

DIABETES MELLITUS

Diabetes is a metabolic and chronic disease characterized by an increased level of glucose (sugar) in the blood, in other words the person develops hyperglycaemia. It is due to the body's inability to produce the proper amount of insulin, a hormone regulating the way glucose is used in the body. The body needs insulin to use glucose as a source of energy.

What happens in Diabetes?

After each meal most of the food is broken down into sugar in the stomach and intestine and then it is absorbed and circulates in the blood. Increased level of blood sugar stimulates pancreas to release insulin. Insulin is necessary to facilitate glucose to enter into the cells. When the body cannot release the proper amount of insulin, then the sugar cannot move into the cells and remains in the blood, causing hyperglycemia. This condition is called diabetes mellitus.

Apart from the sugar that comes directly from the absorption of food, sugar is also produced by the liver. This is an insulin-regulated process. When there is not enough insulin, then the liver produces large amounts of glucose, resulting in an even worse hyperglycemia (especially in the morning).

The main types of diabetes are: Type 1 diabetes, type 2 diabetes and gestational diabetes.

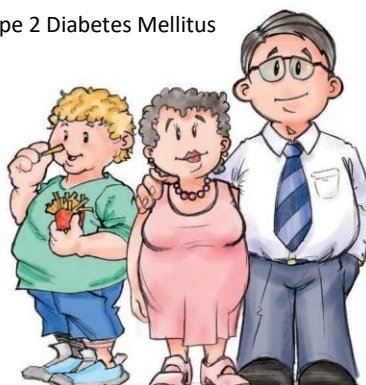
Type 1 diabetes: Formerly it was known as insulin-dependent or juvenile diabetes. It is attributed to complete lack of insulin production from the pancreas. For this reason Type 1 diabetic patients need insulin injections, from the day of diagnosis and longlife. It occurs mainly in people under 30 years old, but it is not uncommon in more elderly people.

Type 2 diabetes: It occurs mainly in adults and was formerly known as "adult diabetes". However, in recent years, it is not uncommon in younger ages, even in children. It is attributed to impaired insulin action or a pancreatic failure to produce the amount of insulin needed by the body to keep the blood sugar at normal levels. In order to manage this type of diabetes, it is necessary to follow a program of systematic exercise and healthy diet combined with medication (antibiabetic pills and/or insulin).

Type 1 Diabetes Mellitus



Type 2 Diabetes Mellitus



Gestational Diabetes: It appears during pregnancy and it usually disappears six weeks after child birth. It is due to the hormonal changes that occur during pregnancy. Aggravating factors include family history, pre-existing obesity, and increased body weight gain during pregnancy. In order to effectively manage this type of diabetes, exercise and proper nutrition is, quite often, enough but antidiabetic pills and/or insulin injections are needed.

Diagnosis of diabetes can be set by blood sugar testing:

- When, in two consequent testing, fasting blood sugar is 126 mg/dl and above (fasting for more than eight hours and the testing has to be performed in laboratory)
- When in a random testing blood sugar level is over 200 mg/dl in a person with diabetes symptoms
- When in the blood sugar curve testing, two hours after the initial glucose intake, the levels are over 200 mg/dl.

While for gestational diabetes, the diagnosis is made by performing the glucose tolerance test (75gr of glucose taken orally) in the 24th-28th week of pregnancy. The diagnosis of gestational diabetes is set when one or more test values exceed the following limits:

Blood Sugar at time the begging (0 time) are ≥ 92 mg/dl

Blood Sugar at 60 minutes (1 hour) are ≥ 180 mg/dl

Blood Sugar at 120 minutes (2 hours) are ≥ 153 mg/dl

The diabetes symptoms are described as follows :

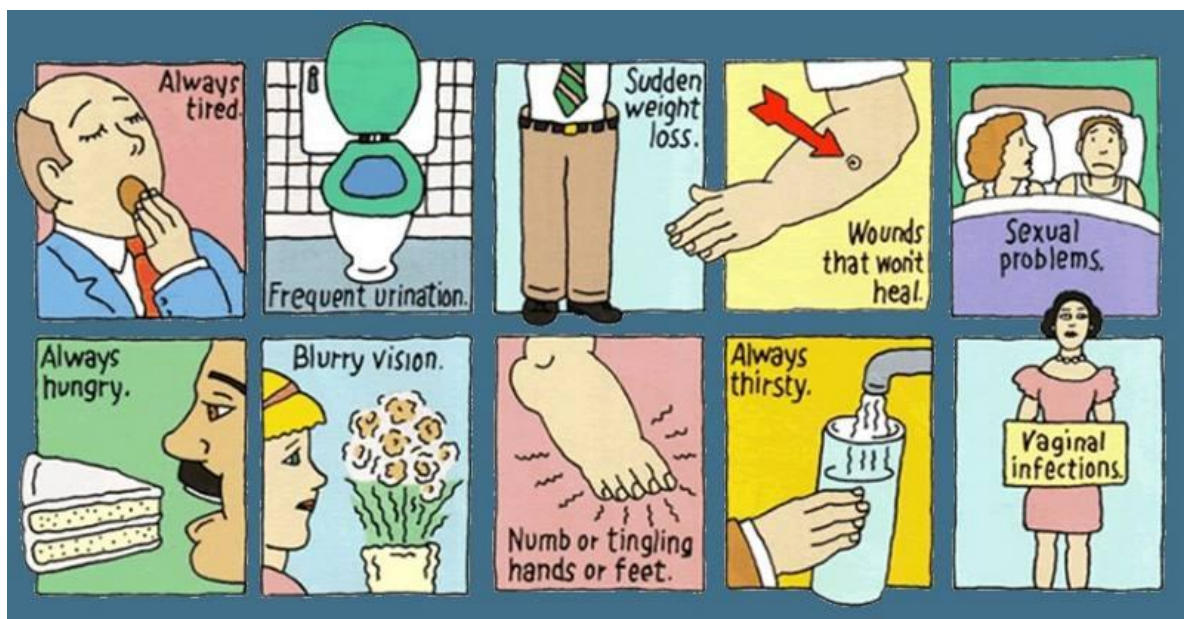
- Urinating often: It is caused by the excessive amount of sugar in the blood that cannot be absorbed and it passes through the kidneys and drows a lot of water with it.
- Feeling very thirsty. It is the result of the above.
- Feeling very hungry: It occurs because glucose cannot be absorbed by the body in order to provide energy, so the body is forced to use its reserves, resulting in increased need

for food. Unfortunately, too much eating causes excessive body weight that increases the problem (need for more insulin).

- Changes in body weight, easy fatigue, weakness, infections that are difficult to recede, blurred vision, genital itching, irritability, erectile dysfunction, severe leg, particular in tibia, and toe pain.

Symptoms of Type 1 diabetes can occur quickly within a few weeks. Symptoms of type 2 may occur later on in a person's life. In many people the symptoms are so mild that they cannot be spotted resulting in a late diagnosis.

Symptoms of diabetes



Risk factors for **type 1 diabetes** manifestation are:

- Genetic predisposition
- Environmental factors (eg viral infections)

Risk factors for **type 2 diabetes** manifestation are:

- Pre-diabetes
- Overweight or obesity
- Age (people aged ≥ 40 are at higher risk)
- High blood pressure
- Lack of physical activity
- Family history of diabetes
- History of gestational diabetes

Risk factors for **gestational diabetes** the woman has to present one of the following factors:

- Age 35 years and older

- Obesity
- Gestational diabetes in a previous pregnancy
- Previous birth of a more than 4kg baby
- Parents or siblings with type 2 diabetes
- Polycystic ovary syndrome
- Dark skin on the neck, under the abdomen and groin

Prediabetes

It occurs when blood glucose levels are higher than normal, but not enough to make a diagnosis of diabetes. The criteria for diagnosis are: fasting sugar of 100 to 125 mg/dl or a sugar curve in the two hours of 140 to 199 mg/dl. Pre-diabetes can be treated or, in some cases, reversed by physical exercise, weight loss and a healthy diet. If no intervention is decided, pre-diabetes can develop into type 2 diabetes (50% within 5 years).

High blood sugar levels can cause complications such as chronic kidney disease, leg ulcers, lower limb amputation, stroke, eye diseases, anxiety, nerve damage and erectile dysfunction (in men).

For the prevention of diabetes mellitus it is recommended:

- Adopting a healthy lifestyle that includes daily physical exercise and proper nutrition
- Body weight with normal limits.



National diabetes statistics report, 2017.

<https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf>

Centers for Disease Control and Prevention website.

<http://www.diabetes.ca/about-diabetes/types-of-diabetes>

<https://www.canada.ca/en/public-health/services/chronic-diseases/reports-publications/diabetes/your-guide-diabetes.html#Liv0>

<https://www.niddk.nih.gov/health-information/diabetes/overview/tests-diagnosis>

