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NEWS ANALYSIS

Covid-19: Public health agencies review whether vitamin D supplements could reduce risk

As agencies announce they are examining whether vitamin D supplements could reduce the risk of covid-19, **Ingrid Torjesen** finds out what the existing evidence shows

Ingrid Torjesen

Public health agencies in England and Scotland are conducting urgent reviews into the potential for vitamin D to reduce the risk of covid-19.

Among the evidence being examined is a systematic review and meta-analysis published in *The BMJ* in 2017, which concluded that vitamin D supplementation reduced the risk of acute respiratory infections.¹ As the covid-19 pandemic escalated, greater awareness of this paper prompted speculation in the media that supplementation could offer benefits against covid-19. Since the start of the pandemic the review has been viewed online more than 300 000 times and shared more times on social media than any other research paper published in *The BMJ* in the past three years.

Public Health England (PHE) has confirmed that the Scientific Advisory Committee on Nutrition will examine the findings of the paper as part of a wider review of the evidence on vitamin D supplementation and reduced risk of acute respiratory tract infections.

At the same time, the National Institute for Health and Care Excellence is producing a rapid evidence summary on vitamin D supplementation in the context of covid-19 and Public Health Scotland (PHS) is conducting a similar evidence gathering exercise.

“I suspect that they’re going to have problems drawing any definitive conclusion simply because the data are limited,” said Adrian Martineau, professor of respiratory infection and immunity at Barts and The London School of Medicine and Dentistry, Queen Mary University of London, and one of the authors of the *BMJ* review.

He said that he knew of no laboratory studies that had looked specifically at the impact of vitamin D on immune responses to the SARS-CoV-2 virus. Many such studies had investigated other respiratory viruses, however, and found that vitamin D metabolites augment innate antiviral immune responses while simultaneously dampening down inflammation, which has been highlighted as a major problem in covid-19.

“This combination of actions makes vitamin D an interesting candidate both as a potential tool in covid-19 prevention and as an adjunct to other therapies for people who already have the disease,” said Martineau.

He said a few observational studies had linked low vitamin D status to adverse outcomes in covid-19 but

said that these were limited by the potential for confounding to explain the associations. Reverse causality could also be operating, he added. “Inflammation itself can disturb vitamin D metabolism and actually render somebody deficient, as we have recently shown in patients with asthma and chronic obstructive pulmonary disease.”²

PHE updated its advice on vitamin D supplementation in April when it recommended that everyone should consider taking a daily 10 µg vitamin D supplement because lockdown meant that people might not get enough vitamin D from sunlight because of more time being spent indoors. It added that at that time there was not enough evidence to recommend vitamin D supplements specifically for reducing risk of covid-19.³ PHS gave similar advice in June.⁴

Both PHE and PHS especially recommend vitamin supplementation for people from black and minority ethnic (BAME) groups with dark skin, such as those of African, African-Caribbean, and South Asian origin, who require more sun exposure to make as much vitamin D. There have also been suggestions that vitamin D deficiency may explain why people of BAME backgrounds experience more adverse outcomes from covid-19.

“It’s an interesting hypothesis,” Martineau said. “It’s unlikely that ethnic disparities in covid-19 outcomes will be explained by a single factor. My hunch is that socioeconomic and structural factors will be more contributory than biological ones. Nevertheless, the vitamin D story is worthy of exploration and a major focus of a research study that we’re doing.”

This national longitudinal study—called COVIDENCE UK—is looking to recruit 12 000 people.⁵ Participants will complete an initial online questionnaire collecting information on determinants of vitamin D status and other putative risk factors, and this information will be linked to notifications of incident covid-19 captured through monthly online follow-up, backed up by linkage to routinely collected health outcome data held by NHS Digital. A randomised controlled trial over the winter is then planned, looking at the potential for different vitamin D supplementation strategies to reduce the risk of covid-19.

Martineau appealed to *The BMJ*’s readership to sign up at www.qmul.ac.uk/covidence. “Healthcare professionals are at heightened risk of covid-19; it’s vital that they are well represented in our study so

that we can identify modifiable risk factors such as vitamin D deficiency as soon as possible. Already 9000 people are taking part, many of them NHS colleagues.”

Regardless of any impact on covid-19, if everyone took a 10 µg daily supplement it would have a real benefit for musculoskeletal health, Martineau added.

“Our unpublished preliminary data indicate that two in three COVIDENCE UK participants are not taking supplemental vitamin D—and they are likely to represent a more health conscious subgroup of the population. Matters of cost and availability limit uptake of this recommendation. One of the questions our trial will look at is whether providing supplements free of charge improves uptake when compared with simply recommending them,” he said.

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- 2 Jolliffe DA, Stefanidis C, Wang Z, et al. Vitamin D metabolism is dysregulated in asthma and chronic obstructive pulmonary disease. *Am J Respir Crit Care Med* 2020. . doi: 10.1164/rccm.201909-1867OC pmid: 32186892
- 3 NHS. Vitamin D. www.nhs.uk/conditions/vitamins-and-minerals/vitamin-d.
- 4 Public Health Scotland. Vitamin D: advice for all age groups. 3 June 2020. www.gov.scot/publications/vitamin-d-advice-for-all-age-groups.
- 5 Queen Mary University of London. Covidence UK. www.qmul.ac.uk/covidence.

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