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NHS
Royal Cornwall Hospitals
NHS Trust

Paediatric Vitamin D Clinical Guideline

V2.0

February 2023

1. Aim/ Purpose of this Guideline

1.1. To provide guidance regarding preventative and treatment Vitamin D regimes for the general paediatric population.

1.2. This version supersedes any previous versions of this document.

Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation

The Trust has a duty under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed, and documented. We cannot rely on opt out, it must be opt in.

Data Protection Act 2018 and General Data Protection Regulations 2016/679 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the Data Protection Act 2018 and General Data Protection Regulations 2016/679 please see the Information Use Framework Policy or contact the Information Governance Team

Royal Cornwall Hospital Trust rch-tr.infogov@nhs.net

2. The Guidance

2.1. PHE recommends preventative Vitamin D supplements for the general paediatric population (2016):

2.1.1. All children under 1 year to have 7-8.5 micrograms (approx. 300- 340 IU) per day all year unless on more than 500 mls of infant formula (just under a pint / approx. 17 fl oz).

2.1.2. All children 1-4 years to have 10 mcg (400 IU) per day all year.

2.1.3. All children above 5 years and adults to consider vitamin D supplementation at 10 mcg (400IU) per day in Winter/Summer and consider higher risk groups:

- People with dark skin, from African, African-Caribbean, and South Asian backgrounds, may also not get enough vitamin D from sunlight in the summer. They should consider taking a supplement all year round as well.

- People who have low or no exposure to the sun, for example those who cover their skin for cultural reasons, who are housebound or confined indoors for long periods. People who have a higher risk of vitamin D deficiency are being advised to take a supplement all year round (see below).

2.2. **Prevention:**

2.2.1. Newborn up to 1 month 300 - 400 units daily [Abidec (0.6mL), Dalivit (0.6mL), Baby D drops (1 drop) and 'Healthy Start' Vitamins].

2.2.2. 1 month – 18 years 400 units daily [Parents can get over-the-counter preparations eg: Abidec, Dalivit, Boots Ddrops, Holland & Barrett SunviteD3, DLux oral spray, SunVitD3 and Vitabiotics tablets].

2.2.3. Preparations:

- Healthy Start multivitamins currently provide only 7.5µg (300IU).
- Abidec – 0.6 ml = 400 IU / 10 mcg (contains Arachis oil, beware nut allergy).
- Dalivit – 0.6 ml = 400 IU / 10 mcg.
- Thorens oral drops = 10,000 IU/ml (2 drops = 400 IU).

2.2.4. Calcium Rich foods https://theros.org.uk/media/100233/nos_vitamin_d_and_bone_health_in_children_web.pdf

2.3. **Treatment of Insufficiency and Deficiency-** please see next page.

2.3.1. It is advised that in those patients where 25(OH) D is tested, the results be acted upon as follows (please note the ranges for deficiency are based on local endocrinology advice and high dose Vitamin D treatment is recommended at a threshold of <40 nmol/l rather than <25 nmol/L):

	Deficiency	**Insufficient**	**Adequate**	**Ideal / Optimum**
Vitamin D level (nmol/l)	< 40	40-50	50-75	>75
Treatment Dose and Type	**Aged up to 6 months:** 3,000 units daily 8 – 12 weeks (Thorens 10,000units/mL oral drops 0.3mL once daily). Recommended calcium supplementation of 200mg per day.	Give advice on dietary sources of vitamin D.	Provide reassurance and give advice on maintaining adequate vitamin D status through diet and supplements.	
	Aged 6 months - 12 years: 6,000 units daily 8 – 12 weeks (Thorens 10,000units/mL oral drops 0.6mL once daily). Recommended calcium supplementation of 260mg per day for aged 6 to 12 months. Recommended calcium supplementation of >500mg per day for aged over 12 months.	Advise oral preparations containing vitamin D (400–600 IU per day for patients aged one month to 18 years). Continue unless there is a significant lifestyle change to improve vitamin D status.		

	Deficiency	Insufficient	Adequate	Ideal / Optimum
	12 -18 years: 10,000 units daily 8 – 12 weeks (Thorens 10,000units/mL oral drops 1mL once daily). ***OR*** Fultium D3 20,000 IU capsules (Licensed >12) – 1 capsule twice a week for 15 capsules total. Recommended calcium supplementation of >500mg per day.	Ensure dietary calcium intake is adequate (see above).		
	It is recognised that equivalent weekly or fortnightly dosing is likely to be effective in treating vitamin D deficiency.	Retesting is not normally required if the individual is asymptomatic and compliant with multivitamin supplements.		
	For the under-fives **After completion of 2 months high dose, request GPs to support:** Until 5 years of age (DoH guidance). Daily maintenance treatment; as vitamin D daily dose of 400 IU which			

	Deficiency	Insufficient	Adequate	Ideal / Optimum
	can be given as Multivits such as Abidec or Dalivit 0.6 ml once daily.			
	For the over-fives **After completion of 2 months high dose, request GPs to support:** For the subsequent year. Daily maintenance treatment then Abidec or Dalivit as above (if liquids required) or Adcal D3 chewable tablets (contain calcium) or Colecalciferol 400unit capsules are also available for those able to swallow tablets.			

2.3.2. **Dietary Sources of Vitamin D:**

- oily fish – such as salmon, sardines, herring and mackerel
- red meat
- liver
- egg yolks
- fortified foods – such as most fat spreads and some breakfast cereals

2.4. Calcium supplementation

Many children with vitamin D deficiency rickets have a poor dietary calcium intake. As their bones are growing, there is a greater risk of negative calcium balance. Therefore, in children 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.

In some cases calcium supplementation may be worthwhile over the period of vitamin D treatment. These recommendations represent a represent a recommended calcium intake to prevent rickets.

- Birth – six months: 200mg per day.
- Six – 12 months: 260mg per day.
- Over 12 months: >500mg per day.

Dietary intake can be achieved through a combination of diet and supplementation as required. The dose of any supplements also needs to take into account dietary calcium intake and the size of the child.

Bone profile and vitamin D tests (and a PTH test if the patient has rickets or hypocalcaemia) are recommended to be repeated at the end of the course of treatment.

2.5. Paediatric higher risk groups:

Paediatric ''high risk' patients are:

- Children and Young people (CYP) with cerebral palsy or significant motor difficulties.
- Children and Young people (CYP) with DMD.
- Children and Young people (CYP) on long term steroids.

- Children and Young people (CYP) with epilepsy.
- Children and Young people (CYP) with renal, liver or gastrointestinal (malabsorption) disease.
- Children and Young people (CYP) who are unable to participate in outside activities or who keep covered up because of sensory difficulties.
- Children and Young people (CYP) with restricted (including vegetarian and vegan) or exclusion diets.

2.5.1. All Paediatricians should be ensuring that higher risk CYP have Vitamin D supplementation throughout the year. Minimum dose should be 400 iu (10mcg) through supplementation. Higher risk children may need higher supplementation (see below).

Some high risk CYP are on prolonged formula feeding therefore a discussion with their dietician, to calculate existing Calcium and Vitamin D intake is crucial to understand deficit.

2.5.2. **Cerebral Palsy (or significant motor disability): Great Ormond Street guidance**

Cerebral Palsy and / or significant motor difficulties (non weight bearing):

- Ensure appropriate calcium intake.
- Vitamin D supplementation at 800 (20 micrograms) to 1000iu with baseline; 6 months and annual Vitamin D levels (to maintain over 75nmol/l).
- Endorse the physio weight bearing programmes particularly in school.
- Some high risk CYP are on prolonged formula feeding therefore a discussion with their dietician, to calculate existing Calcium and Vitamin D intake is crucial to understand deficit.

2.5.3. **Neuromuscular disorders: Great Ormond Street Guidance**

- Need a specialist dosing regime according to Vitamin D levels and steroid treatment.

- Treatment should be for a minimum of 3 months and then guided by levels.

- Maintenance should also be guided by levels.

- Boys with Duchenne Muscular Dystrophy will need at least an annual vitamin D and bone profile tested.

- Calcium intake should also be considered (with dietetic help).

2.5.4. **Children and Young People on long term steroid treatment**

Vitamin D plays more of an important role for children taking steroids which affect calcium and bone metabolism in many ways:

- Treat Vitamin D levels as per specialist guidance and aim to keep levels >75 nmol/l

3. Monitoring compliance and effectiveness

Information Category	Detail of process and methodology for monitoring compliance
Element to be monitored	Compliance with guidelines.
Lead	Clinical guidelines and audit group.
Tool	Adherence to guidelines will be monitored as part of audits using a WORD or Excel template.
Frequency	Ad hoc arrangements.
Reporting arrangements	Community Paediatric Business Meeting. Paediatric Audit and Guidelines Group.
Acting on recommendations and Lead(s)	Community Paediatric Business Meeting. Paediatic Audit and Guidelines group.
Change in practice and lessons to be shared	Required changes to practice will be identified and actioned within 3 months, immediately if required. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant staff/stakeholders.

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the 'Equality, Inclusion & Human Rights Policy' or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.

Appendix 1. Governance Information

Information Category	Detailed Information
Document Title:	Paediatric Vitamin D Clinical Guideline V2.0
This document replaces (exact title of previous version):	Paediatric Vitamin D Clinical Guideline V1.0
Date Issued/Approved:	February 2023
Date Valid From:	February 2023
Date Valid To:	February 2026
Directorate / Department responsible (author/owner):	Child Health
Contact details:	01872 254516
Brief summary of contents:	Guidance regarding preventative and treatment Vitamin D for the general paediatric population
Suggested Keywords:	Vitamin D, rickets
Target Audience:	RCHT: Yes CFT: No CIOS ICB: No
Executive Director responsible for Policy:	Chief Medical Officer
Approval route for consultation and ratification:	Child Health Audit and Guidelines Meeting
General Manager confirming approval processes:	Caroline Chappell
Name of Governance Lead confirming approval by specialty and care group management meetings:	Caroline Amukusana
Links to key external standards:	None required
Related Documents:	Bristol Guidance AASPDM- Osteoporosis care pathway https://theros.org.uk/media/54vpzzaa/ros-vitamin-d-and-bone-health-in-children-november-2018.pdf

Information Category	Detailed Information
	https://theros.org.uk/media/54vpzzaa/ros-vitamin-d-and-bone-health-in-children-november-2018.pdf https://www.nhs.uk/conditions/pregnancy-and-baby/vitamins-for-children/ https://cks.nice.org.uk/vitamin-d-deficiency-in-children#!scenario:1 https://www.gosh.nhs.uk/health-professionals/clinical-guidelines/neuromuscular-disorders-prophylaxis-and-treatment-guidelines-calcium-and-vitamin-d/executive-summary-vitamin-d-and-calcium-guidance https://cks.nice.org.uk/vitamin-d-deficiency-in-children#!scenario
Training Need Identified?	No
Publication Location (refer to Policy on Policies – Approvals and Ratification):	Internet and Intranet
Document Library Folder/Sub Folder:	Clinical/ Paediatrics/ Metabolic and Endocrine

Version Control Table

Date	Version Number	Summary of Changes	Changes Made by
March 2020	V1.0	Initial version.	Dr Jo Lewis, Community Paediatrician
December 2022	V2.0	Update to reflect current treatment dose guidance (ROS, NICE). Amendment to change Trust choice of vitamin D liquid to Thorens 10,000 units/mL.	S Tierney, Pharmacist Dr Y Kumar, Consultant paediatrician

All or part of this document can be released under the Freedom of Information Act 2000

This document is to be retained for 10 years from the date of expiry.
This document is only valid on the day of printing

Controlled Document

This document has been created following the Royal Cornwall Hospitals NHS Trust Policy for the Development and Management of Knowledge, Procedural and Web Documents (The Policy on Policies). It should not be altered in any way without the express permission of the author or their Line Manager.

Appendix 2. Equality Impact Assessment

Section 1: Equality Impact Assessment (EIA) Form
The EIA process allows the Trust to identify where a policy or service may have a negative impact on an individual or particular group of people. For guidance please refer to the Equality Impact Assessment Policy (available from the document library) or contact the Equality, Diversity and Inclusion Team rcht.inclusion@nhs.net

Information Category	Detailed Information
Name of the strategy / policy / proposal / service function to be assessed:	Paediatric Vitamin D Clinical Guideline V2.0
Directorate and service area:	Child Health
Is this a new or existing Policy?	Existing
Name of individual completing EIA (Should be completed by an individual with a good understanding of the Service/Policy):	Child Health Audit and Guidelines Group
Contact details:	01872 254516

Information Category	Detailed Information
1. Policy Aim - Who is the Policy aimed at? (The Policy is the Strategy, Policy, Proposal or Service Change to be assessed)	To provide guidance regarding Vitamin D supplements and treatment for the general paediatric population.
2. Policy Objectives	As above.
3. Policy Intended Outcomes	Prevention and treatment of Vitamin D deficiency.
4. How will you measure each outcome?	See section 3.
5. Who is intended to benefit from the policy?	Staff and patients.

Information Category	Detailed Information
6a. Who did you consult with? (Please select Yes or No for each category)	• Workforce: Yes • Patients/ visitors: No • Local groups/ system partners: No • External organisations: No • Other: No
6b. Please list the individuals/groups who have been consulted about this policy.	**Please record specific names of individuals/ groups:** Child Health Audit and Guidelines Group
6c. What was the outcome of the consultation?	Approved- 19 January 2023
6d. Have you used any of the following to assist your assessment?	**National or local statistics, audits, activity reports, process maps, complaints, staff or patient surveys:** No

7. The Impact

Following consultation with key groups, has a negative impact been identified for any protected characteristic? Please note that a rationale is required for each one.

Where a negative impact is identified without rationale, the key groups will need to be consulted again.

Protected Characteristic	(Yes or No)	Rationale
Age	No	
Sex (male or female)	No	
Gender reassignment (Transgender, non-binary, gender fluid etc.)	No	
Race	No	Any information provided should be in an accessible format for the parent/carer/patient's needs – i.e., available in different languages if required/access to an interpreter if required

Protected Characteristic	(Yes or No)	Rationale
Disability (e.g. physical or cognitive impairment, mental health, long term conditions etc.)	No	Those parent/carer/patients with any identified additional needs will be referred for additional support as appropriate - i.e., to the Liaison team or for specialised equipment. Written information will be provided in a format to meet the family's needs e.g., easy read, audio etc
Religion or belief	No	All staff should be aware of any beliefs that may impact on the decision to treat and should respond accordingly.
Marriage and civil partnership	No	All staff should be aware of any marital arrangements that may have an impact on care (for example: separated parents, domestic abuse).
Pregnancy and maternity	No	
Sexual orientation (e.g. gay, straight, bisexual, lesbian etc.)	No	

A robust rationale must be in place for all protected characteristics. If a negative impact has been identified, please complete section 2. If no negative impact has been identified and if this is not a major service change, you can end the assessment here.

I am confident that section 2 of this EIA does not need completing as there are no highlighted risks of negative impact occurring because of this policy.

Name of person confirming result of initial impact assessment: Child Health Audit and Guidelines Group

If a negative impact has been identified above OR this is a major service change, you will need to complete section 2 of the EIA form available here:
Section 2. Full Equality Analysis