

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

The full guidance can be found at: <https://best.barnsleyccg.nhs.uk/clinical-support/medicines/prescribing-guidelines/Vitamin%20D%20children.pdf>

DO NOT ROUTINELY TEST FOR VITAMIN D DEFICIENCY – ONLY TEST IF:

Does patient have symptoms of vitamin D deficiency?

Symptoms and signs of rickets:

- Progressive / abnormal bowing of legs
- Progressive knock knees
- Painful wrist swelling
- Rachitic rosary (swelling of the costochondral junctions)
- Craniotabes
- Delayed tooth eruption and enamel hypoplasia
- Bone Pain

Does patient have other symptoms or conditions associated with vitamin D deficiency?

- Long-standing (3 months +) unexplained bone pain
- Muscular weakness
- Features of hypocalcaemia
- Cardiomyopathy (in infants)

Children and young people at higher risk of vitamin D deficiency include those with:

- Insufficient exposure to sunlight (housebound etc.)
- Ethnic minority groups with darker skin
- Nutritional deficiency (inc prolonged breastfeeding/delayed weaning)
- Chronic disease morbidities (i.e.CF or Coeliac-malabsorption syndrome)
- Use of certain drugs (i.e. corticosteroids, anti- epilepti drugs, anti-convulsants)
- Obesity
- Family history of vitamin D deficiency

Consider alternative diagnosis (this list is not exhaustive):

- Certain cancers.
- Fibromyalgia.
- Fracture.
- Osteomyelitis.
- Paget’s disease of the bone.
- Parathyroid disease.
- Rheumatoid arthritis.
- Polymyositis and dermatomyositis.
- Thyroid disease.
- Muscular dystrophies

↓ YES

Test for vitamin D deficiency by measuring serum 25-hydroxyvitamin D (25[OH]D) levels

To aid diagnosis and rule out of other concerns considering arranging:

A radiological assessment, if rickets is suspected. Bone profile (calcium, phosphate, ALP), renal, liver and thyroid function tests, parathyroid hormone (PTH) level (in children, raised PTH levels are usually due to vitamin D or calcium deficiency), FBC including haemoglobin and ferritin levels (to identify other possible vitamin deficiencies), malabsorption screen, rheumatoid and other autoimmune screening and inflammatory markers.

Serum 25(OH) D levels are above 50nmol/L = **ADEQUATE**

Serum 25(OH) D levels are in the range 25 – 50nmol/L = **INSUFFICIENT**

Serum 25(OH) D levels are less than 25nmol/L = **DEFICIENT**

DO NOT PRESCRIBE VITAMIN D
ADVISE MEASURES TO PREVENT VITAMIN D DEFICIENCY (lifestyle advice and OTC supplements).

Children (0-4yrs, unless having more than 500ml formula) and those at risk of vit D deficiency should have a daily 10mcg (400IU) vitamin d supplement (all year). Other children and young adults living in the UK should take a daily supplement of 10mcg (400IU) vitamin D throughout October to March inclusive)

If a child or young person has musculoskeletal symptoms despite adequate level, consider alternative diagnosis.

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Check adequacy of calcium intake.
RETESTING IS NOT NORMALLY REQUIRED IF THE CHILD IS ASYMPTOMATIC AND COMPLIANT WITH PREVENTATIVE MEASURES.

TREAT FOR DEFICIENCY
(PRESCRIBE LOADING DOSE – see table 1)

Check adequacy of calcium intake. Check serum calcium levels before treatment and every 4 weeks during high dose vitamin D treatment. Where hypercalcaemia is a concern contact secondary care for advice.

Loading doses should be followed by daily supplemental doses (see table 2) as self-care where the patient or parents/carers are willing and able.

Refer to secondary care or seek specialist advice if the child or young person:

- **Is suspected to have a serious underlying condition such as cancer.**
- **Has hypocalcaemia and symptomatic, refer immediately to A&E.**
- **Has clinical features of rickets.**
- **Has other musculoskeletal symptoms.**
- **Has hypocalcaemia and asymptomatic, seek specialist paediatrician advice**
- **Has raised alkaline phosphate (2 x upper limit of normal for age) seek specialist paediatrician advice.**
- **Has a malabsorption disorder or other condition which causes vitamin D deficiency.**
- **Is taking a drug that can increase the risk of vitamin D deficiency.**

Management and Prescribing Information

Vitamin D Treatment Regimens for Children and Young Adults

Treatment (Check adequacy of calcium intake)	Dose (Vitamin D international units)	Regimen	Formulary choice (Prescribe by brand)	Cost per course	Full quantity to prescribe (Acute prescription)	Considerations correct as of August 2021
Deficiency <25nmol/L	Age 1 – 5 months 3,000 IU daily for 8 – 12 weeks.	3,000 units once a day for 8 weeks	Thorens 10,000 I.U./ml oral drops, 15 drops (0.3ml) once daily	£11.70	2 x 10ml	<p><u>Thorens 10,000 I.U./ml oral drops</u></p> <ul style="list-style-type: none"> o The dropper supplied with Thorens 10 000 I.U./ml oral drops is calibrated to deliver a dose in drops only. Please note that a dose administered in millilitres or not delivered using the dropper supplied (i.e. an 1ml oral syringe) would be outside the terms of product license. o Gelatine free, suitable for patients with soya/peanut allergy and vegetarians/vegans. o Thorens 10,000units/ml oral drops are licensed for use in the paediatric population. The SPC states national posology recommendations in the prevention and treatment of vitamin D deficiency can be followed. o Please note that Thorens 25,000units/ml oral solution is not licensed in children. <p><u>Invita D3 25,000 units/1ml single dose oral solution</u></p> <ul style="list-style-type: none"> o Doses used vary from those provided in the SPC and are off-license. o *These doses are an extrapolation of the dose for ergocalciferol (which is equivalent to colecalciferol), as per the BNF, RCPCH (Royal College of Paediatrics and Child Health) & NOS (National Osteoporosis Society). The daily dose has been scaled up to a measurable weekly dose. o Suitable for vegetarians. Free from gelatin, nuts, lactose and soya. <p><u>Administration</u></p> <p>Either formulation may be mixed with a small amount of milk or cold or lukewarm food immediately before administration.</p> <p><u>Allergies</u></p> <p>If a patient has an allergy it is important this is highlighted to their doctor or pharmacist so the relevant product may be checked for suitability at the point of dispensing (noting that manufacturers can change their formulations at any time).</p> <p>Where a patient requires a specific formulation, or the above recommendations are not suitable Please contact the Medicines Optimisation Team via CAPCCG.prescribingpartnership@nhs.net for further advice and support.</p>
		25,000 units weekly for 7 weeks	Invita D3 25,000 I.U. - ONE x 1ml (single dose oral solution unit) as a single dose, once a week.		7 single-dose units	
	Age 6 months – 11 years 6,000 IU daily for 8 – 12 weeks.	6,000 units once a day for 8 weeks	Thorens 10,000 I.U./ml oral drops, 30 drops (0.6ml) once daily	£23.40	4 x 10ml	
		50,000 units weekly for 7 weeks	Invita D3 25,000 I.U. -TWO x 1ml (single dose oral solution unit) as a single dose, once a week.		14 single-dose units	
	Age 12 – 17 years 10,000 IU daily for 8 – 12 weeks.	10,000 units once a day for 8 weeks	Thorens 10,000 I.U./ml oral drops, 50 drops (1ml) once daily	£35.10	6 x 10ml- 8 x 10ml	
		75,000 units weekly for 7 weeks	Invita D3 25,000 I.U. -THREE x 1ml (single dose oral solution unit) as a single dose, once a week.		21 single-dose units	
Insufficiency 25 – 50nmol/L	Advise on measures to prevent vitamin D deficiency through self-care. Retesting is not normally required if the child or young person is asymptomatic and compliant with preventative measures.		Where a patient is supplied vitamin D deficiency treatment in hospital, the full course length should be supplied by the hospital (please note vitamin D formulations may differ between primary and secondary care and conversion between products should be completed carefully with the patient and their parents/carers counselled fully BEFORE any change is made to avoid any dosing errors.			
Adequate/Sufficiency >50nmol/L	Sufficiency (for almost the whole population) No treatment required; Provide reassurance and advise on measures to prevent vitamin D deficiency.		If you have concerns about compliance with the above regimens, please see specialist advice or refer to secondary care for alternative treatment options to be discussed.			
			This document was adapted from Cambridge and Peterborough CCG in line with NHS Barnsley CCG Guidelines for the Management of Children and Young Adults with suspected Vitamin D Deficiency.			
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