

# Vitamin D deficiency may increase risk of colds, flu

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Vitamin D may be an important way to arm the immune system against disorders like the common cold, report investigators from the University of Colorado Denver (UC Denver) School of Medicine, Massachusetts General Hospital (MGH) and Children's Hospital Boston.

In the largest and most nationally representative study of the association between vitamin D and respiratory infections, people with the lowest blood vitamin D levels reported having significantly more recent colds or cases of the flu. The risks were even higher for those with chronic respiratory disorders, such as asthma and emphysema. The report appears in the February 23 *Archives of Internal Medicine*.

"The findings of our study support an important role for vitamin D in prevention of common respiratory infections, such as colds and the flu," says Adit Ginde, MD, MPH, UC Denver Division of Emergency Medicine and lead author of the study. "Individuals with common lung diseases, such as asthma or emphysema, may be particularly susceptible to respiratory infections from vitamin D deficiency."

While vitamin C has been used for the prevention of colds and other respiratory disorders for decades, little scientific evidence supports its effectiveness. In contrast, in recent years evidence has accumulated that vitamin D - most commonly associated with the development and maintenance of strong bones - may also play a key role in the immune system. Circumstantial evidence has implicated the wintertime deficiency of vitamin D, which the body produces in response to

sunlight, in the seasonal increase in colds and flu; and small studies have suggested an association between low blood levels of vitamin D and a higher risk of respiratory infections.

The current study analyzed data from the Third National Health and Nutrition Examination Survey (NHANES III), conducted by the National Center for Health Statistics. Participants were interviewed in their homes regarding their health and nutrition, and most participants also received a physical examination that included collection of blood and other samples for laboratory analysis. The research team analyzed blood levels of 25-hydroxyvitamin D (25OHD) - the best measure of vitamin D status - from almost 19,000 adult and adolescent NHANES III participants, selected to be representative of the overall U.S. population.

Study participants with the lowest vitamin D blood levels - less than 10 ng per milliliter of blood - were about 40 percent more likely to report having a recent respiratory infection than were those with vitamin D levels of 30 or higher. The association was present in all seasons and even stronger among participants with a history of asthma or chronic obstructive pulmonary disease (COPD), including emphysema. Asthma patients with the lowest vitamin D levels were five times more likely to have had a recent respiratory infection; while among COPD patients, respiratory infections were twice as common among those with vitamin D deficiency.

"A respiratory infection in someone with otherwise healthy lungs usually causes a few days of relatively mild symptoms," explains Carlos Camargo, MD, DrPH, MGH Department of Emergency Medicine and senior author of the study. "But respiratory infections in individuals with an underlying lung disease can cause serious attacks of asthma or COPD that may require urgent office visits, emergency department visits or hospitalizations. So the impact of preventing infections in these patients could be very large."

The authors stress that the study's results need to be confirmed in clinical trials before vitamin D can be recommended to prevent colds and flu.

"We are planning clinical trials to test the effectiveness of vitamin D to boost immunity and fight respiratory infection, with a focus on individuals with asthma and COPD, as well as children and older adults - groups that are at higher risk for more severe illness," Ginde says.

"While it's too early to make any definitive recommendations, many Americans also need more vitamin D for its bone and general health benefits. Clinicians and laypeople should stay tuned as this exciting area of research continues to expand."

Source: Massachusetts General Hospital

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