

# DIABETIC



**Centurion**  
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*Shaping Lives...*  
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## **INTRODUCTION:**

Diabetes is a chronic medical condition characterized by high levels of glucose (sugar) in the blood. It is caused by the body's inability to produce insulin or effectively use insulin that regulates blood sugar levels.

## **TYPES:**

There are two main types of diabetes: **Type 1 diabetes and Type 2 diabetes.**

**Type 1 diabetes**, also known as insulin-dependent diabetes, occurs when the body's immune system attacks and destroys the islet of Langerhans in the pancreas that produce insulin. This type of diabetes usually develops in children and young adults, and requires lifelong insulin injections.

**Type 2 diabetes**, also known as non-insulin-dependent diabetes, occurs when the body becomes resistant to the effects of insulin or when the pancreas is unable to produce enough insulin. This type of diabetes is more common in adults and is often linked to lifestyle factors such as obesity, physical inactivity, and poor diet.

## **CAUSES/ETIOLOGY:**

**Type 1 diabetes:** The exact cause of Type 1 diabetes is not known, but it is believed to be an autoimmune disorder in which the immune system attacks and destroys the insulin-producing cells (beta cells) in the pancreas.

- genetic and environmental factors

**Type 2 diabetes:** Type 2 diabetes is primarily caused by insulin resistance, which means that the cells in the body become less responsive to the effects of insulin.

- Obesity
- physical inactivity
- genetic predisposition
- diet high in sugar and refined carbohydrates.

**Gestational diabetes:** Gestational diabetes is caused by hormonal changes during pregnancy that lead to insulin resistance. Women who are overweight or have a family history of diabetes are at a higher risk of developing gestational diabetes.

**Other types of diabetes:** Other types of diabetes, such as monogenic diabetes and secondary diabetes caused by other medical conditions or medications.

### **PATHOPHYSIOLOGY:**

- Diabetes develops in the body when there is a problem with insulin, a hormone produced by the pancreas that regulates blood sugar levels.
- In Type 1 diabetes, the immune system mistakenly attacks and destroys the insulin-producing cells (beta cells) in the pancreas.
- As a result, the pancreas produces little or no insulin.
- Then glucose builds up in the bloodstream, leads to Type 1 diabetes.
- In Type 2 diabetes, the body becomes resistant to the effects of insulin.
- Which means that the cells do not respond properly to insulin's signals to utilise glucose.
- The pancreas may try to compensate by producing more insulin, but over time, the pancreas may not be able to fulfil the demand for insulin
- Then glucose levels rises in the bloodstream, that leads to Type 2 diabetes.
- Gestational diabetes develops during pregnancy.
- When hormones produced by the placenta interfere with the action of insulin, leading to insulin resistance.
- In most cases, the pancreas is able to produce enough insulin to compensate, but in some women, gestational diabetes can lead to high blood sugar levels, so that the pancreas is unable to produce enough insulin to utilise high level of glucose in blood.

### **SIGN & SYMPTOMS/CLINICAL MANIFESTATION:**

- **Increased thirst and hunger:** People with diabetes may experience increased thirst and hunger as a result of high blood sugar levels.

- **Frequent urination:** High blood sugar levels can cause the kidneys to work harder to filter out excess glucose, leading to increased urination.
- **Fatigue:** People with diabetes may feel tired and fatigued due to the body's inability to effectively use glucose for energy.
- **Blurred vision:** High blood sugar levels can cause the lens of the eye to swell, leading to blurry vision.
- **Slow healing of wounds:** Diabetes can affect the body's ability to heal wounds, and cuts and sores may take longer to heal.
- **Numbness or tingling in the hands and feet:** High blood sugar levels can damage nerves, leading to numbness or tingling sensations in the hands and feet.
- **Unexplained weight loss:** People with Type 1 diabetes may experience unexplained weight loss due to the body's inability to use glucose for energy.
- **Dry mouth and skin:** High blood sugar levels can cause dehydration, leading to dry mouth and skin.

## **DIAGNOSIS:**

**Medical history & family history:** The doctor will ask about the patient's family history and any other medical history.

**Physical examination:** The doctor will perform a physical exam to look for signs and symptoms.

**Fasting plasma glucose (FPG) test:** This test measures the level of glucose in the blood after an overnight fast. A fasting glucose level of 126 mg/dL (7.0 mmol/L) or higher, indicates diabetes.

**Oral glucose tolerance test (OGTT):** This test measures the level of glucose in the blood after fasting and then again two hours after drinking a sugary drink. A blood glucose level of 200 mg/dL (11.1 mmol/L) or higher, indicates diabetes.

**Hemoglobin A1c (HbA1c) test:** This test measures the average blood glucose level over the past 2-3 months. An HbA1c level of 6.5% or higher, indicates diabetes.

**Random plasma glucose test:** This test measures the level of glucose in the blood at any time of the day. A glucose level of 200 mg/dL (11.1 mmol/L) or higher, along with symptoms of diabetes, is indicates diabetic.

**C-peptide test:** This test measures the level of C-peptide, a protein that is produced when insulin is made. It can help determine whether the body is producing enough insulin or not.

**Antibody tests:** In the case of Type 1 diabetes, antibody tests can help to determine whether the immune system is attacking the beta cells in the pancreas or not.

## **PHARMACOLOGICAL MANAGEMENT:**

**Metformin:** This medication is usually the first line of treatment for type 2 diabetes. It works by reducing the amount of glucose produced by the liver and improving insulin sensitivity in the body.

**Sulfonylureas:** These drugs stimulate the pancreas to release more insulin, which helps to lower blood sugar levels.

**DPP-4 inhibitors:** These drugs help to increase insulin secretion and decrease glucose production in the liver.

**GLP-1 receptor agonists:** These medications work by mimicking the action of a hormone called GLP-1, which stimulates insulin secretion and lowers blood sugar levels.

**SGLT2 inhibitors:** These drugs work by blocking the reabsorption of glucose by the kidneys, which leads to increased urinary excretion of glucose and lower blood sugar levels.

**Insulin:** This hormone is used to treat both type 1 and type 2 diabetes when other medications are not effective in controlling blood sugar levels. It can be delivered via injection or insulin pump.

## **NON PHARMACOLOGICAL MANAGEMENT/PREVENTION:**

**Maintaining a healthy weight:** Being overweight or obese is a major risk factor for developing type 2 diabetes. Losing even a small amount of weight can help reduce the risk of developing diabetes.

**Eating a healthy diet:** A diet that is rich in fruits, vegetables, whole grains, lean proteins, and healthy fats can help prevent diabetes. It's important to limit the intake of processed foods, sugary drinks, and foods high in saturated and trans fats.

**Being physically active:** Regular physical activity can help improve insulin sensitivity and lower the risk of developing type 2 diabetes. Aim for at least 150 minutes of moderate-intensity exercise per week.

**Quitting smoking:** Smoking increases the risk of developing diabetes and other health conditions. Quitting smoking can help reduce the risk of diabetes and improve overall health.

**Managing stress:** Chronic stress can increase the risk of developing type 2 diabetes. Finding healthy ways to manage stress, such as practicing yoga or meditation, can help reduce the risk.

**Getting regular check-ups:** Regular check-ups with a healthcare provider can help identify any risk factors for diabetes and allow for early detection and treatment.