

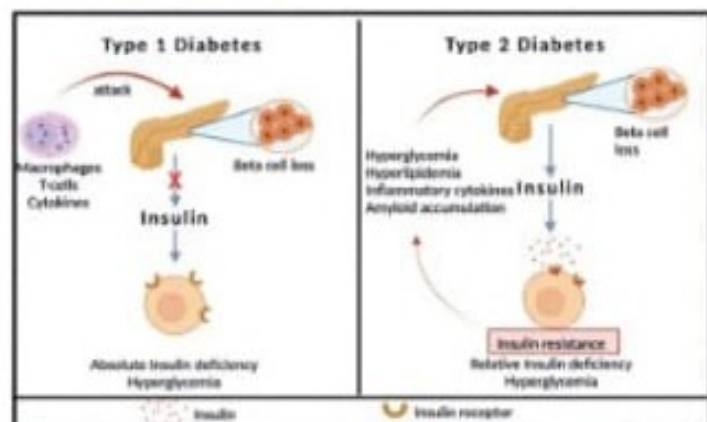
Diabetes Mellitus is a disorder of carbohydrate metabolism and it is characterized by impaired ability of the body to produce or respond to insulin and thereby maintain proper levels of sugar (glucose) in blood.

There are two types of Diabetes Mellitus.

**Type 1 Diabetes Mellitus:** It is an autoimmune disease that destroys the insulin-producing beta cells of the pancreas. It develops early in life and is usually diagnosed in children. This was earlier called insulin-dependent diabetes mellitus. The cause is unknown. The risk factors include family history, environmental factors, presence of damaging immune system cells.

**Type 2 Diabetes Mellitus:** It develops many years later and is related to lifestyle factors. It is mainly seen in adults. This was earlier called as non-insulin-dependent diabetes mellitus or adult-onset diabetes. The risk factors include obesity, inactivity, family history, advancing age, gestational diabetes, PCOD, high blood pressure and abnormal cholesterol levels.

### Pathophysiology:



### Gestational Diabetes:

This is diabetes occurring in pregnant women without a previous history of diabetes. This could be due to hormonal changes during pregnancy, family history, obesity, PCOD and pregnancy over 30 years of age. The symptoms will be excessive thirst and sweating, frequent urination, overweight and fatigue. This can lead to complications namely heavy birth weight baby, premature delivery, respiratory distress syndrome.

### Signs and Symptoms:



### Pre diabetes:

This is characterized by elevated blood sugar levels that fall below the threshold to diagnose diabetes mellitus. This usually does not cause any symptoms. This is usually seen with obesity, dyslipidemia with high triglycerides and /or low HDL cholesterol and hypertension. This is usually considered as early stage of diabetes. This can be diagnosed by measuring HbA1c, fasting glucose or glucose tolerance test.

Fasting blood sugar level of 100-125mg/d L

HbA1C Level - 5.7% to 6.4%

OGTT two-hour blood glucose of 140-199 mg/d L

### Diagnostic test:

- 1. Fasting Glucose Test:** This is a blood test conducted after 8-12 hours fasting and before breakfast to know about the blood sugar levels.
- 2. Random Blood Sugar Test:** This is a blood test for measuring the amount of glucose or sugar circulating in a person's blood at any time of the day. If the levels are more than 200mg/d L it suggests diabetes.
- 3. HbA1c:** This is glycosylated haemoglobin test. This refers to glucose and haemoglobin bound together. The red blood cells live for about 3 months, so the test average shows the level of glucose in the blood for past 3 months.
- 4. Oral Glucose Tolerance Test:** This test measures the



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# Understanding Diabetes Mellitus (DM)



body's response to sugar and can be used as screening and diagnostic tool. The patient after fasting for 8 hours, a fasting sample is taken and then, the patient is given a sugary solution to drink containing specific amount of glucose. Blood samples are taken at intervals to measure the blood sugar levels changing over time.

DIAGNOSING DIABETES			
	A1C (percent)	Fasting Plasma Glucose (mg/dL)	Oral Glucose Tolerance Test (mg/dL)
Diabetes*	6.5 or above	126 or above	200 or above
Prediabetes	5.7 to 6.4	100 to 125	140 to 199
Normal	About 5	99 or below	139 or below

### Treatment:

**1. Prediabetes:** The treatment for prediabetes includes maintaining a healthy lifestyle, including eating a diet rich in fruits, vegetables, nuts, whole grains, olive oil, and fiber. Aim for at least 150 minutes of moderate exercise or 75 minutes of vigorous aerobic exercise per week, or a combination of both. Additionally, losing excess weight, quitting smoking, and taking prescribed medications are essential components of the treatment plan.

### 2. Type 1 DM

The treatment for type 1 DM includes the following:

- Take insulin dosages as advised by doctor
- Monitoring blood sugar levels
- Exercising regularly, having a balanced diet

### 3. Type 2 DM

The treatment for type 2 diabetes includes:

- Taking antidiabetic medications as prescribed by your doctor.
- Maintaining a healthy, balanced diet.
- Exercising regularly.

### Complications:

They can be classified as microvascular and macrovascular complications.

Microvascular complications are those affecting the small blood vessels.

**1. Eye:** The conditions include retinopathy, cataract, impaired vision and sometimes blindness too.

**2. Kidney:** The conditions include nephropathy and renal failure.

**3. Nervous System:** The conditions include peripheral neuropathy and sensory loss and pain.

**4. Muscles:** The condition includes muscular pain.

Macrovascular complications are those affecting the larger blood vessels.

**1. Heart:** The conditions include myocardial infarction, affecting the coronary circulation.

**2. Brain:** The conditions include cerebral circulation, transient ischemic attack and stroke

**3. Peripheral Arteries:** The conditions include peripheral limb circulations and can cause ischemia, and claudication.

### Surgical Complications of DM

These can be a result of the microvascular, macrovascular and superseded with infections. These include abscesses, carbuncles, chronic balanitis, diabetic foot, candidiasis, mucormycosis, emphysematous cholecystitis, emphysematous pyelonephritis, necrotizing fasciitis, Fournier's gangrene and sexual dysfunction.

### Diabetic Ketoacidosis

This is a serious complication of diabetes. It is an acute complication that can develop within 24 hours. In addition to the usual diabetic symptoms, patients may experience shortness of breath, fruity-scented breath, confusion, and coma.

The mortality rate is high due to the complications of uncontrolled blood sugar levels. It is essential to take safe and effective measures to keep blood sugar in check through proper monitoring and medications.