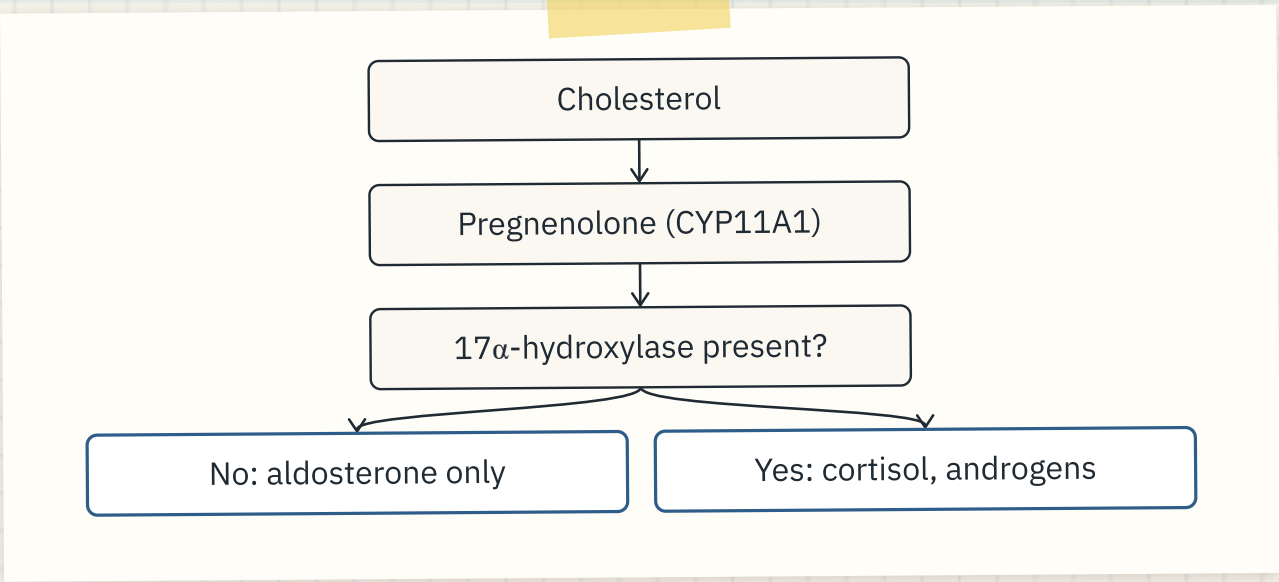
Adrenal steroidogenesis by zone and enzyme

Cholesterol to aldosterone, cortisol and androgens



Step by step

1. Cholesterol: StAR delivers it to the inner mitochondrial membrane
2. CYP11A1 makes pregnenolone
3. 3β-HSD makes progesterone (glomerulosa, fasciculata)
4. Fork: glomerulosa (no 17α-OH): 21-OH, then aldosterone synthase; fasciculata: 17α-OH, 21-OH, then 11β-OH

Zone	Product	Driver
Glomerulosa	Aldosterone	Angiotensin II, K^+
Fasciculata	Cortisol	ACTH
Reticularis	Androgens (DHEA)	ACTH

Salt, sugar, sex: outside in

Rules of thumb

Salt, sugar, sex: from the outside in

17α-hydroxylase is the fork: with it, cortisol and androgens; without it, aldosterone only

Block: pile up before, fall after, spill into open pathways

Exam traps

- ! ACTH can also stimulate the glomerulosa, but angiotensin II and potassium are its main drivers.
- ! Low cortisol means high ACTH: cortisol suppresses ACTH.
- ! The glomerulosa has no 17α-hydroxylase, so it makes aldosterone only.

Adrenal steroidogenesis: zones, enzymes and the 17α-hydroxylase fork

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/endocrinology/adrenal-steroidogenesis

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