

Robert Wachter, MD

We're not out of the woods yet. There's a light at the end of the tunnel, but it's at the end of the tunnel, and for now there's nothing about the guidance that we're all sick of hearing regarding masks and distancing that has changed. If you haven't gotten vaccinated yet, you're a month or two or three away from getting vaccinated and this would be a pretty dumb time to get infected if you can avoid it. It's hard after a year, we're all tired of all of this, but it is a time to double down on the things you're doing to stay safe.

Ellen Kelsey

That's Dr. Bob Wachter, chair of the Department of Medicine at the University of California, San Francisco. A physician, teacher, researcher, and author of 300 articles and six books, he's been ranked as one of the 50 most influential physician executives in the United States, 13 times. A trusted source of information on the pandemic, Dr. Wachter's tweets about COVID-19 reviewed over 100 million times in 2020. And in 2021 he added podcast host to his bio, serving as the guest host for *In the Bubble*, a show dedicated to shepherding us through the pandemic.

I'm Ellen Kelsey, and this is a Business Group on Health podcast, conversations with experts about the most important health and well-being issues facing employers today. Dr. Bob Wachter and I are going to discuss the current state of the pandemic with a deep dive on the vaccine rollout.

Dr. Wachter, welcome. Thank you for joining me today.

Robert Wachter, MD

It's a great pleasure. Thanks for having me.

Ellen Kelsey

Well, we're so thrilled to have you, and we know that you have been very busy and you have been on the airwaves and you're doing your own podcasting these days. We're just delighted to have your time to share some of your thoughts, in particular, as relates to the latest and greatest developments pertaining to the COVID vaccine, certainly know that you are tracking that very closely and would love for you to maybe start us off with a Twitter style summary of the main reasons why you think the rollout has it been a bit sluggish thus far and what you see as some promise and opportunity in the weeks and months ahead related to the vaccine distribution?

Robert Wachter, MD

Sure, Ellen, I'd be happy to and let me know if I'm going over the character limit as we try to keep it Twitter style. We paid a lot of attention to the development of the vaccines and really under prepared for the rollout. I think to the Trump administration's credit, the vaccine development process, and really to the industry's credit, was a miracle. It really is remarkable that within 10 months we had two spectacularly effective, very safe vaccines that were ready to go. That was one thing. It's a wholly different thing to then take vaccines from factories and get them into people's arms all over an incredibly large, diverse country with 330 million people. In that part, they just didn't prepare well enough for and prepare well enough was everything from having a plan, to putting resources into it, to establishing the appropriate collaborations with local and state health departments and hospitals. It's just hard. It's messy. It's complicated. We've never done anything as big and as difficult as that in the vaccine side. It's much harder to do than your annual flu vaccines. We're talking about two shots. We're talking about freezer requirements. It's just everything about it was harder than people anticipated. The problem is that until it's in people's shoulders, it doesn't do any good. So, you know, we spent \$25 billion on the vaccine development process and had allocated a few hundred million to the vaccine distribution process. In retrospect it was a mistake. I don't think a durable mistake and that I think we've realized now a month into it that we didn't get that right and now there's a lot of resources into it. We have a new administration that's paying a lot of attention to the plans and I think the distribution part

we will get right. Then we'll be at the bottleneck that I always thought we'd have, which is the supply. Do we have enough vaccine to go around?

Ellen Kelsey

It's good to hear that we seem to be getting back on better footing as relates to the distribution and the efforts both from prior administration, new administration, and just on the ground. The learnings and every local community, you hear different stories on local news outlets about how different communities are having to course correct and pivot as they too are learning how to do this better. It's encouraging to hear that perhaps brighter days are ahead and we'll stop talking about some of the headache of distribution and just really, as you said, focusing more on the supply. I know and certainly in reading on my newsfeed today, it sounds as though there's some encouraging news related to the J&J vaccine and hopefully we'll see that in circulation and getting in arms in the not too distant future too. Do you think as more vaccines become approved and are in the cycle, that that exacerbates any challenges related to distribution? Or this new vaccine with J&J as a single dose, it doesn't have the same temperature requirements, so what does that mean from a distribution perspective?

Robert Wachter, MD

Well, overall, it's really positive news. It's terrific to have a third entrant in this race and the same day the J&J results came out, preliminary results came out for another vaccine from a company called Novavax, that were also pretty encouraging. It's a little bit behind in terms of its path to approval, but it's not at all inconceivable. There's results coming out in drips and drabs about AstraZeneca, which has already been approved in certain parts of the world, most notably the UK. So it's not at all impossible that within a couple of months, we'll have four or five vaccines in the mix. That is massively helpful just in terms of quickly increasing the supply, but it adds extra complexity. The complexities are everything from the fact that they all have different rules. The J&J vaccine, at least right now, is a single-shot vaccine. The other vaccines are two-shot vaccines and one of them is three weeks apart, the other is four weeks apart. When you get a two-shot vaccine you're supposed to, and the best evidence is that you should get the second shot, the same vaccine you got for the first shot. We've got to track that. If you think about a business, it's probably easier if you have a single product line and you just churn it out and now if you have five product lines, keeping things straight is a little bit more challenging, but it's a good challenge. We need to figure it out, but we'd rather figure out how to manage four or five different vaccines with a sufficient supply than two vaccines and simply have nowhere near enough for what we need to do. The advantages of the J&J are that it's just an easier vaccine all the way around. It can be stored in a refrigerator for weeks. It's cheaper. It is a single shot. It may fill in distribution, particularly as we look at worldwide distribution. We're all interconnected here, so if the United States, for example, has things under control, but there's still a lot of hotspots around the world, and ultimately that's bad just in general because people are going to get sick and die because of that. It's also even bad for us because the virus doesn't really pay much attention to national borders. So that part's good. I think the trickiest part, frankly, about the entry of new vaccines into the mix is they all have different test results from the clinical trials. It was kind of easy when the first two vaccines out of the box, the Moderna and the Pfizer, first of all use the same technology, this mRNA technology, had very similar requirements. The first dose and the second dose, three or four weeks later, had essentially the same efficacy, 95 percent, and very similar side effect profile. As we get new vaccines that are using different technologies, different platforms, different storage requirements, I'd say the biggest curveball I will be someone reading that these new vaccines are 70 percent effective, let's say, and not 95 percent and now saying, I want to wait for the "better vaccine", which I think will be a mistake. I think that these vaccines are still quite good, quite effective, they were tested at a time where there was more virus around and more variant viruses around. It's a little bit of apples and oranges. It's possible that if the Pfizer and the Moderna vaccine been tested over the last couple of months, like the J&J was, it might not have done quite as well. The bottom line is 70-75 percent efficacy and what appears to be at least 90 percent efficacy in preventing severe disease and death, which is what you ultimately really care about, is awfully good. If you had told us on November 1st, here's a new vaccine, it's going to be 75 percent effective in preventing COVID cases and more than that in preventing severe COVID, we would

have said, hooray, that's spectacular. We got a little spoiled because the first vaccines that came out were the 95 percent number. But I think, overall, it's really good news. It just makes the distribution process even a little more complex than it was before, but it's good complexity.

Ellen Kelsey

You've raised so many really interesting points there and one is related to maybe the last point towards the end you made the comment about perhaps individuals wanting to wait for "the better vaccine." I'm curious, will there be a point in the not too distant future where an individual might actually have a choice of one vaccine or over another, or will the supply really kind of dictate at this point in time, this is the only vaccine that is available, choose to take it now or wait, but you might then be waiting months and months before the other vaccine is in supply and available for you as an individual to then elect to get that "better vaccine." I'm just kind of curious if somebody were to play that waiting game, it seems like a pretty big gamble given some of the uncertainties around the supply and distribution at this point.

Robert Wachter, MD

I think if I had a chance today, if the vaccine that happened to show up in my state or my local health department or they're giving out at the football stadium was J & J, I would take it. This disease is still killing 3,000 people a day. Unless you are hermetically sealed in your house, hiding under a table and have no risk whatsoever, the risk of waiting seems to be to exceed the benefit of getting the vaccine now, because the degradation in efficacy is relatively small. What it looks like from these studies is that they're all nearly 100 percent effective in preventing you from dying of COVID. So while you're waiting those two or three months, if you are doing anything in contact with other people, there is some chance that you will contract the virus and bad things will happen. Ultimately, I think the question you asked, maybe at the end of the day, by the summer, let's say it, that would not be impossible that Walgreens has Pfizer and CVS has Moderna and Safeway has J&J. If that's the case, I'm imagining that there will be people who do some shopping, trying to figure out which vaccine they want, but that's really when the supply is plentiful. I think for now, that's not the issue.

Ellen Kelsey

Let's take a step back kind of to where we are right now. It wasn't that long ago, just earlier this year in the beginning of January, when there was some talk about maybe spacing out length of time between first to second dose, or maybe thinking about lottery systems for who should be eligible to receive the vaccine. Your comments at the top of our conversation about really it's supply and distribution, getting a little bit more well-oiled and more vaccines being approved, maybe we're beyond the point of needing to think about those things anymore. I'm curious, you did yourself make some comments about some spacing between the first and second, as well as the lottery, so curious as to your thoughts on whether those are still relevant, whether we should still be considering them, are there some unintended consequences of those things. Just generally, where do you think, if at all, those are still items that should be on the table?

Robert Wachter, MD

I think they should. I had an interesting week a couple of weeks ago where we had an editorial in *The Washington Post* on the idea of delaying the second dose, and then another editorial in *The New York Times* where we talked about using an age-first distribution process and then once you got done with people over 55, switched to a lottery. The reasons for both of those, there were sort of two different sides of the coin, were my concern, and my co-author, who's Ashish Jha, who was Dean of the School of Public Health at Brown. Our concerns that we had the plan, and the plan and the plan had a number of dimensions. One was you must give vaccine dose number two exactly 21 or 28 days, depending on which of the two vaccines after the first one and that's the plan we need to stick with it. One of the lines we use in *The Washington Post* editorial was what I called the Mike Tyson principle, which is everybody has a plan until they're punched in the mouth. It struck me that we were being punched in the mouth here and we should think a little more creatively. Here are the facts. The facts are that in the studies of both Pfizer and Moderna, we knew that both vaccines reached almost 90 percent efficacy, so prevent

nine out of 10 cases at the end of the first dose. When you hear people say it's only 50 percent effective after the first dose, that's wrong and misleading, because that includes the first 10 days during which it has no effectiveness, it's still takes some time for it to work. The relevant question is, the minute before the needle's about to go into my shoulder for dose number two, how protected am I? The answer is reasonably well-protected. Then the question rises, should you get to the second dose? The answer is absolutely, no question about it and the reason is that's what gets you to 95 percent and essentially very little question that it also delivers a much more robust and durable immunity. If you just got the first shot, there's a decent chance your immunity would start to weigh in after some number of months. We don't know the answer to what number that is, but you definitely want two shots. The very pragmatic question was in light of the slow rollout if you have a hundred million vaccine doses to give out, does it make sense to get a hundred million into people, particularly high risk people as quickly as possible and get those people from 0 percent protected to let's say 80 to 90 percent, or does it make sense to take half of the doses and give it to 50 million people to get them their second dose to get them to 95 percent? The argument gets a little bit complex, but that's essentially it and our point was, and the models are very clear on this, more lives would be saved if you get more people their first dose faster. There are competing threads here and they're all legitimate. This is one of those that really is a tough question with two sides. The UK has gone to this strategy, by the way, and the U S has not. The competing threads are you encouraging more mutants? The answer is probably theoretically, but I don't think in real life that would play out to be a massive problem. The second is there some possibility that your immunity will wane after that first dose, let's say in month two or three? I think that's a theoretical concern, but not a great concern. To be the biggest legit concern, are people going to hear this and say, oh good, I only need one dose and I won't come back for those two, or say, oh they keep changing their minds again, that's what they did with masks, they used to tell me I had to clean my mail and now I don't, I'm just going to throw my arms up and I'm not even get vaccinated. It's sort of these more sociological choice things that are, I think, the bigger issues. I think it's still an issue and the reason is, as I mentioned, I think the distribution processes are getting cleaned up, but the supply problem is going to remain very real for the next two or three months. If I knew that we would have a plentiful supply in April or May, but for now we still have a bottleneck, doesn't really matter whether the bottleneck is supply or distribution, I still think the strategy of getting more people to get their first shot sooner and potentially delaying second shots, let's say for a month, there's very little evidence that's going to harm people and I think overall it would save more lives. The question about the lottery is sort of another issue and the issue is that in a well-meaning attempt to come up with a very granular prioritization scheme and paying a lot attention to ethics and equity and disadvantaged populations, all absolutely reasonable and actually quite important, I think we came up with a prioritization algorithm, this is the who goes first, second, third, that was kind of a hot mess. It's one thing to be sitting in a conference room in October and saying it would be great if we prioritize grocery store workers or people with a history of diabetes or a history of cancer or people who live in poor neighborhoods. You can go through a hundred different variations on that theme. The problem is when you get to operationalizing it, it gets to be so complex that it falls apart of its own weight. Since the very beginning, as I saw those schemes roll out, I was asking questions like how is the person at Walgreens or CVS going to figure out whether you're a grocery store clerk? Is that going to be a letter from HR? Is that the honor system? How is that going to work? I had thyroid cancer 40 years ago, I'm pretty sure I'm cured, does that count as cancer? Do I get to the front of the line because of my history of cancer? You can go on and on. You can see the point that it just becomes so extraordinarily complex. The key thing is to vaccinate as many people as possible, to start with the people at the highest risk, and there's no ambiguity that that is age. Yes, blacks and people who are Latinx and American Indians have a higher mortality, there are people in certain professions that have a higher mortality, but they're on the range of maybe one and a half times higher, two times higher. Whereas if you're 80 years old or 70 years old, it's in the order of tens or hundreds of times higher. Age has the advantage of being completely figureoutable and relatively ungameable. We know how to card people. People have a driver's license or other form of ID that gives you their age. Our argument that we made in *The New York Times* was we have to make this thing simple. Once you get done with health care workers and people in nursing homes, which I think it was the right thing to do, start with people over 75, get them all done. Then go to 65 to 75, get them all

done. Then go to 55 to 65, important because they have a higher risk and also if you look at, particularly in minority communities, they die at a younger age and so go to that age, get that done. When you're done with that, take the whole rest of the population and use a lottery. And how would the lottery work? It might be this week is number three, then if the last the number in the year of your birth is a three, mine happens to be a seven, so it would not be my week. If it's a three, this is your week, go and get your vaccine. The model was the oil crisis in the seventies, and I'm old enough to remember that. You could have said the same thing, there should be people who should go to the front of the line to get gasoline because they're poor, they have a longer commute, they have a larger family, their job is more important. We ultimately said sure, but it's just a going to work. The way the system worked was the last digit of your license plate determined whether you got gas that day or not. Even days, even numbers came in. Odd days, odd numbers came in. It was workable. It wasn't gameable. One last comment, a lot of these categories were designed to promote equity and a perfectly important goal and well-meaning, but who gets advantaged in systems that are really complex, it actually is people who are privileged and can figure out how the system works and how to get on the website and how to game the system. Our feeling was in a desire to promote equity, the system would actually get in the way of equity by being so, so difficult to navigate. So that's the argument. I don't think either of those issues have gone away. Yes, distribution is getting better, but as long as there's a bottleneck and now the bottleneck is going to be supply, then I think we've got to really be as simple and straightforward as possible. I do continue to think that delaying the second dose to get more people vaccinated with first doses would save more lives.

Ellen Kelsey

You use the phrase, hot mess, which I love, I use it a lot as well. Just hearing you describe all of that, I mean, gosh, this is unbelievably complicated. Continues to be, you know, so many different ways of thinking about this, different ways of executing on it, different countries are doing things differently. We're learning. We're retooling. We're figuring this out as we go. I think some people would say we're making it up as we go and that's not the case at all. Very well-intentioned things that have been tried and now needing to address and learn and iterate to get better and better each time. As I was hearing you say all of that hoping my gosh, I hope if we ever have a pandemic in our lifetimes or in the next generation's lifetimes, that we have a playbook, that somehow these learnings from this experience do not go to waste. Hindsight is twenty-twenty and have said we should have never been in the position that we are in today, but I hope going forward that there is some playbook here in all of these lessons learned and that we'll do it better the next time around. We have to.

Robert Wachter, MD

There will be. Not to get too political, but there really there was one and it got thrown out really by the Trump administration, unfortunately. I think there are two issues there. One is, do we have a playbook, do we kind of understand from the first minute that, okay, we better pay attention to PPE and we better pay attention to how we get people to wear masks, and we have to roll out a testing system, and all that kind of stuff. There's the playbook, but the bigger issue, I think, is the resources. I'm sure it's true in business too, that you can say we are really going to focus on prevention, whatever the risk is it might be, risk of hacking into your computers or keeping your plans up to date it is, whatever the risk that is. There's just a normal human and organizational tendency for that focus and those resources to be invaded and to wane the more time goes by and the more you haven't needed it. What we're learning here is that the resources that need to go into the public health system and the infrastructure to be prepared for the next pandemic, just have to be much, much greater than what we have typically done. That's just a very hard political problem because, of course, those resources have to come from somewhere and everybody feels like they're strapped. Even if we do it, and maybe we will do it at the end of this thing because it will be fresh on our mind, that's not the real question. The real question is 5 to 10 years from now when we haven't had another pandemic, just seems almost inevitable that that piggy bank will get raided and then we'll find ourselves back, hopefully not as bad a position as we were, but I think there's just a natural tendency to under underemphasize prevention.

Ellen Kelsey

I wanted to also ask about these variants. We've heard of variants in the UK and in other countries and we're talking about vaccines and you also made the comment earlier about the importance of communication and instilling confidence in the general public about vaccine efficacy. I imagine there are some now emerging questions related to these new variants relative to the vaccines that we do have on the market and are coming to market in the coming months. Any thoughts there just to, again, reassure individuals out there and to instill confidence in, not only these existing vaccines and the need for them to get vaccinated, but also new variants and the effectiveness of these vaccines on potential new variants?

Robert Wachter, MD

Well, the first point about the vaccines is they are breathtakingly effective and we are quite confident they are safe, so when you have a chance to take one, you should take one. As a frontline health care worker, I had my chance of about six weeks ago for my first shot. I did get the second shot, about a week ago, and I ran, did not walk, to get it. It's really important, the right thing to do. Maybe I'll just give a very, very quick review of the variants. We're talking about the UK variant, which very quickly became the dominant strain in the UK. What we know about it, is that it does seem to be significantly more infectious and contagious than the virus that we've come to know and hate over the past year. Now there's some preliminary evidence that it might actually be somewhat more serious than if you get it, your chances of dying are a little bit higher than they would be with the old virus. It appears so far at least to be, as susceptible to the vaccines and to other things that target immunity like monoclonal antibodies as the old virus. The bad news is the variant is out there. It's spread very rapidly in the UK. It's now in the U.S. There's a chance that it will spread rapidly here too, but every bit of data we have says that the vaccines are going to work just fine on it. If anything, it is even more incentive to get vaccinated as quickly as possible and for us to speed up the vaccine process, as much as we possibly can. Maybe even slightly scarier, news on the horizon now is these two variants, one in South Africa and one in Brazil, they're similar to each other but somewhat different than the British one, in that there's enough variation through mutations in where the antibodies land and do their magic that there was preliminary evidence that the vaccines might work less well and now just in the past day. When you look at the results from both the Novavax and the J&J trials that have come out, there's pretty good epidemiologic and clinical trials evidence, the vaccines work less well in both of those trials, which turned out to have been done in South Africa, along with a number of other places, the efficacy in South Africa was less than it was for example, in the United States or the UK. There have been a few reported cases of both of those variants, the Brazilian and South African variant, in the United States. We don't have a really good surveillance system for the variants yet, and the fact that in both cases, at least in the South African variant case, there was no known history of travel to South Africa and there were two people that had been found so far and they had no relationship to each other, that says epidemiologically that there's more of it around than we know. That's a little bit scary. The good parts here are the vaccines do work against these variants. They just don't work quite as well as they work in the classic cases of COVID. It's just yet another incentive for us to get as many people vaccinated as quickly as possible. Part of what's promoting all these variants is the amount of spread of the virus. The virus just looks for opportunities to find new mouths and noses to spread, and the more spread there is, the more variance there will be, the more these new variants can take over a community. The faster we can get to magical herd immunity number, the better. If the UK variant becomes a dominant theme, then the number of people that will need to be vaccinated to achieve herd immunity will go up, because the virus is more contagious, not to an unachievable number, but to a higher number than we had hoped for. If the South African or Brazilian variant or ones like it become more of a dominant theme, that number will also go up. In this case it would go up because you need to vaccinate more people to achieve immunity, because you're not getting 95 percent effectiveness, maybe you're getting 50 or 60 percent effectiveness. I should have warned people about the amount of math here. It's wildly complicated. I kind of do this for a living and just keeping up with the news and processing and figuring out the math and the immunology and the vaccinology, it's not shocking that a lot of people find this bewildering, but that is where we are right now.

Ellen Kelsey

Well, I was going to ask you to whip out your crystal ball here and do some, and I was going to say guesswork and magic, but maybe it's all very statistically based, based on your math and your answers here. When do you think we might achieve herd immunity? When do you think we might have enough people vaccinated that we will really truly have a handle on transmission of the virus?

Robert Wachter, MD

Well, here's the math and it's reasonably straight forward. If we were dealing with the old virus, we would need to get somewhere around 70 percent of the population immune before this herd immunity thing kicks in. Herd immunity basically means that there are enough, as the virus is trying to find a foothold in a community given its characteristics of being able to, you know, one person tends to infect two and a half or three other people, if the virus then tries to infect those people and it finds low and behold that they're no longer infectable because they're immune, eventually the virus has no place to go and it dies out. That's the goal. Now that does not mean you need to vaccinate 70 or 75 percent of a community, because, I was about to say for better or worse, mostly for worse, probably about 20 percent of Americans already have immunity because they've already been infected and they've luckily survived. We're not testing that before vaccination, so some of the vaccine is going to people who were already infected. You might ask why and the reason is we just don't know how long immunity from an infection will last. It's almost certain that the immunity you'll get a vaccine will be better and stronger and last longer. In a perfect world, we might've tested those people and put them toward the back of the line, but it would have added another level of complexity that probably wouldn't have been worth it. The bottom line to get to 70 percent immunity in the population, we probably have to vaccinate 55 or 60 percent of eligible people, so with 330 million Americans, you're talking about trying to vaccinate about 180 to 200 million Americans. That should be an achievable number by May or June, depends on the rollout, depends on these new vaccines and how quickly they get approved. If the new vaccines are somewhat less effective, then you've got to vaccinate more people, because the bottom line is not how many people are vaccinated, it's how many people are immune. If a vaccine only works 70 percent or 80 percent of the time, you have to get a few more people in order to make sure that enough people are fully immune. That's kind of the math and then you throw the variants in it and it will slow that down. You'll need higher numbers of people to be vaccinated. It's not like you snap your fingers and all of a sudden the UK variant has taken over the country. There's a period of time during which if we can get people vaccinated, we can dampen down the spread of the UK variant. The same thing is true of South African and Brazilian. It's a lot to take in. To me the crucial month is March and the reason I say that is that's the month where we should be getting enough vaccine out there to enough people that you would normally expect to see the curves of new cases dampen down a lot. It should make us relative resistant to a major new surge. It doesn't get us to herd immunity, meaning the virus is dying out, but it definitely begins to dampen the curve. If you get to 30 or 40 percent of the country with a decent level of immunity, you're not at herd immunity, but you're definitely at a place where the curve starts coming down in a situation where otherwise it might start going up. You get to a pretty good level of protection. If we can get there before the variants kind of take over, then we may keep the variants at bay to a large degree. If we dawdle, either because of supply or rollout or because people when there's enough supply choose not to take the vaccine, any of those things, and we have not achieved a good number of a hundred million people vaccinated let's say by March or April, that's giving the variants a chance to win the race. It feels like all of those curves sort of come together in March. That's when we will see whether we've gotten enough people vaccinated quickly enough to stay ahead of the race here. If that's the case, then we get to a pretty good place where life could be returning to something resembling normal by the summer or early fall. If we don't get to that place and the variants win that race, then this takes much, much longer and there'll be many more people that die, that I don't think should have.

Ellen Kelsey

Thank you for walking through all that. I'm an optimist, so I'm going to try and believe that that we'll achieve it on the earlier window and as you said a lot of things need to line up and happen and go in a

favorable direction for that to occur, but let's hope it does. You mentioned early in the conversation and again just now, people maybe avoiding getting the vaccine for whatever the reasons are. I'm curious of your thoughts on anything that should be done to either mandate or incent, beyond just being very crystal clear on the importance and strongly communicating around that and instilling confidence. Are there other measures that could be put in place to further convince one to get the vaccine?

Robert Wachter, MD

They're all a double-edged sword, and so I think we have to be careful with them. I believe that at this point, the vaccines are under emergency use authorization. They haven't even been fully, fully approved that mandating them would create more backlash than is worthwhile, and also kind of gives a signal to people. This is true of mandates. It's true of people who propose schemes where we pay people to get vaccinated. It sort of sends a signal that you shouldn't need somebody to force you to do it or you should need money in order to do this thing. To me, this is like of all the choices one has to make in life, this is one of the easier ones - here's a vaccine that's 95 percent protective and the reactions to it, sometimes people have a crummy one day afterwards and the allergic rate. Yes, there've been some allergies, it's one in a hundred thousand people have an allergic reaction. No one that we know of yet has died of one. This is about as good as it gets. The idea that you would have to make people do that or pay them to do that, I think is likely to be counterproductive at least for now, for the next several months. I think it's all about communication and about access. So communication, a clear, unremitting message, not only from political leaders and medical leaders, but Instagram stars and TikTok stars and sports stars and clergy and whoever it is that might influence communities, they need to be out there and show people that they got vaccinated and that it's safe and it's a wonderful thing to do, not just for yourself, but for the people you love and for your community. I think that's going to be a winning message. I think it is also important, there is evidence that in particular in the black community but also in other minority communities, there's more skepticism about vaccination, but I think it's easy and a little facile to say, look blacks are taking the vaccine less than whites are and to say it's because they're choosing not to and what can we do about that? In a lot of cases it's not because they're choosing not to, it's because it's hard to get the vaccine. It's hard to navigate the website. English is not their first language. There are a whole lot of reasons why people may not be taking the vaccine and we've got to do everything we can to make the vaccines as successful, as easy to take. Now they're free, that's terrific, but really pay attention to the issues of distribution and the challenges of distributing the vaccine in different communities. I think if we get that right, yeah there are going to be some anti-vax people, they're out there, but I think we're talking about 5 or 10 percent. There's never been anything like this where it's one thing to say, I don't want my kids to get the measles vaccine when you never seen anybody die of measles. Here's something that has killed more people than the entire population of New Orleans or of Oakland, California. By now everybody knows people who've gotten really sick from it. Most people know folks who've died of it. They're going to see their friends and family who've gotten the vaccine. Eventually there will be times where you can't get into this building, you can't get into your workplace, you can't get on an airplane, if you don't show proof of immunity. I think there are going to be incentives around those kinds of things. But I think probably more importantly is they're going to see friends and family who just feel better about life and feel more comfortable going out and doing things than they do. I think that at the end of the day, if we roll this out right, particularly focus on messaging and communication and making sure the access is there, that I'm not that worried about getting to 80 percent vaccination, once it's more freely available.

Ellen Kelsey

Let let's shift gears, I've got just a couple last questions. I always like to towards the end of these conversations ask about bright spots or what gives you hope as you think about the months ahead. Are there a couple of things that really stand out to you as is really showing promise or things that inspire you and you consider to be bright spots?

Robert Wachter, MD

Well, let's start with the vaccines. The vaccines are a miracle. If you told me in the beginning of November we'd have two vaccines that are this good and this safe, I would have said that's impossible. Even now when we hear about another vaccine that it's coming out 70 percent or 75 percent effective, and we say, oh that's not so good, it's still is pretty spectacular and how fast gone. The scientific community and the business community around or in this area has really responded extraordinarily well. That is clearly a bright spot. I have to say the politics are a bright spot. I think this administration has come in I know most of the people involved in the COVID response to the administration, they are as good as it gets. They're smart. They're evidence-based. They will tell us what's right and what's wrong and where they know things and where they don't know things. If they make an error, they will apologize. I think that's the kind of messaging that we've mostly not had, and to me it will determine so much else, whether people trust that the vaccine works, whether they trust that we're going to get the rollout right, whether they trust that we're going to have the appropriate response to the variants. We're not out of the woods with the virus itself, so whether they trust they should be wearing masks. All those things require guidance from governments all over, but it starts at the top. I think what I've seen so far in the past couple of weeks is extremely, extremely promising. It feels like that's a big game changer because ultimately so much of this is about trust. When the CDC says now we can open the schools, does a parent feel like, okay, I believe that, I'm comfortable letting my kid go in. Are we going to put the resources into the testing and ventilation and the masks, everything we need to do in order to open up businesses, open up schools. I have much more trust in that now than I would have last year. I guess the third thing I'd say is that pandemics are horrible, but the history of them is that they often leave societies remodeled in ways that sometimes actually are somewhat positive. I mean, nobody wants one, but I can tell you in the world of health care our pivot to telemedicine, which normally would have taken 10 years, took a month. I think it's a positive trend. We're now doing some of the things that we're doing virtually, I hate zoom meetings as much as anybody at this stage, but we're now much more comfortable working remotely and I think that we'll remodel our workplaces with more nimbleness and more creativity than we would have before we saw the opportunities that arose as we were forced into a whole different way of thinking about work. I think opportunity for innovation, the focus on health equity and equity more generally, I think has come to come to light in a much more profound way than was previously. I'm hopeful about that. I think there are good things that will come out of this and I think if we embrace them and try to sort of say what did we learn from this, that's a positive that we should hold onto and what are the things about this that we never, ever want to see again, I think we'll end up in a better place.

Ellen Kelsey

Dr. Wachter, thank you so much for joining us today. It's been a fascinating conversation. I'm sure the next several weeks and several months will be equally interesting to keep an eye on and appreciate you joining us today, sharing your thoughts and guiding us through this and the months ahead as we will all be keeping our eyes on you. I know you'll be on the airwaves and you'll be very, very busy for months ahead.

Robert Wachter, MD

Yes, that is true.

Ellen Kelsey

I appreciate you taking time, thanks again.

Robert Wachter, MD

Thank you. Thanks for having me. I really enjoyed it.

Ellen Kelsey

I've been speaking with Dr. Bob Wachter, chair of the Department of Medicine at the University of California, San Francisco. To hear more from Bob, follow him on Twitter or tune into the *In the Bubble* podcast.

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