

# City and Hackney Guidance - Indication for Investigation of Vitamin D Levels in Adults in Primary Care

## SYMPTOMS THAT COULD BE ATTRIBUTED TO VITAMIN D DEFICIENCY (1 or more)

- Localised or generalised bone pain/tenderness (often throbbing)
- Proximal muscle weakness (e.g., difficulty rising from sitting position)
- Diffuse muscular aches/pain
- Impaired physical function
- Waddling gait (NB can be from previous osteomalacial state)
- Symmetric lower back pain
- Chronic widespread pain

ENSURE OTHER CAUSES ARE EXCLUDED (see table 1 bottom right)

YES

## Vitamin D Testing Indicated

If other causes for symptoms have been excluded (see table 1) then use clinical judgement and investigate

### \*INVESTIGATIONS

- Vitamin D (25(OH)D) and bone profile e.g., calcium, phosphate and ALP
- Use clinical judgement and test: U+Es, eGFR, LFT, TFT, FBC, ferritin, ESR, CRP, PTH, malabsorption screen, rheumatoid & other autoimmune screen

NO

## Vitamin D Testing NOT Recommended

## RISK FACTORS FOR VITAMIN D DEFICIENCY (1 or more)

Low or no exposure to sun:

- Housebound or spend little time outdoors
- Institutionalised
- People with darker skin
- Skin concealing garments (cultural/religious/health reason)
- Strict sunscreen use

- Aged 65 years and over
- Pregnant and breastfeeding women (especially if a teenager or young)
- Obesity (BMI > 30)

Family history of vitamin D deficiency or osteomalacia  
Diet that restricts major food sources of vitamin D e.g., vegan  
Severe liver disease  
Renal disease  
Intestinal malabsorption e.g., Crohn's disease, coeliac disease  
Medication e.g., antiepileptics, glucocorticoids, highly active antiretroviral therapy (HAART), colestyramine, rifampicin, orlistat, St John's Wort

### Vitamin D Testing Indicated\*

If Risk Factor(s) **and** Patient Symptomatic

### Vitamin D Testing NOT Recommended if NO Symptoms

### Advice on maintaining adequate vitamin D levels through safe sun exposure and diet.

Those aged 65 years  $\geq$  and housebound, in a nursing home or sheltered accommodation, should be offered supplementation with theiCal-D3® 1 tablet od, unless contraindicated.

#### Public Health England Advice (2016):

- People in the UK should consider taking a daily supplement containing 400 units vitamin D in autumn and winter
- People whose skin has little or no exposure to the sun (e.g., housebound or in an institution), or who always cover their skin outside, need to take a daily supplement containing 400 units vitamin D throughout the year
- People with dark skin e.g., African, African-Caribbean or south Asian, should consider taking a daily supplement containing 400 units vitamin D throughout the year

**Covid-19 Pandemic (2020):** Advise patients to consider taking 400 units of vitamin D daily as they may not be getting enough from sunlight if indoors most of the day. See <https://www.nhs.uk/conditions/vitamins-and-minerals/vitamin-d/> for latest updates

## CLINICAL REASONS

Patients with bone diseases:

- that may improve with vitamin D treatment e.g., osteomalacia, osteoporosis
- where correcting vitamin D deficiency is appropriate prior to specific treatment e.g., zoledronate or denosumab in osteoporosis or bisphosphonate in Paget's disease
- Patient has had a fall
- Patient has features of hypocalcaemia (rare)

### Vitamin D Testing Indicated\*

Management of bone diseases is carried out in secondary care. GPs should ensure patients are followed up appropriately

### MEDICAL HISTORY/DIFFERENTIAL DIAGNOSES WHICH MAY REQUIRE REFERRAL TO, OR DISCUSSION WITH A SPECIALIST (not exhaustive)

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|---|--|
| <ul style="list-style-type: none"> <li>· Active sarcoidosis</li> <li>· Anaemia</li> <li>· Cancer e.g., bone/sarcoma/myeloma</li> <li>· Chronic kidney (&gt; CKD 3a) or liver disease</li> <li>· Fibromyalgia/PMR/RA</li> <li>· Fracture</li> <li>· History of renal stones</li> <li>· Hypercalcaemia</li> <li>· Hypercalciuria</li> </ul> | <ul style="list-style-type: none"> <li>· Intestinal malabsorption</li> <li>· Lymphoma</li> <li>· Metastatic calcification</li> <li>· Osteomyelitis</li> <li>· Paget's disease</li> <li>· Pregnant or breastfeeding</li> <li>· Primary hyperparathyroidism</li> <li>· Tuberculosis (TB)</li> <li>· Unexplained weight loss</li> </ul> |
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### Table 1 Conditions which may require referral to, or discussion with a specialist

<https://cks.nice.org.uk/topics/vitamin-d-deficiency-in-adults/diagnosis/differential-diagnosis/>

## City and Hackney Guidance for Interpretation of Vitamin D Levels and Treatment in Adults

Vitamin D Deficiency (< 25 nmol/L)	Vitamin D Insufficiency (25-50 nmol/L)	Vitamin D Adequate (> 50 nmol/L)	Vitamin D Toxicity (> 150 nmol/L)
<p>See page 1, table 1 for which patients to discuss with or refer to a specialist before prescribing vitamin D e.g., pregnant/breastfeeding women, TB, sarcoidosis, primary hyperparathyroidism, hypercalcaemia, hypercalciuria, history of renal stones, CKD, malabsorption disorders.</p> <p><b>Oral Treatment Loading Regimen</b></p> <p><b>Colecalciferol (Vitamin D3)</b></p> <p>50000 units ONCE WEEKLY for 6 weeks</p> <p style="text-align: center;"><b>OR</b></p> <p>40000 units ONCE WEEKLY for 7 weeks</p> <p>Prescribe by <b>brand name</b> and use a first-line licensed preparation (table 2)</p> <p>Advise to seek medical advice if adverse effects during treatment with high-dose vitamin D occur e.g., nausea and vomiting</p>		<p><b>If patient is symptomatic, consider alternative diagnosis as unlikely to be related to vitamin D deficiency</b></p> <p><a href="#">Give advice on maintaining adequate vitamin D levels through safe sun exposure and diet.</a></p> <p>Those aged 65 years <b>&gt;</b> and housebound, in a nursing home or sheltered accommodation, should be offered supplementation with the iCal-D3® 1 tablet od, unless contraindicated.</p> <p><b>Public Health England Advice (2016)</b></p> <p>a) People in the UK should consider taking a daily supplement containing 400 units vitamin D in autumn and winter</p> <p>b) People whose skin has little or no exposure to the sun (e.g., housebound or in an institution), or who always cover their skin outside, need to take a daily supplement containing 400 units vitamin D throughout the year</p> <p>c) People with dark skin e.g., African, African-Caribbean or south Asian, should consider taking a daily supplement containing 400 units vitamin D throughout the year</p> <p><b>Covid-19 Pandemic (2020):</b></p> <p>Advise patients to consider taking 400 units of vitamin D daily as they may not be getting enough from sunlight if indoors most of the day. For latest updates see: <a href="https://www.nhs.uk/conditions/vitamins-and-minerals/vitamin-d/">https://www.nhs.uk/conditions/vitamins-and-minerals/vitamin-d/</a></p>	<p><b>Refer to, or discuss with secondary care</b></p> <p>Very rare and usually due to very high vitamin D dose through inappropriate high-dose treatment or accidental overdose.</p>
<p><b>Does the patient have any one of the following?</b></p> <ul style="list-style-type: none"> <li>· symptoms suggestive of vitamin D deficiency</li> <li>· increased risk of developing vitamin D deficiency in the future because of reduced exposure to sunlight</li> <li>· fragility fracture, documented osteoporosis or high fracture risk</li> <li>· taking anti-resorptive medication for bone disease*</li> <li>· raised parathyroid hormone serum levels*</li> <li>· antiepileptic drugs/oral glucocorticoids/long-term treatment with drugs that cause vitamin D deficiency*</li> <li>· Conditions associated with malabsorption*</li> </ul> <p>*Use clinical judgement and consider discussing with or referring these patients to a specialist before prescribing vitamin D</p>			
<p><b>YES</b> →</p>			
<p><b>THEN</b> ↓</p> <p><b>Start Oral Maintenance Regimen</b> (4 weeks after loading dose)</p> <p><b>Colecalciferol (Vitamin D3) 800 - 2000 units daily</b> (OR intermittent at higher equivalent dose)</p> <p style="text-align: center; color: blue;">Patient to purchase</p>		<p><b>NO</b> ↓</p> <p><b>Start Oral Maintenance Regimen</b></p>	

**PRESCRIBE VITAMIN D3 by BRAND NAME**

- Treatment dose to be prescribed by the GP and regimen explained to the patient
- Patients should be encouraged to purchase the maintenance dose and provided with the CCG vitamin D leaflet
- Maintenance dose can be prescribed if it is strongly believed a patient is unlikely to purchase vitamin D or where clinically appropriate
- **Maintenance product of choice: Valupak D3® 1000 units (60 tablets = £0.59)**
- Invita D3® or Plenachol® once monthly can be prescribed as maintenance dose in at risk groups if advised by a specialist e.g., Crohn's
- Advice patient on adequate dietary calcium intake

### Monitoring and Assessment

**Check corrected calcium within 1 month after the administration of the last loading dose to detect those with primary hyperparathyroidism:**

If hypercalcaemia is detected stop further vitamin D supplementation and investigate

**Routine monitoring of 25(OH)D is costly and unnecessary, but may be appropriate if:**

- symptoms of vitamin D deficiency continue
- malabsorption is suspected (may need advice from or referral to a specialist)
- poor compliance with medication is suspected

- It takes at least 3-6 months to achieve steady state levels of 25(OH)D therefore do **not** routinely check levels before this
- If there is no improvement clinically or in 25(OH)D status **and** the patient is compliant with the loading regimen, refer to a specialist

**Do not** prescribe alfacalcidol or calcitriol as there is evidence of high risk of ineffectiveness or causing toxicity

**Do not** prescribe IM (unpredictable bioavailability, slow acting & administration burden) unless oral route not indicated or ineffective

**Do not** prescribe liquid preparations routinely unless established swallowing difficulties i.e., via SALT assessment

Vitamin D3 Preparation	Strength and formulation	Loading dose cost	Licence status in the UK	Formulary choice
InVita D3®	50 000 unit capsule	£9.90 (6 capsules)	Licensed POM	First-line
Plenachol®	40 000 unit capsule	£10.50 (7 capsules)	Licensed POM	Second-line
Hux D3®	20 000 unit capsule	£1.83 (14 capsules)	Unlicensed (nutritional supplement)	Third-line
InVita D3®	50 000 unit/mL oral solution	£12.50 (6 ampoules)	Licensed POM	Only for established swallowing difficulties

**Table 2 Colecalciferol (Vitamin D3) Product Choice in Adults**

Patient Group	Name and Dose (Prescribe Brand Name)	Constituents	Cost	Important Dietary and Allergen Information <small>(Correct as of December 2021)</small>
<b>Pregnant and breastfeeding women for prevention of vitamin D deficiency</b> <small>(Children (4 weeks to 4 years) are also entitled to free healthy vitamin drops.)</small>	<b>Healthy Start Vitamins</b> 1 tablet daily	Vitamin D3 400 units + Vitamin C 70 mg + Folic Acid 400 micrograms per tablet	All pregnant and breastfeeding women resident in <a href="#">City and Hackney</a> are entitled to free vitamins, while they are pregnant and up to their baby's first birthday.	Approved by Vegetarian Society and Halal Monitoring Committee. <a href="#">City and Hackney state it is Kosher certified</a> (Basel Kosher Commission). Allergens TBC by HS as website has conflicting information
<b>People aged 65 years &gt; and Housebound, in a nursing home or sheltered accommodation</b>	<b>theiCal-D3® tablet</b> Chew 1 tablet daily <small>(Licensed, pharmacy medicine but should be prescribed for the patient group described)</small>	Calcium 1000 mg + Vitamin D3 880 units	£2.95 for 30 days 30 tablets	Suitable for vegetarians. Suitable for kosher diets but not during Passover. Does <b>not</b> contain gelatine. Does <b>not</b> contain wheat starch, nut oils or soya oil. <b>NO information on whether suitable for dairy allergy</b>
Vitamin D Deficiency (< 25 nmol/L 25 OHD) Oral Loading Dose Regime <b>OR</b> Vitamin D Insufficiency (25-50 nmol/L 25 OHD) and where treatment is recommended  Do not put loading dose regimen medicines on repeat or repeat dispensing	<b>First-line</b>			
	<b>InVitaD3® soft capsule†</b> 50 000 units once weekly for 6 weeks <small>(Licensed and prescription-only medicine)</small>	Vitamin D3 50 000 units	£9.90 for loading dose 6 capsules	Gelatine is halal and kosher certified; the only ingredient derived from slaughtered animals is the gelatine. To the best of manufacturer's knowledge – free from nuts, peanuts, soya, lactose/dairy and gluten and their derivatives. <b>NOT suitable for vegetarians.</b>
	<b>Second-line</b>			
	<b>Plenachol® capsule†</b> 40 000 units once weekly for 7 weeks <small>(Licensed and prescription-only medicine)</small>	Vitamin D3 40 000 units	£10.50 for loading dose 7 capsules	Halal and Kosher certified. Approved by Vegetarian Society. The capsules contain no soya, lactose, technically this product can be classified as nut-free, however contains coconut oil.
	<b>Third-line</b>			
	<b>Hux D3® capsule</b> 40 000 units once weekly for 7 weeks <small>(Nutritional supplement - can be purchased)</small>	Vitamin D3 20 000 units	£1.83 for loading dose 14 capsules If patient pays for NHS prescriptions advise to purchase from a pharmacy	Approved by Vegetarian Society and certified Kosher. Suitable for Halal diet. Free from: peanut and soya oil, gelatine, alcohol, yeast, preservative
<b>InVita D3® oral solution ampoules</b> 50 000 units once weekly for 6 weeks <small>(Licensed and prescription-only medicine)</small>	Vitamin D3 50 000 units/1 mL (single-use oral ampoules 1 mL)	£12.50 for loading dose 6 x 1 mL Only if established swallowing difficulties i.e., via SALT	Suitable for vegetarians Does not have halal/kosher certificate but does <b>not</b> contain any ingredients from slaughtered animals, nor does it contain any other prohibited ingredients. Considered free from nuts, peanuts, soya, lactose/dairy and gluten and their derivatives.	
Oral maintenance therapy (See guideline for dose)	<b>Valupak® vitamin D3 tablets</b> <small>(Nutritional supplement)</small>	Vitamin D3 1000 units	<b>Patient to purchase*</b>	Approved by vegetarian society and by <a href="#">Kosher London Beth Din (KLBD)</a> . Suitable for halal diet. Free from: sugar, gluten, yeast, artificial flavours, colours and preservatives.
Vegan patients	Check with City and Hackney Medicines Management Team			

\*GPs can prescribe maintenance dose if they strongly believe a patient is unlikely to purchase vitamin D, or where clinically appropriate.

†GPs can prescribe licensed preparations InVitaD3® or Plenachol® once monthly as maintenance dose in at risk groups on advice of specialist e.g., Crohn's Please note, product choice may change as and when more cost-effective products arrive on the market. The medicines management team will update.