



## DIABETIC MELLITUS

Diabetes mellitus is a metabolic disorder characterized by the presence of hyperglycemia due to defective insulin secretion, defective insulin action or both



Symptoms of high blood sugar include frequent urination, increased thirst, and increased hunger.

Acute complications can include diabetic ketoacidosis, non ketotic hyper osmolar coma, or death.

Serious long-term complications include heart disease, stroke, chronic kidney failure, foot ulcers, and damage to the eyes

Diabetes is due to either the pancreas not producing enough insulin or the cells of the body not responding properly to the insulin produced.

### Prediabetes:

**Impaired glucose tolerance** means that blood glucose is raised beyond normal levels, but not high enough to warrant a diabetes diagnosis. With **impaired glucose tolerance** you face a much greater risk of developing diabetes and cardiovascular disease.



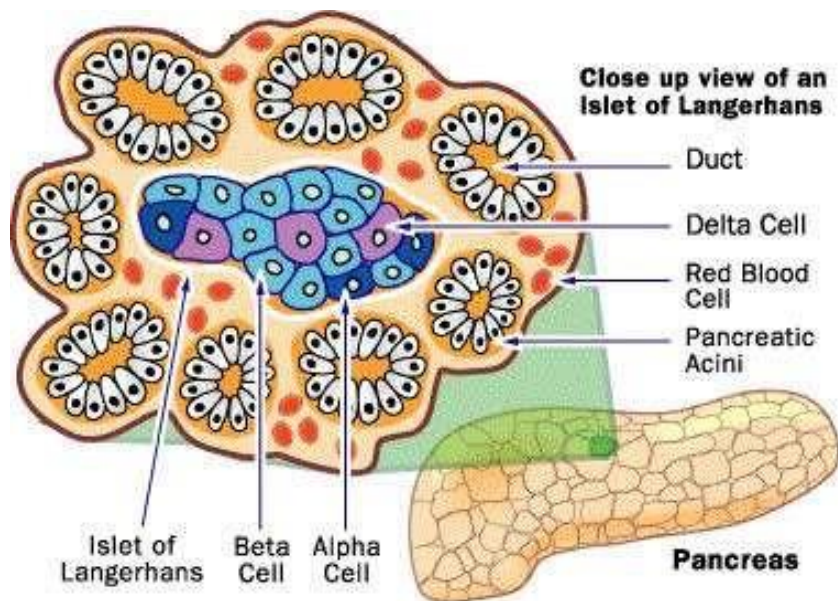
There are two main types of diabetes mellitus:

- Type 1 DM
- Type 2 DM

### Type 1 DM

Results from the pancreas's failure to produce enough insulin.

Type 1 DM was previously referred to as "insulin- dependent diabetes mellitus" (IDDM) or "juvenile diabetes". The cause of Type 1 DM is unknown.



### Type 2 DM

Begins with insulin resistance, a condition in which cells fail to respond to insulin properly.

- This form was previously referred to as "non insulin- dependent diabetes mellitus" (NIDDM) or "adult-onset diabetes".

- The primary cause is excessive body weight and not enough exercise.



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Feature	Type 1 diabetes	Type 2 diabetes
Onset	Sudden	Gradual
Age at onset	Mostly in children	Mostly in adults
Body size	Thin or normal	Often <u>obese</u>
<u>Ketoacidosis</u>	Common	Rare
<u>Auto antibodies</u>	Usually present	Absent
Endogenous insulin	Low or absent	Normal, decreased or increased
Prevalence	~10%	~90%

### SIGNS AND SYMPTOMS

The classic symptoms of untreated diabetes are weight loss

polyuria (increased urination)

polydipsia (increased thirst) and

polyphagia (increased hunger).



## Main symptoms of Diabetes

blue = more common  
in Type 1

### Central

- Polydipsia
- Polyphagia
- Lethargy
- Stupor

### Eyes

- Blurred vision

### Breath

- Smell of acetone

### Systemic

- Weight loss

### Respiratory

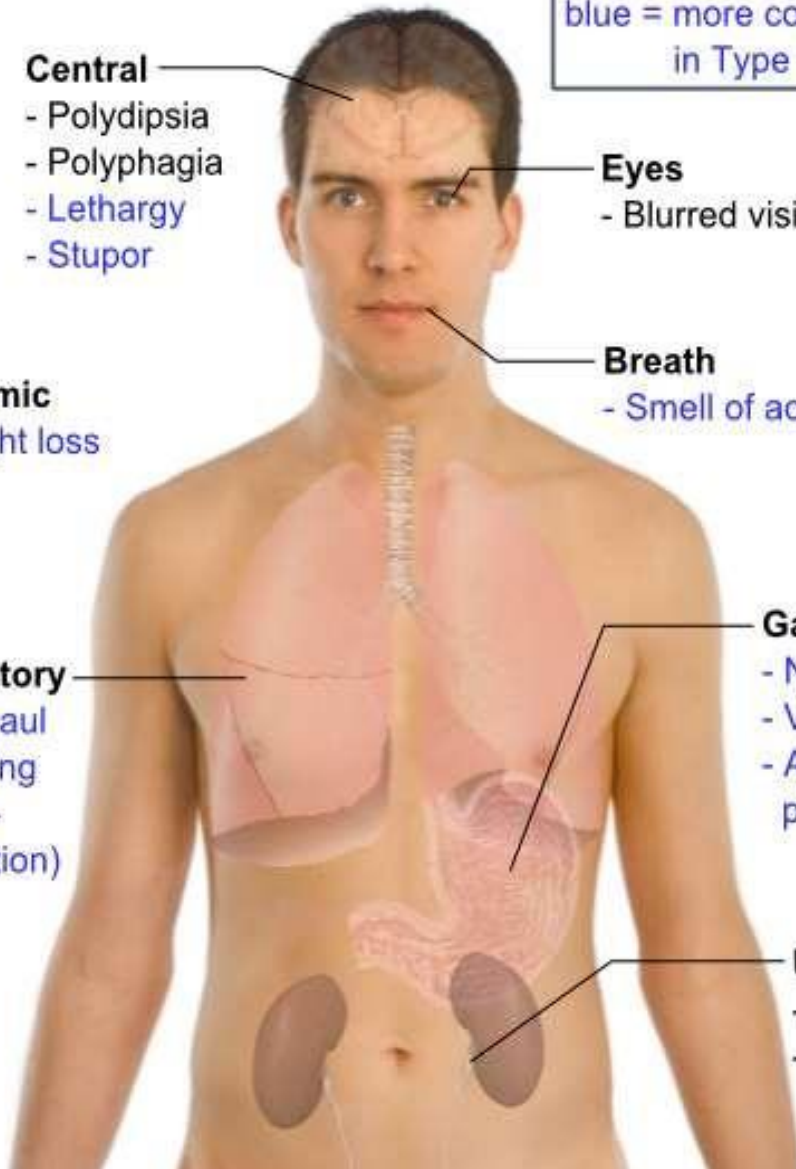
- Kussmaul  
breathing  
(hyper-  
ventilation)

### Gastric

- Nausea
- Vomiting
- Abdominal  
pain

### Urinary

- Polyuria
- Glycosuria





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## **Diabetes Mellitus Type 1**

Type 1 Clinical Manifestations:

Usually develop symptoms over a short period of time, and the condition is often diagnosed in an emergency setting

In addition to high glucose levels, actually ill type 1 diabetics have high levels of ketones.

As cells cannot get glucose, they burn fats as an alternate energy source

Ketones are produced by the breakdown of fat and muscle, and are toxic at high levels

Ketones in the blood cause a condition called "acidosis" or "ketoacidosis" (low blood pH)

Urine testing detects ketones in the urine

Blood glucose levels are also high.

## **Diabetes Mellitus Type 2**

Type 2 Clinical Manifestations:

Polydipsia – increased thirst

Polyuria – increased urine

Polyphagia – increased hunger

Fatigue

Blurred vision

Slow healing infections

Impotence in men



## INVESTIGATION AND LABORATORY FINDINGS

- URINALYSIS
- BLOOD TESTING PROCEDURES
- LIPOPROTEIN ABNORMALITIES IN DIABETES

### URINALYSIS

- ✓ Urine glucose
- ✓ Ketones
- ✓ Protein(microalbuminia)

### BLOOD TESTING PROCEDURES

- ✓ Blood glucose
- ✓ Glycelated Haemoglobin (HBA1C)

### LIPOPROTEIN ABNORMALITIES IN DIABETES

- ✓ Blood lipids(TOTALCHOLESTROL,LDL,HDL,TRIGLYCERIDE)

### DIAGNOSTIC CRITERIA FOR DM

Blood Sugar Levels Chart							
mg/dl	Fasting		2 hrs post meal	mmol/l	Fasting		2 hrs post meal
	Min	Max			Min	Max	
Normal	70	100	<140	Normal	4	6	<7.8
Pre-diabetes	101	125	140-200	Pre-diabetes	6.1	6.9	7.8-11.1
Diabetes	>126		>200	Diabetes	>7		>11.1



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## **MANAGEMENT OF DIABETES**

**Type One Diabetic mellitus:** Administration of Insulin + Healthy Eating + Exercise

**Type Two Diabetic mellitus:**

### **Oral Hypoglycemic Drugs**

#### **I. Sulphonylureas:**

*First generation:*

Tolbutamide, Tolazamide and Acetohexamide

*Second generation:*

Glyburide and glipizide

*Third generation:*

Glimepiride

#### **II. Biguanide**

Metformin

#### **III. $\alpha$ -Glucosidase Inhibitors**

Acarbose and Miglitol

#### **IV. Thiazolidinediones:**

Troglitazone, Rosiglitazone and Pioglitazone

#### **V. Meglitinides:**

Repaglinide