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COVID: We can Prevent Hospitalizations and Save Lives with Information that is Already Published

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In order to achieve these goals, we need to look towards already completed and published studies from across the world for knowledge regarding vitamin and supplement therapy that have evidence showing benefit in the prevention and treatment of COVID-19 related illness.

As a physician and scientist, the importance of evidence-based medicine has been drilled into me from the very beginning of my training at Harvard, more than 25 years ago.

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COVID: We can Prevent Hospitalizations and Save Lives with Information that is Already Published

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I. Introduction

In the face of the current pandemic, I believe that by using already published scientific studies, we can decrease the impact, negative health effects of COVID and dramatically decrease Coronavirus related hospitalization rates. I believe we can also change the perception and reality of coronavirus into a treatable illness, generally managed in an outpatient setting.

In order to achieve these goals, we need to look towards already completed and published studies from across the world for knowledge regarding vitamin and supplement therapy that have evidence showing benefit in the prevention and treatment of COVID-19 related illness.

As a physician and scientist, the importance of evidence-based medicine has been drilled into me from the very beginning of my training at Harvard, more than 25 years ago. I agree with this principal and firmly believe that we must have rationale and good studies backing our actions as part of medical decision making. Replicated, large double-blind placebo controlled human trials are the gold standard in medicine.

However, sometimes in the science and application of medicine we have to use the foundational information from smaller randomized studies, observational studies or studies done in similar conditions. Why? Because the predominating circumstances do not allow for these large studies to be funded and replicated in a timely fashion. Ebola is an example where a lot early evidence had to be used in order to save lives, and it worked! One of my family physician colleagues, who was volunteering in Africa was, in fact, the very first person saved by the use of interventions that were still being studied. Had he waited for final larger formal trials to occur he would have died. Coronavirus is also one of these situations. The interventions discussed below, however, are not early or experimental. They are well studied compounds and supplements that are safe, over the counter, and used routinely in other situations.

If all were ideal, and in order to be scientifically rigorous, there would be enough time and money for clinical trials to be repeated. The goal of these trials would be to firmly demonstrate that the supplements or vitamins that are being studied are highly effective in different Covid-19 settings. This is what evidence-based medicine is all about. However, currently there is an urgent need for *medical recommendations and leadership from our medical community.* People are dying or becoming ill at a pace that is more rapid than what science can study and prove. Yes. The studies absolutely do need to be done. But what can we do in the meantime?

Here are a few examples of excellent, evidence-based, studies for vitamins and supplements that have good safety and efficacy in human trials.

II. Vitamin D

Data cited below (Alipio, 2020) showed that just by having normal vitamin D levels, an individual increases their chances of having a mild outcome rather than a critical outcome by 19.6 times!

This same study showed, that 95.8% of individuals who were critically ill in ICU or who died, had low vitamin D levels < 30 ng/ml with the majority of them having levels < 20 ng/ml. To achieve a vitamin D level of > 30 ng/ml, for most people, it requires only 2000 IU (50 mcg) daily. There is virtually no downside to replacing vitamin D and the institute of medicine has declared that up to 4000 iu daily is safe. Additionally, ideal vitamin D levels are known to be associated with less colon cancer, breast cancer and lower rates of heart disease and osteoporosis. There are now many other published studies and reviews on the topic coming out of Israel and England, with the conclusion that "there is nothing to lose from the implementation (of widespread encouragement for taking vitamin D), and potentially much to gain. (Martineau, A 2020)

While proactively giving vitamin D for prevention makes the most sense, other studies have shown that even in patients who are in hospital with coronavirus, giving 1000 IU of vitamin D daily (along with 150 mg magnesium and 500 ucg B12) was shown to decrease required subsequent oxygen therapy compared to controls dramatically; lowering the likelihood of needing oxygen by 44%. In fact, many hospitals across the country have instituted something called the "MATH Protocol" which includes vitamin D in coronavirus admission orders. While implementing the "MATH

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Protocol" nationwide in hospitals does makes sense, implementing a prevention strategy to encourage all citizens to take adequate vitamin D supplementation makes even more sense. Its low cost and highly cost effective.

III. Melatonin

Low dose melatonin has been shown to improve viral immunity, decrease lung inflammation and early evidence also supports that it can decrease symptoms of acute respiratory distress syndrome or ARDS. (Zhang, 2016, Zhang, 2020) ARDS is the true killer when it comes to COVID-19. ARDS happens when a severe bacterial infection or an aggressive virus like COVID sets off an inflammatory cascade that causes swelling or fluid buildup in the lining of the lungs. The fluid in the lungs from ARDS makes it hard to get oxygen into the blood and is what triggers shortness of breath and low oxygen levels frequently seen in Covid-19. ARDS is what causes people to require oxygen, or in worst case scenarios, ventilators. Melatonin levels decline as individuals age. Replacing melatonin to the levels needed to suppress lung inflammation requires less than one milligram a day. Melatonin is another intervention that is both safe and cost effective. It may be appropriate, in particular, for individuals over 50.

IV. Resolvins

As discussed above, the true killer in the Coronavirus pandemic is not the virus itself but the cytokine storm that occurs in response to the virus. Cytokines are chemical messengers released from cells that are damaged by viruses, bacteria or other causes, and then trigger inflammation in the lungs and throughout the body. The cytokine storm is ultimately what causes acute respiratory distress syndrome. "Resolvins" (derived from fish) act to prevent lung inflammation or cytokine storm and thus to prevent ARDS. Resolvins, also called Pro Resolving Mediators, work by activating the anti-inflammatory process. They can also stop and reverse lung damage in ARDS and promote better outcomes and faster recovery. The advantage of resolvins over the more classic anti-inflammatory compound of steroids is that they do not suppress the immune system or weaken tissue. In fact, they trigger repair of tissue as they promote the resolution of inflammation.

Many of the late complications of Covid-19, such as brain fog and increased risk of stroke and organ dysfunction are due to higher blood clotting risk being triggered by the virus. Resolvins help decrease the risk of other life-threatening complications from COVID19 including decreasing the clotting response and promoting clot removal. While resolvins are moderately expensive compared to vitamin D and melatonin, a course of treatment is still far less expensive than even an urgent care visit.

The science behind resolvins was so important that lead researcher, Dr. Charles Serhan of Harvard, has been given many awards for this work and has even been nominated for a Nobel Prize.

V. Pulse Oximeter

By having a pulse oximeter at home (a $20-$40 device that measures blood oxygen through your fingernail) oxygen levels can be monitored and COVID can be managed via telemedicine from the comfort of a patient's own home the vast majority of the time. While a pulse oximeter is not a treatment for coronavirus, this may be a new tool, like a thermometer, that is worth encouraging citizens to have and know how to use.

Given the knowledge in the published medical literature for safe simple interventions with good research, the next questions are these: How do we get these interventions to be known amongst physicians and community members nationwide? How do we as a country come together and study these strategies to move closer to COVID being a treatable illness – generally managed in an outpatient setting?

If we can prevent cytokine storm and ARDS, Covid-19 could be managed via telemedicine (with pulse oximeter) from the comfort of a patient's own home the vast majority of the time. The human and economic consequences of this paradigm shift would be huge. My purpose in writing this editorial is to encourage our leadership, medical and research institutions and individuals across the world to come together and evaluate and embrace what has already been shared in the published medical literature.

I believe, we as a country, should be investigating these options further; discussing them in the news and perhaps even *providing appropriate supplements our vouchers for supplements and preventive tools along with stimulus checks to our citizens across the country*. One concern during this epidemic is that our minority populations have been most severely affected. While part of the reason may be socioeconomic, and even genetic predispositions towards inflammation, vitamin D levels are known to be particularly low in individuals with darker skin or who suffer from obesity.

One option to help keep minorities and all citizens healthy would be to offer, as part of community health center offerings or the stimulus package, preventative tools.

A low cost "Corona Pack" could contain a pulse oximeter, Vitamin D, low dose Melatonin, and resolvins. This along with an educational campaign could make a tremendous difference in helping people avoid hospitalizations for Covid-19.

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Physician and public health education are imperative for this to work.

Implementing these low-cost strategies into prevention and even treatment regimens of coronavirus could potentially decrease the rates of hospitalization. Perhaps, even more importantly, education is empowering and would help to decrease the anxiety and fear surrounding COVID-19. These sorts of simple educational campaigns with low cost and high potential yield options could help restore our nation with a sense of hope, as well as physical and economic wellness. The human and economic consequences of these simple and inexpensive actions would be a benefit to all of society.

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