

**Article:**

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New Clinical Practice Guidelines for Vitamin D Supplementation and Testing
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Guest: Dr. Vishnu Samara is an Assistant Professor of Pathology and Assistant Director of Clinical Chemistry at the University of Chicago Medicine.

Bob Barrett:

This is a podcast from *Clinical Chemistry*, a production of the Association for Diagnostics & Laboratory Medicine. I'm Bob Barrett. The beneficial role of vitamin D in maintaining bone health has been known since 1920, leading to fortification of foods with vitamin D, which significantly reduced the incidence of rickets. More recently, studies evaluating disease state ranging from cancer to autoimmune disease to diabetes have also hinted at a beneficial role for vitamin D, driving interest from the general population in having one's vitamin D assessed during routine checkups.

This in turn prompted statements from professional societies, recommending against general vitamin D screening, instead advocating for its measurement only in certain well-defined patient populations. Despite these recommendations, the volume of samples received by clinical laboratories for assessment of vitamin D status remains high, indicating limited adherence to professional practice guidelines. In 2024, the Endocrine Society released an updated clinical practice guideline further restricting the categories of patients in which assessment of vitamin D status is recommended. Will patients and their providers follow the new guidelines or will high-volume testing continue despite limited evidence supporting this practice?

A News & Views article, appearing in the April 2025 issue of *Clinical Chemistry*, summarizes this clinical practice guideline and predicts the impact clinical laboratorians can expect on their test volume. In this podcast, we are excited to speak with one of the authors of the News & Views article. Dr. Vishnu Samara is an Assistant Professor of Pathology and Assistant Director of Clinical Chemistry at the University of Chicago Medicine. His research interests include testing for diabetes, cardiovascular diseases, and quality control processes in laboratory medicine.

Dr. Samara, let's get to the basics. Just what is vitamin D and why do we need it?

Vishnu Samara:

Vitamin D is a fat-soluble vitamin, which is essential for calcium absorption in the intestine, bone health, immune function, muscle strength, and possibly also involved in cardiovascular and cognitive health, and it is primarily

obtained through sunlight exposure. So, it can be synthesized in the skin and obtained from dietary sources such as fatty foods, fortified foods, and some supplements. Deficiency of vitamin D can lead to bone problems such as rickets in children, osteomalacia in adults, and has been associated with an increased risk of fractures and some chronic diseases.

Bob Barrett: Doctor, what was the main outcome of these new guidelines?

Vishnu Samara: Yeah. The Endocrine Society has published the new guidelines for vitamin D, mainly focused on disease prevention, and they were published in the *Journal of Clinical Endocrinology and Metabolism* in June of 2024. The society has put together a multidisciplinary panel of experts including endocrinologists, internal medicine, pediatric experts, obstetricians, gynecologists, nutritionists, epidemiologists, and along with a patient representative. The panel prioritized 14 clinical questions and developed recommendations focusing on randomized placebo-controlled trials in general healthy populations, and also some selective conditions such as pregnancy and prediabetes.

So, the key conclusions from this expert panel in developing the guidelines were: they do not recommend routine vitamin D testing for most populations due to lack of clinical evidence supporting its necessity, and then the guidelines recommend targeted supplementation rather than widespread screening or high dose supplementation, and they also do not recommend supplementation beyond the required dietary allowance in adults up to 74 years, unless clinically indicated. These guidelines also generally endorse the current recommended dietary allowance that was set forth by the Institute of Medicine, currently known as National Academy of Medicine, which is 600 units per day up to the age of 70 and then 800 units per day up to the age of 71 and above.

Bob Barrett: Doctor, how were the guidelines developed?

Vishnu Samara: So, as I mentioned, the Endocrine Society has brought together a multidisciplinary panel of experts and this panel of experts have conducted a very thorough systematic review of all the clinical trials published, and then they also used a methodology called as "GRADE," which is Grading of Recommendations, Assessment, Development, and Evaluation, so that they can ensure that strong evidence-based recommendations can be developed for vitamin D in generally healthy populations to help prevent the disease.

Bob Barrett: Which patient populations specifically need vitamin D supplementation?

Vishnu Samara: So, this is the main key outcome for the study, and the guidelines recommend supplementation in specific population where the evidence suggests clear benefits. These include infants, children and adolescents, older adults, 75 years and above, pregnant women, and people with prediabetes. The rationale behind these recommendations for these four specific populations is, in infants and children from the age of 1 to 18 years old, the benefits with vitamin D supplementation include preventing rickets and also reducing the risk of respiratory tract infections, whereas in older adults, it will help reduce the risk of mortality and especially it is needed for these older individuals, 75 and above, because they have decreased skin synthesis of vitamin D and then also reduced intestinal absorption.

In case of pregnant women, vitamin D has the potential to lower the risk of preeclampsia, preterm birth, and also can help prevent some of the maternal-fetal complications. For people with prediabetes, it will help reduce the progression of prediabetes to type 2 diabetes, and all these based on randomized controlled clinical trials. The last category is more important because in the US currently, there is one in every three adults have exposure or incidence of prediabetes. So, supplementation of vitamin D in these all age groups specific patient population is going to be very helpful.

Bob Barrett: What is the impact that is expected that these guidelines will have on vitamin D testing?

Vishnu Samara: The guidelines overall aim to reduce unnecessary vitamin D testing, which was previously over-utilized without any strong clinical justification. So, instead of undergoing routine testing, patients are encouraged to take supplements if they are in a high-risk group, or if they are not in any risk group, just to not take them. If these guidelines were widely followed and accepted, especially by the clinical community, the endocrinologist, or other primary care physicians, they should help result in declining in the vitamin D test orders, particularly for either routine monitoring as well as in asymptomatic individuals.

Bob Barrett: Is this a good thing or a bad thing?

Vishnu Samara: Yeah, that's a great question. I think it depends and it's a very relative perspective. So, the reduction in unnecessary testing has both benefits, as well as there can be some potential concerns here. So, the benefits include potential cost savings from reduced testing in patients where there is no clinical indication, which also goes along with less administrative burden such as fewer insurance reimbursement issues for unnecessary tests, and then also there can be a shift in the healthcare resources toward more evidence-based interventions. However, the potential

concerns include where some individuals with borderline situations can or may go undiagnosed without vitamin D testing. In addition to that, a stronger clinical judgment will be required to identify true deficiency without routine screening.

Bob Barrett: So, how applicable are these guidelines to developing countries or regions with different sun exposure?

Vishnu Samara: So, the 2024 updated guidelines for vitamin D are based on studying, reviewing a lot of clinical trials, which are primarily conducted in high-income, developed nations. So, the sun exposure, the diet, and access to fortified foods vary globally, and it could impact vitamin D requirements in different populations. In developing countries, vitamin D deficiency may still be widespread due to malnutrition, cultural clothing practices, limiting sun exposure, and any lack of fortified food intake. So, in this situation, more research is needed to assess the applicability of these new guidelines across diverse geographic and ethnic populations.

Bob Barrett: Finally, Dr. Samara, let's look ahead. What kind of future studies are needed to further improve guidance on vitamin D supplementation?

Vishnu Samara: I think, more research is definitely needed, especially in conducting more defined randomized controlled trials in individuals with low baseline vitamin D, especially the 25-hydroxyvitamin D levels, to examine specific health outcomes in response to different vitamin D doses, and then also the target vitamin D levels, plus more randomized controlled trials across diverse racial and ethnic groups, and also considering the body composition such as the BMI, adiposity, and environmental lifestyle, and dietary factors is also required. Some other additional randomized controlled trials investigating the role of vitamin D in disease prevention, specifically for cardiovascular disease, autoimmune diseases, and cancer prevention will be very helpful.

In addition to these randomized controlled trials, the function of vitamin D occurs through its binding to the vitamin D receptor. So, genetic studies to assess the role of vitamin D receptor polymorphism and its influence on vitamin D metabolism and effectiveness, and also some long-term safety and toxicity studies to help determine if chronic high-dose supplementation has any other negative health consequences beyond hypercalcemia would also be very helpful in my opinion.

Bob Barrett: That was Dr. Vishnu Samara from the University of Chicago. He authored a News & Views article in the April 2025 issue of *Clinical Chemistry*, summarizing the new Endocrine Society clinical practice guidelines for vitamin D supplementation and

testing, and he's been our guest in this podcast on that topic.
I'm Bob Barrett. Thanks for listening.