

Diabetes Overview

Diabetes Mellitus (referred to as just diabetes) is a lifetime illness. Over 20 million people in the US have diabetes. Diabetes means that your blood glucose (blood sugar) is too high. This is a serious disease and affects almost every part of your body. Diabetes can lead to problems such as heart disease, stroke, vision loss, kidney disease, and nerve damage. That is why a health care team may help you take care of your diabetes, such as a doctor, diabetes educator, eye doctor, dentist, dietician, foot doctor, nurse, pharmacist, social worker, mental health practitioner, nurse practitioner and friends and family. Of course YOU are the most important member of the team! The cause of diabetes is not known. The risk of getting diabetes is likely to be passed on from your family.

What are Insulin and Amylin: These are substances produced by the pancreas (an organ in the abdomen) that help the cells of the body use glucose for energy needs. Insulin is the major hormone that is secreted. Amylin is co-secreted with insulin from the pancreatic beta cells in the ratio of approximately 100:1. Amylin is another important hormone produced by the pancreas. Amylin plays a role in

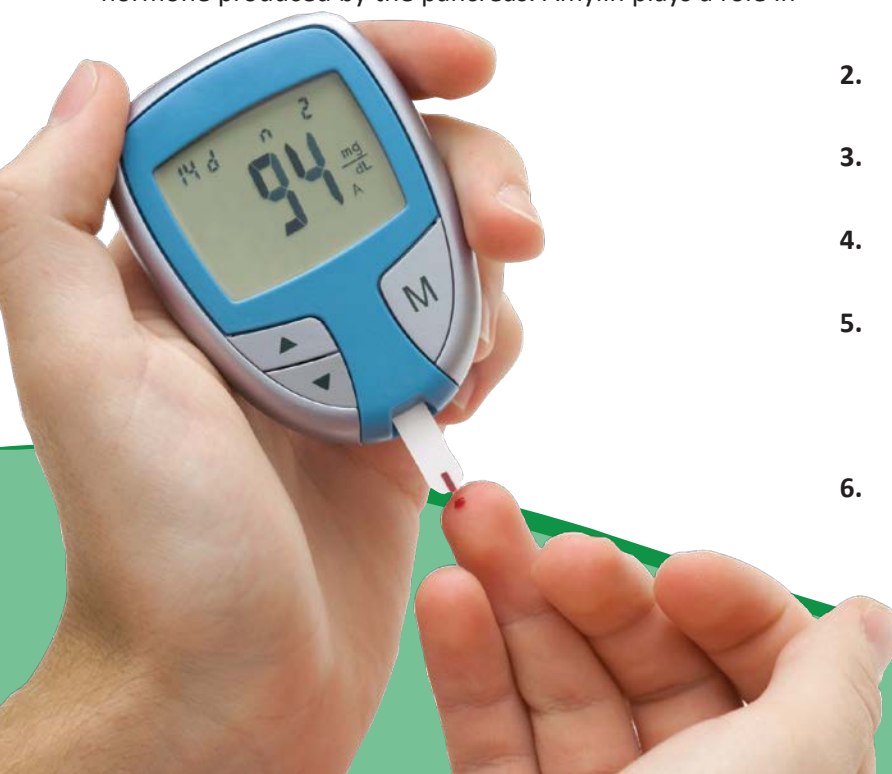
controlling glucose levels in blood by slowing stomach emptying and promoting satiety (feeling of fullness), thereby preventing after meal spikes in blood glucose levels.

There are three major types of Diabetes:

Type 1 Diabetes- The body does not make enough insulin and amylin. This usually happens early in life due to destruction of insulin and amylin making cells in the pancreas. This could be caused by a wide variety of reasons such as a viral infection or allergy to the body's own cells. Insulin is needed by the body to use glucose from food for energy. People with type 1 diabetes need to take insulin every day. Some may also take amylin.

Type 2 Diabetes- Most often, the body makes enough insulin, except in late stage of type 2 diabetes. Also, there may be enough insulin, but the body does not use insulin well. This is called insulin resistance. People with type 2 diabetes often need to take pills or insulin. Several things may lead to developing type 2 diabetes:

- 1. Family history:** The chance of developing type 2 diabetes is increased if you have a family history of diabetes.
- 2. Overweight:** Being overweight increases your risk of developing type 2 diabetes.
- 3. Lack of exercise and poor diet:** These factors can lead to development of type 2 diabetes.
- 4. Age:** As you grow older, your risk of developing type 2 diabetes increases.
- 5. Stress:** Stress such as having a severe illness, surgery, heart attack, or stroke can lead to type 2 diabetes. If you have a family history of diabetes, this is more likely to happen.
- 6. Race or ethnic:** African-American women, Native Americans, Asians, Hispanics and Jewish people are at greater risk of developing diabetes.



Gestational (jes-TAY-shon-al) Diabetes (GDM)- GDM occurs in some women when they become pregnant. It raises her future risk of developing diabetes, mostly type 2. It may also raise her child's risk of being overweight and developing type 2 diabetes.

Other rare types of diabetes include :

- genetic defects of the beta cell—the part of the pancreas that makes insulin—such as maturity-onset diabetes of the young (MODY) or neonatal diabetes mellitus (NDM)
- genetic defects in insulin action, resulting in the body's inability to control blood glucose levels, as seen in leprechaunism and the Rabson-Mendenhall-syndrome
- diseases of the pancreas or conditions that damage the pancreas, such as pancreatitis and cysticfibrosis
- excess amounts of certain hormones resulting from some medical conditions—such as cortisol in Cushing's syndrome—that work against the action of insulin
- medications that reduce insulin action, such as glucocorticoids, or chemicals that destroy beta cells
- infections, such as congenital rubella and cytomegalovirus
- rare immune-mediated disorders, such as stiff-man-syndrome, an autoimmune disease of the central nervous system
- genetic syndromes associated with diabetes, such as Down syndrome and Prader-Willi syndrome

How is diabetes diagnosed?

The fasting blood glucose test is usually the test for diagnosing diabetes in children and adults. The test is most reliable when done before breakfast in the morning after a 8 hour fast. However, The following are tests that can also be done on any specific day

- A blood glucose level of 126 mg/dl or higher after an 8-hour fast. This test is called the fasting blood glucose test.
- A blood glucose level of 200 mg/dl or higher 2 hours after drinking a beverage containing 75 grams of glucose dissolved in water. This test is called the Oral Glucose Tolerance Test (OGTT).

- A random blood glucose —taken at any time of day—blood glucose level of 200 mg/dl or higher, along with the presence of diabetes symptoms.

Gestational diabetes is diagnosed based on blood glucose levels measured during the Oral Glucose Tolerance test. It is generally done in the 28th week of gestation. Glucose levels are normally lower during pregnancy, so the cutoff levels for diagnosis of diabetes in pregnancy are usually lower. Blood glucose levels are measured before a woman drinks liquid containing a specific amount of glucose. Then levels are checked 1, 2, and 3 hours afterward. If a woman has two blood glucose levels meeting or exceeding any of the following numbers, she has gestational diabetes: a fasting blood glucose level of 95 mg/dl, a 1-hour level of 180 mg/dl, a 2-hour level of 155 mg/dl, or a 3-hour level of 140 mg/dl.

What is pre-diabetes?

People with pre-diabetes have blood glucose levels that are slightly higher than normal, but not up to the level of diabetes. Pre-diabetes is also called Impaired Fasting Glucose (IFG) or Impaired Glucose Tolerance (IGT), depending on the test used to diagnose it. Some people have both IFG and IGT.

- IFG is a condition in which the blood glucose level is high—100 to 125 mg/dL—after an overnight fast, but is not high enough to be classified as diabetes. The former definition of IFG was 110 mg/dL to 125 mg/dL .
- IGT is a condition in which the blood glucose level is high—140 to 199 mg/dL—after a 2-hour OGTT, but is not high enough to be classified as diabetes.

Pre-diabetes is increasingly more common in the United States. The U.S. Department of Health and Human Services estimates that at least 57 million U.S. adults ages 20 or older had pre-diabetes in 2007. Those with pre-diabetes are likely to develop type 2 diabetes within 10 years, unless they take steps to prevent or delay diabetes.

The good news is that people with pre-diabetes can do a lot to prevent or delay diabetes. Studies have clearly shown that people can lower their risk of developing diabetes by losing 5 to 7 percent of their body weight through diet and increased physical activity. A major study of more than 3,000 people with IGT found that diet and exercise resulting in a 5 to 7 percent weight loss—about 10 to 14 pounds in a person who weighs 200 pounds— lowered the incidence of type 2 diabetes by nearly 60 percent. Study participants lost weight by cutting fat and calories in their diet and by exercising—most chose walking—at least 30 minutes a day, 5 days a week.

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Reference:

1. National Institute of Diabetes and Digestive and Kidney Diseases:
A division of National Institute of Health:
<http://diabetes.niddk.nih.gov/dm/pubs/overview/>

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