

Diabetes: The enemy within

Diabetes is a disease that occurs when the body's glucose, or sugar, metabolism malfunctions. It's increasingly common and very serious, even life-threatening. If left uncontrolled, diabetes causes serious damage to the body and leads to complications such as blindness, heart disease, kidney problems, nerve damage and erectile dysfunction.

By Dr. Greg Bondy and Kevin Johns

The full name for diabetes is *diabetes mellitus*, which comes from two Greek words: *diabainein* meaning "to pass through," from the fact that the disease causes fluids to pass through the body quickly; and *mellitus* meaning "like honey," because the urine of people with diabetes smells and tastes sweet.

The urine and breath of diabetics are sweet because they contain large amounts of glucose. Glucose is a molecule contained in most of the sugars we eat. Once consumed, it either circulates in our blood or gets stored for future use. Glucose is an important source of energy for the body, especially for cells like brain cells and red blood cells, which rely exclusively on glucose for fuel and die without it.

Normally, the body uses a hormone called insulin to control levels of glucose in the blood by storing it in the muscles and liver. Insulin is made in the pancreas by cells called beta cells. In diabetes, glucose storage is impaired because the body is either unable to produce insulin or does not respond to it properly.

Two types of diabetes

Type 1 diabetes refers to people who don't produce insulin (or produce a very small amount of insulin) because their body has mistakenly attacked the beta cells and destroyed them.

Type 2 diabetes results from a combination of two factors: 1) cells that normally respond to insulin stop responding to insulin, a condition called *insulin resistance*, and 2) the beta cells in the pancreas eventually "burn out" and are unable to produce enough insulin. As a result, the body can't store glucose properly and high levels of glucose are left circulating in the blood. In type 2 diabetes, insulin builds up in the blood as the body tries, ineffectively, to bring the blood glucose levels down. This differs from type 1, where insulin is only found in small amounts or not at all.

Symptoms resulting from damage to certain organs tend to develop more slowly (see "early warning signs") with type 2 than with type 1 diabetes and the disease progresses more gradually, but the consequences can be just as serious.

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Risk factors for type 2 diabetes

- Obesity (more than 20% above your ideal body weight)
- Relative(s) with diabetes
- Race (Blacks, Aboriginals, Asians and Hispanics have higher risk)
- Lack of exercise
- High blood pressure (140/90 mmHg or above)
- Low "good" (HDL) cholesterol (less than 0.9 mmol/L) or high triglycerides (more than 2.25 mmol/L)
- Impaired glucose tolerance or impaired fasting glucose on previous testing

Diabetes and HIV

Type 2 diabetes is of particular concern to people with HIV because some antiretroviral medications can cause *impaired glucose tolerance*, which is sometimes called *prediabetes*. The body becomes less able to handle high levels of glucose in the bloodstream because cells don't respond to insulin. Over time, people with impaired glucose tolerance are at increased risk for developing diabetes and its complications. Redistribution of body fat (lipodystrophy) can also make you more prone to developing diabetes.

There are things you can do, even if you have high glucose levels, to reduce your risk of developing diabetes and to lower your glucose to normal levels. Exercise and diet are key. Moderately increasing your exercise (150 minutes per week is a good goal) and reducing the amount of fat in your diet can go a long way toward preventing the development of full-blown diabetes. If these steps are not enough to get glucose levels back to normal, your doctor may prescribe medications that help your body clear away surplus glucose. Being aware that you may be at risk and having your blood glucose levels tested regularly are important steps to preventing the development of diabetes. **R**

Early warning signs of diabetes

- Need to urinate frequently
- Always thirsty
- Extreme tiredness or lack of energy
- Slow-healing wounds
- Blurred vision
- Weight loss

