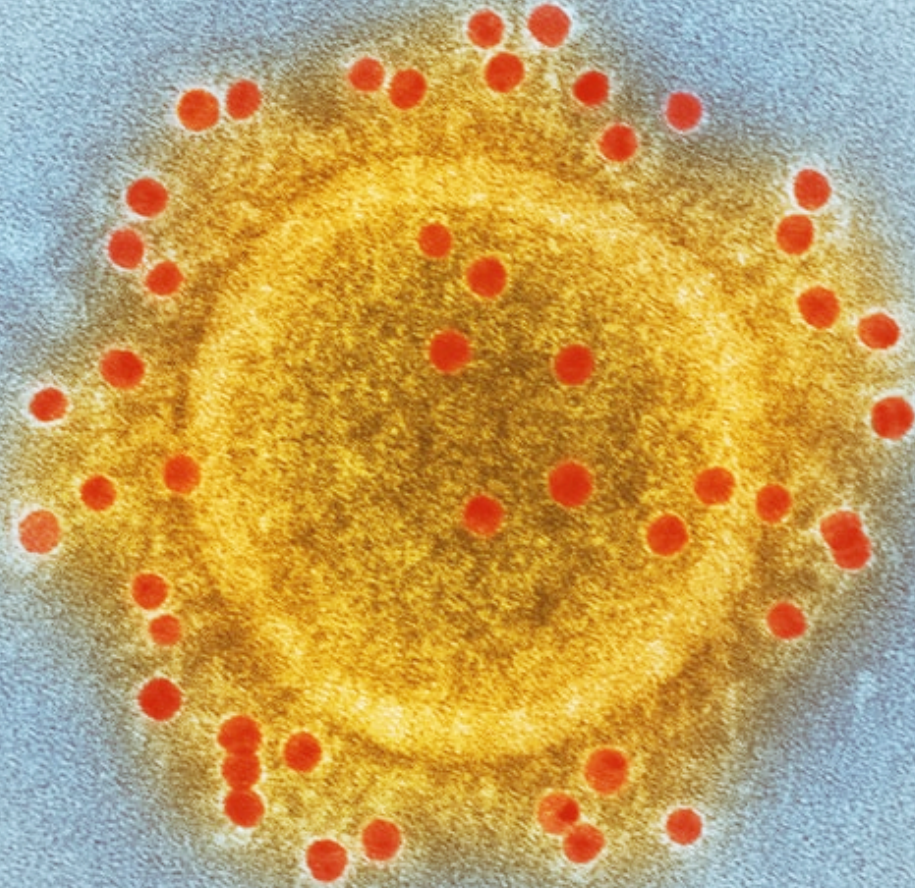




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# FINDING HOPE IN THE AGE OF THE CORONAVIRUS

## An Integrative Physician's View

Dr. Antonio Jimenez | Chief Medical Officer | 4/2/2020



## **Finding Hope in the Age of the Coronavirus: An Integrative Physician's View**

*The author of this article, Dr. Antonio ("Tony") Jimenez, M.D., N.D. is the Chief Medical Officer of [Hope4Cancer Treatment Centers](#) in Mexico. Dr. Tony has dedicated his life to serving the needs of cancer patients and has developed "7 Key Principles of Cancer Therapy™" as the core philosophy behind his treatment protocols. One of those principles, "Immunomodulation," is especially relevant to the COVID-19 crisis the world is facing today. In this article Dr. Jimenez shares practical steps you can take—starting today—to mitigate your fears and bring hope back to your life.*

Within the space of a few short weeks, the world seems to have turned upside down as a tiny virus has decimated our way of life as we knew it. The COVID-19 disease caused by the SARS-CoV-2 virus comes loaded with associated terms such as "global pandemic," "quarantine," "social distancing," "shelter-in-place," "economic recession," and so much more.

But I do not mean this article to repeat those doom-and-gloom headlines back to you—instead, I intend this to be a beacon of actionable hope in these dark times. In that light, I will share with you here some information and practical steps you can take to protect yourself and your family—physically, mentally, emotionally, and spiritually. Many of these steps I am taking myself, and sharing actively with my friends, family, co-workers, and others.

In this article we will cover: (a) the dangers associated with the SARS-CoV-2; (b) general preventative guidelines from COVID-19; (c) integrative approaches to help strengthen your immune system; and (d) some important lifestyle changes that you can incorporate now, and carry through for the rest of your life.

I will also take you through some of the recent progress being made in the world of conventional medicine against COVID-19 and give you my take on what to expect in the next few weeks and months of this pandemic.

### **Why Is the SARS-CoV-2 Virus so Dangerous?**

The SARS-CoV-2 virus is a novel coronavirus. We have all been infected by a coronavirus sometime during our lifetimes (think: *common cold*?). The problem is the word "novel," which means that humans are getting exposed to this specific virus for the very first time, and haven't had the opportunity to [develop the "herd immunity"](#) that protects us from other viruses.<sup>1</sup>

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<sup>1</sup>Sources and References:

Regalado A (2020) [What is herd immunity and can it stop the coronavirus?](#) MIT Technology Review.

[*What is Herd Immunity?* Herd immunity occurs when a significant portion of the population becomes immune to a disease, which greatly slows down its rapid spread from person-to-person. It is not yet known if people can truly become immune to SARS-CoV-2 following initial exposure, and for how long. Also, the more contagious the virus, the more the percentage of population that needs to be immune for herd immunity to be effective. To accomplish this for the SARS-CoV-2 virus, experts estimate that between 40-70% of the population must become immune. When you factor its rate of contagion with the mortality rate of the COVID-19 disease, allowing natural herd immunity to develop could potentially risk the lives of thousands, or even millions—so it must be weighed carefully. On the flip side, keeping the world shutdown over an extensive period risks millions of jobs, business, and the stability of global economies. There are clearly no easy answers.]

This is not the first time a previously unknown virus has emerged from the shadows. However, its high rate and mode of transmission, potential for complicated health scenarios, and mortality rate at a global scale—especially among older and immune-compromised populations—have been unprecedented, making the situation even more precarious. It is also clear now that people infected with the virus [can spread the disease even before they show any symptoms, or even if they remain asymptomatic](#).

Currently, there are no drugs—or vaccines—that can kill this virus or prevent the disease. Despite the mad rush to be first that has already begun, it will probably take pharma and biotech companies many months to develop and launch them.

So, what can we do to protect ourselves and others?

## **General Guidelines to Protect Yourself from SARS-CoV-2**

Let's first review some commonsense preventative guidelines, some of which are being advised by major healthcare centers such as [Johns Hopkins](#)<sup>2</sup> and [Harvard](#),<sup>3</sup> and issued as directives by [international](#)<sup>4</sup> and [national](#)<sup>5</sup> health agencies. These guidelines are designed to help reduce the probability of being exposed to the virus, or exposing others in case you are carrying the infection:

- **Practice good hygiene.** Your hands are the most likely way in which you can pick up the SARS-CoV-2 virus and transfer it to your nose, mouth, and eyes through which it can gain entry into the body. Train yourself to not touch any part of your face with your hands unless they are properly and recently washed. Wash frequently for at least 20 continuous seconds with soap and warm water—ensure

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<sup>2</sup> Maragakis LL (2020) [How can I protect myself \(and others\) from the new coronavirus and COVID-19?](#) Johns Hopkins Medicine.

<sup>3</sup> Coronavirus Resource Center. [As coronavirus spreads, many questions and answers](#). Harvard Medical School Harvard Health Publishing.

<sup>4</sup> World Health Organization: (i) [Advice for public](#); and (ii) [Q&A on coronavirus](#).

<sup>5</sup> Center for Disease Control and Prevention. [Coronavirus \(COVID-19\)](#).

that you are foaming up the soap and rubbing vigorously all over. Focus on the fingertips and under the nails—which you should keep cut as short as possible. Just like foamy soap can engulf and remove oil, it can also [break down the lipid \(oily\) layer that protects the virus](#).<sup>6</sup> Thankfully, the virus does not penetrate intact skin.

- **Display proper behavioral (especially respiratory) etiquette.** If you must sneeze or cough, do so into your elbow. If you have a tissue—use, discard and wash your hands immediately. Do not shake hands, hug, or kiss anyone – period!
- **Practice social (a.k.a. “physical”) distancing.** Maintain a distance of at least 6 feet from others to reduce the chance of your picking up airborne viruses from respiratory droplets that may have been released by an infected person in your vicinity ([watch explainer video here](#)). If you are around people who are at higher risk (e.g. those over 60 years old and/or people suffering from chronic diseases such as hypertension, heart disease, pulmonary diseases, diabetes, or cancer) assume you are a carrier and keep a safe distance away to protect them. Stay away from people who are visually sick, but keep in mind that transmission from asymptomatic carriers has been one of the biggest challenges of the current pandemic. While physical isolation from others is difficult, the more we practice it now, the faster we will be able to resolve to “flatten the curve” of this pandemic and thereby blunt its edge.
- **Teach your children.** If you have small children, teach them the above actions repeatedly until they become habits. Be patient—if you feel this new reality is hard for you, recognize that it must be a lot harder for them. Also, they may simply not understand the gravity of what is happening around them, and that’s ok. Use their innocence as a distraction to keep yourself light-hearted, even as you navigate through these troubled times.
- **Clean, clean, clean!** In a letter to the editor published in the *New England Journal of Medicine*, scientists from the National Institute of Allergy and Infectious Diseases, Princeton University and UCLA claim that the [SARS-CoV-2 virus is stable on various surfaces and aerosols](#) for hours—or even days. It can survive for up to 3 hours in aerosols, 24 hours on cardboard, and up to 2-3 days on plastic and stainless steel.<sup>7</sup> As reported in the *Journal of Hospital Infection*, the SARS-CoV-2 [can be inactivated within 1 minute](#) by using the following: 62-71% ethanol, 0.5% hydrogen peroxide,

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<sup>6</sup> Yong E. (2020) [Why the coronavirus has been so successful](#). *The Atlantic, Science Section*. Accessed: Mar 28, 2020.

<sup>7</sup> Van Doremalen N, et al. (2020) (Letter to the Editor) Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *New Engl. J. Med.* Doi: [10.1056/NEJMc2004973](#).

or 1% sodium hypochlorite (bleach).<sup>8</sup>

So, clean, clean, clean! With your hands and face well-protected, keep all commonly used surfaces clean using a bleach-based cleaner. These include doorknobs and handles, doorbells, kitchen counters, bathrooms, mailboxes etc. Wipe down incoming letters and packages. Keep your shoes outside the house if possible. People might think you are paranoid, but you should know that you are making an informed decision.

- **Should you wear a mask?** My recommendation is: yes! Many government agencies have been strongly recommending that only those who are tending to the sick or are sick themselves should wear masks. This is for two reasons: one, people may not know how to wear them properly, and get lulled into a false sense of security; two, there is a severe shortage of masks and it is important to prioritize their availability for healthcare professionals on the frontline of the pandemic.

So, what should you do? Maybe we can learn from Asian countries that have faced several pandemics, where [wearing a mask is considered an effective physical barrier](#) against infection-carrying respiratory droplets and even considered a sign of respect towards others.<sup>9</sup> A study conducted in 2009 that appeared in an article in the journal *Clinical Infectious Diseases* clearly showed that even a surgical mask (let alone the N95 respirator mask) was able to prevent influenza viruses from penetrating through the mask from the coughing action of infected volunteers.<sup>10</sup> This study was [featured in an article](#) that appeared in the online news website *Wired*, which also referenced a study on 246 participants with respiratory infections where no coronavirus was detected for volunteers wearing a surgical mask measured over a period of 30 minutes, compared to 30-40% of participants when they were not wearing one. [Review this article](#) from Center for Infectious Disease Research to learn more about the types of masks that work.<sup>11</sup>

Wearing even a simple surgical mask doesn't mean you should not heed proper social distancing directives, but it does offer you some protection, reducing the probability of getting infected.

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<sup>8</sup> Kampf G et al. (2020) Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *J. Hospital Infection* 104:246-251. Doi: [10.1016/j.jhin.2020.01.022](https://doi.org/10.1016/j.jhin.2020.01.022).

<sup>9</sup> Leung H. (2020) [Why wearing a face mask is encouraged in Asia, but shunned in the U.S.](#) Time Magazine Article.

<sup>10</sup> Johnson DF et al. (2009) A quantitative assessment of the efficacy of surgical and N95 masks to filter influenza virus in patients with acute influenza infection. *Clin Infect Diseases* 49:275-277. Doi: <https://doi.org/10.1086/600041>.

<sup>11</sup> Souciera S (2020) [Unmasked: Experts explain necessary respiratory protection for COVID-19](#). News and Perspective, CIDRAP Website.

In these volatile times, it is highly unlikely that you will find a proper mask. Also, it is our civic duty not to hoard items—especially the coveted N95 masks—that could save the lives of others in less fortunate situations including our frontline medical professionals. So, if you don't have one, don't panic—if you are diligent about maintaining proper social distance, you will be reducing the possibility of an unexpected infection in most situations. You can also get creative like others and make your own mask, you can [find a template and directions](#) in this New York Times article.

- **Should you wear gloves?** Gloves can prevent your hands from getting exposed to the virus, but you must understand that the virus is just as capable of sticking to them as to your hands. So, make sure you are: (a) either using disposable gloves that you do not attempt to reuse; or thoroughly cleaning and sun-drying your non-disposable gloves after use; (b) observe all the above precautions while wearing gloves as you would do without—which includes washing your hands thoroughly after you remove them.

### **Symptoms, Predisposing Health Conditions and Mortality from COVID-19**

The biggest fear from COVID-19 that has triggered an almost worldwide shutdown is the concern about an uncharacteristically high mortality rate for viral infections. The uncertainty of being able to measure the exact mortality rate stems from the lack of enough rapid and dependable COVID-19 tests. It does appear as though the mortality rates that have been reported so far are over-estimated for that reason. In the latest paper on this topic, epidemiologists from the Imperial College of London have estimated the [mortality rate to be 0.66%](#) based on the data gathered from China.<sup>12</sup> There was a strong age-related bias to the mortality rate that ranged from 0% for children under 9 years of age, all the way to 18.4% to those over 80. [These numbers are several-fold higher](#) than the mortality rate from influenza (~0.1%) which is a concern, although they are certainly not as high as those reported for the SARS-CoV-1 epidemic in 2003 (14-15%) and MERS epidemic in 2012 (35%).<sup>13</sup> The main issues then lie in the global footprint of the spread, the stealthy methods of transmission, and the reasonably selective targeting of people with underlying health conditions and the elderly that causes serious-to-critical disease conditions, and even death.

**What are the symptoms of COVID-19?** A review of data from different countries shows that most people appear to be recovering from the disease after experiencing mild, or even no symptoms. The symptoms themselves can vary to include any of the following: fever, tiredness, runny nose, sore throat, dry cough, difficulty breathing, and gastrointestinal (G.I.)

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<sup>12</sup> Verity R et al. (2020) Estimates of the severity of coronavirus disease 2019: a model-based analysis. *Lancet Infect Diseases* Online first. Doi: [10.1016/S1473-3099\(20\)30243-7](https://doi.org/10.1016/S1473-3099(20)30243-7).

<sup>13</sup> Ruan S (2020) Likelihood of survival of coronavirus disease 2019. *Lancet Infect Diseases* Online first. Doi: [10.1016/S1473-3099\(20\)30257-7](https://doi.org/10.1016/S1473-3099(20)30257-7).

symptoms, such as diarrhea. While the respiratory symptoms are more well-known, a study from the Wuhan Medical Treatment Expert Group revealed that [G.I. symptoms were present in half the patients](#), often *before the onset of respiratory symptoms*.<sup>14</sup> They also predisposed patients to poorer prognoses by a factor of almost two!

For severe cases, the tipping point appears to be between days 7 and 9 from the start of symptoms. Past that point, patients either improve or worsen—sometimes irreversibly—as the disease progresses towards pneumonia and organ failure. It is at this tipping point that a patient needs significant medical intervention.

**What makes you more susceptible to serious COVID-19 disease?** If you have underlying health complications or are over the age of 60, you need to be very careful to avoid exposure. [A report from the Istituto Superiore Di Sanita](#) in Italy studied 2003 COVID-19 patients, revealing that the median age of patients infected with the disease (63 years) was well below the median age of patients who died from it (80.5 years). This means that you can contract the disease at any age, but the risk of dying increases greatly for the older populations.

Besides age, the type and number of underlying predisposing health conditions (co-morbidities) made a big difference. In the Italian study, hypertension was the dominant co-morbidity, associated with 76.1% of the deaths. This was followed by diabetes (35.5%), coronary heart disease (33.0%), and atrial fibrillation (24.5%). Other reported co-morbidities included stroke, dementia, COPD, cancer, chronic liver disease, and renal insufficiency. The number of co-morbidities worsened the outcomes, with 48.5% of the deaths occurring in patients with three or more co-morbidities, 25.6% for those with two co-morbidities, and 25.1% for those with only one co-morbidity.

**Use of non-steroidal and steroidal anti-inflammatory drugs.** A [recent paper published in the journal \*Lancet\*](#), based on data from China, raised concerns that commonly used non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen and naproxen sodium, steroidal drugs, as well as several drugs used to treat hypertension and other cardiovascular diseases could increase the number of ACE2 (angiotensin converting enzyme 2) receptors in cells. The SARS-CoV-2 virus appears to use this receptor to bind and enter the cell it is infecting.<sup>15</sup> However, conflicting arguments exist which point to the benefits of these drugs in reducing inflammation in acute cases. This has caused some confusion, because ibuprofen is a commonly used fever reducer and anti-inflammatory. The World Health Organization (WHO) initially recommended the use of acetaminophen instead ibuprofen, but then withdrew its recommendation.

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<sup>14</sup> Pan L, et al. (2020) Clinical characteristics of COVID-19 patients with digestive symptoms in Hubei, China: a descriptive, cross-sectional, multicenter study. *Am J. Gastroenterol.* [Pre-proof](#).

<sup>15</sup> Fang L (2020) (Letter to the editor) Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection? *Lancet*. Doi: [10.1016/S2213-2600\(20\)30116-8](#).



As we learn more, this information will evolve. My goal here is not to scare you, but to inform you—and, to make sure that you are taking your preventative actions seriously. For many of us, these actions will not come naturally; yet, we must adhere to them. At the time of this writing, the number of cases in the US has overtaken the rest of the world as it hurtled past the 225,000 mark—with over 5,500 recorded deaths. The number of known cases is doubling every 3 days. However, there continue to be reports of people who are not heeding official social distancing directives. Self-preservation in the era of COVID-19 means looking out for the well-being of others by maintaining a safe distance—and this may be our biggest safeguard in the foreseeable future.

## **Overcoming Fear: An Integrative Approach to Protecting Yourself**

Now that you understand what to do to avoid the virus from without, let us discuss what you can do to fortify yourself from within.

COVID-19, like most other diseases, preys mostly upon the physically vulnerable. Many decades ago, as a young physician treating cancer patients, I developed seven key principles outlined in my book [\*Hope for Cancer: 7 Principles to Remove Fear and Empower Your Healing Journey\*](#).<sup>16</sup> Through these principles, I showed how a person's physical, mental and spiritual vulnerabilities create a fertile ground for the seeding and growth of cancer, and how reversing them is the key to healing. This is true for most serious diseases, and COVID-19 is no exception.

This concept is not just science, it should strike you as logical commonsense. Ask yourself: What are the chances that you can resist infection if you can make your immune system stronger? If you have a disease or condition that predisposes you to serious COVID-19 disease (such as hypertension), and you can do something about it to reduce its manifestation (such as exercise), would you? I think you know the answers.

**Supplementation.** There are plenty of reports from across the world that show that people who have pre-existing health conditions and compromised immune systems are much more likely to be higher risk COVID-19 cases. So, what can you do to support your immune system and improve your health status, in general? One of the answers to that question is supplementation. Here are some suggestions for you to consider:

- **Vitamin C (Intravenous, liposomal, or regular).** Researchers have documented the [\*role of vitamin C for immune support\*](#) over many decades,<sup>17</sup> and the effective use of high doses of intravenous vitamin C (IVC) for cancer treatment is detailed in

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<sup>16</sup> Jimenez A (2019) [\*Hope for Cancer: 7 Principles to Remove Fear and Empower Your Healing Journey\*](#), Envision Health Press, Austin, TX.

<sup>17</sup> Carr AC; Maggini S (2017) Vitamin C and immune function. *Nutrients* 9, 1211. doi: [10.3390/nu9111211](https://doi.org/10.3390/nu9111211).



[Pauling and Cameron's pioneering work](#) in 1973.<sup>18</sup>

China has been the first country that has successfully stopped the first wave of the COVID-19 infection, and one treatment they have reported using is intravenous vitamin C. One of the lead physicians on the COVID-19 war front in China is Dr. Enqian Mao. He is the Chief of Emergency Medicine Department at Ruijin Hospital in Shanghai and member of the Senior Expert Team at the Shanghai Public Health Center where all COVID-19 patients have been treated.

In a high-level online meeting of the Editorial Board of the Orthomolecular Medicine News Service on March 17, 2020, Dr. Mao [reported using IVC on a group of about 50 patients with moderate to severe cases of COVID-19](#)<sup>19</sup> with a daily dose between 10 to 20 grams per day for 7-10 days. All the patients recovered, and none of them showed any side effects. In a rapidly deteriorating case, he gave the patient 50 grams of IVC, intravenously dripped over a period of 4 hours—the patient recovered in real time, in front of the critical care team.

It is reported that New York's largest hospital system [has started giving vitamin C to patients in large doses](#) (1500 milligrams, 3-4 times a day). This is in addition to other drug combinations such as hydroxychloroquine and azithromycin (described below). It is known that, at the stage of sepsis, the body goes through a severe depletion of vitamin C. A [recent clinical trial](#) demonstrated that vitamin C infusion greatly reduced the mortality rate of patients suffering from Acute Respiratory Distress Syndrome (ARDS) and sepsis after community-spread viral infections.<sup>20</sup>

Following [Dr. Dietrich Klinghardt's recommendation](#) (Klinghardt Institute), I recommend that you take at least 2,000 milligrams of vitamin C every day in two daily doses as a preventative. If available, see if you can find a good quality liposomal vitamin C for one of those doses. If you can't find the liposomal variety, regular vitamin C will do. Make sure that the source of your vitamin C is non-GMO.

- **Vitamin D.** It is now well understood that vitamin D plays a crucial role in modulating both the innate (immediate response) and adaptive (long-term memory) immune systems, not just strengthening our skeletal system. Decreased vitamin D levels are associated both with [increased development of autoimmune](#)

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<sup>18</sup> Frei B; Lawson S. (2008) Vitamin C and cancer revisited. *Proc. Natl. Acad. Sci. USA*. 105:11037-11038. doi: [10.1073/pnas.0806433105](https://doi.org/10.1073/pnas.0806433105).

<sup>19</sup> Cheng R. [Successful high-dose vitamin C treatment of patients with serious and critical COVID-19 infection](#). Orthomolecular Medicine News Service (For Immediate Release, Mar 18, 2020).

<sup>20</sup> Arabi YM (2019) Critical care management of adults with community-acquired severe respiratory viral infection. *Intensive Care Med* 46:315-328. Doi: [10.1007/s00134-020-05943-5](https://doi.org/10.1007/s00134-020-05943-5).

[conditions as well as susceptibility to infections.](#)<sup>21</sup> In the United States, about [75% of teens and adults are deficient in vitamin D,](#)<sup>22</sup> making it a haven for the prevalence of chronic diseases and a tinderbox for the spread of an infection such as COVID-19.

It is never too late to start supplementing with vitamin D. I usually recommend a daily dose of 5,000–10,000 I.U. of Vitamin D3 alongside 100 milligrams of vitamin K2. The latter, taken alongside vitamin D3, helps improve bone absorption of calcium and prevent its deposition on arteries.

- **Ozone.** As a powerful oxidant, ozone has been used for decades for the treatment of a [variety of infections, including many viruses, such as the original SARS virus.](#)<sup>23,24</sup> Viruses use reduced sulfhydryl groups to penetrate, infect, and then multiply in human cells—[ozone can oxidize those groups and render the virus ineffective.](#)<sup>25</sup> Dr. Juan Carlos Perez Olmedo, recognized as the father of ozone therapy in Spain, and others, are promoting the use of ozone as a complementary and compassionate therapy against COVID-19 through its use via rectal insufflation, sublingual delivery, or even intravenous in advanced cases; there are reports of its use in China as well.
- **Andrographis Extract.** The bitter extract of the Andrographis plant stem and leaves contains a diterpenoid, known as andrographolide. This extract is known for its powerful anti-inflammatory effects. It also modulates the immune system, counters oxidative stress, and can restrain virus replication and virus-induced pathogenesis.<sup>26</sup> [Dr. Klinghardt considers Andrographis to be one of the must-have supplements](#) in the face of a viral pandemic.
- **Micro and Macronutrients.** In the early 2000s, I traveled to South Africa to study the effect of one of my immune-modulating supplement formulas on improving the quality of life of deeply immune-compromised HIV-1/AIDS patients. The results were incredible, and we have been using an improved version of that formula with our cancer patients ever since. This formula combines macro- and micronutrients,

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<sup>21</sup> Aranow C. (2011) Vitamin D and the immune system. *J. Invest. Med.* 59:881-886. doi: [10.231/JIM.0b013e31821b8755](#).

<sup>22</sup> Ginde AA, et al. (2009) Demographic differences and trends of vitamin D insufficiency in the US population, 1988-2004. *Arch. Intern. Med.* 169:626-632. doi: [10.1001/archinternmed.2008.604](#).

<sup>23</sup> Sunnen GV (2003) SARS and ozone therapy: Theoretical considerations. Quote from O3 Center Articles, accessible at [this link](#), retrieved on Mar 22, 2020.

<sup>24</sup> Elvis AM; Ekta JS. (2011). Ozone therapy: A clinical review. *J. Nat. Sci. Biol. Med.* 2:66-70. [10.4103/0976-9668.82319](#).

<sup>25</sup> Rowan RJ; Robins H (2020). A plausible “penny” costing effective treatment for corona virus – ozone therapy. *Inf. Dis. Epidemiology* 6:113. doi: [10.23937/2474-3658/1510113](#).

<sup>26</sup> Gupta S, et al. (2017) Broad-spectrum antiviral properties of andrographolide. *Arch Virol* 162:611-623. Doi: [10.1007/s00705-016-3166-3](#).

along with immune-modulating herbs, to help reboot and rebuild a depleted immune system.

- **Propolis.** Propolis is a greenish-brown product deposited by bees to coat their hives and is known for its immunomodulating properties. Specifically, propolis has also been documented for its [antiviral properties](#).<sup>27</sup>
- **Aloe Vera extract.** In a [pilot study conducted at the University of Miami](#), Aloe Polymannose Multinutrient Complex (APMC) was shown to demonstrate cognitive, immunomodulatory, and gastrointestinal benefits in severe Alzheimer's disease patients.<sup>28</sup> APMC is an extract from the versatile Aloe Vera plant, which has a long history of use as a medicinal herb for a variety of indications. The concentration of the key polysaccharide in the Aloe extract, acemannan, defines its quality and potency (at least 15% acemannan).
- **Coenzyme Q10.** Coenzyme Q10 (CoQ10) is a substance found in the energy factories of our cells—the mitochondria—and is essential for energy metabolism and DNA replication and repair. Many people recognize the deficiency of CoQ10 to be associated with several cardiovascular diseases, including hypertension—co-morbidities for high-risk COVID-19. Also, [a recent study conducted at the Beth Deaconess Medical Center](#) in Boston found that patients suffering from acute influenza had severely reduced levels of CoQ10—the deficiency was associated with increased inflammatory biomarkers.
- **Artemisinin.** Extracted from the plant, *Artemisia annua* (Wormwood), artemisinin appears in traditional medicine to treat fevers and as a globally accepted treatment option against malaria. Its semi-synthetic derivative, artesunate, has been used to treat cancer. Artemisinin possesses a [wide spectrum of antiviral activity](#).<sup>29</sup> It was screened as one of four herb extracts out of a panel of 200 Chinese medicinal herbs that were found to be [active against the SARS-CoV-1](#) virus.<sup>30</sup>

This is by no means an exhaustive list of options, but they are my top recommendations for the developing COVID-19 scenario. I encourage you to also visit *Terrakeys* ([terrakeys.com](http://terrakeys.com)), an excellent web store where you can find many quality devices and supplements for natural, non-toxic healing.

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<sup>27</sup> Marcucci M (1995) [Propolis: chemical composition, biological properties and therapeutic activity](#). *Apidologie* 26:83-99.

<sup>28</sup> Lewis JE. (2013) The effect of an aloe polymannose multinutrient complex on cognitive and immune functioning in Alzheimer's disease. *J Alzheimers Dis* 33:393-406. Doi: [10.3233/JAD-2012-121381](https://doi.org/10.3233/JAD-2012-121381).

<sup>29</sup> Efferth T et al. The antiviral activities of artemisinin and artesunate. *Clin Infect Dis*. 47:804-811. Doi: [10.1086/591195](https://doi.org/10.1086/591195).

<sup>30</sup> Li S-Y, et al. (2005) Identification of natural compounds with antiviral activities against SARS-associated coronavirus. *Antiviral Res.* 67:18-23. Doi: [10.1016/j.antiviral.2005.02.007](https://doi.org/10.1016/j.antiviral.2005.02.007).



**Lifestyle Changes.** Another way to improve your overall health and immune system status is to make some key adjustments to your lifestyle. Here are some suggestions:

- **Exercise and breathing.** The need for social distancing does not mean you cannot get out of the house every day and go for at least one brisk walk (as your body allows) for 30-45 minutes, preferably in the sun. Breathe in the fresh air, and in so doing, exercise your lungs and oxygenate your body.
- **Get enough sleep.** Lack of sleep is connected to increased risk of viral infections that result in colds and increases inflammatory markers. Reduced melatonin from lack of sleep also triggers inflammatory processes in the body.
- **Eat healthy.** Discover ways to put together nutritious, balanced meals in controlled portions. If you are overweight or obese, this will help you reduce weight when you combine it with daily exercise.
- **Flush the toxins!** Do a colon cleanse to eliminate toxins from your digestive system. Make sure there is plenty of fiber in your meals and you drink enough clean, filtered water.
- **Cut down on smoking and alcohol.** One of the conclusions emerging from the Italian COVID-19 experience is the likelihood of people who have health-injurious habits like smoking and excessive drinking to contract severe illness and die. This is a great time to do an inventory check on your habits—and discard the bad ones!
- **Can a sauna help?** Heat can definitely kill viruses, but does exposing your body to heat counteract infection? The answer is not simple. The body's thermoregulation system does not allow inhaled air inside the body to get too hot to be physiologically unbearable, which may be needed to kill viruses. That is why, if the virus has penetrated your system, particularly your lungs, the chances of a sauna session being able to destroy the virus are slim, even though it can definitely kill viruses on outer surfaces of the body. However, sauna sessions have many wellness benefits that can help indirectly. For example, regular sauna bathing is known to be [associated with lower hypertension and overall cardiovascular risk](#)<sup>31</sup> which are, incidentally, known risk factors for higher mortality due to COVID-19. They also [reduce markers that induce inflammation](#) in the body.<sup>32</sup> An excellent resource for evidence-informed data on the wellness benefits of saunas can be accessed at [Dr. Rhonda Patrick's website](#).

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<sup>31</sup> Zaccardi F et al. (2017) Sauna bathing and hypertension: A prospective cohort study. *Am J Hypertension* 30:1120-1125. Doi: [10.1093/ajh/hpx102](https://doi.org/10.1093/ajh/hpx102).

<sup>32</sup> Hage FG. (2013) C-Reactive protein and hypertension. *J. Human Hypertension* 28:410-415. Doi: 10.1038/jhh.2013.111.

- **Are you on medication?** If so, make sure you have enough supply and don't miss any of your doses. You may need to keep an extra stock in the event of shortages of popular medicines.
- **Connect with people—online!** While you might have to isolate yourself physically for a while, that doesn't mean you have to become a social recluse. Be creative in using technology to connect with people—trust me, they are probably feeling as lonely as you are and wouldn't mind the company. Remember, talk of anything BUT the coronavirus!

**Guarding your Emotional and Spiritual Health.** This is a time of extreme stress for the entire world. If you are concerned that the coronavirus might afflict you or someone close to you, you are not alone. If you are concerned that you might (or *will*) be affected by the rapidly deteriorating global economy—again, you are not alone. Regardless of your source of fear, keep in mind that [any fear can rapidly deteriorate the status of your immune and your other body systems.](#)<sup>33</sup>

It is important that you recognize the importance of managing your stress, especially in a chaotic world. Stress is pro-inflammatory and immune suppressing, and leaves you more vulnerable to infection, so you must figure out ways to manage what you are feeling. The thoughts you think all the time eventually become your reality. In times like these, it is easy to fall prey to negative thoughts—instead, you must consciously work to replacing them with positive ones, and by so doing, shift your fear-based reality to a hope-driven one.

But how do you do that? I have found that my emotional being is intricately connected at a spiritual level to my Maker, and when I work on that relationship, the darkness fades and the light shines brightly once again. You can find hope and solace in an excerpt from the Bible which says: “My help comes from the Lord, who made heaven and earth” (Ps. 121, ESV). When you are aligned to the Creator of all things, the One that never slumbers, the problems of the world become much easier to handle.

We must realize that the world has never been problem-free. In Isaiah, you can feel the reverberations of a time long past, echoing at this very moment. It says, “Come, my people, enter your chambers, and shut the doors behind you; hide yourselves for a little while until the fury has passed by” (Is. 26:20, ESV). Like all things, we can find peace in knowing that this, too, shall pass.

### **What Is Happening in the Conventional World of Medicine?**

*Before I start this section, I would like to emphasize that self-medication with any of the drugs discussed here for treatment or prevention of COVID-19 can potentially result in serious side effects, adverse events, or even death. Don't try it on your own.*

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<sup>33</sup> Rosenberg J. (2017) [The effects of chronic fear on a person's health.](#) Neuroscience Education Institute (NEI) 2017 Congress, November 8-12, Colorado Springs, CO.

The conventional world of medicine is actively looking for solutions to the COVID-19 crisis through a variety of different angles such as life-saving drugs and, ultimately, a vaccine (which proponents argue is the “artificial way” to develop herd immunity).

Pharmaceutical companies are trying to repurpose existing drugs against COVID-19. Although none of them have shown conclusive efficacy yet, some of the early reports are encouraging. These include Kaletra (Lopinavir/Ritonavir combination of anti-HIV drugs/Germany), Remdesivir (known RNA polymerase-inhibiting antiviral drug, failed against Ebola/USA), Favipiravir (influenza drug/Japan), Interferon-alpha-2a (suppressor of viral replication/China and Cuba), Interferon-alpha-2a+Ribavirin (chronic hepatitis C drug/Saudi Arabia), Arbidol (broad-spectrum antiviral drug/Russia), Losartan (hypertension drug/USA), and Tocilizumab (immunosuppressant arthritis drug/Switzerland).

Antimalarial drugs—hydroxychloroquine and chloroquine—are receiving recent media attention because of some reports of efficacy against COVID-19. In a letter to the editor of the Nature journal *Cell Discovery*, researchers at the Wuhan Institute of Virology first reported that hydroxychloroquine demonstrated [potent inhibition of SARS-CoV-2 in vitro](#) (*in vitro*= in a tube or dish, tested outside a living organism).<sup>34</sup> This was followed by a research paper from Peking University that showed that [hydroxychloroquine was significantly more potent than chloroquine in vitro](#) against SARS-CoV-2, recommending a loading dose of 400 mg twice on day one, followed by a maintenance dose of 200 mg twice a day for 4 days.<sup>35</sup>

In a [potentially pivotal paper](#), French researchers reported the results from an open-label, non-randomized clinical trial on 42 COVID-19 patients (6–asymptomatic; 22–upper respiratory tract infection symptoms; 8–lower respiratory tract infections) comparing the efficacy of hydroxychloroquine by itself and in combination with azithromycin in reducing viral load.<sup>36</sup>

Out of the 42 patients, 16 patients were in the control group (no treatment), 26 received hydroxychloroquine (200 mg, three times a day for 10 days), and out of those, 6 patients also received azithromycin (500 mg on day 1, followed by 250 mg a day for the next 4 days). Hydroxychloroquine resulted in 70% patients being “virologically cured” (virus

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<sup>34</sup> Liu J et al. (2020) Hydroxychloroquine, a less toxic derivative of chloroquine, is effective in inhibiting SARS-CoV-2 infection in vitro. *Cell Discovery* 6:16. Doi: [10.1038/s41421-020-0156-0](https://doi.org/10.1038/s41421-020-0156-0).

<sup>35</sup> Yao X, et al. (2020) In Vitro Antiviral Activity and Projection of Optimized Dosing Design of Hydroxychloroquine for the Treatment of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). *Clin Infect Dis*. pii: ciaa237. Doi: [10.1093/cid/ciaa237](https://doi.org/10.1093/cid/ciaa237).

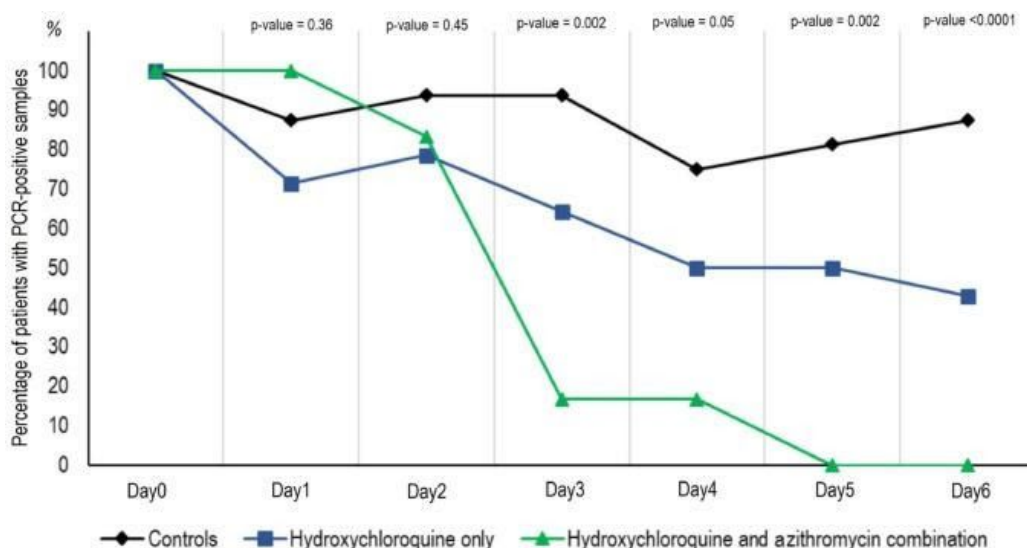
<sup>36</sup> Gautret P et al. (2020) Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. *Int J Antimicrob Agents* 105949. Doi: [10.1016/j.ijantimicag.2020.105949](https://doi.org/10.1016/j.ijantimicag.2020.105949).



undetectable by a PCR assay) by day 6 compared to 12.5% for patients in the control group, whereas the combination of hydroxychloroquine and azithromycin resulted in all patients being found virus-free by day 6 (Figure 1).

There is concern that hydroxychloroquine and azithromycin can both lead to serious cardiovascular events, including death, [because of their side effects](#) of prolonged Q-T and arrhythmia.<sup>37</sup> However, the benefit-to-risk ratio is considered high enough to fuel ongoing clinical studies. In response to the rapidly growing rate of infection in the United States, particularly in New York, the University of Minnesota is starting a [trial with hydroxychloroquine](#) targeting 1,500 exposed, high-risk COVID-19 patients, with the goal of rapidly generating conclusive data.

Meanwhile, the Spanish Agency for Medicines and Health Products, Spain's health regulatory body, [has reluctantly agreed to allow the treatment of patients with chloroquine and hydroxychloroquine](#) even though the efficacy of the drugs has not been fully demonstrated. Given the importance of protecting those caring for COVID-19 patients, such as relatives and healthcare workers, researchers at Columbia University have [initiated a Phase 2 clinical study](#) to demonstrate the use of hydroxychloroquine in COVID-19 prevention in people exposed to the virus. Naturally, we are now facing worldwide shortage of these otherwise low-cost drugs, and governments are working to ration the drugs to be used only in serious cases progressing into pneumonia.



**Figure 1.** Change in percentage of patients showing positive viral load based on a PCR assay. The hydroxychloroquine-azithromycin combination resulted in a complete resolution of disease by day 6 for all patients in that category ([Reference 27](#)).

<sup>37</sup> [Ventricular arrhythmia risk due to hydroxychloroquine-azithromycin treatment for COVID-19](#). *Cardiology Magazine*, Mar 29 2020. American College of Cardiology Website.

The University of Minnesota has also initiated a [trial with Losartan](#), a popular, inexpensive hypertension drug. Losartan is an angiotensin II receptor blocker (ARB) that binds to the same receptor site that the virus uses to penetrate cells and could arguably block its entry. However, scientists are concerned that the [exact reverse might be true](#).<sup>10</sup> Blocking of angiotensin receptors with losartan can stimulate cells to produce even more angiotensin receptors, which could be leveraged by the virus.

Other companies are actively working towards developing vaccines against SARS-Cov-2. Moderna, Inc. is the first company to start a [Phase I clinical trial on 42 patients in Seattle](#) for its mRNA-based vaccine candidate. CanSino Biological and the Beijing Institute of Biotechnology are also in [Phase 1 trials of their non-replicating viral vector vaccine](#) candidate. We can expect to hear many more such trials moving forward in the course of the next few weeks.

### **What Happens Next from Here?**

As the scenario rapidly evolves on a daily basis having a direct impact on each of our lives, it is natural to feel confused and overwhelmed. So, let's break this down into two parts: things you can't control, and things you can.

**Things you can't control:** Political and economic factors that are out of our hands will ultimately determine how long we can continue the ongoing social isolation exercise in the United States. We may have to accept that we may not be able to contain the spread of the virus and, instead, will have to manage it. Agile political decision-making and social responsibility at the individual's level will be necessary to prevent overwhelming our health care system. This would ensure that the sick receive appropriate care, protect our medical professionals from overwhelming conditions, and buy us the time we need to discover and implement life-saving treatments to save potentially thousands—if not millions—of lives. As the scenario stabilizes, we will, as humans, learn to co-exist with this virus just as we do with so many other disease-causing bacteria, fungi, viruses and other pathogens.

**Things you can control:** What we can control is what we do with ourselves—starting now. Through the information in this article, I hope you will realize that you are not as powerless against the onslaught of the virus as you might think you are and can take proactive steps to improve your health and the status of your immune system—and yes, this includes working on your emotional and spiritual health. Taking these steps will not only help you prepare for any health challenges that may lie ahead, but also give you the serenity to deal with unexpected downturns and see opportunities where they don't seem to exist.

As of this time of writing, there are probably a few more weeks to go before we start seeing a semblance of normalcy back in our lives. I hope you can take a good portion of this time to tune away from the fear waiting for you in your favorite news channel and, instead, engage in a voyage of self-discovery. We are getting a once-in-a-generation opportunity to

look within ourselves and discover who we truly are as individuals—and in the context of our relationship to those near and dear to us, the world, and our Creator. I wish you and your families good health, strength and courage through these incredible times that may quite easily change the course of history as we know it.

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*This article was co-authored by Dr. Subrata Chakravarty, Ph.D., Chief Scientific Officer of Hope4Cancer Treatment Centers. Dr. Chakravarty has a background in medicinal and computational chemistry research and was a scientist in the pharmaceutical industry prior to his association with Hope4Cancer since 2007.*

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