

Immune Health in Older Adults



The triplendemic of COVID-19, the flu, and respiratory syncytial virus may hit us again this fall. Men and women in their senior years can be highly susceptible to acute and chronic illnesses. According

to the CDC, older adults are more likely to become seriously ill, with risk increasing when adults are in their 50s and in successive decades of life. The oldest adults, those 85 and older, are the most prone to contracting an infection or contagious illness and developing a chronic condition. The effects of aging on the immune system are manifest at multiple levels that includes a reduced neutrophil function and cytokine production, and neutrophils appear to become less able to travel to tissues that have been invaded by pathogens. Moreover, the number and types of T and B cells appear to decrease with age, and T cells in older adults respond more slowly to previously unencountered pathogens, which is why flu outbreaks tend to be more severe among the elderly.

Role of Food and Nutrition in Immunity During Aging •

The relationship between nutrition and immune health is evolving. Several nutrients play an important role in immune system function.

Vitamin C: Long associated with immune health Vitamin C provides numerous benefits to skin, and other physical barriers, as well as both innate and adaptive immunity. As an antioxidant, vitamin C helps prevent damage to healthy cells from reactive oxygen species (ROS) generated during the destruction of potential pathogens. It also supports the health of T and B cells. Vitamin C supplementation also reduces the incidence and severity of respiratory illnesses in those with vitamin C deficiency and in older adults.

Vitamin D: The active form of vitamin D, 1,25(OH)2D3, has numerous roles in innate and adaptive immunity, including production of antimicrobial and antiviral peptides in mucous membranes, inhibition of pro-inflammatory cytokines, and stimulation of certain types of T cells. During the peak of the COVID-19 pandemic, studies observed that individuals who were deficient in vitamin D were more likely to contract a severe case of COVID-19. In addition, mortality rates were higher among those with a vitamin D deficiency. Study results also suggest that vitamin D may help protect high-risk individuals, such as older adults, against severe symptoms associated with respiratory diseases.

Vitamin E: Cells in the immune system contain high levels of the fat-soluble antioxidant vitamin E. A 2018 review summarizes the numerous immunity-related functions of vitamin E, including reducing inflammation, and protecting fats in cell membranes from oxidation. Vitamin E also is associated with the health of innate (macrophages, dendritic cells) and adaptive (T cells, B cells, natural killer cells) components of the immune system. A review article on nutrition, immunosenescence, and infectious disease notes that the effects of vitamin E supplementation on immune function and disease prevention in older adults are promising.

Zinc: The mineral zinc is highly active in immune health with immune cell signaling functions. In zinc deficiency, T cell and B cell numbers drop, and innate immunity is also affected. Individuals become more susceptible to infectious diseases, including pneumonia. The immune response in older adults, who are more likely to be deficient in zinc, improves with zinc supplementation.

Probiotics: The gastrointestinal tract is a key player in the body's innate immune system. The gastrointestinal mucosa creates a physical barrier that prevents pathogens from passing from the gut into the bloodstream. Its barrier function is aided by the actions of beneficial gut microbes that naturally colonize the gut, along with probiotics that can be introduced via food, beverages, and supplements. The health of the gut microbiome diminishes with age.

Probiotics are defined by the International Scientific Association for Probiotics and Prebiotics (ISAPP) as “live microorganisms that, when administered in adequate amounts, confer a health benefit on the host.” Immunity-related activities of beneficial cultures in the gut include immune modulation, lowering of gut pH to levels that prevent pathogens from colonizing in the gut and interacting with cytokines. The ISAPP notes that the action of microbes is determined by their genus, species, and strain—not all lactobacilli, bifidobacteria, and/or streptococci, for example, are probiotics with defined benefits to gut health.

Studies suggest that probiotics—alone or in combination with prebiotic fibers—may benefit immunity in older adults by boosting immune cell proliferation and activity, improving response to the influenza vaccine, decreasing inflammation, and reducing the incidence of respiratory and other infectious diseases.