

HIGH-YIELD ENDOCRINE SYSTEM NOTES

FOR USMLE STEP 1 AND STEP 2

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Dear IMG

High-Yield Notes for USMLE Step 1 & Step 2 CK

STEP 1 - PATHOPHYSIOLOGY & BASIC SCIENCE

PITUITARY ANATOMY & HORMONES

- Anterior pituitary → Derived from oral ectoderm (Rathke pouch)
- Posterior pituitary → Derived from neuroectoderm (extension of hypothalamus)
- Anterior pituitary hormones: FLAT PiG = FSH, LH, ACTH, TSH, Prolactin, GH
- Acidophils → GH + Prolactin (Acidic PiG)
- Basophils → FSH, LH, ACTH, TSH (B-FLAT)

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- Posterior pituitary → ADH (vasopressin) + Oxytocin (made in hypothalamus, stored in posterior pituitary)
- Most common pituitary adenoma → Prolactinoma

PITUITARY DISORDERS

- Woman + Amenorrhea + Galactorrhea + Headache → Prolactinoma
- Prolactinoma treatment → Dopamine agonists (Cabergoline, Bromocriptine)
- Antipsychotics (Risperidone, Haloperidol) → Block dopamine → ↑ Prolactin → Galactorrhea + Amenorrhea

- Primary hypothyroidism → ↑ TRH → ↑ Prolactin
- Adult + Large hands/feet + Coarse facial features + Diabetes + Headache → Acromegaly (↑ GH)
- Acromegaly diagnosis → ↑ IGF-1, GH not suppressed by oral glucose tolerance test
- Acromegaly treatment → Surgery OR Octreotide (somatostatin analog)
- Child + Tall stature + ↑ GH before epiphyseal plate closure → Gigantism
- Sheehan syndrome → Postpartum hemorrhage → Pituitary infarction → ↓ All anterior pituitary hormones → Failure to lactate + Amenorrhea

- Pituitary apoplexy → Sudden hemorrhage into pituitary adenoma → Severe headache + Bitemporal hemianopia + CN III palsy

ADH & WATER BALANCE

- ADH (vasopressin) → V2 receptors in collecting duct → Insert aquaporin-2 → ↑ Water reabsorption
- Central DI → ↓ ADH production (hypothalamus/posterior pituitary damage) → Polyuria + Polydipsia + Hypernatremia
- Central DI causes → Trauma, Surgery, Tumor, Idiopathic

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- Nephrogenic DI → Normal ADH but kidneys don't respond → Lithium, Hypercalcemia, Hypokalemia
- Water deprivation test: DI → Urine stays dilute. Give desmopressin → Central DI corrects, Nephrogenic DI doesn't
- SIADH → ↑ ADH → ↑ Water retention → Hyponatremia + Euvolemic + Urine osmolality >100
- SIADH causes → Small cell lung cancer, CNS disorders, Drugs (SSRIs, Carbamazepine, Cyclophosphamide)
- SIADH treatment → Fluid restriction OR Demeclocycline OR Tolvaptan (V2 antagonist)

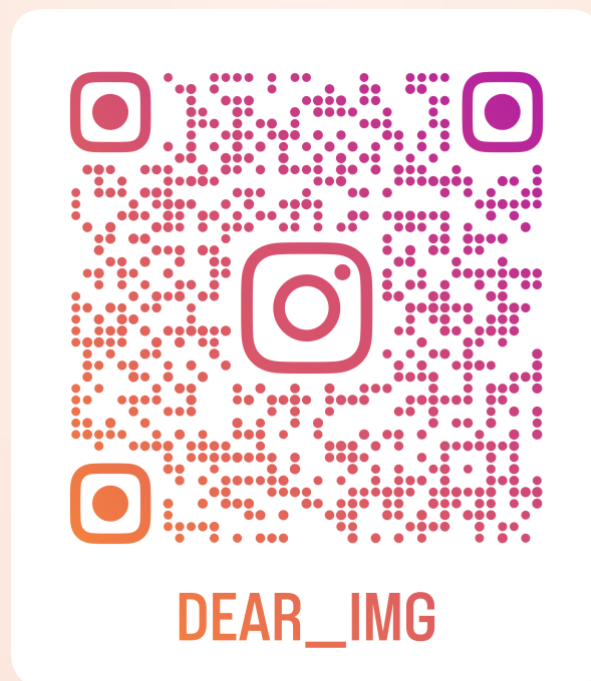
THYROID ANATOMY & PHYSIOLOGY

- Thyroid follicles → Derived from endoderm
- Parafollicular C cells → Derived from neural crest (4th pharyngeal pouch) → Secrete calcitonin
- Thyroglossal duct cyst → Anterior midline neck mass that moves with swallowing/tongue protrusion
- TRH → TSH → T4/T3 production
- T4 converted to T3 (active form) by 5'-deiodinase in peripheral tissues
- Most T3/T4 bound to TBG (thyroxine-binding globulin) → Only free hormone is active



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