

# Diabetes and SCI

2007



**Promoting Health and  
Preventing Complications  
Through Exercise**

## *Rehabilitation Research and Training Center on Spinal Cord Injury*

*Long term spinal cord injury (SCI) and diabetes? Some research suggests the two go hand in hand with as many as 20 percent of spinal cord injured people having adult-onset diabetes. If you have an SCI, what should you know about diabetes?*



**D** **diabetes** is a chronic disease in which the body does not make enough insulin – a hormone from the pancreas – or, does not use the body’s insulin correctly. As a result, glucose, or blood sugar, that is normally carried to cells throughout your body to be used as fuel, builds up in the bloodstream instead, and can even spill into the urine. This extra glucose can damage organs such as the heart, eyes, kidneys, nerves and blood vessels.

### Two Main Types of Diabetes:

#### Type 1:

- Starts during childhood or young adulthood
- Accounts for only five percent of cases
- Requires daily insulin injections

#### Type 2:

- Usually occurs in adults over the age of 40
- Accounts for 95 percent of cases
- Usually controlled through a combination of diet, exercise, oral medications, and insulin

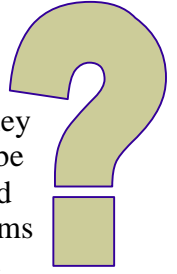
([American Diabetes Association](#) {ADA}, 2007)





## Are You At Risk?

It's estimated that of the **20 million** people in the United States that have diabetes, **6 million** of these individuals (almost one-third) don't know they have it! ([ADA](#), 2007). Symptoms of diabetes can be hard to spot because some of them can be confused for other illnesses or conditions. Common symptoms include: dehydration, excessive urination, extreme thirst, increased appetite and weight change. For people with SCI however, recognizing these symptoms can be difficult because your SCI may hide these symptoms. For example, using a catheter may make it difficult to identify "excessive urination" and some of the other symptoms could be a side effect of certain medications you're using.



It's very important to understand that after your injury your body may quickly lose muscle while gaining fat, especially if you're not physically active. This is enough to change your metabolism and the way your body is able to use insulin. This change in your body can put you at greater risk for developing diabetes than before your injury. Since recognizing symptoms early makes a big difference, you should speak to your doctor about your personal risk.

*Have more questions about risk?  
Take the online risk test at:  
<http://www.diabetes.org/risk-test.jsp>*

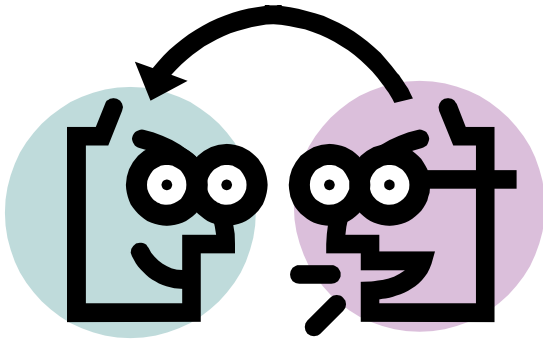
## Risk Factors

By far the most important risk factor is age. Two to 16 percent of people over the age of 40 have diabetes ([ADA](#), 2007)! The older you get, the greater your chances of developing diabetes. Some researchers and clinicians—and more than a few survivors—feel that people with SCI age faster than non-disabled people. If aging *does* speed up after SCI, then diabetes may make its appearance sooner.

## Other Factors:

- Family history of the disease
- Being overweight or obese
- Inactivity or not enough exercise
- Ethnicity— diabetes is more common in African Americans, Latinos, and Asian Americans
- Gender— believe it or not, diabetes is more prevalent among women than men
- Age— if you are over the age of 45 it's a good idea to screen for diabetes as the risks increase with age
- Pre-diabetes— a condition that usually leads to the development of diabetes within 10 years





## Pre-Diabetes, Obesity, and Diabetes— Make the Connection

Pre-diabetes shows no symptoms. Pre-diabetes is a condition where blood glucose levels are higher than normal, but not high enough to *be* diabetes. There are two tests performed to see if you have this condition: the fasting plasma glucose test (FPG) and the oral glucose tolerance test (OGTT).

During the FPG blood test your blood glucose level is measured after you have fasted for 8 hours. This test will show if you metabolize glucose correctly.

With the OGTT, your blood glucose is measured after a fast and then again 2 hours after drinking a beverage with a large amount of glucose.

*Do you have pre-diabetes? Find out more by visiting:*

<http://www.diabetes.org/pre-diabetes/pre-diabetes-symptoms.jsp>

Being overweight or obese is directly linked to pre-diabetes. For people with SCI this is especially important. **About 60 percent of people with SCI are overweight or obese** (University of Michigan Health System, 2007). People with SCI burn calories at a slow rate and lose muscle mass. This not only could lead to diabetes, but to other secondary conditions like high cholesterol, coronary artery disease, and cardiovascular disease.

## What You Can Do

Persons with pre-diabetes should follow the same recommendations as those for persons already diagnosed with diabetes. Through weight loss and physical activity, you can delay having diabetes and even bring your blood glucose levels back to normal. Talk to your doctor about other possible ways to lower your risk.



- Don't do crash diets! Instead make simple changes in your eating habits.
- Set a realistic weight-loss goal, such as losing 1 pound a week.
- Aim for at least 30 minutes a day of physical activity.



## U.S. POPULATION DIABETES STATS

Pre-diabetes	54 million
Have diabetes	20.8 million
Undiagnosed	6.2 million
(ADA, 2007; CDC, 2007)	

**For tips on healthy eating visit the ADA's virtual grocery store online:**

<http://vgs.diabetes.org/homepage.jsp>

*Studies have shown that 30 minutes a day of moderate physical activity, combined with a 5-10 percent loss in body weight, lowered the chance of developing diabetes by 58% (ADA, 2007).*

## Diagnosis and Treatment:

Diagnosis begins with a routine urine test. High levels of glucose in the urine, or on either the FPG or OGTT tests, are the usual signs. People diagnosed with pre-diabetes often develop diabetes within 10 years. With the right changes in diet and exercise, someone with pre-diabetes can delay or even prevent diabetes. Therefore, monitoring for pre-diabetes and taking preventive measures when it does appear is very important.

The goal of treatment is keeping glucose levels as close to normal as possible. Treatment is different for everyone. It's important to get educated about your condition. Your doctor will help you pick the best treatment plan, but you will be responsible for maintaining your health. There are several things that you can do to maintain your health, prevent diabetes, or manage it once you've been diagnosed.

## Diet:

Diet is important in the treatment of diabetes. Knowing what to eat can be confusing so here are some general guidelines:

- Have regular eating times; don't skip meals!
- Keep healthy snacks handy to avoid hunger and high glucose levels.
- Limit sweets and desserts; it's okay to cheat once in a while!
- Stay away from saturated fats.
- Limit alcohol consumption.
- Choose water over diet or other calorie-free drinks (artificial sweeteners can often act like real sugar on glucose levels).
- Choose foods high in fiber (some studies suggest high fiber diets help decrease glucose levels).

## Exercise and Stress:

Exercise and physical activity help, but with a SCI this can be difficult. Work with your doctor or healthcare team to create a physical activity plan right for you. A routine exercise plan can help you get rid of stress, which can aggravate diabetes. Aside from exercise, you should find other ways to unwind, relax, and get rid of stress.



### **Get Your ZZZZZs:**

Recent studies have shown that sleep plays a key role in controlling your weight ([Vorona, et al., 2005](#)). Taking multiple medications, busy schedules and other daily routines can make it tough to get enough sleep. If possible, adjust your busy schedule to allow for enough sleep.

### **Things To Watch Out For:**

If you have been diagnosed with diabetes, it's important to pay attention to your body. Problems in your circulatory system can lead to changes in vision, heart problems and possibly amputation. To avoid these complications it's important you have your heart health monitored with tests such as weight, blood pressure, cholesterol, and cardiac stress. You should talk to your doctor about which tests are best for you. It's also important to see your doctor if you sense any infection or illness. Infections and fevers can affect your insulin levels. You should also watch your skin closely. Keep an eye out for skin breakdowns on your feet and legs, as these can be related to your diabetes. Foot care is important, especially for people with an SCI, so wear loose socks, soft shoes that fit well, and keep your nails trimmed. Always report anything unusual to your doctor.



### **Keep In Mind:**

Because SCI survivors have the same causes and risks as non-disabled people they can benefit from the same lifestyle changes, such as diet, weight maintenance, exercise, and stress management. Careful management of diabetes generally has excellent results. You can take responsibility by learning to check your own glucose levels if your doctor recommends this, take insulin/medication, adjust your diet, and exercise. Look for doctors who understand SCI as well as diabetes, starting with your local SCI facility. If you can't find one doctor knowledgeable in both issues, find two who are willing to work together.

### **Remember That:**

- **Diabetes is caused by a combination of genetic and lifestyle factors including being overweight.**
- **Persons with SCI are at much higher risk for developing diabetes because of decreased activity, weight gain, and metabolism changes post-injury.**
- **Nutrition, exercise, and weight loss are the three keys to preventing diabetes.**

**Take Home  
Tips**

## Resources:

- The American Diabetes Association (ADA) [online] <http://www.diabetes.org> (Accessed 2007).
- (2007). All About Diabetes. [online]. <http://www.diabetes.org/about-diabetes.jsp> (Accessed 2007).
- (2007). Be Active, But How? Top Ten Benefits of Being Active. (ADA) [online]. <http://www.diabetes.org/weightloss-and-exercise/weightloss-getting-active.jsp> (Accessed 2007).
- The Centers for Disease Control and Prevention (CDC) [online] <http://www.cdc.gov/diabetes> (Accessed 2007).
- Vorona, R., et al. (2005). Overweight and Obese Patients in a Primary Care Population Report Less Sleep Than Patients With a Normal Body Mass Index. *Archives of Internal Medicine*, 165, 25-30.
- The American Diabetes Association (ADA) National Call Center- 1-800-DIABETES.

For more information or alternative formats, please visit our web site at:  
<http://www.sci-health.org> or call 1-866-380-4344.

## Disclaimer

This fact sheet only provides general information. It is only for informational and educational purposes and should not be used to diagnose or treat a medical condition. It is not a substitute for professional medical advice relative to your specific medical conditions. Always seek the advice of your doctor or other qualified health provider before starting any new treatment or with any questions you may have about your medical condition.

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