Diabetes Management
This book was developed by the diabetes educators at Bronson Healthcare. Resources used in the development include:

American Association of Diabetes Educators

*The Art and Science of Diabetes Self-Management Education Desk Reference*
Fourth Edition 2017

American Diabetes Association

*Standards of Medical Care in Diabetes 2019*
Diabetes Care 2019; 42(Suppl.1):S1-S2
Fifth Edition 2014
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What is Diabetes?
WHAT IS DIABETES?

With diabetes, the body is not able to use glucose (sugar) for energy. When sugar builds up in the blood it is called high blood sugar or hyperglycemia. Diabetes is a lifelong condition that cannot be cured. However, it can be controlled.

There are several types of diabetes:

- Prediabetes
- Gestational Diabetes
- Type 1 Diabetes
- Type 2 Diabetes
- Latent Autoimmune Diabetes of Adulthood (LADA)

Diagnosing Diabetes

There are several ways to test for diabetes:

- **Hemoglobin A1C test**: shows a 2-3 month average of all blood sugar levels.
- **Fasting glucose test**: shows blood sugar level after no food or drink for 8 or more hours.
- **Random glucose test**: may be done any time of the day.
- **2-hour oral glucose tolerance test (OGTT)**: shows blood sugar level two hours after drinking 75 grams of glucose.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>A1C</th>
<th>Fasting Test</th>
<th>Random Test</th>
<th>OGTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>6.5% or higher</td>
<td>126 mg/dL or higher</td>
<td>200 mg/dL or higher</td>
<td>200 mg/dL or higher</td>
</tr>
<tr>
<td>Prediabetes</td>
<td>5.7% - 6.4%</td>
<td>100 - 125 mg/dL</td>
<td>140 - 199 mg/dL</td>
<td>140 - 199 mg/dL</td>
</tr>
<tr>
<td>No Diabetes</td>
<td>Less than 5.7%</td>
<td>Less than 100 mg/dL</td>
<td>Less than 140 mg/dL</td>
<td>Less than 140 mg/dL</td>
</tr>
</tbody>
</table>
**How the Body Uses Energy**
Your body uses sugar for energy. Sugar comes from the food you eat and from your liver. The sugar then enters the bloodstream, causing the pancreas to release insulin. Insulin is a hormone that opens the cells in our body, like a key opening a door. Once the cells are open, the sugar can move from the blood into the cells. Once sugar is in the cells it can be used for energy. With diabetes, either the pancreas does not make enough insulin OR the insulin does not work the way it should. This leads to the sugar staying in the blood, causing high blood sugar levels.

*Insulin* unlocks the door to the cell. This allows the *blood sugar* to enter the cell where it is used for energy.

**Prediabetes**
Prediabetes describes higher than normal blood sugar levels but not as high as diabetes. Prediabetes increases your risk for developing type 2 diabetes. A healthy lifestyle may help to delay or prevent type 2 diabetes.

**Gestational Diabetes**
Gestational diabetes is a form of diabetes diagnosed during pregnancy. It usually goes away after the baby is born. It can increase the risk for prediabetes or type 2 diabetes for the mother later in life.
Type 1 Diabetes
Type 1 diabetes is an autoimmune disorder where the immune system attacks certain cells of the pancreas. These are the cells that make insulin. When these cells are destroyed, they cannot make insulin. Without insulin, sugar builds up in the bloodstream. Type 1 diabetes accounts for about 5-10% of all diabetes.

There is no insulin. The **blood sugar** cannot enter the cell. It is locked out. This causes blood sugar levels to be high.

Type 1 diabetes can develop very quickly. Symptoms include:

- Increased hunger
- Increased thirst
- Unplanned weight loss
- Behavior changes
- Feeling tired
- Increased urination

Type 1 diabetes is usually diagnosed before age 30. The exact cause of type 1 diabetes is unknown. Risk factors for developing type 1 diabetes include:

- Family history
- Certain racial groups: Caucasian
Type 2 Diabetes

Type 2 diabetes is a condition where the pancreas is producing insulin but the insulin is not used properly (insulin resistance). Insulin tries to open the cells to let sugar in. The cells do not open causing blood sugar levels to rise. It is as if you have the key but the lock is broken and you cannot get in. Over time, the pancreas may also start making less insulin (insulin deficiency). Type 2 diabetes accounts for 90-95% of all diabetes.

Insulin tries to unlock the cell. The cell does not open well. Most of the blood sugar cannot enter the cell. This causes blood sugar levels to be high.

Symptoms of type 2 diabetes include:
- Increased hunger
- Increased thirst
- Increased urination
- Blurred vision
- Frequent infections
- Feeling tired
- Dry, itchy skin
- Problems with sexual function
- Slow healing cuts and sores
- Numbness or tingling in hands or feet

Risk factors for developing type 2 diabetes include:
- Being age 45 or older
- Being overweight
- Family history (parent, sibling, or child)
- History of prediabetes
- Diabetes during pregnancy (gestational diabetes)
- Little or no regular physical activity
- Heart disease
- High blood pressure
- Low HDL cholesterol
- High triglycerides
- Polycystic ovary syndrome (PCOS)
- Acanthosis nigricans (dark, thickened skin around neck or armpits)
- Belong to certain ethnic groups: African-American, Asian-American, Latino or Hispanic-American, Native American, or Pacific Islander
Latent Autoimmune Diabetes of Adulthood (LADA)

LADA has aspects of both type 1 and type 2 diabetes. It is also called type 1.5 diabetes. It is a slow progressing form of autoimmune diabetes (Type 1). People with LADA have insulin resistance, but at levels, less than in type 2 diabetes. LADA is usually diagnosed at 25 years of age or older in individuals without a family history of type 2 diabetes. Initial treatment may include oral medicines. Over time, treatment with insulin is needed to manage blood sugar levels.
Healthy Eating
HEALTHY EATING
Eating well is an important tool for managing your diabetes. A well-balanced diet can help you maintain a healthy weight and keep your blood sugar in range. Food is made of three main nutrients that supply your body with energy: carbohydrate, protein and fat. Each of these nutrients does something different in your body.

Carbohydrates (Carbs):
- Are your body’s main source of energy.
- Are broken down into glucose (sugar) to be used by your body’s cells for energy.
- Raise your blood sugar.

Protein:
- Is used by your body to build and repair tissue, like muscles.
- Some foods contain both protein and carbs, like dried beans.
- Has very little effect on blood sugar levels.

Fat:
- Helps your body absorb certain nutrients, like vitamins E and K.
- Helps protect your organs and keep your body warm.
- Has very little effect on blood sugar levels.

Carbohydrate Counting
Since carbs are the nutrient with the biggest effect on blood sugar, people with diabetes often count carbs. Even though carbs raise blood sugar, they should not be avoided. They provide your body with nutrition and energy. Some carb foods are more nutritious than others. Your blood sugar increases when you eat carbs regardless of the type you are eating. Your dietitian will help you with a personal meal plan.

There are three main types of carbohydrate:
- Sugar
- Starch
- Fiber

Foods with carbohydrate include:
- Grains
- Beans and lentils
- Starchy vegetables
- Fruits and fruit juice
- Milk and yogurt
- Sweets and sugary drinks
Reading Labels for Carbohydrate Counting
To understand how many carbs you are eating, it is important to look at the Nutrition Facts label. Focus on the serving size, total carb, dietary fiber, and sugars.

**Serving Size**
The nutrition information on the label is based on the serving size listed at the top. The container may have more than one serving. If you eat double the serving size, the nutrients will be doubled as well. Knowing the serving size will help you determine how much you can eat based on your meal plan.

**Dietary Fiber**
Fiber is a type of carb. It is included in the amount of total carb listed on the label. Fiber is associated with many health benefits, including digestive health and blood sugar control. Aim for 20-35 grams of fiber per day from whole grains, beans, fruits, and vegetables.

**Total Carbohydrate**
This is the total amount of carb in one serving. The total carb includes all starches, dietary fibers, and sugars that will raise your blood sugar. Your dietitian can provide you with the number of carbs that are right for you.

**Sugars**
Sugar is a type of carbohydrate. It is included in the amount of total carb listed on the label. Total sugars include sugars that occur naturally in foods as well as sugars added during processing (added sugars). Natural sugars are found in nutritious foods like fruit and milk. Added sugars are found in less nutritious foods like candy and other sweets. Limit added sugars.
Additional Carbohydrate Counting Tools
In addition to reading nutrition labels, there are other tools to use in finding the amount of carbs in foods.

Smartphone Downloadable Apps (free)

- CalorieKing
- ControlMyWeight (iOS only)
- MyFitnessPal
- Lose It!
- mySugr (diabetes tracker)
- Macros
- MyNetDiary
- Foodvisor

Websites

- Calorie King: http://www.calorieking.com
- WebMD: https://www.webmd.com/diet/healthtool-food-calorie-counter
- Eating Well: http://www.eatingwell.com (recipes)
- Diabetes Food Hub: http://www.diabetesfoodhub.org (recipes)
- American Heart Association: http://www.recipes.heart.org (recipes)

Books

- *The CalorieKing Calorie, Fat & Carbohydrate Counter* by Allan Borushek
How Many Carbohydrates Do I Need?
The amount of carbs that are right varies from person to person. It is based on age, height, weight, gender, activity level and personal preference. Your dietitian will be able to tell you how many carbs are a good amount for you.

Timing of Meals and Snacks
The more you eat at one time, the harder it is to control your blood sugar. Use the following guidelines to try to eat regular meals and snacks:

- Spread carbs throughout the day.
- Avoid skipping meals which can lead to overeating later.
- Eat every 4-5 hours during the day.
- Eat small snacks between meals if you need them.
- Keep your overnight fasting time between 8 and 10 hours.

Carbohydrate Content of Common Foods

<table>
<thead>
<tr>
<th>Grains</th>
<th>Serving Size</th>
<th>Carbohydrate Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagel</td>
<td>Large (4-5 inches)</td>
<td>48-67</td>
</tr>
<tr>
<td>Bread (white or whole wheat)</td>
<td>1 slice</td>
<td>12-22</td>
</tr>
<tr>
<td>Bun (hamburger or hotdog)</td>
<td>1 bun (1.5 oz)</td>
<td>18-23</td>
</tr>
<tr>
<td>Cereal, cooked, unsweetened</td>
<td>½ cup</td>
<td>13-19</td>
</tr>
<tr>
<td>Cereal, granola</td>
<td>½ cup</td>
<td>25-45</td>
</tr>
<tr>
<td>Cereal, ready-to-eat, sweetened</td>
<td>¾ cup</td>
<td>22-30</td>
</tr>
<tr>
<td>Cereal, ready-to-eat, unsweetened</td>
<td>¾ cup</td>
<td>15-22</td>
</tr>
<tr>
<td>Couscous, cooked</td>
<td>½ cup</td>
<td>18-23</td>
</tr>
<tr>
<td>English Muffin</td>
<td>1 whole</td>
<td>22-30</td>
</tr>
<tr>
<td>Pancake or Waffle</td>
<td>1 (4 inches)</td>
<td>11-15</td>
</tr>
<tr>
<td>Pasta, cooked</td>
<td>1 cup</td>
<td>37-45</td>
</tr>
<tr>
<td>Quinoa, cooked</td>
<td>½ cup</td>
<td>20</td>
</tr>
<tr>
<td>Rice, cooked</td>
<td>1 cup</td>
<td>45</td>
</tr>
<tr>
<td>Roll</td>
<td>1 roll (1 oz)</td>
<td>13-15</td>
</tr>
<tr>
<td>Tortilla</td>
<td>2 corn or 1 flour (6 inches)</td>
<td>18-22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beans and Lentils</th>
<th>Serving Size</th>
<th>Carbohydrate Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baked Beans</td>
<td>½ cup</td>
<td>25-30</td>
</tr>
<tr>
<td>Beans, cooked (black, pinto, etc.)</td>
<td>½ cup</td>
<td>13-18</td>
</tr>
<tr>
<td>Lentils or Split Peas, cooked</td>
<td>½ cup</td>
<td>18-21</td>
</tr>
<tr>
<td>Refried beans, canned</td>
<td>½ cup</td>
<td>15-20</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Starchy Vegetables</th>
<th>Serving Size</th>
<th>Carbohydrate Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>1 cup</td>
<td>28-32</td>
</tr>
<tr>
<td>Lima Beans</td>
<td>½ cup</td>
<td>15-20</td>
</tr>
<tr>
<td>Mixed Vegetables</td>
<td>1 cup</td>
<td>15-20</td>
</tr>
<tr>
<td>Peas</td>
<td>½ cup</td>
<td>11-13</td>
</tr>
<tr>
<td>Potato, baked (sweet or white)</td>
<td>1 whole, 4 inches (6 oz)</td>
<td>30-36</td>
</tr>
<tr>
<td>Potato, mashed</td>
<td>½ cup</td>
<td>15-20</td>
</tr>
<tr>
<td>Winter Squash (acorn, butternut, etc.)</td>
<td>1 cup cooked</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruit and Fruit Juice</th>
<th>Serving Size</th>
<th>Carbohydrate Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>Small (4 oz)</td>
<td>15</td>
</tr>
<tr>
<td>Applesauce, unsweetened</td>
<td>½ cup</td>
<td>12</td>
</tr>
<tr>
<td>Apricots, fresh</td>
<td>Medium (2 oz)</td>
<td>6</td>
</tr>
<tr>
<td>Banana</td>
<td>Medium/Large (7 oz)</td>
<td>30</td>
</tr>
<tr>
<td>Berries (strawberries, blueberries, etc.)</td>
<td>1 cup</td>
<td>11-20</td>
</tr>
<tr>
<td>Canned fruit, in light syrup</td>
<td>½ cup</td>
<td>18-20</td>
</tr>
<tr>
<td>Cherries (sweet)</td>
<td>1 cup</td>
<td>18-24</td>
</tr>
<tr>
<td>Dates</td>
<td>Medium/Large (0.3-0.5 oz)</td>
<td>5-10</td>
</tr>
<tr>
<td>Dried fruit (raisins, craisins, etc.)</td>
<td>¼ cup</td>
<td>28-32</td>
</tr>
<tr>
<td>Grapefruit</td>
<td>½ Medium fruit</td>
<td>13</td>
</tr>
<tr>
<td>Grapes</td>
<td>½ cup</td>
<td>13-15</td>
</tr>
<tr>
<td>Juice (apple, orange, grape)</td>
<td>½ cup</td>
<td>11-16</td>
</tr>
<tr>
<td>Kiwi</td>
<td>Small/Medium (2.5 oz)</td>
<td>10-11</td>
</tr>
<tr>
<td>Mango</td>
<td>½ cup</td>
<td>13</td>
</tr>
<tr>
<td>Melon (cantaloupe, watermelon, etc.)</td>
<td>1 cup</td>
<td>11-16</td>
</tr>
<tr>
<td>Orange</td>
<td>Small/Medium (5 oz)</td>
<td>11-15</td>
</tr>
<tr>
<td>Peach or Nectarine</td>
<td>Small/Medium (5 oz)</td>
<td>12-16</td>
</tr>
<tr>
<td>Pear</td>
<td>Small/Medium (6 oz)</td>
<td>18-25</td>
</tr>
<tr>
<td>Pineapple</td>
<td>1 cup</td>
<td>20</td>
</tr>
<tr>
<td>Plum</td>
<td>Small/Medium (3 oz)</td>
<td>7-10</td>
</tr>
<tr>
<td>Prunes, dried</td>
<td>3-4 Medium (1 oz)</td>
<td>17</td>
</tr>
<tr>
<td>Tangerine</td>
<td>Medium (4 oz)</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Snacks</th>
<th>Serving Size</th>
<th>Carbohydrate Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chips (potato or tortilla)</td>
<td>10-15 chips (1 oz)</td>
<td>14-19</td>
</tr>
<tr>
<td>Crackers, snack such as saltines</td>
<td>3-5 crackers (0.5 oz)</td>
<td>10-12</td>
</tr>
<tr>
<td>Crackers, small such as Goldfish</td>
<td>1 oz</td>
<td>18-21</td>
</tr>
<tr>
<td>Granola Bar</td>
<td>1 bar</td>
<td>15-26</td>
</tr>
<tr>
<td>Popcorn</td>
<td>3 cups</td>
<td>14-20</td>
</tr>
<tr>
<td>Pretzel twists, mini</td>
<td>17 (3/4 oz)</td>
<td>17</td>
</tr>
</tbody>
</table>
### Milk and Yogurt

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>Carbohydrate Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk (skim, 1%, 2% or whole)</td>
<td>1 cup</td>
</tr>
<tr>
<td>Almond and nut milks, unsweetened</td>
<td>1 cup</td>
</tr>
<tr>
<td>Almond and nut milks, sweetened</td>
<td>1 cup</td>
</tr>
<tr>
<td>Soy milk, unsweetened</td>
<td>1 cup</td>
</tr>
<tr>
<td>Soy milk, sweetened</td>
<td>1 cup</td>
</tr>
<tr>
<td>Yogurt or Greek Yogurt, plain</td>
<td>6 oz</td>
</tr>
<tr>
<td>Yogurt or Greek Yogurt, sweetened</td>
<td>6 oz</td>
</tr>
</tbody>
</table>

### Sweets and Sugary Drinks

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>Carbohydrate Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brownie or cake, frosted</td>
<td>2-inch square piece</td>
</tr>
<tr>
<td>Candy, hard</td>
<td>3 pieces</td>
</tr>
<tr>
<td>Candy bar, chocolate, snack size</td>
<td>~2 inch</td>
</tr>
<tr>
<td>Cookie</td>
<td>1 large or 2 small</td>
</tr>
<tr>
<td>Coffee Creamer (flavored liquid)</td>
<td>1 Tbsp</td>
</tr>
<tr>
<td>Donut</td>
<td>3-4 inches</td>
</tr>
<tr>
<td>Frozen Yogurt</td>
<td>½ cup</td>
</tr>
<tr>
<td>Gelatin, regular</td>
<td>½ cup</td>
</tr>
<tr>
<td>Ice Cream</td>
<td>½ cup</td>
</tr>
<tr>
<td>Jam or Jelly</td>
<td>1 Tbsp</td>
</tr>
<tr>
<td>Sugar (brown or white), Honey</td>
<td>1 Tbsp</td>
</tr>
<tr>
<td>Syrup, light</td>
<td>2 Tbsp</td>
</tr>
<tr>
<td>Syrup, regular</td>
<td>2 Tbsp</td>
</tr>
</tbody>
</table>

### Combination Foods

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>Carbohydrate Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Entrée, no rice</td>
<td>1 cup</td>
</tr>
<tr>
<td>Burrito, frozen</td>
<td>7 inches long</td>
</tr>
<tr>
<td>Casserole or Hot Dish</td>
<td>1 cup</td>
</tr>
<tr>
<td>Chili, with meat and beans</td>
<td>1 cup</td>
</tr>
<tr>
<td>Hamburger, fast-food</td>
<td>Small</td>
</tr>
<tr>
<td>Lasagna, frozen</td>
<td>3 inches by 4 inches</td>
</tr>
<tr>
<td>Pasta or Potato Salad</td>
<td>1/2 cup</td>
</tr>
<tr>
<td>Pizza, medium (12 inch) thin crust</td>
<td>1 slice (1/8 of pizza)</td>
</tr>
<tr>
<td>Pizza, medium regular or pan crust</td>
<td>1 slice (1/8 of pizza)</td>
</tr>
<tr>
<td>Pizza, medium deep dish</td>
<td>1 slice (1/8 of pizza)</td>
</tr>
</tbody>
</table>
Low or Non-Carbohydrate Foods
Some foods (non-starchy vegetables, proteins, and fats) will have very little effect on blood sugar levels.

### Non-Starchy Vegetables

<table>
<thead>
<tr>
<th>Choose 3 or more servings per day. A serving is 1 cup raw or ½ cup cooked.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asparagus</td>
</tr>
<tr>
<td>Artichokes</td>
</tr>
<tr>
<td>Beets</td>
</tr>
<tr>
<td>Beans (green, wax)</td>
</tr>
<tr>
<td>Broccoli</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
</tr>
<tr>
<td>Cabbage</td>
</tr>
<tr>
<td>Carrots</td>
</tr>
</tbody>
</table>

### Proteins

1 oz of meat or cheese = about 7 grams of protein

<table>
<thead>
<tr>
<th>Choose More Often</th>
<th>Choose Less Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef, 90% or higher lean (chuck, round, sirloin)</td>
<td>Beef, fatty (corned beef, short ribs)</td>
</tr>
<tr>
<td>Beef jerky, ½ oz</td>
<td>Bacon (pork), 2 slices</td>
</tr>
<tr>
<td>Beans and lentils, ½ cup*</td>
<td>Bacon (turkey), 3 slices</td>
</tr>
<tr>
<td>Cottage cheese, ¼ cup</td>
<td>Cheese (American, cheddar, Parmesan)</td>
</tr>
<tr>
<td>Cheese (less than 3 g fat per oz)</td>
<td>Deli meats (bologna, pastrami, hard salami)</td>
</tr>
<tr>
<td>Deli meats (less than 3 g fat per oz)</td>
<td>Egg, 1 egg</td>
</tr>
<tr>
<td>Edamame, shelled, ½ cup*</td>
<td>Fried fish</td>
</tr>
<tr>
<td>Egg whites or egg substitute, ¼ cup</td>
<td>Hot dog, 1 hot dog</td>
</tr>
<tr>
<td>Fish (tuna, cod, tilapia, salmon, etc.)</td>
<td>Lamb (ground, rib roast)</td>
</tr>
<tr>
<td>Game (venison, rabbit, buffalo)</td>
<td>Pork (cutlet, ground, shoulder roast)</td>
</tr>
<tr>
<td>Hummus, 1/3 cup*</td>
<td>Poultry with skin (fried chicken, turkey, duck)</td>
</tr>
<tr>
<td>Lamb (chop, leg, or roast)</td>
<td>Sausage (bratwurst, chorizo, Italian, Polish)</td>
</tr>
<tr>
<td>Nut butters (peanut butter, etc.), 1 Tbsp</td>
<td></td>
</tr>
<tr>
<td>Organ meats (liver, kidney, heart)</td>
<td></td>
</tr>
<tr>
<td>Pork (ham, tenderloin, loin chop)</td>
<td></td>
</tr>
<tr>
<td>Poultry without skin (turkey, chicken)</td>
<td></td>
</tr>
<tr>
<td>Sausage (less than 3 g fat per oz)</td>
<td></td>
</tr>
<tr>
<td>Shellfish (lobster, scallops, shrimp, crab)</td>
<td></td>
</tr>
<tr>
<td>Tofu, ½ cup*</td>
<td></td>
</tr>
<tr>
<td>Tempeh, plain unflavored, ¼ cup*</td>
<td></td>
</tr>
<tr>
<td>Veggie burger, 1 patty*</td>
<td></td>
</tr>
</tbody>
</table>

*These foods may also contain carbohydrates
<table>
<thead>
<tr>
<th>Unsaturated Fats: Choose More Often</th>
<th>Saturated Fats: Choose Less Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocado, 2 Tbsp mashed or 1 oz</td>
<td>Bacon (pork or turkey), 1 slice</td>
</tr>
<tr>
<td>Margarine, tub spread, 1-2 tsp</td>
<td>Butter, 1 tsp</td>
</tr>
<tr>
<td>Mayonnaise, regular, 1 tsp</td>
<td>Butter blends made with oil, 1 ½ tsp</td>
</tr>
<tr>
<td>Mayonnaise, reduced fat, 1 Tbsp</td>
<td>Coconut, sweetened, shredded, 2 Tbsp</td>
</tr>
<tr>
<td>Nut butter (peanut butter, etc), 1 ½ tsp</td>
<td>Coconut oil, palm, palm kernel oil, 1 tsp</td>
</tr>
<tr>
<td>Nuts (almonds, walnuts, etc), 4-10 nuts or ~1 Tbsp</td>
<td>Coconut milk, regular, 1 ½ Tbsp</td>
</tr>
<tr>
<td>Oils (canola, olive, peanut, avocado), 1 tsp</td>
<td>Coconut milk, light, 1/3 cup</td>
</tr>
<tr>
<td>Oil based salad dressing, 1 Tbsp</td>
<td>Cream cheese, regular, 1 Tbsp</td>
</tr>
<tr>
<td>Olives, 8-10 large</td>
<td>Cream cheese, reduced fat, 1 ½ Tbsp</td>
</tr>
<tr>
<td>Seeds (sunflower, pumpkin, flax, etc.), 1 Tbsp</td>
<td>Cream salad dressing, 1 Tbsp</td>
</tr>
<tr>
<td>Tahini or sesame paste, 2 tsp</td>
<td>High-fat meats and poultry skin</td>
</tr>
<tr>
<td></td>
<td>Heavy cream, 1 Tbsp</td>
</tr>
<tr>
<td></td>
<td>Lard or shortening, 1 tsp</td>
</tr>
<tr>
<td></td>
<td>Sour cream, regular, 2 Tbsp</td>
</tr>
<tr>
<td></td>
<td>Sour cream, reduced fat or light, 3 Tbsp</td>
</tr>
</tbody>
</table>

**Artificial Sweeteners and Sugar Alcohols**

Artificial sweeteners are also known as sugar substitutes. They are food additives used to sweeten foods without the use of sugar. Because they do not contain sugar, they contain few or no calories. They taste much sweeter than sugar and can be used in smaller amounts when used in place of sugar. Foods that contain artificial sweeteners may still contain carbs. It is important to read food labels to make sure these foods fit within your meal plan. The most common artificial sweeteners are:

- Sucralose (Splenda®)
- Stevia (Sweetleaf™, Truvia®)
- Aspartame (NutraSweet®, Equal®)
- Saccharin (Sweet’N Low®)
- Monkfruit
Sugar alcohols are a reduced calorie sweetener found in products such as ice cream, cookies, candy and gum. They are found in foods labeled as “sugar-free” or “no sugar added”. Sugar alcohols may cause gas, bloating or diarrhea and typically need to be eaten in moderation. The most common sugar alcohols are:

- Erythritol
- Maltitol
- Mannitol
- Sorbitol
- Xylitol
- Isomalt

Foods with sugar alcohols contain carbs and will still affect blood sugar. It is important to read food labels for total carbs to make sure these foods fit within your meal plan. If you eat a lot of foods with sugar alcohols, talk to your diabetes educator or dietitian about how to count carbs for these foods.

*Foods that contain sugar substitutes and sugar alcohols may still contain carbohydrates*
Managing Portions
When you are trying to eat healthy it is important to know how much you are eating. It is easy to over or under estimate portion sizes. Eating too much may lead to weight gain and uncontrolled blood sugar. Eating too little may also lead to uncontrolled blood sugar as well as poor nutrition and lack of energy. Knowing portion sizes will help you eat a balanced diet.

The most accurate way to know how much you are eating is to measure or weigh your food. You can use measuring cups and spoons or a food scale. When this is not an option, portions can also be estimated using common household items.

Tips for managing portions:

Pay attention to your physical appetite and be mindful of why you are eating
- Sometimes we eat for reasons other than hunger such as stress, boredom, or social events.
- If you often eat for reasons other than hunger, identify the reason and work towards finding a solution. For example, if you eat when you feel stressed, replace eating with a stress-relieving activity such as going for a walk or calling a friend.
Tracking your meals and snacks can help you be more mindful of your food habits.

- You can write down food choices on paper or use technology such as a smartphone or tablet app.
- If you find there are certain foods you tend to overeat, try to change how you consume these foods. For example, if you overeat ice cream, perhaps avoid keeping ice cream at home. Instead, allow yourself to enjoy a small portion of ice cream at a restaurant once in a while.
- Treats are okay, just think about “how much” and “how often” you enjoy them.

Using smaller plates, bowls, and cups can also help you manage your portions.

- Typically, the larger your dish, the more food you will eat.
- A plate no larger than 9 inches will help you choose the right portions.
- Eat slowly and savor every bite.

Eating Balanced Meals

Balanced meals and snacks contain carbs, protein, and fat. Pairing these nutrients together can help you control blood sugars and maintain overall health. You can use the “Plate Method” as a tool to help you build balanced meals in the right portions.

Choose non-starchy vegetables like carrots, broccoli, cucumber, green beans, lettuce, and tomatoes.

A 9 inch plate is the perfect size to help you choose the right portions.

A small piece of fruit or a serving of milk or yogurt may be added.

Choose lean proteins such as chicken or turkey, fish, lean cuts of beef and pork, tofu, eggs, and low-fat cheese.

Include grains and starchy vegetables like potatoes and corn. Try to make half of your grains whole grains such as brown rice, whole grain bread and pasta.
Eating Balanced Snacks
A balanced snack contains carbs, protein and fat in the right portions. Use this guide to choose one food from each column for some balanced snack ideas.

<table>
<thead>
<tr>
<th>Carbohydrate: 15 grams</th>
<th>Protein/Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crackers (Ritz®/Triscuit), 4-5</td>
<td>Cheese, 1 oz</td>
</tr>
<tr>
<td>Pretzels, ~17 mini</td>
<td>Nuts (ex: almonds, walnuts), 2 Tbsp</td>
</tr>
<tr>
<td>Bread or Toast, 1 slice</td>
<td>Hummus, 2 Tbsp.</td>
</tr>
<tr>
<td>Rice Cake, 2</td>
<td>Hard Boiled Egg</td>
</tr>
<tr>
<td>Cereal, 3/4 cup (dry)</td>
<td>Beef/Turkey Jerky, 1 stick</td>
</tr>
<tr>
<td>Oatmeal (unsweetened), ½ cup cooked</td>
<td>Peanut Butter, 1 Tbsp</td>
</tr>
<tr>
<td>Tortilla, one 6&quot; flour</td>
<td>Cottage Cheese, 1/2 cup</td>
</tr>
<tr>
<td>Tortilla Chips, 10-15</td>
<td>Tuna/Chicken Salad, 1/2 cup</td>
</tr>
<tr>
<td>Popcorn, 3 cups</td>
<td>Olives, 10 large</td>
</tr>
<tr>
<td>Apple, small</td>
<td>Lunchmeat, 1 oz</td>
</tr>
<tr>
<td>Banana, half</td>
<td>Cooked Chicken or Turkey, 1 oz</td>
</tr>
<tr>
<td>Grapes, 1/2 cup</td>
<td>Avocado, 2 Tbsp mashed</td>
</tr>
<tr>
<td>Berries, 1 cup</td>
<td></td>
</tr>
<tr>
<td>Melon, 1 cup</td>
<td></td>
</tr>
<tr>
<td>Sweet Cherries, ½ cup</td>
<td></td>
</tr>
<tr>
<td>Clementine, small</td>
<td></td>
</tr>
<tr>
<td>Dried Fruit, 1/8 cup</td>
<td></td>
</tr>
<tr>
<td>Milk, 1 cup</td>
<td></td>
</tr>
<tr>
<td>Yogurt, 5.3 oz.</td>
<td></td>
</tr>
</tbody>
</table>

Dining Out
Eating balanced meals in the right portions can be a challenge when eating away from home. Try to limit how often you dine out. The following tips can help you make healthy choices.

Be prepared and know your meal plan
- Many restaurants provide nutrition information online.
- Before you get to the restaurant, select a few meal options that fit within your personal meal plan.
- Do not skip meals or snacks before dining out. This will help you avoid eating too much at the restaurant.
Estimate portions even if you cannot measure
- Restaurants often serve portions that are large enough for two people – split a meal with a friend.
- Do not overeat – ask for a take home box at the beginning of the meal.

Ask for foods made to order
- Ask for salad dressing or sauces on the side.
- Order meats that are baked, grilled or roasted instead of fried.

Alcohol
Alcohol can be included in a healthy meal plan if your blood sugar levels are within your target range. You will need to drink alcohol in moderation. Make sure your provider has told you it is safe to drink alcohol.

Know how alcohol affects blood sugar
- Alcohol can cause blood sugar to be high or low.
- The effect on blood sugar can vary based on the type of alcoholic beverage, the amount you drink, the food you eat and the diabetes medicines you are taking.

Drink alcohol in moderation
- Women should limit alcoholic beverages to no more than one serving per day.
- Men should limit alcoholic beverages to no more than two servings per day.
- A serving of alcohol is 1.5 ounces of liquor, 5 ounces of wine or 12 ounces of beer.

Be safe when drinking alcohol
- Alcohol can interfere with some medicines. Check with your provider or pharmacist to make sure it is safe for you to drink alcohol.
- Drink alcohol with a meal or snack, never on an empty stomach.
- Check your blood sugar more often when you are drinking.

Know how alcohol affects your cholesterol and weight
- Alcohol can raise your cholesterol and triglycerides. If your triglycerides are high, you should reduce or stop drinking alcohol.
- Alcohol contains calories but little nutrition. Drinking too much alcohol can make it hard to maintain a healthy weight.
Non-Alcoholic Beverages
Staying hydrated is an important part of a healthy lifestyle. However, your drink choices can affect your blood sugar levels. Drinks made with sugar will raise blood sugar levels.

Non-Caloric Beverages → Choose Most Often
- Water, plain or flavored with lemon, lime, or berries
- Unsweetened tea, unsweetened flavored sparkling water

Beverages sweetened with artificial sweeteners → Limit Intake
- Diet soda-pop, low-calorie powdered drink mixes
  Sugar-free energy drinks, low or no-calorie sports drinks

Beverages sweetened with sugar → Avoid (unless treating a low blood sugar)
- Regular soda-pop, juice, sports drinks, sweetened tea
- Sweetened powdered drink mixes, sweetened coffee drinks

Meal Planning for Heart Health
Diabetes increases your risk for heart disease. Many things can affect heart health, including diet. A heart healthy diet includes fruits, vegetables, whole grains and healthy fats. It limits sodium, alcohol, unhealthy fats and excess sugar.

Dietary Fats
Cholesterol levels are affected by the dietary fats you eat. Some types of fats are better for your heart health than others. There are three main types of fats: unsaturated, saturated and trans fats.

Unsaturated Fats → Choose Most Often
- Improve heart health by lowering bad cholesterol levels (LDL)
- Food sources: olive oil, vegetable oil, avocado, nuts, seeds, peanut butter, mayonnaise

Saturated Fats → Limit Intake
- Increase risk for heart disease by raising bad cholesterol (LDL)
- Food sources: butter, heavy cream, sour cream, gravy, high fat meats or poultry, cheese, coconut oil

Trans Fats → Avoid
- Increase risk for heart disease by raising bad cholesterol (LDL), lowering good cholesterol (HDL)
- Food sources: fried foods, pastries, stick margarine, shortening, some cookies and crackers

Revised 06/2023
Sodium (Salt)
Blood pressure is affected by your intake of sodium. Too much sodium can cause your body to hold extra water. This can lead to high blood pressure and strain on your heart. Sodium is mostly consumed as table salt.

High sodium food items
- Boxed and frozen foods
- Canned beans and vegetables
- Canned soups and broths
- Tomato sauce
- Crackers, chips, and popcorn
- Salted nuts and seeds
- Hot dogs, sausage, deli meat
- Pickles
- Olives
- Restaurant foods

Tips for reducing sodium intake
- Avoid high sodium foods or eat smaller portions.
- Buy fresh, frozen or no-added-salt canned vegetables.
- Rinse canned foods with water to reduce sodium by about half.
- Cook pasta, rice and hot cereal without salt.
- Use herbs, spices and salt-free seasoning blends.
- Be careful – foods labeled with terms like “reduced sodium”, “less sodium” or “light in sodium” may still be high in sodium.
## Reading Labels for Heart Health
To understand how heart healthy a food is, it is important to look at the Nutrition Facts label.
Focus on the serving size, total fat, saturated fat, trans fat, unsaturated fats and sodium.

### Serving Size
The nutrition information on the label is based on the serving size listed at the top.
The container may have more than one serving.
If you eat double the serving size, the nutrients will be doubled as well.

### Total Fat
This is the total amount of fat in one serving.
The total fat includes all types of fats: saturated, trans and unsaturated fats.

### Sodium
Most people should limit the amount of sodium they have to 2,300 mg or less per day.
If you have high blood pressure, you may need even less.
For reference, 1 teaspoon of table salt has 2,300 mg of sodium.

### Trans Fat
Try to avoid eating foods that contain trans fat.
The best way to know if a food contains trans fat is to read the ingredient list.
If you see the words “hydrogenated oil” or “partially hydrogenated oil”, choose a different food.

### Unsaturated Fats
Polyunsaturated and monounsaturated fats are the two types of unsaturated fats.
By law, they are not required to be listed on the nutrition label.
If they are not listed, you can subtract the saturated and trans fats from the total fat.
The remaining fat is unsaturated.

### Saturated Fat
Limit your intake of saturated fat, especially if you have heart disease or want to lower your bad cholesterol (LDL).

### Nutrition Facts

<table>
<thead>
<tr>
<th>Amount per serving</th>
<th>% Daily Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories 130</td>
<td></td>
</tr>
<tr>
<td>Total Fat 5g</td>
<td>6%</td>
</tr>
<tr>
<td>Saturated Fat 3g</td>
<td>15%</td>
</tr>
<tr>
<td>Trans Fat 0g</td>
<td>0%</td>
</tr>
<tr>
<td>Polyunsaturated Fat 0g</td>
<td></td>
</tr>
<tr>
<td>Monounsaturated Fat 1.5g</td>
<td></td>
</tr>
<tr>
<td>Cholesterol 20mg</td>
<td>7%</td>
</tr>
<tr>
<td>Sodium 135mg</td>
<td>6%</td>
</tr>
<tr>
<td>Total Carbohydrate 13g</td>
<td>5%</td>
</tr>
<tr>
<td>Dietary Fiber 0g</td>
<td>0%</td>
</tr>
<tr>
<td>Total Sugars 12g</td>
<td></td>
</tr>
<tr>
<td>Includes 0g Added Sugars 0%</td>
<td></td>
</tr>
<tr>
<td>Protein 8g</td>
<td>16%</td>
</tr>
</tbody>
</table>

*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.
BEING ACTIVE

Benefits of Being Active
Activity is an important part of diabetes management. Being active can help you maintain a healthy weight and keep your blood sugar in range.

Activity improves diabetes control by:
- Aiding in weight loss
- Helping your insulin work better
- Lowering blood sugar levels

Other benefits of activity may include:
- Managing stress and depression
- Lowering your risk of heart disease
- Raising good cholesterol levels
- Lowering bad cholesterol and triglycerides
- Lowering blood pressure
- Building strong and healthy bones
- Decreasing body fat
- Increasing muscle

Types of Physical Activity
There are different types of exercise: aerobic, resistance and flexibility training. All types of activity are good for you. It is important to find an activity that is best for you and that you enjoy.

**Aerobic Activity:**
- Bike riding
- Walking
- Swimming
- Running
- Yardwork
- Dancing
- Skiing

**Resistance Training:**
- Push-ups
- Crunches or sit-ups
- Squats
- Lunges
- Lifting weights
- Resistance (stretch) bands

**Flexibility Training:**
- Yoga
- Stretching
- Pilates
- Tai Chi
Levels of Physical Activity
The level of intensity from the same exercise will be different for everyone. For example, going for a brisk 30 minute walk may be light intensity for some and vigorous intensity for others. An easy way to know how intense you are exercising is to do the “talk test”. Try talking while you exercise and use the chart below to determine your level of intensity.

![Levels of Physical Activity Chart](chart.png)

Guidelines
While any physical activity is good, adults with diabetes should aim for the following:

- **Aerobic Activity:**
  - 150 minutes per week, moderate intensity or 75 minutes per week of vigorous intensity

- **Resistance Training:**
  - 2-3 times per week

- **Flexibility Training:**
  - 2-3 times per week, for older adults

- **Move More, Sit Less:**
  - Get up and move every 30 minutes

Getting Started
There are several things you should think about before beginning a new exercise routine.

**Talk with Your Provider**
- People with diabetes may also have other health concerns.
- Check with your provider to see if exercise is the right thing for you.

**Identify Barriers**
- Ask yourself, “What makes it hard for me to exercise?”
- Then ask yourself, “Is there anything that can be done about this?”

**Start Slowly**
- Remember, doing some physical activity, even a small amount, is better than nothing.
- Start with 5-10 minutes a few times a week and gradually add more.
- Be as active as you can.
Effects of Exercise on Blood Sugar
Exercise usually lowers blood sugar levels. The effects of exercise on blood sugar can last up to 12 to 24 hours after the activity. Check your blood sugar before, during and after exercise to learn how your blood sugar responds to physical activity.

Exercise Precautions
People with diabetes should take certain precautions when engaging in physical activity.

Prevent and Treat Low Blood Sugar
- Wear medical identification that lets others know you have diabetes in an emergency.
- Carry a sugar source such as glucose tablets, glucose gel or juice in case your blood sugar drops.
- You may need to eat a snack before exercise.
- If you take insulin, avoid injecting insulin into an area of the body you will be directly moving.

Avoid Vigorous Exercise When Blood Sugar is High
- At a certain blood sugar level, vigorous exercise can be unsafe and may increase blood sugar. If your blood sugar is over 300 mg/dL avoid vigorous aerobic activity.
- Try to figure out why your blood sugar is high.
- Make sure your blood sugar is back in your target range before doing any vigorous activity.

Take Care of Your Feet
- Wear the appropriate shoes and socks.
- Check your feet for blisters or sores before and after exercise.
- Exercise on a smooth surface.
- If you have neuropathy in your feet, avoid high impact activities like running and jumping.
- Try low impact activities such as swimming, riding a stationary bike or chair exercises.

If You Have Retinopathy
- Avoid strenuous activities and high impact aerobic activity.
- Try activities such as swimming, walking, stationary bike or chair exercises.

Stay Hydrated
- Drink water before, during and after exercise.
- Do NOT exercise in very hot, humid weather or in smog.
Warm Up and Cool Down

- Warm up for 5-10 minutes before exercise to reduce your chance of injury.
- Cool down for 5-10 minutes after exercise to return your heart rate back to normal.
- Try stretching or slow walking as a warm up or cool down activity.
MONITORING

Before having diabetes, your blood sugar stayed in a normal range no matter what you ate, drank or how active you were. For someone with diabetes, many things can cause blood sugar levels to go higher or lower than normal.

Tracking Blood Sugar

- You can check your own blood sugar by using a blood sugar meter called a glucometer. This meter uses a small amount of blood to show how much sugar is in your blood at that time.
- You can check your own blood sugar by using a continuous glucose monitor (CGM). This monitors the amount of sugar in your fluid underneath your skin.
- You can see how well your blood sugar is controlled by getting a lab test called hemoglobin A1C. This test measures the amount of sugar that attached to your red blood cells over the last 2-3 months. The more sugar that has attached to the cell, the higher your result.

Self-Monitoring Blood Sugar

What monitor do you use?

- It is important to check with your insurance company to see which device is covered.
- Work with your diabetes educator or provider’s office to choose the best device for you.

Options where to get your supplies:

- Pharmacy
- Medical supply service
- Directly from the company

When to check your blood sugar:

- Ask your provider about the best times to check your blood sugar.
- Check your blood sugar to see how it’s affected by food, stress, activity or illness.
- Check your blood sugar when you feel symptoms of low or high blood sugar.
- If you take insulin, check your blood sugar before you give yourself an injection.

What to do with your blood sugar results:

- Write down your blood sugar numbers in a logbook.
- Take your meter and logbook to appointments with your provider and diabetes educator.
How to use your blood sugar meter:

- Read the user guide for your meter and follow the directions to set it up.
- Wash your hands with soap and warm water before testing.
- Follow the steps below.

1. Gather your supplies: meter, lancing device, test strip, and lancet (needle).
2. Remove the cap from the lancing device and put in a lancet (needle).
3. Uncover the needle of the lancet by removing safety cover
4. Replace the lancing device cap.
5. Insert a test strip into the meter.
6. Place the lancing device on the side of any fingertip and push the button to poke your finger.
7. Gently squeeze your finger from palm to fingertip to get a drop of blood.
8. Touch drop of blood to the test strip. Your blood sugar result will appear on the meter in a few seconds.

Your meter may be different. If you have questions, call the number on the back of the meter or talk to your provider, pharmacist or diabetes educator.
How to Dispose of Sharps

Do:
• Place test strips in the regular trash.
• Place all sharps in a puncture proof container, such as an empty laundry detergent container.
• When the container is almost full, put the cap of the container on tightly.

Do Not:
• Place sharps in a recyclable plastic or glass container and send them to a recycling center.
• Let small children handle or play with sharps containers.
• Flush needles, syringes or lancets down the toilet.
• Discard needles or lancets in the trash.

You need to check with your county’s health department about where you can put the containers with used sharps.

http://safeneedledisposal.org/state-search/?state=MI
Continuous Glucose Monitoring
A continuous glucose monitor (CGM) measures your blood sugar levels during the day and night. It can alert you if your blood sugar goes too low or too high. It measures your sugar level as often as every 1 to 5 minutes. It also shows the direction your blood sugar is heading and how fast. A CGM can help you better understand how things like food, medicine, physical activity, and stress affect your blood sugar.

What is the difference between a CGM and a Blood Glucose Meter?
A CGM measures the amount of sugar in the fluid underneath the skin. A blood glucose meter is reading the amount of sugar in your blood. This means that you may notice a difference in a CGM reading and a reading taken from a blood sugar meter (glucometer). This is normal. You will see changes in your blood sugar levels on the meter before you see changes in the CGM reading. It is still important to have a blood glucose meter even if you use a CGM. Check to see if your symptoms match what you are seeing on your CGM. If your symptoms do not match, check your blood sugar with your blood glucose meter.

Who should use a CGM?
There are several CGM options available. Not everyone who has diabetes needs to use a CGM. Your provider can help you understand if a CGM is right for you.

Does Insurance cover CGM’s?
Medicare and Medicaid will cover CGM’s if you take insulin at least once a day. Some commercial insurances will cover CGM’s even if you do not take insulin. Check with your provider for more information.

Blood Sugar Targets
The tables below show blood sugar targets from the American Diabetes Association (ADA). Your blood sugar targets may vary depending on many things like your age and chronic health conditions. Ask your provider about YOUR blood sugar targets.
**Adults less than 65 years old with Diabetes**

<table>
<thead>
<tr>
<th>Test Time</th>
<th>Target Range (ADA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting and before meals</td>
<td>80-130 mg/dL</td>
</tr>
<tr>
<td>2 hours after the start of meal</td>
<td>Less than 180 mg/dL</td>
</tr>
<tr>
<td>Bedtime</td>
<td>110-150 mg/dL</td>
</tr>
<tr>
<td>A1C</td>
<td>Less than 7%</td>
</tr>
</tbody>
</table>

**Adults Age 65+ Years with Diabetes**

<table>
<thead>
<tr>
<th>Health Status</th>
<th>Fasting or Before Meals</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy: few co-existing chronic illnesses</td>
<td>80-130 mg/dL</td>
<td>80-180 mg/dL</td>
</tr>
<tr>
<td>Complex: multiple co-existing chronic illnesses</td>
<td>90-150 mg/dL</td>
<td>100-180 mg/dL</td>
</tr>
<tr>
<td>Very Complex: long-term care or end-stage chronic illnesses</td>
<td>100-180 mg/dL</td>
<td>110-200 mg/dL</td>
</tr>
</tbody>
</table>

**Continuous Glucose Monitoring (CGM) Goals**

You will get a report from your CGM. The goals below outline the percent of the time you want to be in these ranges. It will vary if you are at high risk for low blood sugar.

<table>
<thead>
<tr>
<th>Blood Sugar Range</th>
<th>Adults</th>
<th>High Risk for Low Blood Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High: over 250 mg/dL</td>
<td>Less than 5%</td>
<td>Less than 10%</td>
</tr>
<tr>
<td>High: over 180 mg/dL</td>
<td>Less than 25%</td>
<td>Less than 50%</td>
</tr>
<tr>
<td>Time in Range: 70-180 mg/dL</td>
<td>70% of higher</td>
<td>50% or higher</td>
</tr>
<tr>
<td>Low: less than 70 mg/dL</td>
<td>Less than 4%</td>
<td>Less than 1%</td>
</tr>
<tr>
<td>Very Low: less than 54 mg/dL</td>
<td>Less than 1%</td>
<td></td>
</tr>
</tbody>
</table>
Hemoglobin A1C

Hemoglobin A1C is a lab test that can be done at any time of day. The results of this test show a 2-3 month average of all blood sugar levels. This is given as a percentage. That percentage gives you an estimated average blood sugar. This test should be done:

- every 3 months if your diabetes is not well controlled, or at least twice a year if you are meeting your treatment goals.

<table>
<thead>
<tr>
<th>A1C Percentage (%)</th>
<th>Estimated Average Blood Sugar (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td>126</td>
</tr>
<tr>
<td>6.5</td>
<td>140</td>
</tr>
<tr>
<td>7.0</td>
<td>154</td>
</tr>
<tr>
<td>7.5</td>
<td>169</td>
</tr>
<tr>
<td>8.0</td>
<td>183</td>
</tr>
<tr>
<td>8.5</td>
<td>197</td>
</tr>
<tr>
<td>9.0</td>
<td>212</td>
</tr>
<tr>
<td>9.5</td>
<td>226</td>
</tr>
<tr>
<td>10.0</td>
<td>240</td>
</tr>
<tr>
<td>10.5</td>
<td>255</td>
</tr>
<tr>
<td>11.0</td>
<td>269</td>
</tr>
<tr>
<td>11.5</td>
<td>283</td>
</tr>
<tr>
<td>12.0</td>
<td>298</td>
</tr>
</tbody>
</table>

The American Diabetes Association recommends an A1C of 7% or less to reduce your risk of problems. However, A1C goals can be different for different people. Goals may change as you age. Ask your provider for YOUR A1C goal.

Adults Age 65+ Years

<table>
<thead>
<tr>
<th>Health Status</th>
<th>A1C Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy: few co-existing chronic illnesses</td>
<td>Less than 7 to 7.5%</td>
</tr>
<tr>
<td>Complex: multiple co-existing chronic illnesses</td>
<td>Less than 8%</td>
</tr>
<tr>
<td>Very Complex: long-term care or end-stage chronic illnesses</td>
<td>Discuss with provider</td>
</tr>
</tbody>
</table>
High Blood Sugar (Hyperglycemia)
Too much sugar in your blood can be a problem. Generally, a high blood sugar is a blood sugar number of 180 mg/dL or higher, depending on your target. A high blood sugar usually happens slowly.

<table>
<thead>
<tr>
<th>Signs and Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very thirsty</td>
</tr>
<tr>
<td>Frequent urination</td>
</tr>
<tr>
<td>Weak or tired</td>
</tr>
<tr>
<td>Muscle cramps</td>
</tr>
<tr>
<td>Nausea</td>
</tr>
<tr>
<td>Vomiting</td>
</tr>
</tbody>
</table>

Possible Causes
- Too much food or drink with more carbs than usual
- Not being active
- Not enough medicine, like insulin or oral diabetes medicines
- Side effects from other medicines
- Stress, which produces hormones that raise blood sugar
- Illness, which causes your body to release hormones that raise blood sugar
- Not drinking enough water causing dehydration
- Menstrual cycle, which causes hormone level changes
- Short or long term pain, which causes your body to release hormones that raise blood sugar

Treatment
- Drink 1 cup (8 oz.) of water every hour and recheck blood sugar in 4 hours
- Take your diabetes medicines as directed
- Eat foods lower in carbs
- Practice stress relief techniques
- Exercise (follow safe exercise rules)
- If high blood sugars continue over 3 or more days OR you have ketones in your urine:
  - Call your provider – You may need to change your plan of care or you may need to change your medicines
Sick Day Guidelines
When sick, your blood sugar may be higher or lower than normal. Follow these guidelines to stay safe:

- If blood sugar is 300 mg/dL or higher, drink sugar-free fluids (water, sugar-free soft drinks, tea)
- If vomiting or unable to eat solid food, drink fluids with carbs (juice, sports drinks) equal to the amount of carbs you would normally eat
- Check your blood sugar every 2-4 hours
- Never skip your diabetes medicine (pills/insulin)
- Take your temperature
- Call your provider if you have:
  - vomiting or diarrhea
  - fever of 100.5°F or higher
  - your blood sugar stays too high or too low
- Call 911 if you have:
  - trouble breathing
  - a change in mental status
  - chest pain

Diabetic Ketoacidosis (DKA)
Diabetic ketoacidosis or DKA is a dangerous condition that can occur when blood sugar levels are too high. It occurs more often in people with type 1 diabetes. When your blood sugar is high, your cells are not getting the sugar they need for energy. With diabetes, the cells can’t always get the sugar from your blood into the cells. This causes your body to use fat for energy. When fat is used for energy, the body makes ketones. Having ketones is a warning sign that your blood sugar is too high or that you are getting sick. This needs to be treated right away.

<table>
<thead>
<tr>
<th>Early Symptoms of DKA:</th>
<th>Late Symptoms of DKA:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thirst</td>
<td>Stomach pain</td>
</tr>
<tr>
<td>Frequent urination</td>
<td>Weakness</td>
</tr>
<tr>
<td>Very tired</td>
<td>Nausea</td>
</tr>
<tr>
<td>Dry mouth</td>
<td>Vomiting</td>
</tr>
<tr>
<td>Blurry vision</td>
<td>Fruity smelling breath</td>
</tr>
</tbody>
</table>
Preventing DKA
Take the following steps when your blood sugar is 240 mg/dL or higher or you are sick:
- Check your blood sugar level every 2-4 hours or as directed by your provider.
- Check for ketones.
- Drink sugar-free fluids such as water, sugar-free soft drinks, tea, and clear soup.
- Follow sick day guidelines if you cannot eat solid food.

Checking for Ketones
Ketone strips may be prescribed by your provider. Be sure to follow the instructions for testing.
- To check urine for ketones:
  o Urinate on the strip.
  o Compare color change on strip to chart on container after waiting specified amount of time on testing instructions.

Let your provider know if:
- Ketones are present in your urine.
- You do not know how to adjust insulin for ketones.
- You have diarrhea or vomiting lasting for more than 4 hours.
- Your blood sugar is higher than 240 mg/dL two or more times in a 24 hour period.

Low Blood Sugar (Hypoglycemia)
Too little sugar in your blood can be a problem. A low blood sugar is a number of 70 mg/dL or less. A low blood sugar can happen very quickly.

<table>
<thead>
<tr>
<th>Signs and Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaking</td>
</tr>
<tr>
<td>Sweating</td>
</tr>
<tr>
<td>Hungry</td>
</tr>
<tr>
<td>Fast heartbeat</td>
</tr>
<tr>
<td>Vision changes</td>
</tr>
<tr>
<td>Weak or Tired</td>
</tr>
<tr>
<td>Headache</td>
</tr>
<tr>
<td>Grouchy</td>
</tr>
<tr>
<td>Anxious</td>
</tr>
<tr>
<td>Dizzy</td>
</tr>
</tbody>
</table>

Possible Causes
- Not enough carbs at meals or snacks
- Skipping meals or snacks
- Being more active or getting more exercise than usual
- Too much insulin or oral diabetes medicine
- Side effects from other medicines
- Drinking alcohol, especially on an empty stomach
Treatment
If you are having signs or symptoms of low blood sugar, check your blood sugar with your meter. If your blood sugar is less than 70 mg/dL, follow the Rule of 15 to bring your blood sugar back up to a normal range.

The Rule of 15
- Eat or drink 15 grams of quick-acting carbs, such as:
  - ½ cup (4 oz.) juice
  - ½ cup (4 oz.) regular soda
  - 3-4 glucose tablets
  - 1 cup (8 oz.) fat-free milk
  - 1 Tbsp. honey
- Wait 15 minutes.
- Recheck your blood sugar.
  - If your blood sugar is still less than 70 mg/dL, repeat the treatment.
- Once your blood sugar is above 70 mg/dL, either eat:
  - A balanced snack containing carbs, protein and fat.
  - Your next meal if it is time for a meal.

Glucagon
If your blood sugar is so low that you cannot safely treat it using the Rule of 15, you may need glucagon. Glucagon is prescribed by your provider. Glucagon is a hormone made by the pancreas that raises blood sugar. Glucagon should only be given by another person who knows how to give it.

Glucagon is given when a person has low blood sugar AND one or more of the following:
- Not able to swallow
- Quick-acting carbs have not been able to raise blood sugar
- Passed out
- Having a seizure

Glucagon is available by prescription in a single-dose kit. Follow the instructions to prepare the kit. These steps should be taken when giving glucagon:
- If using injection, mix glucagon per instructions and inject glucagon into a large muscle.
- If using nasal powder, open per instructions and release powder into one nostril.
- After glucagon is given, the person with diabetes should be rolled onto their side.
- Call 911.
- Check blood sugar 15 minutes after giving glucagon.
- Once awake and able to swallow, the person with diabetes should eat a snack.
Taking Medicines
TAKING MEDICINES

If you have type 2 diabetes, you may need to add diabetes medicines to your treatment plan. There are several medicines available for the treatment of diabetes. These medicines work in different ways to:

- Help increase the amount of insulin coming from the pancreas.
- Decrease the amount of sugar released by the liver.
- Block sugar from being absorbed by the kidneys and remove excess sugar through urination.
- Reduce appetite and slow down how quickly food empties from the stomach.
- Help your body and cells use the insulin your body makes.

Non-Insulin Medicines
The following are medicines that may be prescribed by your provider. Medicines work in different parts of our body. The medicines in the table below are grouped by how they work in your body. If your medicine is not listed, ask your provider for more information.

<table>
<thead>
<tr>
<th>BRAND NAME</th>
<th>GENERIC NAME</th>
<th>HOW IT WORKS</th>
<th>POSSIBLE SIDE EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actos®</td>
<td>Pioglitazone</td>
<td>Helps your body use the insulin you are producing</td>
<td>Fluid buildup</td>
</tr>
<tr>
<td>Avandia®</td>
<td>Rosiglitazone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Januvia®</td>
<td>Sitagliptin</td>
<td>Increases the amount of insulin coming from the pancreas</td>
<td>Nausea, vomiting or diarrhea</td>
</tr>
<tr>
<td>Onglyza®</td>
<td>Saxagliptin</td>
<td>Decreases the amount of sugar released by the liver</td>
<td>Sore throat, stuffy nose, upper respiratory infection</td>
</tr>
<tr>
<td>Tradjenta®</td>
<td>Linagliptin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nesina®</td>
<td>Alopliptin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invokana®</td>
<td>Canagliflozin</td>
<td>Removes excess sugar through urination</td>
<td>Bladder, urinary tract and genital infections</td>
</tr>
<tr>
<td>Jardiance®</td>
<td>Empagliflozin</td>
<td></td>
<td>Dehydration</td>
</tr>
<tr>
<td>Farxiga®</td>
<td>Dapagliflozin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steglatro®</td>
<td>Ertugliflozin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRAND NAME</td>
<td>GENERIC NAME</td>
<td>HOW IT WORKS</td>
<td>POSSIBLE SIDE EFFECTS</td>
</tr>
<tr>
<td>------------</td>
<td>--------------</td>
<td>--------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Glucophage® Riomet (liquid)®</td>
<td>Metformin</td>
<td>Decreases the amount of sugar released by the liver</td>
<td>Nausea, vomiting, or diarrhea that may last for 10-14 days</td>
</tr>
<tr>
<td>Glucophage XR® Fortamet® Glumetza®</td>
<td>Metformin XR</td>
<td>Helps your body use the insulin you are producing</td>
<td></td>
</tr>
<tr>
<td>Amaryl®</td>
<td>Glimepiride</td>
<td>Helps increase the amount of insulin coming from the pancreas both right after a meal and over several hours</td>
<td>Low blood sugar</td>
</tr>
<tr>
<td>Glucotrol Glucotrol XL® Glynase® DiaBeta® Micronase®</td>
<td>Glipizide Glyburide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Byetta®</td>
<td>Exenatide</td>
<td>Lowers blood sugar after you eat</td>
<td>Nausea, vomiting, or diarrhea</td>
</tr>
<tr>
<td>*Victoza®</td>
<td>Liraglutide</td>
<td>Increases the amount of insulin coming from the pancreas</td>
<td>Headache</td>
</tr>
<tr>
<td>*Trulicity®</td>
<td>Dulaglutide</td>
<td>Decreases the amount of sugar released by the liver</td>
<td></td>
</tr>
<tr>
<td>*Ozempic®</td>
<td>Semaglutide</td>
<td>Helps you feel full after eating by slowing down digestion</td>
<td></td>
</tr>
<tr>
<td>Rybelsus®</td>
<td>Semaglutide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Mounjaro®</td>
<td>Tirzepatide</td>
<td>Lowers blood sugar after you eat</td>
<td>Nausea, vomiting, or diarrhea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increases the amount of insulin coming from the pancreas</td>
<td>Headache</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decreases the amount of sugar released by the liver</td>
<td>Weight loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Helps you feel full after eating by slowing down digestion</td>
<td></td>
</tr>
</tbody>
</table>

*These medicines are given by injection.*
Combination Medicines
When two different diabetes medicines are combined into one pill they are called a combination medicine. These medicines work the same way. They have the same side effects as taking each medicine separately, but are combined into one pill instead of two.
Insulin
You may need to inject insulin if your body is not making enough insulin or if the insulin that your body makes is not working the way it should. Insulin lowers your blood sugar by moving sugar from your bloodstream into your cells. There are two main types of insulin: basal insulin and bolus insulin. Work with your provider to find out what insulin and how much is right for you.

**Basal Insulin:** This type of insulin works in the background. In people without diabetes the pancreas releases small amounts of insulin all of the time to control blood sugars between meals and overnight. When you have diabetes and your pancreas is not making insulin, or is not making enough insulin, you will have high blood sugars. Basal insulin is an injection of insulin that works for a longer period of time. It is important that you try to take this insulin at the same time each day. Providers may prescribe *medium-acting or long-acting* insulin to bring these blood sugar levels down.

**Bolus Insulin:** This type of insulin works when your blood sugar rises quickly. In people without diabetes, when there is a quick rise in blood sugar from food or the liver, the pancreas releases insulin quickly to keep blood sugar at normal levels. When you have diabetes and your pancreas is not making insulin, or is not making enough insulin, you will have high blood sugars. Bolus insulin is an injection of insulin that works very quickly and for a short period of time. It is typically taken just before a meal. Providers may prescribe *rapid-acting or fast-acting* insulin to be used for this purpose.
## Types of Insulin

Insulin works in different ways. Different types of insulin vary by:

- **onset** - how soon it begins to work
- **peak** - when it works the hardest
- **duration** - how long it works in the body

<table>
<thead>
<tr>
<th>TYPE</th>
<th>BRAND NAME</th>
<th>GENERIC NAME</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid-Acting</td>
<td>Apidra® Humalog®/Admelog®</td>
<td>Glulisine Lispro Lispro Aspart</td>
<td>~3-15 min.</td>
<td>~1-2 hrs.</td>
<td>~2-4 hrs.</td>
</tr>
<tr>
<td></td>
<td>Humalog® U200 Novolog®</td>
<td>Lispro-aabc Lispro-aabc Aspart + Vit. B3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lyumjev® U100 Lyumjev® U200</td>
<td>Fiasp®</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid-Acting Inhaled</td>
<td>Afrezza®</td>
<td>Human</td>
<td>~15 min.</td>
<td>~1 hr</td>
<td>~2-4 hrs.</td>
</tr>
<tr>
<td>Fast-Acting</td>
<td>Humulin® R Novolin® R</td>
<td>Regular</td>
<td>~30-60 min.</td>
<td>~2-4 hrs.</td>
<td>~5-10 hrs.</td>
</tr>
<tr>
<td></td>
<td>Humulin® U500</td>
<td>Regular U500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium-Acting</td>
<td>Novolin® N Humulin® N</td>
<td>NPH</td>
<td>~1-1.5 hrs.</td>
<td>~6-10 hrs.</td>
<td>~14-16 hrs.</td>
</tr>
<tr>
<td></td>
<td>Levemir® Semglee</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premixed: Insulin and</td>
<td>Humulin® 70/30 Novolin® 70/30</td>
<td>NPH/ Regular NPH/ Regular NPH/ Lispro NPH/ Lispro NPH/ Aspart</td>
<td>~30 min.</td>
<td>~1-6 hrs.</td>
<td>~10-16 hrs.</td>
</tr>
<tr>
<td>Insulin Combination</td>
<td>Humalog® 50/50 Humalog® 75/25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Novolog® 70/30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin and Non-insulin</td>
<td>Soliqua®</td>
<td>Insulin Glargine &amp; Lixisenatide</td>
<td>~1-2 hrs.</td>
<td>None</td>
<td>~21-42 hrs.</td>
</tr>
<tr>
<td>Combination</td>
<td>Xultophy®</td>
<td>Insulin Degludec &amp; Liraglutide</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Insulin is typically injected, although one type is inhaled. Most insulins are considered U100, meaning that they contain 100 units of insulin in each milliliter or cc. Some insulin has been made to be more concentrated such as those listed as U200, U300, or U500. It is important to know what insulin you are taking, and to take it as your provider has instructed.
Injecting Insulin
For insulin to be absorbed properly, it must be injected into the fatty tissue just under your skin. The best places to inject are your belly, upper buttocks, hips, upper arm and outer thigh.

Giving insulin injections in the same spot can cause sores, lumps or thick skin. This can make it harder for the insulin to be absorbed.

Be sure to change your sites with each injection. Injections should be at least 1 inch away from the last one. Do not inject into moles, tattoos or scars.

Make sure that your skin is clean before giving an injection.

Insulin can be injected with either the use of a vial and syringe or by an insulin pen device.

Disposal: Insulin pen needles and/or syringes must be disposed of according to your county’s health department in a puncture proof container. Insulin vials and pens can be thrown in the trash.
**Vial and Syringe**

First wash your hands, and make sure that you are injecting the correct type of insulin. If the insulin is cloudy, gently roll the vial in your hands to mix the insulin.

1. Wipe the top of the vial with an alcohol swab.

2. Fill your empty syringe with air-the same as the amount of insulin you are using.

3. Push the syringe needle into the vial and push in the air.

4. Keeping the needle in the vial, turn the vial over. Pull the plunger back until you have the right amount of insulin.

5. Be sure to look at the syringe, if you see air bubbles, push the insulin back into the bottle and slowly draw it up again.

6. Gently pinch up an area of skin. Position the needle at a 90 degree angle and insert entire needle into skin.

7. Push the plunger all of the way in. Once injected, count to five and pull syringe out.
**Insulin Pen**

First wash your hands, and make sure that you are injecting the correct type of insulin. *If the insulin is cloudy, gently roll the pen in your hands to mix the insulin.* Remove the cap.

1. Wipe the rubber stopper with an alcohol swab.

2. Remove the protective seal from the pen needle and screw it onto the pen.

3. Pull off the outer and inner shield of the pen needle.

4. Prime the needle. Do this by turning the dose dial to 2 units. Hold the pen pointing up, and push out the 2 units of insulin.

5. Once priming is complete, turn the dose dial to the number of units of insulin you need to inject.

6. Choose the injection site, and inject needle into the skin at a 90 degree angle.

7. Push the pen button all of the way down and keep the needle in the skin for 5 seconds.
**Care of Insulin**

Insulin needs to be cared for in a certain way. It is sensitive to temperature. If it gets too hot or too cold, it can be damaged. Damaged insulin does not change color or smell. Damaged insulin will not work right.

Unused insulin should be kept in the refrigerator. Insulin that you have started to use or that has been opened can stay at room temperature (66-86 degrees F). Keep your insulin with you. Do not leave it in a hot or cold car. An insulated container can be used to protect insulin from getting too hot or cold. When traveling, make sure to keep your insulin with you in your carry-on bag. Do not put it away in your checked luggage.

You should always check the expiration date on your insulin before you use it. Once you start using a vial or pen it is only good for a certain number of days.

<table>
<thead>
<tr>
<th>Type of Insulin</th>
<th>Use After Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vials, Pens, Cartridges (Clear Insulin)</td>
<td>28 days</td>
</tr>
<tr>
<td>Vials, Pens, Cartridges (Cloudy Insulin)</td>
<td>10-14 days</td>
</tr>
<tr>
<td>Levemir®, Toujeo® U300</td>
<td>42 days</td>
</tr>
<tr>
<td>Tresiba®</td>
<td>56 days</td>
</tr>
</tbody>
</table>

**Insulin Pumps**

An insulin pump is a device that delivers insulin based on pre-programmed individual needs throughout the day and night. Your provider will tell you your pre-programmed insulin amounts. Insulin pumps replace the use of multiple daily injections.

**Programming**

Insulin pumps release insulin in two ways: basal and bolus.

- **Basal:** Insulin pumps deliver insulin in small amounts over 24 hours. This helps keep blood sugars in range between meals and while you sleep. This is referred to as a basal rate. This takes the place of your long-acting insulin injection.

- **Bolus:** The insulin pump also delivers insulin when you eat meals or snacks. The pump delivers insulin based on your blood sugar level and the carbohydrates that you are eating. This is known as giving a bolus. This takes the place of your rapid-acting insulin injections.
**Medicine Tips**

It is important to know what medicines you are taking. Keep a list of medicines including all over-the-counter medicines, herbs and supplements with you.

Important things to know:

- What is the name of my diabetes medicine?
- How does this medicine work in my body?
- What is the dose of my medicine?
- What are the side effects? What do I do if I have side effects?
- Should my medicine be taken at a certain time of day?
- Am I supposed to take my medicine with food?
- What should I do if I miss a dose of my medicine?
- When should I call my provider?

Call your provider right away if you are having side effects to find out what you should do next.

If any new medicine has been prescribed, ask your provider if it is replacing an old medicine or is being added to the medicines that you are already taking. Ask your provider about the cost of the medicine. Are there other medicines that would work and cost less?

New insulins and diabetes medicines are being produced all the time. If you do not see your medicine listed here talk to your provider.
Complications and Reducing Risks
COMPLICATIONS and REDUCING RISKS

Your blood vessels carry blood throughout your body. When your blood sugar levels are higher than normal for a long period of time, it may cause damage to your blood vessels and nerves. When your blood vessels are damaged, it makes it harder to get blood to certain areas of your body. This may cause complications.

Retinopathy
Diabetes can harm your eyes. The tiny blood vessels in the retina can be damaged over time. If left untreated, it may cause vision loss or blindness. If diabetes is affecting your retina, you may have blurred vision or see black spots, floaters or flashes of light. If this happens, you need to call your provider right away.

To prevent or manage eye disease:

- Tell your eye doctor that you have diabetes.
- See an eye doctor at least once a year for a diabetic eye exam. You may need to go more often if you have retinopathy.
- Keep your blood sugar within your goal range.
- Call your doctor if you are having vision problems.

Peripheral Neuropathy
High blood sugar may damage your nerves. Peripheral neuropathy affects the nerves that are far away from your heart. This includes the nerves in your hands, arms, feet and legs. Usually, it starts in the feet. Symptoms may be worse at night.

Peripheral neuropathy may cause:

- Pain
- Numbness or tingling
- Weakness

Loss of feeling in your feet may make it hard to tell if you have a sore on your foot. It might take a long time for a sore to heal if you have poor circulation. Your provider should look at your feet at each office visit to check for sores, blisters or other problems. It is always good to remind your provider to check your feet by taking off your shoes and socks in the exam room. Once a year you should have a comprehensive foot exam.
During a comprehensive foot exam your provider should check:

- The skin on your feet
- Your foot muscles and bones
- The blood flow in your feet
- For numbness in your feet

If you already have problems with your feet, they may need to be looked at more often by your provider or a podiatrist (foot doctor). However, between provider visits there are many things you can do to keep your feet healthy.

- **Check your feet every day.** Look at your feet for red spots, cuts, swelling, blisters or ingrown toenails. If you cannot see the bottoms of your feet, use a mirror or ask someone for help.
- **Wash your feet every day.** Dry them carefully, especially between the toes.
- **Keep your skin soft and smooth.** Rub a thin coat of skin lotion or cream over the tops and bottoms of your feet, but not between your toes.
- **If you can see and reach your toenails, trim them.** Trim your toenails straight across and file the edges with a nail file when needed. If you cannot do this on your own, you may need to see a podiatrist (foot doctor).
- **Wear shoes and socks at all times.** Never walk barefoot. Wear comfortable shoes that fit well. Check inside your shoes before wearing them to make sure the lining is smooth and there is nothing inside. Wear socks without seams if possible. Ask your provider about the need for special shoes.
- **Protect your feet from hot and cold.** Wear shoes at the beach or on hot pavement. Test the temperature of the water before putting your feet in. Never use hot water bottles, heating pads or electric blankets on your feet. You can burn your feet without realizing it.
- **Put your feet up when sitting.** Wiggle your toes and move your ankles and feet up and down throughout the day. Don't cross your legs for long periods of time.

**Autonomic Neuropathy**

Diabetes can also cause autonomic neuropathy. The autonomic nerves control the parts of the body that work “automatically” without you telling them. It is important to talk to your provider if you think that you are having problems in any of these areas.

- **Digestion:** After you eat your body digests food. Sometimes diabetes can damage the ability to move food through your system. This is called gastroparesis. It can lead to vomiting and bloating. It may change how fast your body absorbs food and affect how your blood sugars are treated.
• **Bladder and Bowel:** Your bladder or bowels may not work normally. When this happens with the bladder, you may not be able to feel when your bladder is full. When the nerves that control the small intestine are damaged, diarrhea or constipation can occur.

• **Sexual Dysfunction:** Autonomic neuropathy may make it difficult to get or keep an erection when it affects the nerves that control erection. Women may have difficulty with vaginal dryness or orgasms or irregular menstrual cycles.

• **Recognizing Low Blood Sugar:** Typically, your body warns you when you are having a low blood sugar. You may not notice any warning signs when your blood sugar is too low. This may be serious.

• **Ability to Sweat:** Sweating too much or too little may happen. This may affect the ability to adjust body temperature. This may also cause your skin to be dry and itchy.

**Nephropathy**

Kidneys are like filters. Inside of them are millions of tiny blood vessels that remove waste products from the blood. Diabetes can damage the kidneys. This causes waste products to build up in your blood. The first symptom of kidney disease is often fluid buildup. You might also notice loss of sleep, poor appetite, upset stomach and weakness. If your kidneys fail to work, you may need dialysis or a kidney transplant.

Kidney disease can be prevented or delayed by:

- Keeping your blood sugar in your target range.
- Keeping your blood pressure in your target range. Even a small rise in blood pressure can make kidney disease worse.
- Have your provider check your:
  - Blood pressure
  - Urine (for protein) once a year
  - Blood work (for waste products) once a year

If you are having any symptoms of kidney disease, you should call your provider right away.

**Cardiovascular Disease**

People with diabetes are more likely to have high blood pressure (hypertension) and high cholesterol (hyperlipidemia). If you have too much cholesterol, it may narrow or block your blood vessels. Heart disease occurs when the vessels that supply blood to the heart are blocked. This may cause a heart attack.
**Stroke**
You are at increased risk for a stroke if the blood vessels that go to your brain are damaged or blocked. A stroke occurs when your brain is not receiving blood supply. Symptoms of stroke include trouble speaking, seeing or walking and numbness in the face, arm or leg.

Use the letters in F.A.S.T. to notice the symptoms of stroke.
- Face drooping
- Arm weakness
- Speech
- Time to call 911

**Poor Circulation**
Blocked blood vessels may also make it harder for blood to circulate to your feet and legs. Poor circulation may lead to cold or numb feet, leg and foot pain and possibly wounds.

To keep your blood vessels healthy:
- Keep your blood sugar in your target range
- Control your cholesterol levels
- Keep your blood pressure in a good range
- Maintain a healthy weight and BMI
- Make healthy food choices
- Do not use tobacco products

<table>
<thead>
<tr>
<th>Test</th>
<th>Target Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol</td>
<td>Less than 200 mg/dL</td>
</tr>
<tr>
<td>LDL</td>
<td>Less than 70 mg/dL or Less than 55 mg/dL if you have heart disease</td>
</tr>
<tr>
<td>HDL</td>
<td>Over 40 mg/dL (Men) Over 50 mg/dL (Women)</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>Less than 150 mg/dL</td>
</tr>
</tbody>
</table>

**Dental Complications**
It is important to take care of your mouth when you have diabetes. Dental problems may be more serious when you have diabetes or your blood sugars are not controlled. It is important that you see a dentist. You can discuss any oral health issues such as pain, swelling or bleeding. To prevent complications, you should:
- Have your teeth checked and cleaned at least once every 6 months
- Brush your teeth twice a day
- Floss daily
Vaccinations

Vaccinations are given to help prevent illness. Diabetes can make it harder for your immune system to fight infections. You may be at risk for more serious complications from an illness. It is important that you discuss with your provider what vaccinations are right for you and when to get them. The Centers for Disease Control and Prevention (CDC) recommends that people with diabetes get the following vaccinations:

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>How Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza (Flu)</td>
<td>Yearly</td>
</tr>
<tr>
<td>Pneumococcal (Pneumonia)</td>
<td>Check with your provider</td>
</tr>
<tr>
<td>TDAP</td>
<td>Every 10 years</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Once (3 dose series)</td>
</tr>
<tr>
<td>Zoster (Shingles)</td>
<td>Once (2 dose series)</td>
</tr>
<tr>
<td><strong>COVID-19</strong></td>
<td>Primary series</td>
</tr>
<tr>
<td></td>
<td>and booster when eligible</td>
</tr>
<tr>
<td>HPV</td>
<td>Once (2-3 dose series)</td>
</tr>
</tbody>
</table>

Revised 06/2023
Healthy Coping

Managing your emotional health is just as important as managing your physical health. There are many feelings you may experience when you are diagnosed with diabetes. You may also have these feelings if you have been living with diabetes for a long time. Feeling sadness, fear, anger or anxiety are normal. It is important to find healthy ways to cope with them.

Stages of Adjustment
People move through stages of adjustment when facing a change in their daily lives. A person with diabetes may experience any of these stages at any time.

<table>
<thead>
<tr>
<th>Denial</th>
<th>Anger</th>
<th>Bargaining</th>
<th>Depression</th>
<th>Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>This cannot be happening to me.</td>
<td>Why is this happening? Who is to blame?</td>
<td>I will ______ to make this all go away.</td>
<td>I cannot do this. I do not want to do this.</td>
<td>I am okay. I am ready to take care of myself.</td>
</tr>
</tbody>
</table>

Diabetes Distress and Burnout
Diabetes distress can happen when you are worried, stressed, sad, fearful or angry about having and dealing with diabetes. In diabetes burnout a person grows tired of managing their disease and begins to ignore it. Clues that you might be dealing with these conditions include feelings of frustration, worry, anxiety and a lack of desire to manage your diabetes.

Treatment for diabetes distress and burnout includes goal setting, counseling, family support, regular exercise or switching up your routine. Do not expect to be perfect. Even small efforts are good.

Depression
Clinical depression is a serious medical condition that affects thoughts, feelings and the ability to function in everyday life. It may feel like a sense of hopelessness and helplessness in life. Depression is more common in people living with diabetes. If you think you are depressed, talk to your provider.
Stress
Your body reacts to stress by sending out hormones. These hormones may increase your blood sugar. It is helpful to know what may cause you stress. You cannot eliminate stress entirely. If you know what triggers stress and how to cope with it, you may be better able to manage your diabetes.

Coping with Stress
- **Identify the cause.** Try to pinpoint what is causing your stress.
- **Decrease your stressors.** Is it possible to change any of your stressors? Focus on the things that are the most important. Ask for help if needed.
- **Do one thing at a time.**
- **Take time to do things you enjoy.** Make time for fun and relaxation. Even a small amount of time doing the things that you enjoy is helpful.
  - Hobbies
  - Meditation or deep breathing
  - Journaling
  - Reading
  - Laughing
  - Taking a bath
  - Listening to music
  - Spend time with friends or family
  - Get some fresh air
  - Do a puzzle
  - Gardening
  - Work on fix it projects
- **Move your body.** Physical activity is good for your emotional health too!
  - Dancing
  - Yoga
  - Hiking
  - Bike riding
  - Walking
  - Running
- **Get support.** Use your family, friends, your healthcare team, support groups, neighbors, or co-workers as support. Talking to other people with diabetes may be helpful.
- **Be kind to yourself.**
- **Celebrate your success.**
PROBLEM SOLVING

There are many areas of your life that diabetes affects. Planning ahead of time can help you be prepared in different situations.

Driving and Traveling with Diabetes
Taking care of diabetes when you are traveling is different than when you are at home. It is important to plan ahead when traveling.

- **Have supplies.** Keep all of your diabetes supplies with you (medicines, blood sugar monitor, snacks, etc.). Keep them in your carry-on bag and not in your checked luggage. Pack extra supplies.
- **Check your blood sugar.** If you have a low blood sugar, treat it right away.
- **Carry snacks and glucose tablets.**
- **Stay hydrated.**
- **Stretch your legs.** It is important to stretch your legs to improve blood flow.
- **Be aware of time zone differences.** If your medicines need to be taken at certain times, work with your provider on the best way to work through time zone changes.
- **Wear medical identification.**

Diabetes in the Workplace
It is important to talk to your manager or co-workers and tell them that you have diabetes. This will help them understand:

- You may have to adjust your schedule for provider appointments.
- You may need to take breaks or eat throughout your shift.
- You may have to inject yourself with insulin or take medicines.
- If an emergency happens, how they can help you.

You should always provide your employer with emergency contacts in case of an emergency. Diabetes is protected under the Americans with Disabilities Act. This means that you cannot be discriminated against in the work place. For more information visit the Americans with Disabilities Act website (www.ada.gov).
Medical Identification (ID)
A medical ID speaks for you when you cannot. It is a good idea to wear a medical ID when you have diabetes. If something happens to you, it lets people know that you have a medical condition.

Bracelets or necklaces can be engraved with your condition and other emergency information. This allows for faster and better treatment.

When wearing a medical ID your medical information will be available to medical staff and emergency responders no matter where you are traveling. This is especially important when you are traveling alone.

Putting the Pieces Together
Controlling your blood sugar can be a challenge. If you see a problem or an unexpected change try to figure out what might have happened. Ask yourself what you might do to fix it now or prevent it next time. Ask these questions:

- What is the problem?
- What could have caused this?
- What can I do about it now?
- Did the solution work?
- How can I prevent this from happening again?

Each new problem that you work through will help prepare you for the next. It is important to find people in your life that can support you in your diabetes management. Help your loved ones understand more about diabetes by educating them. When they know more, they can be more supportive.
**Know Your Goals**
Talk to your provider to set individual goals.

<table>
<thead>
<tr>
<th>Test</th>
<th>Target Range</th>
<th>My Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood Sugar:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• A1c (every 3-6 months)</td>
<td>Less than 7%</td>
<td></td>
</tr>
<tr>
<td>• Before Meal Blood Sugar</td>
<td>80-130 mg/dL</td>
<td></td>
</tr>
<tr>
<td>• After Meal Blood Sugar (2 hours)</td>
<td>Less than180 mg/dL</td>
<td></td>
</tr>
<tr>
<td>• Bedtime Blood Sugar</td>
<td>110-150 mg/dL</td>
<td></td>
</tr>
<tr>
<td><strong>Blood Pressure</strong> (every visit)</td>
<td>Less than 130/80 mmHg</td>
<td></td>
</tr>
<tr>
<td><strong>Cholesterol and Lipids</strong> (yearly)</td>
<td>Less than 70 mg/dL or Less than 55 mg/dL if you have heart disease</td>
<td></td>
</tr>
<tr>
<td>• LDL (“bad” cholesterol)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• HDL (“good” cholesterol)</td>
<td>Over 40 mg/dL (male), Over 50 mg/dL (female)</td>
<td></td>
</tr>
<tr>
<td>• Triglycerides</td>
<td>Less than 150 mg/dL</td>
<td></td>
</tr>
<tr>
<td><strong>Kidney Labs</strong> (yearly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Microalbuminuria (urine)</td>
<td>Less than 30 mg</td>
<td></td>
</tr>
<tr>
<td>• eGFR</td>
<td>Over 90 mL/min/1.73m2</td>
<td></td>
</tr>
<tr>
<td><strong>Weight and BMI</strong> (every visit)</td>
<td>BMI: 18.5 – 24.9 (Asian BMI: 18.5 – 22.9)</td>
<td></td>
</tr>
<tr>
<td>• Body mass index (BMI) is a measurement based on your weight in relation to your height, and applies to most adults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exam</td>
<td>Description</td>
<td>My Last Exam</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Comprehensive Foot Exam (yearly)</td>
<td>Skin, muscle, sensation and circulation assessment.</td>
<td></td>
</tr>
<tr>
<td>Dilated Eye Exam or Optimap (yearly)</td>
<td>Dilation causes your pupils to widen, allowing in more light and giving your provider a better view of the back of your eye to look for retinopathy, cataracts, glaucoma. Optimap takes a picture of the back of your eye to look for retinopathy, cataracts, glaucoma.</td>
<td></td>
</tr>
<tr>
<td>Dental Examination (6 months – year)</td>
<td>Routine check for periodontal disease</td>
<td></td>
</tr>
</tbody>
</table>

**Advocating for Your Health**

It is important to speak up and take charge of your health. This means visiting with your provider throughout the year. Be honest about what you are doing or not doing. Between visits you may want to write down questions or concerns to discuss at your next visit. Make sure to be prepared. You should bring with you:

- A list of questions and concerns.
- Your blood sugar meter or blood sugar logs.
- A list of the medicines you take

Possible things that you might want to discuss with your provider:

- Blood sugar levels
- A1c results
- Meal planning
- Changes in your weight
- Physical activity
- How to quit smoking
- Side effects or concerns about your medicines
- Anything that makes it difficult to take care of yourself (medicines, medical costs, feelings, etc.)

It is important that you make the most of each visit. Talk with your provider about the things that are most important to you. Make sure that you understand the plan before you leave.
Changing Your Behavior
Making and keeping healthy lifestyle changes might seem overwhelming. There may be many behaviors that you want or need to change. It is important that you pick one area that you want to work on first before moving to the next area. Creating a new habit such as walking the neighborhood once a week, de-stressing by reading a good book each evening or including at least one healthy food choice at lunchtime can make all the difference.

These steps can help you create a healthy habit.

1. **Identify one area of your diabetes that needs work or change:**
   - Healthy eating
   - Monitoring
   - Reducing risks
   - Healthy coping
   - Stress reduction
   - Taking medications
   - Being active

2. **Identify your thoughts, feelings and attitudes:** Why is it important that you work on this area first? Why did you choose this as your goal?

3. **Set a goal:** You are more likely to be successful if you make your goal S.M.A.R.T. Start your goal with the words “I will”.

   **S. M. A. R. T.**

   ![](image)

<table>
<thead>
<tr>
<th>Specific</th>
<th>Measurable</th>
<th>Attainable</th>
<th>Relevant</th>
<th>Time-Based</th>
</tr>
</thead>
<tbody>
<tr>
<td>What exactly do you want to do?</td>
<td>Can you measure the progress of your goal?</td>
<td>Is your goal doable? Is it too much to ask?</td>
<td>How will your goal help manage your diabetes?</td>
<td>Did you give yourself a specific time frame to reach this goal?</td>
</tr>
</tbody>
</table>

Let’s look at an example: I will check my blood sugar each morning for the next month.

- ✓ I want to check my blood sugar. This goal is **specific**.
- ✓ I will check my blood sugar once a day. This goal is **measurable**.
- ✓ Once a day is doable for me. This goal is **attainable**.
- ✓ It will help me understand if my diabetes medicines are working. This goal is **relevant**.
- ✓ I will work on this goal for 1 month. This goal is **time-based**.
4. Determine your confidence level:

It is important that you are confident in your ability to reach your goal. If you are not confident, you may need to change or revise your goal to make it more attainable. Using the example above, if checking blood sugar once a day is unrealistic for you, you might change your goal to “I will check my blood sugar 5 times every week”. The more confident you are at reaching your goal, the more likely it is that you will achieve it.

5. Evaluate your progress:

It is important to review your goal and see if you are staying on track to achieving it. You might evaluate your progress daily, weekly or monthly. Ask yourself, how often am I completing my goal?

- Never
- Occasionally
- Half of the time
- Most of the time
- All of the time

If you are not meeting your goal at “most of the time” or “all of the time,” you might need to look at your goal and see how you can make it achievable.

- Why were you not successful?
- What can you do to be successful?

Behavior change is not always easy. Taking small steps in the right direction leads toward bigger goals becoming more achievable. Getting support from others can help keep you on task. Support may come from:

- Family and friends
- Co-workers
- Support groups and community members
- Neighbors
- Diabetes websites

Make sure to celebrate your successes. Rewards might help keep you on task and give you something to work toward. Keep in mind, rewards should be something you enjoy that does not take away from your goals!
Informational Websites

American Diabetes Association (ADA)
http://www.diabetes.org

Juvenile Diabetes Research Foundation (JDRF)
http://www.jdrf.org

Joslin Diabetes Center
http://www.joslin.org

Centers for Disease Control and Prevention (CDC)
http://www.cdc.gov/diabetes/home

Americans with Disabilities Act
https://www.eeoc.gov/laws/types/diabetes.cfm

Diabetes Magazines and Websites (some of these may require a paid subscription)

Diabetes Self-Management
http://www.diabetesselfmanagement.com
(800) 234-0923 to subscribe

Diabetes Health
https://www.diabeteshealth.com

Nutrition Websites

Academy of Nutrition and Dietetics
http://www.eatright.org

USDA Choose My Plate
http://www.choosemyplate.gov