

Building a Healthy Immune System to Ward Off COVID-19 and Other Viruses Designed for Staff, Children and Families

Tip Sheet

Nutrition and Physical Activity Self-Assessment Child Care (NAP SACC)

Healthy Child Care Project

FORWARD DuPage

www.forwarddupage.org

Best Practice: To strengthen the ability of children, staff, and families to fight off COVID 19 and other viruses, practice these daily habits: eat a healthy diet full of immune boosting foods, exercise or be physically active and spend time outdoors, maintain a healthy weight, get a good night sleep, and minimize stress.

Rationale: During the COVID 19 pandemic, early childhood (EC) programs were shut down. As programs reopen and families slowly return, staff and families are feeling apprehensive, asking what measures they can take (individually and collectively) to protect themselves from COVID 19 or other threatening viruses. Besides the obvious---social distancing, isolating by staying at home when one is feeling ill and wearing masks to protect others---there is one more thing we all can do to take charge and feel empowered. We can implement best practices to build or boost a strong immune system.

Science and Research: The science behind building a strong immune system has been well researched. It is focused here in six key areas: Diet and Nutrition, Obesity, Physical Activity, Vitamin D (outdoor exposure), Adequate Sleep and Managing Stress.

1. **Diet:** Eating a wide variety of healthy foods, that work together to build immunity is essential to building a strong immune system. **Healthy Diet:** Nutrients that have been identified as critical for the growth and functioning of immune cells include: Vitamin A, Vitamin C, Vitamin D, zinc, selenium, iron, and protein (along with a few others). These nutrients are found in a variety of plant and animal foods. Foods like citrus fruits, berries and most fruits, red bell peppers, broccoli, garlic, ginger, spinach, yogurt, almonds, sunflower seeds, shellfish, poultry, mushrooms, and sweet potatoes are often identified as “immune boosting”. Antioxidants (found in foods like blueberries, strawberries, raspberries, deep colored grapes, kale, spinach, sweet potatoes, artichokes, beets, beans, nuts, tea, and dark chocolate) also play a part in building immunity as they prevent damage to immune cells by neutralizing free radicals – agents in the environment that may damage your cells and reduce your immunity.¹ **Poor Diet:** Just as a healthy diet positively impacts an immune system, a poor diet has a detrimental effect. Malnutrition or a diet lacking in one or more nutrients can impair the production and activity of immune cells and antibodies. **Diets that are limited in variety and lower in nutrients, such as fad diets or those consisting primarily of ultra-processed foods and lacking in minimally processed foods (whole grains, clean foods, etc.), can negatively affect a healthy immune system.**

¹ <https://www.hsph.harvard.edu/nutritionsource/nutrition-and-immunity/>

A diet high in refined sugar and red meat and low in fruits and vegetables can promote disturbances in healthy intestinal microorganisms, resulting in chronic inflammation of the gut, and associated suppressed immunity².

2. **Obesity:** FORWARD has been educating DuPage communities for years, highlighting the risks of obesity and the impact excess weight has on a number of chronic illnesses (heart disease, diabetes, hypertension, some cancers, musculoskeletal conditions, and mental illness, to name just a few). **The latest research also links obesity as a risk factor in COVID 19 and in general virus immunity and health.** Recent studies in humans and animal models affected by obesity (and inflammation associated with obesity) have shown an impaired immune response or immune function leading to increased chances for various infections³.
3. **Physical Activity/Exercise:** There is evidence that exercise improves immune function. Studies have shown that exercise seems to increase numbers of certain immune cells that help to bolster immune activity. When you engage in physical activity (sustained long enough to get the heart rate up), your body sees it as a “stressor” and deploys white blood cells into the bloodstream. These white blood cells/T-Cells emerge and circulate during exercise at a higher rate than normal. Pathogens in the body are more easily detected and destroyed during this process. Exercise seems to have a bit of a residual effect. For up to three hours after exercise, the T-Cells extend into other tissues in the body, like the lungs or maybe the skin, intestines, or mucosal surfaces, where an infection might be found. Given this increase in T-Cell activity, research has shown that people who exercise regularly tend to get sick less frequently. According to a 2010 study of more than 1,000 adults published in the British Journal of Sports Medicine, **people who exercised for at least 20 minutes a day, five or more days per week, reported 43% fewer days with upper respiratory tract infection symptoms than those who were sedentary.** And when they did get sick, their symptoms tended to be less severe.⁴
4. **Vitamin D, Phytoncides and Time Outdoors:** Getting outdoors for exercise, play, recreation, and relaxation positively impacts the immune system. Vitamin D, the sunshine vitamin, is necessary for the proper functioning of your immune system, which is your body's first line of defense against infection and disease. Scientists have found that **vitamin D is crucial to activating our immune defenses** and that without sufficient intake of the vitamin--the killer cells of the immune system--T cells--will not be able to react to and fight off serious infections in the body. The research team found that T cells first search for vitamin D in order to activate and if they cannot find enough of it will not complete the activation process. “Most Vitamin D is produced as a natural byproduct of the skin's exposure to sunlight. It can also be found in fish liver oil, eggs and fatty fish such as salmon, herring and mackerel or taken as a dietary supplement.”⁵ At the same time scientists think that breathing in **phytoncides—airborne chemicals produced by plants—**

² <https://www.hsph.harvard.edu/nutritionsource/nutrition-and-immunity/>

³ <https://www.obesityaction.org/community/article-library/obesity-and-the-immune-system/#:~:text=Eating%20healthier%20and%20incorporating%20moderate,decreased%20responsiveness%20to%20some%20vaccinations.>

⁴ <https://www.self.com/story/exercise-and-immune-system>

⁵ <https://www.sciencedaily.com/releases/2010/03/100307215534.htm>

increases our levels of white blood cells, helping us fight off infections and diseases.⁶ In early childhood programs, it is also important to get children outdoors daily, as the research shows that **children who play outdoors are more active than their peers who spend time indoors.** Outdoor play is more conducive to vigorous activity and the ability to sustain activity long enough to see the immune boosting effects.

5. **Sleep:** During sleep, your immune system releases proteins called cytokines, some of which help promote sleep. Certain cytokines (like T Cells) need to increase when you have an infection or inflammation, or when you are under stress. Quality sleep bolsters T Cells in your body that fight off infections. Just as adequate sleep strengthens your immune system, sleep deprivation may decrease production of these protective cytokines. **Children who do not get enough sleep are three to four times more likely to get sick.** To stay healthy, especially during the influenza season, get the recommended seven to eight hours of sleep a night for adults and 10-12 for children. This will help keep your immune system in fighting shape.⁷ It is also important to note that when sleep deprived people are given a vaccine, there is a lower antibody response.⁸ If you expose sleep deprived people to a rhinovirus (like a cold or strep virus) they are more likely to get the virus.⁹ For years we've heard that the remedy for many illnesses is to get plenty of rest; the **research shows that sleep does indeed promote healing.**
6. **Stress:** When we are stressed, the immune system's ability to fight off antigens is reduced. That is why we are more susceptible to infections. **The stress hormone corticosteroid can suppress the effectiveness of the immune system** (e.g., lowers the number of lymphocytes).¹⁰ Studies now show that childhood stress can damage the immune system and have long lasting effects on health (think of the research around adverse childhood experiences or ACES). Scientists found that long after difficult events had passed, stress was still having a negative impact on the immune system well into adulthood even if the child had never felt depressed.

Tips and Strategies (for children, staff, and parents):

1. **Breastfeed your baby exclusively for the first six months (or as long as possible).** "Breast milk contains turbo-charged immunity-enhancing antibodies and white blood cells. Nursing guards against ear infections, allergies, diarrhea, pneumonia, meningitis, urinary tract infections, and sudden infant death syndrome (SIDS). Studies show that it may also enhance your baby's brain power and help protect her against insulin-dependent diabetes, Crohn's disease, colitis, and certain forms of cancer later in life."¹¹ Breastfeeding is also associated with helping a child

⁶ <https://www.activebeat.com/your-health/healthy-habits-that-can-boost-your-immune-system/>

⁷ <https://www.mayoclinic.org/diseases-conditions/insomnia/expert-answers/lack-of-sleep/faq-20057757>

⁸ <https://neurosciencenews.com/immune-system-sleep-deprivation-6015/>

⁹ <https://www.sciencedaily.com/releases/2017/01/170127113010.htm#:~:text=%22The%20results%20are%20consistent%20with,the%20virus%2C%22%20Watson%20said.>

¹⁰ <https://www.simplypsychology.org/stress-immune.html>

¹¹ <https://kcparent.com/kc-baby-magazine/7-ways-to-boost-your-childs-immunity/>

maintain a healthy weight during infancy and throughout childhood.

2. **Plan, prepare, serve, and eat a well-balanced diet that includes a variety of immune-boosting or superfoods such as:** Citrus fruits, berries and most fruits, red bell peppers, broccoli, garlic, ginger, spinach, yogurt, almonds, sunflower seeds, shellfish, poultry, mushrooms, and sweet potatoes¹².
3. **Reduce sugar consumption.** Experts recommend no more than six teaspoons of added sugar per day for women and children and no more than nine teaspoons for men. Read nutritional labels, focusing in on added sugars (four grams of sugar equals roughly one teaspoon of sugar). Rethink your drink by relying heavily on water and low-fat milk to hydrate and quench your thirst while limiting juice, soda, Kool-Aid, lemonade, and sports drinks.
4. **Eat clean whenever possible, minimizing highly processed foods.** Ideally if it is not clean food (fresh fruits, vegetables, meats, eggs, milk, whole grains), check the nutritional labeling and select products that have five or fewer ingredients. Anything beyond that is often chemicals and processing additives.
5. **Find time for regular physical activity.** Preschool children need two or more hours of physical activity each day. Adults need at least 30 minutes of physical activity on most days and some of it should be vigorous.
6. **Schedule time to get outdoors.** (once or twice daily is ideal) to soak up Vitamin D, marvel at nature and all of its beauty (that awe factor has health benefits), engage in vigorous activity and breathe in phytoncides.
7. **Get enough sleep.** Take time to set up the ideal sleep environment and develop an effective nap and nighttime routine to prepare for sleep. Children typically need 8-14 hours of sleep each day; adults 7 to 9 hours. Consider these bedtime activities for children: set a consistent bedtime and stick to it, turn off all screens 30-45 minutes before bedtime, have a light snack or drink of water, take a warm bath, brush teeth, use the toilet, put on pajamas, read bedtime stories, or talk about their day, say prayers, or show gratitude, settle in with a security item (blanket, teddy bear, doll), say good night and be firm about walking away. Adults can try some of the same strategies along with meditating, listening to music, journaling, and creating a bedroom environment conducive to sleep (clean, cool, dark, and free of distractions).
8. **Minimize stress.** Begin by identifying and addressing stressors and finding stress reducing activities that work for you (and your children). Incorporate these stress reducers into children's daily life: Positive family interactions; laughter (stories and anecdotes, jokes, books, cartoons, comedy, movies, sense of humor, etc.); deep and controlled breathing and simple mindfulness activities; physical activity; time in nature (look for that which creates a feeling of "awe" or "wow"); time to talk through what is bothering them; snuggling to feel safe; art and play activities that are conducive to reducing stress (coloring, playdough, painting, silly putty/slime, etc.) and a relaxed and reasonable schedule of activity (resist the urge to

¹² <https://www.healthline.com/health/food-nutrition/foods-that-boost-the-immune-system>

overschedule). Adults can engage in many of the same activities adding to the mix: meditation, yoga and mindfulness, exercise, a listening ear to share thoughts and concerns, candles and essential oils, and journaling.

9. **Maintain a healthy weight.** Eat daily a variety of fresh fruits and vegetables, whole grains, low fat dairy, lean meats (or eggs, nuts, and beans) and healthy fats. Pay attention to portion sizes (half your plate should be fruits and vegetables, a quarter of your plate a starch or grain and a quarter meats/egg/fish or other protein sources. Add 4-8 oz. of low-fat dairy on the side. Limit sugar-sweetened beverages, candy and baked goods, fast food, and high calorie restaurant meals. Find time to be physically active each day. Get a good night's sleep.