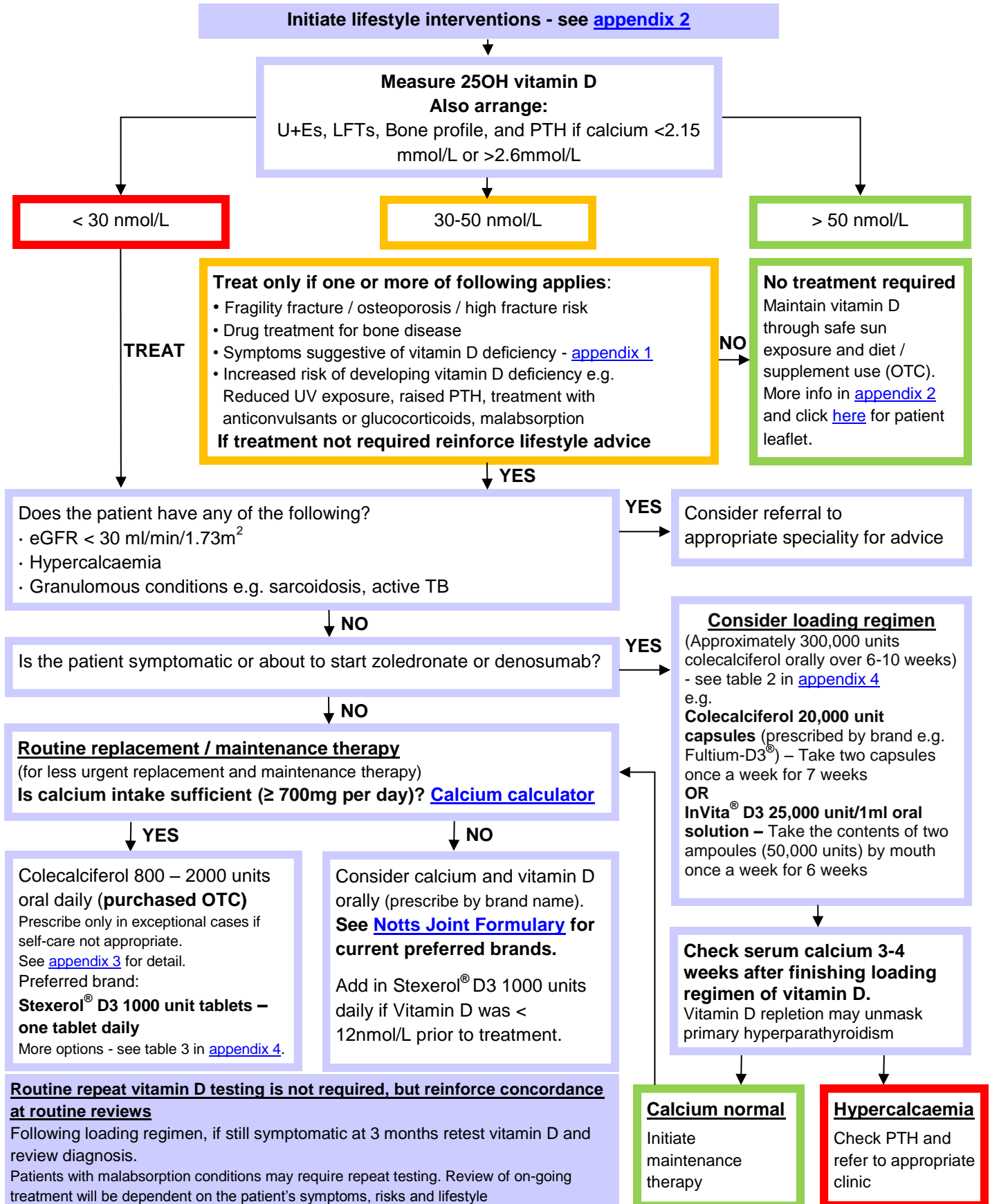


Vitamin D Management in Adults

NICE recommends that health professionals should NOT routinely test people's vitamin D status unless:

- They are considered to be at particular high risk or they show clinical features of deficiency - see [appendix 1](#)
- There is a clinical reason e.g. a metabolic factor (Specialists may test other specific patient groups if necessary)

Test before starting patients on an **antiresorptive agent e.g.** IV zoledronic acid or denosumab or oral osteoporosis therapy if not going to be co-prescribed vitamin D containing supplements.



Appendix 1: Risk factors, features and treatment of insufficiency and deficiency

Table 1: Risk factors for vitamin D deficiency

Inadequate UVB light exposure	Inadequate dietary intake or absorption	Metabolic factors
<ul style="list-style-type: none"> • Pigmented skin (non-white ethnicity) • Lack of sunlight exposure or atmospheric pollution • Skin concealing garments or routine use of sun protection factor 15 or above • Housebound or indoor living (e.g. care homes) • Seasonal 	<ul style="list-style-type: none"> • Vegetarian (or other fish-free diet) • Malabsorption (e.g. coeliac disease, Crohn's disease etc.) • Short bowel • Cholestatic liver disease, jaundice 	<ul style="list-style-type: none"> • Older people aged 65 years and over (reduced synthesis in the skin) • Drug interactions e.g. rifampicin, anticonvulsants (carbamazepine, oxcarbazepine, phenobarbital, phenytoin, primidone and valproate), isoniazid, cholestyramine, sucralfate, glucocorticoids, highly active antiretroviral treatment (HAART) • Chronic liver disease • Chronic renal disease

Clinical features of vitamin D deficiency and Osteomalacia

- Gradual onset and persistent bone pain without preceding mechanical injury (frequently in back, ribs or lower limbs)
- Fragility fracture
- Proximal muscle weakness (difficulty with stairs, getting up off the floor or standing after sitting in a low chair, waddling gait) or muscle pain
- Carpopedal spasm, tetany, seizures or irritability due to hypocalcaemia and requiring urgent treatment
- Osteopenia on plain radiograph
- Low bone density on dual energy x ray absorptiometry scan (does not equate to osteoporosis)

Treatment of insufficiency and deficiency is advised in patients with the following:

- fragility fracture, documented osteoporosis or high fracture risk
- treatment with antiresorptive medication for bone disease
- symptoms suggestive of vitamin D deficiency
- increased risk of developing vitamin D deficiency in the future because of reduced exposure to sunlight, religious/cultural dress code, dark skin, etc.
- raised PTH
- medication with antiepileptic drugs or oral glucocorticoids
- conditions associated with malabsorption.

Appendix 2: Patient information about vitamin D and lifestyle advice

Link to printable local patient information leaflet:

[Notts APC website / Patient Info / Vitamin D - Patient information leaflet](#)

Lifestyle advice:

- From late March or early April to the end of September, most people should be able to get all the vitamin D they need from sunlight. The body creates vitamin D from direct sunlight on the skin when outdoors. Between October and early March we don't get enough vitamin D from sunlight and it is difficult to get the recommended daily intake from diet alone. Read more about [vitamin D and sunlight](#) on the NHS website.
- Public Health England suggest that people should consider taking a daily supplement containing 10 micrograms* (400 units) of vitamin D during autumn and winter when there is limited sun exposure. All year round supplements should be considered for people, who have very little or no sunshine exposure e.g. housebound, in a residential home, usually wear clothes that cover up most of the skin. Patients should be advised to purchase over the counter.

**Note that supplements containing 25 micrograms (1000 units) are considerably cheaper to buy than those containing 10 micrograms (400 units) or 20 micrograms (800 units). This is a suitable dose to take as a daily supplement.*

- Vitamin D is also found in a small number of foods Including:
 - Egg yolks
 - Fortified foods – such as most fat spreads, soy yogurts, soy milk, almond milk, some orange juices and some breakfast cereals
 - Liver
 - Mushrooms
 - Oily fish – such as salmon, sardines, herring and mackerel*
 - Red meat
 - Ricotta Cheese

**note that tuna (fresh or canned) does not count as oily fish ([Eat Well, Fish & Shellfish NHS website](#))*

- In the UK, cows' milk is generally not a good source of vitamin D because it isn't fortified, as it is in some other countries.

More information for patients is available on the following websites:

- [NHS Website – Vitamin D](#)
- [National Osteoporosis Society: A balanced diet for bones](#)
- [Royal National Orthopaedic Hospital: FAQs about Vitamin D in childhood](#)
- [Royal College Obstetrics and Gynaecologists: Healthy eating and vitamin supplements in pregnancy](#)
- [BDA food fact sheet on Vitamin D](#)

Appendix 3: Vitamin D products available without prescription

Patients should buy vitamin D supplements unless they meet one of the specific vitamin D exception criteria in the NHS England guideline: [Conditions for which over the counter items should not routinely be prescribed in primary care](#) (on pg 17).

Note that maintenance or preventative treatment is not an exception for vitamin D. Exceptions to self-care are also listed in the [local vitamin D position statements](#) for Greater Nottingham and Mid Notts.

Prescriptions for vitamin D should be reserved for the treatment of patients with symptoms of deficiency or confirmed deficient vitamin D levels that require treatment with loading doses. Subsequent maintenance doses should then be purchased over the counter.

Patients can buy vitamin D supplements at most pharmacies and supermarkets for less than £3 for a three month supply. Women and children who qualify for the Healthy Start scheme can get free supplements containing the recommended amounts of vitamin D. The [NHS website](#) can provide additional information for patients.

Products available over the counter are suitable for replacement / maintenance doses as well as for prophylaxis in winter if required.

Pregnant and Breast feeding women

NICE recommend that all pregnant and breastfeeding women should be informed about the importance of vitamin D and should take 10 micrograms (400 units) daily. Supplements are available to purchase over the counter or via the Healthy Start programme if the patient is eligible (see below).

High risk women (women with increased skin pigmentation, reduced exposure to sunlight, or those who are socially excluded or obese) may be advised to take at least 1000 units (25 micrograms) daily (in line with [RCOG guidelines 2014](#)).

REMEMBER – pregnant women should avoid taking multivitamins containing vitamin A (retinol) due to the teratogenic risk of vitamin A.

Healthy Start vitamins

Healthy Start vitamins (www.healthystart.nhs.uk) for women and children are free of charge for low income families and are available from Sure Start centres and [some other health centres](#). You can also ask your midwife or health visitor for where they are available locally.

Women qualify for free Healthy Start vitamins from the tenth week of pregnancy or if they have a child under four years old, and if she or her family receives any of the following:

- Income Support
- Income-based Jobseeker's Allowance
- Income-related Employment and Support Allowance
- Child Tax Credit (but only if the family's annual income is £16,190 or less)
- Universal Credit (but only if the family earns £408 or less from employment)
- Working Tax Credit (but only if the family is receiving the 4 week 'run-on*' payment)

**Working Tax Credit run-on is the payment received for a further 4 weeks immediately after ceasing to qualify for [Working Tax Credit](#).*

Women who are under 18 and pregnant also qualify, even if they do not get any of the above benefits or tax credits.

Some Sure Start centres will also sell them to other customers (at minimal charge), but not all have the facility to take money.

There are two different Health Start products:

- Healthy Start **women's** vitamin **tablets**. The daily dose of one tablet contains: 400 units of vitamin D3 per tablet (as well as 70 micrograms of vitamin C and 400 micrograms of folic acid)
- Healthy Start **children's** vitamin **drops**. The daily dose of five drops contains: 300 units of vitamin D3 (as well as 233 micrograms of vitamin A and 20 milligrams of vitamin C)

For those people in whom healthy start vitamins are not suitable, a range of vitamin D3 supplements are available for purchase over the counter.





Appendix 4: Recommended Vitamin D preparations for prescribing (when treating in accordance with Nottinghamshire vitamin D guideline)

It is recommended that only licensed vitamin products are prescribed.

NOT RECOMMENDED: Unlicensed ‘specials’ of vitamin D for adults in primary care should NOT be routinely prescribed.

Table 2: Recommended vitamin D preparations for loading regimen

(To be taken with food) – all products listed are licensed in the UK

Oral Vitamin D preparation Prescribe by brand name to avoid inadvertent use of unlicensed products.	Cost (Nov18)	Allergy / dietary info
Colecalciferol 20,000 unit capsules Brands include: Aviticol [®] , Plenachol [®] and Fultium [®] D3	DT Nov18: £17.04 for 15 £29.00 for 30 capsules Preferred brands: Fultium[®] D3 As per drug tariff price Aviticol[®] £20.25 for 30 (packs of 30) Plenachol[®] £27 for 30 (packs of 10)	<i>Check individual products</i> Gelatin in Aviticol [®] and Fultium [®] D3 suitable for kosher and halal. No Gelatin in Plenachol. Aviticol [®] , Plenachol [®] and Fultium [®] D3 are arachis oil free.
InVita [®] D3 25,000 units/ 1ml oral solution. Formulation is a 1ml single dose “snap and squeeze” ampoule*	£3.95 for 3 ampoules (6 wk course / 12 x 1ml = £15.80)	<i>Does not contain peanut oil or soya.</i> Olive oil based liquid. Suitable for vegetarians
<p>*Comes as a “Snap and squeeze” ampoule (see below). Patients should be advised to take InVita[®] D3 at mealtimes – If preferred, the contents can be emptied onto a spoon and taken orally or mixed with a little cold or lukewarm food immediately before use. See SPC for further information</p> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">  <p>1</p> </div> <div style="margin-right: 10px;">  <p>2</p> </div> <div style="margin-right: 10px;">  <p>3</p> </div> <div style="margin-right: 10px;">  <p>4</p> </div> <div style="border: 1px solid orange; border-radius: 10px; padding: 5px; margin-left: 10px;"> <p>i Patients simply ‘snap’ the top off the ampoule... and ‘squeeze’ the full contents into their mouth before swallowing</p> </div> </div>		

See table 3 overleaf for routine replacement therapy

Table 3: Routine replacement / maintenance therapy

Products listed below are only to be prescribed if the patient meets the exception criteria listed in the [local position statement](#). All other patients should be advised to **purchase** a vitamin D supplement which will provide 800 to 2000units per day (click [here](#) for patient information leaflet).

Oral Vitamin D preparation Prescribe by brand name to avoid inadvertent use of unlicensed products.	Cost (Nov18)	Allergy / dietary info
Colecalciferol 1000 unit tablets Preferred brand: Stexerol-D3 [®] 1000 units colecalciferol tablets	DT Nov18: £2.95 for 28 tablets Preferred brand: Stexerol-D3[®] : As per drug tariff price	<i>Does not contain gelatin, peanut oil or soya.</i> Colecalciferol is derived from healthy live sheep's wool fat – may be acceptable to vegetarians
Colecalciferol 800 unit capsules Brands include: Strivit-D3 [®] InVita [®] D3 Fultium [®] D3 N.B. doses over 4 capsules a day are off-label	DT Nov18: £3.60 for 30 capsules Preferred brands: Strivit-D3[®] : £2.34 for 30 caps InVita[®] D3 : £2.50 for 28 caps Fultium[®] D3 : As per drug tariff price	Fultium [®] D3 and InVita [®] D3 contains glycerol and gelatin. The gelatin used in the Fultium [®] D3 capsule shell is certified to Halal and Kosher standards (see website)
Colecalciferol 800 unit tablets Preferred brand: Desunin [®] 800 unit colecalciferol tablets (30 tabs) N.B. doses over 5 tablets a day are off-label	DT Nov18: £3.60 for 30 tablets Preferred brand: Desunin[®] : As per drug tariff price	Desunin [®] does not contain gelatin, peanut oil or soya. Colecalciferol is derived from healthy live sheep's wool fat – may be acceptable to vegetarians
Colecalciferol 2,740units/ml oral drops sugar free Brand is Fultium[®] D3 drops – 12 drops (800 units)	Fultium[®] D3 drops : £10.70 for 25 ml of oral solution (1020 Drops; 85 days treatment/pack)	Does not contain gelatin. Suitable for a vegetarian diet.

Intramuscular Injection:

Please note that injection of Ergocalciferol is not routinely encouraged due to variable absorption and slower onset of repletion. Therefore it should only be used if a patient cannot take an oral preparation.

Dose for osteomalacia treatment: 300,000 units of ergocalciferol given by intramuscular injection once only or give a second dose 3 months later

There is a licensed UK injection of ergocalciferol, but it is not always available. This is gelatin free. Ergocalciferol, 7.5 mg (300 000 Units)/mL in oil, Injection for intramuscular use only. 1-mL amp = £9.35.

Alfacalcidol/Calcitriol (Specialist initiation only)

Alfacalcidol and Calcitriol have no routine place in the management of primary vitamin D deficiency and should be reserved for use in renal disease, liver disease and primary hypoparathyroidism.

Original Authors:

- Nottingham Osteoporosis Group - PJ Prinsloo, Aamer Ali, Ira Pande, Tahir Masud, Kamal Chokkalingham, Namal Weerasuriya, Opinder Sahota, Hrushikesh Divyateja
- James Sutton, Interface and Formulary Pharmacist.
- Updated October 2016 by Laura Catt, Prescribing Interface Advisor
- Updated May 2017 by Nick Sherwood, Interface and Formulary Pharmacist

- Reviewed and updated November 2018 by Jill Theobald, Interface Efficiencies Pharmacist

References and further resources**Information on available vitamin D preparations:**

- BNF available at www.bnf.org
- Drug Tariff available at <http://www.drugtariff.nhsbsa.nhs.uk/>
- Summaries of Product Characteristics available at www.medicines.org.uk/emc

National Guidance:

- NHS England: Conditions for which over the counter items should not routinely be prescribed in primary care: Guidance for CCGs. March 2018 <https://www.england.nhs.uk/wp-content/uploads/2018/03/otc-guidance-for-ccgs.pdf>
- NICE CKS Vitamin D deficiency in adults - treatment and prevention (last revised November16) <https://cks.nice.org.uk/vitamin-d-deficiency-in-adults-treatment-and-prevention>
- NICE CG62: Antenatal care for uncomplicated pregnancies Mar18 (updated Jan17) <https://www.nice.org.uk/guidance/cg62>
- NICE NG34: Sunlight exposure: risks and benefits Feb16 <https://www.nice.org.uk/guidance/ng34>
- NICE PH11: Maternal and child nutrition Mar08 (updated Nov14) <https://www.nice.org.uk/guidance/ph11>
- NICE PH56: Vitamin D: supplement use in specific population groups Nov14 (updated Aug17) <https://www.nice.org.uk/guidance/ph56>
- Royal College of Obstetrics and Gynaecology: Vitamin D in Pregnancy. Scientific Impact Paper No. 43. June 2014. https://www.rcog.org.uk/globalassets/documents/guidelines/scientific-impact-papers/vitamin_d_sip43_june14.pdf
- Vitamin D and Bone Health: A Practical Clinical Guideline for Patient Management April 2013 <https://www.nos.org.uk/document.doc?id=1352>

SPS Medicines Q&As:

- What dose of vitamin D should be prescribed for the treatment of vitamin D deficiency? Feb17 (updated Mar18) <https://www.sps.nhs.uk/articles/what-dose-of-vitamin-d-should-be-prescribed-for-the-treatment-of-vitamin-d-deficiency-2/>
- Is there a suitable vitamin D product for a patient with a peanut or soya allergy? May16 (updated Jun18) <https://www.sps.nhs.uk/articles/is-there-a-suitable-vitamin-d-product-for-a-patient-with-a-peanut-or-soya-allergy/>
- Which vitamin D preparations are suitable for a vegetarian or vegan diet? May15 (updated Aug17) <https://www.sps.nhs.uk/articles/which-vitamin-d-preparations-are-suitable-for-a-vegetarian-or-vegan-diet/>
- Which oral vitamin D dosing regimens correct deficiency in pregnancy? Sep14 (updated Aug16) <https://www.sps.nhs.uk/articles/which-oral-vitamin-d-dosing-regimens-correct-deficiency-in-pregnancy/>