UCLPartners
Academic Health Science Partnership

NHS
North Central London
Joint Formulary Committee

NCL Osteoporosis Service Guidelines on Management of Vitamin D Deficiency in Adults with Low Bone Mineral Density

Vitamin D supplementation and calcium promotes bone mineralisation and prevents secondary hyperparathyroidism that lowers bone mineral density[1]

<25 nmol/L (Deficiency)

- 20,000 IU weekly for 12 weeks
- **OR**
- 3200 IU daily for 12 weeks

25 – 50 nmol/L (Insufficicency)

- 20,000 IU weekly for 8 weeks
- **OR**
- 3200 IU daily for 8 weeks

>50 nmol/L

Natural sources of vitamin D or maintenance vitamin D 800 – 1600 IU daily

In those intolerant to oral supplementation
I/M cholecalciferol (animal derived, D3) or ergocalciferol (plant derived, D2) at 300,000 IU every 3 months

>250 nmol/L Stop all supplementation, check calcium, but note wide therapeutic index

Check calcium level after four weeks of loading in case primary hyperPTH has been unmasked. Check vit D and calcium at 3 months

Calcium

Dietary Calcium Aim > 700mg/day
www.iofbonehealth.org/calcium-calculator

1 pint of low fat milk = 600mg
Low fat cheese = 200 mg/30g cheese
1 small pot of yoghurt =150mg
No supplementation if intake > 700mg/day

Notable Exceptions

- Pregnancy (Different guidelines apply)
- Chronic Kidney Disease (eGFR <30ml/min/m^2)
- Hypercalcaemia and Hypercalciuria
- Renal stones in last 12 months
- Primary Hyperparathyroidism
- Sarcoidosis/active TB/some cases of lymphoma
- Severe chronic liver disease
- Metastatic calcification

Licensed oral products

1st line: Fultium (animal derived)
2nd line: Desunin (suitable for peanut allergy and vegetarians)

Further information
www.nos.org.uk/about-osteoporosis/yourbones
www.nos.org.uk/document.doc?id=1352[1]

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Who should be tested?

Symptomatic pigmented skin patients, particularly those living in Northern latitude/using regularly occlusive garments
Institutionalised/housebound/frail elderly
Vegetarians or vegans
Patients with eating disorders and low BMI

Malabsorption such as coeliac disease, gastrointestinal surgery, inflammatory bowel disease
Liver disease

Connective tissue disease
Fragility fractures >50 yrs old, and/or on anti-osteoporotic medication
Falls in over 65 yrs old
Unexplained bone pain and muscle weakness

Patients on the following medications:

- Glucocorticoids
- Anti-convulsants
- Anti-retrovirals
- Cholestyramine
- Rifampicin
- Sucralfate
- Liquid paraffin
- Colestipol

[Note: this list is not exhaustive]

What tests should be done?

Routine

- Serum 25-OH-Vit D
- Serum calcium
- Serum Phosphate
- Albumin
- Alkaline Phosphatase
- PTH

Special

Serum 1,25-OH-Vit. D (by prior agreement with the Biochemistry Department required-sample to be frozen within 2 hours) only for sarcoidosis, possible solid tumour induced osteomalacia and hypophosphateamic rickets

24 hours urinary calcium excretion (high PTH, renal stones, idiopathic hypercalciuria)

Serum magnesium in patients with intestinal malabsorption e.g. Crohn's, bariatric surgery

If calcium level >2.65 mmol/L (albumin adjusted)

- Discontinue calcium and vitamin D
- Check serum PTH and 24 hours urinary calcium

If calcium level <2.10mmol/L

- Check Vit. D, PTH, albumin

Ref Camden CCG Guidelines 2015

Sources of vitamin D

Diet

- Not an optimal source of vitamin D
- Not recommended as an exclusive source

Natural Safe Regular Sun Exposure (UBV Light)

90% of vitamin D comes from the sun via skin exposure, specially at lunchtime. Between April and October, an average of 10 min 3-6 times per week to the limbs or back (1/3 of the body) without sunscreen provides adequate vitamin D, but avoid sunburn. Elderly patients and those with pigmented skin require longer exposure.
(www.nhs.uk/livewell/summerhealth/documents/concensus_statement%20_vitd_dec_2010.pdf)

Sun exposure contraindicated in

- SLE
- Skin cancer
- Albinism,vitiligo
- Porphyrias
- Granulomatous diseases (e.g. sarcoid but not TB)
- Lymphoma
- Xeroderma pigmentosum
- Patients on psoralens and phenotiazines