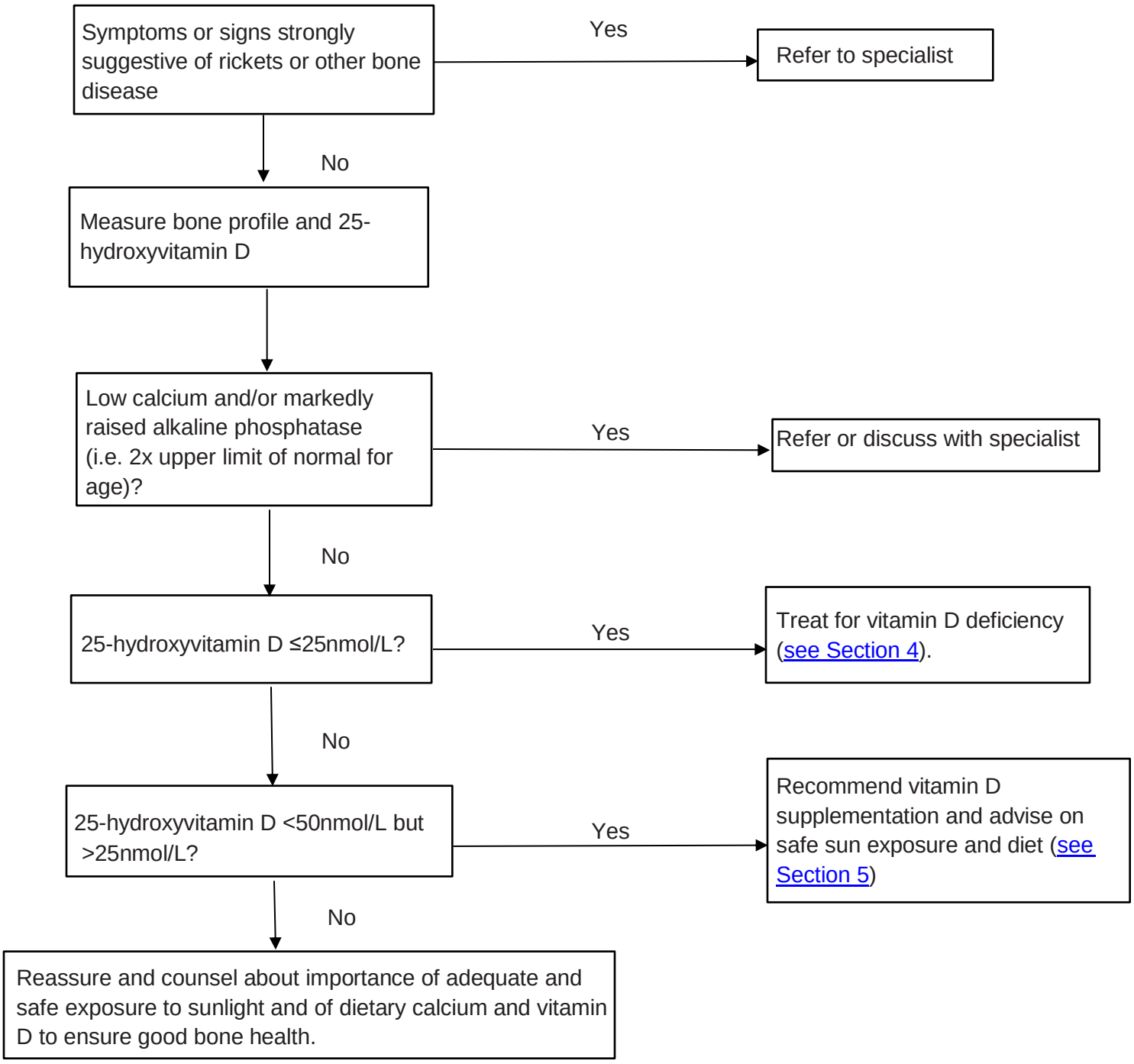
Full Guideline for the Management of Children and Young Adults with Suspected Vitamin D Deficiency in Primary Care.

A summary of the guideline is available at:

https://best.barnsleyccg.nhs.uk/clinical-support/medicines/prescribing-guidelines/Vitamin%20D%20children%20-%20Summary.pdf

Management flowchart of patients suspected to have vitamin D deficiency



Guidelines for management of children with suspected vitamin D deficiency in primary care setting

This guidance has originally been designed for use by General Practitioners in Sheffield and has been adapted for local use within Barnsley. The content is suitable for children up to age 18 years of any ethnic group.

1. Vitamin D deficiency in children[1,2,3]

- Lack of vitamin D in children results in reduced absorption of calcium leading to skeletal deformities (rickets), disturbance in growth and hypocalcaemia in children.
- 85-90% of our daily vitamin D requirement is obtained by the action of UVB sunlight on the skin (only possible during 1st April to 30th September in the UK).
- 10 -15% is obtained through diet (oily fish such as sardines, mackerel, or salmon, liver, egg yolks, fortified margarine and fortified breakfast cereals).
- Healthcare professionals should recommend and record supplement use in all children under 5 years and offer advice regarding obtaining vitamin D from safe sun exposure and diet.
- Public Health England (PHE) recommends Children aged 1 to 4 years should have a daily 10 microgram vitamin D (400IU) supplement. PHE recommends that babies are exclusively breastfed until around 6 months of age. As a precaution, all babies under 1 year should have a daily 8.5 to 10 microgram (340-400units per day) vitamin D supplement to ensure they get enough. Children who have more than 500ml of infant formula a day do not need any additional vitamin D as formula is already fortified.
- In July 2016 Public Health England advised that all individuals should consider vitamin D supplementation, particularly during the autumn and winter months (1st October to 31st March) and throughout the year if they are at risk of vitamin D deficiency.
- Children from families who are eligible for the Government's Healthy Start scheme should be signposted to their local 'Children's Centre' to receive their supplements. Patients not eligible for vouchers can buy Healthy Start children's drops from all children's centres in Barnsley or be signposted to their local pharmacy who will be able to sell them a suitable supplement.
- Improving the availability and uptake of vitamin D supplements for children in multiethnic populations is essential to the strategy of rickets prevention.
- During treatment of deficiency consider referral to secondary care at any stage if new symptoms cause parental or professional concern.
- PHE advise that during the COVID-19 pandemic if children 1yr and above are unable to access safe sun exposure consideration should be given to taking a daily OTC supplement containing 10 micrograms (400IU) of vitamin D. These should not generally be prescribed on prescription but purchased over the counter or online from most pharmacies, supermarkets or health food shops.

2. Identification of children at risk of vitamin D deficiency[1,3]

Any child whom you suspect to be hypocalcaemic but asymptomatic, secondary to vitamin D deficiency should be urgently referred to secondary care (see below).

- Risk factors for vitamin D deficiency include; Reduced exposure to sunlight due to routine covering of face and body, housebound, prolonged institutional care or excessive use of high factor sun block.
- Ethnic minority groups with dark skin, from African, Afro-Caribbean and South Asian backgrounds because their bodies are not able to make as much vitamin D.
- Prolonged breastfeeding without vitamin D supplementation and / or delayed weaning
- Maternal vitamin D deficiency.
- Diet insufficient in calcium or vitamin D.
- Chronic disease (renal, hepatic or malabsorption syndromes e.g. coeliac disease, cystic fibrosis).
- Rare genetic causes including vitamin D resistant rickets, and renal tubular acidosis.
- Medication that induces hepatic enzymes e.g. anticonvulsants
- Obesity (vitamin D is fat soluble and as such obese patients may have increased requirements due to deposition in the adipose tissue)
- Symptoms and signs that are associated with vitamin D deficiency include: Longstanding (>3 months) unexplained bony pains.
- Muscular weakness e.g. difficulty climbing stairs, rising from chair, waddling gait, or delayed walking.
- Dental deformities (delayed tooth formation, enamel hypoplasia).
- Symptoms and signs of rickets and hypocalcaemia (see below).

Rickets[3,5]The commonest cause of rickets is simple nutrient deficiency from low sun exposure combined with inadequate dietary intake. Malabsorption syndromes such as coeliac disease and cystic fibrosis should be considered, especially where there is a poor response to vitamin D treatment. Certain metabolic, renal and liver diseases can also lead to rickets. Peak incidence of rickets is between 3 and 18 months of age. A deficient state exists for months before there are any signs on physical examination. Children with rickets are often miserable and in pain.

Symptoms and signs of rickets

- Progressive or abnormal bowing of legs (genu varum) or knock knees (genu valgum).*
- Anterior bowing of the femur.
- Wrist swelling (distal radius).
- Prominent costochondral joints (“rickety rosary”).
- Softening of the skull with frontal bossing, and delayed fontanelle closure.
- Spinal curvature.
- Bone pain.

*Note that some varus or valgus “deformity” is normal in certain age groups.

Hypocalcaemia[5]Vitamin D deficiency can result in a low serum calcium, particularly during periods of rapid growth e.g. infancy and adolescence. Symptoms of hypocalcaemia include irritability, tetany, and seizures. If you believe that such symptoms are present and likely to be due to low serum calcium then the child should be immediately referred to hospital-based paediatric services.

3. When to test [3,5]

If a patient presents with any of the above symptoms and /or there are other strong reasons to suspect vitamin D deficiency check vitamin D and bone profile.

- Request a bone profile (calcium, phosphate and alkaline phosphatase) and vitamin D (25-hydroxyvitamin D – (25-(OH)D) test. Patients with a low calcium and/or markedly raised alkaline phosphatase (i.e. 2x upper limit of what is normal for age of child) should be referred to or a discussion had with secondary care, as appropriate.
- Children should be re-tested for bone profile and vitamin D on completion of loading dose treatment (around 2-3 months).
- Children should be reviewed annually for symptoms and compliance with supplements. Safe sun exposure and diet should be discussed as part of the annual review.
- Children who are asymptomatic with no reason to suspect deficiency do not generally need their vitamin D levels retesting.

4. Management of vitamin D deficiency (INITIAL serum 25(OH)D ≤25nmol/l)

4.1 Initial treatment of vitamin D deficiency[3,5]

All patients that have a serum 25(OH)D level ≤25nmol/l should be treated with vitamin D. This is currently colecalciferol preparations in Barnsley. During high dose vitamin D treatment the patient's serum calcium should be checked every 4 weeks.

There are two options for the treatment of vitamin D deficiency; **high dose treatment** **or** **high dose poor compliance treatment** (see below). They do not routinely recommend administration of vitamin D as an intramuscular dose. (Please note these doses may differ from doses recommended by currently licensed preparations).

4.1.1 Option 1 – High dose treatment

Dose depends on age:

Suggested dosing based on NICE Clinical Knowledge summary vitamin d deficiency and the BNFc[4,5]	**Barnsley formulary preparation**
1 month-5 months- 3000 units daily as an oral dose for 8-12weeks	*Thorens® 10,000 units/ml 0.3ml (15 drops) oral dose daily for 8 weeks (prescribe 20ml) *InVita®-25,000iu (1 single-dose oral solution every week for 7 weeks** **Pro D3® Vegan Liquid – 2,000iu/ml 1.5ml oral dose daily (Only to be prescribed for vegan patients. Prescribe 100-150ml)
6mths – 11 years- 6000 units daily as an oral dose for 8-12 weeks	*Thorens® 10,000 units/ml 0.6ml (30 drops) oral dose daily (prescribe 40ml) *InVita®-25,000 (2 single-dose oral solution every week for 7 weeks) ** Pro D3® Vegan Liquid – 2,000iu/ml 3.0ml oral dose daily (Only to be prescribed for vegan patients. Prescribe 200-250ml)
12yrs-17yrs-10,000 units daily as an oral dose for 8-12 weeks.	*Thorens® 10,000units/ml 1.0ml (50drops) dose daily (prescribe 60-80ml) *InVita®-25,000iu (3 single-dose oral solution every week for 7 weeks **Pro D3® Vegan Liquid – 2,000iu/ml 5.0ml oral dose daily (Only to be prescribed for vegan patients. Prescribe 300-400ml)

*Off label dose (unlicensed dose)
**Unlicensed preparation

4.1.2 Option 2 – High dose poor compliance treatment (for patients 12 years and over if poor compliance anticipated.

Please discuss with paediatrician before prescribing.

300 000 units either as a single oral dose or two divided doses.

4.1.3 Calcium Supplementation[3,5,8,]

Always consider the need for calcium supplementation. Many children with vitamin D deficiency will have a depleted calcium status and/or a poor calcium intake and may therefore benefit from advice about dietary calcium intake (see Appendix B). The recommended daily intake of calcium is:

- **Age younger than 12 months**: 525 mg (13.1 mmol).
- **Age 1–3 years**: 350 mg (8.8 mmol).
- **Age 4–6 years:** 450 mg (11.3 mmol)**.**
- **Age 7–10 years**: 550 mg (13.8 mmol).
- **Age 11–18 years (boys):** 1000 mg (25.0 mmol)**.**
- **Age 11–18 years (girls):** 800 mg (20.0 mmol).

If the child or young person has an inadequate dietary calcium intake**,** advise on dietary measures to correct this. (Appendix B)

Patients who are either unwilling or unable to increase dietary calcium intake may require calcium supplementation. The additional doses are:

- **Age 1 month – 4 years:** 0.25 mmol (10 mg) per kg four times daily, adjusted to response.
- **Age 5 – 12 years:** 0.2 mmol (8 mg) per kg four times daily, adjusted to response.
- **Age 12–18 years:** 10 mmol (400 mg) four times daily, adjusted to response.

These doses would need to be sourced via self-care.

4.1.4 Prescribing information for vitamin D[4]

Side effects	Hypercalcaemia, polyuria, polydipsia, nausea & vomiting, diarrhoea, sweating, headache & vertigo (side effects unlikely unless hypervitaminosis D occurs e.g. following overdose)
Drug interactions	Increased risk of hypercalcaemia when vitamin D given with thiazide and related diuretics. Drugs containing digitalis and other cardiac glycosides - the use of digitalis glycosides in the presence of hypercalcaemia due to vitamin D administration might result in arrhythmias. Strict medical supervision is needed, together with serum calcium concentration and electrocardiographic monitoring if necessary Vitamin D requirements possibly increased when given with medication that increases vitamin D metabolism e.g. barbiturates, carbamazepine, phenytoin or primidone
Contraindications	Hypercalcaemia, metastatic calcification and sarcoidosis and other granulomatous disease

4.2 Follow-up after treatment for vitamin D deficiency[5]

Unless already referred to an outpatient clinic then follow-up should be in primary care.

- If an individual has been treated for deficiency then a repeat bone profile and 25-hydroxyvitamin D concentration should be performed shortly after completion of high dose treatment (i.e3-4 months after commencement of treatment)
- Serum 25 hydroxyvitamin D concentration ≥50nmol/L should be expected. In this case the patient's carer should be signposted to local pharmacy, health food shops for self-care purchase of a suitable vitamin D supplement containing 200-440IU/day (dependent on age- see Appendix A). This should be continued at least until completion of growth, unless there is a significant lifestyle change to improve vitamin D status. Supplementation should start after completion of high dose treatment.
- Serum 25 hydroxyvitamin D concentration ≤50nmol/L may indicate lack of compliance. Re-treatment may be repeated using high dose treatment (for children age 12 and over) ONLY after discussion with secondary care paediatrician.
- If compliance is satisfactory referral to secondary care should be considered.
- Discuss with secondary care if you have any concerns about vitamin D toxicity.

- NHS Barnsley CCG in line with NHS England recommendations does not promote the prescribing of vitamin D for maintenance or preventative therapy. Children requiring maintenance or preventative therapy should be advised to purchase a suitable supplement over the counter preparation in line with the Barnsley self-care guidance **https://best.barnsleyccg.nhs.uk/clinical-support/medicines/prescribing-guidelines/Self_Care_Guidance.pdf**. NHS England does not classify maintenance or preventative treatment as exceptions.

If in exceptional circumstances with clinical assessment a prescriber has concerns that a parent/guardian might be unable/unwilling to self-care then a prescription (FP10) may be considered. See Appendix A - Vitamin D supplementation- maintenance treatment

5. Management of insufficiency (INITIAL serum 25(OH)D between 26 and 50nmol/l)[1,3,5]

Vitamin D supplementation with vitamin D at a dose of 8.5–10micrograms (340 - 400 units) per day (dose dependent on age – see Appendix A vitamin D supplementation). This should be continued at least until completion of growth, unless there is a significant lifestyle change to improve vitamin D status. General advice regarding maintenance of vitamin D levels from safe sun exposure and diet should also be given

Healthy Start children's vitamin drops are available at low cost from all children's centres and free to families eligible for Healthy Start vouchers. As with children with vitamin D deficiency, consideration should always be given to calcium intake and potential need for calcium supplementation.

If insufficiency is being treated, an individual is asymptomatic and they are compliant with supplements then a re-test of vitamin D levels is **not** normally required.

6. PHE advice for all children[1]

Children aged 1 to 4 years should have a daily 10 microgram vitamin D supplement. PHE recommends that babies are exclusively breastfed until around 6 months of age. As a precaution, all babies under 1 year should have a daily 8.5 to 10 microgram (340IU-400IU) per day of vitamin D supplement to ensure they get enough. Children who have more than 500ml of infant formula a day do not need any additional vitamin D as formula is already fortified (See Section 1 for further information and Appendix A for available vitamin preparations)

Vitamin D supplements are available free-of-charge for low-income families on the Healthy Start scheme from Children's centres across Barnsley. General advice regarding maintenance of vitamin D levels from safe sun exposure, diet and over the counter supplements should be given.

Note from SACN report[8] – There is insufficient data to set RNIs for children aged under 4y, Safe Intakes[1] are being recommended for this age group (8.5-10 µg/340-400 IU per day for all infants aged under 1y and 10 micrograms/400 IU per day for ages 1 up to 4y). It is acknowledged that Healthy Start vitamins contain 7.5 micrograms / 300units per dose. However, the use of healthy start vitamins alongside dietary intake and safe sun exposure is first choice for children in Barnsley up to 4 years of age. Self-care with OTC preparations are advised for older children.

Appendix A

Available Preparations for treatment of deficiency

Licensed products should be used where available.

In general, UK licensed products and imported products licensed in a country of origin with a strong regulatory framework (e.g. another EU country) should be considered of high quality. In the same vein, UK manufactured special products made in MHRA-licensed facilities would be considered to offer an improved risk position compared with imported products not licensed in the country of origin. Nutritional supplements are generally subject to food safety labelling legislation and whilst this excludes them from a formal licensing process they may be considered a potentially useful option in some circumstances following a consideration of the risks.

Examples of licensed products (Recommended doses may be off-license).

Product	Licensed dose for treatment deficiency	Dosage / quantity required to meet dosing recommendations in guidance (off label use – counsel patient accordingly)	Other considerations
THORENS® 10 000 units /ml oral drops, solution	Infants 1000IU (5 drops) per day Children 1-10yrs 2000IU (10 drops) per day Children 11yrs+ 4000IU (20 drops) per day for 6 weeks, Thereafter the patients' parent/guardian should be encouraged to purchase a multivitamin containing 10micrograms(400IU) vitamin D or vitamin D tablets/capsules alone if appropriate to do so	1 month-5 months- 3000 units daily as an oral dose for 8-12weeks: 0.3ml oral dose daily (prescribe 20ml) 6mths – 11 years- 6000 units daily as an oral dose for 8-12 weeks: 0.6ml oral dose daily (prescribe 40-50ml) 12yrs-17yrs-10,000 units daily as an oral dose for 8-12 weeks: 1.0ml dose daily (prescribe 80-100ml)	An olive oil-based solution Peanut, soya and gelatin free. Suitable for halal and kosher diet. Suitable for vegetarians (not vegans).

Product	Licensed dose for treatment deficiency	Dosage / quantity required to meet dosing recommendations in guidance (off label use – counsel patient accordingly)	Other considerations
InVita® D3 25,000 units / ml oral solution (colecalciferol)	0-18 years - 25,000 units every 2 weeks for 6 weeks. Thereafter the patients' parent/guardian should be encouraged to purchase a multivitamin containing 10micrograms vitamin D or vitamin D tablets/capsules alone if appropriate to do so	1month to 5 months 3,000 IU daily for 8 -12 weeks: 25,000 units weekly for 7 weeks 6months – 11years 6,000 IU daily for 8–12 weeks: 50,000units weekly for 7 weeks 12yrs – 17yrs 10,000 IU daily for 8–12 weeks: 75,000units weekly for 7 weeks.	An olive oil based solution presented in 1ml (25,000 units) single dose 'snap and squeeze' plastic ampoule D3 is sourced from lanolin from sheep's wool. Suitable for vegetarians (not vegans) Gelatine-free, PEG-free, peanut oil free

Product	Licensed dose for treatment deficiency	Dosage / quantity required to meet dosing recommendations in guidance (off label use – counsel patient accordingly)	Other considerations
Fultium D3 drops 2740IU/ML	Infants aged 0 up to 2 year- 6 – 15 drops (400 – 1,000 IU) daily. Children aged 2 years to 11 years - 6 – 30 drops (400 – 2,000 IU) daily Adolescents aged 12 years to 18 years - 6 – 60 drops (400 – 4,000 IU) daily. Thereafter the patients' parent/guardian should be encouraged to purchase a multivitamin containing 10micrograms (400IU) vitamin D or vitamin D tablets/capsules alone if appropriate to do so.	1 month-5months- 3000IU daily as an oral dose (45 drops) 6mths-11yrs – 6000IU daily (90drops) 12yrs-17yrs – 10,000IU daily (use alternate product)	Suitable for vegetarians but not vegans

Examples of unlicensed products/licensed product being used in an unlicensed manner

Product	Suggested dosing for Deficiency (Off license dose)	Other considerations
THORENS® 25 000 units /2.5 ml oral solution (unlicensed for use in children).	1-17 years 25000 units (1 bottle) once every 2 weeks for 6 weeks. Thereafter the patients' parent/guardian should be encouraged to purchase a multivitamin containing 10micrograms (400IU) vitamin D or vitamin D tablets/capsules alone if appropriate to do so	An olive oil based solution presented as a single-dose bottle of 2.5 ml oral solution. Peanut, soya and gelatin free. Suitable for halal and kosher diet. Suitable for vegetarians (not vegans). Note Thorens 25.000IU is a licensed product which is unlicensed for use in children.
Pro D3® 2,000units/ml (colecalciferol 2,000units/ml) Does not have UK marketing authorisation. Marketed as a nutritional supplement.	1 month-5 months – 3000 units (1.5ml) daily for 4 weeks (supply 50ml bottle) 6 months–2 years – 3000 units (1.5ml) daily for 8 weeks (supply 100ml bottle) 2-8 years – 6,000 units (3ml) daily for 6 weeks (supply 150ml bottle) 8-11 years – 6,000 units (3ml) daily for 8 weeks (supply 200ml bottle) 12 years and over – Prescribe as Pro D3 10,000 unit capsules unless problems with taking solid dosage forms. Thereafter the patients' parent/guardian should be encouraged to purchase a multivitamin containing 10micrograms (400IU) vitamin D or vitamin D tablets/capsules alone if appropriate to do so.	Gelatin Free. Halal approved. Free from peanut and soya related Ingredients. Prescribe as Pro D3 2,000iu/ml liquid to avoid uncontrollable high cost of unlicensed specials Prescribers and pharmacists should ensure the dose is written in units and milliliters and the patient / carer is counselled appropriately.

Product	Suggested dosing for Deficiency (Off license dose)	Other considerations
Pro D3® 10,000 units / capsule. (colecalciferol 10,000units / capsule) Does not have UK marketing authorisation. Marketed as a nutritional supplement.	12 years and over – 10,000 units (1 capsule) daily for 8 weeks Thereafter the patients' parent/guardian should be encouraged to purchase a multivitamin containing 10micrograms (400IU) vitamin D or vitamin D tablets/capsules alone if appropriate to do so.	Gelatin free. Halal approved. Free from peanut and soya related Ingredients. Prescribe as Pro D3 10,000IU capsules
Pro D3® vegan Drops 100IU/drop Does not have UK marketing authorisation. Marketed as a nutritional supplement.	0-1yrs - 3 to 4 drops daily (300IU-400IU). Unless they are receiving over 500ml of infant formula milk daily as this is already fortified with vitamin D). 1-4yrs- 4 drops daily (400IU) Thereafter the patients' parent/guardian should be encouraged to purchase a multivitamin containing 10micrograms (400IU) vitamin D or vitamin D tablets/capsules alone if appropriate to do so.	Gelatin free. Halal approved. Free from peanut and soya related Ingredients. Vegan approved. Prescribe as Pro D3 Vegan Drops 100IU/drop
Pro D3® Vegan Liquid 2000IU/ml Does not have UK marketing authorisation. Marketed as a nutritional supplement.	6months-12yrs -0.2ml-0.4ml daily(400IU-800IU) Thereafter the patients' parent/guardian should be encouraged to purchase a multivitamin containing 10micrograms (400IU) vitamin D or vitamin D tablets/capsules alone if appropriate to do so	

Vitamin D supplementation- maintenance treatment

Public Health England recommends all infants and young children aged 6 months to 5 years should take a daily supplement containing vitamin D in the form of vitamin drops, to help them meet the requirement set for this age group of 7-8.5 micrograms of vitamin D per day. However, those infants who are fed infant formula may not need vitamin drops until they are receiving less than 500ml of infant formula a day, as these products are fortified with vitamin D. Breastfed infants may need to receive drops containing vitamin D from one month of age if their mother has not taken vitamin D supplements throughout pregnancy.

Vitamin D supplementation should continue in children with a history of vitamin D deficiency or insufficiency unless there has been significant lifestyle change to improve vitamin D status. Children with low exposure to sunlight, for example those who cover their skin for cultural reasons, who are housebound or confined indoors for long periods and children who have darker skin, for example people of African, African-Caribbean and South Asian origin, should also continue on supplements because their bodies are not able to make as much vitamin D. Parents/carers should be encouraged to purchase a suitable supplement over the counter. Barnsley self care guidance can be accessed at https://best.barnsleyccg.nhs.uk/clinical-support/medicines/prescribing-guidelines/Self_Care_Guidance.pdf

Available multivitamin / vitamin D preparations

* correct in June 2021

Product	Vitamin D content	Distributor	Costings*	Dose	Other considerations
Healthy Start Drops (10ml). Multivitamin preparation	Colecalciferol 7.5micrograms (300 units) per 5 drops	**http://www.nhs.uk/ServiceDirectories/Pages/ServiceSearchAdditional.aspx?ServiceType=HealthyStartVitamins.** Also available from most wholesalers	Patients should be signposted to a children's centre. Healthy Start vitamin drops for children are available free to those eligible for Healthy Start vouchers and at low cost to those not eligible. (£2.10/bottle/ 2 month supply).	7.5 micrograms (300 units) / dose (5 drops)	All children's centres sell Healthy Start vitamins. They are also available from some pharmacies. Free from soya and peanut residues. All breastfed babies will receive their first free two month supply from their health visitor upon their 14 day visit. All bottle fed babies will receive a voucher from their health visitor once they are on less than 500ml of infant formula. All children classed as at risk of vitamin D deficiency will have been identified by their GP or health visitor. A sticker in their red book will identify those at risk. These children will be able to obtain free healthy start vitamins from children's centres up until the child's fourth birthday.

Product	Vitamin D content	Distributor	Costings*	Dose	Other considerations
Dalivit (25ml or 50ml bottles). Multivitamin preparation Licensed product.	Ergocalciferol 400 units per 0.6 ml	Via all wholesalers	£6.50/25ml; £11.36/50ml – OTC prices	6 weeks – 1 year – 200 units = 0.3ml = 7 drops daily **≥ 1 year** 400 units = 0.6ml = 14 drops daily	Can be added to squash, juice, milk or jam for ease of administration. Does not contain peanut oil or soya Contains 5000IU/14 drops (0.6ml) of vitamin A - Advise patients not to exceed the stated dose. When using this multivitamin preparation, they should also take into consideration vitamin A that is obtained from the diet, in order to prevent excessive intake.
Abidec (25ml) Multivitamin preparation Licensed product.	Ergocalciferol 400 units per 1.6ml	Via all wholesalers	£3.16/25ml –OTC price	Birth – 1 year – 200 units = 0.3ml = 7 drops daily **≥ 1 year** 400 units = 0.6ml = 14 drops daily	Contains peanut oil. Contraindicated in patients with a peanut allergy. Also avoid in patients with a soya allergy.
Invita D3 2,400 units/ml oral drops, solution (POM)	Colecalciferol 2,400 units/ml - 1 drop contains 1.67microgram cholecalciferol, equivalent to 67 units vitamin D3.	Via all wholesalers	£3.60/10ml (POM – NHS price)	Prevention of deficiency 0–1 years - 400 units = 6 drops daily 1-18 years - 600 units = 9 drops daily	An olive oil based solution. D3 is sourced from lanolin from sheep's wool- company confirmed product suitable for vegetarians. Gelatine-free, PEG-free, peanut oil free

Product	Vitamin D content	Distributor	Costings*	Dose	Other considerations
Adcal D3 chewable tablets / caplets Contains calcium and vitamin D	Chewable tablets - Colecalciferol 400 units /tablet (and 600mg Calcium) Caplets – colecalciferol 200 units/caplet (and 300mg Calcium)	Via all wholesalers	£1.85 £1.47/28 day supply (NHS price)	Chewable tablets – One daily (only licensed in children above 12 years) Caplets – One caplet Twice daily (only licensed in children above 12 years)	Please note the difference strengths between the chewable tablets and the caplets Contains soya oil in the chewable tablets. Refer to SPC for full list of excipients. Some calcium-containing preparations are poorly tolerated so consider compliance. Dietary adjustment is often a better way to increase calcium intake than supplementation – See Appendix B
Supermarket and Pharmacy own brand products.	Various strengths		Various	Confirm by age on packets	Please check the vitamin D content is suitable for age range of child and be mindful vitamin A dose does not exceed max daily doses.

Appendix B.

Dietary reference values for calcium.

Please see attached document for required calcium intake and table of calcium rich foods

BDA-Calcium.pdf

References.

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7. British Nutrition Foundation-Nutritional daily requirements https://www.nutrition.org.uk/attachments/article/234/Nutrition%20Requirements_Revised%20Oct%202016.pdf < Accessed 11/06/2020>
8. British Dietetic Association guidelines <Accessed 11/03/2020> https://www.bda.uk.com/uploads/assets/b1f5f83d-fdd0-41be-b7ef16c174fdcbc8/Calcium2017-food-fact-sheet.pdf
9. Scientific Advisory Committee on Nutrition (SACN) – Vitamin D and Health https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/537616/SACN_Vitamin_D_and_Health_report.pdf <Accessed June 2021>

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