

How to Protect Yourself from COVID-19: Supporting Your Immune System When You May Need it Most

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This is an unprecedented time, a once in 100-year pandemic. A time for us to be level-headed, open-hearted, and focused on what we can do to protect ourselves, our families, our communities, and our country, and be kind to each other. A time to hunker down with family, to take care of ourselves, to cook and cherish the people and things we love. The more we can face the threat with calm and kindness, the better able we will be to survive and thrive.

The threat is to our health and to our economy. We have weathered worse as a nation including two World Wars and The Great Depression with far greater devastation and death (although not on our soil). There will be loss and loss of life, but we will emerge in 12-18 months with a new vaccine, new medications and treatment options, and more widespread immunity.

COVID-19, the viral disease caused by the SARS-CoV-2 virus, is a global pandemic. Scientists estimate that 40% to 70% of our population will be affected. Those with a chronic disease will face a greater threat. In some cases, they will be affected ten times more than the rest of the population, underscoring the need to protect this vulnerable group. Additionally, the mortality rate estimates range from 0.6% to 4% percent and is much higher in people over 75 years old.

The question my patients, friends, and family are asking is “What can we do”? The answer is a lot, both to reduce our own risks and reduce the spread nationwide.

The World Health Organization (WHO) has declared this a global pandemic. The federal government has declared a national emergency including a ban on

flights from Europe. The Centers for Disease Control and Prevention (CDC) advised that any gatherings be limited to less than 50 people and President Trump advises gatherings of no more than 10 people. Many states and cities have shuttered schools, restaurants, and bars. San Francisco has ordered its citizens to “shelter in place” for 3 weeks. Sixty million Italians are essentially under house arrest. Most businesses have canceled meetings and conferences and are encouraging remote working. Airlines have cut flights. The NBA, MLB, NHL, and Broadway have suspended their games and shows. Social distancing is becoming the norm (for good reason). This is a massively disruptive pandemic, no doubt.

To attack this pandemic (and not just protect ourselves), as my friend Jordan Shalin, MD reminded me, we must weigh the cost of being wrong against the chance of being wrong (to paraphrase the political theorist Hannah Arendt).

Let’s start by reviewing what we know to date (and it is changing daily). Since this is something no one has ever seen in our lifetime, take all “facts” as a potential changing sea of scientific information.

What We Know About the Disease

- COVID-19 is caused by a virus that emerged from Wuhan, China. It is now (as of March 16) in 155 countries and has resulted in an estimated (because of lack of widespread testing) 180,000 cases with more than 7,000 deaths worldwide.
- This is a novel virus in the human population with no native immunity which means we are all susceptible.
- It is spreading rapidly. On March 1st in the USA, there were 76 cases. Today (March 16th) there are 4,178 cases, a 54 fold increase in a little over 2 weeks. At the current rate of exponential spread that means in 2 more weeks, there will be 225,000 people infected and in 2 more weeks after that, it will be 12 million and 2 weeks later it could be 657

million people (meaning the whole US population could be affected) unless we are extreme in our mitigation strategies. The cost of underreacting is far greater than the cost of overreacting.

- A moderate case scenario, according to the Department of Health and Human Services, would result in 38 million needing medical care, 1 million requiring hospitalization, and 200,000 needing ICU care. A severe case scenario would lead to 2.9 million needing ICU beds (we currently have only 64,000).
- It will get worse before it gets better and we will be dealing with it for the next 12-18 months. It may die down over the summer but could roar back in the fall as did the Spanish Flu of 1918.
- It is easily transmissible and can survive on surfaces for up to 72 hours, some say longer.
- People are infectious and can transmit the virus from 2 days to 14 days after exposure.
- The virus is easily killed with antibacterial cleaning agents including alcohol, bleach, and hydrogen peroxide.
- The most at risk are those with a chronic disease, those over 70 years old, health care workers, and those on immunosuppressive medicine (commonly used for autoimmune disease, cancer, and transplant rejections).
- Up to 80% of people infected have mild or no symptoms and up to 96% to 99% recover from the infection. But up to 1.5 million will die in the US because of the large-scale, rapid spread and lack of immunity in the population.

- The typical symptoms are fever, cough, and fatigue but not a runny nose.
- The disease affects the lungs leading to respiratory failure in severe cases and death may be caused by a cytokine storm or massive burst of inflammation (see below for how this may be addressed). It does this by inhibiting the production of surfactant by the lungs (which keeps airways open).
- Death rates are highest in those with chronic disease (diabetes, heart disease, cancer, lung diseases, and smokers—time to stop the vape pens!) and the elderly (about 15% over 80 years old).
- It affects older, sicker individuals, but even young healthy people can be affected (except, it seems, children, although they can be carriers).
- Mortality rates vary depending on rates of testing (see below).

What We Know About Testing

- South Korea, early on, developed a test that is 98% accurate.
- They perform 10,000 tests a day (vs. 5,000 total in the US as of today) and have a mortality rate of about 0.6%, which is more than the flu (0.1%) but far less than China or Italy where extensive testing was not done and mortality rates are between 2.4% to 6%, most likely due to lack of diagnosis in mildly symptomatic people.
- The key to knowing the true mortality rate is knowing the actual number infected, not just those diagnosed.
- If the number of people tested is 100 and 3 die, the rate of death is 3%. However, if for every 100 people tested, there are actually 1,000 who

are actually infected then the death rate is 0.3%. Unfortunately because of the lack of widespread testing, we do not have accurate mortality rates. In fact, there may be 5 to 10 people infected with COVID-19 for every person diagnosed according to epidemiologists from Columbia University.

- The clearest data for mortality among ambulatory, well-fed individuals comes from the Diamond Princess cruise ship because all of the 3,500 people on board were tested. So far, 706 have tested positive for the virus and 6 have died, a case fatality rate of 0.85%, almost 10 times greater than the average flu but similar to that seen with severe epidemics of influenza.
- America's delayed response to ramping up the development, production, and scaling of testing has led to mixed advice from experts—from having anyone with symptoms tested to ensure case tracking and self-quarantine to testing only those with severe symptoms (mostly, I believe, because of the lack of accessible testing).
- Testing will soon scale in the US but what the recommendations (and process for testing) will be is still not clear. Testing of all contacts may not be realistic but testing of all symptomatic people should be.

What We Know about Slowing the Rate of Spread or “Flattening the Curve”

- China and South Korea have seen a reduction in cases and a “flattening of the curve” because of severe quarantine and case tracking policies. We can learn from them. Sometimes draconian measures are needed to stop the spread.
- The strategy in the US (because of delayed response) has shifted from containment to mitigation to try to reduce the spread by self-quarantine

and social distancing.

- Slowing the spread by self-quarantine and social distancing (even if the same number of people eventually get it) will help reduce the burden on health care systems, hospitals, and ICU beds. There are an estimated 160,000 ventilators in America, far short of what we will need if we don't slow the spread.

What is the Status of Treatments and Vaccines?

There are currently no approved treatments other than supportive care with fluids, symptomatic care, and ventilators if needed. However, many are hard at work looking at various treatment options. Here are the most promising.

- **Plaquenil** (hydroxychloroquine): a medication used for autoimmune disease. It is widely available as a generic medication, low in cost, and low in side effects. The recommended dose is 200 mg twice a day for 10 days.
- **Remdesivir**: an antiviral drug developed for Ebola, given only intravenously. Studies are underway and medications promise faster approval than vaccines.
- **Convalescent plasma therapy**: means taking the blood of a recovered patient, extracting the antibodies from their blood, and giving it to those who are sick.
- **Cytokine blocking drugs** (tocilizumab, sarilumab, etc.): can reduce the inflammatory storm that leads to death. Cytokines are inflammatory messenger molecules that can spin out of control with COVID-19.
- **Interferon B.**: In Cuba, they have developed a drug that can calm down an out of control inflammatory response. More data is needed but

seems promising.

- **Vaccines:** will likely take 12 to 18 months to progress with human trials for safety and efficacy.
- **Theoretically beneficial medically supportive therapies:** Some therapies are being suggested based on their mechanism of action such as theophylline (bronchodilator), ARB medication (blood pressure medication), amantadine (anti-viral), and sodium bicarbonate (like Alka Seltzer Gold, to increase the pH making it harder for a virus to thrive).

Out of the Box Treatments

- **High dose intravenous vitamin C:** In Wuhan, doctors have been using high dose intravenous vitamin C for those who are sick and for those in the hospital. Nearly all patients with symptoms received 50-100 mg/kg/day for mild symptoms and 100-200 mg/kg/day for severe forms. This, unfortunately, is not widely available in the US but trials are underway for use in the ICU for people with overwhelming infections.
- **Ozone therapy:** This may be unknown to many but is used extensively in other countries for infections. It is the most potent disinfectant and can be given intravenously, rectally, or nasally. It also helps to improve immune function and antioxidant systems in the body. More research is needed but it may be an effective option for treatment.

***These treatments should not be used unless you work with a physician or trained practitioner.*

How Can I Protect Myself, My Family, and My Community

There are many potential approaches from proven to experimental to ensure you, your family, and your community remain safe. These fall into two categories. The first is how to not get it in the first place and reduce spread and

the second is how to support your immune system so you are more resilient to infection. This pandemic can bring out the best in us or the worst. It is a time for kindness, for calling friends, for FaceTimes with family, or hunkering down with loved ones and family in your home, cooking meals from scratch, and for finding ways to help those who are in need.

How to Avoid Infection with COVID-19

- **Social Distancing.** This is among the most effective way to prevent spread. Don't shake hands. Keep a 6-foot radius from others (unless they are healthy, uninfected people who live in your home). Cancel vacations, business trips. Restaurants, bars, schools, yoga classes, fitness clubs and more are shutting down. Work from home if you can.
- **Practice Good Hygiene.** Wash your hands for 20 to 30 seconds with soap and water. Hand sanitizer is ok but not necessary. If you are out and about, do your best to wash hands frequently and avoid touching your face (hard to do).
- **Stay Home.** Since restaurants, bars, sports events, and gatherings of more than 10 are not recommended, stay home and work on projects you have neglected. Write letters, play games, prepare home-cooked food. If the whole country stayed home for 14 to 21 days we could significantly slow the pandemic. San Francisco has already recommended its citizens stay home.
- **Protect Those At Risk.** The CDC recommends that people over 60 stay home and avoid unnecessary contact. If you have elderly parents find ways to support them with food and supplies. If you have an autoimmune disorder, cancer, or are on transplant medication be especially careful.

How to Support Your Immune System: Remember, Let Food Be Your Medicine!

- **Eat a whole foods, nutrient-dense diet.** Our immune system relies on nutrient-dense whole foods to function well. Death from infections in the developing world is often not due to the infection itself but the body's inability to fight it because of nutrient deficiencies. Since more than 90% of Americans are deficient in one or more nutrients at the minimum dose to prevent deficiency diseases like scurvy and rickets, we all need to focus on improving the quality of our diet. Since diabetics are more likely to die from COVID-19 and one in two Americans is pre-diabetic or diabetic this is a great opportunity to cut sugar and starch which suppress the immune system. For my favorite recipes visit drhyman.com/blog/category/recipes. I know a lot of people are ordering their food now. If you're looking for great companies with healthy options, check out the following:
 - thrivemarket.com
 - butcherbox.com
 - vitalchoice.com
 - mariposaranchmeats.com
 - grassrootscoop.com
- **Cut out sugar and refined starches.** Now has never been a better time for a sugar and junk food detox. Studies have shown that refined sugars can suppress your immune system for hours after ingesting. Limiting starch and sugar will help your immune system function better and your overall health improves. To help you detox from sugar and starch and reset your body to a healthy state I have created the 10 Day Reset which is available for free download at www.getfarmacy.com/free
- **Ensure adequate protein intake.** While most Americans eat adequate amounts of protein, some do not such as the elderly and vegan

populations. Protein is critical for immune function and protein malnutrition is a big risk factor for death from infections. Eat approximately 1 gram/kg or about half your body weight in grams of protein a day, or about two four-ounce servings of organic, clean animal protein. Plant-based proteins (legumes, nuts/seeds) are adequate if consumed in enough quantity. Try tofu and tempeh from non-GMO soy for the highest protein concentrations.

- **Add garlic, onions, ginger, and lots of spices (oregano, turmeric, rosemary) to your meals!** Add these to your soups and vegetable dishes, as well as bean dips and sauces. Garlic and onions offer wide spectrum antimicrobial properties.
- **Eat multiple servings of colorful fruits and vegetables** high in vitamins C, A, and phytonutrients that support the immune system. Choose more leafy greens, cruciferous vegetables (broccoli, Brussels sprouts, and cauliflower), peppers, sweet potatoes, and squashes. Aim for 2 servings of fruits and 8 or more servings of vegetables! A serving is half a cup.
- **Eat fermented foods to support your microbiome and immunity.** Eat sauerkraut, kimchi, natto, miso, tempeh, unsweetened yogurt, kefir. They also keep well.
- **Alkalize your body.** Sugar and processed foods tend to make your body slightly more acidic and more receptive to the COVID-19 virus. Eating whole plant foods and lots of them, 5 to 8 cups a day, is a good way to alkalinize your body. Try making big vegetable and bone broth soups which can help improve your pH.
- **Drink plenty of fluids, especially warmer fluids.** Consuming adequate fluids supports all your bodies' functions including the immune system. [Make soups and broths](#) (from scratch with fresh vegetables is always best) and have them throughout the week. Drink herbal teas

like ginger and turmeric tea. Keep a bottle of filtered water with you at all times. Avoid concentrated fruit juices and sweetened beverages, as the sugar content is harmful for the immune system.

- **Get sufficient sleep!** We all know [sleep](#) restores and heals the body. Without adequate sleep, optimal immune function is next to impossible! Get in a better rhythm and head to bed earlier. Aim for seven to eight hours a night. Incorporating [various relaxation and breathing techniques](#) throughout the day to help with stress and allowing the mind to rest is also very helpful!
- **Get regular exercise.** Mild to moderate exercise (for approximately 30-45 minutes) helps boost the immune system. Avoid overexertion such as training for endurance events when you are feeling run down. This will lower your immune defenses. If you are able to exercise outside in less populated areas, great. If not find workouts and yoga classes online. [Try the 7-minute workout app.](#)
- **Practice meditation and yoga.** The data are clear. Increased levels of stress increase susceptibility to viral infections. In one study volunteers had cold viruses injected into their nasal passages. Only the ones who scored high on the stress questionnaire succumbed. Now is the time to [learn meditation](#), double down on your practice, do yoga, take hot baths, do deep breathing, practice home massage with your loved ones.
- **Start a garden.** If you live in an area with a lawn or some access to land, grow some of your own food. During WWII, victory gardens produced 40 percent of the food in America.

How to Supplement for Immune Function

There is an increasing number of health claims and the promotion of

supplements has also increased in the coronavirus frenzy. There is a lot we don't know and a lot we do. It's important not to go overboard and be sensible.

Let's start with an overview of the vitamins, minerals, and herbs you need and why they are important.

- **Multivitamin/Mineral:** This is the foundation for any health support regimen. It's a good way to cover the basic vitamins and minerals your body needs for day-to-day functions. If you aren't on a good multivitamin you should get and stay on one. Look for a high-quality, broad-spectrum multivitamin and mineral.
- **Vitamin D3:** Adequate vitamin D status is critical for optimal immune function and this cannot be achieved without supplementation during the winter months. Studies have shown that people with vitamin D deficiency are 11 times more likely to get a cold or flu, while supplementing with vitamin D can reduce colds and flu by 42%. It is best to get your levels of 25-OH vitamin D checked for accurate dosing. Blood levels should be above 30 ng/dl, however, optimal levels are probably closer to 50ng/dl for most. Many need 5,000 IU or more of vitamin D3 a day in the winter. Start with 2,000 IU for adults, 1,000 IU for children.
- **Buffered Vitamin C:** The role of vitamin C in supporting the immune system has long been known. Take 500-1,000mg throughout the day with meals and snacks.
- **Zinc Citrate:** You can take an additional supplement or consume more foods high in this powerful immune-supporting nutrient. Seafood—especially oysters—red meat, and pumpkin seeds are the best food sources. Take 30 mg per day.
- **Probiotics:** A healthy gut flora supports a healthy gut, a major barrier against pathogens and integral to the immune system. Look for brands

that offer several species of good bacteria and contain at least 5-10 billion organisms per capsule. Lactobacillus plantarum and spore forms of Bacillus are the best for immunity.

- **Fish Oil (Arctic Cod Liver Oil):** This old-time remedy for good health and robust immunity still stands true! In addition to the good fats, this cod liver oil contains additional vitamins A and D for added immune protection.
- **1-3, 1-6 Beta Glucans:** Research has shown that these compounds up-regulate the function of the innate immune system. This part of your immune system is the first line of defense against viruses and bacteria. It helps your white blood cells bind to and kill viruses and bacteria.
 - **Note:** Patients with autoimmune diseases should not take this.
- **Natural anti-viral herbs:** Many herbs have broad-spectrum antimicrobial effects or immune-enhancing effects. Formulas contain different immune boosters such as astragalus, green tea extract, andrographis, and monolaurin.
- **Mushroom Extracts such as reishi, maitake, shiitake, turkey tail, and cordyceps:** These provide immune-supporting properties. Cooking with medicinal mushrooms like shiitake is also helpful.
- **Theoretically beneficial supplements.** The ways in which these products work may provide some benefit for prevention and treatment. Potentially beneficial ingredients include quercetin, resveratrol, curcumin, rosemary, Asian ginseng, alpha-lipoic acid.

It is not necessary to take all of these. Just starting with a multivitamin, vitamin D3, vitamin C, zinc and fish oil is a great start.

If we all stay calm, avoid the pandemic of fear, follow our common sense, and

take care of ourselves and our families we can weather this and dramatically reduce sickness and death. But we have to come together (at least 6 feet apart!) as humans, and as a society to combat this pandemic.