PIPADOR REVISION

MRCOG Part 1 Revision Notes

Osteopenia and Osteoporosis

PATHOLOGY • LECTURE 317

VISUAL EXAMINATION REVISION NOTES

2026 Edition

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MRCOG PART 1 REVISION NOTES | PATHOLOGY

Osteopenia and Osteoporosis

Definitions, pathology, causes, assessment and management, and bone in pregnancy and lactation

T ≤ −2.5	≈ 1 in 2	FRAX	HRT
Osteoporosis (DXA)	Women > 50 will have a fragility fracture	10-year fracture risk tool	Prevents bone loss (< 60 / POI)

■ KEY FACTS: Learning objectives

- Define osteopenia and osteoporosis and describe bone remodelling pathology.
- Describe causes and risk factors, including those relevant to women's health.
- Describe assessment (DXA, FRAX) and management, including pregnancy- and lactation-associated osteoporosis.

317.1 Definitions and pathology

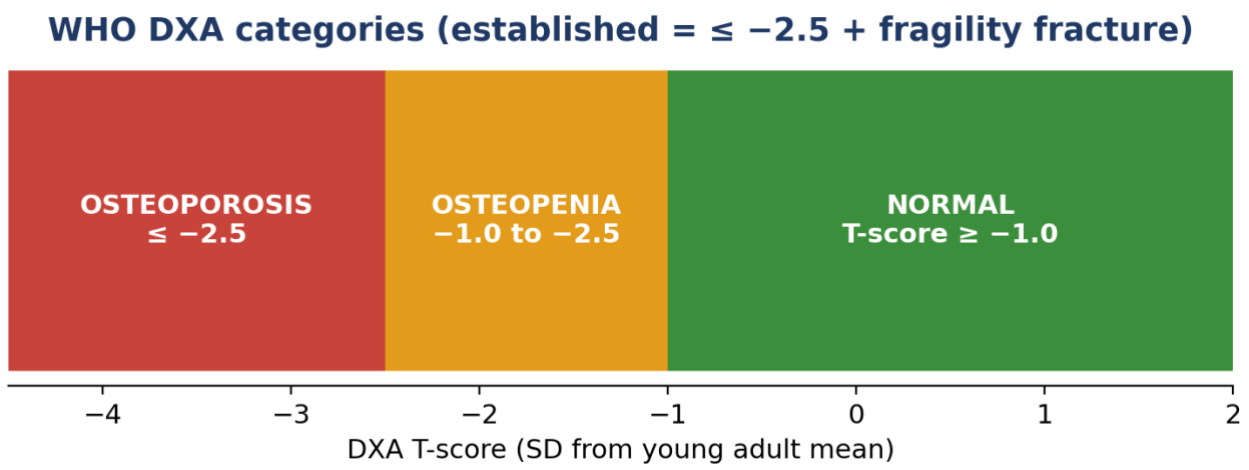


Figure 317.1 — WHO DXA categories

- **Osteoporosis**: low bone mass and micro-architectural deterioration of bone → fragility and fracture risk (hip, vertebrae, wrist).
- **Osteopenia**: reduced bone density (T-score −1.0 to −2.5).
- Mechanism: resorption (osteoclasts — RANKL) exceeds formation (osteoblasts)
  - Trabecular bone lost first
  - Oestrogen deficiency ↑ RANKL and ↓ OPG (Lecture 156).
- Distinguish from **osteomalacia** (defective mineralisation — vitamin D deficiency; ↓ Ca/PO_4, ↑ ALP).

317.2 Causes and risk factors

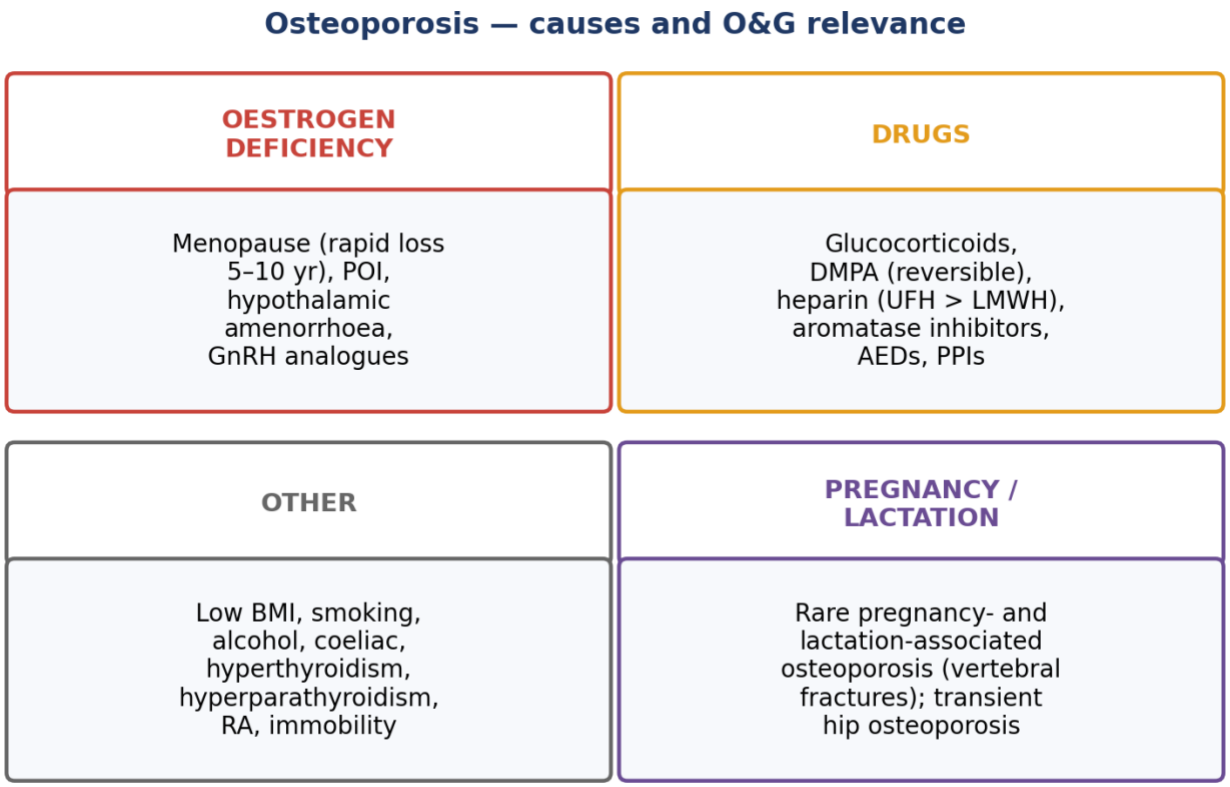


Figure 317.2 — Causes and O&G relevance

317.3 Assessment and management

Topic	Details (NOGG / NICE)
Risk assessment	FRAX (age, BMI, prior fracture, parental hip fracture, steroids, smoking, alcohol, RA, secondary causes ± BMD) or QFracture
DXA	• Hip and lumbar spine T-score • Z-score for younger women (compares with age-matched)
Investigations	FBC, calcium, vitamin D, renal/liver function, TFTs, coeliac serology, PTH, myeloma screen as indicated
Lifestyle	Weight-bearing exercise, calcium (≈ 700–1200 mg/day) and vitamin D, stop smoking, limit alcohol, falls prevention
Drugs	• **Bisphosphonates** (alendronate first-line — upright 30 min; zoledronate IV) • **Denosumab** (anti-RANKL — rebound on stopping) • **HRT** (< 60 / POI), raloxifene • Teriparatide/romosozumab (severe)
Adverse effects	• Osteonecrosis of jaw, atypical femoral fractures (long-term bisphosphonates) • Oesophagitis

317.4 Pregnancy, lactation and contraception

- Pregnancy and lactation cause transient bone loss (lactation 3–10%) with **full recovery after weaning**; long-term risk not increased.

- **Pregnancy- and lactation-associated osteoporosis (PLO)**: rare vertebral fractures late pregnancy/early lactation (severe back pain)
  - Stop breastfeeding, calcium/vitamin D
  - Specialist.
- **Transient osteoporosis of the hip**: 3rd-trimester hip pain, marrow oedema on MRI — protected weight-bearing; risk of fracture.
- **Heparin**: long-term UFH ↑ osteoporosis
  - LMWH risk low.
  - **DMPA**: reversible ↓ BMD (review at 2 years; caution < 18).
  - **Bisphosphonates** persist in bone — avoid in women planning pregnancy where possible.

317.5 Must-know summary

■ EXAM TIP

- Osteoporosis T ≤ −2.5; osteopenia −1.0 to −2.5; fracture = established disease.
- Oestrogen deficiency (menopause, POI, amenorrhoea), steroids, DMPA, heparin, low BMI, smoking.
- FRAX ± DXA; bisphosphonates first-line; HRT for POI/under 60.
- Pregnancy/lactation loss recovers; rare PLO and transient hip osteoporosis.

■ MNEMONIC / MEMORY AID

Secondary causes — 'SHATTERED': Steroids, Hyperthyroidism/Hyperparathyroidism, Alcohol & smoking, Thin (low BMI), Testosterone/oestrogen deficiency, Early menopause, Renal/liver disease, Erosive/inflammatory disease, Diet (calcium, vitamin D, malabsorption).