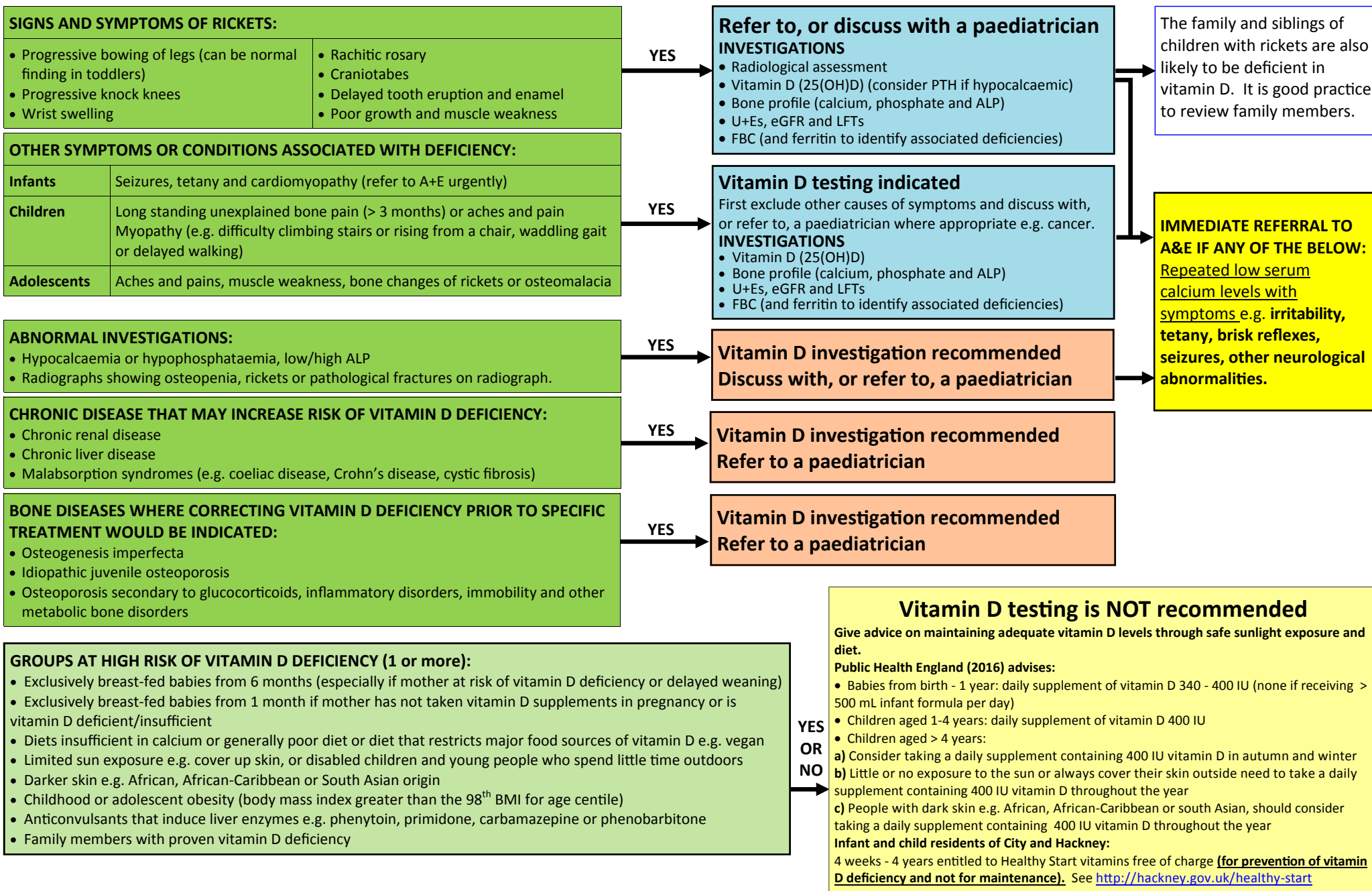
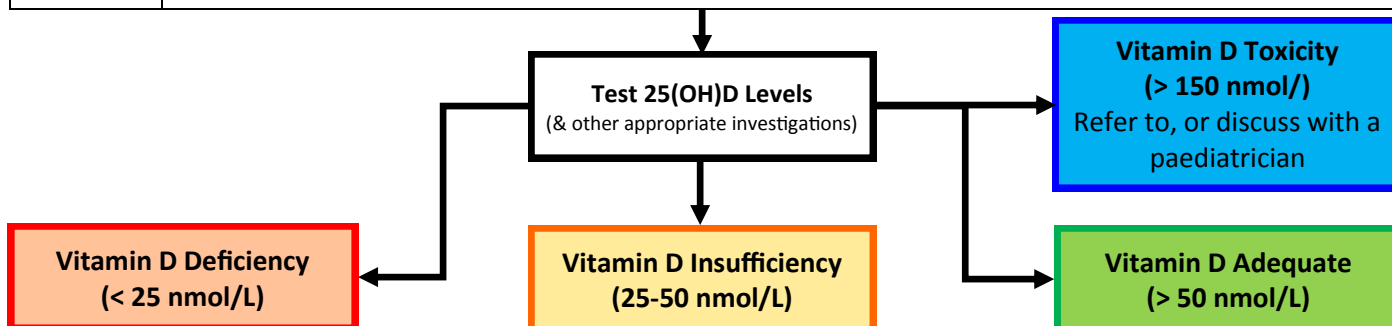


## Indication for Investigation of Vitamin D Levels in Children and Young People in Primary Care



# Interpretation of Vitamin D Levels and Management in Children and Young People

Patient presents with following signs and symptoms (please also see page 1 of guidance)	
<b>Infants</b>	Seizures, tetany and cardiomyopathy (if suspected refer to A+E urgently)
<b>Children</b>	Long standing unexplained bone pain (> 3 months) or aches and pain Myopathy (e.g. difficulty climbing stairs or rising from a chair, waddling gait or delayed walking) Signs and symptoms of rickets e.g. bowed legs, knock knees, wrist swelling, poor growth, muscle weakness
<b>Adolescents</b>	Aches and pains, muscle weakness, bone changes of rickets or osteomalacia.



**A) VITAMIN D DEFICIENCY WITHOUT RICKETS OR HYPOCALCAEMIA**

**Prescribe Oral Colecalciferol Loading Regimen**  
(ensure adequate dietary calcium intake)

<b>1 - 6 months</b>	3000 IU daily for 8 weeks*
<b>6 months - 12 years</b>	6000 IU daily for 8 weeks*
<b>12 - 18 years</b>	10 000 IU daily for 8 weeks*

Discuss with, or refer to a paediatrician if patient has granulomatous disease e.g. TB, sarcoidosis  
\*Using clinical judgement may prescribe for up to 12 weeks, where appropriate.

**B) VITAMIN D DEFICIENCY WITH HYPOCALCAEMIA**  
**Symptomatic:** urgent referral to A+E  
**Asymptomatic:** discuss with paediatrician.

**C) VITAMIN D DEFICIENCY WITH RICKETS**  
Discuss with 'hot line' paediatrician. See above for dose of colecalciferol, discuss treatment duration with paediatrician.

**Maintenance Therapy for 1 month to 18 years**

**Oral preparations containing Colecalciferol 400 - 600 IU daily**

To continue until significant changes made to improve vitamin D status then follow Public Health England (2016) guidance.  
**Ensure child has adequate dietary calcium and give advice on safe sunlight exposure and diet.**  
**Foods rich in vitamin D include:**

- Oily fish e.g. salmon, sardines, herring, fresh tuna and mackerel
- Egg yolks, red meat and liver
- Fortified foods e.g. some breakfast cereals and yoghurts, margarine and infant formula

**Monitoring and Assessment**  
Retesting is not normally required if patient is asymptomatic and compliant with vitamin D supplements

If symptomatic consider alternative diagnosis as unlikely to be related to vitamin D deficiency. Give advice on maintaining adequate vitamin levels through safe sunlight exposure and diet.

**Public Health England (2016) advises:**

- Babies from birth - 1 year: daily supplement of vitamin D 340 - 400 IU (none if receiving > 500 mL infant formula per day)
- Children aged 1-4 years: daily supplement of vitamin D 400 IU
- Children aged > 4 years:
  - a) Consider taking a daily supplement containing 400 IU vitamin D in autumn and winter
  - b) Little or no exposure to the sun or always cover outside need to take a daily supplement containing 400 IU vitamin D throughout the year
  - c) People with dark skin e.g. African, African-Caribbean or south Asian, should consider taking a daily supplement containing 400 IU vitamin D throughout the year.

**Infant and child residents of City and Hackney:**  
4 weeks - 4 years entitled to 'Healthy Start' vitamins free of charge **(for prevention of vitamin D deficiency and not for maintenance).**  
See <http://hackney.gov.uk/healthy-start>

**Monitoring and Assessment**

At the end of the course of treatment test vitamin D (25(OH)D), calcium, phosphate and ALP (and PTH if rickets or hypocalcaemia).

- **If 25(OH)D > 50 nmol/L and bone profile normal:**  
See under vitamin D insufficiency for maintenance therapy.
- **If 25(OH)D > 50 nmol/L and bone profile abnormal:**  
Discuss with, or refer to, a paediatrician.
- **If 25(OH)D < 50 nmol/L:** Discuss with, or refer to a paediatrician. Consider poor compliance, drug interactions or underlying disease e.g. renal disease, liver disease, malabsorption.
- **If 25(OH)D > 50 nmol/L and symptoms not improved:**  
Discuss with, or refer to, a paediatrician as unlikely to be related to vitamin D deficiency.

- Colecalciferol (Vitamin D3) to be prescribed by BRAND NAME (see table 1)
- Treatment dose to be prescribed by GP and regimen explained to patient
- Patients should be encouraged to purchase maintenance dose and provided with the CCG vitamin D leaflet
- GPs can prescribe maintenance dose if they strongly believe a patient is unlikely to purchase vitamin D, or where **clinically appropriate**. Products of choice are SunVit-D3® 400 IU tablet, Thorens® oral drops, Abidec® or Dalivit®

Check and ensure child is not supplemented with extra vitamin D during treatment e.g. multivitamins  
All products below are nutritional supplements and hence unlicensed

Colecalciferol Preparation	Daily Loading Dose (see under vitamin D deficiency for duration of treatment)	Cost
<b>SunVit-D3® Oral Solution</b> 2 000 IU/mL	1-6 month 3 000 IU daily for 8-12 weeks 6 month-12 year 6 000 IU daily for 8-12 weeks 12-18 year 10 000 IU daily for 8-12 weeks	£17.80 - £26.70 £35.60 - £44.50 £53.40 - £62.30
<b>Aciferol® Liquid</b> 2 000 IU/mL	1-6 month 3 000 IU daily for 8-12 weeks 6 month-12 year 6 000 IU daily for 8-12 weeks	£18.00 - £27.00 £36.00 - £54.00
<b>SunVit-D3® Tablet</b> 10 000 IU	12-18 year 10 000 IU daily for 8-12 weeks	£13.98 - £20.97

Table 1 Vitamin D3 (colecalciferol) Product Choice for Children and Young People

## City and Hackney CCG Vitamin D Products of Choice for Children and Young People

Patient Group	Product Name and Dose	Constituents	Cost	Important Dietary and Allergen Information
Eligible Children for Prevention Only (not for maintenance therapy)	<b>Healthy Start vitamin drops</b> 5 drops daily	Vitamin D3 300 IU + Vitamin C 20 mg + Vitamin A 233 micrograms per 5 drops	All infants and children 4 weeks - 4 years in City and Hackney are eligible for free vitamins.	Suitable for vegetarian* and halal* diets. Free from milk, egg, gluten, soya and peanut residues *Halal certification *Approved by Vegetarian Society
<b>Maintenance Therapy</b> Advise patients/carers to purchase vitamin D for insufficiency or maintenance after treatment of vitamin D deficiency. GPs can prescribe if they strongly believe a patient/carer is unlikely to purchase vitamin D, or where clinically appropriate. Only prescribe licensed preparations for maintenance for patients in at risk groups.  Only consider prescribing nutritional Vitamin D supplements at the GP's discretion when prescribing outside of the at risk groups.	<b>SunVit-D3® tablet</b> 400 IU daily to continue until significant changes made to improve vitamin D status (Nutritional supplement - can be purchased)	Vitamin D3 400 IU	400 IU daily £2.55 for 28 days	Suitable for vegetarian* and halal* diets. Manufacturer says to 'the best of our knowledge' our products are Kosher Free from yeast, wheat, gluten, soy, gelatine and nut products. *Halal certification *Approved by Vegetarian Society
	<b>Thorens® oral drops</b> 400 - 600 IU daily to continue until significant changes made to improve vitamin D status (Licensed POM)	Vitamin D3 10 000 IU/mL (10 mL) 6 month expiry once opened	400 IU daily = 2 drops £5.85 (lasts 6 months) 600 IU daily = 3 drops £5.85 (lasts for over 5 months)	Suitable for vegetarians. Colecalciferol in Thorens is Halal and Kosher certified. Suitable for patients with nut or soya allergies. Free from gluten, milk, milk products, lactose and yeast.
	<b>Dalivit® oral multivitamin drops</b> (Licensed medicine which can be purchased)	25 mL or 2 x 25 mL <small>Each 0.6 mL contains: Vitamin A Palmitate BP 5,000 units, Ergocalciferol Ph Eur 400 units, Thiamine hydrochloride BP 1 mg, Riboflavin BP 400 micrograms, Pyridoxine hydrochloride BP 500 micrograms, Ascorbic acid BP 50 mg, Nicotinamide BP 5 mg Use manufacturer's expiry</small>	6 weeks - 1 year: 0.3 mL daily > 1 year: 0.6 mL daily £6.19 25 mL (lasts approx. 6-12 weeks) £10.82 2 x 25 mL (lasts approx. 3-6 months)	Suitable in peanut and soya allergy Suitable for vegetarians and vegans Free from alcohol, animal products or by-products, dairy products, eggs, fish, fish oils, gelatin, gluten, soya, nuts and nut oils.
<b>Vitamin D Deficiency (&lt; 25 nmol/L)</b> <b>Oral Loading Dose Regime</b>  <b>Do not put loading dose regimen medicines on 'repeat medication list'</b>	<b>Abidec® oral multivitamin drops</b> (Licensed medicine which can be purchased)	25 mL <small>Each 0.6 mL dose contains: Retinol 1333 IU, Ergocalciferol 400 IU, Thiamine Hydrochloride 0.4 mg, Riboflavin 0.8 mg, Pyridoxine Hydrochloride 0.8 mg, Nicotinamide 8 mg and Ascorbic Acid 40 mg 4 week expiry once opened</small>	< 1 year: 0.3 mL daily > 1 - 12 year: 0.6 mL daily £3.33 25 mL (lasts 4 weeks)	<b>Contains both arachis (peanut) oil and soya</b>
	<b>SunVit-D3® solution</b> 3 000 IU daily for 8-12 weeks 6 000 IU daily for 8-12 weeks (Nutritional supplement)	Vitamin D3 2 000 IU/mL (50 mL) 3 month expiry once opened	3 000 IU daily £17.80 - £26.70 (100 mL - 150 mL) 6 000 IU daily £35.60 - £53.40 (200 mL - 300 mL)	Suitable for vegetarian* and halal* diets. Manufacturer says to 'the best of our knowledge' our products are Kosher Free from gelatine, nut products, sugar, wheat, gluten and soya. Alcohol free *Halal certification *Approved by Vegetarian Society
	<b>Aciferol® liquid</b> 3 000 IU daily for 8-12 weeks 6 000 IU daily for 8-12 weeks (Nutritional supplement)	Vitamin D3 2000 IU/mL (2 x 50 mL) 8 week expiry once opened	3 000 IU daily £18.00 - £27.00 (100 mL - 150 mL) 6 000 IU daily £36.00 - £54.00 (200 mL - 300 mL)	Suitable for vegetarians. Not Halal or Kosher certified. Free from peanuts or their derivatives (ground nuts) and not handled at site of manufacture. Free from cereals containing gluten, egg, fish, milk, nuts (tree nuts) and soya but are used on site of manufacture.
	<b>SunVit-D3® tablet</b> 10 000 IU daily for 8-12 weeks (Nutritional supplement)	Vitamin D3 10 000 IU	10 000 IU daily £13.98 - £20.97 (56 - 84 tablets)	Suitable for vegetarian* and halal* diets. Manufacturer says to 'the best of our knowledge' our products are Kosher Free from yeast, wheat, gluten, soy, gelatine and nut products. *Halal certification *Approved by Vegetarian Society

Please note, product choice may change as and when more cost effective branded products arrive on the market. The medicines management team will update accordingly.