PIPADOR REVISION

MRCOG Part 1 Revision Notes

Congenital Adrenal Hyperplasia

ENDOCRINOLOGY • LECTURE 197

VISUAL EXAMINATION REVISION NOTES

2026 Edition

MRCOG PART 1 REVISION NOTES | ENDOCRINOLOGY

197 Congenital Adrenal Hyperplasia

Enzyme defects and inheritance, clinical forms, neonatal management, fertility and pregnancy, prenatal issues

≈ 90–95%	AR	↑ 17-OHP	Day 7–14
21-hydroxylase (CYP21A2) deficiency	Autosomal recessive (1 in 4 risk)	Diagnostic marker	Salt-wasting crisis (classic)

■ KEY FACTS: Learning objectives

- Describe the enzyme defects, inheritance and pathophysiology of congenital adrenal hyperplasia.
- Describe the clinical forms (classic salt-wasting, simple virilising, non-classic) and diagnosis.
- Describe management of the neonate, fertility and pregnancy in women with CAH, and prenatal issues.

197.1 Pathophysiology

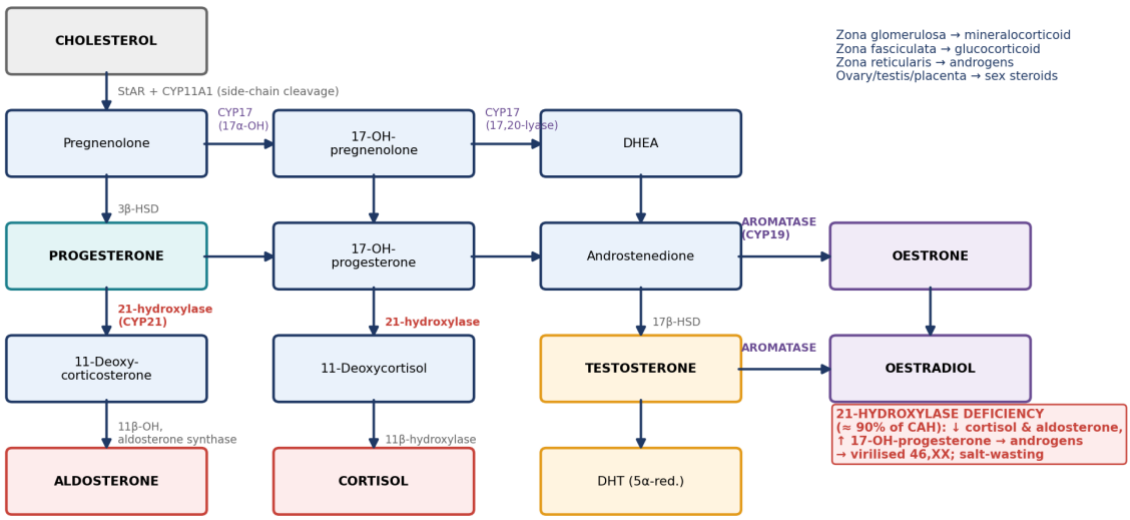


Figure 197.1 — Steroidogenesis: the 21-hydroxylase block

CYP21A2 mutation (chromosome 6p, HLA region) ▶ ↓ Cortisol (± ↓ aldosterone) ▶ ↑ **ACTH** (loss of feedback) → adrenal hyperplasia ▶ Precursors (**17-OH-progesterone**) shunted to **androgens** ▶ Virilisation of 46,XX fetus; salt-wasting; early puberty

Form	Frequency	Features
Classic salt-wasting (≈ 75% of classic)	≈ 1 in 15,000 (classic)	Ambiguous genitalia in girls; salt-wasting crisis day 7–14 (vomiting, ↓ Na^+, ↑ K^+, hypoglycaemia, shock) — boys often present this way
Simple virilising	—	Virilisation, rapid growth, advanced bone age; aldosterone adequate
Non-classic (late-onset)	≈ 1 in 1000 (higher in some ethnic groups)	Hirsutism, acne, oligomenorrhoea, subfertility — mimics PCOS; early-follicular 17-OHP / Synacthen test
11β-hydroxylase	≈ 5–8%	Virilisation + hypertension, hypokalaemia (↑ DOC)
17α-hydroxylase	Rare	Hypertension, sexual infantilism, primary amenorrhoea

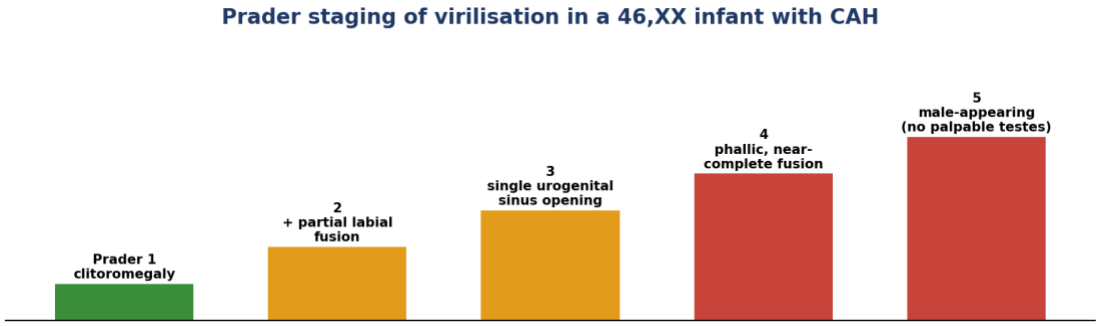


Figure 197.2 — Prader staging of genital virilisation

197.2 Management

Stage	Management
Neonate	Urgent assessment in a DSD multidisciplinary team (do not assign sex prematurely); karyotype, 17-OHP, electrolytes; hydrocortisone + fludrocortisone + salt; sick-day rules
Childhood/adolescence	Balance glucocorticoid dose (suppress androgens) vs growth suppression; genital surgery decisions with family (timing debated)
Fertility (women)	↓ Fertility: anovulation, raised follicular-phase progesterone (impairs endometrium/mucus), vaginal stenosis after surgery, psychosexual issues; optimise glucocorticoid (prednisolone/dexamethasone pre-conception)
Men	Testicular adrenal rest tumours (TARTs) → infertility

197.3 Pregnancy

Topic	Key points
Woman with CAH	Continue hydrocortisone or prednisolone (inactivated by placental 11β-HSD2) — not dexamethasone (crosses); dose may need ↑ in 3rd trimester; fludrocortisone continued; stress-dose cover in labour/CS; ↑ caesarean rate (android pelvis, previous genital surgery); ↑ GDM
Fetal protection	Placental aromatase converts maternal androgens → a female fetus is usually not virilised
At-risk fetus (both parents carriers)	Partner carrier testing (CYP21A2); cfDNA fetal sex from ≈ 7 wk; CVS for genotype
Prenatal dexamethasone	Started < 9 wk to suppress fetal ACTH and reduce virilisation of an affected girl (7 of 8 fetuses treated unnecessarily); concerns about neurocognitive/behavioural effects — only within research protocols (Endocrine Society)

197.4 Must-know summary

■ **EXAM TIP**

- **21-hydroxylase** (CYP21A2) deficiency ≈ 90–95%; autosomal recessive; **↑ 17-OHP**.
- Classic: virilised 46,XX, salt-wasting crisis day 7–14 (boys); non-classic: PCOS-like.
- 11β-OH deficiency → virilisation + hypertension.
- Pregnancy: hydrocortisone/prednisolone (not dexamethasone), stress-dose cover; placental aromatase protects female fetus.
- Prenatal dexamethasone only in research settings; cfDNA sexing + CVS.

■ MNEMONIC / MEMORY AID

'21 — salt is gone, sex is on' (↓ aldosterone, ↑ androgens). **'11 — hypertension'** (↑ deoxycorticosterone).