Diabetes Overview

Diabetes is a disease in which the body does not produce or properly use insulin. Insulin is a hormone that is needed to convert sugar, starches and other food into energy needed for daily life. The cause of diabetes continues to be a mystery, although both genetics and environmental factors such as obesity and lack of exercise appear to play roles.

In order to determine whether or not a patient has pre-diabetes or diabetes, health care providers conduct a Fasting Plasma Glucose Test (FPG) or an Oral Glucose Tolerance Test (OGTT). Either test can be used to diagnose pre-diabetes or diabetes. The American Diabetes Association recommends the FPG because it is easier, faster, and less expensive to perform.Source

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Major Types of Diabetes

Type 1 diabetes

Results from the body's failure to produce insulin, the hormone that "unlocks" the cells of the body, allowing glucose to enter and fuel them. Type 1 diabetes is the least common of the two main types and accounts for between 5 ? 15% of all people with diabetes.

Type 2 diabetes

Results from insulin resistance (a condition in which the body fails to properly use insulin), combined with relative insulin deficiency. Type 2 diabetes is the most common of the two main types and accounts for between 85 - 95% of all people with diabetes.

Gestational diabetes

Gestational diabetes affects about 4% of all pregnant women - about 135,000 cases in the United States each year.

Pre-diabetes

Pre-diabetes is a condition that occurs when a person's blood glucose levels are higher than normal but not high enough for a diagnosis of type 2 diabetes. There are 54 million Americans who have pre-diabetes, in addition to the 20.8 million with diabetes.

Signs and symptoms

The signs and symptoms of diabetes are:

- Thirsty
- Increased thirst
- Going to the loo (for a wee) all the time ? especially at night
- Extreme tiredness
- Weight loss
- Blurred vision
- Genital itching or regular episodes of thrush
- Slow healing of wounds

Causes and risk factors

Type 1 diabetes

one person picked out of a crowedType 1 diabetes develops when the insulin-producing cells in the pancreas have been destroyed. Nobody knows for sure why these cells have been damaged but the most likely cause is an abnormal reaction of the body to the cells. This may be triggered by a viral or other infection.

Type 2 diabetes

If you are white and over 40 years old, or if you?re black, Asian or from a minority ethnic group and over 25 years old and have one or more of the following risk factors, you should ask your GP for a test for diabetes.

The risk factors

? A close member of your family has Type 2 diabetes (parent or brother or sister). ? You?re overweight or if your waist is 31.5 inches or over for women; 35 inches or over for Asian men and 37 inches or over for white and black men. ? You have high blood pressure or you?ve had a heart attack or a stroke. ? You?re a woman with polycystic ovary syndrome and you are overweight. ? You?ve been told you have impaired glucose tolerance or impaired fasting glycaemia. ? If you?re a woman and you?ve had gestational diabetes. ? You have severe mental health problems.

The more risk factors that apply to you, the greater your risk of having diabetes. Your age

You?re at risk of diabetes if you?re over 40 or you?re over 25 and black, Asian or from a minority ethnic group. The risk also rises with age so the older you get the more at risk you are.

The family

Having diabetes in the family puts you at risk. The closer the relative is, the greater the risk. So if your mum or dad has diabetes, rather than your aunt or uncle, it?s more likely you will develop the condition too.

Ethnicity

African-Caribbean or South Asian people who live in the UK are at least five times more likely to have diabetes than the white population.

Your weight

Not all people with diabetes are over weight but the stats show that over 80 per cent of people diagnosed with Type 2 diabetes are overweight. The more overweight and the more inactive you are the greater your risk. If you don?t know whether you?re overweight, ask your GP to measure your BMI.

Your waist

Women ? if your waist measures 31.5in (80cm) or more you?ve got an increased risk. Men ? if you?re white or black and your waist is 37in (94cm) or more you have an increased risk of developing diabetes; if you?re an Asian man the figure is 35in (90cm) or more.

The other factors

If you?ve been diagnosed with any problems with your circulation, had a heart attack or stroke, or if you?ve got high blood pressure you may be at an increased risk of diabetes.

Pregnant women can develop a temporary type of diabetes ? gestational diabetes. Having this ? or giving birth to a large baby ? can increase the risk of a woman going on to develop diabetes in the future.

Women with polycystic ovary syndrome who are overweight are at an increased risk of developing diabetes.

If you?ve been told you have either impaired fasting glycaemia (IFG) or impaired glucose tolerance (IGT) it means the level of glucose (sugar) in your blood is higher than normal but you don?t have diabetes and you should follow a healthy diet, lose weight if you need to and keep active, to help yourself prevent diabetes. But make sure you?re regularly tested for diabetes.

Other conditions such as raised triglycerides (a type of blood fat) and severe mental health problems can also increase your risk.

Treating diabetes

- **Type 1 diabetes** is treated by insulin injections and diet, and regular exercise is recommended. Insulin cannot be taken by mouth because it is destroyed by the digestive juices in the stomach. People with this type of diabetes commonly take either two or four injections of insulin each day. If you have Type 1 diabetes, your insulin injections are vital to keep you alive and you must have them every day.

- **Type 2 diabetes** is treated with lifestyle changes such as a healthier diet, weight loss and increased physical activity. Tablets and/or insulin may also be required to achieve normal blood glucose levels. There are several kinds of tablets for people with Type 2 diabetes. Some kinds help your pancreas to produce more insulin. Other kinds help your body to make better use of the insulin that your pancreas does produce. Another type of tablet slows down the speed at which the body absorbs glucose from the intestine. Your doctor will decide with you which kinds of tablet are going to work best for you and may prescribe more than one kind. Type 2 diabetes is progressive. If your diabetes cannot be controlled through lifestyle changes and tablets your doctor may recommend that you take insulin injections.

The main aim of treatment of both types of diabetes is to achieve blood glucose, blood pressure and cholesterol levels as near to normal as possible. This, together with a healthy lifestyle, will help to improve wellbeing and protect against long-term damage to the eyes, kidneys, nerves, heart and major arteries.

Molecular biology of Diabetes

- The identification, characterization, and mutational analysis of three different genes, namely the prepro-arginine-vasopressin-neurophysin II gene (prepro-AVP-NPII), the arginine-vasopressin receptor 2 gene (AVPR2), and the vasopressin-sensitive water channel gene (aquaporin-2, AQP2), provide the basis for our understanding of three different hereditary forms of diabetes insipidus: autosomal dominant neurogenic diabetes insipidus, X-linked nephrogenic diabetes insipidus, and autosomal recessive nephrogenic diabetes insipidus, respectively. These advances provide diagnostic tools for physicians caring for these patients. Source