommend your personal healthcare guidelines.*
What does diabetes mean to me?
Navigating diabetes is a life-long commitment. Each day you will need to make many healthy, informed choices. With practice and support from your diabetes team, your diabetes care will become easier to manage.

What about my emotions?
Managing and living with diabetes can be hard work. Some days your blood sugar will be right where you want it. Other days, it may be difficult to keep your blood sugars at goal. There are many feelings you may have about your diabetes (denial, anger, and/or guilt). Ask yourself, “What are my feelings about diabetes?” Write them down.

What can I do about my feelings?
Share your thoughts and feelings about having diabetes with someone on your team. That person can be a healthcare member, close friend, family member, or someone in the community. Maybe it is another person who has diabetes and can relate to what you are going through.

What about when I stumble?
Occasionally, you will “get off track” in your self-management plan. You may go off your meal plan, skip your medication, or ignore checking your blood sugar. When you make a mistake, you may feel angry, guilty, or disappointed in yourself. In order to get beyond these emotions, you must “get back on track” as quickly as possible. Call and reach out to those who can help you.

How do I get motivated?
- Put your mistake behind you.
- Remember that one mistake does not represent failure in your diabetes care.
- Move forward and focus on one goal at a time.
- Share your struggles with your diabetes educator and ask for support.

Who should I talk to about diabetes?
The choice is yours. Diabetes is a part of who you are, but it is not the only thing you are! It is good to tell some people about your diabetes, like your co-workers or friends. They may be able to offer valuable support. They may even be able to assist you with recognizing symptoms of low and high blood sugar and assist with treatment. But the choice is always yours.

“Calm minds bring inner-strength and self-confidence, so that’s very important for good health.”
– Dalai Lama
What can other people do?

People may want to help, but may they not understand what you need. They may say, “You shouldn’t be eating that doughnut,” or “You need to exercise.” Keep in mind that they are trying to show you they care. By talking about what you need from them, people can learn to show their concern and support you in a way that helps you.

1. Ask yourself what you need them to stop doing.
   - Do you want them to stop telling you what to eat?
   - Do you want them to stop talking about your diabetes in front of other people?
   - Do you want them to stop talking about your weight?

2. Tell them how these comments make you feel.

3. Tell them what they can do to help.
   - Ask them to eat healthy with you so that you are not tempted.
   - Invite them to come to your appointments.
   - Challenge them to exercise with you.
   - Show them how they can help when you have low blood sugar.
   - You may want to remind them that everyone should try to follow a healthy diet and exercise, not just people with diabetes

Where can I get more support?

It can be a great relief to know that you are not alone in trying to manage your diabetes. The Penn State Hershey Medical Center Diabetes Team offers education and support. Call 717-531-8395 to learn more.

Most importantly …

Do what you can to help yourself—medically, physically, and emotionally. You are a person with diabetes, but that does not define who you are. It is important to understand and take care of yourself as best you can. You are not alone. There are many people living with diabetes and there are many healthcare members who can help you navigate through your journey of diabetes management.
Tattoos and piercings

When choosing a tattoo/piercing parlor, ask about how they manage their equipment. The shop you choose should:

1. Have a licensed artist.  
2. Use a brand new needle just for you.  
3. Autoclave their tattoo machines between customers.  
4. Use disposable ink pots.

It is best to have your hemoglobin A1C in a good range before you go to get a tattoo or piercing. If your levels are out of control, you are at risk for slower healing and infections.

A person with diabetes needs to be vigilant about preventing infection. Follow all aftercare precautions. For more information visit: http://blog.joslin.org/2015/02/the-safe-way-to-get-ink-when-you-have-diabetes/

Pedicures:

• Know when to postpone a pedicure. If you currently have any infections, cuts, or open sores on your legs, feet, or toenails, skip the pedicure as these breaks in the skin will make you more vulnerable to infection. Instead, contact your physician for a referral to a podiatrist or other professional who is medically trained to care for feet.

• Avoid shaving your legs for a day or two before your pedicure. Shaving can leave tiny nicks in your skin and increase the chance of infection. It is fine to shave afterward.

• Choose a salon that is clean and practices good sanitation. Ask about the cleaning and sterilization practices.

• Make a morning appointment. If you can, schedule your appointment early in the day, so that you are one of the first customers.

• Let your technician know that you have diabetes before the pedicure begins. Ask him or her to be very gentle and avoid doing anything that can scratch or injure the skin.

• Keep the technician informed of protective practices. Ask the technician not to cut nails too short, as this can encourage ingrown toenails and lead to infection. Make sure toenail edges are not sharp; they should be rounded off with a file.

• Skip any services that can injure the skin. Never allow the technician to cut your cuticles or use any sharp instruments on your skin or under your toenails. Instead, after your feet have been soaking for a few minutes and the skin around your toes is soft, cuticles can be gently pushed back with an orange stick. Go to this web site to learn more: www.diabetesforecast.org/2008/jul/the-truth-about-pedicures.html

Telling others about your diabetes

www.diabeticlivingonline.com
Search “talking about diabetes”

Dating and Diabetes

www.diabetesforecast.org
Search “dating”

Social Media Sites

www.dlife.com
www.hopewarshaw.com
Why join a social networking site?

• Discussing your experiences with diabetes with others who also have diabetes can be helpful.
• You are exposed to other diabetes management practices, you can learn a great deal from others in an online community.
• You learn about new research and treatment alternatives.
• You get valuable tips on how to work with insurance companies.
• You can get answers to many of your diabetes questions, but be sure to verify the answers with your diabetes educator or provider.
• You can get great support through rough times.
• You can help others. The feeling you get from helping someone else, answering their questions, or directing them to where they can get answers will make you feel even better than when you get help from others.
• You can make great new friends—friendships start and grow through online diabetes communities.
• Be aware, any medical "advice" offered on a social media site may not be accurate.
What should I think about before I travel?

• Pack twice as many supplies as you will need.
• Call the airlines/cruise lines in advance. Let them know you may need a special meal plan and ask about bringing diabetes supplies aboard.
• Pack extra snacks in case of low blood sugar.
• Find out if your health insurance will cover the cost of emergency health care out of your state or out of the country.
• Carry/wear medical identification at all times.
• Keep diabetic supplies with you at all times. Checked bags may not make it to the destination or be exposed to dangerous temperatures.
• Carry phone numbers for your medical team, insurance company, glucose meter, and insulin pump companies.
• Consider having a “travel letter” from your healthcare provider that explains you have diabetes and what supplies you will be carrying.
• If you use an insulin pump, consider asking your pump company for a loaner pump for a small fee.

What about the medical waste disposal when traveling?

Leaving needles and testing supplies in trashcans is both dangerous and illegal. Carry an appropriate waste container when you travel. Look up the guidelines for medical waste disposal in the areas where you will be traveling.
MY RIGHTS AT WORK

Do I have any rights at work?
There are laws that can protect you while you are at work. Your employer does not have the right to use your diabetes as an excuse for hiring, firing, discipline, pay, promotion, job training, benefits, or any other part of your job. They are not legally allowed to “get back” at you for defending your rights. You are protected under what is called the anti-discrimination laws. To be protected under these laws, you must tell your employer you have diabetes. You also need to tell them what you need to stay safe while on the job.

What are some examples of things I can ask for?
Here are a few examples of accommodations you might need because of your diabetes:
• Bathroom.
• Special permission to eat on the job.
• The ability to keep diabetes supplies and food nearby.
• A special schedule or a standard work shift instead of a swing shift.

What can I do if I am having trouble at work?
A good first step is to get information about anti-discrimination laws as they apply to you. Contact the American Diabetes Association (ADA) at 1-800-DIABETES (1-800-342-2383), or visit their website at diabetes.org to request a packet on employment discrimination.
What if I can’t afford my supplies?

There are many people who have difficulty paying for diabetes supplies. Sometimes it is a short-term problem because of a job change or loss of insurance. Sometimes it is a lifelong problem because of finances. Unfortunately, diabetes does not take a break. Talk to your medical team—sometimes they can change your pills, insulin, or even glucose meter to make it less costly. Ask for generic forms of medication whenever possible.

Use the American Diabetes Resource Guide

The resource guide is a list of all diabetes pills, insulin, and supplies for sale in the United States with pricing included. It can show you the wide range of prices. You can find the resource guide on the Internet at diabetes.org.

Contact the Partnership for Prescription Assistance

The Partnership for Prescription Assistance may be able to help you get your prescriptions free or nearly free if your insurance doesn’t cover medicine. Call 1-888-477-2669 for more information, or visit the web site pparx.org.

Ask about pharmaceutical patient assistance programs

Many of the companies that make diabetes pills, insulin, and supplies offer free supplies for a short period of time to those who qualify. These are not state or federal programs. The companies voluntarily offer these programs.

Hershey Medical Center patient financial services

Call 717-531-5069 to inquire if you qualify for financial assistance regarding bills incurred for services at the Hershey Medical Center. For prescription affordability assistance, call the Prescription Assistance Program at 717-531-2982.
MY DIABETES TEAM

The following people are on your medical team:

You!
Ultimately, you are the center of your diabetes management. Your team must listen to and understand your needs and feelings regarding the best approach to your diabetes management.

Doctor
Your family doctor will help you take control of your diabetes. He or she may ask you to see a doctor with special training in diabetes (called an endocrinologist).

Nurse Practitioners and Physician Assistants
Nurse practitioners and physician assistants are licensed professionals who can help you manage your diabetes and prescribe medications.

Nurse Educators
Nurse educators are registered nurses (RNs) with special training in caring for people with diabetes. They teach you about diabetes and support you with your self management. You should see a nurse educator at least once a year.

Registered Dietitians
Registered dietitians (RDs) are trained in nutrition. They teach you how the foods you eat affect your blood sugar, how to read food labels, and how to make your healthy meal plan. You should see a registered dietitian at least once a year.

Pharmacists
Pharmacists fill your medications and can answer questions you may have about your medications.

Certified Diabetes Educator (CDE)
A CDE is an experienced health professional who is certified to provide in-depth education and support to people with diabetes. A CDE can help you learn how to manage your diabetes better.

Others on your team
There are many other people who you may want to help you with your care. These include people who check your eyes (ophthalmologist/optometrist), your heart (cardiologist), your feet (podiatrist), your nerves (neurologist), and your kidneys (nephrologists). You also may want to see a counselor or psychologist for extra support. If you need to see a doctor who is a specialist in a medical field not associated with your diabetes, such as a dermatologist or plastic surgeon, it is very important that you tell this doctor you have diabetes.
RESOURCES
PENN STATE HEALTH AND DIABETES ASSOCIATIONS

Penn State Health Milton S. Hershey Medical Center
Adult Endocrinology 717-531-8395
Pediatric Endocrinology 717-531-4751
Adult Diabetes Education 717-531-8395
Adult Nutrition Scheduling 717-531-8885
Ophthalmology (for eyes) 717-531-5690
Podiatry (for feet) 717-531-5638
Heart & Vascular Institute 717-531-8407 Toll Free: 877-467-7484
Nephrology (for kidneys) 717-531-8885
Neurology Program (for nerves) 717-531-3828
Surgical Weight Loss 717-531-7260

American Association of Diabetes Educators (AADE)
800-338-3633 www.diabeteseducator.org

American Diabetes Association (ADA)
1-800-342-2383 www.diabetes.org
1-800-DIABETES

Academy of Nutrition and Dietetics
800-877-1600 www.eatright.org

Additional resources
Centers for Disease Control www.cdc.gov 1-800-CDC-INFO
Joslin Diabetes Center www.joslin.org 1-800-JOSLIN-1
JDRF Diabetes Foundation www.jdrf.org 1-800-458-3343
Cystic Fibrosis Foundation www.cff.org 1-800-FightCF

Emotional/behavioralsupport
Alcoholics Anonymous: 717-234-5390
Behavioral Diabetes Institute: http://behavioraldiabetes.org 1-858-336-8693
Crisis Intervention:
   Dauphin County: 717-232-7511
   Cumberland County: 717-763-2222
   Lancaster County: 717-394-2631
   York County: 717-851-5320
Domestic Violence Hotline: 1-800-932-4632 www.crisistextline.org
Suicide hotline: 1-800-273-8255
**GLOSSARY**

**A1C or glycohemoglobin**—a blood test than can show your average blood sugar over the past two to three months.

ACE Inhibitor—an Angiotensin Converting Enzyme (ACE) Inhibitor is a medication that helps lower blood pressure and protects the kidneys from nephropathy.

ARB—an Angiotensin Receptor Blocker (ARB) is a medication that helps lower blood pressure and protects the kidneys from nephropathy. It works differently than an ACE Inhibitor.

**Blood sugar**—also called glucose. It is the amount of sugar in your bloodstream. The carbohydrates we eat digest and break down into glucose.

**Carbohydrate**—the main source of energy for the body, which comes from foods such as bread, pasta, grains, fruits, milk, desserts, sugar, sweetened beverages, and vegetables. The amount of carbohydrates differs among food types.

**Cardiologist**—a doctor who specializes in the heart and blood vessels and evaluates blood pressure and cholesterol.

**CDE**—an experienced health professional certified to provide diabetes education.

**Cells**—the smallest structural unit of an organism that is capable of independent functioning.

**Charcot foot**—weakening of the foot bones that leads to fractures and deformity. It is often seen in people who have neuropathy.

**Diabetic ketoacidosis (DKA)**—A serious health problem when cells are unable to use sugar for energy because of a lack of insulin. The body breaks down fat for energy, resulting in a waste called ketones. These ketones build up in the blood, appear in the urine, and can lead to coma or death if not treated.

**Dietitian or registered dietitian**—A person trained in nutrition and dietary counseling.

**Endocrinologist**—a doctor who specializes in diabetes and other endocrinology disorders.

**Fasting blood sugar**—the amount of sugar in the blood after not having eaten or drank (anything with calories) for at least eight hours.

**Gastroparesis**—a condition that slows the emptying of the stomach.

**Gestational diabetes**—high blood sugars caused by hormone changes during pregnancy.

**Glucagon**—a hormone made by the pancreas to help the body respond to low blood sugar. Glucagon causes the liver to release stored sugar into the bloodstream.

**Glucagon injection kit**—an injection that contains glucagon and is available through a prescription. It is used for the treatment of severe low blood sugar.

**Glucose**—a type of sugar that, with the help of insulin, is used by our cells for energy.

**Glucose gels**—a cake icing-like product available without a prescription. It is used for the treatment of low blood sugar.

**Glucose log**—A record of blood sugar results and times and doses of medications or insulin. It also includes other factors affecting blood sugar, such as exercise, food, stress, or illness.

**Glucose meter**—also called glucose monitor. A small device that allows a person to check blood sugar.

**Glucose tablets**—a chewable product available without a prescription used for treatment of low blood sugar.

**Hormone**—a chemical substance made in the body that has a specific effect on how certain target cells or organs work.

**Hyperglycemia**—high blood sugar.

**Hypoglycemia**—low blood sugar under 70mg/dL. Low blood sugar must be treated right away with 15g of a rapid acting carbohydrate.

**Fat**—one of the three main nutrients in food. Can be found in butter, oil, meat, and dairy products.

**Hypertension**—when blood flows through the blood vessels with a force greater than normal. This can increase the risk of heart attack, stroke, and kidney problems.

**Impotence** (also called erectile dysfunction)—the inability to get or maintain an erection for sexual activity.
Injection—inserting medications with a needle using a syringe or pen

Injection site rotation—changing the location on the body where medication is injected

Insulin—a hormone that helps the body use glucose for energy

Insulin resistance—the body’s inability to respond to and use insulin properly

Intermediate-acting insulin—a type of insulin that starts to lower blood glucose within 1-2 hours after injection and works strongest 6-12 hours after injection.

Ketones—waste product that is released into the bloodstream when the cells use fat for energy because they cannot take in sugar. When high levels of ketones appear in the urine, it may be a sign of a serious complication called diabetic ketoacidosis (see DKA)

Lancet—a tiny needle used in a lancing device to prick your finger

Lancing device—a tool that makes it easier to collect blood for blood glucose monitoring by using a lancet

Laser eye surgery—a type of laser therapy that is used to treat a damaged area of the eye.

Latent Autoimmune Diabetes in Adults (LADA)—LADA is similar to type 1 diabetes, but occurs as an adult. Insulin is needed to control blood sugar.

Lipodystrophy—is the breakdown or buildup of fat below the surface of the skin causing lumps or small dents. This may be caused by repeated injections of insulin in the same spot.

Liver—a large organ that stores extra glucose and releases it back into the bloodstream when blood sugars are low, among other functions.

Long-term complications—health problems caused from having high blood sugars for a number of years. Examples may include heart disease, eye damage(retinopathy), kidney disease (nephropathy) or nerve damage(neuropathy).

Medical identification—an item that alerts others that you have a medical condition. Available in various forms including bracelets, necklaces, wallet cards, etc.

Meter correlation—a test done at a laboratory that checks to make sure glucose meter is accurate.

Microvascular disease—disease of the smallest blood vessels such as those found in the eyes, nerves, and kidneys.

Nephrologist—a doctor who specializes in treating kidney disease (known as nephropathy) that can result from diabetes.

Nephropathy—when high blood sugars damage the kidneys causing them to leak protein. It can lead to kidney failure.

Neurologist—a doctor who specializes in treating nerve damage, known as neuropathy, that can result from diabetes.

Neuropathy—nerve damage caused by high blood sugars. It causes pain, loss of feeling, and muscle weakness usually in the hands, legs, and feet. It can also affect the heart, bladder, digestive system, and sexual organs.

Nurse Educator—a nurse educator is a registered nurse (RN) with special training in caring for people with diabetes.

Nurse Practitioner—an advanced practice registered nurse who can diagnose and treat diabetes.

Obesity—A body mass index of 30 or more

Oral glucose tolerance test (OGTT)—A test to diagnose pre-diabetes and diabetes. An overnight fast is required; a blood sample is taken; a high glucose beverage is given. Blood samples are then taken approximately every 2 hours and compared with a standard.

Ophthalmologist—a doctor who has attended medical school and specializes in eye care. Ophthalmologists can prescribe corrective lenses, prescribe drugs or perform surgery.
Optometrist—a person who has attended optometry school and specializes in examining the eyes. An optometrist prescribes corrective lenses but cannot perform surgery.

Pancreas—a gland located behind the stomach, releases the hormones insulin and glucagon. It also helps with digestion.

Pancreatitis—inflammation or infection of the pancreas.

Peripheral neuropathy—Nerve damage that affects the feet, legs or hands causing pain, numbness, or a tingling feeling.

Pharmacist—healthcare professional who dispense medications to patients and counsel them on the proper use and adverse effects of that medication.

Physician Assistant—A certified medical professional who can also diagnose and treat diabetes.

Podiatrist—a doctor who specializes in foot care.

Polydipsia—excessive thirst; may be a sign of diabetes

Polyphagia—excessive hunger; may be a sign of diabetes

Polyuria—excessive urination; may be a sign of diabetes

Post-prandial blood glucose—The blood glucose level taken 1-2 hours after eating

Pre-diabetes—diagnosed when a person’s blood glucose level is higher than normal, but not high enough to be called diabetes.

Pre-mixed insulin—a commercially produced combination of two different types of insulin

Pre-prandial blood glucose—The blood glucose level taken before eating

Protein—One of the three main nutrients in food. Found in meat, poultry, fish, eggs and legumes for example.

Proteinuria—the presence of protein in the urine, indicating that the kidneys are not working properly.

Psychiatrist—a doctor who specializes in the treatment of mental difficulties.

Rapid acting insulin—A type of insulin that starts to lower blood glucose within 5-10 minutes after injection and works its strongest 30 minutes to 3 hours after injection and keeps working up to 6 hours.

Regular insulin—A type of insulin that starts to lower blood glucose within 30 minutes after injection. It works its strongest from 2-5 hours after injection and keeps working up to 8 hours.

Retinopathy—eye disease that is caused by damage to the small blood vessels in the retina

Risk factor—anything that raises the chances of a person developing a disease.

Rule of 15—how to treat low blood sugars. Eat 15 grams of a rapid-acting carbohydrate and repeat blood sugar in 15 minutes.

Self-management—The ongoing process of managing diabetes.

Sharps Container—a puncture resistant container used for safe disposal of used needles and syringes

Target blood sugar range—the blood sugar level ideal to prevent long-term health problems.

Team management—a diabetes treatment approach that includes you and healthcare professionals including a doctor, a nurse practitioner, physician assistants, nurse educators, registered dietitians, pharmacists

Type 1 Diabetes—high blood sugars because the body’s immune system attacked the pancreas until it could no longer make insulin.

Type 2 Diabetes—high blood sugars because the body’s unable to make enough insulin or use insulin properly.

Unit—standard measurement used for insulin

Vascular—relating to the body’s blood vessels