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COVID-19
Questions, Answers and Actions
Vitamin D and infection risk

Question: "What is the evidence that vitamin D status affects the risk of infection with COVID-19?"

Answer: The Scientific Advisory Committee on Nutrition (SACN) 2016 report on vitamin D and health found that "Evidence on vitamin D and infection is inconsistent and mainly observational. RCTs do not generally show a beneficial effect of vitamin D supplementation on infectious disease risk." [1]

There is some evidence from observational and randomised trials that serum 25-hydroxy-vitamin D (25(OH)D) levels may alter the risk of acute respiratory tract infections (RTIs), but meta-analyses examining the role of vitamin D supplementation in RTI have varying results. To quote the SACN:

"Out of 3 systematic reviews/meta-analyses of RCTs on the effect of vitamin D supplementation on RTIs, 1 reported beneficial effects of vitamin D supplementation in reducing RTI risk, 1 reported no effect, and 1 reported conflicting results. The majority of RCTs published since the meta-analyses also did not find that vitamin D supplementation reduced RTI risk. Findings from cohort studies are generally supportive of an inverse association between serum 25(OH)D concentration and RTIs, with serum 25(OH)D concentrations ranging between < 25 and <50 nmol/L associated with increased risk for developing RTIs". It should be noted that observational studies, including cohort studies, cannot prove causation and are subject to confounding.

In the winter months, at up to 40% of the UK population may be considered deficient in 25(OH)D (serum levels <25 nmol/L), and a much larger proportion are likely to have levels considered insufficient (<50 nmol/L).[1] Average annualised serum 25(OH)D levels vary with ethnicity, and do not reach the threshold for sufficiency in any ethnic group: 45.8 nmol/L in white adults, 20.5 nmol/L in Asian adults, and 27.7 nmol/L in black adults. Annualised levels in institutionalised adults were 30 nmol/L.[1]

Vitamin D testing will not affect clinical management for the majority of patients and therefore has a limited place in clinical practice. **Testing should be reserved for scenarios where the result will influence clinical management (e.g. osteomalacia/rickets) or prior to a specific treatment (e.g. antiresorptive treatments such as IV bisphosphonates).** Testing is not indicated as part of the management or prophylaxis of COVID-19, and there is no direct evidence that vitamin D status affects the risk of COVID-19 infection specifically.

Action:

- Reinforce usual advice around vitamin D supplementation. Adults and children over 5 should consider taking a daily supplement containing 10 micrograms (400 units) of vitamin D.[1,2] Suitable products for supplementation can be bought OTC and should not be prescribed; see NHSE guidance on Conditions for which OTC items should not routinely be prescribed in primary care.[3]
- If deficiency is suspected then consideration may be given to administering a treatment dose, but this must be prescribed; there are no suitable licensed products available OTC. Guidance on dosing regimens is available from NICE CKS.[4]
- Vitamin D can be produced in the skin in response to exposure to sunlight in the UK between April and September.[1,2] Adults and children may consider daily safe sun exposure, but must adhere to government advice on leaving the home safely.[5]

References

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