DM

.DM in pediatrics
- T1DM results from deficiency of Insulin bcz of pancreatic β-cells damage
- Median age of onset: 7-15 yr
- 2 peaks → 4-6 yr
  → 10-14 yr
- Sudden onset
- Presentation: polyuria, polydepsia, polyphagia, weight loss, DKA
- Goal: 72-180 mg/dL

.Honeymoon period
Period of stable blood glucose, after first weeks of therapy, continues for 3-6 mo

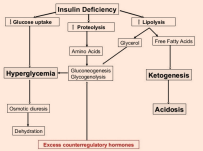
.MODY
- Genetic defect of β-cells function
- Monogenic
- AD
- 9-25 yr

Insulin
- Anabolic hormone
- Carbohydrates: ↑utilization of Glucose, ↑Glycogen synthesis, ↓ Gluconeogenesis ↓ Glycogenolysis
- Fat: ↑ Lipogenesis, ↓ Lipolysis
- Protein: ↑ protein synthesis, ↓ proteinolysis

.Natural history
1. Preclinical β-cells autoimmunity with progressive defect of Insulin secretion
2. Abnormal blood sugar, (+) antibodies, No symptoms
3. Onset of Clinical DM
4. Honeymoon period
5. Acute/chronic complications may occur

* After 80-90% of β-cells are destroyed, Hyperglycemia develops

.Absence of Insulin
- ↑ Lipolysis → Weight loss (+ loss of calories by Glycosuria), ketone bodies
- ↑ proteinolysis → Muscle wasting & fatigue
- ↑ Glycogenolysis & ↑ Gluconeogenesis → Hyperglycemia + Glycosuria



* Ketone bodies: β-hydroxybutyrate, Acetoacetate, Acetone
- Glycosuria: Glucose level exceeds renal threshold 160-190 mg/dL
- Glycosuria → Osmotic diuresis (+ loss in Na^+, K^+) → Dehydration & Polydypsia

.Etiology
- Autoimmune destruction of β-cells
- Genetic susceptibility + Environmental factors
- 95% of pts have either HLA-DR3 or HLA-DR4
- polygenic inheritance
- Viruses, Toxic chemicals, Early exposure to cow milk in infancy

.Labs
- FBG ⩾ 126 mg/dL in more than one occasion
- RBG ⩾ 200 mg/dL + Symptoms
- HbA1c ⩾ 6.5%
- Islet cell autoantibodies
- Blood gas & ketones
- C-peptide → Low: Confirm Dx
  → Normal: pts with T1DM may have normal C-peptide up to 2 yrs
- Screening for associated conditions

.Comorbid conditions of T1DM
- Autoimmune thyroid disease (Mainly Hashimoto), screen for anti-TPO antibodies
- Celiac disease: screen for anti-tTG antibodies
- Addison disease

.Autoantibodies
- ICA
- ICA512
- GAD
- IAA
- ZnT8A

- These can be detected mo to yrs prior to clinical onset

.Dawn phenomenon
- Hyperglycemia between 5-9 am without preceding hypoglycemia
- Due to clearance of Insulin & Nocturnal increase in GH
- Tt: ↑ Evening dose of Insulin

.DDx
T2DM, MODY, Enocrine disorders, Drugs (Thiazides), Chronic pancreatitis cystic fibrosis, Prader-Willi syndrome, Non-diabetic Glycosuria

.LADA
- Latent Autoimmune Diabetes of Adult
- Late 30s & early 40s
- Less aggresive
- Presentation betw T1DM & T2DM

Physical examination
- Usually normal
- DKA: Kussmaul breathing, Signs of dehydration, hypotension, altered mental status

.Neonatal DM
- Monogenic defect, <6 mo
- Mutation in KCNJ11, ABCC8

.Somogy phenomenon
- Hypoglycemia episode followed by Hyperglycemia
- Insulin induced hypoglycemia followed by outpouring of counterregulatory hormones
- Tt: ↓ Insulin dose