Are Caucasian children at risk of sub-optimal vitamin D levels?

Bone, growth plate and mineral metabolism
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1. Background
In children, vitamin D insufficiency has been linked to osteopenia and osteoporosis (1). Studies also suggest a negative correlation between vitamin D levels and diabetes mellitus types I and 2, and cardiovascular diseases (2).

2. Aim
To identify the vitamin D levels in a select cohort of Caucasian children aged 0-16 years, and identify the effect of age group, weight, preterm birth and malabsorpptive conditions.

3. Methods
• Electronic patient records of all children (368) aged 0-16 who had a vitamin D test at Royal Cornwall Hospital between February and September 2017 were collected.
• Repeat tests, inadequate samples and non-Caucasian ethnicities were excluded
• 3/4 results were screened for demographics, risk factors and vitamin D status.
• Vitamin D levels were deficient: <25 nmol/l, insufficient: 25-50 nmol/l and sub-optimal: 50-75 nmol/l. (3)

4. Results and Conclusions
The prevalence of sub-optimal vitamin D levels or lower was 75.19% and prevalence of insufficient levels or lower was 40.46%.
• Despite the data being collected over summer, the prevalence of sub-optimal vitamin D levels as they were obtained from secondary care.
• The cohort may have a higher baseline risk of sub-optimal levels as they were obtained from secondary care.

Age Group
• Median vitamin D levels across all age groups were sub-optimal and the 11-16 group was at risk of insufficiency.
• Medians were compared because of a positive skew in data distribution (Fig. 1).
• Statistical analysis found significant difference between vitamin D levels of the three age groups (p<0.001).
• The 0-4 group have access to fortified formula milk and free vitamins.
• The older groups may have reduced outdoor activity and low adherence to prescription supplements.

5. Recommendations
Supplementation should be extended to at risk groups like adolescents and overweight children. We encourage routine follow-ups in pre-term children, especially in lower socio-economic group, and children with malabsorptive conditions like cystic fibrosis. Doctors should be more aware of vitamin D status in Caucasian children.

References:
3. Royal College of Paediatrics and Child Health. Guide For Vitamin D In Childhood [Internet]. Royal College of Paediatrics and Child Health; 2013 [cited 2017 Sep 12].