



December 29, 2020

Get the First Series of Shots!

I receive numerous emails and telephone calls daily, from colleagues, family members, other physicians, policymakers and schools, from across the globe, asking me what my personal position is around the topic of COVID-19 and SARSCoV-2 vaccinations. With this update, I intend to answer these questions in broad and specific ways. I would like to describe the variables to consider, so we all have a fuller, nuanced understanding to contextualize this point of view. At the end, I hope you will see why and how I believe that vaccine in this very instance, at this specific time is important for everyone to have. In the future, I hope we develop better solutions, since this one is imperfect at best, but for the first cycle for the first year, a vaccine is the best way forward. I will keep this short, and mostly touch on a few of the most important variables. Please consider reading this post in its entirety.

Amy says I lost a decade of my life this year. As this virus began early this year, most of you know the tireless work we embarked upon, and then when the virus came into full swing, we wound up working with, well, countless patients with this virus. The work is nonstop. Initially, most of the work was trying to change the course of where we were going. But that was not to be. Here, I want to describe how that intersects with the current question of vaccinating for SARS-CoV-2, why we worked so broadly and tirelessly then to create a different path forward.

Often, people want a quick answer. And when I give them the quick answer, they seem disappointed, or confused, or are left feeling surprised and unsure. One very important group is integrative medicine providers (NDs, DCs, acupuncturists, DOs, and integrative MDs etc.) Many are looking for their role at this time in regard to the topic of vaccination. Please consider this discussion in the most general way. What I mean is that the issues mentioned here are universal to every epidemic/pandemic. Please don't simply apply this understanding to the current pandemic, but consider these basic tenets that ring true regardless of epidemic or pandemic illness. In other words, learn these issues once, and you will be able to apply this at any other time in the future. This framework is universal with regard to understanding epidemics and pandemics.

That said, the topic of vaccinations in general has been polarized in our society, and in the midst of this pandemic, that polarization is evident and growing. Within this

polarized landscape we are finding up to 50% of adults considering not seeking the vaccine, a public health disaster by any definition.

WHO/WHERE/WHEN or PERSON/PLACE/TIME

An essential concept in public health which I have written about before relates to WHO/WHERE/WHEN or PERSON/PLACE/TIME. Simply put, regarding outbreaks/epidemics/pandemics, it matters when, where, and who is falling ill. Or to be more clear, one needs to consider interventions based upon these variables. And what you might decide at one point as a good intervention may not be a good intervention at a later time or with a different person. An epidemic is a constantly changing community event, to which we must adapt. I return to this point below.

VIRUS NATURE

Another important topic is the nature of the virus. The point I made in January, 2020, which many also made, is that this is not a virus that would be going away in the next week or month or year. It is going to be with us for a long time. Actually, I still do not think people understand the full import of this comment. This one is not just going away. Which means that we actually do need workable, long-term, broadly accessible, effective solutions. There are several pathways that do exist here, though we have, as a society, chosen only one. More on this below.

VIRUS MUTATION

An additional variable I wrote about early in the pandemic was the mutation of this virus. I know it is in the news just now, but only half the story is reported, which is causing unnecessary, or rather, premature, additional anxiety. As we highlighted, viruses mutate. This is part of the natural order of all organisms. The main questions around mutation should be:

1. What is the rate of mutations?
2. Where is the location of mutation in the genetic structure of the virus?
3. What is the effect of said mutation(s).

1. Rate of mutations. Different species have different rates of mutation. There is an understanding in evolutionary biology, which goes: If there are too many mutations, the species dies. It's too unpredictable. If there are not enough mutations, the species dies, as the species is not adapting fast enough to the changing environment. This concept is well paraphrased in Roger Lewin's book title, *Complexity: Life at the Edge of Chaos*. What we have seen from the start is that this virus mutates, though in fact, more slowly than other coronaviruses. But a change is not necessarily good or bad. It's just a change.

2. Location of mutation. This happens to be a very important question. Mutations can impact the behavior of the virus. In means it can make the virus more or less transmittable and/or more or less severe. Will the mutation make it more or less likely for the virus to attach to the cells or more or less likely to enter the cell? Ideally, the mutation makes it less likely to hurt us. For example, a mutation in the spike protein (the part of the virus that attaches to your cells,) would be pretty useful for us as it might make the virus less likely to attach. Unfortunately,

from the very start, what we have seen is that the mutations do not seem to occur in the most important part of the virus and so scientists are observing modifications, yes, but none have been important enough ones for us, at least not yet. There is a lot here to discuss but you see the point.

3. Effect of mutation. Which brings us to the most important question when discussing mutations. Has the mutation made the virus more or less transmittable and/or more or less dangerous?

What is in the news just now is that the mutations have made the virus more transmittable. But the real question remains: has its potential for serious illness stayed the same or has it become more or less potentially dangerous?

You may recall that I am a strong proponent of convergent evolution. Simply put, this is a concept that all species constantly adapt, via mutations, towards being less virulent, less severe towards other species. In other words, what stopped the 1918 influenza pandemic was not any sort of treatment or anything that we as a species did. What stopped it was that mutations to the influenza virus which occurred, made it less virulent and less effective at hurting humans.

When you are listening to news related to COVID mutations, recall these questions and stay grounded in the science.

PEOPLE PURPOSELY CAUSING VIRAL MUTATIONS

Here is a related topic I spoke of in more detail in an earlier post, and highlight here once more. We have the technology to modify the virus itself. While we can wait for the virus to hopefully mutate in less dangerous directions, we can also actively *produce* a mutation that benefits us. I know this may sound awful, but actually it would have been the best way forward. Please hold off passing judgement on this just now. More details below.

ECONOMICS AT POINT

I remember as part of a lecture in February, and again in a Webinar hosted by my professional organization, I made the point that the consequence of what was about to befall us was so enormous, that on the economic side, it will hurt us all. The economic and social impacts, some predictable, others unforeseen, would likely send people who recently moved out of poverty back into poverty, leading to further multigenerational poverty, not just in the United States, but across the developed and developing world economies, too. The main point I made was that the economic burden will not be shared equally. I remember colleagues disagreeing with me on this front. I think the grave reality on the ground, related to how the economic fallout is impacting individuals, families, businesses and communities, is pretty obvious to all of us at this point.

The reason I bring this up is the following. The longer the virus situation continues as it is, the more people will suffer. We will find:

1. More individuals in poverty.

2. More families in poverty.
3. More communities and whole countries in crises.
4. Less services available to those in need.
5. Higher morbidity and mortality from variables not directly related to the virus, but to the fact that the economy is not supporting people in ways that are needed.
6. Women will suffer more than before.
7. Children will suffer more than before.
8. People of color will suffer more than before.
9. Less funding for a slew of programs that benefit many portions of the population.

This is not an exhaustive list, rather illustrates the real health and welfare concerns that have to be considered and accounted for as the pandemic ensues.

THE VACCINE

In general, vaccines are an intervention to produce an immune response to change the outcome of a future illness—both prevention getting sick or mitigating severity of illness, should it occur. There should be at least four issues that come into play here.

1. How bad is the disease?
2. How bad is the side effect of the vaccine?
3. What is the main purpose of the vaccine?
4. How stable is the modification of the disease?

1. How bad is the disease? Here we know the numbers are bad. Simply put. Described more so elsewhere.

2. How bad is the side effect of the vaccine? We do not know the full answer to this yet, but it seems as though the side effects are less than the disease if you read the studies completed before the vaccine received approval.

3. What is the main purpose of the vaccine? The 2 main reasons for a vaccine are to either make the disease less likely to be transmitted, or to make the disease less severe when/if it occurs. Ideally, both of these occur, but not necessarily. In the current vaccine studies, the main outcomes were to limit the severity of the illness in those vaccinated, which was tested for and proved effective, but what was not tested was transmission. Did those vaccinated not pass the virus as easily? This feature was not tracked as it might have been. As one example, we do not know how many people got the vaccine and caught the virus but were *asymptomatic*. It is possible that more people got the virus by vaccine but were asymptomatic. We simply do not know yet. but over time we will, by actually tracking this. I await this study. What we seem to know is that less people develop less severe forms of the disease when vaccinated, than those who were not vaccinated. We have to wait until they do the studies on the second question. This should have been part of the study in the first place. I cannot for the life of me understand why this was not done.

4. How stable is the modification of the disease caused by the vaccination? This remains an important question. We do not know the answer to this, since it is a new vaccine. My personal opinion is that natural post infection antibody immunity lasts for 6-12 months. I would very

much hope that this is *at least* as long for the vaccine. It would be a bad sign if it is a shorter period of time and a good thing if it lasts 2-3 years. More on this below.

PATH DEPENDENCY

This is a term I like. Simply put it is a way to say that the past decisions and events matter and percolate down, bringing us to today. The past and present are both present, but not equally distributed. The choices we made or did not make have an impact on today, and on the path we are currently on. One corollary is that because we made certain choices, we are averse to, and resistant to, alternate ways to look at a problem. No one wants to be responsible for a change. Policymakers, scientists, and funders, retreat to a position of caution. I will come back to this concept soon.

PUTTING IT ALL TOGETHER - HOW I CAME TO THE CONCLUSION THAT WE SHOULD TAKE THE VACCINE AT THIS TIME:

1. From what we know, this virus is not going away in the near future.
2. From what we know, this virus morbidity and mortality is staying high; at this time around 1.5%-1.75% mortality, getting closer to the 1% I predicted at the start of it all. I believe it will stay in this range for some time to come. My current projections from last January are staying the same, I believe that if nothing changes, the first full, complete cycle will end with 500,000-2,500,000 dead in the USA. There is no math that shows this to not be the case at this point, *unless something changes*.
3. The effect of this upon the health care system is leading to failures across the board. Numerous services are failing leading to excess mortality and excess morbidity even unrelated to this virus. Emergency departments, intensive care units, and hospitals in general, are taken up by COVID patients, so that many people are not seeking or are being refused other essential diagnostic or treatment care. There is ample loss and general misery.
4. In terms of the economy, unemployment, etc., we know the facts on the ground are not good and not getting better any time soon.
5. In terms of health access and outcomes, BIPOC, women, and others living at the fringes are having worse outcomes. Problems such as alcohol and drug abuse, domestic violence, anxiety, depression and suicide are all increased as a result of the many ways the pandemic is playing out and researchers believe these realities will likely persist even once the pandemic is passed.

This has to come to a halt as fast as possible. In January, 2020, I described several paths that were open to move forward to limit the harm that was surely on its way. These included:

1. Prevention, emphasizing public health measures, like everyone else. Unfortunately, as a country, we did not adopt the public health measures that were needed in a timely, urgent and unified fashion.
2. Mitigating the effects of the virus, by assisting in producing a normal healthy immune response, via natural medicine therapies. We discussed several options, but FDA/FTC asked many in the integrative doctor sector to stop discussing these, to halt making claims and to discontinue making any such recommendations. Ironically, when more traditional medical

institutions and providers began to discuss the same concepts, many months later, there was less pushback, but by then, these recommendations were late. That delay was costly.

3. Developing drugs aimed at normalizing and optimizing immune response.

4. The development and distribution of vaccinations.

There were several others, but the main point I wanted to make was, when we, as a species, are in crisis, we work towards solutions. We excel at this. But, as a society, what was decided in the spring of 2020, is that the path forward was going to be through vaccinations. You can read about this in my writing from that time. Specifically, I said that unless we deviate from this course now, at that time, the path dependency will lead us to vaccinations. As you recall from our intense and urgent communications, I, and many colleagues, were working tirelessly on other potential pathways, but let's leave that aside.

We as a society, our officials in charge of such decisions, chose the vaccine pathway as our essential and most important way forward. And most of all our eggs went into that basket. I know some, just for the sake of argument might disagree with this, but think about it this way, just as one example. The current vaccines were built upon the final trials of 30,000-40,000 people, after smaller trials, and a *couple of billion dollars* per vaccine. How much money went to study Vitamin C, Zinc, CoQ10, Resveratrol, homeopathic treatment? Any one of such studies could represent a proof-of-concept to be built upon in larger trials. Most of these treatments are readily available, inexpensive and have extremely low side effect profiles. What was/is missing is robust testing, which needs funding. As a society, we decided to shut these other options down and put the majority of focus and funding into vaccine development. Right or wrong, that decision was made.

The next point flows from this. If you are not going to fund the preventive and treatment side aggressively and properly, especially the inexpensive, natural treatments that have for generations worked on supporting healthy immune function, then you are solely reliant on herd immunity. The number I mentioned this spring is still the same for me; 300 million Americans must be immune to the virus for our society to get back to some semblance of normal. One way or another you need 300 million people, more or less safe. You can have this from vaccinating this number of people, or from having 300 million people catch the virus, or a combination of the two. But one way or another, *de facto*, this is the direction we decided to pursue as a society. Three hundred million people need to be immune.

Which is where one of my math problems arises. If we have around 30 million folks that had the virus and 250,000 died from it, and we just keep going as we have, the 300 million getting it naturally leads to 2,500,000 dead. We can't have that. This would be a complete and total societal breakdown. It leaves us with only the vaccine path.

Remember PPT point I made above. We are where we are, at this moment in time. We have, for the most part, underfunded drug treatments, and nearly, completely suppressed the study of potential natural treatments. This is what I mean by path dependency. The society has chosen and we are now, predictably moving down one pathway, which is to get vaccinated.

DO YOU REALLY HAVE A CHOICE?

I would like to make one point incredibly clear. In my humble opinion, in fact, you don't really have a choice here. I know the nature of the questions I receive is, should I or should I not get vaccinated? And it seems to many as though they have a choice right now. But again, please be aware that as a society this choice was made 9 months ago. It only *feels* like you have a choice because of vaccine numbers. If we were forced to get a vaccine now, all of us, right now, then we would run into the problem that there are not enough vaccines to go around. But as soon as there are, the lack of choice will become apparent. We will see mass vaccinations. And if we did not reach the high level of immunity, then one by one, the various professions will begin to mandate vaccines. Courts have already determined that business owners have the right to demand workers get vaccinated. And if not, they have the right to keep employees from their jobs.

One profession after the next will roll through the demands, and if not enough health care professionals chose to take the vaccine, then it becomes a prerequisite for work, and then people who live in nursing homes and those working with them, and if still not enough, then factory workers, and if still not enough, those working in education, and then students, and if still not enough, to get on an airplane, and if still not enough, to travel by train and bus. You get the idea. One way or another our leadership and society, in general, chose last spring that we are going to get to herd immunity, and as our main path to it, we will require vaccines. I state this as a fact, not as whether we should or should not, but what reality will look like in early 2021.

In other words, I believe having a discourse on *if* you should or should not have a vaccine is unproductive, since you don't really have a choice, in the end. We will see how this turns out, but I am pretty sure this is the reality we live in, and is easier to grasp when you appreciate the path our public health, research and leadership chose.

So, if you ask me if I am getting vaccinated, I say yes, because I want to continue to work with my patients and I believe all health care workers will need to have the vaccine, to achieve herd immunity this way, rather than by waiting until we all fall ill as our way towards herd immunity.

Further, I believe that those professions and those medical societies that at this point in time come out against vaccinations, are reckless, both to their patients but also to themselves. I do not see how a practitioner would be able to survive a lawsuit from someone who becomes ill from SARS-CoV-2 who chose not to vaccinate based on such a recommendation. I am trying to be forthright here. I am fairly certain that your own professional association will not support you in discouraging vaccination.

I am not sure how to say it here, but that ship has already sailed.

WHAT ARE THE ROLES OF INTEGRATIVE DOCTORS WITH REGARD TO VACCINATIONS?

1. As a point of clarity, and unrelated from the other points below, many integrative doctors provide vaccinations in their offices. For example, licensed naturopathic doctors in several states provide vaccinations for their patients, as is true for other licensed providers. And just as NDs have been conducting COVID-19 testing onsite, they might also provide the vaccine. This is just another practitioner offering recommended treatment. Nothing unique here. What follows goes beyond that.

2. Integrative practitioners, for the most part, have worked for decades, and in some instances, for centuries, in helping support healthy immune response and to optimize normal immune function. According to the vaccine makers, there are a variety of immune reactions and side effects, to be expected in 3%-50% of those who receive the vaccine. It may be that integrative practitioners can help the immune system function in healthy and appropriate ways, leading to the desired response to the vaccine, perhaps even extending the benefit of the vaccine. This needs to be tested in earnest.

I am not referring to helping those with anaphylactic reactions caused by the poly-ethylene glycol ingredient in the vaccine, but rather other potential reactions. People with that known allergy are not recommended to take this vaccine. (As a personal not unrelated side note, I nearly died two times from vaccines when immigrating twice in several years, finally to this country, as a child. So, for me to say that I am getting vaccinated, you can see, this is not a simple decision, but one decided upon last summer when I understood the direction things had gone was not changing and appreciating the reality that will emerge on the ground.)

3. There are a few different vaccines on the market just now, all are injectables. I assume that by late spring, early summer 2021, an intranasal, inhaled form will become available. It may be that integrative practitioners can help those who are unable to take the injectable vaccine at this time due to issues with what is used in those vaccines, using additional natural medicine approaches with regard to prevention. This needs to be tested.

4. Assisting those with vaccine hesitancy questions. Many times, those not wanting to vaccinate seek out integrative physicians. These practitioners can help assuage anxiety about the vaccine itself.

5. Side effect profile. I believe integrative physicians can mitigate side effects of the vaccines. We only need funding to test this out. More on this below.

6. Special circumstances. Aside from those that cannot take the current vaccine due to known potential anaphylactic reaction, there may be other groups of individuals who will not tolerate the current vaccines, or are recommended to skip the vaccine because of age or other reasons. It could be that integrative approaches can help with preventive care and with mitigating severity of illness by normalizing proper immune response, for those unable to take the vaccine. This needs proper funding to be tested.

7. Specifically, it may well be that the side-effect profile is as intimately related to the underlying health status of the individual, just as the disease expression of COVID-19 is modified by the underlying health status of those who contract the virus. Many of these health concerns plaguing our modern society are modifiable by integrative practitioners, whether it is diabetes, hypertension, heart disease, obesity, and other common chronic diseases.

8. It may be that people who do develop bothersome or long lasting side-effects find relief from an integrative practitioner who helps the person develop a healthy, appropriate immune response and helps with underlying health conditions that may have put the person at more risk for worse outcomes in the first place. This also needs testing.

WHAT WE DO NOT KNOW?

Leadership in the country has a great deal of hope with the vaccines, though, in fact most people have not fully thought out what the future might look like if this remains the *only* intervention. Picture the reality of where we might be headed.

1. By the summer or at latest the fall of 2021, more or less most people will be vaccinated. Which means that there is gradual easing of restrictions, but not a complete easing until next Fall. In other words, even though we are being vaccinated in December or in January, we are still wearing masks, and some businesses are still closed or operating below pre-COVID capacity. Sadly, people are still dying from COVID-19.

2. We don't really know how long the vaccine will last. Hopefully it lasts longer than the disease immunity, which as mentioned above, I still personally believe to be 6-12 months. But all our eggs are in this basket of vaccinations. What happens if it only lasts for 6 months? I do not foresee people lining up for shots every 6 months. We need another egg in another basket. This cannot be the only pathway forward.

Related to this time question, we do not know if people can tolerate a second or third series of vaccination. What if you can tolerate one, but the second or third series does not work, or causes problems. There is too much at risk to only remain with this one pathway. Perhaps a more affordable, less risky approach that many people are already doing on their own or with the guidance of an integrative doctor needs to be tested and funded properly.

3. We do not know if the vaccines will continue to be effective, as the virus mutates. I mention this for completeness sake. Vaccines are made in relation to specific parts of the virus. If the current wild virus mutates out of that realm, it may be that the vaccine will stop being effective. I do not think this is a major concern here, since, as I mentioned above, the virus is mutating slowly and it is not mutating easily in the areas that the vaccine is aimed at. Having a close vaccine, like having a close virus, I believe, is protective in itself. However, it is a possibility that the vaccine will stop being effective. Having a second pathway open is vital to the security of this nation, and the quickest, easiest, most affordable pathway involves the natural medicine course, which has a known side-effect profile, and know dosage and usage. Only efficacy need be tested.

MY WISH LIST VIS A VIS VACCINATIONS AND INTEGRATIVE MEDICINE COMMUNITY

Here's what can be done now, with regard to COVID-19 and vaccinations. I am writing here for those working at the colleges and in professional organizations that are looking for the answer to, "What does our profession bring to the table?" They are also asking, "What should we say about the vaccination that is not already being said by the CDC/FDA/FTC?"

The main need would be an open, consistent, proactive relationship with the FTC/FDA which focuses on the following points:

- a. We assist with the vaccine rollout by answering questions and diminishing vaccine hesitancy.
- b. Research underscores that comorbidities predictably lead to worse disease manifestation and outcomes. Invite the work of integrative providers to impact the treatment of common chronic diseases, many of which are lifestyle and natural medicine modifiable, including diabetes, hypertension, heart disease and obesity. We have a record of proven efficacy working with these populations. When I was giving a talk on this, at one point I wept, and when someone asked me why, I said it is because what we have is a great deal of needless, pointless death. We have all the pieces spelled out to us, but it is a reluctance to broach a different pathway that allows some to die needlessly.
- c. We have worked for decades on healthy immune functioning and need ongoing funding to test these approaches in regards to both prevention of and progression of COVID-19 illness.
- e. We can partner with FTC to disseminate reliable information related to effective preventive and treatment approaches where research already exists. (Zinc, Co-Q10, Vitamin D status, etc.).
- f. We assist in developing a protocol for people to use before and after vaccination to mitigate side effects, which in turn may well diminish unwanted vaccine reactions and vaccine hesitancy, and may potentially extend the effect of the vaccine.

In other words, we need to be working on Plan B. We need and want FTC and FDA support for this work. There is an unusual problem that exists in the USA. FDA/FTC rules state that for a substance to be used to treat a disease or prevent a disease, it has to go through stringent drug trials to prove safety and efficacy. OTC products do not have to go through this process, but on the other hand, health claims cannot be made for OTC products. There has to be a middle way here. **Specifically, there are natural approaches that can be easily tested, and if the results show promise, larger studies can be done, and if these interventions are shown to work to treat and/or prevent illness, then uniquely, in this instance, FDA and FTC should allow and encourage such claims to be made.**

Let me put it in very plain English. It might be that the virus will become more benign, and or it might be that the vaccine works perfectly, but what if it does not? There are very simple studies, very inexpensive studies, that can be conducted with natural products that are inexpensive, and have little to no side effects. These studies could be for disease prevention or treatment. If these work they should be allowed to become part of the national plan to treat or prevent illness, something that cannot be easily done at this time with OTC products.

A few examples, what if you develop a protocol of inexpensive natural products to be taken as a preventive and seeing how many of those taking those supplements become severely ill from the virus and need to be in the ICU. It may be that for example, taking Vitamin C, Vitamin D, Resveratrol, CoQ10, and Zinc on a daily basis makes it possible to lessen the likelihood of ending up in the ICU. What if most people taking these items, if they fall ill, end up having a milder form of the disease? After all, this is what the vaccine is aiming to do, to lessen the severity of the illness. What if other items do the same thing? But unlike the vaccine are not so specific that they wear out, as the vaccine might. What if helping the underlying health and addressing comorbidities does the same? These are not inconsequential questions, and also not difficult questions to answer. We have the expertise. We have a willing and interested public. We just need the willingness to venture into this realm and to fund studies properly, and should they be successful, be allowed to disseminate those results as treatment plans.

MY WISH LIST OUTSIDE OF CAM

To finish off on a related topic. The main way forward, in a way that puts this period of life in the past, is if the virus changes. Specifically, if it becomes less dangerous. After all, we do not say we have a pandemic of a cold. The fact that billions get sick is sort of almost irrelevant since it's mostly not dangerous. At this moment, we are waiting for the virus to mutate in such a way that it becomes less dangerous. This is nature in its process. Hopefully it is this next year and not much later!

As I mentioned last winter, another possibility is that we modify the virus ourselves. Making it less severe, even if more transmittable, if less people or few people become symptomatic, we are all happier for it, and the vaccine question goes away. All in all, I think this remains one of the easiest paths forward. I believe the virus will get there by itself, but it will take a year, a decade or a century. Of course, I am very, very much aware of the risk here. I am, after all, an evolutionary biologist at heart. But risks versus benefits, I would rather change the virus than change ourselves with a constant barrage of vaccines. The technology exists already. It is not difficult nor expensive. It is just a path that I am not sure that the Department of Defense, who has the capacity, would pursue such a venture. Though at some point if the vaccines are not doing the trick, this may well be in our future.

My other wish is that therapies working on other parts of the immune response be properly funded. Last winter, after speaking to people who were ill with this virus, I wrote about pathways that included C1INH. Eventually a company that manufactures this molecule conducted a small trial that led to positive results. They are now in the midst of a larger trial. This drug will be expensive. But what is important to me is understanding and working on that side of the inflammatory pathway that has been left behind. I think there is a great deal to learn there, which will lead to inexpensive therapeutics.

In sum, the question of should I get vaccinated reflects a false dichotomy, it is a logic fallacy.

This is the point I have been trying to get across for a year now. It can be that there are other approaches that might work in concert or instead of vaccines, should vaccines not work out for the future. These should be looked at, in earnest, as soon as we can. In regard to where we are

at this time, the end of this long year, vaccination is the pathway open to us. However, once vaccinated it buys us roughly 6-12 months to articulate and act on next steps. If we do not do so, then we have squandered our precious time once more. This is the time to be brave. A change in focus, or rather broadening our focus, by funding research has been and continues to be warranted.

Good luck with everything. Sending wishes for a healthy, peaceful year to you and yours.

Paul Herscu, ND, MPH