

COVID-19: Straight Answers from Top Epidemiologist Who Predicted the Pandemic

By [Dan Buettner](#), *Blue Zones Founder*

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We've been told alternatively to not wear masks, to wear masks, to stay home, and to get out and reinvigorate the economy.

Hydroxychloroquine and remdesivir both got our hopes up but now have largely fizzled. We've heard estimates that as many as two million Americans will die and now, with 100,000 deaths, we've heard we're near the end of the crisis. Is a vaccination forthcoming? How likely are we to get the disease? What exactly should we do with our aging parents who are at the most risk?

To get some clear answers, I called Michael Osterholm, PhD, MPH, an internationally known expert in infectious disease epidemiology who has advised both Democratic and Republican Presidents. I know [Dr. Osterholm](#) from the University of Minnesota (our academic partner for the first Blue Zones explorations) where he serves as the Director of the Center for Infectious Disease Research and Policy. He has also served as interim Director of the Centers for Disease Control (CDC).

In short, Dr. Osterholm is arguably one of the most dependable, non-political sources for straight answers on what COVID-19 means

to us and our world in the immediate future. In his 2017 book, [*Deadliest Enemy*](#), he correctly foretells a global pandemic and offers the best strategy for fighting it now and avoiding it in the future.

Here are the highlights of our conversation. But if you really want to understand this disease, read the whole interview(<https://www.bluezones.com/2020/06/covid-19-straight-answers-from-top-epidemiologist-who-predicted-the-pandemic/>). This disease may be the biggest event of our lifetimes.

- 3 months ago, COVID-19 was not even in the top 75 causes of death in this country. Much of the last month, it was the #1 cause of death in this country. This is more remarkable than the 1918 Flu pandemic.

- There is no scientific indication Covid-19 will disappear of its own accord.

- **If you're under age 55, obesity is the #1 risk factor.** So, eating the right diet, getting physical activity, and managing stress are some of the most important things you can do to protect yourself from the disease.

- One of the best things we can do for our aging parents is to **get them out into the fresh air**, while maintaining physical (not social) distancing.

- Wearing a cloth mask does not protect you much if you're in close contact with someone who is COVID-19 contagious. It may give you 20 minutes, instead of 10, to avoid contracting the disease.

- We can expect COVID-19 to infect 60% – 70% of Americans. That's around 200 million Americans.

- We can expect between 800,000 and 1.6 million Americans to die in the next 18 months if we don't have a successful vaccine.

- There is no guarantee of an effective vaccination and

even if we find one, it may only give short term protection.

- Speeding a vaccination into production carries its own risks.
- The darkest days are still ahead of us. We need moral leadership, the command leadership that doesn't minimize what's before us but allows everyone to see that we're going to get through it.

***Dan Buettner:** The 1918 Spanish Flu broke out in the spring, kind of went semi-dormant in the summer and then came back with a lethal vengeance in the fall. Do you worry we might see a similar pattern with COVID-19?*

Dr. Osterholm: One of the things we have to understand is that this virus is operating under the laws of physics, chemistry, and biology. It doesn't in any way, shape, or form bend itself to public policy. Right now, about 5% of the US population has been infected; although it's higher in places like New York City and some urban areas, across the world it's about 5%.

A virus like this is transmitted by the respiratory route. I call it the **leaky bucket virus** because if there's one little crack somewhere, it will get out and will infect people. Why is that important? Because we know that it will continue to infect people into 60 to 70% of the population over time. When this happens, it's called herd immunity where these people are immune rods in the transmission reaction. That means that if I'm in contact with four people and three of them are already protected because they have antibody from having had the illness or been vaccinated, I don't transmit to them. So the bottom-line message here is that this virus is going to keep transmitting to others until it hits that 60 or 70% level. And even then, it's like a plane at 30,000 feet when the pilot announces we're going to be dropping for landing. It doesn't just suddenly land, it'll just slow down.

So, we're really confronted with having this virus in our population for months to years ahead if we don't get a successful vaccine. So to answer your question of how we are going to get to that 60 or 70%, that's what we don't know. We've never had a coronavirus pandemic infection like this. It may have happened centuries ago, but we didn't see it.

If it's like influenza, of which there have been 10 such pandemics in the last 250 plus years, three started in our North American winter, two in our spring, three in our summer, and two in our fall. And in each instance when that happened, there was a wave that lasted several months, much like we're seeing now around the world that seemed to disappear after several months. We don't know what happens to the virus and it is not just based on season — it's always just after a few months. In every instance the virus came back with a second wave. And when that happened, usually three to four months after that initial wave was over, it tended to be much, much more severe.

This is not just the 1918 pandemic because even in 2009 with H1N1, we saw that same thing happening with a much less severe pandemic. We saw an early Spring peak of cases when it first emerged in March, April, and May. Then it disappeared and came back in late August / early September and then took off with a peak in October. So that's one model that could happen. But because this is a coronavirus [not an influenza virus], we don't know what might happen for sure. Our group has actually put a paper on our website and the scenarios for what this might look like. We said, well, maybe it's not going to be like a flu virus, maybe it'll just be a slow burn and just keep doing what it's doing now for potentially months and months to come if we don't get a vaccine. Or we could see more of these kinds of peaks and valleys where basically certain areas light up for anywhere from a month to six weeks, and we work hard

to suppress it, and then it disappears, but then it lights up somewhere else. And any of these are still possibilities.

But I can say with certainty, what I call the laws of virus physics, is that this is going to continue to transmit until we see a large part of the population infected. When you think about only 5% of this country's been infected to date, and you understand the pain, the suffering, the death, and economic disruption that's occurred with just 5%, then you can imagine what it's going to take for us to get to 60 or 70%.

***DB:** There's no chance it will just mysteriously disappear after the first or second wave?*

MO: We have no reason to think that that will happen. Put it in this context: If we drop 1000 books, we can pretty well predict moment after moment after moment in every instance, where each book is going to go when it hits the floor. And the same thing is true with viruses like this. There's nothing in our past history that would suggest that it would just suddenly disappear and die off. While it does change genetically over time, it's still a very stable virus. There's no evidence that somehow it might just mutate itself away. That's just not going to happen.

***DB:** So there's a lot of hope around a vaccination. But we haven't been able to find a vaccination for herpes or for the common cold. Is there any reason to have any greater hope for COVID-19 than we've had for these common diseases that have been around for decades or centuries?*

MO: The one thing we've done here is we've put probably the hundred best hockey players we can on the vaccine ice. And so, we're getting lots of shots on goal and they're as good as they're going to get. So that part is very positive. The world has responded. There are over 120 vaccine candidates being evaluated right now.

But to go to the heart of your question, will any of them make it in the goal? We don't know. There are challenges with coronaviruses. We know that from two other coronavirus infections called SARS and MERS; in both instances, we were not able to get easily and effectively applied vaccines.

We also know that it's possible we could get some short-term immunity with these vaccines. That means you may not be able to develop what we call durable immunity that lasts a long time. That would be a real challenge, because then you'd have to keep re-vaccinating people if that would even work. The final piece is safety as we do have challenges with this virus. We know that there's a condition called antibody dependent enhancement, which is a condition where you make just a little bit of antibody, but not enough to protect yourself. There's also an immune enhancement phenomena where your body goes out of whack in terms of immune response. And so, one of the things that we are having to look at very carefully is the safety of these vaccines.

I would say at this point we can all be hopefully optimistic. But we know hope is not a strategy. I think the key message is that, first of all, is that if it does happen, it's not going to happen soon. The idea that we're going to have a readily available vaccine by the end of this year is just not realistic. And while we all want to be aspirational, we also have to be highly practical in how we plan. I think the second piece of it is that if we do get a vaccine, it's not going to happen overnight in terms of making it or distributing it. There are 8 billion people in the world that want this vaccine right now. What happens if China has an effective vaccine before we do, are we going to get any of it? And so, there are still many challenges yet that are before us in terms of what happens even if we do get an effective vaccine.

DB: *Good answer. A Blue Zones core value is honoring older*

people. For people who have aging parents or relatives, do they need to sit at home by themselves for the next year? Or how do we best protect them?

MO: This is a challenge that is as daunting as any I've ever faced in my public health career, including HIV / AIDS or any other condition. How do we try to protect those people who are at the highest risk of having a severe outcome? And right now, if you're over age 65, you're male, if you have underlying heart disease, hypertension, diabetes, renal disease, certain lung cancers or blood cancers or if you're moderately to severely obese, then these are all risk factors for developing the disease. And I might add to the obesity piece, which is something very near to the hearts of your readers here — [healthy lifestyles are so important in reducing your risk for severe disease](#). Right now, among those people who we see having severe disease under age 55, obesity is the number one risk factor for [COVID-19].

[For people under age 55, obesity is the number one risk factor for severe COVID-19. Click To Tweet](#)

So what do we do to protect these people? We don't have a ready answer. Locking people up to bubble them from this virus for 18 or more months, or however long it might take to get a vaccine, is a severe challenge. Mental health-wise — we have to understand the issues. **I categorically reject the concept of social distancing. It's physical distancing. I hope we never social distance, ever.**

Minimizing your contact with large groups, numbers of people, will surely help. We know that you can reduce transmission that way. Beyond that, wearing a mask will reduce your risk and not in a major way, but it's another possible means of reducing transmission. But in the end, this is why we so desperately need to get a vaccine.

DB: *Let's say you have two 80-year-old parents who live in a house*

by themselves. What do they do for the next year?

MO: Again, I would limit the number of contacts they have outside the home. If they are out in public, they can wear a mask but that's of limited protective value. When outside, stay away from large groups. Don't spend lots of time next to someone. This virus doesn't magically jump between two people — it's time and dose.

For example, if you're riding in a car with someone who's infected, you may become infected yourself by just breathing their air within 10 minutes. If they have a cloth mask on, then that may move it to 20 minutes but it doesn't eliminate it. The same thing is true if you're going to a large social event, like a church event. The problem is that this virus is transmitted largely by what we call aerosols, those little things that we breathe, and we put out hundreds of thousands of these every minute when we talk.

If you're in church setting, particularly where there's singing, we know that there have been a number of outbreaks that have occurred where the source has been someone infected in a church setting. So, should they go to church on a Sunday? That's a real challenge. Again, if they're at increased risk for severe disease, I have to tell them that they are taking this risk on. This has been a very difficult part of this pandemic to try to provide meaningful and thoughtful risk-based information that doesn't scare people needlessly, but at the same time, doesn't put them in harm's way for what can happen.

To give you some perspective on what this virus has done: 85 days ago, this virus as a cause of death was not even the top 75 causes of death in this country. **Much of the last month, it was the number one cause of death in this country.** Nothing has done that since the 1918 influenza. That gives you some sense of the impact that this

has had.

***DB:** To summarize a few things that you've said: we're going to herd immunity of 60 to 70%, and it's people over 65 who are at highest risk. It almost seems like a death sentence to let your 80-year-old parents go outside over the next few years.*

MO: The message I think we have to say is being outside is really a very important thing [for Covid-19]. It's getting fresh air, and being able to [move and exercise](#). It turns out that being in the outside environment dissipates these aerosols very, very quickly. Of all the outbreaks that happened in Wuhan, China where people get together with one infected individual and then transmission occurred — all but one of them occurred inside.

So, I think this is the time of year when people need to take advantage of parks and walks separated by 6, 10, 12 feet knowing they can feel very safe about that. **It's time and dose, so you're not going to get infected by passing somebody on the path.** That's the good message: Get people out, get them exercising, and take them out.

The challenge is going to family events. We've had a number of outbreaks where funerals, weddings, and family events in general were the source because people congregated together in tight spaces for a long period of time. But if you're not doing that, then I think the risk is actually quite small.

***DB:** Another one of our core observations from Blue Zones research is that people living long lives are eating more plant-based foods. What role do you think the industrialized meat production plays in the emergence of diseases like COVID-19?*

MO: Well, one of the things that is very clear is that the human-

animal interface is a very, very important source for these infectious agents. When you're looking at bushmeat or something from the wild that may come from any number of exotic animal species, in many parts of the world this is an important source of protein for families. One of the things we realize though, is in the process of contact with that animal — cleaning it, preparing it for food, consumption — these all contain exposure to blood or other body fluids that might transmit any number of different viruses or agents. We know certain kinds of bats are much more likely to harbor some of these exotic viruses that don't kill the bats but can transmit it to humans or other animals.

So the wild bushmeat is a very important area, in the kinds of market situations we see largely in Asia but also in other places around the world. Africa also can play a role, as we saw with the Ebola virus. So that's the one area with animal contact that's by far the highest risk.

In terms of domesticated animals like cattle, hogs, pigs, etcetera — the risk there is just common food-borne disease where we continue to see huge challenges there like with salmonella and e. coli. These all play an important role in human disease and particularly today in antibiotic resistance transfer because we're seeing the increasing use of antibiotics in raising these animals. Because they too are suffering from infectious diseases, and the more antibiotics used the more antibiotic resistance you get, which means the more antibiotics you use. So we don't see the exotic viruses for the most part with domesticated animals except for very occasionally.

DB: I read the theory that the 1918 flu virus mutated in a pig and then jumped to humans.

MO: We don't know the exact origin of the 1918 virus. We call it a swine flu because the genes on it look very much like it probably

spent time at a pig. Pigs are very important animals in making viruses for humans that can be very dangerous. The reason for that is that flu viruses originate in aquatic birds, particularly ducks and so forth. These viruses can very rarely jump to humans, but typically humans can't then transmit them on to others.

But when a pig becomes infected with one of those bird viruses, they also have the ability to get infected with human viruses because of the receptor sites in their lung cells. And when those two viruses get together in a pig cell, they often swap out genes, which then makes a virus that's unique, new, and now able to infect humans. Pandemics begin when a brand-new virus infects a human who also at that point is able to transmit the virus to other humans. So, it's not just *to* humans, but transmission *by* humans. The 1918 virus is one that we've resurrected because we didn't even have the ability to grow viruses back in 1918. We didn't really understand them. But now we can come back to it and say that this virus likely emerged out of a pig source with a human virus involved and then somehow it jumped into humans. But where it jumped into humans is still a question that we all have.

DB: Great answer. Let's say you have the full support of the president and a sufficient budget. If you were willing and took on the job of "COVID-19 czar," what strategy would you pursue at this point?

MO: The first thing I would do is identify an FDR or a Winston Churchill. Because I know that over the months ahead, we're going to have a great deal of difficulty working through this pandemic. **The darkest days are still ahead of us.** And we need that moral leadership, that command leadership that doesn't minimize what's before us but allows everyone to see that we're going to get through it. And we will — we're going to get through this. We need that kind of leadership. It's not a partisan statement. It's not anything

about the politics of the day, it's just what we as a society are going to need to get through. That may seem simple, but that is right up there with the magic wand issue of also having a vaccine.

I would continue to push forward everything I could on vaccine research and development, looking at drug therapies, and also doing anything I could to improve on the production of protective equipment for healthcare workers. Right now, over [600 healthcare workers](#) in this country have died as a result of Covid-19 infection acquired on the job. They are now on the frontline of this war against this virus. And because of our lack of preparedness, we don't have enough respirator masks and the kinds of things that they should have on to protect themselves when working with patients. They don't have all the protective equipment they need. And our consumption of it has been so high just trying to provide care to the patients, that we haven't been able to get ahead. We're always falling further and further behind what's needed. That has to be a very high priority.

Finally, I would really work on and develop the kinds of protocols and information sources for the public to better understand what's going on. Right now, I think the public feels whipsawed back and forth. What is my risk? The questions you asked me — how do I protect my aging parents? Is it safe to go to work? What do I have to be concerned about with my kids in school? We really need to have as much information in the hands of the public. We can't answer all the tough questions. We can't solve all the tough problems, but we can be a partner in helping the public understand what we know and what we don't know. I call it straight talk. Not happy talk, just straight talk. If I were czar, I would make sure that all the people that I worked with would espouse that very important goal.

DB: *Two final questions: What do you think the best-case scenario*

and the worst-case scenario are for COVID-19?

MO: My worst-case scenario is that we see it suddenly start to disappear from this country right now. And people say what, how could that be worst case? That's the worst because if that happens, it means that it's not disappearing due to human behavior or anything we've put in place to reduce transmission. That would tell me that this is now acting like a flu virus even though it is a coronavirus. If it looks like a pandemic flu virus, then that would suggest that in late summer or early fall we could have a very significant wave of activity that would overwhelm society as we know it, healthcare wise and otherwise. That would be really a very unfortunate situation.

My best scenario is that this just continues to burn on — it's with us, but it doesn't ever overtake us. We learn to live with the virus, and we are able to suppress it without destroying society as we know it. And we get a vaccine in 12 more months, and we're able to get that into people and it works effectively, at least for the short term. So we're somewhere between those two. What we don't understand is exactly where yet.

***DB:** In that worst-case scenario, given the fact we have to get to some form of herd immunity – can you estimate how many Americans die?*

MO: Well, I think you can do your own math in the sense that if 5% of the population has been infected to date and we have 100,000 deaths, it's a 12-fold increase to get to 60 or 70%. Now, some of these people will be at lower risk of dying than the people in the first 100,000 deaths, because we are, in a sense, burning through long-term care facilities right now in a really terribly, terribly tragic way. But they're developing herd immunity in many of these facilities because there have been so many cases. So, the death rate per

hundred thousand people will drop as we have more people infected. But because we have so many more people that are in that top of the pyramid, that smaller part of the population distribution, we still will have lots of deaths. So it would not be unreasonable to say based on what I just shared with you with 100,000 deaths for 5% of the population infected, that somewhere between 800,000 and 1.6 million people could easily die from this over the course of the next 12 to 18 months if we don't have a successful vaccine.

***DB:** Well, that is scary. There's this strongly held view by some that we should follow a modified Sweden model. They point out that there's all this death and pain and suffering from a collapsed economy. And that if we're going to herd immunity and as long as the healthcare system can absorb the cases, we should just speed to herd immunity. What's wrong with that thinking?*

MO: First of all, the Sweden model no longer exists. It was a myth to begin with. And it now is even being heavily criticized within Sweden to the point where there's actually a criminal investigation going on about what did or didn't happen in their long-term care. Sweden has one of the highest death rates in the world in terms of number of people that have died per population. They have not advanced any meaningful way towards a herd immunity level and are not much higher than the United States is right now. And they recognize in retrospect that maybe they didn't accomplish all that they thought they were going to.

The adjoining countries of Denmark, Finland, and Norway – who did go into more extensive lockdown activities — have kept their death rates significantly lower than Sweden has. And they're bringing back the economy, very similar to Sweden is doing. So, I think that one of the problems we have is everybody seems to have a magic answer for what's going on. And my response is that it might be a magic answer today, but let's wait a week and see what

happens. And that has happened time and time again. We've heard about how China was successful in tamping down that initial outbreak in Wuhan and throughout Hubei. But now we see they're having a resurgence of infection with large parts of Wuhan now being tested again and other major outbreaks in China. So everyone may have a perfect solution today, but following my leaky bucket concept it may not be that way tomorrow at all.

DB: So we should be continuing to lockdown and wear masks and proceed with caution.

MO: I think one of the things we have to understand is we can't just lockdown. I look at this with two guardrails. On one side is a guardrail where we are locked down for 18 months to try to get us all to a vaccine without anyone having to get infected or die. We will destroy not just the economy but society as we know that if we try to do that. The other guardrail is to just let it go and see what happens. We will see the kinds of deaths we just talked about and we will see healthcare systems that will literally implode. And not just for COVID-19 care, but for heart attack, stroke, and all other causes of disease in our communities. That's not acceptable.

And so we've got to thread the rope through the needle in the middle. The very question you asked me about, what do we recommend to our older citizens of this country — our parents, our grandparents — what do we tell them? That's the part that we haven't done a good job of addressing. **We have to learn not only how to die with this virus, which tragically we've had to do, but we also have to learn how to live with it.**

Those are the kinds of discussions we need to have now. If we're not going to lock up and we're not going to open up willy-nilly, then what is the approach? And what we've been trying to do is facilitate those very discussions so that people can make hard choices. What

are the things that we can do to change society that will help us maintain society to the best we know but at the same time also reduce transmission? That's a key activity right now that public health needs to be playing a very important role in.

DB: What a phenomenal and articulate informed answer, Michael.

MO: Well it's all I know, and it's where we're at.

DB: It's not binary. We need to find the Goldilocks — the sweet spot.

MO: And then consensus. I see what this is doing to our country — it's tearing it apart. I've said this to others that for years and years, I could never stand what it must have been like to be a father who sends half his sons off to the north to fight and half to the south during the Civil War. Today, I'm seeing families going through exactly that over these issues. It's really tragic. What is happening with COVID-19 is that it's not just about the severe disease, but it's also exacerbating many [underlying issues we have in this country today](#). I think this is a real point of learning for us.

DB: I have a final personal question. My 60th birthday is coming up. I live on Lake of the Isles and I was thinking of putting an open-air dining room up for a dinner party of 10 people or so outside. Is that a bad idea?

MO: If you're outside, the aerosols dissipate much, much faster. So any air movement at all will help move those. Again, I can't say that it's perfectly safe. Remember the choir participant who sang for two hours and transmitted the virus to 42 out of 60 people.

But exposure as a dose is a combination of time and amount. So, if you're in a situation where you are basically spending an hour or two in an outdoor area, it's likely that even if somebody was

infected there, you wouldn't have the same dose at all. As I pointed out before, virtually all the outbreaks we've seen have occurred indoors.

DB: Okay, so I can go ahead or are you advising against it?

MO: [laughing] Well I can't say yes or no, I'm giving you the best advice I have. We're all looking for the Holy Grail right now.

DB: Well, this has been fantastic. You're always busy, so thank you for taking the time to educate us. How can we learn more on this pandemic and for what the future holds?

MO: My book [*Deadliest Enemy: Our War Against Killer Germs*](#) was published in 2017. Chapter 13, ironically, is about SARS and MERS, and about why coronaviruses are going to keep being a huge challenge. Chapter 19 is about what an influenza pandemic would look like, and if you just cross the word out influenza and put in coronavirus, it details what's happening now — 25% unemployment, no summer baseball season, and what we're facing now.