

Information for Patients with Diabetes

The information in this pamphlet is intended for the newly diagnosed adult with diabetes. You should use it to supplement information given to you by your health care providers. We hope you find the information helpful. We look forward to working with you to help you understand diabetes and what can be done to control the detrimental effects it may have on your physical well-being.

We would like to take this opportunity to introduce the Endocrinology and the Diabetes Self Management Education Programs offered by, or affiliated with, UMass Memorial Health Care. On the back inside cover, you will see a listing of these sites with contact information. These sites are staffed by physicians who are board certified in endocrinology and diabetes, and each education program is certified by the American Diabetes Association. Please speak with your primary care physician to find out if a referral to a diabetes educator and/or an endocrinologist would be appropriate for you.*

Diabetes education programs are designed to help you learn more about your disease and how to manage it more effectively with nutrition, exercise, medication and lifestyle modification. The team of experts that will assist you in managing your diabetes includes your primary care physician, an endocrinologist, nurse, dietician, and most importantly, you.

If you would like to schedule an appointment at one of the diabetes sites we have listed, please speak with your primary care doctor. If you need a primary care physician, call UMass Memorial's Physician Referral Services, 800-431-5151.

The UMass Memorial Children's Medical Center offers diabetes care for children and adolescents. For more information, call 508-856-4280.

Your comments about this pamphlet would be appreciated. Please send an e-mail to kit.bowry@umassmemorial.org or call 508-334-8500.

**An endocrinologist is a physician who takes care of patients with diabetes, as well as other disorders of the glands and hormones.*

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Diabetes is a chronic condition in which there is not enough insulin activity in the body. Insulin is a hormone, made by the beta cells in the pancreas, that regulates the movement of sugar into your body's cells. Before you had diabetes, your insulin worked fine. It carried sugar to the cells and left a little behind in the blood as a back-up supply. The sugar that is left in the blood is called "blood sugar." The blood sugar level can be measured with a blood test.

Before you had diabetes, your blood sugar level stayed in a safe range because your insulin kept it there. We do not know why people get diabetes. Usually it runs in families, but not always.

Diabetes is diagnosed with a blood test. People over the age of 45 should be tested for diabetes annually. Those who are at risk for developing diabetes should be screened starting at age 30, however, diabetes can develop at any age. People are at high risk for developing diabetes if they are overweight, have a family history of diabetes, are Hispanic, African-American, Native American or Asian American, have high blood pressure, have been told they have high blood sugar or have delivered a baby weighing more than nine pounds. Those at high risk for diabetes should ask their doctor how often they need to be tested.

Pre-diabetes (Impaired Fasting Glucose)

There are many people who have blood sugar levels that are a little higher than normal, but they do not have diabetes. Many of these people will go on to develop diabetes in a few years. A healthy diet, exercise and weight loss can help prevent or delay diabetes from developing. It is important that people at high risk for diabetes learn what they can do to lower their risk. Even a little bit of high blood sugar can do damage to the body. Ask your primary care doctor, or a diabetes educator, what is a safe range for your blood sugar levels.

Types of Diabetes

There are two types of diabetes. In both types, there are problems with insulin and blood sugar.

Type 1

Before you had diabetes, your insulin worked well. With type 1 diabetes, your body has stopped making insulin.

Type 2

Before you had diabetes, your insulin worked well. With type 2 diabetes, your insulin doesn't work the way it should. You may also be making less insulin than you used to.

Blood Sugar Problems

With diabetes, your blood sugar can go too high because your insulin is not working to maintain a safe level.

High blood sugar can make you feel tired, thirsty and hungry, and make your vision blurry. If your blood sugar stays high for a long time, serious health problems can happen for people with *both* types 1 and 2 diabetes, including:

- Infections
- Eye damage and blindness
- Numbness or tingling in feet, hands or legs
- Heart and blood vessel problems, including heart attack and/or stroke
- Wounds that will not heal
- Kidney problems
- Problems with sexual relations

The most important thing you can do to lower your risk of these serious problems is to keep your blood sugar level as close to normal as possible.

How Your Diabetes Educator Can Help

People with either type of diabetes need to learn about a balanced meal plan and healthy habits.

People with diabetes also need to learn about exercise:

- What kind is best
- When to exercise
- How long to exercise
- How often to exercise

Your diabetes educator will help you learn about food, exercise and weight loss, if necessary. The educator will teach you the skills you need to manage your diabetes, such as how to check your blood sugar level and how to take your medicines.

What You Need to Do

Taking care of your diabetes is a team effort, and the most important member of the team is *you*. Knowing about diabetes and having the skills to manage it are essential. Your primary care doctor, endocrinologist, diabetes educator and dietician, are there to help you. Be sure to ask about anything you do not understand.

Your diabetes team will help you decide on individual goals for managing your diabetes. It will help you reach those goals.

Diabetes is a part of your life. It does not go away. That may be hard to get used to, but as you learn to take care of yourself, it will get easier.

You Are in Control

Healthy, nutritional habits are one of the most important steps that *you* can take to control your diabetes. *You* may need to modify your behaviors to improve your health.

What Should You Eat?

It is best if each meal and snack has a variety of foods. You need enough carbohydrates in your diet.

These are examples of the best food choices:

Carbohydrates

- Vegetables
- Fruits (all kinds)
- Whole-grain breads, cereals and legumes (such as lentils or kidney beans)
- Skim or low-fat milk and yogurt

Proteins

- Lean meats
- Fish and seafood
- Other protein sources (low-fat cheese, eggs/egg substitutes, peanut butter or soy protein products)

When you can, eat vegetables and fruits in their natural states. They are better at satisfying your hunger and they are much healthier. Consistently eating the same amount of total carbohydrates at the same times everyday will help your blood sugar stay in your healthy target range. If eaten in excess, carbohydrates can raise your blood sugars too high.

Limit these foods:

- Sweets (e.g., candy, desserts, jelly, syrups) can make your blood sugar go *too high, too fast*.
- High-fat foods (e.g., butter, fatty meats, cheese, ice cream) can clog up your blood vessels and make you gain weight.

When Should You Eat?

Space your meals evenly, about four to five hours apart.

Carbohydrates and protein make the best snacks.

They digest within three hours. Try:

- Four small crackers with peanut butter
- 1/2 of a lean meat sandwich
- Six ounces light yogurt

Eat your meals on time to fuel your body. If you take medication to help control your blood sugar level, the doses are planned to work with your meal and snack times. *Do not ever skip meals.* You cannot afford to have your blood sugar level drop too low.



How Much Should You Eat?

When you have diabetes, portion sizes are very important. Eating the right amounts of food will help you manage your blood sugar level and provides proper nutrition. Your dietician will discuss specific portion sizes with you.

Healthy Cooking Tips

- Do not fry your food. The extra fat is not good for you.
- Grill, broil, roast or bake meats, and steam vegetables. Drain off meat fat drippings.
- Use a nonstick pan.
- Use a cooking spray instead of butter or oil.

Add some extra taste, if you like, with these flavorings:

- Lemon juice
- Mustards
- Hot pepper sauce
- Vinegar
- Garlic
- Artificial sweeteners
- Fresh salsa
- Extracts (vanilla, almond, etc.)
- All spices and herbs, except those containing salt

If the recipe calls for “oil,” use canola oil or olive oil.

Get the Fat Out!

Our bodies need a little fat every day, but too much or the wrong kind is bad for you.

Do these things *before* cooking meat:

- Trim off any fat you can see.
- Take the skin off chicken and turkey.

Eat small portions of meat, each portion about the size of a deck of cards. Eat more white meat and fish than red meat.

Use fat-free or reduced-fat salad dressing and mayonnaise. Oil-based salad dressing is preferred.

When you use milk and dairy products:

- Use skim or one percent milk.
- Eat cheese with less than five grams of fat per ounce.
- Use reduced-fat margarine, not butter.
- Choose artificially sweetened yogurt that is low fat or fat free.

Tips on Eating Out

If your meal will be later than usual, eat a small snack before leaving home, such as four crackers and a slice of cheese.

When you order:

- Choose plain foods. Broiled meat or fish, baked potato, and vegetables and salad are good choices.
- Ask for sauces, gravies and dressings to be served on the side.
- Do not order fried foods.

What Can Cause Low Blood Sugar?

Low blood sugar can happen if you did not eat enough.

- Did you skip a meal?
- Did you eat less than usual?
- Was your meal delayed?

It can happen if you took more insulin or diabetes pills than your body needed.

It can happen if you exercised more than usual.

What Does Low Blood Sugar Feel Like?

Anyone who takes a certain type of diabetes pill or insulin for diabetes can get low blood sugar. People who have had diabetes for many years may not feel the signs of low blood sugars as well. It is very important to follow your meal and exercise plan carefully, and check your blood sugar regularly. This will help head off low blood sugar before it starts.

You need to know that blood sugar levels can drop very quickly, and there may not be any warning signs so that it can be prevented. A blood sugar below 70 mg/dl (90 mg/dl for some people) for type 1 and type 2 diabetes and under 60 mg/dl for gestational diabetes is low and needs to be treated immediately.

Watch for these signs of low blood sugar:

- Getting sweaty
- Hunger
- Feeling confused
- Feeling dizzy
- Having a rapid heartbeat
- Feeling nervous and shaky
- Being in a bad mood

Check your blood sugar whenever you feel different. Low blood sugar can get worse *very fast*. If you do not treat it quickly, you could pass out.



How to Treat Low Blood Sugar

Step 1 - Test your blood sugar level. If it is below 70 mg/dl, eat or drink one of these, fast:

- A tube of glucose gel or three to four glucose tablets, or
- 1/2 cup of juice or regular soda (not diet soda), or
- Three to four hard candies, which should be chewed, not sucked, for faster action

Wait 15 minutes.

Step 2 - Check your blood sugar. If it is still below 70 mg/dl, and you still are feeling symptoms of low blood sugar, repeat the treatment. Do not do anything strenuous at this time. Take it easy.

Step 3 - Check your blood sugar *again* in 15 minutes. Repeat treatment if needed. If it is going to be more than a half hour until your next meal, eat a small snack, such as half of a sandwich with a glass of milk.

Step 4 - Take it easy until you feel better and if your blood sugar improves, in 30 minutes, check your blood sugar again.

If your blood sugar does not improve after the third blood sugar check and treatment, call your primary care doctor right away.

Always be prepared for low blood sugar. How? Always carry your blood sugar testing meter, and carry something to eat to treat low blood sugar if it suddenly happens:

- Juice
- Candy (not chocolate)
- Tube of glucose
- Glucose tablets



Low Blood Sugar and Exercise

Since both insulin and exercise lower blood sugar, here are some additional steps you should take to prevent low blood sugar reactions during exercise.

- Always carry some form of sugar such as glucose tablets or hard candies.
- One serving of fruit or the equivalent of 15 grams of carbohydrate should be eaten for most activities lasting about 30 minutes.
- One serving of fruit and one serving of starch or the equivalent of 30 grams of carbohydrate should be consumed for activities that last longer than 60 minutes.
- If you exercise right after a meal, eat the snack after the exercise. If you exercise two hours or more after a meal, eat the snack before the exercise.

How to Check Your Blood Sugar

You can check your own blood sugar any time. It is easy to do. You will need a small blood glucose testing meter and a lancing device. The lancing procedure is not very painful.

Follow these steps:

- Wash hands in warm soapy water, rinse and thoroughly dry.
- Prick your finger tip using a clean, new lancet for each test and the lancing device that comes with your meter. (Some meters allow you to prick other parts of the body.)
- Gently squeeze your finger tip until you get a drop of blood. (Some types of meters need more blood than others.)
- Apply the blood drop to the test strip. Follow the instructions in the product manual.
- Write the test result in your logbook.
- Dispose of the used lancet in a plastic container, not directly in the trash.
- Always take your logbook and meter with you when you visit your primary care doctor or diabetes educator. Your diabetes educator can discuss what type of meter would be the best one for you.



What Can Make Your Blood Sugar Go Up?

- Food
- Being sick
- Stress
- Not getting enough physical activity
- Not taking enough diabetes medication

Food

As your body changes food into sugar, your blood sugar level goes up. All foods can change to sugar, but especially foods high in carbohydrates. These include starchy foods, such as bread, rice, pasta and beans, sweets, fruits and milk.

If your blood sugar goes up too high or too fast, your insulin may have trouble getting enough sugar to the cells in time.

Appropriate amounts of food at each meal or snack can help keep your blood sugar from going up so high.

Stress

Stress can come from the following:

- Anger
- Fear
- Too little sleep
- Pregnancy
- Illness
- Infection
- Worry
- Growth spurts

Sickness and surgery are other kinds of stress for the body. They also can make your blood sugar go up.

If you are sick and have type 1 diabetes or are pregnant and have gestational diabetes, you need to check your urine for ketones regularly.

What Can Bring Your Blood Sugar Level Down?

When you have diabetes, your blood sugar can go too high, but these things will help it stay down.

- Exercise
- Insulin
- Diabetes pills
- Eating less food

Exercise

When you exercise, your cells burn more sugar and your blood sugar goes down. Exercise also helps insulin work better.

Exercise is helpful when you need to lose weight. It also can help reduce stress, high blood pressure and high cholesterol levels.

Diabetes Pills

Diabetes pills are *not* insulin, but they may help your own insulin work better.

If food and exercise alone do not keep your blood sugar down, your primary care doctor may order these pills to control your blood sugar and will give you instructions on how to use them.

Insulin

As insulin moves sugar from your blood to your cells, your blood sugar level goes down.

- If you have **type 1 diabetes**, you must take insulin by injection every day.
- If you have **type 2 diabetes**, your primary care doctor or endocrinologist will decide if you need to take insulin.

Since it takes awhile for insulin to start working after an injection, you usually will take it *before* eating. By the time your blood sugar goes up after eating, the insulin will be ready to do its work. Your primary care doctor, endocrinologist, diabetes educator or pharmacist will instruct you as to the best time to take your insulin. It is important to eat the same amount of carbohydrates (such as starches, fruit and milk) at each meal to balance your meal plan with the insulin dose and exercise.

You Are in Control

Exercise is one of the most important changes that you can make to control your diabetes. Exercise will improve your health.

This is what exercise does for you:

- Helps your insulin work better
- Helps keep blood sugar levels more stable
- Helps you lose weight (along with careful eating)
- Gives you more energy
- Increases your metabolism
- Helps lower cholesterol, a dangerous kind of fat in the body
- Helps lower blood pressure
- Improves your strength and muscle tone
- Reduces stress



Exercise: A Key to Successful Diabetes Treatment

The important thing is to find something you like to do.

So, get ready...get set...go!

Get ready...

- First, ask your primary care doctor what kind of exercise you can do and how much.
- Think about what you like to do.
- Find someone to exercise with if you need company.
- If you will be on your feet, wear well-fitting, supportive footwear.

Get set...

- Always make sure you carry or wear your diabetes identification, such as a wallet card, bracelet or necklace.
- Carry something in case of low blood sugar, such as glucose tablets or hard candies.
- Drink extra water before, during *and* after exercise.

...Go!

Check your blood sugar just before *and* one hour after you exercise...especially if you are trying a new exercise or sport.

Begin gradually:

- If you have not been active, go slowly.
- Slowly work up to longer (and maybe harder) exercise. Consider getting an exercise prescription from your primary care doctor.

When Should You Exercise?

- Try to exercise every day.
- Do it about the same time every day.

How Much Should You Exercise?

If you are not use to exercise, start with just a few minutes at a time. Little by little, build up to about 30 minutes or more each day.

If it is hard for you to do 30 minutes at one time, break it up into shorter exercise sessions during the day, such as 10 minutes, three times a day.

Should You Snack First?

Ask your diabetes educator or dietitian if you need a snack before exercise.

When Should You Not Exercise?

Do not exercise if:

- Your doctor says “no!”
- You do not feel well or have pains.
- It is too hot or humid outside. (No one should!)
- Your insulin or diabetes medication is peaking and you have not eaten.
- Your blood sugar is very high or very low. (Ask your primary care doctor or diabetes educator what is safe for you.)
- You have ketones in your urine (for type 1 diabetes).



AFFILIATED DIABETES SITES

Contact your primary care physician for a referral to the site most convenient to you.

Day Kimball Hospital - Putnam, CT

Endocrinologist	860-928-4344
Diabetes Education	860-928-4344

HealthAlliance Hospital - Leominster Campus, Leominster, MA

Endocrinologist	978-466-2105
Diabetes Education	978-466-4580

Heywood Hospital - Gardner, MA

Endocrinologist	978-630-2770
Diabetes Education	978-630-5719

Marlborough Hospital - Marlborough, MA

Endocrinologist	508-486-5753
Diabetes Education	508-486-5430
Nutrition Education	508-486-5633

Milford Regional Medical Center - Milford, MA

Endocrinologist	508-473-6320
Diabetes Education	508-422-2396

UMass Memorial Medical Center - Worcester, MA

Adult Diabetes Program

Diabetes Physician and/or Diabetes Education

University Campus 508-334-3206

Diabetes Education

Memorial Campus 508-334-6694

Children's Diabetes Center 508-856-4280

Adult Community Medical Group Diabetes Program

Diabetes Physician and Education 508-334-5332

Wing Memorial Hospital - Palmer, MA

Endocrinologist	413-284-5400
Diabetes Education	413-284-5208

UMass Memorial Health Care is the largest not-for-profit health care system in Central Massachusetts with 1,500 physicians and more than 12,000 employees. Our comprehensive network of care includes teaching hospitals, affiliated community hospitals, outpatient clinics, community-based physician practices, long-term care facilities, and home health, hospice, rehabilitation and mental health services. UMass Memorial is dedicated to promoting health and wellness in the community, and is proud to be the clinical partner of the University of Massachusetts Medical School.

Contributions and memorial gifts to UMass Memorial Health Care are deeply appreciated. For information, call the UMass Memorial Foundation at 508-856-5520 or e-mail to giving@umassmed.edu.

For more information about UMass Memorial Health Care, please visit our web site at www.umassmemorial.org.



Our Academic Partner



Diabetes Center

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