Guideline for the Prevention and Detection of Rickets

What is Rickets?

Osteomalacia in adults

A disease due to vitamin D deficiency and characterised by over production and deficient calcification of osteoid tissue, with associated skeletal deformities, disturbances in growth and hypocalcaemia.

How common is Rickets?

- Fairly rare but not always recognised
- There is emerging evidence from around the world that there is a resurgence of the disease
- In the United Kingdom it is predominately found amongst children of South Asian origin B
- It is most likely to occur during periods of rapid growth when the body demands high levels of calcium and phosphate
- It is usually seen in children 6-24 months

What are the risk factors?

1 Being of South Asian origin
2 Lack of exposure to sunlight
   - Dark skin
   - Cultural reasons
   - Swaddling
   - Housebound / Institutional care
3 A diet low in vitamin D
   - Maternal vitamin D deficiency
   - Breast feeding - especially prolonged without vitamin D supplementation for mother and child
4 Malabsorption syndromes
5 Liver or kidney disease
6 Children with genetic risk factors
   - Vitamin D Resistant Rickets
   - Renal Tubular Acidosis

How might Rickets present?

Hypocalcaemia
- Tetany
- Fits

Bone pain or tenderness
- Arms, Legs, Spine, Pelvis

Skeletal deformities
- Bow legs
- Knock knees
- Bone changes most evidence at the lower end of the radius and ulna

Dental deformities
- Delayed formation of teeth
- Defects in the structure of teeth

Impaired growth
Decreased muscle development
Delayed walking

What are the clinical indications of Rickets?

Blood tests D
- Low serum calcium
- Low magnesium
- Raised alkaline phosphatase (interpretation is dependent on bone growth)
- Raised parathyroid hormone
- Low iron and ferritin - may indicate co existing iron deficiency and malabsorption syndromes
- The presence of endomysial antibodies suggests the presence of coeliac disease
- Low vitamin D

Wrist X ray D
- Demonstrates decalcification or changes in the shape / structure of the bone

NB: These tests / investigations are not a pre-requisite for referral

When should I refer?

Refer all children presenting with a suspicion of Rickets to a Paediatrician for assessment, investigation, diagnosis, management and evaluation

Primary Prevention

Key Messages
1 Five drops daily of **Mothers and Children's Vitamin Drops** D should be recommended for:
   - Pregnant or breast feeding women B
   - Infants from 1 month E until the age of 5 years
2 Give advice on healthy weaning including information on foods containing vitamin D and calcium
3 Be proactive in seeking and advising those who should be in receipt of benefits, free fortified infant milk and supplements
4 Encourage the value of playing outdoors in a safe environment but remember "Sun Safe" guidance
5 Visit the dentist twice a year
6 Raise awareness of the risks of vitamin D deficiency in all Asian families

NB:
- Rickets is preventable
- Supplementation is cheap and effective

Examples of opportunities for maximising key messages:

- Ante natal and Post natal clinics
- Child Health Surveillance
- Health Promoting Schools Programme
- Dental Health reviews
- School curriculum
- Opportunistic counselling by primary care teams and pharmacists

DEVELOPED BY:
Bradford & Airedale Trusts, Social Services, Independent Sector, Voluntary Agencies and PACE.

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Guideline for the Diagnosis and Management of Osteomalacia in Adults

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What is Osteomalacia?

Vitamin D deficiency results in a reduced uptake of calcium and this may lead to poor mineralisation of the bone.
It is defined as "soft bones" and characterised by:

- The gradual softening and bending of the bone with varying severity of pain
- Muscle weakness
- Osteomalacia is a preventable condition that is cheap, safe and effective to treat

How do we obtain vitamin D?

- 90% of the recommended daily intake is obtained from the action of sunlight on the skin
- 10% of our vitamin D requirement is obtained through diet

Who is at risk?

Those who:

1. Are of South Asian origin
2. Have reduced exposure to sun light
   - Covering the face and body
   - Housebound/Institutional care
   - Dark skin
3. Have a diet low in vitamin D
4. Have a diet high in phytates e.g. high fibre foods
5. Have malabsorption syndromes
6. Have liver and kidney disease
7. Are pregnant and/or breast feeding - especially women of South Asian origin
8. Are aged 65 years and over

How much sunshine?

- Black clothes, glass and plastic exclude 100% ultra violet B light
- Daily exposure to the face and hands of sunlight for 15 minutes is considered to be sufficient for adequate vitamin D absorption *(World Health Organisation 1994)*
- Remember 'Sun-Safe' guidance

Which foods provide Vitamin D?

Vitamin D is fat soluble and found naturally in:

- Oily fish e.g. salmon, sardines
- Egg yolks
- Liver
- Some foods are fortified with vitamin D e.g. margarine and a few breakfast cereals

Who requires supplementation? (D)

Consider preventative measures by prescribing prophylactic vitamin D to:

- At risk adults up to 64 years - 10 microgrammes (mcg) daily
- Everyone 65 years and over - 20 mcg daily
- Pregnant and lactating women - Five drops daily of **Mothers and Children's Vitamin Drops**

Presentation of Osteomalacia

- Bone pain
- Muscle pain
- Generalised body aches and pains
- Muscle weakness (especially proximally)
- Change in gait

GRADE OF EVIDENCE

- (A) Randomised control trials
- (B) Controlled studies
- (C) Robust experimental or observation studies
- (D) National expert consensus opinion
- (E) Local expert consensus opinion

READ CODES

4 Byte	C415.	Vitamin D deficiency
5 Byte	C28..	Osteomalacia/Rickets
Version 3	X40Qn	Rickets
Version 3	X70B4	Osteomalacia