Sutter Health

# Understanding Type 2 Diabetes

## Your Guide to Healthy Living


February 2017

## Understanding Type 2 Diabetes

If you have diabetes, prediabetes or high blood glucose (blood sugar)—or if you simply want to learn more about diabetes—this book is for you. Inside, you will find the basics of diabetes care, plus tools to help you manage your diabetes. As you read, keep in mind that diabetes is a complex disease. The knowledge and skills you need for diabetes self-management take time to learn. As you learn, you will be better equipped to adjust your lifestyle for better health. You are not alone. You have the support of a health care team that includes your health care provider and other diabetes experts.

### 7 Self-Care Behaviors

The American Association of Diabetes Educators has a list of seven key behaviors, known as the AADE7™ Self-Care Behaviors, to help patients successfully manage type 2 diabetes and prevent complications. These include: healthy eating, being active, monitoring, taking medication, problem solving, reducing risks and healthy coping. When making healthier lifestyle choices, it helps to set goals in each of these seven key areas. Your health care provider can help you develop a diabetes management plan.

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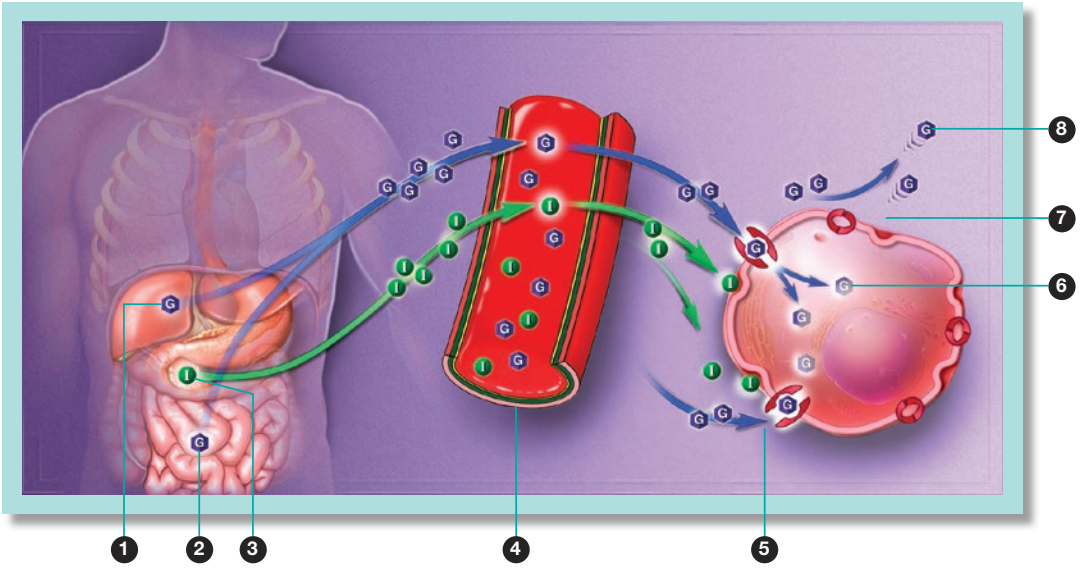
# What is Diabetes?

Diabetes is a medical condition that develops when your body cannot regulate the level of glucose (sugar) in the blood. As a result, your blood glucose (blood sugar) levels become higher than normal. When blood glucose climbs too high, this affects the cells and tissues of your body. As a result, you can have uncomfortable symptoms—such as fatigue, blurry vision or extreme thirst. But that's not all. Over time, unstable blood glucose can lead to serious and harmful complications.

## What Causes Glucose Levels to Become Elevated

1. Glucose is made by the liver.
2. Glucose is also made in the gut by the breakdown of carbohydrates from food and drinks.
3. In response to glucose, the pancreas makes and releases insulin.
4. Glucose and insulin flow throughout the bloodstream to all the parts of the body.
5. Insulin attaches to cells throughout the body, which open "channels" that allow glucose to move from the bloodstream into the cells.
6. The cells in the body use glucose for energy.
7. Without a trigger by insulin, the channels remain closed, and glucose is unable to enter the cells.
8. This causes glucose levels in the body to become elevated.



## Types of Diabetes

### Type 1 diabetes

Type 1 diabetes occurs when the immune system mistakenly attacks the pancreas, damaging it so that it can no longer make insulin. Without any insulin, the glucose level in the body becomes elevated. People with type 1 diabetes need to take insulin to manage the disease.

This type of diabetes most commonly strikes children, teens and young adults, but it can occur at any age. To date, scientists do not know what causes type 1 diabetes, and type 1 diabetes cannot be prevented.

### Type 2 diabetes

Type 2 diabetes occurs when the body becomes unable to use the insulin you make. The pancreas is then unable to make enough insulin to overcome the resistance. Without adequate insulin to overcome this resistance, the glucose level in the body becomes elevated.

This is the most common type of diabetes. It can often be managed with healthy eating, exercise and prescription medicine (pills). Some people may also need insulin injections to manage the disease.

### Prediabetes

Prediabetes occurs when blood glucose levels are higher than normal, but not high enough to be diagnosed as diabetes. Prediabetes increases the risk of developing type 2 diabetes. Research has shown that healthy eating and lifestyle changes can help delay or prevent the onset of type 2 diabetes in people with prediabetes.

### Gestational diabetes

Gestational diabetes, also known as GDM, is high blood glucose that first shows up during pregnancy. GDM occurs when the body becomes resistant to insulin due to the hormones from the placenta. It is usually diagnosed after the 24th week of pregnancy. High blood glucose is harmful to both the mother and her developing baby. Women who have had gestational diabetes have a higher risk of developing Type 2 diabetes.

## Diagnosis of Diabetes

| | In-range | Prediabetes | Diabetes |
|---|---|---|---|
| Fasting Blood Glucose (mg/dL) | less than 100 | 100-125 | 126 or higher |
| Blood Glucose two hours after a 75 gram glucose tolerance test (mg/dL) | less than 140 | 140-199 | 200 or higher |
| Random Blood Glucose (mg/dL) | | | 200 or higher (in a person having symptoms) |
| A1C (%) | less than 5.7 | 5.7-6.4 | 6.5 or higher |

*Without clear symptoms of diabetes, test should be repeated to confirm diagnosis.*

## Screening for Diabetes

The American Diabetes Association recommends screening all adults age 45 and older for diabetes. If a person is overweight or obese and has one additional risk factor (see table below) they should be screened regardless of age. Screening may be repeated every three years. Discuss screening for diabetes with your health care provider.

### Risk factors for type 2 diabetes

- Smoking
- Unhealthy eating
- Prediabetes
- Older age
- Overweight or obese
- Physical inactivity
- Family history of diabetes
- Ethnic populations that are at higher risk: African American, Latino, Native American, Asian American, Pacific Islander
- Gestational diabetes or had a baby that weighed more than 9 pounds
- History of heart disease
- High blood pressure
- High-density lipoprotein (HDL) cholesterol less than or equal to 35
- Triglyceride level greater than or equal to 250
- Polycystic ovarian syndrome

# Healthy Eating

## Eating Right to Manage Diabetes

How you eat is very important for managing your health and your diabetes. There is no standard meal plan or eating pattern that works for all people with diabetes. Work with your healthcare providers to learn what to eat, how much to eat and when to eat. This will help you manage your blood glucose levels and your weight. It may also help lower your risk of heart disease and other diabetes complications.

## Make Healthy Choices

As often as possible, choose nutritious, less-processed foods. This can help you to achieve a healthy weight and manage diabetes. These include:

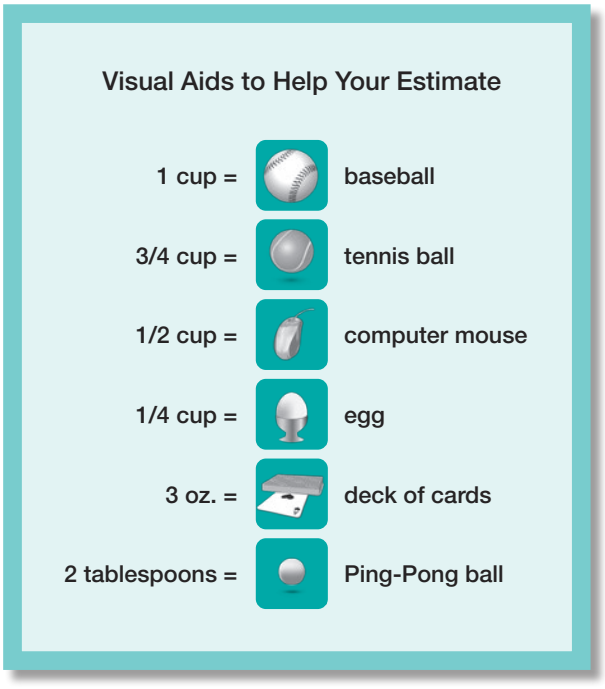
- High-fiber foods such as whole grains, beans, fresh vegetables and fruits.
- Low-fat protein such as fish and seafood, soy products, fat free and low fat milk, cheese and yogurt, poultry without skin and lean cuts of meat.
- Choose heart-healthy fats such as olive, canola or peanut oil, avocado, nuts, and seeds instead of butter.
- Eat fish twice a week, especially salmon and sardines, which contain omega 3 healthy fats.

## Choose the Right Portions

- How much energy (calories) you need depends on your age, gender, activity level and weight goal (desire to lose, gain or maintain weight). Weight loss can lead to improved glucose levels.
- Energy (calories) comes from 3 key nutrients:
  - Carbohydrates turn into glucose, so spread evenly through the day.
  - Protein builds and maintains muscle, helps you feel fuller longer and helps keep your blood glucose within range.
  - Fat is found in many foods and there are many types of fat. Choose heart-healthy fats in moderation if weigh loss is desired.

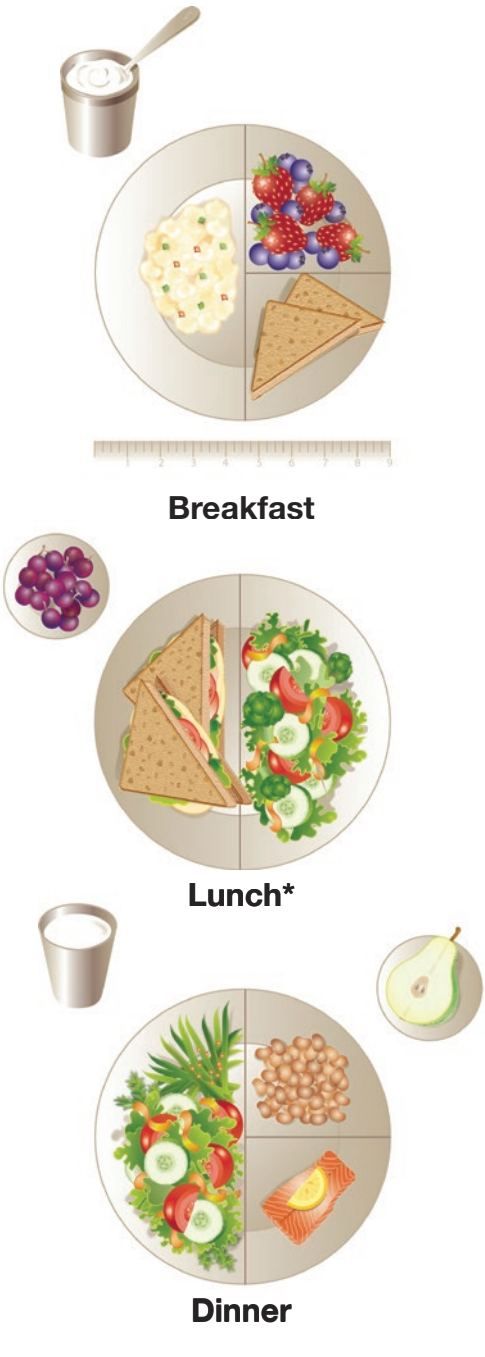
The following chart can help to estimate portion sizes.

### Visual Aids to Help You Estimate Portion Size




Two methods to help with portion control are “the plate method” and “carbohydrate counting”.

## The Plate Method



**Breakfast**

**Lunch***

**Dinner**

The plate method is a good way to plan well-balanced meals that are limited in carbohydrates. Divide your food groups on a 9- to 10-inch plate as shown in the diagram.

A common goal for meals may include two to four servings of carbohydrates. More detailed guides to help you choose the correct amount and type of foods to eat are on pages 7-9 and pages 42-51.

### General Guidelines:

- A portion of whole grains, whole grain products (breads and cereals), lentils, dried beans, or starchy vegetables fits on one quarter of the plate.
- A portion of lean protein fits on one-quarter of the plate.
- A variety of colorful, non-starchy vegetables fits on half the plate.
- Include fruits and/or vegetables at every meal.
- A cup of milk or yogurt and/or a serving of fruit may be eaten with the meal or saved for snack.
- Use a small amount of heart-healthy oil for cooking or flavoring foods and/or add a few nuts or seeds to your meal.
- Use herbs and spices liberally.
- Choose a wide variety of types and colors of fruits and vegetables, such as dark-green and orange vegetables and blue and red fruits.

**** The sandwich at lunch contains whole grain bread (one-quarter of the plate) and lean protein (one-quarter of the plate).***

## Carbohydrate Counting

Carbohydrates are a main source of energy and are part of healthy eating. Counting carbohydrates when you eat is a good way to manage your weight and diabetes. However, eating too many carbohydrates can raise your blood glucose to unhealthy levels. Eating the right kinds of carbohydrates in the right portions is part of a healthy meal plan.

### Major carbohydrate food groups include:

- Starches, beans, starchy vegetables
- Fruit and fruit juices
- Milk
- Sweets, sweetened drinks, and snacks

### Carbohydrate Choices

A carbohydrate choice is a serving of food that has approximately **15 grams of carbohydrates**. The more grams of carbohydrates you eat, the higher your blood glucose level will rise. Planning meals by limiting and evenly spreading your carbohydrates through the day can improve diabetes management. The following table shows the amount of food in one carbohydrate choice, that may be used for portion control.

***Please see page 42 in the Appendix for a complete list of carbohydrate choices.***

**15**
**grams of carbohydrates = 1 carbohydrate choice**

## Carbohydrate Choices

### Starch

**Each serving contains 15 grams of carbohydrate and about 80 calories**

- ⅓ cup cooked whole grains (rice, quinoa, barley)
- ½ cup cooked beans and lentils
- ½ cup starchy vegetables (potatoes, peas, corn)
- ⅓ cup cooked pasta and couscous (whole grain is best)
- 1 slice (1 oz.) bread (sprouted grain is best)

### Fruit

**Each serving contains 15 grams of carbohydrate and about 60 calories**

- 1 small (4-5 oz.) piece of fruit
- 1 cup melon chunks
- ½ cup diced fruit
- ¾ to 1 cup berries

### Milk

**Each serving contains 15 grams of carbohydrate and about 90 to 120 calories**

- 1 cup milk (reduced-fat and fat-free are best)
- 6 to 8 oz. nonfat plain or flavored “light” yogurt
- 1 cup fortified (calcium-enriched) soy milk

### Other Carbohydrates

**Limit these**

**Each serving contains 15 grams of carbohydrate and variable amounts of calories**

- ½ cup low-fat ice cream
- 2-inch square of cake or brownie (unfrosted)
- 2 small cookies (2 inches each)
- 1 Tbsp. sugar, honey, syrup, jam, or jelly
- 4 oz. of juice or sweetened drink

# Healthy Eating

## How Much to Eat

Work with your health care provider to find the best meal plan for your particular health needs. Here are some guidelines:

- Choose two to four carbohydrate choices per meal (30 to 60 grams).
- Choose up to one or two carbohydrate choices at each snack (15 to 30 grams).
- Choose 4 to 6 ounces of lean protein in a day (about two decks of cards).
- Choose 1 to 2 tablespoons of heart-healthy fat every day.

Although there is no ONE single eating plan that works best for all persons with type 2 diabetes, research has shown the benefit of both the Plant Based and Mediterranean styles of eating. Both plans recommend the following:

- Build meals using fresh vegetables, fruits and whole grains.
- Limit or eliminate red meat
- Increased use of vegetable proteins from beans/ legumes, nuts and seeds or from fish
- Decrease sodium and use fresh herbs and spices to season foods
- Replace butter with healthy oils such as olive oil

## Include Protein

Eating enough protein not only helps you build muscle, but it helps keep your blood glucose stable. Choose plant proteins such as legumes and soy products, nuts and seeds. Choose lean animal proteins such as white-meat poultry (skinless); nonfat or low-fat dairy products; tenderloin cut of pork and beef, and eggs (whole eggs, egg whites and egg substitute).

Avoid eating fatty protein such as sausage, salami, regular and full-fat cheese, ribs, bacon, and regular ground beef.

## Choose Healthy Fats

Choose ***heart-healthy fats***. Examples include: vegetable oil (olive, peanut, or canola), avocado, nuts, seeds, trans fat-free tub margarines, and salad dressing made with healthy oils. All fats are high in calories and may result in weight gain if eaten in excess.

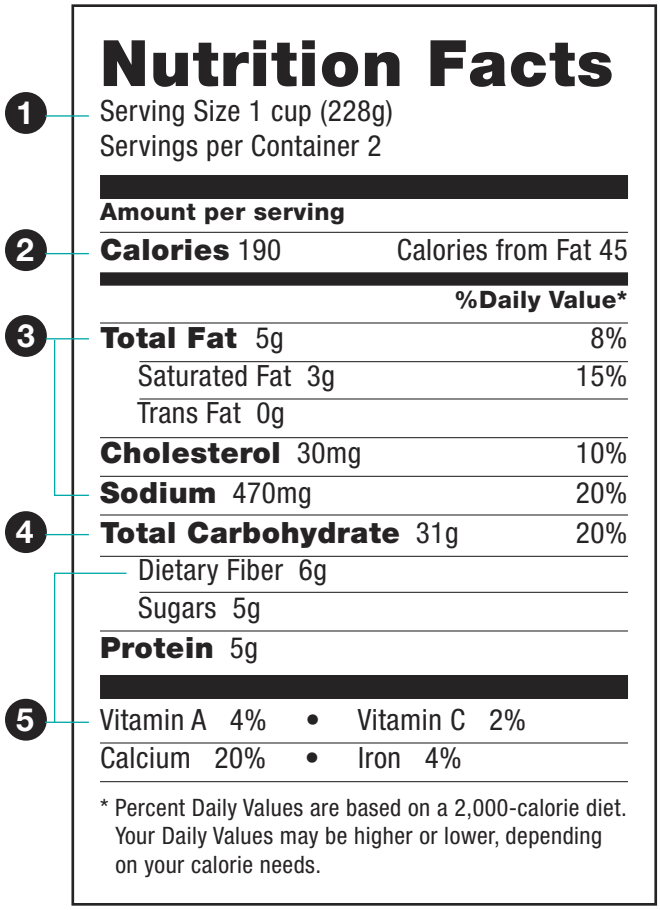
Avoid unhealthy (trans and saturated) fats. These may make insulin resistance worse and increase your risk for heart disease. Trans and saturated fats are found in fatty meats, deep-fried foods, whole-fat dairy products, pastries, poultry skin, cheese, cookies, sausage, sour cream, some crackers, creamer, half-and-half, and premium or full-fat ice cream.

***See the expanded food lists on pages 42-51 in the Appendix.***

## More Tips for Healthy Eating

- Use measuring cups, measuring spoons, and a food scale for portion control.
- Drink unsweetened or noncaloric beverages, and water.
- Limit alcoholic beverages, but if you do drink, be sure to have with food or snack as it could lead to low blood glucose.
- Eat at the table with all screens (TV, computer, phones) off during the meal.
- If you tend to eat when bored, try an alternative nonfood related activity such as going for a walk, reading or talking with a friend.

## Guidelines for Reading Food Labels



**Nutrition Facts**

1 Serving Size 1 cup (228g)
Servings per Container 2

**Amount per serving**

2 **Calories** 190 Calories from Fat 45

**%Daily Value***

3 **Total Fat** 5g 8%
Saturated Fat 3g 15%
Trans Fat 0g
**Cholesterol** 30mg 10%
**Sodium** 470mg 20%
4 **Total Carbohydrate** 31g 20%
Dietary Fiber 6g
Sugars 5g
**Protein** 5g

5 Vitamin A 4% • Vitamin C 2%
Calcium 20% • Iron 4%

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

### 1 Start with the serving size

- All the listed nutrients are based on this serving size.
- Note that *Servings per Container* equals the number of servings contained in the package.

### 2 Check the calories

- The amount of *Calories* you eat affects your weight.
- Fewer calories helps with weight loss

### 3 Check the fat and sodium

- Keep *Saturated Fat* as low as you can
- Avoid *Trans Fat*
- Limit *Cholesterol*
- Look for the lowest amount of *Sodium*

### 4 Count carbohydrates

- Look at *Total Carbohydrate* per serving
- 1 Carbohydrate Choice = 15 grams of carbohydrate
- *Sugars* are included in the total grams of carbohydrate

### 5 Choose more fiber, vitamins and minerals

- Look for the highest amount of *Fiber*
- Look for high amounts of *vitamins* and *minerals*

**Read the ingredients to help choose healthy foods**

The ingredients are listed in order from most to least

# Being Active

Being physically active helps to keep your blood glucose in a healthy range. Physical activity (exercise) makes muscles contract, causing them to absorb glucose for energy. This process happens much more quickly during physical activity than at rest.

## Exercise Offers Important Benefits

- Lowers fasting blood glucose and improves insulin action
- Lowers blood pressure
- Lowers cholesterol and triglyceride (blood fat) levels
- Lowers your risk for heart disease and stroke
- Relieves stress and can improve your mood
- Burns calories, which can help you manage your weight
- Improves energy and ability to concentrate
- Helps you sleep better at night

## Types of Physical Activity

There are three general types of exercise. Each type has unique health benefits, so you will want to include a variety of activities in your weekly routine. Check with your health care provider before starting any exercise program.

### 1 Aerobic Exercise

Aerobic exercise is any exercise that increases your breathing and heart rate for a prolonged period. Examples include brisk walking, swimming and dancing.

- Aerobic exercise uses glucose and fats for fuel, burning calories and helping to manage weight. It also strengthens the heart and lungs and improves circulation.
- If you haven't exercised recently, start with five to 10 minutes of gentle aerobic exercise three or more times per week. Gradually increase your time by five to 10 minutes.
- Aim for some type of aerobic activity at least 30 to 60 minutes a day, three or more days a week. Try not to skip more than one day. It may be easier to divide this time. For example, consider taking a 10-minute brisk walk after each meal.
- Mild to moderate intensity exercise tends to lower blood glucose. More intense exercise may cause an increase in blood glucose for one to two hours following exercise.
- Begin and end workouts with five minutes of an easier-paced exercise to warm up and then to cool down.

## 2 Strength Training

Strength training helps you lower glucose levels, build muscle, and lose weight. Also, exercise helps improve your strength and balance.

- Examples of strength-training exercises include sit-ups, lunges, Pilates, weight lifting and resistance bands.
- Always check with your health care provider before starting a strength-training program. Lifting too much weight can cause your blood pressure to rise or can cause injury.
- Strength train 2-3 times a week. Do exercises that use different muscle groups. Increase exercises as you get stronger
- Using correct technique is important for preventing injury. A personal trainer, physical therapist or exercise specialist can make a strength-training exercise program that works for you.

## 3 Flexibility Exercises

Flexibility exercises are important for protecting tendons, joints and muscles from soreness or injury during exercise. Regular stretching also helps increase your range of motion. Examples are yoga, tai chi, toe touches, side bends and head rolls. Flexibility exercises are *in addition to* aerobic and strength training.

- Stretch daily, holding each stretch for 15 to 60 seconds, or until you feel tightness or resistance. Repeat each stretch three to five times. Stretch your neck, arms, waist, hips, back, legs, ankles, toes, etc.
- Avoid bouncing or stretching to the point of pain.
- For the best results, stretch *after* your aerobic workout.

**Find joy in movement and move in ways that feel good. This encourages a life-long habit of exercise.**

## Preparing for Exercise and Physical Activity

Being prepared and following these general guidelines can help keep you safe and injury-free during exercise.

- Protect your feet with shoes that fit well and are soft and absorbent.
- Check for blisters, cuts and reddened areas before and after exercising.
- Wear or carry diabetes identification at all times.
- Keep your glucose meter and supplies with you.
- Aim to keep your blood glucose level between 100 to 150 while exercising.
- Have a carbohydrate source available to maintain safe blood glucose levels.
- Drink enough liquid to replace what you lose from sweating.
- If you use insulin, you may need to reduce your mealtime insulin when you plan to exercise within one to two hours after eating.
- Consider checking your glucose every 30 to 60 minutes during exercise, especially if you use insulin.

**Check with your provider for guidelines specific to you. Generally the guidelines are as follows.**

| If your blood glucose level is: | Then… |
|---|---|
| **Less than 100 mg/dl** | Eat a snack with 15 to 30 grams of carbohydrates before beginning exercise. |
| **100-150 mg/dl** | It's okay to exercise. (You may need to eat or drink 15 to 30 grams of carbohydrate every 30 to 60 minutes of activity to prevent low glucose levels). |
| **150-300 mg/dl** | It's okay to exercise. You probably will not need to eat or drink any additional carbohydrates during exercise. |
| **Greater than 300 mg/dl** | It's okay to exercise *with caution*. Drink plenty of liquids. If you feel unwell, stop exercising. |

**Follow the guidelines on this page in order to stay safe during exercise**

## How to Create a More Active Lifestyle

In addition to exercising, try to stay active throughout the day. Getting up and moving helps to burn calories, to strengthen muscles and to manage blood glucose. For example:

- Walk or bicycle, instead of driving, when running errands.
- Take the stairs instead of the elevator—or at least get off a few floors early and walk the rest of the way.
- Do housekeeping or gardening.
- Play kickball, hide-and-seek, hopscotch, hula hoop, or jump on a trampoline with the kids.
- Walk, run, or go to the gym when kids are at practice or games.
- Carry items upstairs in two trips, instead of one.
- Arrive early enough to park farther away, so you can walk the distance.
- Take the time to walk your shopping cart back to the front of the store.
- Take regular activity breaks to stretch or walk around when watching television, working on the computer or reading.

### Tips for Success

- Make a list of several physical activities you enjoy.
- Plan time to enjoy these activities each week, and vary them.
- Make exercise more fun by planning activities with friends or family.
- Include indoor activities on your list as alternatives for days when it is rainy or too hot to exercise comfortably outdoors.
- Record your progress, problem-solve your barriers, and reward yourself in meaningful ways for success.
- Consider using a smart phone app or activity tracker for motivation.
- Find an exercise buddy to help you keep your appointment to work out!

## Exercise Precautions

- Check with your health care provider before starting exercise. This is especially important if you have complications from diabetes.
- If you develop any of the following symptoms stop exercising and seek care immediately:
  - Chest pain, discomfort, or pressure
  - Discomfort or pain in other areas, such as one or both arms, the neck, jaw, back, or stomach
  - Shortness of breath, lightheadedness, nausea, or sweating
  - Abdominal discomfort that may feel like heartburn

## Note:

**Exercise may result in low blood glucose (hypoglycemia)**

Exercise, which is fueled by pulling glucose from the muscles and liver, can help your insulin work better for the next day or two. Exercise can lead to low blood glucose especially if you are on insulin or diabetes pills.

To prevent hypoglycemia (low blood glucose), you may need to eat or drink extra carbohydrates before exercising. As a guide, consume 15 grams of carbohydrates for every 30 minutes of exercise.

If you exercise near meal time, consider lowering the dose of your rapid-acting or mealtime insulin in order to avoid low glucose levels. The exact amount you lower the dose (often 10 percent to 50 percent) will depend on your type of insulin and the type and duration of exercise.

For evening exercise, you may need to eat a bedtime snack containing carbohydrates.

*My health care provider recommends I reduce my mealtime insulin*

***for light to moderate activity by:*** _____

***for harder activity by:*** _____

# Monitoring Your Blood Glucose

Measuring blood glucose is a way to find out how your diabetes care plan is working. Knowing if your blood glucose is not at goal—too high or too low—can also help you to problem-solve. Checking your blood glucose regularly—and keeping a record of it—can also provide valuable data to help you and your health care provider evaluate whether or not to adjust your medicine.


## Blood Glucose Goals

| Time of Day | Common Goals | Alternative Goals | My Specific Goals |
|---|---|---|---|
| Waking up (fasting level) | 80-130 mg/dl | less than 110 mg/dl | _____ mg/dl |
| Before meals | 80-130 mg/dl | less than 110 mg/dl | _____ mg/dl |
| 1 to 2 hours after meals (from start of meal) | less than 180 mg/dl | less than 140 mg/dl | _____ mg/dl |
| Bedtime | 100-150 mg/dl | 100-140 mg/dl | _____ mg/dl |
| Difference between before and after meals | 30-50 mg/dl | | |

***Some people may keep their blood glucose levels higher or lower than these goals. Check with your health care provider about the safest glucose levels for you.***

# Monitoring Your Blood Glucose

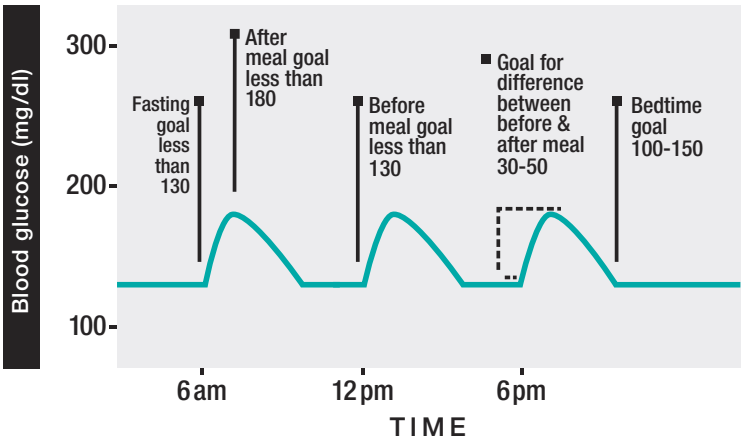
## Recording your Blood Glucose Levels

- Ask your care team when and how often to check your blood glucose.
- Record your results in a log book, such as the example below. Log books can also be kept on a mobile app or done on-line.
- Keeping track of your food and activities can help you to understand how they affect your blood glucose.
- Look at trends to identify patterns.

## Helpful Hints for Checking Your Blood Glucose

- Check your blood glucose more often if:
  - Your diabetes plan is changing.
  - You increase or reduce your exercise level.
  - You are gaining or losing weight.
  - You are ill or have an infection.
  - Your daily stress level increases.
  - You begin taking new medicine.

### Common Blood Glucose Goals



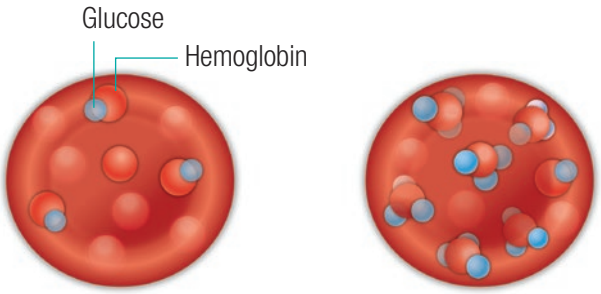

- Bring your meter and log book to every health care appointment.
- Call your health care provider if you often have numbers below 70 or above 300.

**Sample Blood Glucose Log Book**

| Before breakfast | After breakfast | Before lunch | After lunch | Before dinner | After dinner | Before bed | Night |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Food at breakfast | | Food at lunch | | Food at dinner | | Snacks | |

## What is the A1C?

- The A1C (glycohemoglobin) test measures the amount of glucose that is attached to the hemoglobin in your red blood cells.
- This test reflects the average blood glucose in your body over the last two to three months.
- The higher the A1C, the more glucose is attached to your hemoglobin.




**Low A1C** **High A1C**

## The A1C Level

- The A1C result is one way to show the average blood glucose level for the last two to three months. It is called the "estimated average glucose (eAG)." See the table on this page.
- Most patients with diabetes have an A1C done every three to six months.
- In general, keeping your A1C under 7.0 (average glucose less than 154) helps prevent the complications of diabetes. For some people, a higher or lower A1C goal may be right for you. Discuss your A1C goal with your health care provider.

### Average Blood Glucose

| A1C% | eAGmg/dl |
|---|---|
| 5.0 | 97 |
| 5.5 | 111 |
| 6.0 | 126 |
| 6.5 | 140 |
| 7.0 | 154 |
| 7.5 | 169 |
| 8.0 | 183 |
| 8.5 | 197 |
| 9.0 | 212 |
| 9.5 | 226 |
| 10.0 | 240 |
| 10.5 | 255 |
| 11.0 | 269 |
| 11.5 | 283 |
| 12.0 | 298 |

# Taking Medicine for Diabetes

Health care providers use many types of medicine to manage blood glucose levels and to minimize the risk of developing complications. Medicine for type 2 diabetes may be pills and/or injections. Discuss any type of medicine you are taking with your health care provider, including herbs, supplements and over-the-counter (OTC) medicine.

## Oral Medicine

The following table summarizes some of the oral medicine commonly used for diabetes management.

**Oral Medicine**

| Drug Class | Generic Name | Brand Name | Strengths Available | How It Works |
|---|---|---|---|---|
| **Alpha-Glucosidase Inhibitors** | acarbose | Precose® | 25, 50, 100 mg | Blocks carbohydrate digestion and absorption to help keep blood glucose levels normal after meals. |
| | miglitol | Glyset® | 25, 50, 100 mg | |
| **Biguanides** | metformin | Glucophage® | 500, 850, 1000 mg | Decreases liver glucose production and increases insulin sensitivity. |
| | metformin extended release | Glucophage XR® Fortamet® Glumetza® Metformin ER® | 500, 750, 1000 mg | |
| | metformin oral solution | Riomet® | liquid 500 mg/5ml | |
| **DPP4-Inhibitors** | sitagliptin | Januvia® | 25, 50, 100 mg | Stimulates the pancreas to respond better to glucose and decreases liver glucose production. |
| | saxagliptin saxagliptin | Onglyza® | 2.5, 5 mg 2.5, 5 mg | |
| | linagliptin | Tradjenta® | 5 mg | |
| | alogliptin | Nesina® | 6.25, 12.5, 25 mg | |

## Oral Medicine (continued)

| Drug class | Generic Name | Brand Name | Strengths Available | How It Works |
|---|---|---|---|---|
| **Meglitinides** | nateglinide | Starlix® | 60, 120 mg | Short-acting agents that increase insulin release from the pancreas. |
| | repaglinide | Prandin® | 0.5, 1, 2 mg | |
| **Sulfonylureas** | glimepiride | Amaryl® | 1, 2, 4 mg | Longer-acting agents that increase insulin release from the pancreas. |
| | glipizide | Glucotrol® | 5, 10 mg | |
| | glipizide extended release | Glucotrol XL® | 2.5, 5, 10 mg | |
| | glyburide | DiaBeta® Micronase® | 1.25, 2.5, 5 mg | |
| **Thiazolidinediones** | pioglitazone | Actos® | 15, 30, 45 mg | Increases insulin sensitivity and decreases liver glucose production. |
| **SGLT 2 Inhibitors** | canagliflozin | Invokana® | 100, 300 mg | Decreases re-absorption of glucose in the kidneys |
| | dapagliflozin | Farxiga® | 5, 10 mg | |
| | empagliflozin | Jardiance® | 10, 25 mg | |

Many of the oral diabetes pill are available in combination form. Here is a list of available combination medicine for diabetes. Please check with your Health Care Provider to see if any of these are right for you.

Alogliptin and Metformin: Kazano®
Glipizide and Metformin: Metaglip®
Glyburide and Metformin: Glucovance®
Linagliptin and Metformin: Jentadueto®
Pioglitazone and Metformin: Actoplus Met®, Actoplus Met® XR
Repaglinide and Metformin: PrandiMet®
Rosiglitazone and Metformin: Avandamet®
Saxagliptin and Metformin: Kombiglyze® XR
Sitagliptin and Metformin: Janumet®; Janumet® XR
Alogliptin and Pioglitazone: Oseni®
Pioglitazone and Glimepiride: Duetact®
Canagliflozin and Metformin: Invokamet®
Dapagliflozin and Metformin: Xigduo® XR
Empagliflozin and Metformin: Synjardy®
Empagliflozin and Linagliptin: Glyxambi®
Rosiglitazone and Glimepiride: Avandaryl®

## Injectable Medicine

Some diabetes medicines are injected. These are described in the table below and in the following section.

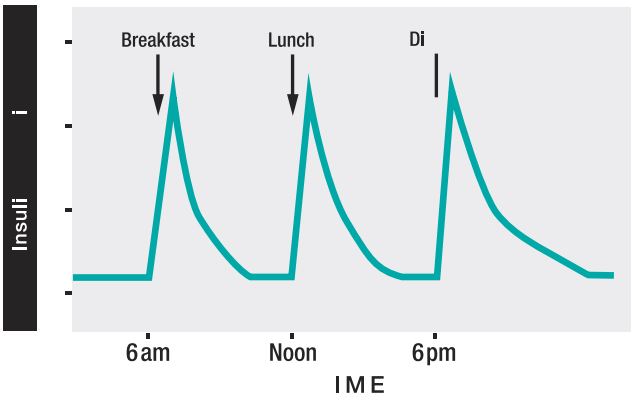
### Injectable Medicine

| Drug class | Generic Name | Brand Name | Common Doses | How It Works |
|---|---|---|---|---|
| **GLP-1 Receptor Agonists** | exenatide | Byetta®<br>Bydureon® | 5, 10 mcg<br>2 mg | Helps the pancreas make more insulin when blood glucose is high. Reduces glucose production in the liver and slows the absorption of food. |
| | liraglutide | Victoza® | 0.6, 1.2, 1.8 mg | |
| | albiglutide | Tanzeum® | 30, 50 mg | |
| | dulaglutide | Trulicity® | 0.75, 1.5 mg | |
| **Amylin Analog** | pramlintide | Symlin® | 15, 30, 45, 60, 120 mcg | Reduces the amount of glucose made by the liver. Lowers blood glucose levels after meals and decreases appetite. |
| **Insulin** | glargine | Lantus®<br>Basaglar®<br>Toujeo® | | Supplements the level of insulin made in the body, which lowers blood glucose. |
| | detemir | Levemir® | | |
| | degludec | Tresiba® | | |
| | NPH | Humulin N®<br>Novolin N®<br>Humulin® | | |
| | lispro | Humalog® | | |
| | aspart | Novolog® | | |
| | glulisine | Apidra® | | |
| | regular | Humulin R®<br>Novolin R® | | |
| | Inhaled insulin | Afrezza® | | |

# Insulin

Insulin is a hormone made in the pancreas. Insulin plays a key role in managing blood glucose by helping move glucose out of the bloodstream and into your cells. Insulin and other hormones help keep blood glucose levels in the goal range.

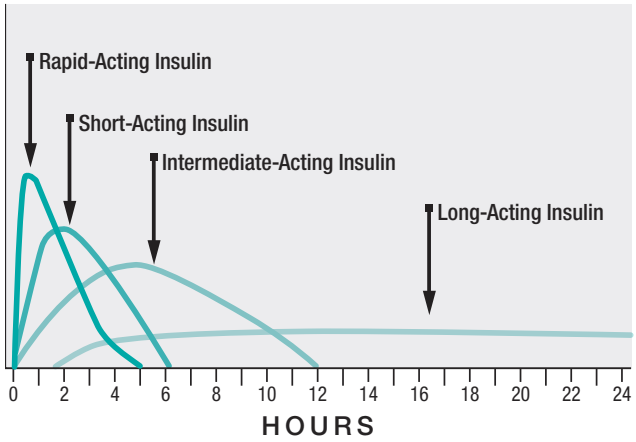
### Normal Insulin Secretion in a Person Without Diabetes




The insulin you inject or inhale works like the insulin made by your pancreas. Every person with type 1 diabetes needs to take insulin to keep blood glucose in your goal range. Many people with type 2 diabetes eventually need to take insulin, as the pancreas tends to make less insulin over time.

There are different types and different concentrations of insulin. Your health care provider will work with you to decide which insulin plan works best for you. You may need to take more than one type of insulin.

### Action and Duration of Types of Insulin




## Types and Actions of Insulin:

Insulins affect the body differently, based on timing

### Mealtime Insulins

**Rapid-Acting Insulins**

- Humalog® (Lispro), NovoLog® (Aspart), Apidra® (glulisine) and Afrezza® start working in 15 to 30 minutes, works hardest at 1 to 2 hours, and last about 4 to 6 hours.

**Short-Acting Insulins**

- Humulin Regular and Novolin Regular start working in 30 to 60 minutes, works hardest at 2 to 3 hours, and last about 6 to 8 hours

### Background Insulin

**Intermediate-Acting Insulins**

- Humulin NPH and Novolin NPH start working in 2 to 4 hours, works hardest at 4 to 6 hours, and last about 12 hours.

**Long-Acting Insulins**

- Lantus® Basaglar® Toujeo® (glargine); Levemir® (detemir); Tresiba® (degludec) start working in 1 to 2 hours and work evenly for up to 24 hours.

## Insulin Injections

Insulin does not come in pill form. It can be taken as an injection, delivered in a pump, or inhaled.

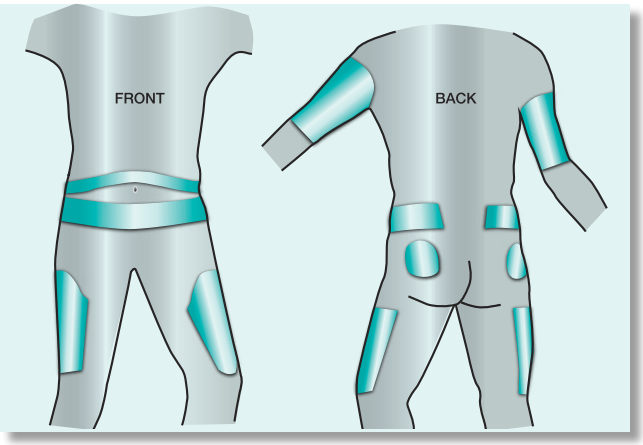
Generally, the best place for you to inject insulin is into your abdomen (belly). You may also inject insulin into the outer side of the upper arm, the small of the back, the thigh, or the buttocks. To work best, insulin is injected into the fatty tissue beneath the skin.

It is important to inject your insulin into a slightly different spot each time, rather than in the same area of the skin.

## Tips for Safe Insulin Use

- Check the expiration date on the insulin. Never use insulin past its expiration date.

## Insulin Injection Areas




- Keep insulin in the refrigerator before opening. Keep unused vials in the carton so they will stay clean and protected from light. Label the insulin with the date it is opened.
- Once opened, refer to the package insert for directions on how to store it. Most insulins can be stored at room temperature for 14 to 28 days once the vial or pen is opened. Guidelines may vary for different types of insulin. Follow manufacturer's guidelines.
- Do not keep insulin in temperature extremes: room temperatures above 86 degrees Fahrenheit, hot cars, direct sunlight, or direct contact with ice or refrigerator cold spots. Do not use insulin if it has been frozen. Consider storing unopened insulin in the door inside the refrigerator. Read instructions for details about your insulin.
- If insulin starts yellowing or crystals form in insulin, discard the vial or pen and use a new one.
- Consider packing a reusable ice pack near the container you use to carry insulin, such as your travel bag, insulated lunch bag or insulin carrying case. Do not allow the insulin to directly touch the ice pack.
- Do not mix a long-acting insulin—detemir (Levemir®) or glargine (Lantus®)—with any other insulins. Do not use the same syringe to draw up a long-acting insulin and a mealtime insulin. Inject different insulins in different areas of your body.

# Problem Solving

Managing your diabetes and being healthy involves making decisions on a daily basis. The problems you face in keeping your blood glucose levels stable are often the most challenging. Hypoglycemia (low blood glucose), hyperglycemia (high blood glucose), and sick day decisions are some of the problems that require special knowledge and problem-solving skills.

## Hypoglycemia (Low Blood Glucose)

When your blood glucose drops lower than goal—usually below 70 mg/dl—this is hypoglycemia.

- Some diabetes medicines are more likely to cause hypoglycemia than others. Check with your health care provider if your medicine may cause hypoglycemia.
- Exercise, which lowers blood glucose naturally, can also lead to hypoglycemia.

### Causes of Hypoglycemia

- Too much insulin or medicine for diabetes.
- Skipping or delaying meals or snacks—or eating less than usual.
- Exercising very hard without eating extra carbohydrates or adjusting insulin dosages.
- Vomiting and/or diarrhea during an illness.
- Drinking too much alcohol, especially without eating food.

### Preventing Hypoglycemia

- Match your insulin dose to the amount of carbohydrates you eat. Your health care provider can help you learn these skills.
- Check your blood glucose more often during exercise and times of stress.
- If you drink alcohol, limit yourself to one or two servings, and always eat some carbohydrates at the same time.
- If you are sick, check your blood glucose levels every two to four hours—or at least four times each day.
- Always carry a source of sugar with you. (See examples on page 24.)
- Wear medical identification (bracelet, necklace or a wallet card) that states you have diabetes.

### Hypoglycemia and Driving

Driving with hypoglycemia is very dangerous. Do not drive when you have any symptoms of hypoglycemia or when your glucose level is low. If you are at risk for hypoglycemia:

- Check your blood glucose before driving.
- When driving or traveling, always carry your glucose meter and have glucose tablets or gel near you.

## Hypoglycemia Plan

### How to Treat Mild and Moderate Hypoglycemia (Rule of 15)

Check your blood glucose level. If your blood glucose level is low, usually below 70 mg/dL, **eat or drink 15 grams of carbohydrates** such as:

- Three to four glucose tablets.*
- One tube of glucose gel.*
- Liquid glucose such as Dex4 Glucose Liquid Blast®*
- ½ cup (4 ounces) of fruit juice
- ½ cup (4 ounces) of regular (not sugar-free) soda
- 1 cup (8 ounces) of skim milk
- Six to eight Life Savers® or SweeTarts®
- 15 Skittles® or Jelly Belly® jelly beans
- Small piece of fruit
- 1 Tbsp. sugar, jam, honey, or syrup

After **15 minutes**, check your blood glucose again. If your glucose level is still low, **eat or drink 15 more grams of carbohydrates**. Once your blood glucose level is in goal range, eat a light snack, if it will be more than one hour before your next meal. Continue following this rule until blood glucose level is above 70 mg/dl.

** These are available without a prescription at drugstores.*

### How to Treat Severe Low Blood Glucose

Talk to your family and friends about the possibility of hypoglycemia. Let them know that if you become unresponsive or unconscious or cannot swallow for any reason, call 911.

If you have a glucagon kit, show family and friends how to use it and where it is stored. Teach them to turn you on your side before injecting, in case you vomit.

A glucagon injection kit requires a health care provider's prescription. Always have the kit available, if you are at high risk for hypoglycemia.

### Symptoms of Hypoglycemia**

**Mild Hypoglycemia**

- Sudden hunger
- Headache
- Shaking
- Fast or pounding heartbeat
- Sweating
- Tiredness
- Dizziness
- Blurred vision
- Nervousness, excitement
- Drowsiness
- Numbness or tingling around mouth and lips

**Moderate Hypoglycemia**

- Personality change
- Irritability
- Confusion
- Poor coordination
- Difficulty concentrating
- Slurred or slow speech

**Severe Hypoglycemia**

- Unconsciousness
- Seizures

*** Note: You may feel all, some, or none of these signs and symptoms. Some medications such as beta-blockers, which are used to manage blood pressure, may make it difficult to recognize the symptoms of hypoglycemia.*

## Hyperglycemia (High Blood Glucose)

Hyperglycemia means that your blood glucose is too high. Very high glucose levels can be dangerous.

### Causes of Hyperglycemia

- Eating too much food, especially too many carbohydrates.
- Taking less diabetes medicine than you need.
- Inactivity (too little exercise).
- Not taking diabetes medicine as directed.
- Side effects of other medicine you may be taking.
- Infection, injury or illness, such as a cold or flu.
- Emotional stress.
- Progression of diabetes.

### Hyperglycemia Plan

It is important for you and your health care provider find out the reason for high blood glucose. Allowing blood glucose levels to remain high harms your body and will increase your risk for complications. When blood glucose levels are very high (above 300 mg/dl), you can become dehydrated and get sick very quickly.

- Keep a record of the times you have high blood glucose levels and note any possible causes. Discuss these episodes with your health care provider. Your diabetes plan may need to be changed.
- When your blood glucose is high, you need to stay hydrated. Drink plenty of calorie-free or low-calorie liquids such as water, sugar-free soda, caffeine-free teas and broth.
- Ask your health care provider when to call the office.

**Symptoms of Hyperglycemia**

- Increased thirst
- Frequent urination
- Blurry vision
- Dry skin
- Hunger
- Weight loss
- Fatigue and/or drowsiness
- Slow healing of wounds
- Urinary tract infections
- Sexual dysfunction
- Numbness or tingling in feet or toes

*Note: You can have high blood glucose without showing any symptoms! Check your blood glucose regularly to see if your levels are in a healthy goal range.*

## What Happens When You Get Sick

When you get sick, your blood glucose may be higher than normal for several reasons.

- The body becomes more insulin resistant during illness.
- The liver still releases glucose, sometimes at increased levels, due to stress hormones.
- Certain medicine may cause your blood glucose to rise.

## Managing Sick Days

### Managing your Blood Glucose

Before your next illness, infection or injury—all of which can make blood glucose levels rise—be prepared with an action plan.

- Rest. Ask someone to help care for you.
- Take your usual diabetes medicine, unless your health care provider instructs you differently.
- Drink plenty of fluids. Drink about 8 ounces of water every hour you are awake. Sipping fluids might be easier than drinking 8 ounces all at once. Watch for signs of dehydration (weight loss, very dry mouth or tongue, cracked lips, being confused). Seek immediate medical care if any of these signs occur.
- Eat your usual healthy meals or snacks. If you are too ill to eat, see the table on this page.
- Check your blood glucose level every two to four hours while you are awake.
- If your blood glucose levels remain high or too low, then contact your health care provider.
- Seek immediate medical care if you have high blood glucose levels, extreme fatigue, stomach pain with nausea, rapid and shallow breathing, fruity breath or confusion. All of these are signs of diabetic ketoacidosis—a very dangerous complication.

### Taking Insulin During Illness

If you take insulin, continue to take your insulin even when you are ill. However, you may need to adjust the timing or dosage of your insulin, especially if you are unable to eat your regular meals or snacks. Discuss how to adjust your insulin during illness with your health care provider.

### When you are ill, drink plenty of sugar-free, caffeine-free liquids such as below:

- Water
- Sugar-free Kool-Aid®
- Sugar-free soda
- Sugar-free gelatin
- Sugar-free Crystal Light®
- Caffeine-free tea
- Broth

### If you are too ill to eat regular food, choose from the options below:

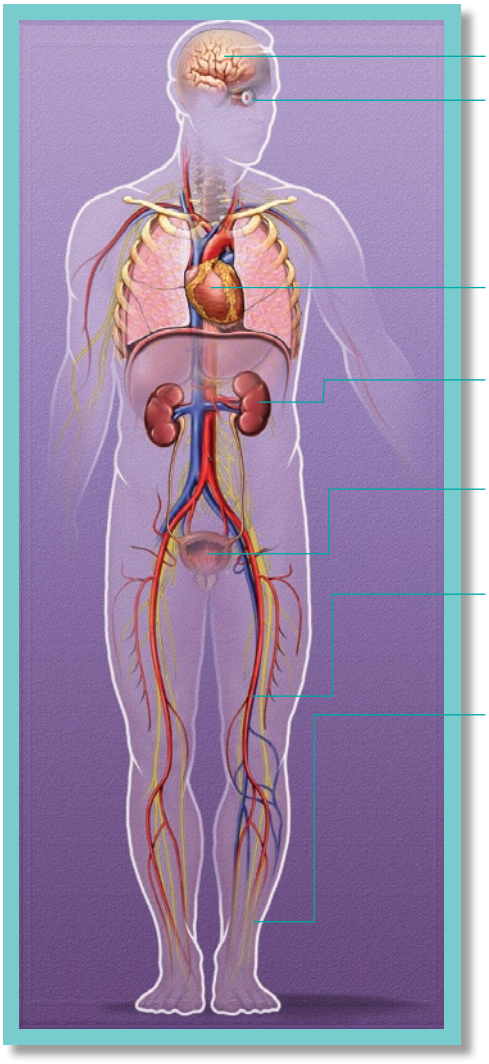
**Drink a liquid or eat a snack every one or two hours that gives you 10 to 15 grams of carbohydrates. Examples are:**

- 4 oz. (½ cup) regular gelatin
- 4 oz. (½ cup) ice cream
- 4 oz. (½ cup) custard
- 1 regular double Popsicle®
- 4 oz. (½ cup) applesauce
- 6 oz. light yogurt
- 6 oz. (¾ cup) regular ginger ale
- 4 oz. (½ cup) regular soda
- 4 oz. (½ cup) fruit juice
- 8 oz. (1 cup) sports drink
- 8 oz. (1 cup) soup
- 6 soda crackers

# Reducing Risks

Choosing a lifestyle that keeps your diabetes well-managed will help reduce your risk for serious complications. It will also lead to a healthier and more active life.

**Complications and Symptoms of Diabetes**



Brain injury (stroke)

Eye disease (retinopathy, glaucoma, cataracts) Blurred vision

Heart disease (heart attack, high blood pressure)

Kidney disease (nephropathy)

Urinary tract infections, Erectile dysfunction

Blood vessel disease (peripheral vascular disease)

Nerve damage (neuropathy, ulcers, amputation)

Skin (dry skin, rash, skin infections)

General symptoms: hunger, thirst, increased urination, weakness, mood changes, fatigue

## An Ounce of Prevention

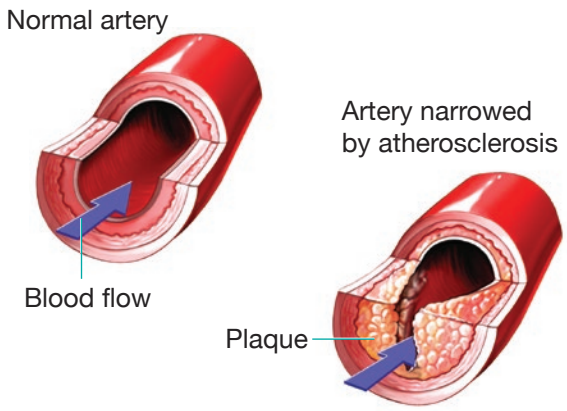
People with diabetes can lead full and active lives if they manage their condition well. If diabetes is not well managed, however, serious complications can develop over time. Some of the health complications that may develop include:

- Heart attack
- Stroke
- Eye disease (retinopathy)
- Kidney disease (nephropathy)
- Nerve disease (neuropathy)
- Blood vessel disease (peripheral vascular disease)
- Foot problems, such as foot ulcers, that could lead to amputation

The best way to prevent complications is to manage your blood glucose, blood pressure and cholesterol.

## Heart and Blood Vessel Disease

Heart and blood vessel disease are the most common health problems linked to diabetes. The ABC's of diabetes summarizes the key tests that are needed to be sure your risk factors for heart and blood vessel disease are being well managed.




**A is for A1C.** The A1C is a blood test ordered by your health care provider that shows your average blood glucose over the last three months. The A1C goal is less than 7.0% for most people with diabetes. Discuss your individual goal with your health care provider.

**B is for Blood Pressure.** When your blood pressure is high, your heart has to work harder. This extra strain puts you at higher risk for heart disease as well as multiple other health problems such as eye and kidney disease. Discuss your individual goal with your health care provider. Note that many people with diabetes will need to take one or more types of medicine to achieve their blood pressure goal.

**C is for Cholesterol.** Cholesterol contributes to the buildup of plaque in blood vessels, which increases the risk of heart attacks, strokes, and blood vessel disease. There are different types of cholesterol and a healthy lifestyle can help keep your cholesterol levels in the best range.

- **Low Density Lipoprotein (LDL)** is the "bad" cholesterol that leads to heart and blood vessel disease. The lower your LDL, the lower your risk of heart and blood vessel disease.
- **High Density Lipoprotein (HDL)** is the "good" cholesterol that removes the "bad" cholesterol from the blood. In general, the higher your HDL level, the lower your risk of heart and blood vessel disease.
- Triglycerides measure the amount of circulating fats in your blood. Higher risk for heart and blood vessel disease is associated with levels greater than 150 mg/dl.

The American Diabetes Association recommends that certain patients with diabetes should take cholesterol medications to lower their risk of heart and blood vessel disease. For example, these may include people with diabetes who are older than 40 years old, who have other heart disease risk factors, or who have had a previous heart attack.

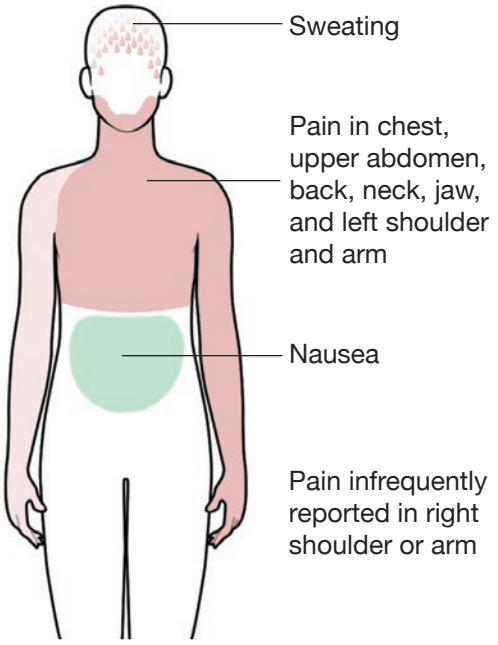
Discuss cholesterol medicines with your health care provider to see if they are right for you.

# Heart Disease and Stroke

## Heart Attack

A heart attack occurs when the blood vessels supplying your heart become partially or totally blocked by fat and cholesterol, which cuts off the blood supply that keeps your heart beating. Warning signs of a heart attack may include:

- Chest pain, tightness, pressure or discomfort.
- Pain or discomfort in your arms, back, jaw or neck
- Shortness of breath
- Sweating
- Dizziness or light-headedness
- Indigestion or nausea
- Weakness or fatigue




## Stroke

A stroke (sometimes called a brain attack) occurs when the blood supply to part of your brain is blocked. The result is damage to brain tissue. Warning signs of stroke often include:

- Weakness or numbness on one side of your body
- Sudden confusion or trouble understanding what is happening
- Trouble talking
- Dizziness, loss of balance or trouble walking
- Trouble seeing or double vision
- Severe headache

**If you have any of the above warning signs, call 911 immediately.**

## Aspirin

The American Diabetes Association recommends that some people who have diabetes take an aspirin each day to help prevent heart attacks and strokes. This includes most men and women older than age 50 and who have at least one additional major risk factor for heart disease (family history of heart disease, high blood pressure, smoking, high cholesterol, or protein in your urine). Some people should not take aspirin. Before deciding to take aspirin, discuss it first with your health care provider.

## Foot Problems

Foot problems occur more often in people with diabetes, they are slow to heal and difficult to treat. Common problems include:

- Nerve damage, which can result in pain, tingling, numbness, and deformity of the foot.
- Poor circulation, which leads to poor wound healing and increased risk of serious infection. In severe cases, doctors may have to amputate toes or feet.

### Caring for Your Feet

- Trim your toenails straight across or follow your health care provider's guidelines.
- Choose socks that won't irritate your feet, such as absorbent, seamless socks that keep your feet dry.
- Change your socks frequently.
- Wear comfortable, well-fitting shoes. If you have problems with your feet, your health care provider may prescribe special shoes or inserts.
- Before you put on shoes, feel inside to make sure there are no pebbles or rough edges that might hurt your feet.
- Protect your feet by always wearing shoes or slippers, even around the house or at the beach.
- Take your shoes and socks off and ask your health care provider to check your feet at each visit. Once a year, request a thorough foot exam, including a test for change in feeling or numbness.

### Daily Foot Care Instructions

- Wash your feet with warm (not hot) water and soap. Dry them completely, especially between the toes.
- If your skin is dry, apply moisturizer, but do not put it between your toes.
- Every day, examine the tops, bottoms, and sides of your feet, as well as between your toes. Use a mirror to help you see the bottoms and sides of your feet, or have a family member assist you.
- Every day, check for sores, cuts, cracks, change in color, blisters, calluses or swelling. If you notice any of these problems, contact your health care provider right away.
- Don't try to take care of foot problems yourself.

## Dental Problems

Diabetes increases your chances of developing dental problems, including gum disease, which can lead to serious infection or the loss of teeth or bone. In addition, gum disease can increase your blood glucose levels.

### Protect Your Teeth

- Try to keep your blood glucose in your goal range.
- Brush your teeth at least twice a day with a soft brush.
- Floss daily.
- See your dentist twice a year—or more often, if needed.
- Call your dentist if you notice red, swollen, tender, bleeding or painful gums.

## Eye Disease

### Diabetic Retinopathy

High blood glucose and high blood pressure can damage the tiny blood vessels in your eyes. This damage can cause vision problems or may even lead to blindness. If found early, eye disease can usually be stopped or managed.

### Protecting Your Eyes

- Keep your blood glucose and blood pressure within your goal ranges.
- See an eye doctor every one to two years for a dilated eye exam and vision check.
- Make sure your eye doctor knows you have diabetes.
- Call your health care provider if you notice dark spots in your vision or if you have a change in vision or eye pain or pressure.

*Note: High blood glucose levels, low blood glucose levels and rapid changes in glucose can result in blurred vision. This problem often goes away once blood glucose levels are in goal range.*

## Kidney Disease

### Diabetic Nephropathy

High blood glucose damages the blood vessels in your kidneys, which can lead to kidney disease. In turn, kidney disease can lead to kidney failure and the need for dialysis.

### Protecting Your Kidneys

- Keep your blood glucose and blood pressure within your goal ranges.
- Once a year, ask your health care provider for a blood test and a urine test to check for kidney function. These tests help identify signs of stress on your kidneys.
- Consider meeting with a dietitian to be sure your diet provides the correct balance of carbohydrates, protein, healthy fats and minerals such as sodium, potassium, calcium and phosphorus.

## Nerve Disease

### Diabetic Neuropathy

Having diabetes increases a person's risk for diabetic nerve disease, also known as diabetic neuropathy. Managing your blood glucose will help maintain the health of all types of your nerves.

High blood glucose over a long time can cause nerves to stop working or not work correctly. Symptoms can develop and depend on the nerves that are damaged.

Peripheral neuropathy is when there is nerve pain and numbness, mainly in the legs, feet and hands and may be present even before you are diagnosed with diabetes. Sometimes lowering blood glucose to your goal range can help decrease nerve pain and numbness. Have your healthcare provider do a complete foot exam for loss of sensation at least once a year, and check your feet at every visit. It is important that you check your feet daily. A small foot injury can turn into a serious problem very quickly. You may need to see a foot care specialist for prevention and treatment of foot issues. If you have neuropathy and you smoke, consider quitting. Smoking can greatly increase the risk of amputation.

A second type of neuropathy is called Autonomic Neuropathy. This happens when nerves are damaged that work on your stomach, intestines, heart and other internal body functions. The most common problem, gastroparesis, also called delayed gastric emptying, is a disorder that slows or stops the movement of food from the stomach to the small intestine. This problem can cause low or high blood glucose and you may need your diabetes medicine changed. Talk to your health care provider about any changes in medicine.

## Sexual Health

Diabetes can sometimes damage the nerves and blood vessels that control sexual organs. Managing your blood glucose, blood pressure and cholesterol levels can help maintain the health of these organs.

### Sexual Problems in Men

The most common form of sexual dysfunction in men is erectile dysfunction, or ED. Most men with diabetes have ED at some time in their life. In ED, there is a problem getting or keeping an erection. The main cause of ED in diabetes is related to nerve damage (neuropathy) or blood flow. Another common cause of ED in men with diabetes is a low testosterone level. ED can also be related to heart disease. If you have ED, or are concerned you might have ED, talk to your healthcare provider. Ask if any medicine you take could be causing ED. Also ask if there are medications or mechanical devices that might help you. There are health care providers called urologists, who specialize in ED treatment.

### Sexual Problems in Women

Vaginal and urinary tract infections are a commonly reported sexual health problem for women. If you have these or other sexual concerns, talk with your health care provider. High blood glucose levels can also decrease sexual desire and also lead to dryness in the vagina.

## Immunizations

Keeping current with the following immunizations is also important for reducing the risk of diabetes complications:

- Flu shot (every year).
- Pneumonia vaccine at least once for everyone over 2 years old. There are two types of pneumonia vaccines recommended for people with diabetes. One is called the PPSV23 (Pneumovax) and one is called the PCV13 (Prevnar). Check with your health care provider to determine which vaccine you need based on your age. (When you turn 65 years old, get another pneumonia vaccine, unless you have received one in the past five years.)
- Hepatitis B vaccine (especially if you are less than 60 years old).

## Diabetes and Pregnancy

During pregnancy, diabetes that is not well managed can be harmful for both the mother and her baby. Although many women with diabetes give birth to healthy babies, pregnancy requires special planning and medical attention. High blood glucose levels and high blood pressure can be dangerous for an unborn baby.

- Meet with your health care provider before becoming pregnant.
- Use an effective method of birth control until you are ready to get pregnant. Ask your health care provider which birth control method would be best for you.
- Before trying to get pregnant, make sure your blood glucose and blood pressure are well managed for several months. Then work hard to maintain those levels throughout your pregnancy. Your health care provider will help you set the your goals.

## Smoking

Smoking is especially dangerous for people with diabetes because:

- Smoking (including e-cigarettes and other products with tobacco) makes diabetes more difficult to manage.
- Smoking damages blood vessels throughout the body, which dramatically increases the risk of heart attack, heart disease, stroke and amputation.

Ask your health care provider for a personal plan to help you quit smoking. Tobacco cessation counseling and medications can greatly increase the chances of quitting successfully.

Call the California Smokers' Helpline at 1-800-NO-BUTTS for free telephone counseling and additional help.

### Other Health Problems in Diabetes

Some health problems are more common in people with diabetes than in people without diabetes, including those listed below. Discuss any questions you have about these conditions with your health care provider.

- Sleep apnea
- Hearing loss
- Dental disease
- Liver disease
- Depression
- Memory problems
- Broken bones
- Cancer

# Healthy Coping

## Learning You Have Diabetes

Learning you have diabetes can dramatically change your life. You may feel scared, shocked, angry or overwhelmed. You may not want to believe it. These are normal reactions. Always remember that diabetes is a manageable disease. Learning how to manage your disease will help ease your fear and anxiety. Many people diagnosed with type 2 diabetes become very motivated to improve their overall health and lifestyle, so they can enjoy life to its fullest. Learning coping skills and getting the support you need is very important.

## Stress

Stress is a natural part of life. Sometimes it can affect us in a good way—such as teaching us new skills, motivating and strengthening us. But other times, stress can harm our health, especially if it persists day after day. Chronic stress can raise blood pressure, heart rate, cholesterol and blood glucose.

### Type of Stress

| Psychological Stress | Physical Stress |
|---|---|
| • Family issues or concerns | • Illness |
| • Work challenges | • Infection |
| • Financial worries | • Chronic pain |
| • Relationship issues | • Poor sleep |
| • Personal problems | • Health complications |
| • Caregiver responsibilities | • Dental problems |
| • Worry and fatigue | |

## Coping Skills to Manage Stress

It is important to learn healthy ways to reduce and manage stress. Doing this can help improve your blood glucose levels and your overall health.

### Tips for Stress Management

- Take a break: relax, take a walk, slow down, have some fun.
- Take care of your body. Eat healthy, sleep well, exercise, manage pain.
- Get support through friends, family members or professional counseling.
- Calm down and let go. Try deep-breathing exercises, meditation, or yoga.
- Make priorities. Decide what is most important in your life and stay focused on that.
- Take care of yourself. Do not put everyone else's needs ahead of your own.
- Set realistic goals. Try to change only those things that you can.
- Nurture yourself spiritually, emotionally and mentally. Treat yourself like your own best friend.
- Take time to do things you love.
- Stay positive.
- Your ideas: _____

_____

_____

_____

_____

## Recognizing Depression

When you first learn that you have diabetes—or at other times in your life when your stress level remains high week after week—it is normal to feel sad and anxious. When stress worsens enough to affect your motivation, energy level and daily happiness, you could be experiencing symptoms of depression. Depression can make managing your diabetes, health and lifestyle more challenging.

Depression is treatable, but it often takes expert help and guidance, including counseling and medicine. If you have some of the symptoms below, talk to your health care provider. You deserve to enjoy life without depression.

### Symptoms of Depression

- Sadness or irritability
- Withdrawing or isolating yourself
- Fatigue and trouble sleeping
- Poor concentration, forgetting things
- Poor eating habits
- Feeling overwhelmed
- Lack of motivation
- Feeling hopeless and helpless

## Diabetes Burnout

Taking care of your diabetes is an ongoing, daily routine. This routine gets easier when it becomes a habit. On the other hand, sometimes you may get tired of doing what it takes to manage your diabetes.

### Signs of Diabetes Burnout

- Anger or resentment about having to manage your diabetes
- Feelings of being overwhelmed when thinking about the daily management routine
- Neglecting diabetes care: forgetting medicine, not checking blood glucose, not paying attention to eating and exercise
- No motivation or energy to manage your diabetes and take care of yourself
- Denying, forgetting or ignoring your diabetes

If you feel you have diabetes burnout, speak to your health care provider.

## Taking Action

To manage your diabetes, your health care provider may recommend many lifestyle changes. Remember, no one expects you to immediately change all your daily habits. Most people do best when they can work on one lifestyle change at a time. Keep in mind these important steps for success:

- Make a clear plan
- Keep it realistic
- Do it consistently
- Document your success

It is normal to make mistakes and fall back on old habits, but sticking to your plan will help you achieve successful results. With success comes a feeling of well being.

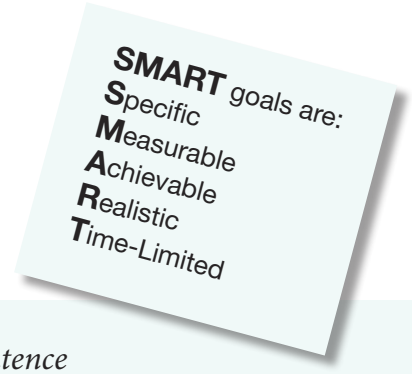
Choose one of the AADE7™ Self-Care Behaviors to create a behavior-change goal. Then work with your health care provider to develop an action plan that will help you reach your goal.

- Healthy eating
- Being active
- Monitoring
- Taking medications
- Problem solving
- Reducing risks
- Healthy coping

You can use the Take Action form on the next page.

## Take Action Plan

**SMART** goals help people with diabetes and their healthcare team track the progress of reaching your goal. When you are in a diabetes education program, you will set short term goals that can be met during the program.




*If you answer these questions and complete this sentence you will have a SMART goal to follow.*

**By** (date) _____ I will **WHAT** _____,

**WHEN** _____, **WHERE** _____,

**HOW OFTEN** (daily, weekly etc.)_____, **HOW LONG** _____

in order to **WHY** (i.e. lower blood glucose, lose weight)_____.

How will you **TRACK** your goal? _____

_____

### Confidence Level

1 2 3 4 5 6 7 8 9 10

We ask people to "Rate your confidence level" after you set a goal. Confidence means how likely you think you can finish your goal.

- A rating of 1 means you are not sure at all and a rating of 10 means you are very sure. If you choose a 6 or below, ask yourself, how you can change your goal to make it easier to reach?
- Start with something you think is doable and then add on to the goal over time.
- Small changes now help you to meet bigger goals later.

### Action Plan

An Action Plan helps you to meet your goal and to make changes to your goal when you are not able to finish what you set out to do. Ask yourself these questions:

- Who do you need support from?
- What might get in the way or make it hard for you to reach your goal?
- What is a reasonable time frame for your goal?
- What are some things you can do differently?
- Is your home or work planned to help you reach your goal?

## Keeping track of your goals

- Use a paper log or a mobile application (app) to track progress.
- Use reminders in your calendar, on your phone or with a mobile app.
- Social media and online support groups may help you find people to support you.
- A list of commonly used mobile apps and online diabetes support communities are listed in the back of the book.

## Tracking your Progress

- How successful were you in reaching your goal?
- Rate your goal on a scale of 1-10 with 1 meaning not at all, 5 meaning half of the time, 7 meaning most of the time, and 10 meaning all of the time.
- If you met your goal, that is great! Now think about a new goal to help you keep your new skill or habit for the long term.
- If you did not meet your goal, think about how you might do things differently and change activities to reach your goal.
- Maybe your goal was too hard? You may need to start over with a new goal?

Your diabetes educator can help you set SMART goals and Action Plans.

# Appendix

## Your Diabetes Health Record

Use the worksheet on the following page to stay actively involved in the management of your diabetes.

Completing the tests and exams listed on the worksheet on the next page will help prevent the complications of diabetes.


## Communicate with your health care provider

**Improve your diabetes self-management by discussing with your health care provider:**

- Smoking counseling
- Medicine
- Nutrition therapy
- Physical activity
- Weight management
- Complications
- Aspirin therapy
- Hypoglycemia (low glucose)
- Hyperglycemia (high glucose)
- Sick day rules
- Mental health issues
- Pre-pregnancy counseling
- Pregnancy management

# Appendix

## Diabetes Health Record

| | Frequency | My Goals | My results | My results | My results |
|---|---|---|---|---|---|
| Review blood glucose records | every visit | | | | |
| Blood pressure | every visit | | | | |
| Weight (set realistic goals) | every visit | | | | |
| Foot exam | every visit | | | | |
| A1C | every 3 to 6 months | | | | |
| Urine albumin to creatinine ratio | yearly | | | | |
| GFR (glomerular filtration rate) | yearly | | | | |
| Total cholesterol | varies | | | | |
| Triglycerides | varies | | | | |
| HDL cholesterol (good cholesterol) | varies | | | | |
| LDL cholesterol (bad cholesterol) | varies | | | | |
| Dilated eye exam | every 1 to 2 years | | | | |
| Dental exam | twice yearly | | | | |
| Flu shots | yearly | | | | |
| Pneumonia vaccines | once or more often depending on your age | | | | |
| Hepatitis B vaccine series | once (for most people) | | | | |
| Diabetes self-management education and support | yearly and as needed | | | | |

## Blood Glucose Goals & Log

| Time of Day | Common Goals | My Specific Goals |
|---|---|---|
| Waking up (fasting level) | 80-130 mg/dl | _____ mg/dl |
| Before meals | 80-130 mg/dl | _____ mg/dl |
| 1 to 2 hours after meals (from start of meal) | less than 180 mg/dl | _____ mg/dl |
| Bedtime | 100-150 mg/dl | _____ mg/dl |
| Difference between before and after meals | 30-50 mg/dl | _____ mg/dl |

| Date | Breakfast | | | Lunch | | | Dinner | | | Bedtime or Nighttime |
|---|---|---|---|---|---|---|---|---|---|---|
| | Medicine | Before time/glucose | After time/glucose | Medicine | Before time/glucose | After time/glucose | Medicine | Before time/glucose | After time/glucose | |
| | | | | | | | | | | |
| Food log/notes | | | | | | | | | | |
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| Food log/notes | | | | | | | | | | |
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| Food log/notes | | | | | | | | | | |

# Appendix

## Carbohydrate Choices

Foods containing carbohydrates are necessary for good health. Managing the amount and distribution affects blood glucose. A carbohydrate choice is a serving of starch, fruit, milk, or other carbohydrate listed below that contains approximately **15 grams of carbohydrate**.

### Carbohydrate Choices

**Starch (1 serving = 15 gms carbohydrate)**

#### Breads

- Bagel (large) ¼ (1 oz.)
- Biscuit (2½ inches across) 1
- Bread, loaf
  - white, whole-grain, pumpernickel, rye, unfrosted raisin 1 slice (1 oz.)
  - reduced-calorie 2 slices (1½ oz.)
- Chapatti (6 inches across) ¼
- Corn bread (1¾ inch cube) 1
- English muffin ½
- Hot dog bun or hamburger bun ½ (1 oz.)
- Naan (8 inches x 2 inches) ¼
- Pan dulce (4½ inches across) ¼
- Pancake (4 inches across) 1
- Pita (6 inches across) ½
- Roll (plain, small) 1 (1 oz.)
- Roti (6 inches across) ½
- Stuffing bread ⅓ cup
- Taco shell (5 inches across) 2
- Tortilla
  - corn (6 inches across) 1
  - flour (6 inches across) 1
  - flour (10 inches across) ⅓
- Waffle (4-inch square or 4 inches across) 1

#### Cereals and Cooked Grains

- Barley (cooked) ⅓ cup
- Bran (dry)
  - Oat ¼ cup
  - Wheat ½ cup
- Bulgur (cooked) ½ cup
- Cereals, cold
  - Bran flakes ½ cup
  - Granola ¼ cup
  - Muesli ¼ cup
  - Puffed 1½ cups
  - Shredded wheat (plain) ½ cup
  - Unsweetened (ready-to-eat) ¾ cup
- Cereals, hot
  - Oats (cooked) ½ cup
  - Grits (cooked) ½ cup
- Couscous ⅓ cup
- Kasha ½ cup
- Millet (cooked) ⅓ cup
- Pasta (cooked) ⅓ cup
- Rice stick noodles ½ cup
- Bean thread noodles ½ cup
- Polenta (cooked) ⅓ cup
- Quinoa (cooked) ⅓ cup
- Rice, white or brown (cooked) ⅓ cup
- Tabbouleh (tabouli) (prepared) ½ cup
- Wheat germ (dry) 3 Tbsp.
- Wild rice (cooked) ½ cup

## Carbohydrate Choices (continued)

### Starch (1 serving = 15 gms carbohydrate)

#### Starchy Vegetables

- Cassava ⅓ cup
- Corn
  - kernels ½ cup
  - cob (large) ½ cob (5 oz.)
- Edamame (shelled) ½ cup
- Hominy (canned) ¾ cup
- Mixed vegetables (with corn, peas, or pasta) 1 cup
- Parsnips ½ cup
- Peas (green) ½ cup
- Plantain (ripe) ⅓ cup
- Potato
  - baked (with skin) ¼ large (3 oz.)
  - boiled (all kinds) ½ cup or ½ medium (3 oz.)
  - mashed (with milk and fat) ½ cup
  - French fried (oven-baked) 1 cup (2 oz.)
- Pumpkin (canned, no sugar added) 1 cup
- Squash, winter (acorn, butternut) 1 cup
- Succotash ½ cup
- Yam sweet potato (plain) ½ cup

#### Crackers and Snacks*

- Animal crackers 8
- Crackers
  - round (butter type) 6*
  - saltine type 6
  - sandwich-style (cheese or peanut butter filling) 3*
  - whole-wheat (regular) 2-5 (¾ oz.)*
  - whole-wheat (lower fat) or crisp breads 2-5 (¾ oz.)
  - graham crackers (2½ inch square) 3
  - Matzah ¾ oz.
  - Melba toast (about 2 inches x 4 inches) 4
  - oyster crackers 20
- Popcorn 3 cups*
- Pretzels ¾ oz.
- Rice cakes (4 inches across) 2
- Snack chips
  - tortilla, potato, pita (fat-free or baked) 15-20 (¾ oz.)
  - tortilla, potato (regular) 9-13 (¾ oz.)*

*May be high in unhealthy fat

#### Beans, Peas, and Lentils**

- Baked beans ⅓ cup
- Beans, cooked (black, garbanzo, kidney, lima, navy, pinto, white) ½ cup
- Lentils, cooked (brown, green, orange, yellow) ½ cup
- Miso 3 Tbsp.
- Peas, cooked (black-eyed, split) ½ cup
- Refried beans ½ cup

**Beans, peas and lentils are an excellent source of plant based protein and fiber.

## Carbohydrate Choices (continued)

### Fruit (1 serving = 15 gms carbohydrate)

- Apple (unpeeled, small) 1 (4 oz.)
- Apples (dried) 4 rings
- Applesauce (unsweetened) ½ cup
- Apricots
  - Canned ½ cup
  - Dried 8 halves
  - Fresh 4 whole (5½ oz.)
- Banana (large) ½ (4 oz.)
- Blackberries ¾ cup
- Blueberries ¾ cup
- Cantaloupe (small) ⅓ melon or 1 cup cubed (11 oz.)
- Cherries
  - sweet (canned) ½ cup
  - sweet (fresh) 12 (3 oz.)
- Dates 3
- Dried fruits (blueberries, cherries, cranberries, mixed fruit, raisins) 2 Tbsp.
- Figs
  - dried 1½
  - fresh 1½ large or 2 medium (3½ oz.)
- Fruit cocktail ½ cup
- Grapefruit
  - large ½ (11 oz.)
  - sections (canned) ¾ cup
- Grapes (small) 17 (3 oz.)
- Guava (medium) 1½
- Honeydew melon 1 slice or 1 cup cubed (10 oz.)
- Kiwi (3½ oz.)
- Loquat 4
- Mandarin oranges (canned) ¾ cup
- Mango (small) ½ fruit (5½ oz.) or ½ cup
- Nectarines (small) 1 (5 oz.)
- Oranges (small) 1 (6½ oz.)
- Papaya ½ fruit or 1 cup cubed (8 oz.)
- Passion fruit 1
- Peaches
  - Canned ½ cup
  - fresh (medium) 1 (6 oz.)
- Pears
  - canned ½ cup
  - fresh (large) ½ (4 oz.)
- Pineapple
  - canned ½ cup
  - fresh ¾ cup
- Plums
  - canned ½ cup
  - dried (prunes) 3
  - small 2 (5 oz.)
- Raspberries 1 cup
- Strawberries (whole berries) 1¼ cup
- Tangerines (small) 2 (8 oz.)
- Watermelon 1 slice or 1¼ cup cubes

#### Juice (less or none preferred)

- Apple juice/cider ½ cup
- Cranberry juice ⅓ cup
- Cranberry juice cocktail (reduced calorie) 1 cup
- Fruit juice blends (100% juice) ⅓ cup
- Grape juice ⅓ cup
- Grapefruit juice ½ cup
- Guava juice ½ cup
- Mango juice ⅓ cup
- Orange juice ½ cup
- Pineapple juice ½ cup
- Prune juice ⅓ cup

## Carbohydrate Choices (continued)

### Milk (1 serving = 15 gms carbohydrate)

**Fat-free or low-fat (1%)**

- Milk
  - Plain 1 cup
  - Flavored ½ cup
  - Lactose-free 1 cup
- Buttermilk, acidophilus milk, natural kefir 1 cup
- Evaporated milk ½ cup
- Rice, soy, and almond milk
  - Plain 1 cup
  - Flavored ½ cup
- Yogurt
  - Plain 1 cup (8 oz.)
  - Flavored (sweetened with non-nutritive sweeter and fructose) ⅔ cup (6 oz.)
  - Greek (plain) 2 cups

**Reduced-fat (2%)**

- Milk
  - Plain 1 cup
  - Flavored ½ cup
  - Lactose-free 1 cup
- Buttermilk, acidophilus milk, natural kefir, 1 cup
- Evaporated milk ½ cup
- Rice, soy, and almond milk
  - Plain 1 cup
  - Flavored ½ cup
- Yogurt
  - Plain 1 cup (8 oz.)
  - Flavored (sweetened with non-nutritive sweeter and fructose) ⅔ cup (6 oz.)
  - Greek (plain) 2 cups

**Whole**

- Milk
  - Plain 1 cup
  - Flavored ½ cup
  - Lactose-free 1 cup
- Buttermilk, acidophilus milk, plain kefir 1 cup
- Evaporated milk ½ cup
- Rice, soy, and almond milk
  - Plain 1 cup
  - Flavored ½ cup
- Yogurt
  - Plain 1 cup (8 oz.)
  - Flavored, (sweetened with non-nutritive sweeter and fructose ⅔ cup (6 oz.)
  - Greek (plain) 2 cups

### Other Carbohydrates (1 serving = 15 gms carbohydrate)

- Cake (unfrosted) 2 inch square
- Cake (frosted) 1 inch square
- Cookie (small) 2
- Cranberry sauce ⅛ cup
- Cupcake (small, frosted) ½
- Doughnut (small, plain cake) 1 (1 oz.)
- Doughnut (glazed) ½ (1 oz.)
- Fruit juice bars (frozen) 1 bar (3 oz.)
- Fruit spreads (100% fruit) 1½ Tbsp.
- Gelatin (regular) ½ cup
- Honey 1 Tbsp.
- Ice cream (no added sugar) ½ cup
- Jam or jelly 1 Tbsp.
- Pie (fruit, 2 crusts) 1/24 pie
- Pie (pumpkin or custard) 1/26 pie
- Pudding (regular) ¼ cup
- Pudding (sugar-free) ¼ cup
- Salad dressing (fat-free) ¼ cup
- Sherbet, sorbet ¼ cup
- Sports drinks 8 oz.
- Sugar 1 Tbsp.
- Syrup (regular) 1 Tbsp.
- Teriyaki sauce ½ cup
- Tomato sauces ½ cup
- Yogurt (frozen) ½ cup

# Appendix

## Non-starchy Vegetables

Non-starchy vegetables are important to a healthy meal plan. Most people do not eat enough of these. Liberally include them in your snacks, as well as in your meals.

### Non-Starchy Vegetables

- Artichoke
- Artichoke hearts
- Asparagus
- Baby corn, canned
- Bamboo shoots
- Beans (green, wax, Italian)
- Bean sprouts
- Beets
- Borscht
- Broccoli
- Brussels sprouts
- Cabbage (green, bok choy, Chinese)
- Carrots
- Cauliflower
- Celery
- Chayote
- Chinese spinach
- Cucumber
- Eggplant
- Gourds (bitter, bottle, luffa, melon)
- Green onions or scallions
- Greens (collard, chard, kale, mustard, turnip)
- Hearts of palm
- Jicama
- Kohlrabi
- Leeks
- Mixed vegetables (without corn, peas, or pasta)
- Mung bean sprouts
- Mushrooms, all kinds, fresh
- Nopales
- Okra
- Onions
- Oriental radish or daikon
- Pea pods (snow peas, snap peas)
- Peppers (all varieties)
- Radishes
- Rutabaga
- Salsa de Chile
- Sauerkraut
- Soybean sprouts
- Spinach
- Squash (summer, crookneck, zucchini)
- Sugar pea snaps
- Tomato (fresh, canned)
- Tomato/vegetable juice
- Turnips
- Water chestnuts
- Yard-long beans

## Proteins

Protein is important for building and maintaining muscles. Including it in your meals and snacks can help you feel satisfied and stabilize your blood glucose. However, some protein-rich foods contain high levels of saturated fat, cholesterol and calories. Choose small amounts of these foods; instead, choose lean proteins. A portion of protein listed below is typically 1 ounce and contains 7 grams of protein with variable amounts of fat.

### Protein

#### Lean Protein (1-3 grams fat per ounce)

- Beef: Select or Choice grades trimmed of fat: ground round, roast (chuck, rib, rump), round, sirloin, steak (cubed, flank, porterhouse, T-bone), tenderloin
- Beef jerky
- Cheese, fat free or low fat
- Cottage cheese, low fat or nonfat
- Egg substitutes, plain, 1/4 cup
- Egg whites, 2
- Fish, canned or drained: salmon, tuna, sardines, mackerel
- Fish, smoked: herring or salmon (lox)
- Game: buffalo, ostrich, rabbit, venison
- Hot dog with 3 grams of fat or less per ounce. (Check label for carbohydrate.)
- Lamb: chop, leg, or roast
- Organ meats: heart, kidney, liver Note: may be high in cholesterol.
- Oysters, fresh or frozen, 6 medium
- Pork, lean: Canadian bacon, rib or loin chop/roast, ham, tenderloin
- Poultry, without skin: Cornish hen, chicken, domestic duck, or goose (well-drained of fat), turkey
- Processed sandwich meats with 3 grams of fat or less per ounce: chipped beef, deli thin-sliced meats, turkey ham, turkey kielbasa, turkey pastrami
- Sausage, only if 0 to 3 grams of fat
- Shellfish: clams, crab, imitation shellfish, lobster, scallops, shrimp
- Veal, loin chop, roast

**Plant-Based options***

- Beans, cooked: azuki, black, cannellini, kidney, pinto, red
- Edamame
- Lentils
- Meatless burger
- Peas, cooked: black-eyed & split
- Soy “sausage” with less than 3 grams fat per ounce

** These plant-based options may contain carbohydrates, too. If you are counting carbohydrates, count them into your meal plan.*

## Protein (continued)

### Medium Fat Protein (4-7 grams fat per ounce)

- Beef: corned beef, ground beef, meat loaf, Prime grades trimmed of fat (prime rib), short ribs, tongue
- Cheeses with 4–7 grams of fat per ounce: feta, mozzarella, pasteurized processed cheese spread, reduced-fat cheeses, string
- Eggs (high in cholesterol, so limit to 3 per week)
- Fish, any fried product
- Lamb: ground, rib roast
- Pork: cutlet, shoulder roast
- Poultry: chicken with skin; dove, pheasant, wild duck, or goose; fried chicken; ground turkey
- Ricotta cheese
- Sausage with 4 to 7 grams of fat per ounce
- Veal, cutlet (no breading)

**Plant-Based options***

- Soy “bacon” strips
- Soy “chicken nuggets”
- Soy nuts
- Soy “sausage” patty with 4 to 7 grams of fat per ounce
- Tempeh
- Tofu

** These plant-based options may contain carbohydrates, too. If you are counting carbohydrates, count them into your meal plan.*

### High Fat Protein (8 grams or more fat per ounce)

**These foods are high in fat, cholesterol, and calories. Choose small amounts of these foods.**

- Bacon: pork or turkey
- Cheese, regular: American, bleu, Brie, cheddar, hard. goat, Monterey jack, queso fresco, and Swiss
- Hot dog: beef, pork, or combination
- Hot dog: turkey or chicken
- Pork: ground, sausage, spareribs
- Sandwich meats with 8 grams of fat or more per oz.: bologna, pastrami, ham, salami
- Sausage with 8 grams fat or more per ounce: bratwurst, chorizo, Italian, knockwurst, Polish, smoked, summer

**Plant-Based options****

- Hummus, ⅛ cup
- Nuts or seeds, ¼ cup
- Nut spreads (butters): almond, cashew, peanut, soy nut, sunflower, 2 Tbsp.

*** These plant-based options are high in fat, but are heart-healthy.*

## Fats

Saturated and trans fats are unhealthy. They raise cholesterol and increase the risk for heart disease. Mono- and polyunsaturated fats are healthier and help to lower cholesterol when chosen over unhealthy fats. To protect your health: avoid unhealthy fats, limit the total amount of fat consumed each day, and be aware of hidden sources of fats (especially in packaged foods).

### Fats

#### Monounsaturated Fats

- Avocado
- Nut butters (natural):
  - almond butter
  - cashew butter
  - peanut butter (smooth or crunchy)
- Nuts
  - almonds
  - Brazil
  - cashews
  - filberts (hazelnuts)
  - macadamia
  - mixed (50% peanuts)
  - peanuts
  - pecans
  - pistachios
- Oil
  - canola
  - olive
  - peanut
- Olives

#### Polyunsaturated Fats

- Margarine: lower-fat spread (30%–50% vegetable oil, trans fat–free)
- Margarine: stick, tub (trans fat–free), or squeeze (trans fat–free)
- Mayonnaise
  - reduced-fat
  - regular
- Mayonnaise-style salad dressing
  - reduced-fat
  - regular
- Nuts
  - pine nuts
  - English walnuts
- Oil
  - corn
  - cottonseed
  - flaxseed
  - grape seed
  - safflower
  - soybean
  - sunflower
- Salad dressing
  - reduced-fat*
  - regular
- Seeds
  - flaxseed, whole
  - pumpkin, sunflower
  - sesame seeds
  - Tahini or sesame paste

***May be high in carbohydrates.**

## Fats (continued)

### Saturated and Trans Fats (Unhealthy)

- Bacon, cooked, regular or turkey
- Butter
  - reduced-fat
  - stick
  - whipped
- Butter blends made with oil
  - reduced-fat or light
  - regular
- Chitterlings, boiled, baked or fried
- Coconut
- Coconut milk:
  - light
  - regular
- Cream
  - coffee creamers
  - half-and-half
  - heavy
  - light
  - whipped
- Cream cheese
  - reduced-fat
  - regular
- Lard
- Oil
  - coconut*
  - palm
  - palm kernel
- Salt pork
- Shortening, solid
- Sour cream
  - reduced-fat or light
  - regular

*Note that regular cheese, meat, chicken and some other high-fat proteins contain these unhealthy fats.*

** Studies show that although coconut is saturated, it may have health benefits.*

## Combination Foods

Many of the foods that we eat are a combination of ingredients and may contain carbohydrate, protein and fat. These "combination" foods do not fit into one choice list. Here are some typical combination foods and suggestions for fitting them into your meal plan.

| Food | Serving Size | Food Serving Size Count as |
|---|---|---|
| • Casseroles (tuna noodle, lasagna, spaghetti with meatballs, chili with beans, macaroni and cheese) | 1 cup (8 oz) | 2 carb choices + 2 oz med fat meats |
| • Stews (beef/other meats and vegetables | 1 cup (8 oz) | 1 carb choice + 1 oz medium fat meat + 0-3 fat choices |
| • Burrito (meat/bean) | 1 (5 oz) | 3 carb choices + 1 oz lean meat + 2 fat choices |

## Combination Foods (continued)

| Food | Serving Size | Food Serving Size Count as |
|---|---|---|
| • Pizza (thin crust) | ¼ of a 12-inch (4½-5 oz) | 2 carb choices + 2 oz medium fat meat + 0-1½ added fats |
| • Salads (deli style) | | |
| ◦ Cole slaw | ½ cup | 1 carb choice + 1 ½ fats |
| ◦ Macaroni/pasta salad | ½ cup | 2 carb choices + 3 fats |
| ◦ Potato Salad | ½ cup | 1½-2 carb choices + 1-2 fats |
| • Soups | | |
| ◦ Bean, Lentil, or split pea | 1 cup | 1 carb choice + 1 oz lean meat |
| ◦ Chowder (made with milk) | 1 cup | 1 carb choice + 1 oz lean meat + 1½ fats |
| ◦ Tomato (made with water) | 1 cup | 1 carb choice |
| ◦ Vegetable beef, chicken noodle or other broth-type soup | 1 cup | 1 carb choice |
| • Orange Chicken 1 restaurant style entrée | 5.7 oz | 3 carb choices + 3.5 fat choices |
| • Szechuan Tofu with string beans | 1½ cups | 1 carb choice + 3-4 fat choices |
| • Chicken Tikka Masala 1 restaurant style entrée | 5.5 oz | 1½ carb choice + 2-3 fat choices |
| • Palak Chana (chick peas and spinach) | 1 cup | 2 carb choices + 1-2 fat choices |
| • Sushi Roll with raw fish (small) | 2 rolls (6 pieces) | 2 carb choices + 0-1 fat choice |

## Disposal of Medical Waste

Household medical waste is any waste related to health care activities in the home.

***In California, medical waste disposal policies vary by county. The following are recommendations for safely disposing of used needles and medicine.***

### Home-Generated Sharps Disposal

In California, it is illegal to dispose of sharps waste in your home trash or recycling container. Sharps waste includes anything that penetrates the skin and has the potential to infect another person: syringes, insulin-pen needles, lancets and insulin pump insertion needles.

The following are some of the disposal options for medical waste:

### Local Household Hazardous Waste Programs

- Call your local household hazardous waste agency and ask if it collects needles (sharps) at its collection facility or on household hazardous waste days.
- Visit www.calrecycle.ca.gov/HomeHazWaste/Sharps/ to search for a local facility that collects medication or sharps for safe disposal.

### Hospitals

- Hospitals may take your home-generated sharps. Contact your local hospital to see if they offer this service.

### Labs and Pharmacies

- Some labs and pharmacies have agreed to take home-generated sharps for disposal. Check with your local laboratory to see if it accepts sharps for disposal.

### Mail-Back Services for Sharps

The California Department of Public Health has a list of authorized mail-back service providers for sharps. Visit their website at *www.cdph.ca.gov/certlic/medicalwaste/Pages/HomeGeneratedMedWaste.aspx*

If no collection facilities are available in your area, you may find postage-paid mailers by searching the Internet for keywords such as “medical sharps mail back.”

## Diabetes Resources

Many sites have materials available in English and Spanish.

**American Association of Diabetes Educators**
*www.diabeteseducator.org*

**American Diabetes Association**
*www.diabetes.org*

**Academy of Nutrition and Dietetics**
*www.eatright.org*

**American Heart Association**
*www.heart.org*

**Calif Department of Public Health**
**Chronic Disease Control Branch**
*www.cdph.ca.gov/programs/cdcb*

**Centers for Disease Control and Prevention (CDC)**
National Center for Chronic Disease Prevention and Health Promotion
*www.cdc.gov/diabetes*
1-800-CDC-INFO *(*1-800-232-4636)

**diaTribe**
*http://diatribe.org*

**dLife**
*www.dlife.com*

**Joslin Diabetes Center**
*www.joslin.org/diabetes-information.html*

**National Institute of Diabetes, Digestive, and Kidney Diseases (NIDDK)**
*www.niddk.nih.gov*

**National Institutes of Health**
National Diabetes Education Program (NDEP)
*www.ndep.nih.gov*

**Nutrition and Food Information**
*www.dietfacts.com*
*www.calorieking.com*

**Tobacco Cessation**
*www.tobaccofreeca.com*
English 1-800-NO-BUTTS(1-800-662-8887)
Spanish 1-800-45-NO-FUME(1-800-456-6386)

**WebMD**
*www.webMD.com*

**Weight-Control Information Network (WIN)**
*http://win.niddk.nih.gov/index.htm*
1-877-946-4627

### Social Media Sites

**Diabetes Mine**
*http://www.diabetesmine.com*

**Diabetes Daily**
*http://www.diabetesdaily.com*

**Tu Diabetes**
*http://www.tudiabetes.org*

**Diabetes Sisters**
*https://diabetessisters.org*

**Six Until Me**
*http://sixuntilme.com/wp*

**Diabetic Connect**
*http://www.diabeticconnect.com*

**Diabetes Stories**
*http://www.diabetesstories.com*

**EsTu Diabetes (Spanish)**
*http://estudiabetes.org*

# Appendix

## Mobile Applications

**AADE Diabetes Goal Tracker (Goal Setting)**
*http://www.diabeteseducator.org/DiabetesEducation/PWD_Web_Pages/DiabetesGoalTracker.html*

**Accu-Check 360© (Diabetes Management Glucose Tracker)**
*https://www.accu-chek.com/us/data-management/360-diabetes-management-app.html*

**CalorieKing (Carbohydrate counting)**
*http://www.calorieking.com*

**Diabetes App Lite (Tracking carbs, medication, activity, weight)**
*http://www.diabetesincontrol.com/articles/96-/13438-diabetes-app-lite*

**FitBit (Activity Tracker)**
*http://www.fitbit.com*

**Fooducate (Food Tracker)**
*http://www.fooducate.com*

**Glooko (Glucose Tracker)**
*http://www.glooko.com*

**Glucose Buddy (Glucose Tracker)**
*http://www.glucosebuddy.com*

**Go Meals (Food Tracker)**
*http://www.gomeals.com*

**iBolusCalc (Calculates insulin dose)**
*http://www.iboluscalculator.com/Site/Home.html*

**Map my walk (Activity Tracker)**
*http://www.mapmywalk.com/app*

**Moves Activity tracker**
*http://www.moves-app.com*

**Myfitnesspal (Glucose Tracker & Food tracker)**
*http://www.myfitnesspal.com*

**Power20 (Activity Tracker)**
*https://itunes.apple.com/us/app/power-20-fitness-trainer-pro/id567207319?mt=8*

**Striv (Activity tracker)**
*http://www.striiv.com*

**dLife- Diabetes Companion Mobile App (Glucose tracker, diabetes information, on-line support group)**
*http://www.dlife.com/dlife_media/mobile*

**Diabetic Connect (Glucose tracker, diabetes information, on-line support group)**
*http://www.diabeticconnect.com/*

# Notes

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*This book is not intended to replace professional medical care.*

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