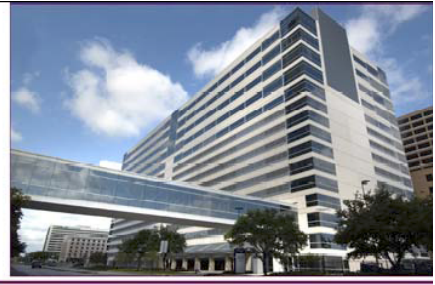


# Baylor Clinic Healthletter



## Focus On Diabetes

December 2008

### Could You Have Diabetes?

Did you know that there are more than six million people in the United States who have diabetes but don't know it? According to the Centers for Disease Control and Prevention, diabetes affects nearly 21 million Americans—that's seven percent of the U.S. population. And, the numbers are rising. In the last decade alone, there has been a 33% increase in diabetes, largely attributed to the obesity epidemic. In addition, it is estimated that more than 41 million people have pre-diabetes, a condition that increases the risk of Type 2 diabetes, the most common form of the disease—and most of them don't know it.

### So, What is Diabetes?

*Type 1 diabetes* is an autoimmune disease in which your body does not produce insulin—a hormone needed to convert sugar, starches and other food into energy. Without adequate insulin, sugars build up in your blood, starving your cells of energy. Over time, this lack of insulin can cause damage to major organs in the body including the heart, blood vessels, nerves, eyes and kidneys—increasing your risk for severe health problems.

*Type 1 diabetes*, once known as *juvenile or insulin-dependent diabetes*, is a less common form of diabetes, accounting for only 10% of diabetics. In Type 1, the pancreas (an organ in the abdomen) produces little or no insulin. At this time, the cause of Type 1 diabetes is unknown and it cannot be prevented. However, research is ongoing—it has been found that genetics and exposure to certain viruses may be contributors. With early diagnosis and proper treatment, Type 1 diabetics can live long, full lives.

*Type 2 diabetes*, or *adult on-set or non-insulin dependent diabetes*, is the most common form of diabetes. About 90-95% of diabetics are Type 2. In Type 2 diabetes, either the body does not produce enough insulin or the cells don't respond to insulin correctly. Without proper diagnosis and treatment, Type 2 diabetes can be life-threatening. Although there is no cure for the disease and the cause is unknown, Type 2 diabetes can be prevented through making healthy lifestyle choices. It is almost always preceded by "pre-diabetes" and if diagnosed early, proper diet, exercise and lifestyle choices can help you avoid Type 2 altogether.

### One Disease—Many Doctors

Diabetes is a very complex disease that can affect the entire body and lead to serious complications. If you are diagnosed with diabetes, it is very important to receive excellent medical care so that you can live a full life with very few complications.

One doctor alone cannot provide the expertise required to treat the disease effectively. That's why it is important to get high-quality medical care. At Baylor Clinic, all the expertise needed to treat diabetes is available in one convenient location—and, even better—our doctors offer a collaborative approach to treating the disease. This means that your doctors will actually talk to each other about you, your disease and your treatment to make sure you get the care you need.

If you have Type I diabetes, you should be followed by an endocrinologist. However, if you suffer from Type II diabetes the lead doctor treating your condition should be a primary care physician such as an internist or family doctor. Depending on complications that may arise and your specific medical needs, your primary care physician may also suggest you see an endocrinologist, cardiologist, podiatrist, ophthalmologist, nephrologist, neurologist, registered dietician or exercise therapist. Education is also very important in the treatment of diabetes, so at Baylor Clinic, our nurse educators and dieticians will make sure you completely understand your diagnosis, warning signs and treatment plan. The American Diabetes Association provides standards of medical care for people with diabetes. These guidelines are available at <http://www.diabetes.org/whos-who-on-your-health-care-team.jsp>.

### **What Should I Watch For?**

The symptoms of diabetes can be very subtle—therefore, it is important to pay close attention to your body. Symptoms usually start mild (possibly with a slow healing wound) and then progress to something more severe (like excessive thirst or urination). These symptoms can lead to life-threatening complications like kidney and foot problems, if not treated properly. The symptoms of Type 1 and Type 2 are similar; however, they vary greatly in their progression. In Type 2 diabetes, symptoms typically progress slowly and it may take months—or even years—to realize there is a problem. With Type 1 diabetes, symptoms progress rapidly over a few weeks or months, so prompt medical attention is critical.

### **Are You at Risk?**

Ongoing research efforts are underway to further identify the risk factors associated with diabetes. Although correlations associated with Type 1 diabetes are minimal, much evidence supports

### **Pay Attention—Your Body May Be Warning You**

It's important to listen to your body—it may be telling you that something is wrong. The following symptoms could be an indicator of the onset of diabetes. Be sure to tell your doctor if you are experiencing any of these:

- Frequent urination
- Excessive thirst
- Extreme hunger
- Unusual weight loss
- Increased fatigue
- Irritability
- Blurry vision
- Dry, itchy skin
- Slow-healing sores or frequent infections
- Lost feeling or tingling in your feet

many risk associations with Type 2 diabetes. We know the following factors are associated with the development of Type 2 diabetes:

- Overweight
- Inactive lifestyle (exercise less than three times a week)
- Family history of diabetes
- Ethnic background of African American, Hispanic, American Indian, or Asian American
- Over age 45 (often because of sedentary lifestyle and loss of muscle mass)
- Diagnosis of pre-diabetes
- Developed Gestational Diabetes when pregnant or gave birth to a baby weighing more than nine pounds
- Blood pressure: 140/90 mm/Hg or higher
- HDL cholesterol less than 35 mg/dL or a triglyceride level 250 mg/dL or higher
- Polycystic ovary syndrome, a metabolic disorder that affects the female reproductive system

- Acanthosis nigricans (dark, thickened skin around neck or armpits)
- History of disease of the blood vessels to the heart, brain or legs
- Positive IFG (Increased Fasting Glucose) or IGT (Impaired Glucose Tolerance) on previous testing

If you would like to evaluate your risk for developing diabetes, the American Diabetes Association offers an on-line assessment tool <http://www.diabetes.org/risk-test.jsp>; however, it is always best to discuss health concerns with your physician.

### **Are You Pre-Diabetic?**

Many people have pre-diabetes and do not even know it. Formerly known as Impaired Glucose Tolerance, pre-diabetes typically does not have any symptoms. The diagnosis of pre-diabetes simply means that either your fasting blood glucose level is higher than the normal range (but not high enough to be considered diabetes) and/or your glucose level is too high two hours after a glucose load. Because of increased glucose levels, you are at increased risk for developing Type 2 diabetes, as well as developing heart disease or having a stroke. But the good news is that you can do something about it. Studies have proven that 30 minutes a day of moderate physical activity, coupled with a 5-10% reduction in body weight, can prevent the development of diabetes by up to 58%. If you are diagnosed with pre-diabetes, it is important to have your blood glucose checked at least once a year.

### **How Can You Prevent Diabetes?**

The most important thing you can do to prevent diabetes is to pay attention to your body, make healthy lifestyle choices and educate yourself on the disease. Find out if you are at risk, and if so, make sure you get proper screenings and regular checkups. Through regular exercise, healthy diet, weight control and proper medical care, you can decrease your risk for developing the disease. The old saying, “an ounce of prevention is worth a

### **Screening is Simple**

There are two simple blood tests available for pre-diabetes and diabetes screening: If you think you are at risk, ask your doctor to test you:

#### *Fasting Plasma Glucose Test (FPG)*

- Simple blood test requiring an eight-hour fast
- Results between 100 and 125 mg/dl signal pre-diabetes
- Levels over 126 mg/dl confirm diabetes (must be confirmed twice)
- Possible for diabetics to have normal results and more testing may be required
- Recommended by the American Diabetes Association because it is easy, quick and inexpensive

#### *Oral Glucose Tolerance Test (OGTT)*

- Simple blood test requiring eight-hour fast
- Following fast, you will drink about 75 grams of glucose
- After two hours, blood is drawn
- Levels between 140 and 199 mg/dl signal pre-diabetes
- Values over 200 mg/dl indicate diabetes

pound of cure” holds true with this disease. In many cases, you can prevent it. Prevention is so important that the National Diabetes Education Program has launched a national awareness campaign on the subject, which will provide you with all the tools you need to reduce your odds. You can view their online prevention guide at [http://ndep.nih.gov/campaigns/SmallSteps/SmallSteps\\_index.htm](http://ndep.nih.gov/campaigns/SmallSteps/SmallSteps_index.htm)

## What if You Have It?

If you are diagnosed with diabetes, remember that people live very long, fulfilling lives with both Type 1 and Type 2 diabetes. One of the most important aspects of dealing with diabetes is recognizing that the choices you make directly effect the progression of the disease. These choices involve food, medication and physical activity. Here's how you can choose wisely:

- Educate yourself—learn as much as you can about diabetes by having your doctor refer you to an official diabetes educator (RN or RD) who can inform you of the medical and dietary changes that are important for managing this disease
- Get excellent medical care—find a qualified team of doctors and other health care professionals (dietitians, RN diabetes educators, exercise therapists, etc.) who communicate with each other and will provide the highest level of care
- Eat a healthy diet—eat a well-rounded diet that is high in fiber and low in calories
- Exercise regularly—at least three times a week
- Lose weight—if you are overweight, losing five to 15 pounds can significantly lower your blood sugar levels
- Eat around the same time every day—this can help sustain blood sugar levels
- Avoid empty calories—like foods that are very high in sugar
- Know your medicine—where it is and how to use it; make sure it is always accessible
- Monitor your blood sugar—your doctor can help you know when to do this
- Listen to your body—it will typically warn you if something is wrong
- Quit smoking—you don't want to further increase your risk of heart disease

Food choices and portion control are so important to the maintenance of diabetes, that a diabetes-specific food pyramid has been developed, grouping foods on their carbohydrate and protein content, instead of their traditional classification. See <http://www.diabetes.org/nutrition-and-recipes/nutrition/foodpyramid.jsp> for more information.

## How is it Treated?

The goal of diabetes treatment is to keep blood sugar levels as close to normal as possible. Levels that are too high, or levels that are too low, can lead to serious complications, and even death. If you have been diagnosed with diabetes, it is of utmost importance that you regularly monitor your blood sugar levels. How often you need to test your levels depends on the type of diabetes you have and your specific situation. Your doctor can help you determine a target level and appropriate test times. In general, Type 1 diabetes needs to be monitored more often than Type 2 diabetes.

In order to test your blood sugar level, a blood sugar monitor is required. There are many varieties available today—some will even track your results and provide trend information. Your doctor can help you choose the one that is right for you. With a monitor, you prick your fingertip, the sample is read and results are provided immediately.

When blood sugar levels are unmanageable through diet alone, medication may be necessary. In Type 1 diabetes, exogenous insulin (insulin externally produced) is required, as the pancreas produces little or no insulin at all—so it must be replenished through insulin injections. However, Type 2 diabetes can often be managed through proper diet and exercise alone. It is not uncommon, though, for Type 2 diabetics to also require medication.

There are many different forms of insulin today, including rapid-acting, long-acting and intermediate options. Currently, it is only available in injectable form as stomach enzymes interfere with insulin taken by mouth. Insulin can be given

through a standard syringe, an injector pen or a pump. The pumps available today are very compact and easily concealed. They are worn outside the body, but attach through a catheter in the stomach. Pumps are programmed to dispense insulin automatically.

Oral medication may be recommended for Type 2 diabetics who cannot properly control their diabetes through diet and exercise. These medications vary depending on your specific needs.

### **It Can Get Complicated**

If diabetes is not maintained properly, it can lead to very serious complications. The longer you have the disease, the greater your chances are of developing serious side effects. That's why prevention and maintenance are so important. If not controlled properly, chronic, irregular blood sugar levels can lead to the following serious conditions:

- Heart disease—adult diabetics are two to four times more likely to die of heart disease than non diabetics; the risks of heart disease can be reduced by good lipid and blood pressure control
- High blood pressure—75% of adults with diabetes have high blood pressure
- Nerve damage—about 60 to 70% of diabetics have mild to severe forms of nervous system damage, resulting in pain to the extremities, slowed digestion, carpal tunnel syndrome, erectile dysfunction and other problems; good glucose control reduces the risk of peripheral nerve damage
- Blindness—diabetes is the leading cause of blindness in adults, but this can usually be prevented by good glucose control and care from an ophthalmologist

- Amputations—diabetes is responsible for more than 60% of non-traumatic lower-limb amputations; however, in most cases amputations can be prevented by good foot care and good lipid and blood pressure control
- Stroke—the risk for stroke is two to four times higher for diabetics
- Dental disease—periodontal (gum) disease is more common in diabetics
- Pregnancy complications—poorly controlled diabetes during pregnancy can cause major birth defects or miscarriage; it can also result in excessively large babies. The risks are greatly reduced by good glucose control before and throughout pregnancy
- Kidney disease—diabetes is the leading cause of kidney disease, but kidney disease can be prevented or reduced by good glucose and blood pressure control
- Osteoporosis—diabetes can lead to lower than normal bone density, increasing the risk for osteoporosis
- Alzheimer's disease—research has shown a possible link between diabetes and this disease, probably due to blocked blood flow to the brain

### **Is a Cure on the Way?**

At this time, there is no known cure for diabetes. However, there is voluminous ongoing research on the subject, and great strides have been made over the last several years. At Baylor College of Medicine (BCM), we are committed to finding a cure for the disease. That's why we have the best minds in medicine dedicated to the effort. Our commitment is evidenced through our recent designation by the National Institutes of Health (NIH) as a Diabetes and Endocrinology Research Center—the only one in Texas and one of only 17 in the country. As a leader in this effort, we will collaborate with other centers across the country to provide better education, prevention and treatment of the disease.

Currently, we have more than 50 diabetes-related projects that are supported by NIH grants. Here are just a few highlights of our cutting-edge diabetes research:

- A new gene therapy has been developed that induces the formation of new islets (the insulin production factory in the body) in the livers of diabetic mice. These islets produce enough insulin to maintain normal blood sugar levels and reverse diabetes in these animals. Eventually, we hope to translate these findings into a cure for Type 1 diabetes in humans.
- At our Behavioral Medicine Research Center, we are conducting studies that examine the long-term health effects of weight loss for overweight, Type 2 diabetics after appropriate lifestyle counseling, diet modifications and diabetes education/support.
- Through a program with the Harris County Hospital District, we are investigating novel forms of diabetes characterized by severe defects in the way the pancreas secretes insulin. These studies are helping to reclassify diabetes and identify new causes of pancreatic malfunction.
- Various clinical studies are underway testing the effectiveness of investigational drugs and anti-diabetes medications.

### **We Will Take Care of You**

Whether you think you are at risk for diabetes, you've been diagnosed with diabetes or you're perfectly healthy, it is important to get the high-quality, personalized medical care that you need. At Baylor College of Medicine it's all about you. We provide the highly skilled resources you need to manage your health in one convenient location. Our doctors will listen to you and work collaboratively to treat you. With our integrated approach, we combine the best of medicine, science, education and service to deliver comprehensive, compassionate care. At Baylor, you will have access to all the experts you need and the benefits of the latest technology, discoveries and advances in medicine. What we are learning in our research today is implemented at the bedside tomorrow. It all comes back to you. Let our doctors take care of you.

### **Call Us Today—We're Waiting for You**

Baylor Clinic's team of experts are some of the best minds in medicine. We offer personalized care for the whole person and the whole family, meeting the needs of all ages and addressing all types of healthcare concerns. Our patients benefit from:

- Board-certified physicians and certified physician's assistants
- Onsite specialists, when needed, expediting your treatment
- Innovative treatments based on the latest research findings
- Modern systems that make the healthcare process easier
- A collaborative environment that brings together multiple specialists all working together to improve your care and treatment.

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Call **713.798.7700** to schedule an appointment with a Baylor Family Medicine physician today.

**Sources:** Lawrence C. B. Chan, MD, Betty Rutherford Chair for Diabetes Research at Baylor College of Medicine, National Institute of Diabetes and Digestive and Kidney Disease, the American Academy of Family Physicians, the Centers for Disease Control and the Mayo Clinic.