# Episode 38: Places We’ve Never Been

**Chris Dall:** [00:00:00] Hi, everyone. Before we start this week's episode of the Osterholm Update, I want you to know that it was recorded on Tuesday evening, January 5th. Ironically, the title that we chose for this episode was Places We've Never Been. This title was in reference to the current status of the covid-19 pandemic. Unfortunately, it also describes the events in Washington, D.C. on Wednesday, January 6th. While our nation's attention is necessarily focused on the situation, we must not lose sight of the immense challenge that the covid-19 pandemic and its new and concerning developments continue to pose. Now here's this week's episode of the Osterholm Update.

**Chris Dall:** [00:00:41] 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:** [00:01:17] It's January 7th, the first Thursday of a new year that everyone hopes will be better than the last. But as we begin 2021, the terrible trajectory of the coronavirus pandemic continues where it left off in 2020. In the United States and around the globe, new covid-19 cases, hospitalizations and deaths continue to surge, and there are fears that holiday travel and gatherings will exacerbate the situation. Complicating matters of the more transmissible variants of the virus that are fueling outbreaks in the United Kingdom and South Africa, and the vaccines that we all hope will bring an end to the pandemic are taking longer to get to people than promised. On this first Osterholm Update episode of 2021, we're going to talk about the domestic and international trajectory of the pandemic, discuss the latest news on the coronavirus variants, examine the problems with the vaccine rollout, answer a listener email about post vaccination life, and highlight an act of kindness from the Osterholm Update website. But first, we'll begin with Dr. Osterholm's opening thoughts.

**Michael Osterholm:** [00:02:16] Well, thank you very much, Chris, and welcome to everyone to the first podcast of 2021. I hope all of you had a wonderful holidays and safe holidays and welcome back. I just want to begin by thanking you for the many, many notes that we received from you to the CIDRAP team around the holidays, and they meant a great deal to us. Also, thank you for those that commented on the Polar Express. We actually we're very pleased to have a number of you who found it enjoyable, since oftentimes these podcasts I can't say that they're necessarily just that enjoyable. But it really has meant a lot. I'd like to announce a new feature that we're going to include in each week's podcast. It's a way to celebrate the light of the world as we see it and how our lives are lighting up with this pandemic. And so what I'm going to share with you each week is how much light we've gained in Minneapolis since the week before, as at least I, for one, love those long summers. So today I just want to report to you on December 21st, the winter solstice, Minneapolis had eight hours and forty six minutes of sunlight. Today as this podcast is released January 7th, we're up to eight hours and fifty eight minutes. We've gained 12 minutes of light just since December 21st. So each week I'll keep updating you. Each week that number will get larger and larger. And won't it be exciting that by the time we get to the long days of summer, hopefully there won't be any need for these podcasts anymore? I want to begin this podcast by a dedication that will become increasingly important in the days ahead. You might say that in a sense, with this dark cloud of this virus, the people I want to dedicate this to are what I consider my rainbow people, and that are the vaccinators. The people who are out there helping all of us achieve that level of immunity that we all so desperately want. So I dedicate this to the vaccinators. And let me just say a few opening words before we move ahead. It is the new year. And in that sense, in that first episode of the year, I wanted to kind of put perspective to where we've been, where we're going. And I chose a title for this week's episode as Places We've Never Been. And I want to begin by explaining what I mean by this. In my last episode, just before Christmas, as you know, I talked about how we've all been on a journey for almost a year. Isn't it hard to believe? On December 30th of this year, the first year anniversary of us reporting out for the first time on the outbreak in Wuhan, I felt a sense of, oh, my, how could a whole year have gone by? And now that we're here in one year, we can look back and we must look forward. You know, I've been talking about how we've been on a journey for this entire year. And in the beginning of this pandemic, there was a certain sense by a number of people, and I'm sure I shared some of it, who expected this new coronavirus pandemic to maybe be a repeat of what we saw in 1918, 1957, 1968, and even 2009 with influenza. It was almost in a sense like we've got this, we know what's going to happen, we're prepared and ready to go. I wrote a chapter about this in my book. But as you also well know, things began to develop very differently. And soon it became clear that we were headed to places we have never been. And that's thus the title for this week's edition of the podcast. First of all, the waves that occurred when an influenza pandemic, they come sweeping into a regional area they're there for six to eight weeks and then gone, sometimes gone for weeks to months, only to return possibly for a second or third wave. But again, it's very short lived relative to this kind of a pandemic we're seeing with this coronavirus where it just never goes away. Some days burns much hotter, but it's always there. Also, the idea of a vaccine. Clearly in the 1918 pandemic, there was no discussion of a vaccine since they didn't exist as such at that time for influenza. In 1957, 1968, and 2009, influenza vaccines already existed for seasonal influenza and efforts were made at that point to create a pandemic vaccine. This time for a coronavirus vaccine we had to make it literally from scratch. So it was a very different situation, yet we all kind of wanted to come back to that pandemic world that we knew and understood. Now we're seeing some emerging twists in our journey. A new strain of the virus in the U.K. so bad that London has now gone to an extreme lockdown, their definition. It's now followed by another strain from South Africa we'll be talking about today that poses great challenge to us in terms of the transmission and even potentially what vaccine protection means. And that's where we are now. In a place we've never seen before. The current covid-19 deaths from around the world are at an all time high. The surge in cases has been bad and continues to get worse. It can be scary entering into places we've never been. But the good news is that we have science on our side. That's our light into the dark. The vaccines are now a reality. I'll talk more about that later as we talk about the emergence of the new variant viruses and what that might mean for the effectiveness of vaccines, but for right now, we've got the vaccines. So it's the start of a new year and I want to address why I'm doing this podcast. I've also thought a lot about why am I doing this? Trust me, I think a lot about this because of all of you out there listening to it, I don't want to let you down. And it's in that regard I really, in thinking about over the holiday season, this podcast, I really came away with one simple understanding of this podcast. I do this podcast because of you. You are the reason we created it. As soon as the pandemic began, we felt this wellspring of so many people wanting a reliable, trustworthy, honest voice to help guide them through what I called not the blizzard, as you may recall, but the winter of the pandemic. You're all so smart and you listen so well. That's evident in the messages we get from you, the countless emails and the letters I receive. You ask such great questions, you convey so much compassion and frankly, you tell some great stories. I wish I could tell them as well as you do. Some of these I try to share through our acts of kindness, and I will do that again today, a feature each week that is one of the most special and meaningful parts of this entire podcast. Of course, we're going to continue this. We're in this for the long haul. And I wish I could tell you it's going to be over next week or next month, but it's not. But it's also, I think, something you have to understand that you may not know. It's all these voices of warmth, concern, involvement, that help me and the entire CIDRAP team to keep going. I know I can speak for our production group for this podcast, particularly for Chris Dall and Maya Peter's that your feedback, your input, your sense of what's happening is so important to us. It's been challenging for me at times. It's very emotional dealing with the painful stories I've heard and frankly, the hours I've spent sharing the pain with those who have experienced it personally is both a gift and a terrible challenge. As I've said to you before, and I mean this sincerely, there are days I don't think I have any more tears left. This podcast has played a really essential role for me. Here is this epidemiologist science egghead, and yet you've given me a sense of connection, which I believe is so essential in times like these as we continue on our journey. So I want to thank you for that and help you understand how important you are to this podcast. You are not just the receivers of it. You are truly part of the family of it. And one of the things I wanted to share with you, which is a perspective that I read over the holiday season, and it's a letter that I ended up sharing with our staff at CIDRAP on Christmas Day. And it has to do with our children. And one of the most important changes to be aware of, it is what is happening to our children. And in a sense is an indicator, as goes our children. And I had the great fortune to see a letter that had been written by Teresa Thayer Snyder, Dr. Thayer Snyder, a school superintendent from upstate New York, now retired, but having served with great distinction throughout her career. And in fact, in 2016, she was a recipient of an Excellence in Education Award from the University of Albany. And I might add at that time they said this about Dr. Thayer Snyder. They said "Teresa Thayer Snyder is often described as a fearless and tireless advocate for public health students in a distinguished career spanning 40 years, now 44 years, in public schools throughout the New York capital district. Snyder has emerged as an articulate voice of reason at the statewide level regarding implementation of the Common Core Learning Standards. One of the state's boldest education leaders, her main focus has always been on the students". I had an opportunity to talk to Dr. Snyder over the holiday season and it was a gift. It's about the students coming back to school after this pandemic year that, as we know, has been unlike any year of school ever. Really, I think she is a powerful guide to all of us, looking at the entirety of this pandemic. The basic message of her very powerful letter can be found in the middle of it in just five words: the time was not lost. Let me repeat that. The time was not lost. Her number one instruction to the teachers is not to scramble to try to teach the students an entire year of material they think they missed, but rather to start with a simple direction of the teachers, 'we will need to listen to them'. She tells her teachers to remember "their brains did not go into hibernation during this year. They may not have been focused on traditional school material. Instead, they may have been focused on where their next meal is coming from or how to care for a younger sibling or how to deal with the missing grandma, or how it feels to have to surrender a beloved pet or even how to deal with death". She says to her teachers, "Our job is to welcome them back and help them write that history". Finally, her overall plea is that "Children do not need to be fixed, they are not broken, they need to be heard. They need to be given as many tools as we can provide to the nurture resilience and help them adjust to a post pandemic world". As I said at the start, we're going to places we've never been. Ever.It can be daunting. But know that there are voices among us, like Superintendent Snyder, who can provide comfort, insight and guidance. And that's part of what I continue to try to do here with these podcasts, searching for those voices to bring them to you and to help us along with this journey as we are now all on this together. We must remember, as we think about this past year and where we're going, the time was not lost. Do not let this time be lost. It's our lesson. As I said, we are in places we've never been. But that doesn't mean we have to be frightened. That doesn't mean that we can't do something about making our lives better. And I hope that's what these podcasts over the course of the weeks ahead will provide you with.

**Chris Dall:** [00:15:51] Mike, let's start with the current situation here in the US, which is seeing a seven day average of more than two hundred fifteen thousand new cases and at least twenty six hundred deaths a day. While the surge that hit the Midwest in the fall seems to have fallen off, it's been replaced by a new surge in California, the Southwest and the South. And we know there was a lot of travel over the holidays based on data from the Transportation Security Administration. So where is this headed?

**Michael Osterholm:** [00:16:16] I've shared with you on multiple occasions that one must have a real sense of humility in dealing with this virus. I have studied this virus, its every move, unlike virtually any other infectious disease I've ever worked with in my lifetime. Some days I go to bed thinking about what its next move will be and how to anticipate it. There are days when a part of me has this terribly painful satisfaction of realizing that something I said four or five weeks ago becomes reality today. I tell you that because I'm at a point right now where I don't quite know where we're going. I believe the underlying premise vaccine is coming and that's surely going to have an impact. But let me again kind of tell you a story of what's happened with this virus in a way that most people haven't really looked at it or realized what was going on. If you look back to last spring, particularly in that time period of March/April, we saw parts of California, to some degree Seattle was still in that area, clearly Chicago, Detroit, to some degree Atlanta, and most of all the New York metropolitan area and some on the East Coast, were all really houses on fire. We asked the whole country go into lockdown so that we could flatten the curve. Many areas said "Why? We have not had a case of this virus infection throughout the last six, 10, 12 weeks". And that was true. Again, we were applying more of an influenza-like model that six to eight weeks, in and out. Well, what happened, though, was as those April cases begin to curve down from those peaks of looking at, you know, in the thirty two thousand cases a day, it began to continue to decrease across much of the United States and that what we saw around Memorial Day, however, was a substantial increase, particularly in the upper Midwest. Minnesota had its first big peak at that time. And those cases climbed through the post-Memorial Day period. And we went from that twenty two thousand and started to come down. And then all of a sudden something happened. In Southern California, Arizona, New Mexico, right across, Texas, the Gulf states, particularly Georgia and Florida, and we saw this huge increase in cases such that we had that big peak in July of this past year, rising almost to seventy thousand cases reported a day. Then the case numbers started coming down again. We got to Labor Day and we were talking now about somewhere in the neighborhood of twenty four to twenty six thousand cases reported each day. Now, again, that was still high compared to what we were seen back in the spring. The Midwest began to demonstrate a very different pattern. Starting in October, we saw cases increasing from Montana to the Dakotas, Kansas, Nebraska, Iowa, Minnesota, Wisconsin, and the case numbers just continue to increase and increase such that by the end of November, we were watching the number of cases grow to among the highest reported incidences in the world right here in the upper Midwest. Some of the states like Minnesota put in place major public health efforts to try to reduce transmission. Other states were doing something but less than we did. And then all of a sudden around the time of the second week of November, case numbers started to drop in all those states, every one of them. And it was a situation where I can't understand why the case has dropped as they did. I have to tell you honestly that I did not see a Thanksgiving surge in those states, even though we had substantial travel. Possibly that happened and the drop would have occurred even quicker in cases than it did, but nonetheless we saw a substantial drop in cases. But at the same time that those cases were dropping, we began to see a major increase in cases, guess what, the same Sun Belt area again. Southern California, Arizona, which at the time of this recording has the highest rate of cases in the US, less so in New Mexico this time. But look at Texas, go right across the coast to Georgia and Florida, and it's kind of like deja vu all over again. New York this time has had its case numbers increase substantially. We've seen the same thing in other parts of the East Coast. What's happening here is we're seeing these evolving and rotating increases in cases in geographic areas and then decreases. And I don't know why. And I don't think anybody does. In fact, most people, I don't think have yet recognized this pattern of what's happening. Surely the concept of social networks that I talked about before may play a role where there are smaller subsegments of the population that where transmission is really taken off, and if you can dampen those, those few rods and just that part of the reaction, you can really drop case numbers down. But the reason I share this with you is we tend to grow terribly complacent in an area that may have been at, like Minnesota, eighty five hundred cases a day newly reported here just five weeks ago, six weeks ago. And now we're down to sometimes fifteen hundred/sixteen hundred cases, the load on the hospitals has been reduced dramatically, and we let our guard down because we're done. We're in a place I've never been before. Because guess what I've seen happen? Just in the last five to seven days in all those same states that I just talked about in the upper Midwest, where case numbers are decreasing, every one of them have taken a turn up again. Now I don't know if those terms will be sustained. I don't know if it's a function more of the holiday reporting season when things come through. We'll follow that carefully. But this is really one of the most challenging aspects of understanding this pandemic. What is this virus doing? How is it doing this? It's not about season. I mean, look at we've had these peaks and valleys in the springs in the summers in the falls now in the winter. So it can't be about that. What it's telling me is stay tuned. And you can never let your guard down. You can't. Because just as soon as that big peak goes to a bottom, right now without widespread vaccination, I think it's going to go right back up. And what it's pointing out, by the way, for all those that assumed herd immunity was reached last spring in some of these areas, oh, no. There's a lot of human wood left to burn for this coronavirus forest fire. And it's doing it. It comes back. Go ask the people right now in Southern California. Ask them what's happening through a number of the southern states. So we have a real challenge on our hands, trying to figure out what's going on and what that's going to mean going forward as we're trying to roll out our vaccine programs and where are we going to see areas most hard hit? And what's that going to mean for planning for health care, resources, staffing? And what I would consider to be another psychological challenge of, oh, no, here we go again. So this is clearly a really concerning issue right now that I hope that we start to pay more attention to. I see every night on the television, they'll go to the one hot spot like L.A., which is right now in terrible shape, horrible shape, and somehow the rest of the country that's not like says "Well, that's not us, that's not us". But what we're finding is it could be us again tomorrow. And that's going to be an ongoing challenge. That's why vaccine has to be our savior.

**Chris Dall:** [00:24:58] Turning to the international situation, the United Kingdom right now is a house on fire with the U.K. variant of the virus, B117, fueling a sharp increase in cases there. Since our last episode, the U.K. variant has been detected in a handful of states in the US and more than thirty five countries. So Mike, is it a matter of time before other countries in Europe and beyond start to see a similar impact from this variant?

**Michael Osterholm:** [00:25:22] At the time of our last podcast, just prior to Christmas, Europe was seeing cases trend upwards in the Czech Republic, Germany, and the Netherlands. Each of these countries announced further restrictions around that time. Since then, Germany and the Netherlands are seeing gradual declines in cases. The Czech Republic initially saw a brief dip in cases, but now is trending upwards quickly. The UK was also seeing an exponential rise in cases at the time of our last episode, with that trend continuing at this time, despite ramped up restrictions in most of the country. They are now in nationwide Tier 4 restrictions, which involves closing non-essential businesses, schools, banning gatherings between people living in different households. The seven day averages for the UK on December 22nd in terms of cases, the daily cases at that time was thirty two thousand reported a day, about four hundred eighty five deaths. Now the seven day average for cases in the UK on January 3rd is fifty two thousand five hundred. Daily deaths are six hundred and ten, which again we know are lagging indicators. What's different here? What's happening? What we know is happening in England is a story of the variant we call B117, or the variant of concern 202012/01, standing for variant of concern year 2020 December first. This variant, which has twenty three different mutations, was first seen in England this fall. And at the time there was concern, but not something that was specifically noted about how it was acting differently in terms of causing illness or causing more severe illness even. However, in early December, the British health officials begin to note a very major increase in cases, particularly in Kent, in the southeastern part of the country, as well as parts of London. And as they noted this increase, they went back and looked at the isolates from those cases. And sure enough, it was all of this variant B117. And it was notable in that many of the cases early on were in children, particularly 10 years of age to 18 years of age, which then began to spill over into the rest of the adult population. So that the concern was, well, wow this is really a big change and the case numbers are going up. And not only are they going up, but they are going up in the face of ever increasing lockdown activities to minimize transmission. First, the observation about what was happening to the epidemiology, I think can be explained in part by some research work that was done by modelers in England. We're not talking about forecasting modeling, but going back and understanding case data that already existed to explain what happened to achieve those numbers of cases. They came up with an analysis that showed that the R0, or the Rt, as we call it sometimes, that reproduction number, meaning one case transmits to 1.2 people if the R0 is 1.2, actually saw the R0 go from about 1.2 in that area prior to this big increase in cases with this variant to anywhere from 1.6 to 1.8. It had been suspected that transmission could have been increased anywhere from 20 to 40 percent versus previous coronavirus isolate. Another critical finding with the new variant B117, was that the virus load is clearly higher in those infected with this strain versus the other strains of coronavirus that had been circulating prior to the dominant takeover of the B117 strain. And when they looked at strains that were of the variant type versus strains isolated from people that were not the variant type, they estimated there are anywhere from 10 to 10,000 fold increase viral load. Now, those numbers have to be interpreted carefully and with some qualifications about when people were sampled in terms of their infectious disease status, etcetera. But it's very concerning. And what we're seeing right now in England, I think is going to be a harbinger of things to come. We know that the virus, this particular variant is now spread across thirty three countries at least, and that's including across six continents. We know that every day we're finding more and more countries that have the virus. And even when it's found in one country, within days, it's found in many locations. In the United States, it goes up by the day. Last count I had it was six states in the United States. But in the last twenty four hours, a number of the variant cases have been found in the San Diego area, causing illness there. In terms of where it's going, I think this is going to spread across the world and we can expect to see what is happening in England happening in many other locations. Now, this is a challenge in that it's not just this variant that's hitting us right now, but also there's one from South Africa called N501Y. This one we have less information about overall, but what we do have is very troubling. And the UK health secretary just was quoted this week saying that the N501Y variant from South Africa is much more of a problem than the B117. The point being that the mutations associated with the South African variant may actually provide a real challenge to the protection that is afforded by our current vaccines. So that, I want to be very careful in saying that, at this point we don't have clear, compelling evidence of that. But it's another reason why we have to be concerned about these variants. In short, I'm going to leave you with some very unsettling information. The variants are going to happen more and more. They're likely happening because in part, people who have some immunity, such as a severe immune deficient individual who is treated with plasma, does not have enough antibody there to basically eradicate the virus from the body, but enough to challenge the virus over time to actually develop these mutations. Classic microbial evolution. Also, we may be seeing this in terms of people who have been previously clinically infected, recovered with waning immunity, although we don't have direct evidence of that. That may be one way of the same thing happening. The point being is these variants, I think you're going to start taking off with higher and higher frequency. I wouldn't be surprised if tomorrow we had a U.S. variant that was found. All of them with these multiple mutation changes, some very critical ones on the spike protein that have to do about their infectivity and hopefully not about their ability to evade vaccine induced immunity. One other issue that's come up, particularly about the B117, has been do they cause more severe disease? Well, all the data we have to date suggests that at least viral load as a measure is a good indicator of more severe disease. In other words, the higher the virus load, the more likely it is you're going to have severe disease. To date, we don't have any evidence that that's occurred in the UK. Remember, most of these cases that have occurred there in early December were among younger individuals, that then the transmission moved into older populations. And because hospitalizations and deaths are lagging indicators, I think it's really going to take us a few more weeks before we're really going to have a better understanding. Is it not only more transmission, but is it more severe illness? And what that means. In fact, we need to just pray at this point that vaccine induced immunity, and to that degree previous illness and related immunity, will provide protections against these particular strains. It was noteworthy that this past week a paper was put out on MedRxiv looking at the very issue of sars-cov escape in vitro from a highly neutralizing covid-19 convalescent plasma. This is a study from Rino Rappuoli's group in Siena, Italy. Anyone who knows Rino knows he's a top deck investigator. Incredible work. What they did is they passed the sars-cov-2 virus through a series of exposures to cultures where antibody was also present from convalescent plasma. And over the course of passing this, these viruses, they actually found the kinds of genetic changes occurring in the presence of this antibody to the point of where they actually saw the emergence of a virus that did have the capability of basically escaping the antibody that might be produced by vaccine. And their quote as the conclusion of their abstract was "The recent emergence in the United Kingdom and South Africa of natural variants with similar changes suggests that sars-cov-2 has the potential to escape an effective immune response and that vaccines and antibodies able to control emerging variants should be developed". Now, that does not say that that's what's going to happen. I want to be really clear on that. I hope that three to six months from now, we look back on those and say, "Boy, we avoided that one," but we have to keep this in mind. We're at a place right now where we have to be mindful that these variants surely could challenge our ability to protect the population with the current vaccines. Can't say it's going to happen. I surely hope, like you, that it doesn't happen. But this is really something we are going to have to watch very, very carefully. And we're at a place we've never been before.

**Chris Dall:** [00:36:44] Turning now to vaccines, a few weeks ago, we talked about the last mile and the last inch of the vaccine rollout, and right now we're seeing issues in both of those areas. But let's start with the last mile. Operation Warp Speed officials had projected that 20 million Americans would receive their first shot by the end of December. And as of Tuesday this week, the number was fewer than five million. Were those predictions overly optimistic? Can you blame the holidays and some bad winter weather, or Mike, are there bigger fundamental problems at work?

**Michael Osterholm:** [00:37:17] Well, let me just say at the outset, and addressing this issue, again, as most of you know, I'm actually a member of the Biden/Harris covid-19 advisory board. And I just want to be really clear that my comments do not reflect necessarily the position of the transition team for the Biden/Harris team. So I'll give you my best personal professional shot on this issue. Don't forget that just a month ago, one of the podcasts was actually entitled The Last Mile and the Last Inch. And at that time, despite all the fanfare that was coming out of the Operational Warp Speed and the US government, that this was going to happen overnight, vaccine would roll with approval, everything would be fine and dandy, I raised a lot of challenges to that, saying that it was one thing to get vaccine out and to actually get it to where we need it, particularly under the conditions that the Pfizer vaccine has to be maintained at in terms of refrigeration, freezing, and also the issue of that last inch, i.e. convincing people that they want and need the vaccine and will come and get it. What we're seeing right now is nothing short of chaos in many ways in terms of what's happening at the local and state level. First of all, the CDC had, through its Advisory Committee on Immunization Practices, recommended that first priorities be those in long term care facilities and the people who work there and that the other high risk group for getting vaccinated would be health care workers. Well, the long term care facility residents and workers were to be vaccinated by the Walgreens, CVS companies in terms of their outreach that they had already had doing some influenza clinics. But they were really caught short handed, you might say, because no one thought that long term care facilities would be in that first high priority rollout. The ACIP had signaled the week before that it would be essential workers, particularly those from where racial and ethnic disparities were a real challenge. But then it became these too. So the rollout situation of long term care has at best been very, very challenging. In our state, they actually, the two pharmacy companies had to come to our Board of Pharmacy and request basically approval to allow non-licensed pharmacists in Minnesota to come and administer vaccine here because we didn't have enough people here. Well, that happened in other states, too. And at some point, there is no states out there that have, you know, thousands and thousands of pharmacists just sitting there waiting to be called to another state. There's going to be a shortage. That had never been planned for. In terms of health care facilities, a real challenge there because of the ongoing transmission of the virus, the short staffing of just trying to provide that care and vaccinate at the same time. Trying to space out the vaccine so that not everybody got vaccinated on the same day, so should they have sore arms the next day or some symptoms of a reaction and they couldn't come to work, that they wouldn't have a major shortage of employees. So those two areas have rolled out with some challenge. But what's really coming at us is the fact that the rest of the vaccination is going to have to be done largely under the auspices of state and local health departments. They are the experts. They know their communities. They are the ones that can mobilize other parts of the private sector, other parts of the health care system, and they are stretched beyond imagination. They have not received the resources they need to even begin to hire vaccinators or planners or people who can help connect with the community to make sure that vaccination campaigns that are rolled out according to the prioritization of the ACIP statements. We are severely challenged right now. And while money will be coming in some limited way from the recent legislation passed, it's still going to be quite inadequate to cover what local and state governments are going to need to respond to this vaccine challenge. It is, in my mind, the biggest challenge we've had in all of my career. Clearly, the flu vaccines, a single dose, not nearly as volatile vaccines in terms of temperature control, etc. This is second to none. This is a real challenge. So Operation Warp Speed did an amazing job spending lots of money, billions of dollars to get vaccines from a research and development standpoint to emergency use authorization, but they lost the last mile and the last inch. And let me just make a comment on the last inch. A month ago, I continued to express my concern that there would be a number of people not willing to take the vaccine even in the health care area. At that point, there were a lot of comments back to me. You know, here he goes again. You know, bad news Mike. We're identifying a number of areas in this country where less than half of the health care workers who are eligible, who should receive the vaccine, have received it. In some cases even lower than that. We have a lot of work to do to educate the American public and even our health care workers about the safety issues, around the effectiveness issues, what we know about these vaccines to help them understand why they want to get it. Yesterday, the editor, a physician, of a well read medical journal in this country, indicated his own reluctance to get vaccinated until there's more safety data. So at this point, Operation Warp Speed has failed miserably I think in terms of that vaccine leaving the manufacturing plant and getting into the arms of the individuals that need it. I can only say, and again, I'm not speaking for the Biden/Harris team, I am much more confident that this incoming administration gets it. I can say that personally, I am very supportive of what I think the efforts are going to take to work closely with state and local health departments and to do what they can to get vaccine out there. But for now, we have a real challenge getting these vaccines into people.

**Chris Dall:** [00:44:18] So there's been some discussion and debate about lengthening the amount of time between vaccine doses in an effort to get more initial doses into arms, which the United Kingdom is doing, but the Food and Drug Administration and the World Health Organization have both come out against. Mike, what do you make of this idea?

**Michael Osterholm:** [00:44:36] We all want more vaccine. We know that given the projections of those companies that have licensed products or likely will be licensed in the near term, that we're not going to have nearly enough vaccine for the world in the next year. And even in a country like the United States, it could be the second or third quarter before we see sufficient quantities of the vaccine to get everyone vaccinated in the country. Again, assuming we can get them vaccinated. So it makes sense that we're trying to find ways to stretch the vaccine, and one of the challenges has been having a two dose vaccine, is originally Operation Warp Speed demanded that for every dose that goes out, a dose gets saved without accounting for, with increasing production, could you vaccinate everybody today on first dose? And as production increases, continue doing first dose, but also then have enough excess capacity to then use that to go back and for dose two for everybody behind you so that as production ramps up that be done. I have to say, I'm very concerned about changing any of the recommendations how the vaccine be administered without additional scientific evidence. We need the scientific evidence. For example, if one looks at the studies that were done, it is absolutely true with both Moderna and the Pfizer vaccines, there was evidence of some protection within seven to 10 days of the first dose of vaccine. The problem is, if you look at the antibody from those studies, it largely was a non neutralizing antibody, the kind that we need to have to, in fact, actually be certain that we're getting good protection against the virus. We don't know, if we didn't give a second dose, how long after that that that first dose may protect you for. So the second dose is clearly what we call a boost on the prime, but it's also one that may take you to the next threshold where it's not just about your durability of protection, but even the extent of your protection. I am particularly worried about that in those high risk groups for serious illness with covid-19. Take a step back and look at influenza vaccine. I'll grant you, these are two totally different viruses, two totally different vaccines. It's notable that those individuals who are at highest risk for serious covid-19 related disease, including death, are the same people who are at increased risk for severe disease or even death from influenza. What have we learned from influenza vaccines? That by adding more antigen, or more of the vaccine, to the shot, adding adjuvants, or chemicals it can help boost the response, have meant that there's an improvement in these people that don't respond as well, who also have a much higher risk of serious disease. We don't know in the high risk groups of individuals for covid-19 that the second dose doesn't provide that same kind of boost phenomena. So, you know, I think we all have to be open minded. We have to understand that it would be great if we could get more vaccine quicker. But it's got to be based on the science. And we can't just go knee jerk and say, "Oh, well. You know, we got some protection with dose one". That may be a big problem. The brits obviously have made a decision to go ahead and do the one dose with a 12 to 18 week postponement for dose two so they get more people vaccinated with dose one. I'd love to see the scientific data that allowed them to make that decision. We already know that the AstraZeneca vaccine has some of its challenges on its original data presentation, whereby looking at lesser doses and more doses and the lesser dose being an accident in terms of the study design showed somewhere between 60 percent and up to 90 percent protection. Well that 60 percent's concerning to me, particularly now for the single dose, what does that mean? So I would just come back and say that the Food and Drug Administration put out a letter this week clearly laying out the justification for sticking with the current approach. I support it completely. Many of my colleagues who work in this area support it. And I would be the first to say again, if we can find a way to extend the vaccine supply, do it. One of the areas we're looking at right now is with Moderna, the vaccine. There may be an opportunity there because we are using one hundred microgram dose right now as the approved product. And there was actually an arm in the trial that used a 50 microgram dose and found virtually the same results as the hundred microgram dose. With that information, now it's science based information, ee could say, well, let's basically use half the amount of the Moderna vaccine and double the supply and anticipate getting the same results. So at this point, I would just urge us to stick with the science. We want more vaccine as quickly as we can, but the science has got to win out.

**Chris Dall:** [00:49:53] So as you might have guessed, we continue to receive a lot of email questions on vaccines, and this week we're going to take one from Cecily who writes, "My husband and I are fortunate in being vaccinated. We've had our first shot and are scheduled for our second ones. Until now, we've been very careful to avoid swapping air. We're grateful for the guidance you've given us on the podcast and have tried to follow your advice. We don't know what being vaccinated will mean in terms of changes in our daily lives. When we've received our second shot, can we then spent time indoors unmasked with our unvaccinated preschool-aged grandchildren?"

**Michael Osterholm:** [00:50:25] Well, thank you very much for that really good question. And it's one that I had posed a couple of podcasts ago about at some time we're going to have to ask ourselves, how do we get back to normal? What do we do to say, you know, I'm vaccinated now, I'm protected, everyone around me is, do I still need to maintain the distance? Do I need to keep wearing a mask? Cecily, thank you for this really very important question. Some of you may recall that a few podcasts ago, I actually addressed the issue of what would it take to get back to this new normal? When will we know that it's OK to go into public places without having to wear a mask or necessarily be distanced from each other? And unfortunately, society has not really put itself in that position, or even had that discussion. I've seen no public health agencies even address it. We're still really house on fire, what can we do? But we need to start having that discussion now so that it doesn't become a crisis. We know how difficult the masking issue has been. We know that for entertainment venues, restaurants and bars and so forth, how absolutely difficult it's been to have to close them down and the economic impact that's occurred because of that closure to reduce the transmission that occurs there. When are we going to know? How will we know? Will somebody look at a card to see if we've been vaccinated or not? Well, will we be concerned about people forging cards if they don't want to get vaccinated? But they also don't want to be kept out of a place without a mask on? So I have to say, at this point, we have some big, big societal questions to answer here. I wish we could start having that discussion. I'd almost like to have the commission on how do we move to the new normal formed and start addressing these issues. In the meantime, and this is not official public health recommendations, I am not a clinician, so I don't even claim that this has any issues around clinical medicine. But let me put it this way, if it were my partner and me with my grandkids and everyone was vaccinated, I would have one heck of a good weekend with them. And I think that's what we have to start figuring out, is how do we normalize what we're going to do. Now, some will say we need to find out whether or not vaccination also prevents you from being asymptomatically infected and transmitting the virus. Well, then, if I'm in a pod, though, where everybody else was vaccinated if I were infected, shouldn't their vaccine kick in and and hopefully prevent them from becoming infected? So it's a challenge. Yet I understand it. We need to address it and I hope sooner than later. So thank you for that very important question.

**Chris Dall:** [00:53:17] This has been a fairly heavy episode, so, Mike, I'm hoping you can add some light with an act of kindness from the Osterholm Update website.

**Michael Osterholm:** [00:53:26] I can add some kindness, and this is from Lori in Michigan, and I just want to thank you, Lori, so much for this. Lori sent pictures along too to help us better understand this note of kindness, and they were wonderful. She writes, "Hi, Dr. Osterholm and team. This has been a tough year on everyone, kids included. Our families intentionally tried to focus on what we can do to be the helpers. When activities and competitions are canceled, school is moved to virtual learning. Family, neighbor and friends fall ill and worse to covid. It seems that many things are out of our control. One motto our family has adopted during these times is a quote. "If you think you're too small to be effective, you've never been in bed with a mosquito". I want my kids to know that although they may be little, they still have the unique ability to bring encouragement to others in a way that grown ups might not. During our first snowfall of packing snow, they wanted to build a snowman outside the local hospital for patients and workers to see in hopes that it would bring a smile to their face. It is our hope that we were a small light in someone's day, a little mosquito in this hopefully contagious pandemic of kindness. Thank you and your team for everything you do at CIDRAP. We look forward to your podcast each week. We also really enjoyed your reading of the Polar Express. Stay safe, Lori". Lori, thank you to your family. I can't tell you how much that meant to us. We love the pictures. You've got a career here in snowman making. There's no doubt about it. And I'm sure the hospital loved it very, very much.

**Chris Dall:** [00:55:06] And just a reminder to our listeners that if you want to share your acts of kindness with us, please email us at osterholmupdate@umn.edu. We'd also love to hear from you about loved ones, friends, neighbors and colleagues who've died from covid-19. If you have a celebration of life that you'd like to share with us, you can send it along also to osterholmupdate@umn.edu. Mike, do you have any updates on the Front Line Families Fund for our listeners?

**Michael Osterholm:** [00:55:33] Thank you, I do. And I want to begin thanking so many of you who have donated to that fund. Remember that the Front Line Families Fund is an effort by the St. Paul & Minnesota Foundation, the Brave of Heart Foundation in New York, and Scholarship America to take care of our fallen health care workers who have died from covid-19 and the families they leave behind. This fund was started with intent that there are many, many health care workers today amongst us who have unfortunately not only developed covid-19 infection, but died. The number is at least seventeen hundred and likely growing. Not all of them acquired that at work, but many did. And in addition, many of these were not people of some means. These were nursing assistants. They were station clerks. There were environmental services. Nurses. I could go down the laundry list. And of course, physicians. This fund is meant to provide immediate support for those who need to deal with the immediacy of a funeral, the burial then based on need, there is additional money that can be made available. I know far too many single moms who have died leaving behind young kids. It's very, very painful. And then, of course, the Scholarship America is an effort to guarantee every child a scholarship as they, no matter what their ages are, going to college. Whether it's they're 18 now or two years of age. We now have over 1.3 million dollars that have been raised by over three thousand three hundred people. Our next goal is two million. We're moving towards that. I just can't thank you all enough for this. We have to take care of our health care workers. They've been taking care of us throughout this entire pandemic, putting their life on the line day after day. And it's the only thing we can do to help them. We must do this. So I appreciate your support for that. And if you need more information, you can go to our Osterholm Update website or you can go to frontlinefamiliesfund.org. Thank you very, very much for your support.

**Chris Dall:** [00:57:56] Mike, your closing thoughts for this first episode of the New Year?

**Michael Osterholm:** [00:58:00] Well, you know, I have two today. They're brief. I couldn't choose between them. One of them reflects an experience that has fundamentally changed my teaching life. I've been teaching now for 45 years. Last spring, my infectious disease epidemiology class, which was made up of, at that time, twenty eight graduate students, got caught in the earliest of days of this pandemic. In fact, in the first day of class was the day that I announced this was going to be a pandemic. And they hung in there with me when we ended up going virtual in early March. And as a result of the close knit group conducting our classes on Zoom, we just continued them. And we've only missed several weeks since last spring of every Monday having class. So I get on for a half an hour to an hour with them. They're the most incredible group of people I've ever had the good fortune to be involved with teaching. And so to me it meant a lot when a couple of weeks ago they actually presented me with a book that they had made a summary of individuals and their comments about the class, as well as they made a very sizable donation to the Front Line Families Fund. And one of the students, all of them are very special, but one, Katie, was so kind and sent me a very nice note. And in it she actually said that something that I think you all should hear and remember. She said "The following is a quote from Maya Angelou. That is not only my favorite of all time, but one I try to live by and relate to in your speech, a speech that I had given. The quote: 'I've learned that people will forget what you said. People will forget what you did, but people will never forget how you made them feel'". Boy, is that important. For all of us. It's all about what do we do to make people feel better? And then, Kristen, another podcast listener sent me this poem that she wrote. And I want to thank you very much, Kristen, for this. She is a physical therapist in a hospital who works in the covid wings. And she said she was really struck by the feelings I had working on New Year's Day this year. So this is a right off the press poem. And she said, "It made me write this poem and I thought you would appreciate it". It's entitled A View from Inside. "The year had grown tired, its time had come. The damage was done, though. Too late for some. I walk inside halls first day of a new year, but I am greeted by the same feeling of weary and fear. So much has been lost. Can we hold on forever? This year brings hope if we can do it together. One day at a time we vowed to do. To help our patients and help ourselves too. Kristen". Wow. Thank you very much, Kristen, for your service and for taking time to share this wonderfully beautiful poem. So thank you all for another episode here. I am sorry if it was a little heavy. These are heavy times right now. But as I said, I promise I always tell you the balls and strikes as I see them. And this challenge we have right now with these variants is real. This is all the more reason why we have to look into our brains and our hearts and find the ways to continue to protect ourselves. Doing the same old things. If we protect ourselves against regular coronavirus infection, we protect ourselves against the transmission of the variant strains. And in the process of looking in our heads to how to best do that, just keep looking inside our hearts for these acts of kindness. We've gotten through this far, we can continue to do it. So I urge you to keep on that wonderful path to the pandemic of kindness. I thank you again, on behalf of all the CIDRAP staff, I thank you for your time with us. As I've said many times, I know you have many opportunities to get your information. And thank you for being a part of this podcast family. For somebody who might be listening to this the first time, you're saying, what's this family stuff? Stick with us. Maybe it'll wear off and you'll understand. It's really very special. So thank you. Thank you. Have a safe week. Have a kind week. Thank you.

**Chris Dall:** [01:02:56] 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.