# Episode 39: Places We’ve Never Been Part 2

**Chris Dall:** [00:00:05] Hello and welcome to the Osterholm Update: covid-19, a weekly podcast on the covid-19 pandemic with Dr. Michael Osterholm. Dr. Osterholm is an internationally recognized medical detective and director of the Center for Infectious Disease Research and Policy, or CIDRAP, at the University of Minnesota. In this podcast, Dr. Osterholm will draw on more than 45 years of experience investigating infectious disease outbreaks to provide straight talk on the covid-19 pandemic. I'm Chris Dall, reporter for CIDRAP News, and I'm your host for these conversations.

**Chris Dall:** [00:00:42] It's January 14th, a little more than a month after the Food and Drug Administration authorized the first covid-19 vaccine. While that authorization sparked hope that the end of the covid-19 pandemic was in sight, the subsequent rollout of covid-19 vaccines has fallen far short of projections, and many are wondering just how long it's going to take to get to the level of herd immunity needed to get to post pandemic life. Meanwhile, new covid-19 cases, hospitalizations and deaths continue to climb across the country and the globe as new coronavirus variants spread and take hold. The warning that things could get worse before they get better appears to have come to fruition. On this episode of the Osterholm Update, we're going to talk about the domestic and international trajectory of the pandemic, what role the variants are playing, take a closer look at these variants and why they've become so ubiquitous, discuss the problems with the vaccine rollout and the plans to ramp it up, answer a listener email about reactions to the vaccine and highlight some acts of kindness from the Osterholm Update website. But first, as always, we'll begin with Dr. Osterholm's welcome and dedication.

**Michael Osterholm:** [00:01:46] Well, thank you, Chris, and welcome to all of you to the podcast. For those who may be coming to the first time, we welcome you to what we call our podcast family. You'll get a dose of how to get through the pandemic, as well as some scientific information that hopefully will inform you about what's happening. I just want to start out again by saying, as I do every week, but each week it grows and grows in importance and in reality, is just how much support we appreciate receiving from you. The letters, the cards, the emails. It means a great deal to us and while we can't individually respond to each and every one, we do read each and every one. And we want to let you know just how much that really means to us. So thank you so very, very much. I want to also start out today with our dedication and we have all watched as this pandemic has gone on and gone on and gone on and the economic havoc that has caused in so many people's lives, particularly those who are least able to afford it. The single mom who was working as a waitress, who now is trying to keep food on the table for her two young children, the small business owner who has invested his or her whole life into that business, watching it literally dissolve away. So we dedicate this to all of you today who are suffering financially, who are struggling, who don't quite understand how you're going to get through this another day. And I can't tell you how much my heart breaks for you because I know what it's like to be where you are. And all I can say is that we support you however we can in trying to get through this terrible pandemic. Also, I want to offer some very good news, as each of you know who have been following this podcast, I am a individual who loves my daylight. Light is very important to me and not just at the end of the tunnel, but every day. And I've been tracking the increase in light length in the Minneapolis area here since this winter solstice on December 21st, when at that time we had eight hours and forty six minutes of sunlight. I'm happy to report, here we are on January 14th, and we're already up to nine hours and nine minutes. We've gained 14 minutes since last week's podcast and thirty seven minutes overall. And it's important to note that as we get closer to the spring solstice, March twenty first, the amount of daylight that we increase each day also gets larger. So watch these numbers grow. We can surely use the light. Let me just say a few words to introduce this week's podcast. On Tuesday this week, an editorial appeared in The New York Times written by Dr. Rochelle Walensky. She is set to be the new director of the Centers for Disease Control and Prevention, or, as we all know it, the CDC. The title of her editorial, which I thought was brilliant, was 'As the New CDC Chief, I'll tell You the Truth'. Powerful. Rochelle is a friend and a brilliant and trusted colleague, she's, you might say, one of the best of the best. That headline, not only says it all, I think it sets the bar for the entire public health world. We must tell the truth. Those of you who listen to this podcast know that I surely try to do my best to just call balls and strikes. I call them as I see them. I'm an eternal believer in the truth as an individual in science and as an individual in life. And when I don't know something supported by either data or experience, I tell you I just don't know. And I urge you to require that of all the people you get your information from. This is what prompted us to recycle last week's title for this week's episode, because the truth is we're going even deeper into places we've never been. This time I'm calling it 'Places We've Never Been Part Two'. This week it's about the sars-cov-2 variants. I'll talk much more about those in a moment. I don't want to make light of the severity of this situation hardly, but I found myself hearing in my head my own version of the Fifth Dimension song from the 1969 hit Aquarius/Let the Sunshine In where there is a line in there that says 'this is the dawning of the Age of Aquarius'. And I fear that now this is the dawning of the age of the variants. A fundamental and critical change in this pandemic. It's almost a month since I started feeling this terrible uneasiness by the news of the variants in the south of England, followed by what we saw in South Africa. Then several more variants to the point where it's now feeling like a new day, a new variant. Is there reason for concern with these new variants? The answer is absolutely yes. There are three things they can do that will make life much more complicated for our war with this virus. First, they can prove to be more infectious. Second, they can prove to be more deadly. And third, they can end up reducing the effectiveness of the immunotherapy drugs and the vaccines we've developed. Now, I want to make it very clear as I discuss these later, that we have lots of partial information, incomplete information. Before we conclude that any of these three things are happening, we surely need more information. But we must be aware of them. We must tell you the truth. So what is true for the UK variant? What is true for the South African variant? Which is true for the Brazilian/Japanese variant? We mostly don't know. We're in places we've never been before. In her editorial, Dr. Walensky said last year demonstrated how a frail, poorly tended public health infrastructure can bring a great country to its knees. There you go. A real dose of the truth. And she is promising to bring it. Let me add one more comment to this introduction, because I think it frames the tone of what I'm about to share with you. Last October, I expressed my concerns nationally on NBC's Meet the Press. One thing I said was about how we're communicating. I said we don't have a consolidated one voice, we didn't then. It caught the interest of a communications expert by the name of Randy Olson. Randy and I have become very good friends since that meeting in October. He's a scientist turned filmmaker who has written five books on science communication. Last year, he earned an award from the American Medical Writers Association for his work over the years with organizations like the National Institutes of Health and the Centers for Disease Control and Prevention. A friend connected us and we began a collaboration that has become very important to this podcast. I cherish and value his input very much. In one discussion, I was telling him about the science when he interrupted, and quite abruptly, and said "The science is crucial, but so much of what's happening is about communication". He said he took a look at Australia and New Zealand and the Asian nations. They had the same science as us, same prevention and control measures, the same understanding of the virus, yet their death rate has been a world apart from ours. If you take New Zealand, one of my most favorite countries in the whole world, it has a population of almost five million people, comparable to the city of Los Angeles. To date, New Zealand has had a total of twenty five deaths from covid. Twenty five. That's their entire country, just twenty five dead. Now grant you, each one of those was someone loved, someone cared about, but twenty five. In contrast, Los Angeles has had over twenty nine thousand deaths. Now, what happened? Was our science not as good as theirs? Same basic science knowledge, completely different outcomes. Clearly, something has gone wrong. But that's not what really interests me right now in this podcast tonight. What I want to focus on is the same thing that Dr. Walensky points to, which is what needs to go right. In her editorial, she promises to lead with facts, science and integrity. All of which add up to the truth. I completely agree with her. We have to place our trust in facts, science and integrity. It's our only hope to work our way out of this pandemic as we continue to go places we've never been. Today some of the things I'm going to share with you are not going to be easy, but you need to hear them. We need to tell the truth and we need to prepare ourselves to do what we must to reduce the horrible impact of this pandemic.

**Chris Dall:** [00:11:29] Mike, let's start where we normally do with the domestic and global epidemiology. The US is seeing a seven day average of at least two hundred forty eight thousand new covid-19 cases and at least thirty two hundred death the day. The numbers just continue to climb in nearly every state, with some doing much worse than others. You said last week that you weren't sure what's going on. Has a week added any clarity?

**Michael Osterholm:** [00:11:51] Well, it has added some new information, but I'm still not sure I know what's going on. I look at the case numbers for this past week, if I take the cases reported on January 12th for Tuesday, the day that's most current before the podcast here, as you pointed out, there were almost two hundred and thirty thousand new cases reported. That's a 37 percent increase over the last 14 day moving average. In total, twenty two point nine million cases. If you look at the deaths, a staggering number. Four thousand four hundred and six deaths reported today, a 49 percent increase over the 14 day time period, giving us now three hundred and eighty two thousand deaths. And hospitalizations have hit an all time high at one hundred and thirty one thousand three hundred and twenty six, a nine percent increase for 14 days. But clearly a very, very ominous trend in terms of our ability to provide health care. Just to put these numbers into perspective, and it's very important we do two things. One is in each and every time I talk about these, I want to remind all of us, these are our loved ones. These are the people we have cared about. These are the people who have been our colleagues. These are the people who have meant something to us. And they're gone. They're gone. And to put this in comparison with other public health challenges, if you look at the numbers of estimated deaths for influenza for the 10 year period from 2010 to 2020 here in the United States, the CDC estimates that there have been between 12 and 61 thousand deaths, likely somewhere in the middle of that. 12 to 61 thousand deaths. We've already reported three hundred and eighty two thousand six hundred eighty two deaths as of today for this past year. And we know that that number is going to continue to climb precipitously. When we look at the increases in cases by states, we saw something this past week we haven't seen before. If you take the 50 states and the District of Columbia, 51 different entities, cases are climbing in 50 locations. Forty nine states and the District of Columbia. The only place that they aren't climbing right now is Hawaii. We haven't seen that since the pandemic began. Large parts of California remain in a major lockdown. Other areas of the country are experiencing the same thing. We are now seeing what I would call a shifting baseline, a concept that was put forward by Randy Olson, the communication expert I just spoke about some years ago. The shifting baseline is now that we have gone from when 20 thousand cases was really bad, to seventy thousand cases is really bad, to two hundred and eighty thousand cases is really bad. And now we're actually hitting on a number of days three hundred thousand cases a day. Wouldn't it be something if we could go back to only twenty two thousand cases a day? You could say that may sound terrible, I realize those are still all individuals again, but, boy, it sure would beat what's happening in the United States right now. I think that this is in part our pandemic fatigue. And as one of our listeners shared with me several weeks ago, we're probably experiencing pandemnesia. A pandemic amnesia that is here. We are starting to see the surge in a number of states associated with the Christmas holiday/New Year time period. I personally am aware of people right now who are in critical condition as a result of an exposure that occurred in their home on Christmas Day. All the things we talked about. And, you know, for many of you who are on this podcast who did participate in those same events and fortunately have come out not having been infected, I hope that you don't ever get infected. But again, each time you do that, you take a chance. So I'm going to talk more about the issue of variants in a moment and what that might be doing and I don't think at this point that the increase in cases is due necessarily to new, more infectious strains of the virus in our communities. It's us. It is us. We are not understanding that, in fact, this virus is still here. Now, when we heard news that a vaccine was coming, I think many of us felt I can coast to the end. We can't. We can't. Four thousand four hundred and six deaths reported today. Let me just restate that. Right now, this is the leading cause of death in the United States, and it's caused by a virus that we're breathing in because unfortunately, far too many of us put ourselves in harm's way when we wouldn't have to. Now there are a number of essential workers, people who just have to put themselves in harm's way, we can only hope that they have adequate respiratory protection. But far too many of us are putting ourselves in harm's way. So, Chris, my real sense of this is we're just seeing increases across the country tied right now to the holiday season activity. In the Sunbelt states in particular we're seeing this major increase in cases. And as we talk about the variants going forward, I have great concerns about what that will mean and how we will ultimately trying to be responding to that issue.

**Chris Dall:** [00:17:48] And Mike, what are we seeing internationally?

**Michael Osterholm:** [00:17:51] Well, let me highlight several countries, because we're going to be talking more about them in a moment when we talk about the variants. If you go to Europe, you have to immediately focus on two specific countries, the United Kingdom and Ireland. The U.K. is now a week into its third national lockdown, which is scheduled to last through sometime in mid-February. That's a date that Boris Johnson has set as a target for all 15 million of the UK's most vulnerable people to be vaccinated with at least one dose of vaccine. As of January 11th, more than 2.2 million UK residents had received at least one vaccine dose. But health officials are urging people not to grow complacent as the country deals with the continued surge in cases and hospitalizations and despite what they call their tier four most severe lockdown. Last week, hospitalizations increased by twenty two percent. It reached a record high of thirty two thousand three hundred Brits currently in the hospital with covid. Their seven day average of new cases is right around fifty seven thousand eight hundred, up from fifty two thousand five hundred last week. Their daily deaths this week are now at about nine hundred and twenty six, up from six hundred and ten last week and a record high actually occurred on January 8th of thirteen hundred and twenty five. We're hopeful that the top of the curve may have been hit, as it looks like the numbers are starting to level off somewhat over the past several days, but the bottom line is they have been literally under attack by this virus. Anybody who's been following the news media, the pleas by the elected officials in England to please shelter in place has been a very real event. If we look at Ireland, it has experienced one of the fastest growing outbreaks in the world up to this point in January. The country's 14 day infection rate has risen 10 fold in just the last three weeks to nearly thirteen hundred cases per hundred thousand population, a very high number. Just to give you some perspective, on January 1st, they were at a daily reporting number of seventeen hundred and fifty three cases. Overall seven day average of about thirteen hundred and forty seven cases. By January 8th that seventeen hundred and fifty three number had gone to eight thousand two hundred and twenty seven cases per day. The surge is at this point thought to be fueled by this new B117 variant alongside the opening of shops and restaurants and the relaxing of a ban on household visits for Christmas. Despite otherwise having a fair amount of lockdown activity, the cases are coming back in a major surge. The percentage of genomic surveillance samples looking for mutations in these viruses show that the B117 variant, or the one from the United Kingdom, has grown each of the last four weeks, coinciding with the big increase in cases. On December 20th, it was about nine percent of the isolates that were found in patients from Ireland. December twenty seventh, that nine percent went to 13 percent. On January 3rd, a week later, it went to twenty five percent. And on January 10th, forty five percent of all the isolates, or viruses obtained from cases in Ireland, are this B117. So now as a result of this surge, Ireland has entered back into a strict lockdown just before New Year's Day, which includes the closing of non-essential businesses, schools, limits on household gatherings. And they're expecting this to last right now through the end of January, when at that time it will be reassessed by the government. If we look at other countries in Europe, we're seeing somewhat similar situations, although not as extreme as we've seen in Ireland/the United Kingdom. And the issue right now for all of these countries is what is happening with the variants that are present. If we look in Asia, we're seeing substantial increases there in Japan where they have the highest spike of cases and deaths throughout this entire pandemic. And yet if we look at other countries in Asia, such as Australia and New Zealand, they're still doing a remarkable job of keeping the case numbers down. We have seen in Africa a very major increase in cases with the current primarily in South Africa, causing the president there to extend restrictions in that country through mid-February. I'm going to talk much more about that in a moment. For months, we had people writing into us telling us, well, Africa is doing something right, they're not seeing cases. And I kept responding back and saying, "Just wait, it will hit." I don't know why it takes so long. Right now this past week, 18 countries in Africa are now reporting record high number of cases and the numbers are growing quite rapidly. So in short, the world is clearly under attack by this virus. We, unfortunately, are leading the way here again in the United States. And all I can say is, is that the vaccine is our light at the end of the tunnel. But we have to understand what that means in light of these variants, both in terms of the number of cases and as well as what it means in terms of how well the vaccines will work.

**Chris Dall:** [00:23:40] So now's a good time to back up a bit and provide a primer on these variants and the impact that they're having. Mike, do we know why the UK and the South African variants have gained an advantage? Is it simply the number of mutations that they've accumulated or where those mutations are located? And do we have any more clarity on their impact beyond the increased transmissibility?

**Michael Osterholm:** [00:24:02] Well, let me first try to frame this variant message. You know, let me explain what we know and what we don't know about the sars-cov-2 variants. Remember the virus that causes covid-19 is sars-cov-2. And what do these variants mean going forward? One of the questions I often get is what is a variant? It's really a nuanced answer in that it depends on who you ask. And what I mean by that, if you ask a virologist, you ask an epidemiologist, you ask some other scientists, they may give you a different answers. But variants are generally considered to be changes that occur in the virus that have become fixed into the human populations. Meaning that the virus mutates and that virus survives as a fit virus and transmitted into the human population. These variants likely become fixed into the population due to competitive advantage, either more transmissible, capable of evading protection, whatever. One of the issues that we recognized with these coronaviruses like sars-cov-2 as well as the other coronaviruses, is that they undergo frequent mutation. What I mean by frequent, it's basically kind of an orderly increase in mutations that occur over time, and that's why early on in the pandemic, a number of the laboratory experts who do genetic sequencing said this is a relatively new virus based on the presence of certain mutations and how they changed over time. More recently what we've seen is not an orderly increase in mutations, but viruses going from five mutations present to twenty three mutations just like that. And this is where we're beginning to see the potential impact of these viruses, whether it results in increased transmission, more severe disease, or how they respond basically to immunotherapy, the antibody treatments or actually the protection from vaccine. Now, there are at least three notable variants of concern right now, and this could change overnight with variants coming up from any number of locations. I'm going to just briefly give you a sense of the three variants that we're most concerned about. One is called B117, which comes from the United Kingdom. The WHO has implored us not to call it the UK variant because of the, you might say, stigma of that for a country. I agree with that. I think it's exactly right as it is from a policy standpoint, but it's so hard to remember these numbers. So I'm afraid I'm going to violate that and call it the UK variant. Then there is one that has been found in South Africa. It's called by some 501YV2. To others it's called B1351, and I'm just going to call it the South Africa variant. Again as a virus that has had substantial mutational changes, but it's not the same as the one from the UK. More recently, we've seen one called P1 also known as B11248. Again, I'm just going to call it the Brazilian variant of concern. And now it's also found in Japan as a result of travelers bringing it back from Brazil. And so you may hear it called the Japanese variant, but I think most of us will call it the Brazilian variant. When we talk about these mutations, the one that really concerns me is when we have genetic changes to the spike protein on the virus, a molecule that is really critical to unlocking and entering the human cell. And that's what, of course, we're making antibody in our immune response to to try to basically tie that up so that we don't have that virus with that spike protein entering into the human cell. So what's the messages for each of these variants? What do we know? I will try to share this with you as the truth. I think we have to be very cautious at this point about over interpreting this information. But I have to also say this is a real concern to me, a real concern. If you take the B117, or the U.K. variant, there's growing consensus among the experts that this variant is more infectious, although there's still some uncertainty as to just how much. It's been estimated it could be 50 to 70 percent more infectious than the previous sars-cov-2 strains. Now, when you hear that number, note the following. That is a population based issue, meaning that how much more likely are people to be infected in the community. However, we can still protect ourselves from these viruses using the very same methods that we would use for any of the sars-cov-2 viruses to date. Distancing, not swapping air with someone, using respiratory protection. Those are the key features that will keep you from getting infected from both viruses. We now know that this virus is in at least 50 countries, no longer just in the U.K. From the time that it enters a country like we're seeing right now in Europe, it may take anywhere from six to eight weeks before it builds up sufficiently in the population to then really cause a severe challenge. I'll come back to that and what it means for the U.S. We see this virus has been now confirmed in at least 11 states as of January 12th. And it looks like this is one that's probably in most states by now and will be detected with more genetic sequencing surveillance. I really am concerned that there's going to be a serious challenge in responding to this virus with so much pandemic fatigue and anger that's already established in the population. Despite what I think are going to be much worsening trends, much worse than we've had so far in this pandemic. And if that, in fact, is true, and I hope I am wrong. Oh, boy, do I hope I'm wrong. But if I'm not, what we've done to date is not stopped the current pandemic virus movement. I don't know how we're going to do any better with these variants unless we take much more extreme measures, something no one wants to talk about. I have raised that issue. As you know, the word lockdown has become equivalent to trying to drink barbed wire, and yet we're doing it in a number of communities. And at the same time, we're not really doing it. We still have substantial social interactions going on. Now, I understand during the lockdown, the economic hardships are immense, the feeling that people have that their freedoms have been restricted. But the only way we're going to stop this virus in six to eight weeks, if in fact it takes off, as I think it very well likely will, what we're doing now is not going to work. It's simply not going to work. That's the truth. So what we have to understand is we're not in the same place we were even six months ago. We now need to consider what steps will we take to reduce that transmission. The good news is the current vaccines appear to be effective against the UK variant. And it is really important that we do everything we can to accelerate our current vaccine programs, to try to minimize the impact of this rapidly emerging variant that I think is going to be the challenge in six to eight weeks. Let's take a look at the other variants, the South African variant. I'm going to lump the South African virus and the Brazilian virus together and cover them. They actually have a mutational change that is different than what we see in the UK virus. It has to do with a mutation at site E484, which could very possibly have an impact on how well our immunotherapies work or even our vaccines work. I want to be really clear here. I'm not saying yet that our vaccines will be reduced in their effectiveness, but it's possible. And when I say it's possible, it doesn't mean that they won't work, it may be that they will be like influenza vaccines where they'll be less effective. So number one, we don't know that this will happen at all. We have to be investigating this thoroughly. If it does happen, it could be where there is some reduction in protection, but clearly still offering some protection, as I said, like flu virus, or we could have a much more disastrous situation. So right now, I can tell you the loss of this protection is being highly debated. There's only limited public information available. The vaccine companies are surely working on trying to understand how well their vaccine and induced antibody protects against these variants. Other researchers are working on that. If you look at the variants that are currently occurring in Manaus, Brazil and Nelson Mandela Bay, South Africa, being the Brazilian and the South African variants, you've seen that they've been really hit hard with covid in the spring and summer of last year, and yet we're seeing amazing surges in cases occurring right now at that time. Based on data from some of these laboratories looking at this, the effect of these mutations on what we would call basically immune escape viruses could vary widely depending on the person. And at this point, it's just too early to know. Already I know that the companies are working on constructs of new vaccines that might incorporate the changes here that could be brought into the vaccination program, much like you might think of influenza. I want to be really clear. We don't yet have the data to say that this is happening. However, it was notable, on Wednesday the senior leadership at Eli Lilly, the manufacturer of the monoclonal antibody therapy, said that the particular strain from South Africa could evade their antibody treatment. So at this point, I'll keep you posted. We're going to follow this very carefully. This could be a game changer. So what's the message in these variants? Number one, the U.K. strain and likely the South African strain are actually resulting in increased transmission. The Brazilian strain may also be doing that. Number two, is that for the South African strain and the Brazilian strain, there is at least some evidence that also increased severity of illness. It's not surprising that we might see more severe illness because, in fact, we have seen much higher levels of virus in the individuals who are infected with these variants. So we still have to better understand the severity issue and at this point, we have no data that supports that the UK virus actually can evade the protection from vaccines as well as from immunotherapy or treatment with immunoglobulin. We're just going to have to wait and see what we come up with on these. But this is a stay tuned moment. This is now why I said we're living in the age of the variants. So going forward, we have got to start working now to make sure that our health care facilities are geared up for what could be a terrible, terrible, terrible increase in cases in six to eight weeks. We have to understand that we are going to need to make sure that as many of our health care workers are vaccinated by that time so that they can safely be in these environments caring for our patients. We need to understand supply chains, personal protective equipment, all these things with the idea that we really do have the potential for some advance warning here. And if this is like those other countries who have seen this new variant emerge, we can expect that we're going to see some real challenges.

**Chris Dall:** [00:36:43] So let's turn now to the vaccine rollout in the United States. While it does appear to be picking up, it's still moving very slowly. The Trump administration this week announced a pivot in its vaccination strategy. It's now saying it will release all the doses that are currently available instead of holding back doses for the second shot and is calling on states to start vaccinating people 65 and older, along with adults who have a health condition that puts them at risk. So, Mike, what are your thoughts on this new policy and what does it mean for the vaccine priority group recommendations from the CDC's Advisory Committee on Immunization Practice?

**Michael Osterholm:** [00:37:17] Well, I think most of the listeners know that I'm a member of the Biden/Harris covid-19 advisory board, and I have been involved with this issue in a very extensive way. But let me just say tonight, I don't speak for the advisory board. I don't speak for the transition team. I'll give you my balls and strike assessment of where we're at. As I have shared with you in the past and as I did in a podcast over a month ago entitled The Last Mile and the Last Inch, I laid out all the reasons why distribution was going to be a failure, and it had to do with the fact that, and we did an amazing job under Operation Warp Speed to bring vaccines forward from a research and development standpoint to an evaluation standpoint for safety, we tested them for efficacy, they were reviewed critically by the FDA, and evaluation given, and they were authorized under emergency use authorization. Nothing short of a vaccine Manhattan Project. But what we did is, it's like the builder of a very elaborate, amazing bridge that spans a two mile gorge, which is an incredible space to cover, and they had this bridge all in place except for they ran out of money and didn't have the last hundred feet completed. Well, that bridge is a bridge to nowhere. You can't get across that. What Operation Warp Speed did is they did all this work and spent many billions of dollars to get these vaccines to manufacturing status and approval and then said "Oh, the rest of it will just happen." And we know how difficult distribution of vaccines are, particularly for adults and more importantly, for a vaccine that had to be maintained at minus 90 degrees centigrade. And then once the vaccine was taken out, at least for the Pfizer vaccine, out of that freezer space, it could sit in a refrigerated unit for five days. But then once it was reconstituted, you have six hours to deliver it or you have to throw out the doses. Very complicated. A two dose vaccine regimen, very complicated. You have to match up the same vaccine, Pfizer or Moderna, very complicated. I have been involved with vaccine campaigns of national importance dating back to 1976 and was very involved with the swine flu vaccine program here in Minnesota at the time. I was there for the 2002 smallpox vaccine program at the time, concerned about bioterrorism and of course was there for the 2009 H1N1 influenza pandemic vaccine campaign. None of those compare to how complicated this particular one is. So on top of it, state and local health departments have always been the air traffic control for vaccines in our communities. Whether they're being given by private medical facilities to the private sector, it's the state and local health departments that help control who is getting vaccines, where. And how to move vaccine to the right place, and which public or private parties are administering the vaccines. Well, what happened was the federal government took out a contract with two pharmacy companies to deliver vaccines to our long term care facilities, a noble idea, but they were not prepared and still are challenged by getting vaccines out. So we're sitting here with a certain amount of our vaccine just sitting there appearing not to be used yet, even though it's been allocated for long term care. Health care has not been a smooth delivery system so far. Part of it is the fact that a number of our health care facilities are under siege right now with cases. Remember, one hundred and thirty one thousand people hospitalized right now for covid. That's a hard time to think about vaccinating people, particularly for those knowing that a vaccine will have some reaction. I know of a number of health care workers who felt somewhat mildly ill, sore arm after dose one and literally missed a day of work after dose two. Now please do not let those reactions keep you from getting vaccinated. In fact, if you have such reaction, it's a sign it's working. But how do you deliver those vaccines in units where you can't have 20 or 30 percent of people out tomorrow? So you have to stagger the delivery. So it's been a challenge to get those first two 1a categories vaccinated. And just to summarize, the health care personnel and long term care facility residents in this country number about twenty four million people. Well, then we move to 1b, the front line essential workers, persons aged over seventy five. That combined is about forty nine million people. And some states decided, like Florida, well, I'm just going to go with the age issue and they decided to say anyone over sixty five, which in this case actually would be an additional almost 30 million people for vaccination and we don't have the vaccine for it. So what did you see in Florida? You saw these long lines, people very upset, couldn't get vaccine because we're still just delivering a limited amount as the manufacturing now is picking up. As of Wednesday, January 13th, we have delivered basically about twenty seven million, six hundred and ninety six doses of vaccine, far less than would cover those areas I just talked about. However, if you actually look at that improvement, that was about one point five million more per day than it was seven days ago. If you look at the number of people who have started vaccination, we've gone from on January 11th, eight million nine hundred and eighty seven thousand three hundred twenty two, so eight point nine million. And now we're at nine point four million. So we've added about six hundred and forty one thousand people basically in the last day and a half. That number is starting to go up. That number is going to climb. And I think we will, in fact find that we will be vaccinated a million people a day. But in the meantime, what's happened? Well, the Biden/Harris administration, I think rightfully so, said why are we holding all of these doses of vaccine for the second immunization? Can't we use some of those up front? Get more people vaccinated with one dose and then with the increase in production plus holding a strategic reserve guarantee we have enough for a second dose, meaning that if there is some manufacturing glitch in one of the vaccines that might mean a lot of vaccine couldn't be approved right away we'd still have that backup. But we wouldn't be holding all the doses. I fully endorse that approach. I think it was a very thoughtful approach. That's what the president elect has basically announced will be done. So that part was good. But yesterday, the Trump administration decided to say, you know what, we're going to let everybody from 1A, B and C basically all participate in getting their vaccine. Which for a sense was literally adding up in total, almost one hundred and eighty million people. Well, there's no way vaccines are going to get to that number of people until in the summer. Yet we just gave people this message, well, you can get your vaccine now. We're recommending it. So I think that was a really unfortunate step. It surely did not match up with reality. And I think what we're all going to be seeing is state and local health departments are going to continue to be the shock absorber where people are going to be upset because they don't have enough doses. And this rollout is just not going well because of expectations and what can be done. I do believe that the Biden/Harris administration will bring more clarity to this. The president elect is going to be announcing later today a major initiative on vaccination programs, support for state and local health departments. How do we use federal assets that could be brought in to help out the states? And so it's going to improve. But just understand, it's going to take time. These are not vaccines that are just there overnight. And I don't care how many people you recommend get it, if you don't have the vaccines to give, what have you accomplished except frustration? So I am optimistic that we're going to actually see more uptake with more vaccine very soon. One thing I do want to add. And I'm very concerned about this, and it really is about that podcast that I talked about the last mile and the last inch, we're seeing a growing body of vaccine hesitant people to take the vaccine. They're concerned about safety. They do see that some people get a reaction to the vaccine that causes them to have a sore arm. We've also seen the fact that some people have had anaphylaxis or a reaction where they needed to have epinephrine afterwards, occurring about 11 per million population of vaccinees. Most of these were people we already knew were vulnerable to anaphylaxis because they've had it in the past. And now when we look at the vaccines from the standpoint of Operation Warp Speed, that terrible name that makes people afraid that safety was somehow cut short. If we look at the vaccine from the standpoint of a messenger RNA vaccine, this new platform that people are somehow mistakenly believing is going to inject new genetic material into their bodies. And then if we have to deal with all the disinformation, misinformation on social media, we're finding that in some areas of the country, up to 40 percent or more of health care workers are taking a pass on the vaccine right now. Saying, "You know, I'm just going to wait a while, see what happens." If that translates over into the general public, that's only going to continue to let this virus do its deadly work. So we have a lot of work to do on understanding the knowledge, attitudes and beliefs of people about this vaccine. We have a lot of work to do to help them understand why it is a safe vaccine, why it is an effective vaccine, why, in fact, it's something you want to take to save your life and very possibly the life of one of your loved ones. So I worry that we're so far behind the eight ball that this is going to create a challenge in the short term as I'm sitting here looking at the UK variant bearing down on us. I do know for a fact that the Biden/Harris team is going to put together an extensive campaign to promote vaccination with information. But right now this is a challenge. And so an incredible technology miracle to bring these vaccines through an incredible communication and rollout strategy failure. And now it's our job to can finish that last mile and that last inch and get that needle into people's arms. As I close out this discussion of the vaccine, I want to be really clear. I can't wait to get mine. I will not jump in line in front of anyone who should get it before me. But I can't wait to get my vaccine. I can't wait for all my family members to get the vaccine. My daughter, who's a neonatologist, has just gotten her second dose. You don't know the wonderful relief I felt knowing that. So if anyone listening to this podcast thinks that they should consider waiting on this vaccine, please. Be with me, go for it. I can't wait to get my vaccine.

**Chris Dall:** [00:49:29] So you just mentioned some of the reactions that people are having after the second dose of the vaccine. This gets to our e-mail question this week from Patty. She writes, "I have heard of four people who have received their second shot and have experienced side effects, fever and aches. Why on the second shot and not the first dose?"

**Michael Osterholm:** [00:49:46] As I just mentioned in the previous discussion, yes, having a sore arm as part of the vaccine experience is actually a good thing believe it or not. And the second dose is more likely to give you that reaction, because that is your immune system that has been primed by the first dose now really kicking in and actually causing you to have that reaction. Now, I don't want anybody to have any pain. I don't want to have anybody have a sleepless night or feel like they can't use their arm for 12 hours. But you know what? That's a wonderfully painful feeling to have. It's one that says the vaccine's working. You have had a vigorous response and your level of protection surely is as good as it's going to get. So I hope people understand when that happens it's not a life threatening situation. It is not even one that's going to last more than a day, but it's one that is surely a sign that that vaccine is working.

**Chris Dall:** [00:50:48] Mike, do you have some acts of kindness you'd like to highlight from the Osterholm Update website this week?

**Michael Osterholm:** [00:50:53] We do. And it's one that I'm really, really happy to share with you. This is from Rayona, an email that came in. And, you know, I think about the acts of kindness and oftentimes we've discussed some really pretty remarkable acts. You know, you really had to go out of your way to accomplish that. Yet most of life are everyday events that are simple events. And yet they are just as kind, they're just as important and they do just as much for you as they do for the person that you've done the act of kindness for or about. And so Rayona writes to us, "Thank you so much for your weekly podcast. I try to do one act of kindness every day, whether it is to call my elderly uncle who lives alone and who has advanced COPD so dares not leave his home, send a donation check to the local food bank, take donated items to the Goodwill Store, give a Starbucks card to my local mailman, tip my food delivery person more than I normally would, read a story to my grandkids on Zoom, check in on the 90 year old neighbor lady who lives alone or send a donation check to the women in Third World villages to help them with their food and water situation. So while each is a small, discrete act of kindness, together, they help spread a pandemic of kindness, Rayona." I think this is such an important message. The accumulation of these small acts of kindness are every bit as powerful as some big event. And you know what, they're also something you can do every day in such a way that they become a wonderfully great habit. And I hope all of you think about that and do that, because, in fact, I know that one of the ways we're going to get through this pandemic together are all of these acts of kindness that I'm hearing more and more about. It's a mindset change. You know, imagine you wake up to think, what am I going to do kind today? As opposed to waking up and saying, "Oh, my gosh, another day in this world." So I hope you all heard these very important words. Rayona, thank you very much for your very thoughtful note. Keep up the wonderful, wonderful acts of kindness. And, you know, this is as much a potent medicine as so many things you can buy at a pharmacy, the acts of kindness. Thank you.

**Chris Dall:** [00:53:29] Just a reminder to our listeners that if you want to share your acts of kindness, large or small, please email us at osterholmupdate@umn.edu. Your closing thoughts today, Mike?

**Michael Osterholm:** [00:53:40] I'd like to circle back to the title of this podcast and the comments I made earlier. Places we've never been. And I hope today that you sensed that some of the things we're talking about, we've never been here before. These variants, the whole vaccination rollout are places we've never been before. But despite that, we need to tell you the truth, we need to be truthful, we need to say what we know and don't know. And one of the real truth tellers who also spent a great deal of his career in a place that nobody else had ever been before was Dr. Jonas Salk the father of our original polio vaccine. And I have been a big fan of Dr Salk for many, many years, and I actually used a quote from him as an opening to Chapter five, The Natural History of Germs in my book, Deadliest Enemies. And I'd like to share two quotes with you, that quote that I used to open Chapter five and a separate quote that he shared with us, because I think it captures the moment. It captures what we're all about. His first quote, "When things get bad enough, then something happens to correct the course and it's for that reason that I speak about evolution as an error making and an error correcting process. And if we can be even ever so much better, ever so much slightly better at error correcting than an at error making, then we'll make it." Think about this pandemic, think about the events of the past week in this country. If we can just be so much slightly better at error correcting than at error making, we're going to make it. And I believe that so much in our lives right now with this pandemic and the world we live in in this country. And his last quote, which I think is a, you might say, complimentary dessert to his first quote is, "I have dreams and I have nightmares. I overcome the nightmares because of my dreams." Right now, we have to keep dreaming about getting through this pandemic. We have to keep understanding that it's not going to be done overnight, that the new normal, quote unquote, isn't necessarily here next week or next month. But we can do it. Our choices are to face what's happening and when, to use our dreams as a way to win over our nightmares, or we can say, "You know, I don't care anymore," and I guarantee you you're ultimately going to be part of the nightmare scenario. So I just want to close by saying, again, thank you to everyone for listening. I know you have many other options for getting your information about covid-19. I want to thank the CIDRAP staff, Chris and Maya, Cory and Angie, for their help in putting this together. It's something we really appreciate being able to share with you. And thank you for being part of this podcast family. Please keep the the letters, the emails, the notes coming in. We read them all, as I said, and we try to answer as many as we can. But most of all, in this next week, be safe. Be safe. Be kind. And thank you very much. Thank you.

**Chris Dall:** [00:57:26] Thanks for listening to this week's episode of the Osterholm Update. If you're enjoying the podcast, please subscribe, rate and review and be sure to keep up with the latest covid-19 news by visiting our website CIDRAP.umn.edu. The Osterholm Update is produced by Maya Peters, Cory Anderson and Angela Ulrich.