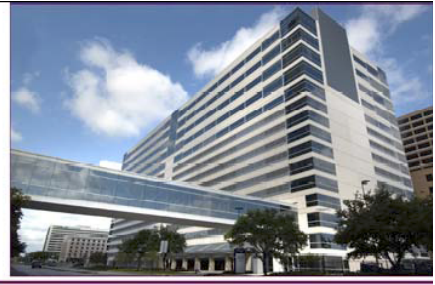


# Baylor Clinic Healthletter



## Focus on Diabetes and Prediabetes

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Listless and fatigued, the very thought of a busy day at the hospital tired John, a young hospital employee. Initially, John dismissed the feeling as post-viral-fever weakness. But in the days ahead there was no change. Then a friend, a diabetes expert, suggested that John have his blood sugar level checked. John had almost begun to take those extra 30 pounds for granted. But to his friend, 40-year-old John's weight was a clue – to diabetes. A simple blood test confirmed his fears.

The American Diabetes Association reports that almost 21 million people in the United States, or 7 percent of the population, have diabetes. According to the Texas Diabetes Council, an estimated 1.3 million adults in Texas alone have been diagnosed with the disease. Diabetes is the 6th leading cause of death in Texas, contributing to more than 17,000 deaths in 2002.

While its cause is still unknown, researchers have found that genetics and environmental factors such as sedentary lifestyles play significant roles. Diabetes is a disease in which the body does not produce or properly use insulin, a hormone needed to convert sugar, starches and other food into energy. Obesity reduces the body's ability to respond to insulin. When your body makes insulin but can't use it properly, the sugar level in your blood rises above the normal healthy range, resulting in diabetes. High blood sugar levels can cause serious damage to the heart, kidneys, eyes and peripheral nerves.

Knowing your risk of diabetes can help you prevent or delay onset of the disease. Consider John's case. With both his parents living with diabetes, John should have been screened with blood sugar testing at regular intervals. Screening can detect early diabetes as well as "prediabetes," a stage in the natural history of the disease where the high blood sugar levels can be reversed with lifestyle changes. Once a patient is diagnosed with prediabetes, it is possible to prevent or reduce the complications of diabetes with proper control of glucose (blood sugar), blood pressure and cholesterol levels.

## Diet and Diabetes

Lifestyle strategies for the prevention of diabetes are centered around healthy eating and regular exercise. Your diet plays a key role in controlling your blood sugar level, making good nutrition a crucial element in preventing diabetes, managing existing diabetes, and preventing or slowing the rate of development of chronic complications.

There is no "diabetic diet." The American Diabetes Association does not endorse a specific meal plan for those with diabetes. In addition, contrary to popular belief, people with diabetes *can* consume sugar (sucrose) and still keep their blood glucose levels in their target range. The key is to work these foods into your meal planning and properly monitor your overall nutrition.

Research has shown that the total amount of carbohydrates in your diet affects blood glucose levels the most. As a result, most people with diabetes use meal-planning tools such as carbohydrate counting to help control their blood sugar level. Carbohydrates or "carbs" are foods you eat that break down into blood sugar; they include starch, fruit, milk and sweets. Carbohydrates are your body's main energy source. They are also a source of fiber, vitamins and minerals, and help aid in hydration.

It is not necessary for those with diabetes to avoid carbs. (High protein diets are *not* recommended to treat prediabetes or diabetes.) Rather the focus should be on the amount and source of carbohydrates consumed. Your physician, dietitian or diabetes educator can tell you specifically how many carbohydrates to eat based on your weight, activity level, medical history, need for weight loss, or to match insulin doses. When reading food labels, keep in mind 15 grams of “Total Carbohydrate” is one carbohydrate serving or “exchange.” Also keep in mind the type of carbohydrate (e.g. sugar vs. starch) can also affect blood glucose levels – some carbs are better for your body than others.

For those already living with diabetes, include carbohydrates from fruits, vegetables, whole grains, legumes, low-fat milk, and fiber rich foods. In addition, you should keep saturated fats to a minimum, eat at least two servings of non-fried fish per week, limit trans fatty acids or “trans fats” and restrict total cholesterol to less than 200 mg/day. Sodium intake should also be kept to a minimum. For those with prediabetes, focus on consuming more fiber and whole grains, and sustained, moderate weight loss, if needed.

Some people with diabetes also use a tool called a “glycemic index” to help control their blood sugar level. The glycemic index measures how fast a food is likely to raise your blood sugar. For example, if your blood sugar is low and continuing to drop during exercise, you would prefer to eat a carb that will quickly raise your blood sugar. On the other hand, if you would like to keep your blood sugar from dropping during a few hours of mild activity, you may prefer to eat a carb that has a lower glycemic index and longer action time. If your blood sugar tends to spike after breakfast, you may want to select a cereal that has a lower glycemic index. Faster carbs (higher numbers) are great for raising low blood sugars and for covering brief periods of intense exercise. Slower carbs (lower numbers) are helpful for preventing overnight drops in the blood sugar and for long periods of exercise.

### **The Power of Exercise**

Regular exercise is another cornerstone for both the prevention and treatment of diabetes. Prior to starting a moderate or vigorous exercise program, individuals should check with their physician. Because people with adult onset or type 2 diabetes have a higher risk of coronary heart disease (CHD) than the general population, an assessment of cardiac risk should be determined for these patients. That risk can be assessed using a landmark study known as the U.K. Prospective Diabetes Study risk engine which calculates cardiac risk estimates for individuals with type 2 diabetes based on a study of 53,000 patient years (<http://www.dtu.ox.ac.uk/index.php?maindoc=/riskengine/>).

Cardiac stress testing is typically recommended for individuals with at least moderate cardiac risk (those with more than a 10 percent chance of having a heart attack or cardiac event over the next 10 years). In general, you should undergo cardiac stress testing prior to initiating an exercise program if you are:

- More than 40 years old with or without cardiovascular disease risk factors other than diabetes
- More than 30 years old with type 1 or type 2 diabetes for more than 10 years, hypertension, cigarette smoking, dyslipidemia, proliferative or preproliferative retinopathy (damage to the retina) or nephropathy (damage to the kidneys), including microalbuminuria.

Large clinical trials have demonstrated that diet and exercise reduce the incidence of type 2 diabetes in people with impaired glucose tolerance, or a pre-diabetic state. Exercise also has been demonstrated to improve glucose control, even in the absence of weight loss.

Exercise recommendations by the American Diabetes Association include:

- At least 150 minutes/week of moderate-intensity aerobic physical activity (walking briskly, mowing the lawn, dancing, swimming, or bicycling on level terrain, for example.)
- At least 90 minutes/week of vigorous aerobic exercise (jogging, mowing the lawn with a nonmotorized pushmower, high-impact aerobic dancing, swimming continuous laps, or bicycling uphill, for example). This should be done over at least three days/week with no more than two consecutive days without physical activity.

There is also data indicating that resistance exercise improves insulin sensitivity to about the same degree as aerobic exercise. Moderately fit men have shown to have a mortality rate 60 percent lower than men with low fitness levels.

In summary, diabetes is common. Minority populations, specifically Hispanics, Asians and African-Americans, are genetically predisposed to developing adult onset or type 2 diabetes and its complications. Individuals who are at increased risk should be evaluated with a fasting glucose level (blood test after fasting) or an oral glucose tolerance test, which involves measuring blood sugar levels after drinking a cola-like solution. Those with impaired glucose tolerance (prediabetic) should alter their lifestyle to include a healthier diet and regular exercise. Those with overt diabetes should make these lifestyle changes and, in addition, work with their physician to find medications that will control their diabetes and reduce the risk for developing eye, kidney, neurological and cardiovascular complications.

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