Staying Healthy With Diabetes

For: ______________

We care. We will listen. We can help.
# Table of Contents

Table of Contents ............................................................................................................................................. 1
Staying Healthy with Diabetes ............................................................................................................................ 2
About Diabetes .................................................................................................................................................. 3
Blood Glucose Testing at Home .......................................................................................................................... 4
High and Low Blood Glucose (Sugar) Reactions .............................................................................................. 5
Basics of Healthy Eating .................................................................................................................................. 6
Carbohydrate Counting ..................................................................................................................................... 7
Other Healthy Choices ..................................................................................................................................... 9
Staying Healthy to Avoid Complications of Diabetes ....................................................................................... 10
Oral Diabetes Medications (Pills) ...................................................................................................................... 11
Insulin ............................................................................................................................................................... 12
Frequently Asked Questions .............................................................................................................................. 16
Your Diabetes Plan ............................................................................................................................................. 17

Your health care team may have given you this information as part of your care. If so, please use it and call if you have any questions. If this information was not given to you as part of your care, please check with your doctor. This is not medical advice. This is not to be used for diagnosis or treatment of any medical condition. Because each person’s health needs are different, you should talk with your doctor or others on your health care team when using this information. If you have an emergency, please call 911. Copyright © 9/2014 University of Wisconsin Hospitals and Clinics Authority. All rights reserved. Produced by the Department of Nursing. HF#6671
Staying Healthy with Diabetes

If you are reading this, you may have just been told that you or a loved one has diabetes. Or, you may be ready to make a fresh start to better control your diabetes. Whatever the reason, we believe this booklet will help you get started.

How to Use This Booklet

Use this booklet to learn about diabetes or about how to manage it better.

This booklet will give you the basics about:
- Types of diabetes
- Glucose (blood sugar)** values and goals
- Meal planning
- Activity
- Medications

Since treatment options vary from person to person, you may find that some of the topics do not apply to you right now but may in the future.

You will find places to take notes and to write down your goals. Be sure to bring this with you to clinic visits. Also bring your logbook, glucose (blood sugar) meter if you have one, and your list of medications.

Diabetes Control Is Important

As we learn more about diabetes, we realize how vital it is to keep blood glucose levels as close to normal as possible. If blood glucose levels remain high, your eyes, kidneys, nerves, feet, and blood vessels can be damaged. These problems can be prevented if glucose levels are controlled.

**Please Note:
“Blood glucose” or “glucose” means “blood sugar.” We will mainly use “blood glucose” or “glucose” throughout this booklet.

Diabetes Care Is a Team Effort

Diabetes is a disease that is best managed by staying in close contact with your health care team. Your friends and family may also be helpful. Please feel free to share this booklet with them so they begin to get a sense of what this is like for you and how they can help.

Talk to your health care team about including a diabetes educator on your team. This could be a nurse or dietitian who has special training in diabetes care. You will learn about group classes and how these classes can help you.

Members of Your Team

Primary Provider: ____________________
Nurse: ______________________________
Dietitian: ___________________________
Medical Assistant (‘‘MA’’): _____________

Complex Case Manager: ______________
Diabetes Specialists:

___________________________________
___________________________________

Call with Questions

Medical Home: _______________________
Other: ______________________________
About Diabetes

Types of Diabetes

**Type 1 diabetes** means that your body no longer makes insulin. It is often diagnosed early in life but can occur at any age. Insulin must be taken to stay alive.

**Type 2 diabetes** means that your body does not respond to insulin as it should. Over time, the body may stop making enough insulin to keep glucose levels controlled. When this happens, insulin is needed. Type 2 is the most common type of diabetes.

**Medication-induced diabetes** means that certain medications, like steroids, can cause blood glucose levels to rise above normal.

**Pre-diabetes** means that blood glucose levels are higher than normal but not high enough to be diagnosed with diabetes. If action is taken and blood glucose levels are controlled, type 2 diabetes can be delayed or even prevented.

With all types, your body has a harder time changing the food you eat into energy. Glucose levels rise and you have less and less energy. The glucose that stays in the bloodstream can damage blood vessels throughout the body over time. This can lead to damage to your heart, eyes, kidneys, and many other parts of your body.

**Risk Factors for Type 2 Diabetes**
- Over age 45
- Family history
- Ethnicity (African American, Latino, Native American, Asian American and Pacific Islander)
- Overweight
- Delivered a baby weighing more than 9 pounds or have had gestational diabetes
- Sedentary lifestyle

What the Numbers Mean

Diabetes is often diagnosed by checking fasting blood glucose levels.

- **Normal:** 70-99 mg/dL
- **Pre-diabetes:** 100 – 125 mg/dL
- **Diabetes:** 126 mg/dL or higher on two tests or anytime glucose levels are more than 200 mg/dL with symptoms

A1C and eAG

The A1C or hemoglobin A1C measures the average amount of glucose in your blood over the past 2-3 months. Studies show that any decrease in A1C will help to reduce the risk of long term problems from diabetes. The chart below shows how the A1C relates to the estimated average glucose or “eAG”.

<table>
<thead>
<tr>
<th>A1C</th>
<th>eAG (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 17 %</td>
<td>384 - 441</td>
</tr>
<tr>
<td>14 %</td>
<td>355</td>
</tr>
<tr>
<td>13 %</td>
<td>326</td>
</tr>
<tr>
<td>12 %</td>
<td>298</td>
</tr>
<tr>
<td>11 %</td>
<td>269</td>
</tr>
<tr>
<td>10 %</td>
<td>240</td>
</tr>
<tr>
<td>9 %</td>
<td>212</td>
</tr>
<tr>
<td>8 %</td>
<td>183</td>
</tr>
<tr>
<td>7 %</td>
<td>154</td>
</tr>
<tr>
<td>6.5 %</td>
<td>140</td>
</tr>
<tr>
<td>5.7 - 6.4 %</td>
<td>117-137</td>
</tr>
</tbody>
</table>

Take Action

<table>
<thead>
<tr>
<th>Goal</th>
<th>A1C</th>
<th>eAG (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 %</td>
<td>154</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>6.5 %</td>
<td>140</td>
</tr>
<tr>
<td>Pre-diabetes</td>
<td>5.7 - 6.4 %</td>
<td>117-137</td>
</tr>
</tbody>
</table>

Talk with your health care team about how often you need an A1C checked. It often depends on your most recent result.

<table>
<thead>
<tr>
<th>A1C Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Goal</td>
</tr>
<tr>
<td>Last result</td>
</tr>
<tr>
<td>Next A1C (date)</td>
</tr>
</tbody>
</table>
Blood Glucose Testing at Home

You can check your blood glucose levels at home using a glucose meter. The results tell you what your glucose levels are at certain times of the day. Your meal choices, activity, medications, and how you feel will affect the results.

There are many kinds of glucose meters. It is best to find out which meter is covered by your insurance. If you do not have a meter, call your provider to get one.

My Glucose Meter __________________________

Before testing, always wash your hands with soap and water. You will poke your clean finger for the blood sample. You will then apply the drop of blood on a test strip that fits into the meter. In 5 – 20 seconds you will have a result.

Your Glucose Goals

We suggest keeping your blood glucose levels between 70 – 130 mg/dL before meals. This will help to prevent complications. Some people check blood glucose levels two hours after starting a meal. These glucose levels should be less than 180 mg/dL.

Talk with your health care team about setting goals that make sense for you. Use the boxes below to record your goal.

<table>
<thead>
<tr>
<th>Goals for People with Diabetes</th>
<th>Your Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Meals: 70-130 mg/dL</td>
<td>_______ to _______</td>
</tr>
<tr>
<td>2 hours after starting a meal: less than 180 mg/dL</td>
<td>Less than _______</td>
</tr>
<tr>
<td>Bedtime/Before Driving: 100-140 mg/dL</td>
<td>_______ to _______</td>
</tr>
</tbody>
</table>

My Self-Testing Plan

How often you test your blood glucose levels at home depends on your treatment plan. Some people check a few times per week. Others need to check four or more times per day. Talk to your team about the best times for you to test.

Testing Schedule:
☐ Before meals  ☐ Bedtime
☐ 2:00AM
☐ Before/during/after exercise
☐ Anytime you have signs or symptoms of low or high blood sugar

Record your results in a logbook. Bring your logbook and meter to every clinic visit for your health care team to review.

Testing on Sick Days

If you get sick with a cold or flu or if you have an infection, you may need to check your blood glucose levels as often as every two hours. Stay in close contact with your health care team during these times.

- Keep taking your diabetes pills or insulin (if possible).
- Drink at least 4 oz (1/2 cup) of fluids every 30 minutes.
- If you cannot eat a meal, then fluids should contain sugar.

Call Your Doctor…

- If you have had vomiting or diarrhea for more than 6 hours
- If your glucose stays above 300 mg/dL for more than 6 hours or below 70 mg/dL after repeated treatment
- If you have moderate to large ketones
# High and Low Blood Glucose (Sugar) Reactions

## Low Blood Glucose (Hypoglycemia)
Less than 70 mg/dL

### Causes
- Too much insulin or diabetes pills
- Late/skipped meal or smaller than usual meal
- More activity/exercise than usual
- Alcohol intake without food

### Symptoms
- Shaky, sweaty or clammy
- Light-headed, weak, blurry vision
- Hungry, irritable, anxious or confused

- These are the most common symptoms. Get to know your symptoms and respond quickly. If not treated quickly, you may lose consciousness.

### Treatment Options (if able to swallow)
These choices contain 15 grams of carbohydrate. Each should raise your glucose about 50 mg/dL in 15 minutes.
- 4 oz. juice or regular (non-diet) soda
- 3-4 glucose tablets (chew them)
- Soft, chewable candy (amount varies)
- Glucose gel or liquid (follow directions for dose)
- 4-5 teaspoons table sugar

- Check your blood glucose 15 minutes after treatment. If your glucose is still below 70 mg/dL, repeat the treatment.

- **Call 911** if you feel too sick to eat or if the glucose levels stay below 80 mg/dL after 30 minutes.

## High Blood Glucose (Hyperglycemia)
More than 140 mg/dL

### Causes
- Not enough or missed dose of insulin or diabetes pills
- Less activity than usual
- Overeating
- Illness (cold, flu, infection)
- Pain or injury
- Stress (physical or emotional)
- Some medicines (such as steroids)

### Symptoms
- Thirst, frequent urination
- Nausea/vomiting
- Unexplained weight loss
- Slow healing or frequent infections
- Fatigue or sleepy
- Blurred vision

- These are the most common symptoms. Many people do not have symptoms until glucose levels are very high. If not treated, this can be life-threatening.

### Treatment Options
Insulin is often used to treat high blood glucose levels. If you do not use insulin, talk with your health care team about what to do. It is not always best to exercise or to eat less to lower your glucose levels. Discuss this with your health care team. If you are sick, follow sick day guidelines.

### Informing Others
It is important to wear a Medical Alert bracelet or necklace that is easy to see by others. Carry a wallet card that states that you have diabetes. It should include your current list of medicines.
Basics of Healthy Eating

- Aim to eat meals and snacks at about the same time each day. Avoid skipping meals. This will prevent you from getting too hungry and overeating.

- Eat breakfast every day. Healthy examples: 1 piece of whole grain toast and an egg, or yogurt and a piece of fruit, or a small bagel with peanut butter.

- Choose a variety of foods at each meal to help your body get the nutrients it needs.

- Use a 9” plate to help you pay attention to portion sizes. Fill ½ of it with fruits and vegetables, ¼ with protein, and ¼ with grains.

- Eat high-fiber foods. Aim for:
  - 3 grams or more of fiber per serving
  - 25 – 35 grams of fiber per day

- Limit foods high in fat. Use foods with less saturated and trans fat, sugar and sodium.

- Choose lower calorie options when you eat out. Share a meal or bring home leftovers to control portions.

- Use jams, jellies and syrup made with low sugar or no sugar.

- Choose unsweetened drinks such as black coffee, diet soda, or drinks with an artificial sweetener. Use unsweetened canned fruits in natural juices.

- If you need to lose weight, eat smaller portions and become more active!
  - Losing 5-10 pounds can improve your blood glucose levels, blood pressure, and cholesterol.
  - Start by cutting out 100 calories a day (8 oz regular soda, 1 Tbs. Butter, margarine or regular salad dressing).
  - Walk 10 minutes more each day. Small changes count!

Carbohydrates

Foods contain carbohydrates, proteins, and fats. All three are part of a well-balanced meal plan. Carbohydrates raise blood sugar while protein and fat do not.

You still need to eat carbohydrates for many reasons:

- They are a good source of energy for the body, especially the brain and red blood cells.
- They can be a great source of fiber, vitamins and minerals.
- They taste good!

Examples of Carbohydrates

- Breads, cereals, rice, and pasta
- Starchy vegetables (white and sweet potatoes, corn, green peas, and winter squash) and legumes (dried beans, lentils, and split peas)
- Fruits and fruit juice
- Milk and yogurt
- Sweets and snack foods such as cakes, ice cream, cookies, chips, and pretzels
- Regular sodas, jelly, syrup, honey, and table sugar
Carbohydrate Counting

Carbohydrate (“carb”) counting is a method of meal planning used to help improve blood glucose control. It is not a special diet, nor does it cut out any of your favorite foods. In fact, it is just a way to keep track of all the foods you eat that contain carbohydrate.

Getting Started

Aim for consistent carbohydrate amounts at meals and snacks.

Generally, for men, eat:
- 180-225 grams per day
- 60-75 grams per meal
- 0-30 grams per snack

Generally, for women, eat:
- 135-180 grams per day
- 45-60 grams per meal
- 0-15 grams per snack

Food Labels

Read food labels carefully. Be sure to look at the serving size and the Total Carbohydrate line. You don’t need to look at the grams of sugar because they are included in the Total Carbohydrate grams.

Sugar-free foods may still contain carbohydrate, so be sure to check the total carbohydrate content.

Sugar alcohols like sorbitol or mannitol are used in sugar-free gum and candy. Sugar alcohols can cause stomach cramping or diarrhea if used in large amounts.

Foods with less than 20 calories or less than 5 grams of total carbohydrate per serving will have little effect on your blood sugar levels, if used in small amounts.

Working with a Dietitian

One of the first things to do is decide on a meal plan with a dietitian. Based on your usual intake, weight, height, activity level, and age, he or she will suggest how many carbohydrate servings you should have each day and how to divide them between meals and snacks.
### Carbohydrate Foods: Serving Sizes and Carbohydrate Content

<table>
<thead>
<tr>
<th>Grains, Beans and Starch Vegetables</th>
<th>Portion Size</th>
<th>Total Carbohydrate (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans (black, garbanzo, kidney, navy, etc.), cooked or canned</td>
<td>½ cup</td>
<td>15</td>
</tr>
<tr>
<td>Bread, any kind</td>
<td>1 slice (1 oz)</td>
<td>15</td>
</tr>
<tr>
<td>Bun, hamburger or hot dog</td>
<td>1</td>
<td>25-30</td>
</tr>
<tr>
<td>Cereal, cooked</td>
<td>½ cup</td>
<td>15</td>
</tr>
<tr>
<td>Cereal, unsweetened, dry</td>
<td>¾-1 cup</td>
<td>20-30</td>
</tr>
<tr>
<td>Corn</td>
<td>1/2</td>
<td>15</td>
</tr>
<tr>
<td>Crackers, graham</td>
<td>2 squares</td>
<td>10</td>
</tr>
<tr>
<td>Crackers, saltines</td>
<td>5 squares</td>
<td>11</td>
</tr>
<tr>
<td>Pasta, cooked</td>
<td>1/3 cup</td>
<td>15</td>
</tr>
<tr>
<td>Peas</td>
<td>½ cup</td>
<td>15</td>
</tr>
<tr>
<td>Potato, cooked</td>
<td>½ cup</td>
<td>15</td>
</tr>
<tr>
<td>Rice, cooked</td>
<td>1/3 cup</td>
<td>15</td>
</tr>
<tr>
<td>Tortilla, flour, 8”</td>
<td>1</td>
<td>25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fruits</th>
<th>Portion Size</th>
<th>Total Carbohydrate (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>1 medium</td>
<td>22</td>
</tr>
<tr>
<td>Banana</td>
<td>1/2-1</td>
<td>15-30</td>
</tr>
<tr>
<td>Berries (strawberries, blueberries, raspberries)</td>
<td>1 cup</td>
<td>15-20</td>
</tr>
<tr>
<td>Canned fruit in juice</td>
<td>½ cup</td>
<td>14</td>
</tr>
<tr>
<td>Canned fruit in heavy syrup</td>
<td>½ cup</td>
<td>23</td>
</tr>
<tr>
<td>Grapes</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Juice (grape, cranberry, prune)</td>
<td>1/3 cup</td>
<td>15</td>
</tr>
<tr>
<td>Juice (apple, orange, grapefruit)</td>
<td>1/2 cup</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Milk and Yogurt</th>
<th>Portion Size</th>
<th>Total Carbohydrate (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk, 1% and fat-free</td>
<td>1 cup</td>
<td>13</td>
</tr>
<tr>
<td>Milk, 2% and whole</td>
<td>1 cup</td>
<td>12</td>
</tr>
<tr>
<td>Yogurt, fruited, sweetened</td>
<td>6 oz cup</td>
<td>25-35</td>
</tr>
<tr>
<td>Yogurt, light, fat-free, artificially sweetened</td>
<td>6 oz cup</td>
<td>15-20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foods You Eat</th>
<th>Portion Size</th>
<th>Total Carbohydrate (g)</th>
</tr>
</thead>
</table>

### Using Common Objects to Estimate Portion Sizes

- **1 fist** = 1 cup of cooked cereal, pasta or rice
- **Tennis ball** = 1 medium piece of fruit
- **DVD** = 1 pancake or slice of bread
- **1 palmful** = 1 ounce of nuts or candy
- **2 handfuls** = 1 ounce of snacks like chips, pretzels and similar items
- **Palm of hand or deck of cards** = 3 ounces of cooked meat, poultry or fish
- **Index finger** = 1 ounce of cheese
- **Tip of thumb** = 1 teaspoon
  - Use for butter, margarine, sugar, honey, jelly or other condiments
- **Golf ball** = 2 tablespoons
  - Use for peanut butter, ketchup, dressing or other condiments or sauces
Other Healthy Choices

Activity

Activity helps control your blood glucose levels. Here are some key points to follow:
- Have a check-up first!
- Start gradually.
- Set goals.
- Choose activities you enjoy.

How often?
This will vary based on how fit you are to start. Here is an example of what might work for you:
- Start with 10 minutes, 2 times per week.
- Slowly work up to 30-60 minutes, most days of the week by adding 2-5 minutes per day as you feel comfortable.

What activities?
- Walking
- Biking (stationary bike)
- Dancing
- Water aerobics
- Housework
- Gardening
- Lifting weights
- Yoga
- Stair-climbing
- Any activity you enjoy!

Safety First
- Test blood glucoses before and after activity. Low blood glucose can occur several hours after activity.
- Wear well-fitting shoes and socks.
- Always warm up and cool down.
- Keep water nearby to stay hydrated.
- Be prepared to treat low blood glucoses.
- Carry identification.

Tobacco Use

Why quit smoking?
- You are 11 times more likely to die of a heart attack or stroke if you have diabetes and smoke.
- Smoking raises your blood sugar levels AND lessens your body’s ability to use insulin. Smoking ONE cigarette lowers the body’s ability to use insulin by 15%.
- People with diabetes who smoke are twice as likely to have circulation and wound healing problems.
- Smokers with diabetes are more likely to get nerve damage and kidney disease.

How Do I Quit Smoking?
The best way to quit is to combine medicines with counseling and/or the Tobacco Quit Line. Using both makes successful quitting four times more likely!

Tobacco users can call toll free, 1-800-QUIT-NOW (800-784-8669) to talk to counselors about how to quit. The calls are private and advice is tailored to each person.
Staying Healthy to Avoid Complications of Diabetes

High blood glucose levels over time can cause damage to your blood vessels, eyes, kidneys, nerves, and feet. This means you can be at risk for heart attack, stroke, blindness, kidney disease, and loss of toes and limbs. Review the chart below for things you can do to lower your risk of these problems.

<table>
<thead>
<tr>
<th>What You Need</th>
<th>How Often</th>
<th>Reason</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1c Test</td>
<td>Every 3 or 6 months</td>
<td>Know if blood sugar levels are in your goal range</td>
<td>&lt; 7% for most people</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>If you do not know your A1c goal, ask.</em></td>
</tr>
<tr>
<td>Urine Microalbumin</td>
<td>Yearly</td>
<td>Check the health of your kidneys. High blood sugar levels and high</td>
<td>&lt; 30 mg/L</td>
</tr>
<tr>
<td>/Creatinine Ratio</td>
<td></td>
<td>blood pressure damage blood vessels in the kidneys.</td>
<td></td>
</tr>
<tr>
<td>Test</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol Test</td>
<td>Yearly</td>
<td>If cholesterol levels are not in goal range, discuss changes that</td>
<td>Total Cholesterol &lt; 200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>could help reduce risk of stroke, heart attack, kidney and eye problems.</td>
<td>Triglycerides &lt; 150</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LDL &lt; 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HDL Above 40 for men; Above 50 for women</td>
</tr>
<tr>
<td>Blood Pressure Check</td>
<td>Each Visit</td>
<td>If blood pressure is not in goal range, discuss changes that could</td>
<td>&lt; 140/80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>help reduce risk of stroke, heart attack, kidney and eye problems.</td>
<td></td>
</tr>
<tr>
<td>Clinic Appointment</td>
<td>Every 6 months or</td>
<td>Discuss your test and exam results, home blood sugar readings, alcohol</td>
<td>Set or revise personal health goals</td>
</tr>
<tr>
<td></td>
<td>more often if</td>
<td>intake, smoking habits, exercise and any concerns you have.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>needed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dilated Eye Exam</td>
<td>Yearly</td>
<td>Check for small blood vessel damage in the back of the eyes.</td>
<td>Prevent eye problems that can affect</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>vision and lead to blindness</td>
</tr>
<tr>
<td>Dental Exam</td>
<td>Every 6 months</td>
<td>Check for tooth or gum problems.</td>
<td>Prevent gum problems and tooth decay</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>which can raise blood sugar levels</td>
</tr>
<tr>
<td>Complete Foot Exam</td>
<td>Yearly</td>
<td>Check nerve function, circulation, and any nail or skin problems.</td>
<td>Prevent ulcers and amputation of toes,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>feet, legs</td>
</tr>
<tr>
<td>Flu/Pneumonia</td>
<td>As needed; ask</td>
<td>To protect against illness</td>
<td>Prevent high blood sugar levels due to</td>
</tr>
<tr>
<td>Vaccinations</td>
<td>your doctor</td>
<td></td>
<td>illness</td>
</tr>
<tr>
<td>Diabetes Education</td>
<td>When diagnosed and</td>
<td>Learn about how to stay healthy with diabetes; help you set personal</td>
<td>Attend a class taught by dietitians and/or nurses who are certified diabetes educators (CDE); include family or support persons to learn with you</td>
</tr>
<tr>
<td></td>
<td>yearly</td>
<td>health goals</td>
<td></td>
</tr>
</tbody>
</table>

Based on 2014 Wisconsin Diabetes Guidelines, Personal Diabetes Care Record (http://dhs.wisconsin.gov/health/diabetes/guidelines.htm)
Oral Diabetes Medications (Pills)

There are many medications taken by mouth for high blood glucose. These may also be called “oral agents.” They are used along with healthy eating and exercise. Details about how these oral agents work are listed below. If oral agents are prescribed for you, be sure to find out more about how each one works.

- Some should not be taken if you have tests like x-rays that require the use of dye (“contrast”).
- Some can cause low blood glucose levels if not taken with food or if you skip or delay meals.
- Some should not be used if you have heart or kidneys problems

<table>
<thead>
<tr>
<th>Medication Names</th>
<th>Expected decrease in A1C (%)</th>
<th>Key Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sulfonylureas</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| - Glipizide (Glucotrol®) | 1.0 – 2.0 | - Helps the pancreas make more insulin  
- Can cause low blood sugars  
- Can cause loss of appetite, nausea, vomiting, diarrhea, and stomach cramps |
| - Glyburide (Micronase®) | | |
| - Glimepride (Amaryl®) | | |
| **Biguanides** | | |
| - Metformin (Glucophage®) | 1.0 – 2.0 | - Prevents the liver from making glucose  
- Helps the muscles use glucose  
- Slows down how quickly the body absorbs glucose from food  
- May cause nausea, diarrhea, and bloating. Taking it with food may decrease side effects. |
| **Thiazolidinediones (“TZDs”)** | | |
| - Pioglitazone (Actos®) | 1.0 – 1.5 | - Helps muscles use glucose  
- Decreases glucose produced by the liver  
- May cause swelling and/or weight gain |
| - Rosiglitazone (Avandia®) | | |
| **Meglitinides** | | |
| - Repaglinide (Prandin®) | 0.5 – 1.5 | - Helps the pancreas to make more insulin  
- Works quickly after meals to lower blood sugar in the first hour after a meal  
- Can cause weight gain  
- May cause low blood sugars |
| - Nateglinide (Starlix®) | | |
| **Alpha Glucosidase Inhibitors** | | |
| - Acarbose (Precose®) | 0.5 – 1.0 | - Delays the travel of sugar in the bloodstream after eating  
- Gas and bloating are common |
| - Miglitol (Glyset®) | | |
| **DPP-4 Inhibitors** | | |
| - Sitagliptin (Januvia®) | 0.4 – 0.8 | - Increases the amount of insulin your body makes after eating  
- Prevents the liver from making glucose |
| - Saxagliptin (Onglyza®) | | |
| - Linagliptin (Tradjenta®) | | |
| **Sodium-Glucose Co-transporter 2 (SGLT2) Inhibitor** | | |
| - Canagliflozin (Invokana®) | 0.5 – 1% | - Help remove glucose from the body through the urine  
- May increase risk of genital fungal infections and urinary tract infections |
| - Dapagliflozin (Farxiga®) | | |
| - Empagliflozin (Jardiance®) | | |
Insulin

Insulin is used when a meal plan, exercise, and oral agents are not enough to control your blood glucose levels. If you have type 1 diabetes or your pancreas has been damaged or removed, insulin must be used. There are many types of insulin. You may need more than one kind to keep your gluoses in your goal range.

The chart below tells you more about each insulin type.

- **Onset** means how long it takes to start to work.
- **Peak** means when it works at its best.
- **Duration** means how long it affects your blood sugars.

<table>
<thead>
<tr>
<th>Insulin Name</th>
<th>Onset</th>
<th>Peak</th>
<th>Duration</th>
<th>Key Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novolog® (aspart)</td>
<td>5-15 minutes</td>
<td>1-2 hours</td>
<td>4-6 hours</td>
<td>Take within 10 minutes before or after eating.</td>
</tr>
<tr>
<td>Humalog® (lispro)</td>
<td>30-60 minutes</td>
<td>2-4 hours</td>
<td>6-10 hours</td>
<td>Take within 30 minutes of eating.</td>
</tr>
<tr>
<td>Apidra® (glulisine)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td>1-2 hours</td>
<td>4-8 hours</td>
<td>10-20 hours</td>
<td>This insulin is cloudy. Always roll the bottle before using.</td>
</tr>
<tr>
<td>NPH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lantus® (glargine)</td>
<td>1-2 hours</td>
<td>None</td>
<td>24 + hours</td>
<td>Never mix in the same syringe with any other insulin.</td>
</tr>
<tr>
<td>Levemir® (detemir)</td>
<td>1-2 hours</td>
<td>8-12 hours</td>
<td>12-24 hours</td>
<td>Never mix in the same syringe with any other insulin.</td>
</tr>
</tbody>
</table>

Expiration of Insulin

Using expired insulin will affect your blood sugar control. Remember these key points:

- Check your vials for an expiration date. This date applies if the vial has not been opened yet.
- Mark the date you start to use a vial or pen.
- Insulin expires whether or not you store the vials in the refrigerator or at room temperature.
- If using pens, do not refrigerate after first use.

Expiration dates for vials

- Levemir®: 42 days
- All other insulin types: 28 days

Expiration dates for insulin pens

- 70/30, 50/50, 75/25: 10 days (disposable) or 7 days (cartridge)
- NPH: 14 days (disposable) or 7 days (cartridge)
- Lantus®, Regular, Humalog®, Novolog®, Apidra®, 28 days
- Levemir®: 42 days

Expiration dates for non-insulin injectables

- Byetta® (exanatide): 30 days
- Victoza® (liraglutide): 30 days

Other Injectable Medications

Other treatment options may be prescribed for adults with type 2 diabetes. Exenatide (Byetta®, Bydureon®) and Liraglutide (Victoza®) can lower blood glucose levels. These medications are not insulin, but must be injected. If you have questions, please ask your team who can give you more details.
Correction Insulin

Correction insulin is meant to “correct” or lower high blood sugars before meals. It is given in addition to the usual dose that you take to cover your meal. Some people also take it if blood sugars are high at bedtime.

Types of Correction Insulin
Short-acting or rapid-acting insulin can be used. Examples are listed below.
- Novolog® (aspart)
- Humalog® (lispro)
- Apidra® (glulisine)
- Regular

Key Points to Remember
- Do not eat less food because of the high blood sugar. This can put you at risk for low blood sugars.
- Do not take correction insulin more often than every 4-6 hours unless you have been directed to do so.
- If you need to use correction insulin daily, for three or more days in a row, call your health care team. Your usual doses may need to be changed.
- Exercise will likely lower your blood sugars. You may not need correction insulin at the meal before or after you exercise. Discuss this with your health care team.

Example
Your blood sugar before lunch is 285 mg/dl.
Your usual dose is _____ units.
Your correction dose is _____ units.
Total Dose = _______

<table>
<thead>
<tr>
<th>Correction Insulin (insulin type: ________________ )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before Meals</strong></td>
</tr>
<tr>
<td><strong>If Blood Glucose is:</strong></td>
</tr>
<tr>
<td>Less than 150</td>
</tr>
<tr>
<td>151 - 200</td>
</tr>
<tr>
<td>201 - 250</td>
</tr>
<tr>
<td>251 - 300</td>
</tr>
<tr>
<td>301 - 350</td>
</tr>
<tr>
<td>351 - 400</td>
</tr>
</tbody>
</table>
**Drawing Up Insulin**

Some people draw up insulin from a vial. You will use a syringe to do this which already has a needle attached. Insulin is measured in units.

**Steps**
1. Wash your hands.
2. If you have a cloudy-looking insulin, roll the vial between your hands until the entire mixture looks cloudy.
3. Clean the top of the vial with an alcohol wipe.
4. To draw air into the syringe, pull the plunger out to the number of units needed for your dose.
5. Remove the needle cover. Push the needle through the rubber top of the insulin vial. Push the plunger down to inject air into the vial.
6. Turn the bottle upside down. To withdraw the insulin, pull down the plunger.
7. Check for air bubbles before taking the needle out of the vial. Be sure the syringe contains the correct number of units.
8. You are now ready to give the injection.

**Drawing Up Two Types of Insulin**

If you need two types of insulin at the same time of day and prefer to inject once, you may be able to combine them in one syringe.

**This is not always safe; be sure to ask your health care team if it makes sense for you. Please ask for further instruction but the key points are below.**

**Key Points:**
- Inject air into both vials before drawing up insulin.
- Always draw up your clear insulin before the cloudy insulin.
- If you draw too much cloudy insulin, discard the syringe and start again.

**Using Pens or Devices**

Insulin and other medications can be given using devices that may be shaped like pens. (See image below.) You can “draw up” your dose by turning a dial to the amount you need. Some people find this is easier than using a syringe. Pens may cost more, so be sure to discuss this with your health care team.

**Steps for Using an Insulin Pen**
1. Wash your hands and be sure your injection site is clean.
2. Check the label on the pen to make sure you are using the correct type of insulin.
3. Clean the rubber stopper on your pen by rubbing it with an alcohol wipe.
4. Remove the foil seal on the pen needle. Attach the pen needle to your pen by twisting it on the end of the pen until tight.
5. Pull off the outer pen needle cap and inner pen needle cap. Set aside.
6. Prime the pen by dialing in 2 units. Hold your pen with the needle pointing up. Push the end of your pen like a plunger to push out the 2 units. You should see a drop of insulin at the needle tip. If not, repeat this step.
7. Turn the dial to the number of insulin units you need.
8. Follow “Steps to Inject with Syringes or Pens” on next page for final steps.
Giving Injections

Injections are given into fatty tissue. The areas of fatty tissue are shaded in the image below.

Options for Injection Sites

**Abdomen**: If using this site, do not use the area within one inch of your belly button. Avoid using the belt line area since rubbing may irritate the site. Avoid scars from surgery.

**Arms**: Use the back side of your upper arm in the fatty tissue. It can be hard to reach this area yourself. You can try pinching up the tissue by placing your arm over the back of a chair or brace it against a wall.

**Thighs**: Use middle and outer areas where you can pinch up tissue.

**Buttocks**: Use any area where you can pinch up tissue. This site is not often used since it’s hard to reach.

Site Rotation

Rotate your injection sites to prevent tissue damage. If tissue is damaged, the insulin may not absorb as well. This may make it harder to control your blood sugars. Some people keep a record of where their last shot was given to avoid these problems. If you choose one site, like the abdomen only, be sure to rotate shots within that site.

Steps to Inject with Syringes or Pens

1. Wash hands well with soap and water. Be sure that the skin where you will give the shot is also clean. Avoid any scars, bruises, or swollen areas.

2. Pull the cap straight off of the needle, using care to avoid poking yourself. Keep the needle sterile once you have removed the cap; do not set the needle down or touch the needle. Hold the syringe or pen like a pencil.

3. With the other hand, gently pinch the clean spot between your thumb and fingers to make a fold in the skin. Be sure to hold the skin fold until the injection is complete. (Some needles are short enough that pinching the skin fold is not needed. Ask your nurse or pharmacist what is best for you.)

4. Insert the needle straight down into the skin holding the syringe at a 90° angle. If you have very little fatty tissue or are using longer needles, you may need to inject at a 45° angle. Ask your health care team what is best for you.

5. Place your pointer finger on the syringe plunger or the end of the pen. Press down until the plunger or end of the pen won’t push any down any further. Wait 5-10 seconds before pulling the pen needle out of your skin.

6. Remove the needle by gently pulling it out of the skin fold. **Do not rub the site after you are finished.** Rubbing may cause bruising or affect how the insulin is absorbed.

7. Drop the used syringe or pen needle into the “Sharps Box” or other hard plastic container. Close the lid and move the box out of the reach of children and pets. For more information visit, http://www.fda.gov/safesharpsdisposal.
Frequently Asked Questions

We expect that you will have questions as you learn more about insulin. The questions below are a few that are often asked.

Sometimes, a little insulin leaks out of the skin after my shot. Should I repeat the dose or give a little more?
Do not give more insulin – there is no way to guess the amount that leaked out. When giving the next dose, leave the needle in the skin for a few seconds after injecting. If you are using a pen instead of a syringe, make sure to leave the needle in the skin and count to 10 before pulling out the needle.

What should I do if I draw up/dial up the wrong dose?
If you are using a vial and syringe, and only one type of insulin, you can push the insulin back into the vial until you are at the correct dose. If you are using a pen, make sure to turn the dial back to zero (0). Do not push the dialled end in if there is no pen needle attached. The pressure created may cause damage. Never dial in a dose of insulin without a pen needle attached.

What if I forget to take my insulin?
If you are taking only one injection of insulin a day, you may take your shot if you remember before going to bed. If you forget at night, do not take a dose the next morning. Just take your prescribed dose the next evening. Expect your blood glucose readings to be higher during the day after no insulin.

What if there is air in my syringe?
With the needle pointing up, “flick” the syringe to move the air bubble to the top. Then push the plunger up to force the air out. Draw up more insulin if needed to get the dose you need. If you inject air into yourself, the air will not hurt you, but you will not get your full dose of insulin.

What if there is air in my insulin pen?
Sometimes air gets into the insulin in your pen. This often happens when a pen needle is left on the pen during storage. Always remove the pen needle after you have given your shot. If air is present in the insulin, attach a pen needle, dial up 2 units and hold the pen straight up and down with the needle pointing up. Push the dialled dose in – to shoot out the air. Repeat 2 units until a drop (or spray) of insulin comes from the tip of the needle.

What if I can’t see to draw up my dose of insulin? There are magnifiers available for syringes and for some pen devices. You may also choose to have a family member or friend draw up syringes of the correct dose ahead of time.

Where should I throw away my needle?
Needles should be disposed of in a hard plastic jug, like a laundry detergent bottle. A red “Sharps Box” can be used if you prefer. These can be purchased at any pharmacy. Some laboratories will accept needles that are in a hard plastic container.

Can I mix my insulin before I need it?
NPH and Regular insulin can be pre-filled up to 21 days before using. Keep these pre-filled syringes in the refrigerator with the needle tip pointed upward. Rotate the syringe to mix the two insulins before using. If NPH and Novolog® or NPH and Humalog® are mixed in the same syringe, these doses should be given right after filling the syringe. Glargine should not be pre-filled. Inject it as soon as you can after drawing up your dose.
Your Diabetes Plan

Date: __________________ (Please update as changes are made.)

Blood Sugar Goals: _____________ (before meals) ____________ (at bedtime)

Testing Schedule:  □ Before meals □ Bedtime □ 2:00AM □ Before/during/after exercise
                  □ Anytime you have signs or symptoms of low or high blood sugar

<table>
<thead>
<tr>
<th>Type of Insulin</th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
<th>Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-acting insulin: (basal)</td>
<td>_____ units</td>
<td>_____ units</td>
<td>_____ units</td>
<td>_____ units</td>
</tr>
<tr>
<td>Meal time insulin: (bolus)</td>
<td>_____ units</td>
<td>_____ units</td>
<td>_____ units</td>
<td>_____ units</td>
</tr>
</tbody>
</table>

☐ Skip usual meal dose if you skip a meal.
☐ Take ½ of your usual meal dose if you eat less than half of your meal.

Correction insulin:

☐ Add correction insulin if blood sugar is higher than _______

<table>
<thead>
<tr>
<th>Correction Insulin Doses</th>
<th>Before Meals</th>
<th>Correction Insulin Doses</th>
<th>Before Bedtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>If blood glucose is:</td>
<td>Take this much insulin:</td>
<td>If blood glucose is:</td>
<td>Take this much insulin:</td>
</tr>
<tr>
<td>Less than 150</td>
<td>No correction dose</td>
<td>Less than 200</td>
<td>No correction dose</td>
</tr>
<tr>
<td>151 - 200</td>
<td>units</td>
<td>201 - 250</td>
<td>units</td>
</tr>
<tr>
<td>201 - 250</td>
<td>units</td>
<td>251 - 300</td>
<td>units</td>
</tr>
<tr>
<td>251 - 300</td>
<td>units</td>
<td>301 – 350</td>
<td>units</td>
</tr>
<tr>
<td>301 - 350</td>
<td>units</td>
<td>351 - 400</td>
<td>units</td>
</tr>
<tr>
<td>351 - 400</td>
<td>units</td>
<td>&gt;400</td>
<td>units</td>
</tr>
</tbody>
</table>

Notes:

We hope this booklet will help you to stay healthy with diabetes. We know it can be overwhelming at times. Remember… *We care. We will listen. We can help.*