Adult Pathway for Vitamin D Deficiency in Primary Care

Does the patient have at least 1 SYMPTOM of vitamin D deficiency?
- widespread bone pain or tenderness or myalgia
- proximal muscle weakness

Do not screen or treat if patient is asymptomatic

Yes

Does the patient have at least 1 risk factor for vitamin D deficiency?
- black or Asian
- elderly
- housebound
- habitual skin covering
- vegan/vegetarian
- liver/renal disease
- malabsorption
- anticonvulsants, cholestyramine, rifampicin, glucocorticoids or anti-retrovirals

Vitamin D testing not required

No

First exclude other causes for symptoms and manage the primary diagnosis

Yes

Vitamin D testing not required at present.

Any relevant past medical history?
- Hypercalcaemia
- Metastatic calcification
- Renal stones, severe hypercalciuria
- Stage 4/5 CKD or eGFR<30ml/minute
- Malabsorption
- Primary hyperparathyroidism
- Low bone mineral density

Manage the primary diagnosis

No

Have other cause for symptoms been excluded?
Consider tests: U+Es, LFTs, FBC, CRP, ALP, PO4, TFTs, Ca2+, CK

No

Yes

Assessment of vitamin D status required: 25(OH) D (and Ca2+ and ALP if not already tested)
If Ca2+ or ALP is raised, look for underlying primary diagnosis. Undertake PTH only if Ca2+ or ALP raised.
Treatment based on serum 25-hydroxyvitamin D level
NB treatment of deficiency can (rarely) lead to vitamin D toxicity; this may present as symptoms of hypercalcaemia

Deficiency <25nmol/L
REFER to endocrinology if pregnant
1st line: Desunin (colecalciferol 800 unit tablet) 5 tablets daily (Total daily dose = 4,000 units), with lifestyle & dietary advice. Take for 12 weeks (until course is completed).
Vit D level check after Rx NOT usually needed
Review at 12 weeks. Is patient still symptomatic? (Check compliance)

Yes

Review and repeat Vitamin D, Ca2+ and ALP levels.

No

2nd Line: Ergocalciferol 300,000unit IM injection one single dose (NB not as effective)
Review at 24 weeks. Is patient still symptomatic?

No

Yes

>25nmol/L
Lifestyle and dietary advice and consider maintenance therapy e.g. OTC Colecalciferol products (see over)

No

Review and repeat Vitamin D, Ca2+ and ALP levels.

Is patient still deficient, with suspected underlying undiagnosed pathology?

No

Yes

Refer to endocrine specialist
Further Information

This pathway is intended for use by General Practitioners for the treatment of symptomatic patients. **It is not a screening pathway and Vitamin D testing should not be used as a screening tool.** It has been designed in partnership between primary care (Calderdale, North Kirklees, Greater Huddersfield and Wakefield CCGs) and secondary care (Calderdale and Huddersfield NHS Foundation Trust and The Mid Yorkshire Hospitals NHS Trust). It will be monitored and reviewed in 2014 or earlier if needed.

Vitamin D2 is known as ergocalciferol and Vitamin D3 is known as colecalciferol. Colecalciferol, is the treatment of choice.

**The major risk factors for Vitamin D deficiency are:**
- Skin pigmentation
- Use of sunscreen or concealing clothing
- Lack of sunlight exposure

People at higher risk of Vitamin D deficiency should be offered advice to prevent this (see box below).

**Vitamin D tests** are listed as a biochemistry test. Retesting after treatment is **not usually indicated** (unless the patient remains symptomatic).

Lifestyle and dietary advice checklist:

**Sunlight:** 20-30 minutes each week between 10am and 3pm in summer (April-September) should provide adequate amounts of vitamin D for most individuals. The elderly and those of non-white ethnicity will have higher requirements.

**Diet:** Oily fish (but not tinned versions) such as herring, sardines, mackerel, salmon and tuna are the best dietary source of vitamin D. Egg yolks and mushrooms also contain small amounts and there are also some foods such as margarines and cereals that are fortified with vitamin D (check product labels).

Prescribing Notes

**Desunin:** Each tablet contains colecalciferol 800 units. It is gelatine free and suitable for vegetarians. It is also free of soya and peanut oil. It is a licensed medicine. The cost of a 30 tablets is £3.60. A 12 week course costs £50.40.

**Fultium** (colecalciferol 800 unit capsules) are also licensed for Vitamin D deficiency. They contain gelatine and arachis oil. The cost for 30 tablets is £3.60.

Named patient liquid ‘specials’ of vitamin D (unlicensed) for adults in primary care should **NOT** be prescribed as they are not a cost effective choice, and detract from limited stock used in infants.

**Examples of colecalciferol supplements which can be bought from pharmacies or health food stores** for self-management of insufficiency (25-50 nmol/L) or as maintenance therapy for those who have previously been treated for deficiency. Recommended dose 1000 units daily. Other supplements may be available. The community pharmacist is able to provide advice on these products. **These products should not be prescribed on FP10.**

<table>
<thead>
<tr>
<th>Product</th>
<th>Strength and form</th>
<th>Source</th>
<th>Relevant excipients for any dietary/allergy restrictions*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunvite Vitamin D3</td>
<td>400unit and 1000unit tablet</td>
<td>Holland and Barrett</td>
<td>Soya, gelatin (bovine origin)</td>
</tr>
<tr>
<td>Vitamin D3</td>
<td>500unit and 1000unit tablet</td>
<td>Boots</td>
<td>Soya bean oil, gelatin, glycerin</td>
</tr>
<tr>
<td>Vitamin D3</td>
<td>1000unit capsule</td>
<td>Nature’s Remedy</td>
<td>Rice bran oil, gelatin, glycerin</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>1000unit tablet</td>
<td>Nature’s Remedy</td>
<td>Nil – suitable for vegetarians</td>
</tr>
<tr>
<td>BioLife Vitamin D3</td>
<td>1000unit tablet</td>
<td>Lifestyle Natural</td>
<td>Nil – suitable for vegetarians</td>
</tr>
<tr>
<td>Vitamin D3</td>
<td>1000unit softgel</td>
<td>Solgar</td>
<td>Gelatin, glycerin</td>
</tr>
</tbody>
</table>

*Colecalciferol in supplements is derived from wool oil (lanolin); Products with soya are not suitable for those with nut allergies

Acknowledgement: NHS Wandsworth and St George’s Healthcare NHS Trust

2. Pearce SHS, Cheetham TD. Diagnosis and management of vitamin D. BMJ 2010; 340: 142-147

Feb 2013