Osteoporosis

Diagnosis

Purpose of Investigations
- Confirming the diagnosis
- Exclude causes of secondary osteoporosis
- Provide measurement, so that the efficacy of therapy may be assessed in the future

Confirmation
- T-score < -2.5
- Following pathological / fragility fracture

Primary
- Age related / post menopausal

Secondary
- Due to steroids, hypogonadism
- Calculates 10 year risk of fracture

FRAX
- Age, sex, weight, height, previous spontaneous adult fracture
- Smoking status, steroid status, alcohol status
- RA diagnosis, other diagnosis associated with osteoporosis (DM, hypogonadism), BMD

Management

Prevention
- Exercise
- Good diet
- Avoid smoking and excess alcohol
- Bisphosphonates for at-risk pts (> 3 months steroid treatment)
- HRT - only with relevant symptoms

Bisphosphonates
- Alendronic acid: SE: abdo pain, nausea, photosensitivity, oesophageal ulcers
- Weekly, monthly, bimonthly, annual dose is available
- Swallow with water on empty stomach, remain upright for 30 mins
- Important to supplement vitamin D and calcium
- Zoledronate is an IV option (once yearly)

Vitamin D / Calcium
- Of little use as a single therapy
- Can be used in elderly institutionalised

Raloxifene
- Selective oestrogen receptor modulator
- Also reduces breast cancer risk
- Does not reduce incidence of long bone fractures

Strontium
- Same periodic group as calcium
- Increases bone formation and reduces reabsorption
- Effective in reducing fractures

Recombinant PTH

Risk Factors
- Slender; smoker; alcohol; prolonged rest; old age; HyperPTH; vertebral deformity; <5mg pred
- Late menarche; early menopause; Cushing's; malabsorptive syndrome; thyrotoxicosis; myasthenia; amencorrhea
- Family history; RA; hypogonadism; past low trauma fracture

Osteomalacia

Pathology
- Increased bone turnover, due to increased osteoclasts and osteoblasts
- Remodeling, bone enlargement, deformity and weakness
- Incidence rises with age
- Commenes in temperate areas and Anglo Saxons
- Marked raised Alk Phos, normal calcium, vit D and liver enzymes
- Nerve endings in periosteum
- Pressure effects on other tissues
- Nerve compression e.g. deafness
- Bone sarcoma (1% if those affect for > 10 yrs)
- Enlargement of skull, femur or clavicle, and sabre tibia

Paget's Disease

Typically examines lumbar spine and hip
- Bone mineral density is compared with that of a young healthy adult (z-score)
- z-score is an age and sex matched value

- T-score
  - 0 to -1: BMD is in top 84%, no evidence of osteoporosis
  - -1 to -2.5: Osteopenia - at risk of osteoporosis and consider preventative measures
  - -2.5 or worse: Osteoporosis

Who not to scan
- Elderly patients with ankylosing spondylitis in whom spine bone density measurements may be difficult to interpret
- Within a year of previous measurement