

# Definition, etiopathogenesis, clinical manifestations, nonpharmacological and pharmacological management of the diseases associated with Endocrine System

## Diabetes Mellitus (Dm)

### Definition:

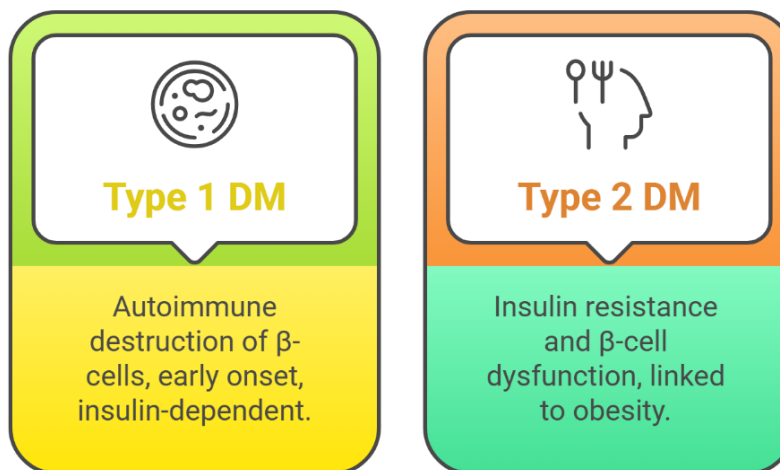
- DM is a group of metabolic disorders characterized by chronic hyperglycemia due to defects in insulin secretion, insulin action, or both.

### Types:

- Type 1 DM:** Autoimmune destruction of  $\beta$ -cells  $\rightarrow$  absolute insulin deficiency
- Type 2 DM:** Insulin resistance + relative insulin deficiency
- Gestational DM**
- Secondary DM** (due to pancreatitis, drugs, endocrinopathies)

### Etiopathogenesis:

#### Diabetes Mellitus Types



#### Type 1 DM:

- Autoimmune destruction of pancreatic  $\beta$ -cells (HLA-DR3, DR4)
- Onset usually in children/adolescents
- Requires lifelong insulin therapy

#### Type 2 DM:

- Insulin resistance in peripheral tissues (muscle, liver, adipose)

- Relative  $\beta$ -cell dysfunction
- Associated with obesity, sedentary lifestyle, genetics

### Clinical Manifestations:

- Polyuria
- Polydipsia
- Polyphagia
- Weight loss (especially in type 1)
- Fatigue
- Blurred vision
- Frequent infections
- Poor wound healing

### Complications:

- **Acute:** DKA (type 1), HHS (type 2)
- **Chronic:**
  - **Microvascular:** Retinopathy, nephropathy, neuropathy
  - **Macrovascular:** Coronary artery disease, stroke, PAD

### Nonpharmacological Management:

- **Medical nutrition therapy (MNT):** Low glycemic index, balanced carbohydrates
- Regular physical activity (150 minutes/week)
- Weight management
- Self-monitoring of blood glucose (SMBG)
- Education and counseling

### Pharmacological Management:

#### Type 1 DM:

- **Insulin therapy (lifelong):**
  - Basal-bolus regimen (long-acting + short-acting insulin)
  - Insulin pumps

#### Type 2 DM:

- **Oral hypoglycemics:**

- **Biguanides:** Metformin (first-line)
  - **Sulfonylureas:** Glipizide, Glimepiride
  - **DPP-4 inhibitors:** Sitagliptin, Linagliptin
  - **SGLT2 inhibitors:** Empagliflozin, Dapagliflozin (also CV protective)
  - **Thiazolidinediones (TZDs):** Pioglitazone
  - **$\alpha$ -glucosidase inhibitors:** Acarbose
  - **GLP-1 receptor agonists:** Exenatide, Liraglutide (injectable)
  - **Insulin:** Added when oral agents fail
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## **Hypothyroidism**

### **Definition:**

- A condition in which the thyroid gland fails to produce sufficient thyroid hormones (T3, T4), leading to slowed metabolism.

### **Etiopathogenesis:**

- **Primary causes** (most common):
  - Hashimoto's thyroiditis (autoimmune)
  - Iodine deficiency
  - Post-surgical or post-radioiodine therapy
- **Secondary causes:**
  - Pituitary or hypothalamic disorders (rare)

### **Clinical Manifestations:**

- Fatigue
- Weight gain
- Cold intolerance
- Constipation
- Dry skin
- Depression
- Bradycardia
- Puffy face, periorbital edema

- Menstrual irregularities
- Hoarseness
- Slow reflexes

**Severe form:** Myxedema

### Nonpharmacological Management:

- Adequate iodine intake
- Regular monitoring of TSH levels
- **Lifestyle:** Diet, avoiding goitrogens (raw cabbage, soy in large amounts)

### Pharmacological Management:

- **Levothyroxine** (T4 replacement therapy) – lifelong
- Dose adjusted based on TSH levels
- Taken on empty stomach, early morning

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## Hyperthyroidism

### Definition:

- A condition where there is excess production of thyroid hormones (T3, T4), leading to increased basal metabolic rate.

### Etiopathogenesis:

- Graves' disease (autoimmune, most common)
- Toxic multinodular goiter
- Thyroid adenoma
- Thyroiditis
- Excessive thyroid hormone intake

### Clinical Manifestations:

- Weight loss despite increased appetite
- Heat intolerance
- Palpitations, tachycardia
- Nervousness, anxiety
- Tremors



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