PIPADOR REVISION

MRCOG Part 1 Revision Notes

Biochemistry Results

DATA INTERPRETATION • LECTURE 442

VISUAL EXAMINATION REVISION NOTES

2026 Edition

442

MRCOG PART 1 REVISION NOTES | DATA INTERPRETATION

Biochemistry Results

Interpreting renal, liver, thyroid and glucose results in pregnancy — definitions, reference changes and worked cases

Creatinine ↓	ALP ↑	Bile acids	PCR ≥ 30
ULN ≈ 77 µmol/L	Placental — normal	≥ 19 µmol/L = ICP	mg/mmol = proteinuria

■ **KEY FACTS: Learning objectives**

- Define the key biochemistry tests and how their reference ranges change in pregnancy.
- Interpret renal, liver, thyroid, glucose and electrolyte results in obstetric scenarios.
- Distinguish ICP, pre-eclampsia/HELLP, AFLP and hyperemesis from their biochemistry.

442.1 Key definitions and reference values

Test	What it measures	Change in pregnancy / threshold
Creatinine, urea	Renal function (GFR)	↓ (GFR ↑ ≈ 50%); creatinine > 77 µmol/L abnormal in pregnancy
Urate	Purine breakdown (renal handling)	↓ early, rises to term; ↑ in pre-eclampsia, AFLP
ALT / AST	Hepatocellular injury	UNCHANGED (ULN slightly lower) — any rise is abnormal
ALP	Liver/bone/placenta enzyme	↑ up to 3–4× from placenta — usually normal
Bilirubin	Bile excretion	Unchanged — ↑ suggests AFLP, haemolysis, obstruction
Bile acids	Hepatic bile acid excretion	Normal < 10–14 µmol/L; ≥ 19 + itch = ICP; ≥ 100 high risk
Albumin	Plasma protein	↓ to ≈ 28–37 g/L (dilution)
Urine PCR	Protein:creatinine ratio	≥ 30 mg/mmol = significant proteinuria
TSH / fT4	Thyroid function	TSH lower in 1st trimester (hCG); use trimester-specific ranges
OGTT (75 g)	Glucose tolerance	GDM (NICE): fasting ≥ 5.6 or 2 h ≥ 7.8 mmol/L

■ **IN PLAIN ENGLISH: Pregnancy biochemistry**

In pregnancy the kidneys filter more, so **creatinine and urea fall** — a 'normal' non-pregnant creatinine of 90 µmol/L is **abnormal** in pregnancy. The placenta makes ALP, so a high ALP is usually normal, but **ALT, AST and bilirubin should not rise**.

442.2 Pregnancy changes

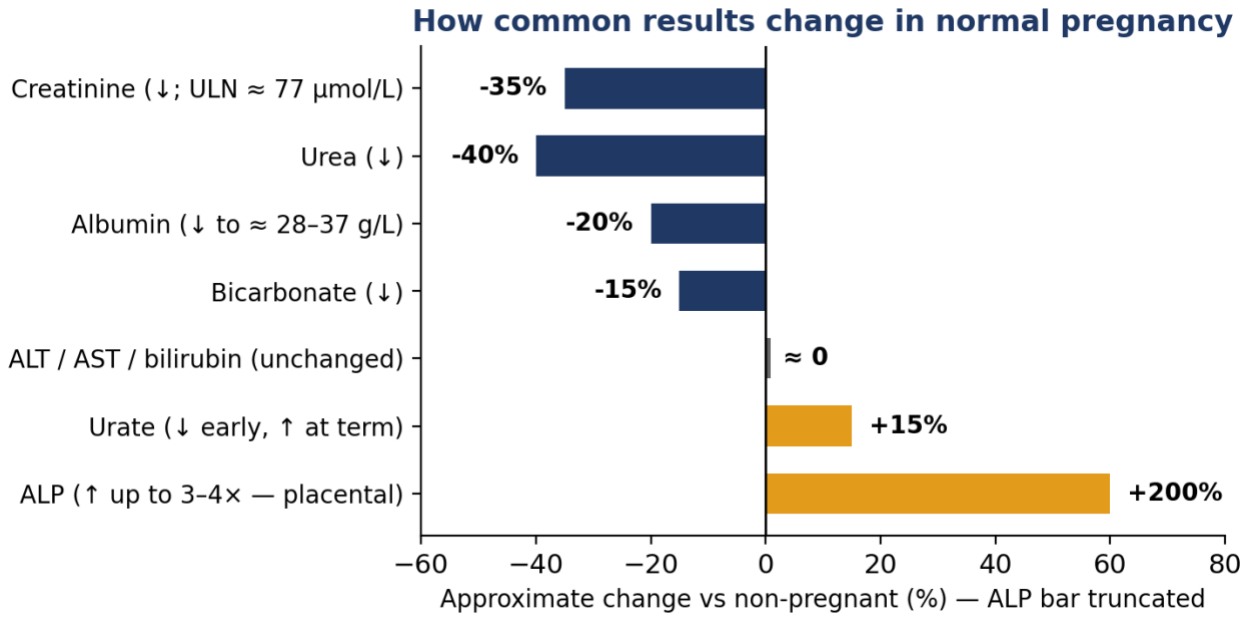


Figure 442.1 — How common results change in normal pregnancy

442.3 Abnormal liver tests

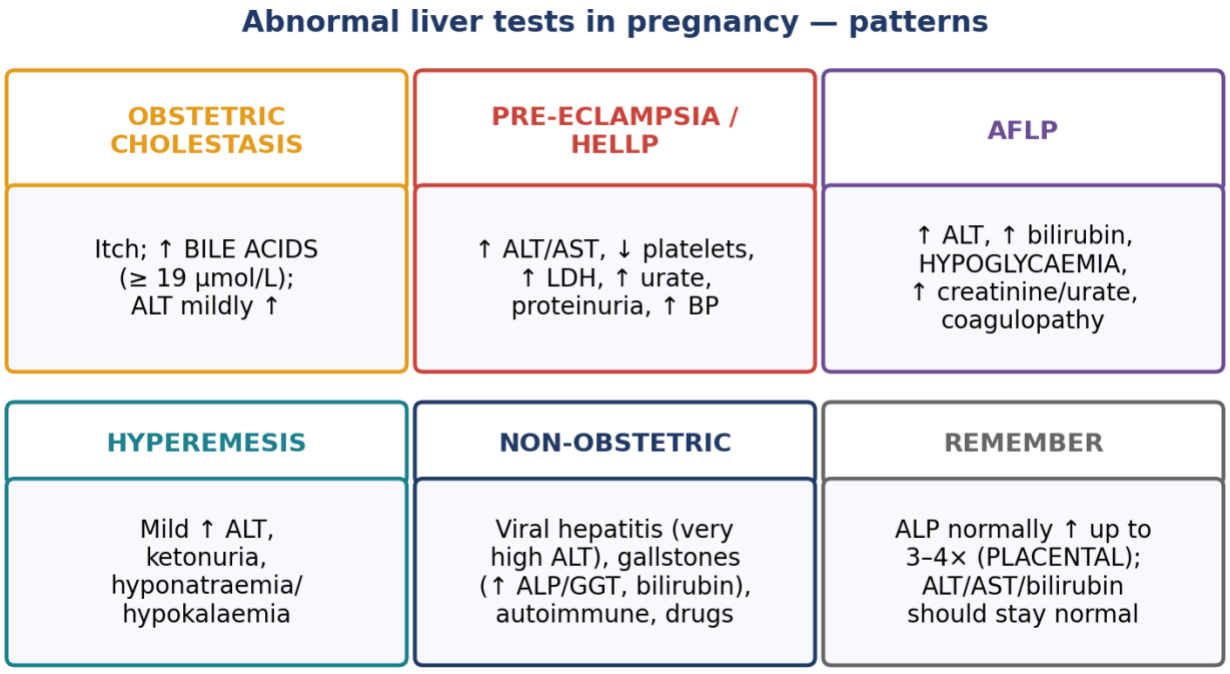


Figure 442.2 — Patterns of abnormal liver tests in pregnancy

442.4 Worked cases

■ WORKED EXAMPLE

Case 1 — 34 wk, itchy palms: ALT 85, bile acids 48 µmol/L, bilirubin normal → **intrahepatic cholestasis of pregnancy**; plan birth 38–39 wk (RCOG GTG 43).

Case 2 — 35 wk, vomiting, confusion: ALT 300, bilirubin 90, glucose 2.5, creatinine 150, PT prolonged → **AFLP** → stabilise, correct glucose/coagulopathy, deliver.

Case 3 — 36 wk, BP 155/100, PCR 60 mg/mmol, urate ↑, ALT 70 → **pre-eclampsia** with liver involvement.

Case 4 — 10 wk, vomiting: Na 128, K 2.9, ketones +++, ALT 60, TSH 0.05, fT4 mildly ↑ → **hyperemesis** with gestational (hCG-mediated) thyrotoxicosis — supportive care, not antithyroid drugs.

■ COMMON PITFALLS

Using non-pregnant creatinine ranges (missing renal impairment).

Attributing a raised ALT to 'pregnancy'.

Diagnosing hyperthyroidism from a low TSH in the 1st trimester (hCG effect).

442.5 Must-know summary

■ EXAM TIP

- Creatinine/urea ↓ in pregnancy; creatinine > 77 µmol/L abnormal.
- ALP ↑ normally (placental); ALT/AST/bilirubin should not rise.
- ICP = itch + bile acids ≥ 19; AFLP = hypoglycaemia, ↑ bilirubin, coagulopathy, AKI; HELLP = ↓ platelets, ↑ LDH, ↑ ALT.
- PCR ≥ 30 mg/mmol = proteinuria; GDM: fasting ≥ 5.6 or 2 h ≥ 7.8 (5.6/7.8 rule).

■ MNEMONIC / MEMORY AID

GDM — '5-6-7-8': fasting ≥ 5.6, 2-hour ≥ 7.8 mmol/L.