

Boosting Immunity: Functional Medicine Tips on Prevention & Optimizing Immune Function During the COVID-19 (Coronavirus) Outbreak

By the IFM Medical Education Team

With the spread of the COVID-19 coronavirus disease in the news, The Institute for Functional Medicine would like to remind you that there are several steps you can take to reduce your chances of being exposed to respiratory viruses and to boost your immunity in the event of exposure. The following information outlines what you can do to help keep yourself and your family safe.

Please note: Due to the novelty of COVID-19, no peer-reviewed research has been published regarding the effectiveness of dietary or lifestyle interventions for its prevention or treatment.

Prevention Strategies in Alignment With the Centers for Disease Control and Prevention

Behavior

Hand washing: The most well-established way to prevent respiratory infections such as influenza and coronavirus is frequent and thorough hand washing with soap and water. Scrub your hands thoroughly with soap and water for at least 20 seconds.

Hand sanitizer: Handwashing with soap and water is the best way to reduce germs, but if they are not available, alcohol-based hand sanitizers that contain at least 60% alcohol can help to reduce the spread of infection. Note: avoid any products containing triclosan, a known hormone-disrupting chemical.

Covering your mouth and nose: Cover your mouth and nose with a tissue when coughing or sneezing; if your hands are not free or you don't have a tissue, cough or sneeze into your sleeve, not your bare hands.

Not touching your face: Avoid touching your eyes, nose, and mouth with unwashed hands, which can help provide the virus with a route of entry into the body. Since the average individual touches their face an average of 15 times per hour, remain vigilant!

Keeping surfaces clean: Clean and disinfect frequently touched surfaces, especially when someone is ill. Surfaces to consider include doorknobs, phones, computer keyboards, remotes, and other surfaces that are frequently touched in rooms such as the bathroom and kitchen.

Lifestyle

Stress reduction: Chronic stress can negatively alter immune system responses, making you more likely to get sick. Identify your personal stress reduction strategies and practice them regularly.

Sleep: Sleep has a big influence on immune function, so it is essential to get plenty of sleep. Practice good sleep hygiene and maintain consistent sleep hours—turn off screens, ensure the room is cool, quiet, and dark, and set a reminder to help yourself go to bed on time.

Exercise: Moderate, regular physical activity helps to boost immune system function by raising levels of infection-fighting white blood cells and antibodies, increasing circulation, and decreasing stress hormones. Establish and follow an exercise program to not only help prevent respiratory infections but also to improve cognitive and physical resilience.

Nutritious foods/diet: Research indicates that brightly colored vegetables and fruits boost immunity better than most supplements. Eat plenty of fruits and vegetables—aim for 10 servings per day. Include fermented vegetables or other probiotic-containing foods.

Natural Means of Boosting Immunity

Most over-the-counter medications only treat the *symptoms* of viral infections; most don't actually help the immune system fight the infection. Although there is no research to determine what is effective specifically for coronavirus, the following are some natural modalities you can utilize to both address symptoms as well as boost your immune system if you do come down with an illness:

Self-care: When battling upper respiratory infections, top priorities are plentiful hydration and rest. Drink plenty of fluids; homemade vegetable or bone broths are also extremely beneficial. Various herbal teas/hot drinks can help with hydration and reducing symptoms; good choices include peppermint, ginger, eucalyptus, chamomile, and hot water with lemon, honey, and cinnamon.

Sore throats: Salt water gargles are excellent for loosening mucus and helping fend off bacterial throat infections. Hot teas and lozenges containing slippery elm are excellent demulcents (to relieve minor pain and inflammation of mucous membranes) for soothing irritated sore throats. Two tablespoons of honey in hot water can also help to soothe and decrease throat inflammation and pain. Chamomile and peppermint teas are also helpful for soothing irritated sore throats, as are teas or infusions made from marshmallow root and licorice root, both of which can act as soothing demulcents.

Respiratory congestion & sinuses: For respiratory congestion, use a humidifier, vaporizers, or steam inhalers, or spend time in steamy baths or showers. Vaporizers and inhalers can also be used with decongestants or essential oils such as eucalyptus, menthol, peppermint, or frankincense. Nasal xylitol sprays are very beneficial, as is nasal irrigation using a neti pot or nasal irrigation bottle. Buffered saline is easy to make or can be purchased in packets and eliminates any irritation to delicate, irritated mucous membranes.

Supplements, nutrients, and foods to support immune function

There are several nutrients, plant-based botanicals, and supplements that can boost immune function and provide symptom relief during illness and may help to shorten the duration of

illness. For preventing and treating viral upper respiratory infections, consider some of the following:

Vitamin C: Vitamin C may help to prevent infections, including those caused by bacteria and viruses. Regularly administered vitamin C has been shown to shorten the duration of colds, and higher doses of vitamin C during an illness can also act as a natural antihistamine and anti-inflammatory.

Vitamin D: Vitamin D, known as the “sunshine vitamin,” is one of the most important and powerful nutrients for supporting the immune system. Numerous studies have shown that it helps reduce the risk of colds and flu. Unfortunately, a high percentage of the population is deficient, so daily supplementation (ideally in the form of vitamin D3) offers the best protection.

Vitamin A: For short-term use and particularly for those with moderate vitamin A deficiency, supplementation can be extremely helpful in supporting the body’s ability to fight infections, particularly with regard to respiratory infections.

Zinc: Zinc plays a significant role in boosting immunity. Often available as lozenges, zinc can help to reduce the frequency of infections as well as the duration and severity of the common cold when taken within 24 hours of onset.

Selenium: Selenium, a key nutrient for immune function, is also an antioxidant that helps boost the body’s defenses against bacteria, viruses, and cancer cells. It may particularly help to protect against certain strains of flu virus. Selenium is easily obtained from foods, with the richest source being Brazil nuts.

Honey: Honey, preferably raw, is a good demulcent (it relieves minor pain and inflammation of mucous membranes), has antioxidant properties, and has some antimicrobial effects. It is helpful for coughs and sore throats and can be added to hot tea.

Garlic: Garlic contains a variety of compounds that can influence immunity. Some studies have shown that both fresh garlic as well as aged garlic extract and some other garlic supplements may reduce viral upper respiratory infection severity as well as function in the prevention of infection with viruses that can cause colds.

Probiotics: Probiotics contain “good bacteria” that not only support the health of the gut but also influence immune system functioning and regulation. Studies have shown that probiotic use can decrease the number of respiratory infections, particularly in children.

** This document is only intended to identify modalities that may boost your immune system. It is not meant to recommend any treatments, nor have any of these modalities been proven effective against coronavirus. Always consult your physician or healthcare provider prior to using any of these modalities. For up-to-date information on COVID-19, please consult the Centers for Disease Control and Prevention at www.cdc.gov.*

References

- Bergman P, Lindh AU, Björkhem-Bergman L, Lindh JD. Vitamin D and respiratory tract infections: a systematic review and meta-analysis of randomized controlled trials. *PLoS One*. 2013;8(6):e65835. doi:[10.1371/journal.pone.0065835](https://doi.org/10.1371/journal.pone.0065835)
- Besedovsky L, Lange T, Born J. Sleep and immune function. *Pflugers Arch*. 2011;463(1):121-137. doi:[10.1007/s00424-011-1044-0](https://doi.org/10.1007/s00424-011-1044-0)
- Biesalski HK, Nohr D. Importance of vitamin-A for lung function and development. *Mol Aspects Med*. 2003;24(6):431-440. doi:[10.1016/s0098-2997\(03\)00039-6](https://doi.org/10.1016/s0098-2997(03)00039-6)
- Olson EJ. Lack of sleep: can it make you sick? Mayo Clinic. Published November 28, 2018. Accessed March 5, 2020. <https://www.mayoclinic.org/diseases-conditions/insomnia/expert-answers/lack-of-sleep/faq-20057757>
- Cannell JJ, Vieth R, Umhau JC, et al. Epidemic influenza and vitamin D. *Epidemiol Infect*. 2006;134(6):1129-1140. doi:[10.1017/S0950268806007175](https://doi.org/10.1017/S0950268806007175)
- Clinton CC. Preparing yourself for the flu season naturally. American Association of Naturopathic Physicians. Published October 29, 2012. Accessed March 5, 2020. http://aanpsite.ga.membershipsoftware.org/article_content.asp?article=779
- Common colds: protect yourself and others. Centers for Disease Control and Prevention. Reviewed February 11, 2019. Accessed March 5, 2020. <https://www.cdc.gov/features/rhinoviruses/index.html>
- Davis JM, Murphy EA, McClellan JL, Carmichael MD, Gangemi JD. Quercetin reduces susceptibility to influenza infection following stressful exercise. *Am J Physiol Regul Integr Comp Physiol*. 2008;295(2):R505-R509. doi:[10.1152/ajpregu.90319.2008](https://doi.org/10.1152/ajpregu.90319.2008)
- Exercise and immunity. MedlinePlus. Updated March 4, 2020. Accessed March 5, 2020. <https://medlineplus.gov/ency/article/007165.htm>
- Gleeson M. Effects of exercise on immune function and risk of infection. Mysportscience. Published September 26, 2016. Accessed March 5, 2020. <http://www.mysportscience.com/single-post/2016/09/25/Strategies-to-reduce-illness-risk-in-athletes-Part-1-Behavioural-lifestyle-and-medical-strategies>
- Goldman RD; Canadian Paediatric Society, Drug Therapy and Hazardous Substances Committee. Treating cough and cold: guidance for caregivers of children and youth. *Paediatr Child Health*. 2011;16(9):564-569. doi:[10.1093/pch/16.9.564](https://doi.org/10.1093/pch/16.9.564)
- Griffin J, Akpan N. How long do cold and flu viruses stay contagious on public surfaces? PBS NewsHour. Published December 17, 2018. Accessed March 5, 2020. <https://www.pbs.org/newshour/science/how-long-do-cold-and-flu-viruses-stay-contagious-on-public-surfaces>
- Hao Q, Dong BR, Wu T. Probiotics for preventing acute upper respiratory tract infections. *Cochrane Database Syst Rev*. 2015;(2):CD006895. doi:[10.1002/14651858.CD006895.pub3](https://doi.org/10.1002/14651858.CD006895.pub3)
- Hemilä H. Vitamin C and infections. *Nutrients*. 2017;9(4):E339. doi:[10.3390/nu9040339](https://doi.org/10.3390/nu9040339)
- Hojsak I, Abdovi S, Szajewska H, Milosevi M, Krznari Z, Kolacek S. *Lactobacillus GG* in the prevention of nosocomial gastrointestinal and respiratory tract infections. *Pediatrics*. 2010;125(5):e1171-e1177. doi:[10.1542/peds.2009-2568](https://doi.org/10.1542/peds.2009-2568)
- Hulisz D. Efficacy of zinc against common cold viruses: an overview. *J Am Pharm Assoc (2003)*. 2004;44(5):594-603. doi:[10.1331/1544-3191.44.5.594.hulisz](https://doi.org/10.1331/1544-3191.44.5.594.hulisz)
- Josling P. Preventing the common cold with a garlic supplement: a double-blind, placebo-controlled survey. *Adv Ther*. 2001;18(4):189-193. doi:[10.1007/bf02850113](https://doi.org/10.1007/bf02850113)

- Licorice. Michigan Medicine. Published October 22, 2014. Accessed March 5, 2020. <https://www.uofmhealth.org/health-library/d04424a1-d04424a1-Header>
- Martineau AR, Jolliffe DA, Hooper RL, et al. Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data. *BMJ*. 2017;356:i6583. doi:[10.1136/bmj.i6583](https://doi.org/10.1136/bmj.i6583)
- Nantz MP, Rowe CA, Muller CE, Creasy RA, Stanilka JM, Percival SS. Supplementation with aged garlic extract improves both NK and ??-T cell function and reduces the severity of cold and flu symptoms: a randomized, double-blind, placebo-controlled nutrition intervention. *Clin Nutr*. 2012;31(3):337-344. doi:[10.1016/j.clnu.2011.11.019](https://doi.org/10.1016/j.clnu.2011.11.019)
- Percival SS. Aged garlic extract modifies human immunity. *J Nutr*. 2016;146(2):433S-436S. doi:[10.3945/jn.115.210427](https://doi.org/10.3945/jn.115.210427)
- Perry KA, Coulliette AD, Rose LJ, Shams AM, Edwards JR, Noble-Wang JA. Persistence of influenza A (H1N1) virus on stainless steel surfaces. *Appl Environ Microbiol*. 2016;82(11):3239-3245. doi:[10.1128/AEM.04046-15](https://doi.org/10.1128/AEM.04046-15)
- Phytonutrients. NutritionFacts. Accessed March 5, 2020. <https://nutritionfacts.org/topics/phytonutrients/>
- Healthy habits to help prevent flu. Centers for Disease Control and Prevention. Reviewed November 7, 2019. Accessed March 5, 2020. <https://www.cdc.gov/flu/prevent/actions-prevent-flu.htm>
- Prasad AS. Zinc is an antioxidant and anti-inflammatory agent: its role in human health. *Front Nutr*. 2014;1:14. doi:[10.3389/fnut.2014.00014](https://doi.org/10.3389/fnut.2014.00014)
- Rondanelli M, Miccono A, Lamburghini S, et al. Self-care for common colds: the pivotal role of vitamin D, vitamin C, zinc, and echinacea in three main immune interactive clusters (physical barriers, innate and adaptive immunity) involved during an episode of common colds—practical advice on dosages and on the time to take these nutrients/botanicals in order to prevent or treat common colds. *Evid Based Complement Alternat Med*. 2018;2018:5813095. doi:[10.1155/2018/5813095](https://doi.org/10.1155/2018/5813095)
- 6 at-home remedies to ease your sore throat. Penn Medicine. Published January 8, 2018. Accessed March 5, 2020. <https://www.pennmedicine.org/updates/blogs/health-and-wellness/2018/february/sore-throat>
- Steinbrenner H, Al-Quraishy S, Dkhil MA, Wunderlich F, Sies H. Dietary selenium in adjuvant therapy of viral and bacterial infections. *Adv Nutr*. 2015;6(1):73-82. doi:[10.3945/an.114.007575](https://doi.org/10.3945/an.114.007575)
- Higdon J, Drake VJ, Delage B, Ross CA, Tan L. Vitamin A. Linus Pauling Institute. Reviewed March 2015. Accessed March 5, 2020. <https://lpi.oregonstate.edu/mic/vitamins/vitamin-A>
- Higdon J, Drake VJ, Angelo G, Delage B, Carr AC, Michels AJ. Vitamin C. Linus Pauling Institute. Reviewed December 2018. Accessed March 5, 2020. <https://lpi.oregonstate.edu/mic/vitamins/vitamin-C>
- Wang Y, Li X, Ge T, et al. Probiotics for prevention and treatment of respiratory tract infections in children: a systematic review and meta-analysis of randomized controlled trials. *Medicine (Baltimore)*. 2016;95(31):e4509. doi:[10.1097/MD.0000000000004509](https://doi.org/10.1097/MD.0000000000004509)
- What happens when your immune system gets stressed out? Cleveland Clinic. Published March 1, 2017. Accessed March 5, 2020. <https://health.clevelandclinic.org/what-happens-when-your-immune-system-gets-stressed-out/>

- Yaribeygi H, Panahi Y, Sahraei H, Johnston TP, Sahebkar A. The impact of stress on body function: a review. *EXCLI J.* 2017;16:1057-1072. doi:[10.17179/excli2017-480](https://doi.org/10.17179/excli2017-480)
- Zakay-Rones Z, Thom E, Wollan T, Wadstein J. Randomized study of the efficacy and safety of oral elderberry extract in the treatment of influenza A and B virus infections. *J Int Med Res.* 2004;32(2):132-140. doi:[10.1177/147323000403200205](https://doi.org/10.1177/147323000403200205)