**[Q1] What is diabetes?**

Diabetes refers to a group of conditions characterized by a high level of blood glucose, commonly referred to as blood sugar. Too much sugar in the blood can cause serious, sometimes life-threatening health problems. There are two types of chronic diabetic conditions.

* Type 1 diabetes (insulin destroyed by beta cells by mistake)
* Type 2 diabetes. (cell doesn’t respond to insulin)
* Gestational diabetes
* Pre-diabetes

Pregnant women may acquire a transient form of the disease called “**gestational diabetes**” which usually resolves after the birth of a baby. **Pre-diabetes** is when the blood sugar level is at the borderline: higher than normal, but lower than in diabetics. Prediabetes may or may not progress to diabetes. During food digestion, carbohydrates - or carbs - break down into glucose which is carried by the bloodstream to various organs of the body. Here, it is either consumed as an energy source - in muscles for example - or is stored for later use in the liver. Insulin is a hormone produced by beta cells of the pancreas(অগ্ন্যাশয়) and is necessary for glucose intake by target cells. In other words, when insulin is deficient, muscle or liver cells are unable to use or store glucose, and as a result, glucose accumulates in the blood. In healthy people, beta cells of the pancreas produce insulin; insulin binds to its receptor on target cells and induces glucose intake. In type 1 diabetes, beta cells of the pancreas are destroyed by the immune system by mistake. The reason why this happens is unclear, but genetic factors are believed to play a major role. Insulin production is reduced; less insulin binds to its receptor on target cells; less glucose is taken into the cells, and more glucose stays in the blood. Type 1 is characterized by early onset, symptoms commonly start suddenly and before the age of 20. Type 1 diabetes is normally managed with insulin injection. Type 1 diabetics are therefore “**insulin-dependent**”. In type 2 diabetes, the pancreas produces enough insulin but something goes wrong either with receptor binding or insulin signaling inside the target cells. The cells are not responsive to insulin and therefore cannot import glucose; glucose stays in the blood. In other words, type 2 diabetics are “**insulin** **resistant**”. Here again, genetic factors predispose susceptibility to the disease, but it is believed that lifestyle plays a very important role in type 2. Typically, obesity, an inactive lifestyle, and an unhealthy diet are associated with a higher risk of type 2 diabetes. Type 2 is characterized by adult onset; symptoms usually appear gradually and start after the age of 30. Type 2 diabetes accounts for about 80 to 90% of all diabetics. Management focuses on weight loss and includes a low-carb diet.

**Types of Diabetes:**

**Type 1 Diabetes:** This type occurs when your immune system mistakenly attacks and destroys the insulin-producing beta cells of the pancreas. It's usually diagnosed in children and young adults.

**Type 2 Diabetes:** Type 2 diabetes occurs when your body becomes resistant to insulin or doesn't produce enough insulin to maintain normal glucose levels. It's often associated with lifestyle factors such as obesity, physical inactivity, and poor diet.

**Gestational Diabetes:** This type of diabetes occurs during pregnancy when the body can't produce enough insulin to meet the increased insulin needs. It usually resolves after giving birth but increases the risk of developing type 2 diabetes later in life.

**Other Types:** There are other less common types of diabetes, such as monogenic diabetes and secondary diabetes, which have different causes and characteristics.

**Causes:**

**Type 1 Diabetes:** The exact cause is unknown, but it's believed to involve a combination of genetic predisposition and environmental factors, such as viral infections or exposure to certain toxins.

**Type 2 Diabetes:** Lifestyle factors such as obesity, sedentary lifestyle, and poor diet play a significant role. Genetic factors also contribute to the risk of developing type 2 diabetes.

**Gestational Diabetes:** Hormonal changes during pregnancy and genetic factors contribute to the development of gestational diabetes.

**Prevention:**

**Type 1 Diabetes:** There is no known way to prevent type 1 diabetes.

**Type 2 Diabetes:** Healthy lifestyle choices such as maintaining a healthy weight, eating a balanced diet, regular physical activity, and avoiding smoking can help prevent or delay the onset of type 2 diabetes.

**Gestational Diabetes:** Eating a healthy diet, maintaining a healthy weight before and during pregnancy, and regular physical activity can reduce the risk of gestational diabetes.

**Treatment:**

**Type 1 Diabetes:** Treatment involves insulin therapy, often delivered via injections or an insulin pump, along with monitoring blood sugar levels and maintaining a healthy lifestyle.

**Type 2 Diabetes:** Treatment typically involves lifestyle changes (diet, exercise) and may include oral medications or insulin therapy, depending on the severity of the condition.

**Gestational Diabetes:** Treatment usually involves dietary changes, exercise, and in some cases, insulin therapy to keep blood sugar levels under control during pregnancy.

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