

Diabetes Guide



2011



What is Diabetes?

Diabetes is a disorder of the metabolism – the way our bodies use digested food for growth and energy. Diabetes means that your blood sugar (glucose) is too high. After digestion, blood sugar (glucose) passes into the bloodstream where it is used by cells for growth and energy. For blood sugar (glucose) to enter the cells, insulin, which is produced by the pancreas, must be present. In people with diabetes the pancreas either produces little or no insulin, or the cells do not respond to the insulin that is produced. The blood sugar (glucose) builds up in the blood and the body therefore loses its main source of fuel.

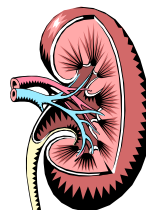
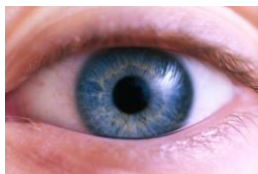
Diabetes is a condition that causes unstable, mostly high, blood sugar levels. It is a chronic disease that can be managed but not cured. Proper diabetes treatment and education can help a person stay healthy. You can learn to live well with diabetes. That is the goal. Without proper treatment diabetes can cause damage to the large and small blood vessels. Blood vessel damage can lead to serious nerve, heart, eye, or kidney problems. But this doesn't need to happen with good care. This guide will help you with the first steps of living well with diabetes. Many people will help you along the way. These may include your doctor, nurse and dietitian Diabetes Educators, and other healthcare professionals, as well as your family and friends. They are all on your team.

What you need to know about diabetes

Diabetes is a large and growing health problem. About 23.6 million Americans have diabetes. Many are not aware they have the disease and it may go undetected for years. Diabetes is diagnosed through blood tests that measure the blood sugar (glucose) levels in the blood.

There are two main types of long-term problems with diabetes:

1. Small blood vessel damage happens in the eyes, kidneys and nerve cells. It can lead to blindness, kidney failure and amputation. The main cause for damage is high blood sugar. High blood pressure can also add to the damage.



2. Large blood vessel damage can lead to heart attacks, strokes and infection (especially in feet). The main cause for damage is high blood fats and high blood pressure. High blood sugar can also add to the damage.



Good diabetes management can reduce the risk of complications

How to take control of your diabetes

Diabetes is a self-managed disease. In order to avoid serious problems *you must take control of your diabetes.* That means following a treatment plan that includes the following:

- Eating healthy foods in healthy amounts
- Staying active (talk to your doctor about daily exercise)
- Taking your medications as prescribed by your doctor
- Visiting your doctor regularly
- Getting all necessary laboratory tests done



But just following your plan is not enough. You need to know how you are doing every step of the way:

- What is your blood sugar level throughout the day?
- How well are you controlling your blood sugar levels over the long term?
- Are you developing any of the problems of diabetes?

This booklet can help you with your diabetes. One of the most important steps is learning about your numbers. (See page 6)

Meal Planning

Eating well is an important part of diabetes management. However, there is more than one approach to choose from. This can be a little confusing. So it is important that you talk with a registered dietitian to find out which meal planning option is right for you.

Options:

Plate Method

The Plate Method is designed to help keep portion sizes under control. It uses the concept of a dinner plate that is divided as a guideline for meals. Using this method, the plate would consist of

- 1/2 Vegetables (broccoli, green beans)
- 1/4 Starch (potato, rice, pasta)
- 1/4 Protein (lean meat, poultry, fish, tofu)



Filling half of your plate with vegetables can help meet goals for :

- Weight control
- Blood sugar control
- Blood pressure control

It also promotes a feeling of fullness after eating.

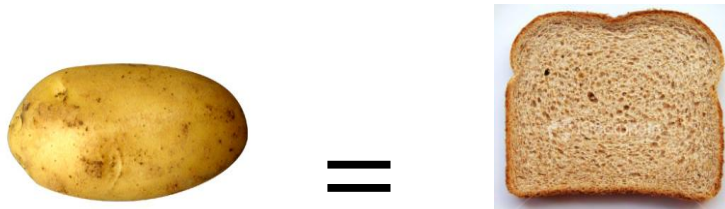
Choose Your Foods/Exchange System

These food lists are developed by the American Diabetes and Dietetics Association. It lists six groups of foods. Within each group, the foods are similar in nutritional value.

The six food groups are:

- Starches
- Meat and meat substitutes
- Vegetables
- Fruit
- Milk
- Fat

Meal Plans are developed by combining a certain number of “servings” from each food group into a given meal. Foods can be substituted (exchanged) for other foods in the same list.



Carbohydrate Counting

Carbohydrate Counting focuses on the total number of carbohydrates contained in each meal and snack. This method is often used by people who have chosen intensive diabetes management.

Carbohydrate Counting allows these people to adjust their insulin dosage or daily routine based on the total number of carbohydrates they plan to eat in a given meal. Each person’s carbohydrate amounts are different.

A good place to start until you meet with your diabetes educator is to aim for 45-60 grams of carbohydrate per meal.

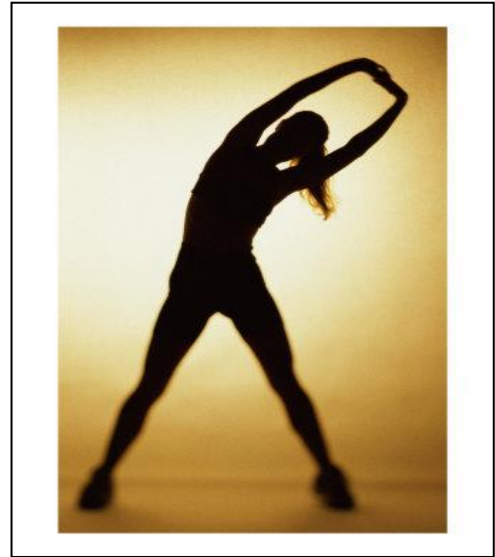
It is important that you meet with a dietitian and diabetes educator to develop a meal plan that is right for you.

Exercise

“Adults should get at least 2 ½ hours of moderate intensity physical activity per week or about 30 minutes a day, five days a week. “Moderate intensity” means you are moving but you don’t feel too winded to talk. This is probably how you feel when you go for a bike ride or take the stairs instead of the elevator.” *-American Dietetic Association*

Why is exercise important?

- Lowers blood sugar
- Lowers risk for heart disease
- Lowers risk for early death
- Lowers high blood pressure
- Helps blood circulation
- Improves blood fat and cholesterol levels
- Helps your body use insulin better
- Helps achieve a healthy weight
- Strengthens muscle
- Reduces bone loss
- Increases energy level
- Improves sleep
- Reduces stress
- Reduces depression and anxiety



“Exercise doesn’t have to be a chore. It should be a fun activity that you incorporate into your day. Be creative and get moving!” *-Amer. Dietetic Assoc.*



Getting Started

- Make a simple and realistic plan...one you can stick with, and start slowly
- Exercise with a partner to make it more fun and help you stay motivated

- Check your blood sugar, exercise usually helps lower blood sugar. Carry some glucose tablets or other source of quick acting carbohydrates in case you experience low blood sugar

Practical Ideas for Everyday-Exercise

- Park farther away from your destination to increase walking distance
- Join a gym (See page 17 of this booklet for local exercise facilities)
- Walk the dog
- Play with your kids
- Dance
- Wear a pedometer (aim for 10,000 steps each day)
- Wear ankle weights for a day
- Try new activities: yoga, strength training, swimming, tai chi, pilates, Zumba
- Take the stairs instead of the elevator...climb them a few extra times
- Be more productive: vacuum, weed the garden, clean, rake leaves, chop wood

References: Vermont Dept. of Health and the Vermont Blueprint for Health. Healthvermont.gov/blueprint.aspx



One of the first steps to controlling your diabetes is knowing your numbers!

Numbers you need to know and routine health checks

Your numbers are simply results from different types of tests. You do some of these every day. Most of these assessments are done by your doctor throughout the year. The main things that need to be tracked include:

- Blood Sugar (Glucose)
- Hemoglobin A_{1c} (A_{1c})
- Lipids (blood fat, cholesterol, HDL, LDL, Triglycerides)
- Blood Pressure
- Microalbumin (urine protein)
- Dilated Eye Exam
- Foot Exam

Tests:

Self-Monitoring of Blood Sugar (Glucose)

Monitoring your blood sugar at home with a home glucose-testing machine several times a day is extremely important. This allows you to quickly see when your blood sugar is too high or too low. Monitoring also gives you a good idea on how high your blood sugar levels go after you eat a meal. This tells you how well your meal plan and medications are working during the day. After-meal blood sugar is a very important number to know.

The goals for blood sugar are:

80 to 120mg/dL first thing in the morning and before meals
100 to 160 mg/dL 1-2 hours after a meal and at bedtime

Hemoglobin A_{1c}

The A_{1c} checks your diabetes control over 2 to 3 months. It looks at the amount of glucose that has attached to blood cells. As glucose levels rise, more and more glucose attaches to the blood cells. The A_{1c} result is shown as a percentage.

The goal range for A_{1c} is:

7% or less



Blood Fats (Lipids, cholesterol)

High levels of fats, in your blood can cause heart disease, heart attacks and strokes. It is very important that you keep your lipids at a healthy level. Having you doctor check your lipid levels once a year will help you and your doctor spot problems. Then you can take action before problems get worse.

Goal Ranges for lipids are:

- LDL Cholesterol (the bad cholesterol) less than 100 (mg/dL)
- HDL Cholesterol (the good cholesterol) greater than 40 (mg/dL)for men, 50 for women
- Total Cholesterol less than 200 (mg/dL)
- Triglycerides less than 150 (mg/dL)

Blood Pressure/Hypertension

High Blood pressure, often called hypertension can lead to kidney disease, heart attacks and strokes. You need to control your blood pressure to help prevent these problems. To do this, you need to have your blood pressure checked by your doctor at every visit.

Goal range for blood pressure is:

Less than 130/80 mmHg.



Microalbumin

Measuring microalbumin (urine protein) is important for spotting kidney disease in its early stages. Early detection lets you and your doctor take action that can prevent or slow down kidney damage.

Ask your doctor to perform a microalbumin urine test and tell you the results.

Goal range for microalbumin is: less than 30mg/g creatinine on a random sample.

Dilated Eye Exam

Yearly eye exams can detect changes. There are often no symptoms to warn that blood vessel damage is happening. So it is important that you have your eyes checked once a year by a qualified eye doctor. Make sure the doctor uses a test that dilates your eyes.



Foot Exam

Diabetes can put your feet at risk in two ways:

- Diabetes can damage the nerves in your feet. This makes it hard to feel pain and injury. You may not know if you have a cut or sore or if you could step into water which is too hot and you burn your skin.
- Diabetes can reduce blood flow to your feet. This makes it difficult to heal any injuries you might have.

It is important to check your feet every day for any cuts, blisters or other injuries that may get infected. At doctors' visits you should remove your shoes and socks as soon as you get into the exam room (as a reminder to your doctor). You should ask your doctor about routine testing for loss of feelings.



Goals for controlling your diabetes

| Test | Goal |
|--|--|
| *Fasting/before meal glucose | 80-120 mg/dL |
| *After Meal glucose 2 hours after start of meal | 100-160 mg/dL |
| *Bedtime glucose | 100-140 mg/dL |
| Hemoglobin A _{1c} | Less than 7% |
| Blood Pressure | less than 130/80mmHg |
| Microalbumin | less than 30 mg/g creatinine on a random sample |
| Lipids | |
| LDL Cholesterol | less than 100 mg/dL |
| HDL Cholesterol | greater than 40 mg/dL for men, greater than 50 for women |
| Total Cholesterol | less than 200 mg/dL |
| Triglycerides | less than 150 mg/dL |

* These tests are done daily by you



When to check your numbers

Use the forms on pages 11-13 to keep track of your numbers!

Every Day

Check your Blood Sugar at home according to your doctor.

Check your feet everyday at home to see if there are cuts blisters, sores, or other injuries that might be infected. Tell you doctor immediately if your foot sore or blister does not get better.

Every Doctor Visit

Have your Blood Pressure checked.

Have your feet examined. Screen for loss of feeling at every doctor appointment.

Every 3-6 Months

A_{1c} tested (frequency depends on level of control).

- ◆ Every 3 months if treatment has changed or control is poor.
- ◆ Every 6 months if control is stable.

Every Year

Cholesterol and Triglycerides checked – more often if risk is high.

Microalbumin checked – more often if risk is high.

Dilated Eye Exam performed every year by an ophthalmologist or qualified optometrist. Check with your insurance plan to determine which specialist is covered.

Getting started with monitoring

We recommend that you take at least one week to get an accurate picture of your after-meal glucose, using the schedule shown here. As you can see, the schedule calls for at least 3 blood sugars per day for 7 days.

Blood Glucose Trends

| | Breakfast | | Lunch | | Supper | | Bedtime |
|---------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|---------|
| Monday | | | | | | | |
| Tuesday | | | | | | | |
| Wednesday | | | | | | | |
| Thursday | | | | | | | |
| Friday | | | | | | | |
| Saturday | | | | | | | |
| Sunday | | | | | | | |
| Goal (mg/dL) | 80-120 before meal | 100-160 after meal | 80-120 before meal | 100-160 after meal | 80-120 before meal | 100- 160 after meal | 100-140 |

After you have obtained your blood sugar results, you can meet with your healthcare provider to see if there are any trends or concerns that need to be addressed.

Here are the steps:

- Set up an appointment with your doctor or diabetes educator.
- Check your blood sugar and record the results.
- Meet with your doctor to review the results.

Keeping track of your numbers

This form is for tracking your blood sugars. Take it when you visit your doctor so that your doctor can write down the results. Keep this form with your other medical information so that you can review it often.

Glossary of Terms

Carbohydrate: One of the three main classes of foods, mainly sugars and starches that the body breaks down into glucose (a simple sugar that the body uses to feed its cells). The food groups which contain carbohydrates include bread (or starch), fruit, milk, and sweets.

Certified Diabetes Educator (CDE): A health care professional that is qualified by the American Association of Diabetes Educators to teach people with diabetes. CDE's can include nurses, dietitians, physical therapists, physicians, and behavioral specialists.

Cholesterol: A fat-like substance found in blood and other tissues in the body of humans and animals. The body makes and needs some cholesterol. Too much cholesterol, however, may cause fat to build up in the arteries and can reduce or stop the flow of blood. Animal products are food sources of cholesterol. The goal level for total cholesterol is less than 200mg/dl.

Diabetes-Type 1: A chronic condition in which the pancreas makes little to no insulin because the beta cells have been destroyed. Without insulin, the body is unable to use sugar (glucose) for energy. This condition used to be called "*insulin-dependent diabetes*" or "*juvenile onset diabetes*".

Diabetes-Type 2: A chronic condition in which the pancreas does not produce enough insulin to meet the body's needs or the body cells are resistant to the action of insulin. This is the most common form of diabetes. Approximately 90-95 percent of people who have diabetes, have Diabetes-Type 2. This condition used to be called "*noninsulin-dependent or adult-onset diabetes*".

Choose Your Foods(Exchange List): A grouping of foods by type to help people make informed choices. Each group lists foods in specific serving sizes. A person can exchange, trade or substitute a food serving in one group for another food serving in the same group. Within a food group, each serving has about the same amount of carbohydrate, protein, fat and calories.

Hemoglobin A_{1c}: A blood test that measures a person's average blood sugar (glucose) level over the 2-3 month period before the test.

Insulin: A hormone that helps the body to use sugar (glucose) for energy. When the body cannot produce enough insulin of its own; a person must inject insulin.

Intensive Diabetes Management: A form of treatment for Diabetes-Type 1 in which the goal is to keep blood sugar (glucose) levels as close to normal levels as possible. The treatment consists of either three or more insulin injections per day or the use of an insulin pump. This treatment requires multiple blood testing, as well as, adjustment of insulin, food intake, and activity levels through out the day.

Oral diabetes Medication: Pills or capsules that people take to lower the level of sugar (glucose) in the blood. The pills work in several ways by either causing the cells in the pancreas to produce more insulin or increasing the body cells ability to use the insulin released by the pancreas.

Pancreas: An organ behind the lower part of the stomach that is about the size of a hand. Insulin, a hormone, is made in the beta cells of the pancreas. Insulin is released from the pancreas when blood sugar levels rise.

Registered Dietitian (R.D.): An expert in nutrition who helps people with special health needs to plan the kinds and amounts of foods to eat. The health care team for people with diabetes should include a registered dietitian.

Triglyceride: A type of blood fat. The body needs insulin to remove this type of fat from the blood. The goal for triglyceride levels is less than 150.

Know Your Local Community Numbers

Diabetes & Nutrition Education (Individual Appointments and Group Classes):

- **Central Vermont Medical Center**
Outpatient Health Education
For Appointments: 802-371-4152
For Questions: 802-371-4351 (Sylvia Gaboriault)
Sylvia.Gaboriault@cvmc.org
- Central Vermont Home Health and Hospice: 802-223-1878
- Central Vermont Council on Aging: 802-479-0531
- University of Vermont Extension: 802-223-2389

Additional Resources:

- Vermont Health Department:(Barre District) 802-479-4200
- Vermont State Regional Libraries: 802-828-3273
- Public Libraries: Barre: 802-476-5118
Montpelier: 802-223-3338
- American Diabetes Association 1-800- 232-3472

To find a Primary Care Physician:

- Central Vermont Physician Hospital Organization: 802-371-5972
Or toll free at 1-866-294-0992
- People's Health and Wellness Clinic, Barre 802-479-1229

Websites:

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| www.diabetes.org | American Diabetes Association |
| www.aadenet.org | American Association of Diabetes Educators |
| www.jdfcure.com | Juvenile Diabetes Foundation |
| www.eatright.org | American Dietetic Association |
| http://www.eatrightvt.org/ | Vermont Dietetic Association |
| http://www.childrenwithdiabetes.com/ | |
| www.joslin.harvard.edu/index.htm | Joslin Diabetes Center |
| http://sparkpeople.com/ | Diet Analysis Program |
| http://www.calorieking.com/ | Diet Analysis Program |
| http://www.fitday.com | Diet Analysis Program |
| http://www.cvmc.org | Central Vermont Medical Center |
| http://www.nationalahec.org/home/index.asp | Area Health Education Council |
| http://www.healthvermont.org/prevent/blueprint/selfmanage.aspx | Vermont Health Department |
| http://www.cvaa.org | Central Vermont Council on Aging |

Exercise Facilities:

- **First in Fitness**
1 Blanchard Court
Montpelier, VT 05602
(802) 223-1348
Or
- Granger Road
Berlin, VT 05641
(802)223-6161
<http://www.Firstinfitness.com>
- **Body Tech**
65 Elm St.
Barre, VT 05641
(802) 476-3973
- **Curves**
<http://www.curves.com/>
Barre:
100 North Main St.
(next to Lubiana's Bridal)
Barre, VT 05641
(802) 479-5300
Or

Northfield:

168 North Main St.
(The Gray Building)
Northfield, VT 05663
(802) 485-4847

- **Walking at the Berlin Mall**

Berlin Mall
282 Berlin Mall Road
Berlin, VT 05602
(802) 229-4151
<http://www.theberlinmall.com/>

- **Ladies Workout Express**

Montpelier/Berlin/Barre, VT
1284 U.S. Route 302, Ste. 1
Barre, VT 05641
(802)-476-7999
<http://www.ladiesworkoutexpress.com>

- **Jazzercise**

79 River St.
Montpelier, VT
(802) 244-8061
<http://www.jazzercise.com/>

- **Local Bike Paths**

Berlin, VT: <http://www.berlinvt.org/Bikepath.htm>
Montpelier, VT: <http://www.mdca.org/Visitors>

- **The Confluence**

188 River St.
Montpelier, VT 05603
(802) 229-4131
<http://www.theconfluencevt.org>

For more copies contact:

Central Vermont Medical Center
Outpatient Health Education Department at 371-4152.

 **Central Vermont Medical Center**
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