

Episode 74: Implement, Study, Learn

Chris Dall: [00:00:00] This month, CIDRAP is commemorating its 20th anniversary. Since we first opened our doors, our team has created what is now a globally renowned center tackling the world's toughest challenges in infectious disease and public policy. In celebration of this milestone anniversary, a generous CIDRAP supporter has offered a transformational matching gift to support our efforts and ensure we're able to continue our important work into the future. For a limited time, your gift will be matched at 50%, helping to build a solid endowment to support CIDRAP's work. Please visit CIDRAP.umn.edu/donate. Hello and welcome to the Osterholm update COVID-19, a 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. Welcome back, everyone, to another episode of the Osterholm Update podcast. The word of the week here on the podcast is booster. We've been hearing a lot about COVID-19 booster shots over the past week in the wake of the FDA's Vaccine Advisory Committee meeting on boosters for the Moderna and Johnson and Johnson vaccines. And we're going to be hearing more about them in the coming days as the CDC's Vaccine Advisory Committee takes up the booster shot question. But if your head is spinning over who can get a booster shot, when you can get one, what type of booster shot you can get and whether we should even call it a booster, you're not alone. This week on the podcast, Dr. Osterholm is going to try to unpack all that we've been hearing about COVID-19 booster shots and what the FDA and CDC booster shot recommendations mean for people who are fully vaccinated. We'll also take a look at the state of the pandemic here in the U.S. and in the rest of the world, discuss breakthrough infections, answer a COVID query and address how the communication around vaccine mandates could be better. And you'll hear the latest beautiful place emission from one of our listeners. But first, as always, we'll begin with Dr. Osterholm's opening comments and dedication.

Michael Osterholm: [00:02:23] Thanks, Chris, and welcome to all of you back to another episode of the podcast. This week again, we will try to share with you the

relevant and what I believe are current issues around the COVID pandemic and specifically what it means to you in your life. It seems as if each week we have more curveballs and more unknowns that come forward. And as I've said on multiple occasions, this is clearly a business for those who are humble to be part of. Because if you're not, I can guarantee you either be wrong or you won't understand what's going on. I also want to note this week that, you know, again, we have received so many wonderful, wonderful communications cards, letters, emails, even packages from so many of you. Thank you so much. It means the world to us. It's of note that this is actually our 77th episode since the pandemic began. We've tried to provide during that time, hopefully helpful information, but I'm noting that today because I want to put a stake in the ground. We all need to do that. I want to tell you that. Let's hope by the 100th episode, we're not needed anymore. We're done. You don't need us, you. You've already seen that movie so many times it's over. Wouldn't that be a great date upon which to say yes, this pandemic has run its course, while COVID-19 will still be in the world, the major challenges that we have will be behind us. And so let's all focus on this next 20 some weeks and get this behind us and use that as one of our our benchmarks. Now, in terms of the dedication this week, this actually comes from a very personal experience that I've shared with family and friends and others out there. A number of people who I know who have had underlying health conditions, whose diagnosis, treatment, need for additional evaluation have all been compromised because of the pandemic. And for all of you, this is dedicated to you. Imagine if you're sitting on a potential diagnosis of cancer and you're waiting to have further diagnostic testing done, but it's interrupted because of COVID. Imagine if you have an acute injury and you can't get a hospital bed near your community so that that injury can be dealt with. And I personally know of people who have had that happen, where they've had to go many, many miles from home to get the nearest hospital bed. For those of you who have had what everyone would say in any other time has been substandard care, but in a crisis, this is the care that you were able to get because it was all that was available. So this podcast is dedicated to you. You have had additional pain. You have had additional doubts and additional suffering. And all I can say is I hope that that kind of care can catch up with what your condition is all about, help you recover, or surely at least minimize the ongoing potential pain and suffering from that. So this podcast is for you. And last, I would like to just thank those of you who have donated to our 20th anniversary fund to help support our activities at CIDRAP. I've never been good at asking for money. I never will be. And so from that perspective, if I don't sound real

confident here, you're right. I never want anyone to think that somehow you have to pay for us to tell you the truth as we know it. But at the same time, we have to keep the lights on. And from that perspective, your support and assistance means everything. So thank you for being with us again. Remember, we're talking about a hundred episodes. Put this thing behind us and then you can get rid of me. And won't that be a wonderful day in your life?

Chris Dall: [00:06:22] Mike, the WHO reported this week in its latest update that global COVID-19 cases and deaths have stabilized, with declines of 4% and 2%, respectively, so that those declines that we've been seeing over the last several weeks are slowing down. But you wanted to focus on trends in three countries the United Kingdom, Russia and Japan. So what's going on in those three countries and what is the significance of those trends?

Michael Osterholm: [00:06:48] Well, we can learn a lot about what might happen here in the United States by watching what happens around the world. As I have said time and time again, I do not have any magic equation, some software program, or some intelligence that gives us the inside story on what's going to happen with this pandemic. But as a student of epidemiology for 40 some years, I do understand the power of observation and trying to then take and translate that to what might be happening as you see it in the days ahead. And so I think it is important for us to continue to understand the international perspective because it does hold, I think, some very important lessons for us. First of all, I want to acknowledge the point that you raised about the stabilization of global activity we've seen over the past two weeks, which has occurred after more than a month and a half of constant declines. If you look into last week's overall numbers, which came in just under 2.9 million cases and 47,000 deaths, you'll find that most regions of the world are still generally seeing declining activity. And with this often comes a certain sense of enthusiasm that we're done with COVID in those areas. Not true. And in fact, the best example I can give you of that is while seeing regional improvements around the world, it has been offset by upticks in one region, Europe. They have now recorded their highest number of cases and deaths in more than five months. Of course, as I've highlighted in the past episodes, Eastern Europe in particular accounts for a sizable portion of the region's latest trends and multiple countries there are still going through surges. In fact, as of this Tuesday, all 12 countries on The Washington Post list of locations with highest per capita deaths

reported in the past week were located in or near Eastern Europe. Unfortunately, that outcome isn't all that surprising, given the relatively low vaccination rates in many of these countries. A majority of which have yet to fully vaccinate more than a third of their residents. One of these countries is Russia, where 33% of residents are fully vaccinated. Up to this point in the pandemic, the country has officially reported just over eight million cases and 225,000 deaths. To put that into perspective, Russia has 145 million people. The United States at 332, if you look, that's 43% of our population. Yet Russia is reporting only 17% of the number of cases we are and only 30% of the deaths. I can tell you that what's happening in Russia is very comparable to what has happened here in the United States, and I think it's very clear that there's been underreporting. In fact, independent analyzes are now estimated the true death toll is likely more than double or even triple of what the official government reports say. This would put this on the same footing as the deaths we've seen in the United States. As a result of these numbers, which clearly appear to be intentional underestimates, there's mounting suspicion that Russian officials are intentionally downplaying the country's situation, which has grown even more severe ever since the delta surge took off there early in June. Even with the acknowledgment of inaccurate reporting, Russia appears to be facing their highest ever number of daily cases, which exceeded 30,000 for the first time and deaths which are now approaching 100,000. In fact, Russia's current daily death toll is almost twice as high as it was at any point in the pandemic prior to Delta's emergence. Even still, Delta analysis are reporting that excess mortality in the country now sits at more than 2,000 deaths a day. Now, with Russia in its fourth overall surge and the second surge since Delta became dominant there, there's a growing number of public calls for action. One hospital official in Moscow that was identified as pro-Kremlin was cited in a recent Washington Post story, describing the situation there as close to critical. Meanwhile, government officials are aware of the problem, which they are essentially trying to manage through promotion of the Sputnik vaccine. However, despite the freely available vaccine, there aren't many Russians lining up to get a dose. A consequence that's being attributed to mistrust. According to an article published New York Times on Monday, around 40% of Russians don't trust the government and 52% reported they are not interested in being vaccinated. I think there's a lot of lessons that could be learned from the Russian experience, but the overall point I want to emphasize is that the virus isn't done with us. There are plenty of places out there that are just as vulnerable to a surge as is Russia. And until we figure out ways to turn more vaccines into vaccinations, we'll keep seeing similar situations play out. This is an important point

because I fear that far too often we think the United States is a unique place with regard to acceptance of vaccinations. And in fact, that's not true. We surely are in a somewhat unique place and that we have an overabundance of vaccines. We just can't get people to use them. But there are other countries around the world that are having the same problem of converting vaccines into vaccinations. That being said, it's not just the Russias of the world that are being impacted by the virus. If you look at the western half of Europe, you'll notice that there are several countries with rising activity despite having higher vaccination rates. These countries, like Germany, where nearly two in three residents are fully vaccinated, the United Kingdom which has now fully vaccinated almost 70 percent of its population. And Denmark, where more than three out of every four residents are fully vaccinated now, are they being impacted at levels like their neighbors to the east? No, we're seeing that relationships between cases and both hospitalizations and deaths weaken because of the heightened vaccine coverage. At this time, even the cases in Denmark and Germany remain well below peak levels. But the virus is still making its presence known in these places. The U.K., in particular, has been confronted with this reality. They've been reporting rising cases throughout most of October, with the seven day average now approaching levels reached during the initial delta surge that peaked in July. As expected, they've also seen hospitalizations and deaths tick upwards. To help understand where the U.K. currently stands, I've actually adjusted the numbers we see there to the U.S. population, which is about five times higher. The U.K. is currently conducting about 920,000 tests a day. That same level in the U.S. would equal about 4.5 million tests a day. That's actually almost three times the amount of testing that we're reporting in the United States. So they're testing a lot more, finding more cases. They're now reporting just under 45,000 cases each day. Adjusted to the U.S. population, that number comes out to 219,000 cases, which is more than two and a half times more than the latest U.S. average of 83,000 cases. A total of 7,750 UK residents are hospitalized with COVID. That's equivalent to 38,000 hospitalizations in the U.S., falling far below our current levels of 56,000 hospitalizations. Finally, the U.K. has reported an average of 130 deaths a day, which is equal to about 634 deaths in the U.S.. Meanwhile, our actual average is 1,639, or more than two and a half times higher. So what's happening here? Let me just be really clear the U.K. is documenting a very substantial problem with the transmission of COVID-19 in the country and with their more robust testing, I believe that they are giving us a much more accurate picture of what's really happening in their country than we are in ours. But it's very important, despite the fact that they have this major increase in cases, they are seeing a

substantially lower rate of hospitalization and a substantially lower incidence of death. Why is that? Because in fact, 70% of their population across the board are vaccinated and 80% of those 12 and over are fully vaccinated. Those numbers compare for the U.S. only 57% of all the population is fully vaccinated, so that's compared to 70% and only 66.8% of our population 12 and over are fully vaccinated, compared to their 80%. So it really tells the story that even if you can't eliminate COVID-19 in your population, you can do so much to minimize the serious impact that it can have if we can get people vaccinated. Now, I think that one of the other areas, though, that has become somewhat of a controversy is to why this uptick has occurred in England and what does that mean? And we've recently had some of what I affectionately call the talking heads, which I put myself into. So I'll take that as a common comment, who have been on the media saying basically that the problem in England may be due to the emergence of a sublineage of the Delta virus, known as AY4.2. It has two mutations in the spike protein that distinguish it from the Delta variant that we're most commonly seen here in the United States. Although it's been growing in frequency in the U.K. and currently accounts for around 10% of all the cases, I do not believe it's playing any significant role in the big increase in case reports that we're now seeing. And so this is in some contrast to others who are really heightening, I think, the concern about this particular lineage. By the way, neither the WHO or the U.K. government have designated this lineage as either a variant of concern or a variant of interest. So what might be accounting for this situation? Well, I've already mentioned the issue about testing in the U.K., which includes widespread use of lateral flow tests, particularly in educational settings. These are the rapid tests. In England, students and staff are asked to test themselves with these tests twice a week, even if they aren't showing any symptoms. So there's the possibility that they're picking up more cases in children that could otherwise go undetected. And of course, we know that children overall have a lower risk of serious disease. Schools themselves could still be playing a role, according to the latest report from England's Department of Education, an estimated 204,000 students, equal to around 2.5% of all the students in the country had COVID related absences in the first two weeks of October, which increased from the previous two week period. Less than 15% of the 12 to 15 year olds in England have been vaccinated, and current recommendations ask that they only received one dose for now, although health agencies there have acknowledged the role that ventilation can play in reducing transmission. Students in England aren't required to distance or to wear masks. So if you look at the school data itself, it surely gives you a sense that that could be adding a

really major piece to the overall incidence reported in the country. And at the same time, not contributing in a similar manner to increase hospitalizations or deaths. Even outside of schools, there is data in the UK suggesting more mixing there. In a recent Twitter thread, John Burn-Murdoch with the Financial Times and someone who has been really a very important voice in following this pandemic in England showed that residents in England and Scotland reported significantly higher willingness to attend large gatherings or meet in crowded places compared to residents of Germany, France, Italy and Spain. Now there's the vaccine issue. This comes about as part of the analysis in the sense that most UK residents received the AstraZeneca vaccine, which had lower effectiveness compared to other vaccines like our mRNA vaccines. What role is that playing? Is this a result of waning immunity? The UK started their community wide immunization programs in advance of us, and so there are more people overall vaccinated who are now into their seventh, eighth and ninth month following their doses of vaccine, which we now recognize surely with the mRNA vaccines do lead to increased waning immunity concerns. So what role does this vaccine issue play? The UK rollout of vaccines earlier than other European countries and the United States could be a contributor to now what is increased waning immunity. And then finally, the virus itself. What do we know about that as a wild card? And what I mean by that is we have seen these surges take off and we've seen them end. No one yet can tell me why a surge starts or ends. You can't attribute it to population based mitigation strategies because they don't change that quickly from going from few cases to an entire big surge. Nor do they change substantially from the height of that surge to suddenly bottoming out later or not bottoming out in the case of what's happening in the UK. So what can we say about where we're at with the UK? At this point, I do not believe that the sublineage of Delta known as AY4.2 has been contributing to the overall major increase in cases. I think it's about increased testing. It's more infections in kids that are now being documented. It's more contact in the community. It's about the vaccines and how long term effectiveness holds up with a vaccine like the AstraZeneca vaccine, for example, versus the mRNA vaccines. It's about waning immunity. It's about the amount of time from when people were initially vaccinated to now. I think if you put that all together, that really describes why we're seeing what we're seeing in the UK, and it's a harbinger of things to come for us if we are not careful. We could see that this surge that we're now experiencing and is beginning to tail off may not tail off back to the pre-surge days. And we could be following a type of pattern we see in the UK if we continue to not vaccinate and we continue to believe that the pandemic is over. Now let me just

conclude quickly on what's happening in Japan because it plays to the very point that I just made. An article published this past Monday in The Associated Press covering the declines in Japan summarized it well. The article, which was titled "Vaccines? Masks? Japan puzzling over sudden virus success." And in that article, it reported the daily cases in Tokyo had fallen from a peak of almost 6,000 in mid-August to less than 100 a day now, their lowest levels in nearly a year. The question is why the drop? Although the country's vaccination campaign started slow, they have now fully vaccinated 68% of their population. But we know that that's not nearly enough to smother the transmission issue. Other explanations offered up include widespread masking and even a bout of bad weather as August came to a close, which might have kept more people at home. At the same time, the article described and we have confirmed the current scenes of crowded public transportation, jam packed bars, and life moving on as if the pandemic never happened. So why do we see this substantial drop? I believe this is absolutely another lesson in humility. And while I still gladly welcome any lessons in humility that are offered up in the form of declining activity, I do so with the understanding that this virus is still more capable of providing lessons that are much, much more painful. It will come back. We will not know why. It will peak. We will not know why. It will be in decline. We will not know why. We can just anticipate it's going to happen. And the one thing that we can do over and over again is reduce the height of that peak and reduce the seriousness of illness, reduce the number of hospitalizations, and reduce the number of deaths by vaccination.

Chris Dall: [00:23:26] Here in the United States, the New York Times noted earlier this week that cases are currently rising fastest in five northern states Vermont, New Hampshire, Colorado, Michigan and Minnesota, and that this is similar to the pattern we saw in 2020, when cases began to surge in northern states as the weather got colder, while cases in the south receded. Well, it's tempting to attribute this to seasonality. You say that's not the case. Why not?

Michael Osterholm: [00:23:53] Let me pick up where I left off. You know, I have seen so many times where we've had these what I call ecological fallacies, where something happens to occur in a certain way that therefore we attribute whatever happened to things that really had no impact whatsoever. So I can tell you right now that if I try to go into a building during the day and the doors are open and I walk in and the escalator is on, I can assume that the building is open. Now, but if I go back at night and the doors

are locked and the escalator is not on, I can assume that that locked door shut the escalators off. But it didn't. They were totally independent events, and I see this happen over and over again, where people tie the locked doors to the cause and effect of shutting the escalators off. Now they're related, but they're not cause and effect. And so any regular listener of this podcast knows I'm not one who puts a lot of stock into the theory that COVID activity fits a seasonal pattern. At the face value of the whole concept of seasonality may appear very simple. But when you start to unpack what all goes into it like human behavior, the numerous environmental factors such as temperature, humidity and climate, even sunlight, and even the variations in host immune responses, you can start to get a sense of just how complicated this really is. So let me try to unpack this for you. But at the first instance, let me just update us to make sure that we understand where we're at. We are seeing now about 80,000 cases a day in the United States. That is a 22% decrease over the last 14 days. That's good news, but 80,000 cases, a lot higher than the 10,000 cases a day that we saw back last June. The testing numbers, as I pointed out at about 1.5 million tests a day, are still much lower than I think we absolutely must have. And clearly, it is put into perspective when you look at what countries like the UK are doing. Our hospitalizations still sit at 58,400 for a given days average. This is surely below the one hundred plus thousand we had just a month and a half ago, but it still is strikingly high and the number I think that just is so painful to talk about is the fact that we're still averaging 1,560 deaths a day in this country. Think about this. This is just one of those points that we have to focus on since the beginning of this surge with Delta and the availability of vaccine widely available through our communities, over 50,000 people have died. 50,000 people have died from this virus infection since the delta surge started in late June. In an era of vaccine. These people should not have, did not have to die. And that's, I think, a really important point now where are we at in the United States so that I can comment on seasonality. Well, it is true that Alaska still remains unfortunately the most impacted state in the country right now, they're seeing about 890 cases per day. On average, it's down 6% from their height, but I'm telling you they still are under major pressure. Just to give you some perspective, that is about 117 cases per 100,000 population. We bring that up because I'll compare that to the other states. If you look at the other. If you look at the other states with the highest number of cases, it's Montana where you see right now 85 cases per 100,000, Idaho 74 cases per 100,000, Wyoming 73 cases per 100,000, and North Dakota 66 cases per 100,000. Minnesota is a distant down there at 43 cases per 100,000, but still quite elevated. If you look at those states I just

mentioned, they all have just hit peaks or are about leveled off. North Dakota actually is the one state that is now down about 19% over the last 14 days. Minnesota is down about 10%. But so as we're getting into the colder weather, we're actually seeing the case numbers drop in the northern states. And I might add as a Minnesota resident, I am so happy to report that over the course of the past several weeks, I have enjoyed so many afternoon walks at 70 to 75 degrees temperature and not yet having one day of frost. Don't tell us about this was the cold weather driving us all indoors, Minnesotans and people in the northern states have largely enjoyed a remarkable fall that didn't result in everybody going in. So that conclusion by itself is a mistake. If we look at some other areas in the country, we're seeing potentially some increases in cases in Colorado and New Mexico. Colorado is up 23% in case numbers over the last 14 days, New Mexico is up about 5%. And we've seen some increase in the Northeast and particularly Vermont, which is up about 38% in cases. But that's pretty much it. Otherwise, it's on its way down. This is great news, but there are still 65 million Americans who today could be vaccinated by our current recommendations who are not. And while surely some of them have already been infected and likely have some protective immunity. We still have more than enough human wood for this coronavirus forest fire to burn. I know I keep saying that, I say it, I say it, I say it, but it's true. So while this surge may drop and continue to drop, hopefully coming back to the baseline that it was in June, or it may be like the U.K. and we'll see increased number of cases, I think with our limited testing, that probably won't happen even if it does occur, really, we won't pick it up. But what will happen over the days ahead is certainly that those 65 million people will continue to be at risk as well. Younger kids who yet are not able to be vaccinated. 28 million kids between the ages of five and 11 are not yet able to be vaccinated. Hopefully, that will change very quickly, but they too will add to that potential pool of future cases. And let me just pull back because I think it's really important to note, the states that I just mentioned Montana, Idaho, Wyoming and North Dakota clearly really challenged right now in those states. But collectively, they only make up 1.2% of the U.S. population. That's 4,029,000 people. Important people, we love you in those states. We love your states. But just take a look at two other areas L.A. County and New York City. L.A. County has roughly 10 million people, New York City has 8,340,000 people, so basically 18 million people compared to the four million in those states I just mentioned. L.A. County has actually seen the number of cases drop 18% in the last 14 days. They are at 10 per 100,000 cases per day. Remember, Alaska was 117. Montana through North Dakota were in the 60s to 80s. They're at 10 per 100,000 cases per day. They never

saw the surge activity that we've seen in the other states. Only 61% of the residents in L.A. County are fully vaccinated. For those 12 and older, only 71% are fully vaccinated. They've got a lot of people there that are susceptible to this virus. Let's take a look at New York City. There they're reporting about 15 cases per 100,000, again, much lower than the states have been most impacted. They have had a 15% decrease in case numbers over the last 14 days. Only 65% of their population is fully vaccinated. And for those 12 and older, only 76% are fully vaccinated. Again, the same situation as L.A. They never got hit by this surge, and they surely have a large number of people who are susceptible to this virus. They will be part of future surges. You know, we don't have to wait for this to happen to understand why it's still so important and and and only growing more important to get these people vaccinated. And what I worry about is that we will hit another "June period," as I talked about in last week's podcast, where people see case numbers dropping, dropping, we're done with the pandemic. We don't want to hear about it. And in such, we won't get people vaccinated. Now we also have to be mindful of what's going to happen with the boosters, and I'll be talking about that in a minute. But the case numbers could increase also substantially there. So let me just point out to you right now that if we look at the surge activity with Delta, it started out in June in Missouri and Arkansas and in the far northwest, it did not start out in the hot, hot, hot temperatures of the northwest. They were moderate at that time. They had had a period of very hot weather. When we look at what happened with the case numbers through the south, the southern Sunbelt states, the southeast making its way up to West Virginia, we saw cases in the far northeast. We saw the continued number of cases expanding throughout the Rocky Mountain region. And now here we are with cases in the Upper Midwest. We do not have evidence at this point that there was anything here that really spoke to the issue of seasonality. And I could go through all of the situations around the world. Now why is that important? Well, because everybody is on the seasonality bandwagon right now. In this article, you just mentioned New York Times this week. The headline "Country's Northernmost Regions are Experiencing Rising Cases as Colder Weather Arrives." Well, it hadn't arrived when these case numbers went up at all. And in fact, my colleagues here at the Minnesota Department of Health actually, when asked to respond to that about the increase of 12% in the past two weeks of cases here, the spokesman for the Minnesota Health Department said in an email that the department was more concerned about factors like reopening of schools and relaxed mitigation measures than any wintry weather, and they were exactly right. There were no data, but it makes good media to say, Well, it must be seasonal. We're

finding, I think, potentially even dangerous statements being made in the Atlantic this past week. Story by Jacob Stern. The title, "We Accidentally Solved the Flu. Now What?" We start out by saying perhaps the oddest consolation prize of America's crushing, protracted battle with the coronavirus is the knowledge of the flu season as we've long known it, does not have to exist. They have no concept at all what happens in a pandemic. Let me just very briefly remind you. In the 2009 H1N1 pandemic, the virus that emerged in Mexico spread around the world in March of 2009, hit a peak here in North America in late April, early May and then dropped precipitously in terms of numbers. No mitigation strategies. No canceling of classes or businesses. No masking, no distancing, and no vaccine. It just went away. And during that summer, we saw virtually no respiratory virus transmission activity, including any of the four standard flu viruses. Well, then we got to late August and we saw another big peak of H1N1, and those cases actually did peak in late September and came down precipitously in numbers after that, with vaccine only arriving in mid to late October. And even then in limited quantity so that the vaccine had no impact. Again, no mitigation strategies was all on its own. What was most telling was then if you looked at the winter season of 2009 and 2010, when people were concerned it would come back again, or we would see this widespread problem with other respiratory pathogens. It was almost a absent winter in terms of respiratory pathogens. RSV, all of the things we worry about didn't show up. We don't know why, not because of mitigation. Well, somehow there's an interaction here between the flu virus in this case and other respiratory pathogens. And remember, in a given flu season, only about 8% of the population at most gets infected. So you can't say that it was this blanket out there of everyone getting infected. Well, now fast forward to this pandemic, we went through the 2021 winter and we saw virtually no other respiratory pathogen activity. Somehow it was suppressed, including flu. Well, then we get to the summer and we see RSV activity pick up, which we've never seen before. We've always seen it in the winter and people said, Oh, because mitigation strategies were basically relaxed. Well, we have a number of countries that didn't partake in those same mitigation strategies that also saw the resurgence of RSV during the summer months. So you can't attribute it to that. And now here we are with flu, and I don't know if there's going to be a bad flu season or no flu season at all this year. I'll tell you, it's going to be somewhere between the two, and I'm probably going to be right. And I have no idea why. We saw no major flu activity whatsoever in the southern hemisphere's winter, which they have just completed, just had a conversation this past week with one of the leading flu researchers, surveillance experts in the world.

They're virtually seeing throughout North America, Europe, et cetera almost no flu activity at all right now yet, none. So the point being is, how can you say you solved the flu because somehow it appeared and disappeared, it's like the door and the escalator example. But that's what's making the news, and they're giving people the sense that somehow we can just make flu go away by wearing face masks. Another colleague this week wrote actually, an op ed piece in the New York Times published on October 19th, "What We Know About COVID, the Flu and the Air We Breathe." And this article starts out by saying last winter, the flu nearly disappeared worldwide because precautions taken against COVID-19, including mask and social distancing, also worked to prevent it. These precautions may have been especially powerful against the flu because they are layered upon some protective immunity people had built up from years of prior exposure to various flu viruses. There was no such protection from COVID-19, which was novel. There is simply no truth to this. None. None. And this is a very prestigious colleague who gets on a lot of media shows, and we have no evidence at all that the precautions played any role in seeing no flu. Just like in 2009. It was a repeat of what we saw when we had a flu pandemic, when no mitigation was there. And we saw a lot of countries this past year that saw no flu around the world, that took no special mitigation strategies. So again, it's that same combination of events. And now there's an article coming out later this week from a group in Barcelona. It's a modeling study saying basically the same thing look how seasonal activity impacts on flu. Using the earliest days of the pandemic, and I can tell you that there again, just isn't any evidence at all that seasonality played a role here. Now, don't get me wrong, it may someday, and it may be that this will become a seasonal virus. But for now, it is just simply not the case, and you're going to continue to see this twindemic concept. You know, the fact that somehow we mitigated it with masks and therefore, you know, and it's reminds me of Bob Redfield when he famously at a hearing last year, took his surgical mask and slammed it on the table and said this is more powerful than any vaccine, which is absolutely inappropriate and frankly, I think dangerous.

Chris Dall: [00:40:19] Now to the booster shot issue. Last week, the FDA's Vaccine and Related Biological Products Advisory Committee, VRBPAC recommended a booster dose of the Moderna vaccine for certain groups who initially received Moderna shots. This matched the recommendation made for the Pfizer vaccine. They also recommended that everyone who got the J&J vaccine get a second shot of that vaccine. They made these recommendations despite expressing some skepticism about the

underlying data. Then there's been talk this week that the FDA might say that people can get booster shots that are different from the initial vaccine they received based on data that suggest a mix and match approach might boost efficacy. And we're still waiting to hear from the CDC. Mike, there's a lot going on here with booster shots. What are people to make of all that they're hearing about boosters?

Michael Osterholm: [00:41:08] As you may recall, more than three months ago, I started talking about the importance of breakthrough infections and how we were overly minimizing them as an important part of what we needed to know about how these vaccines were working. And I will say it time and time again throughout this rest of this presentation, these vaccines are remarkable, but they're not perfect. Remember that they're remarkable, but they're not perfect. And so why are we talking about boosters? Because it's about waning immunity. It's about what happens from the point of being vaccinated over time. And remember, as I've said many, many times, if in fact, we did this as a normal vaccine research and development approach where we had four to five years to actually do the studies, get the data, do more studies, answer questions, get more data and then take that entire portfolio of information. All the questions asked and answered to the FDA. We would know well, how long does this vaccine last us is it four years, five years? What does it mean? What? We are basically in a mode where once we settle the issue around safety and we do have an abundance of data on safety, we now are trying to figure out how to best use these vaccines. And it's about dose, how much to put in the vaccine, it's which kind of vaccine, it's dose spacing. When do you get certain numbers of doses and how far apart? And it's a situation where we're still learning that. And unfortunately, I think early on in the breakthrough infection issue, people kind of wanted to deny they existed because it didn't play to the narrative that these vaccines were so powerful. You know that in fact, we had this 90, 95% protection and somehow it was going to last forever. Well, we now know that that's not the case. Again, let me repeat one more time these vaccines are remarkable, but they're not perfect. So let's talk about just breakthroughs for a second. A breakthrough infection occurs in someone who has been fully vaccinated at least several weeks after the final dose of that scheduled vaccine. Two doses for the mRNA vaccine, one dose for the adeno platform, the J&J vaccine. But if you look at what's happened is while the CDC now only tracks severe breakthrough cases, they have found that still unvaccinated are 6.1 times more likely to test positive for COVID and 11.3 times more likely to die than fully vaccinated individuals. So this is an important point. I'm going to be talking about a

lot of breakthrough issues, but never forget in the first instance that you are much more protected against getting infected and you are much more protected from getting serious illness and dying by being vaccinated, even if you're a breakthrough infection. Right now, the CDC's latest numbers from October 12th report that there have been 31,895 hospitalizations or deaths among fully vaccinated patients. I think that number is an undercount. But when you again go back to looking at the protection, given the number of people vaccinated, you see how it fits into perspective. Let me give you specific data. Take, for example, in Minnesota, a state that I believe that the health department here is as good as any in the country and have comprehensively looked at this information. We have approximately 46,000 breakthrough infections, which is about 1.4% of vaccinated Minnesotans. But if you look at the actual protection from these vaccines, it's very similar to what we see at the CDC data, where 0.0068% percent. Let me just emphasize this 0.0068% of the vaccinated people have been hospitalized and 0.00008, that's four zero and an eight, of those vaccinated have died. So you can see that's a very, very, very low risk. If you look at states like Washington state, they've just seen over 50,000 breakthrough infections, with 9% hospitalized and 493 deaths, but the same kind of level of protection. So the point to make here is that these are still very rare. Yet they feel big because when you talk about thousands of people, you're talking about, numbers you can't just say are rare events in the minds of most people. But if you compare it to the millions of people being vaccinated, it still is a rare event. So we have to understand that time and waning immunity go hand in hand. And as we get further out now, this is the data that I shared with you from the UK. You get seven months out, you get eight months out, you get nine months out, you get 10 months out from that last vaccination. You start to see this waning immunity. Now, as I've said multiple times on this podcast, I do believe that the mRNA vaccines always should have been a three dose vaccine. I've said over and over again that I believe that the adeno platform single dose vaccine, the J&J should have been a two dose vaccine. And so this isn't a surprising place where we're at, and we have to emphasize again that this is something that we're learning. This is corrected science. We study, we learn, we implement, we study, we learn, we implement and we're not doing it risking someone's safety. Those questions have been answered. They're done. We understand the safety issues around this vaccine. But over the upcoming months, potentially years, we're going to be learning about how we can use these vaccines more effectively and how can we get more protection. And in fact, this is an example of why we have to with the breakthroughs. So now this leads us to the booster dose issue. The question becomes

given breakthroughs, are boosters the answer? And we've already known with regard to the Pfizer vaccine, where we've already had approval for that, that in fact, that this is something that now people are beginning to recognize is not just a limited phenomenon, but that in fact waning immunity, particularly with the Pfizer vaccine and to some degree with the Moderna vaccine, clearly is a challenge. But with the J&J's vaccine, we have a different situation where it wasn't about waning immunity. In fact, the protection appeared to be quite stable, but the original protection wasn't as high as we saw for the mRNA vaccines. And as you noted in your question, Chris, the FDA has taken action over the last week. On October 14th and 15th, VRBPAC, the advisory committee to the FDA, actually discussed the use of these booster doses, both for Moderna and for Janssen J&J. Based on the subsequent discussion and the votes taken at the meeting, it was clear that the recommendations likely to come from the FDA would support a third dose for those who have received Moderna and a second dose for those who had received J&J. So not surprising yesterday, the FDA announced that in fact, these indications would be approved. So based on the announcement yesterday from the FDA, they have now authorized use to COVID boosters from Moderna and Johnson and Johnson, and say that the people can receive a different brand of vaccine as a booster than they did for their initial shots. It's important to note that those eligible for the Moderna boosters include people 65 years of age and older and those 18 to 60 for at high risk of severe COVID 19 or with high exposure to the coronavirus for their jobs or living situations. This is exactly as we saw with the Pfizer vaccine. Also, the Moderna booster can be given six months after the initial vaccination. The J&J booster will now be available to anyone 18 or older, two months after their first dose. Again, remember, this particular situation with J&J was not about waning immunity, but rather about the fact that we didn't see the same level of protection initially as we saw with the two mRNA vaccines. Now this all moves to the CDC, where today they will actually hold a meeting of the ACIP, the Advisory Committee on Immunization Practices, and they will bring all this information together and come out with formal recommendations about what should and can be done. I might add one last piece that the FDA also did approve today that you can mix and match. I'm not surprised that that was approved at the same time. I have to say that I was, for one, somewhat surprised that the amount of data that was submitted was quite limited only on 400 plus individuals that were part of this study looking at all the different combinations of vaccine. And again, remember, we don't have a correlate of protection, so you can't just do a laboratory assessment of are these vaccines doing more or less? It really is about real life experience looking into

effectiveness data. Nonetheless, the FDA believes that the data submitted was sufficient to say you could mix and match. So now, later today, the CDC will make that decision about what to do, how to make recommendations for you. Recommend that you mix and match, do you say it's permissive? How do you make that decision? So stay tuned. There'll be more coming. The last point that I want to make really just reflects again in comments I've been making throughout this podcast and throughout the series of podcasts over recent months, that is corrected science. This is not going to be the last time that we're going to be confronted with data about what to do with the vaccines. Will we find in six more months that we still again have waning immunity as a challenge? Will it differ between the types of vaccines that we see? Will mixing and matching make a difference? Based on the permutations and combinations of different vaccines that can be used with in fact, different boosts, with the possibility that people over time will also have waning immunity by months after their most recent dose. And then on top of that, who these people are, are they immune compromised, otherwise otherwise healthy? When you start adding in all of these possibilities, there's going to be a lot to study over the days ahead. And so please do not be surprised. Don't be at all concerned that we are going to have a lot of additional work that's going to need to be done to figure out how the best way to use these vaccines. And again, I come back and just want to emphasize these are remarkable vaccines, but they're not perfect. They're remarkable, but not perfect. And what we need to do is keep making the remarkable even better by learning how to best use them. And that's what you're seeing happen right here right now. So I would urge everyone, particularly because of the breakthrough discussion, please go get your booster if you're eligible. I think it's very important. As I've said from the beginning, I've always believed that the mRNA vaccines were meant to be a three dose primary series. J&J was always meant to be a two dose primary series, and now we finally have people all coming together at the FDA. And of course, now today at the CDC. So stay tuned. A lot's going to happen in the next 12 to 24 hours.

Chris Dall: [00:52:30] So, Mike, we have a lot of people out there, many of our listeners who have received Pfizer or Moderna vaccine, they're not in the groups that are recommended for a booster dose, but maybe getting near to that six month date from being fully vaccinated. Do you think eventually we're going to see boosters recommended for everyone?

Michael Osterholm: [00:52:51] Well, in fact, I do, and quite honestly, you know, this recommendation now of anyone, 65 years of age and older, those 18 to 64 at high risk of severe COVID or with high exposure to the coronavirus through their jobs or living situations, you can almost drive a semi through that recommendation. And so I think that many people will interpret themselves to be at some increased risk. But officially, will it be expanded? Ultimately, I think it will. I think you're going to see as we collect more data that it will just be this is a three dose vaccine whenever you start that vaccine series or this is a two dose vaccine whenever you start that vaccine series. So I think that that's what will happen. And the one thing that's different here and I should mention again, is that the Moderna booster dose is different than the regular vaccine, with the first two doses being 100 micrograms. The booster dose now at 50 micrograms, it's only half. So there will be some consideration there of making sure that we, in fact, are giving the right dose at the right time with Moderna.

Chris Dall: [00:54:01] So, Mike, stepping back a second to breakthrough infections. As all the discussion about booster shots that's been going on earlier this week, we learned that former Secretary of State Colin Powell, who was fully vaccinated but also immunocompromised, had died from COVID-19 complications. This is really the most high profile breakthrough infection and death we've seen, and unfortunately it's been used by some to push vaccine skepticism. How do we put Secretary Powell's death in the proper context?

Michael Osterholm: [00:54:33] You know, the vaccines did fail Colin Powell, but not his vaccine. The vaccine that didn't get into the arm of the person that likely infected him. Now could it have been a breakthrough infection that did? It could have been. But it appears at this point it was not. It was someone who was not vaccinated. You know, the vaccines are not perfect. I've said that already. But man, are they powerful. And so we have to never forget that, but that's not a reason not to get it. Now I know it's being used widely. I've been asked many, many times, doesn't this prove the point? These vaccines aren't any good? No. All the data I just covered on breakthroughs give you the data that says these are really important. And what we all must be doing right now is working hard to try to get as many people vaccinated so that we don't have more people like him who are at risk of serious infection, even having been vaccinated because their immune compromised status infecting them. How do we protect them? We bubble them with making sure as many people are fully protected around them as possible. So my take

on the vaccine is the fact that what we need to do is just remind people that one of the reasons to get vaccinated is not just to protect yourself. If you think I'm not, you know, I'm not at risk. I don't believe that I should have to get the vaccine. Please do it for your loved ones. Do it for the people around you. That is the example that we should take away from what happened to Colin Powell.

Chris Dall: [00:56:09] Now to this week's COVID query, this one is from Rob, who asks "In early September, we saw a number of images of college football games, with stadiums full of tens of thousands of people tightly packed, many or most not wearing masks. The Delta variant was still raging, and I thought for sure there would be a massive increase in new cases. That does not appear to have happened. Can you explain why we didn't see large outbreaks after what looked like potential mass spreader events?"

Michael Osterholm: [00:56:37] Welcome to COVID-19. I say that only because as I've pointed out throughout the course of this podcast, this virus does what it's going to do and why surges start, why transmission occurs, why surges reach certain peaks, why surges subside, why virus appears to go away like we just talked about with regard to Japan, we're seeing a number of states in the United States that just three to four months ago, our house is on fire and this is part of the challenge is why don't we see in areas that at the time appeared to be at high risk, not have transmission occur? At least in ways that we can easily detect it, meaning so many people infected. What role does outdoor air still play in reducing the risk? I've already shared with people on this podcast that my colleagues at the Minnesota Department of Health have documented many outbreaks of COVID-19, particularly the Delta variant, where outdoor exposure was the only thing that happened. So I can't explain why we don't see major large outbreaks associated with these areas, except for the fact that once the virus activity starts to subside, it does across the board. And I don't know why, and I can't find anybody that can tell me why and if they do tell me why, as I've pointed out, they're usually based on beliefs, not on data. So that's number one. So, you know, in the South right now, you could probably be in a lot of settings where you might not feel comfortable being in that same setting. If you're in Minnesota right now and you wouldn't put yourself at high risk for becoming infected in the south where you might hear. And we don't understand that. The second point I want to make, though, also is playing true here. We have seen the public health agencies of this country all but gutted in the sense of their capabilities to

do population based surveillance and follow up. And it's in part because of the fact that they have been so overstretched by what has hit them in terms of case numbers that to do follow up is almost impossible. Notice we don't even talk about contact tracing anymore. When's the last time you or anybody talked about contact tracing? Why? Because it became so impossible to do in the sheer numbers. Well, to find out if someone was exposed at, you know, Restaurant A or sporting event B, or church service C, you have to have people that follow up with these cases. Unfortunately, today in many states, fewer than 30% of those cases reported to the health departments ever get followed up on in terms of where their exposure might have occurred. In part, that's due to the fact that we now have a very large number of people who won't return calls to the health department. They won't take the call in the first instance. And so it's very hard to get this kind of information. And so I think there have been outbreaks more limited in size, but ones that have occurred in these kinds of venues, whether they be concerts, whether they be sporting events, but they've been small enough, localized enough that in fact, they haven't been picked up. In many instances, because people don't want to talk to the health department. I know personally of several weddings where there have been outbreaks that have occurred and where there was a general sense that no one would talk to the health department because no one wanted to implicate a groom and the bride and their families in this kind of setting. So, you know, in a sense, according to our records, those outbreaks never occurred. So I think it's a combination right now of what the virus does because it does it. And what our capability is right now to detect these outbreaks, it's very, very difficult. And if you look today, the vast majority of cases in this country have no site or activity associated with it to explain how transmission occurred.

Chris Dall: [01:00:53] Mike, COVID-19 vaccine mandates continue to be a hot button issue across the country. You've been an advocate of mandates, but you sent the podcast team a commentary this week that suggests that while the case for mandates is strong, the way we communicate the case could be better. What did you make of this argument?

Michael Osterholm: [01:01:13] Well, what we're doing right now is not working. We're vaccinating fewer than 200,000 first time vaccinees every day in this country, the lowest number since the vaccine became available. And yet we're still seeing the 65 million plus people out there that are not availing themselves to vaccine that could. I think we're

going to see increasing challenges with the five to 11 year old age population. Even though the FDA is going to approve that vaccine. ACIP is going to make it recommended to get. The White House is working right now on delivering the vaccine through a more patient centric perspective, such as in your own doctor's offices or in your own health plans, offices, cetera. I think it's going to be a real challenge to get people vaccinated because of the concern about what it means to turn a vaccine into a vaccination. Safety issues any number of things that will come up. And so we have to ask ourselves is doing the same thing over and over again working? And this article that I shared with you comes from two very, very, very special people to me, Peter Sandman and Jody Lanard. They have taught me so much about risk communication and understanding the whole public health messaging issue. I'm at best humbled to be in their presence in terms of their expertise. Peter and Jody published this past week an article related to risk communication about COVID-19 vaccination mandates. It's entitled "Even Though Risk Communication: Mandatory COVID vaccination", and they make the argument that the case of COVID-19 vaccine mandates is strong and is predicated on two main issues. One, lots of people who declined to get vaccinated voluntarily roll up their sleeves when they're told they have to or suffer some unacceptable consequence, losing their job being kicked out of a restaurant or other venues. If the goal is to increase vaccine uptake, mandates can work. They also then say increase vaccine uptake is a worthwhile goal. Good for literally everybody. Good for the people who reluctantly get vaccinated, good for their families and friends and coworkers and everyone they come in contact with and good for society at large. And this isn't a small good. We're talking about alleviating the worst public health crisis in the past century, but they do argue that there are also strong arguments against vaccination mandates. They state, for example, "mandatory vaccinations, a clear infringement on freedom and bodily integrity." They state, "the actual harm done by voluntarily unvaccinated individuals is mostly to other voluntarily unvaccinated individuals." Meaning if I'm not vaccinated, my real risk is transmitting to someone who is also unvaccinated. When people feel coerced into doing something they greatly prefer not to do, the resulting outrage is bad for society in many ways. The article makes that case that if you acknowledge that your opponent's case is strong, some of them might just be open to the argument that your case is even stronger. But if you claim they have no case, you have no shot at all. If you tell somebody, it's a no brainer that infers they have no brain. They will not hear you any further. They call this the even though risk communication, for example, even though vaccine mandates are a huge blow to personal freedom,

what's more important right now, sadly, is that they also have a huge and essential step towards ending the pandemic. They recommend conceding the merits on the other side's case before you build your own argument that on balance, not one hundred percent, but on balance your case is even stronger and build your argument sadly, not triumphantly taking full cognizance of the sacrifice you're asking of your opponents. Now, for many of us in public health, this is a very difficult thing to do because we're mad, we're angry that we're even in this place and we're saying, get it, you should get it. It is a no brainer. And you know what we're doing? We're not getting people vaccinated. Now, I believe, and I've talked to Jody and Peter about this, that in fact, there is that collective mindset. It's not about vaccines only, it's ivermectin, it's masking. It's any kind of public health intervention right now you're against. But what they bring us back to is results. And, you know, it might be hard for me to sit across from a table and acknowledge to someone. It does take away your freedom that does impinge upon your ability to control your own body, etc.. But here's my argument with versus yours and acknowledge an argument. You know, I think this is an important consideration. I think we need to talk a lot more about this and maybe it'll go nowhere. Maybe, maybe that hardcore group of people that won't get vaccinated are not going to get vaccinated. But on the other hand, maybe it will peel off some important segment of that group that will say, OK, I finally feel like I'm being heard and I feel like, OK, I can go head to head with you on this and not just blanket say no. And at this point, I think from this perspective, we need to try it. Now, would I be in the same boat with ivermectin? No, because ivermectin is actually a potentially dangerous drug, and the decision to get that or not get that actually does have deleterious health effects. And I urge you to read this paper from Peter and Jody. It's on our website linked in the podcast for today. And think about it, I'm thinking about it because you know what? Being right means nothing if in fact, we accomplish no additional vaccination. I don't want anybody to lie. I don't want anybody to feel like somehow they have to, you know, bow out to some other one. But just acknowledging you've heard them. Let's see what it does. And so I read, I want you to read this article. Now, having said that, let me just say one last thing. We must acknowledge that there are workplace settings where these mandates are going to cause tremendous turmoil. For example, when we look at the police, there have been indications in a number of cities that the police will walk off the job if they're mandated to get the vaccine. And yet I know that this is my public health perspective speaking, which will be refuted. But the data are clear and compelling there. There've been five times as many police officers since the beginning of the pandemic who have died from COVID,

then from gunshot wounds on the job. And if you look at the issue of health care workers, you know, we know that at least 3,600 health care workers have contracted COVID and have died. Now not all of those at work. And yet, the workplace setting is a dangerous location, or at least potentially. And it also poses a potential dangerous location for patients who are exposed to infected health care workers. So I also recognize that this is going to be a challenging time to move these mandates forward. I can only hope that we are able to move forward in a way that there will be some attrition, particularly at a time when finding people to do these jobs is often very difficult. This is most notable in the long term care facility area. But I think it's also a moment of reflection to say, when will we say this is necessary to reduce the community transmission of this virus that prevents future surges? That also prevents or at least reduces the likelihood that if you have a heart attack or that you need that cancer diagnostic testing that I talked about it being on the podcast that somehow your community is not overwhelmed by the next surge of COVID and you have access to that. So to me, this is really all about how do we move that forward knowing that this is not going to be easy in a country that is already split in so many ways. But I hope that we're able to work through this and stay tuned. This is going to be a point of much discussion.

Chris Dall: [01:09:42] Mike, a lot of the beautiful place submissions we get are people telling us about places they were able to visit during the pandemic, but we also get people writing about beautiful places they've created for themselves, and I think that's where this week's submission falls into place. Can you tell our listeners about it?

Michael Osterholm: [01:09:59] I'm delighted to share this beautiful place with our listeners. This is from Tiffany. And thank you, Tiffany, for sharing this with us. She, first of all, writes a very kind paragraph to us about the podcast, but let me move into the heart of her beautiful place. And she wrote to us and said, "a little back story to my beautiful place. In May 20 2021, after 15 months of enduring this pandemic as an essential worker, helping keep our family owned and operated small town local pharmacy up and running the entire time, I was emotionally worn out. I wouldn't change a thing about what we did and continue to do to help keep our communities safe. Mainly learning from this podcast and other epidemiologists I know, requiring masks in the store, running HEPA filters to help ventilation, encouraging physical distancing, offering curbside and in-town delivery, and pointing the community to where they can receive

testing and vaccinations. But if I'm honest, it was a tiring feat to try and keep ourselves and others safe in our business and personally as we interact in the community, particularly when the majority of others around you have essentially moved on from the virus. Even though we know the virus is not done with us and to act as if there is no pandemic. As summer approached and the weather turned nice, I knew I needed self care and respite in the outdoors. So I decided to make a flower garden and boy, it did not disappoint. It became my beautiful place. As you can see in the three progression of pictures from planting in May to August and now in October, the burst of color truly brightened the landscape and in turn, my disposition. Each evening, throughout the summer and into the fall, I would head outside after supper to weed, water or deadhead the flowers. And in the time with nature, I would pray for others and let the worries of the day melt away. It has become my evening ritual that brings peace and restores my joy, and I pray that the beauty of the flowers bring the same joy and peace to all who see them. Sincerely, Tiffany." Tiffany, thank you. What a beautiful, beautiful thing to do. I just want all the audience to know that the pictures will be on the website. Please go and take a look to watch the progress that Tiffany shared with us, and thank you for sharing this beautiful place and we always welcome your beautiful place submissions.

Chris Dall: [01:12:36] And just a reminder that you can send your beautiful place submissions to us at osterholmupdate@umn.edu. Your take home points and closing thoughts today, Mike.

Michael Osterholm: [01:12:47] Well, thanks again to all of you for being with us. I appreciate it more than I can say. And I want to make it very clear, as I do each week, that I talked about a lot of numbers today, but I never forget. Nor do we here at CIDRAP forget that those numbers are people's moms and dads, grandpas and grandpas, sons and daughters, neighbors, colleagues, in some cases, they're famous people like Colin Powell. And we must never forget that. That's hopefully what keeps driving us back to this central point of how do we help each other get through this pandemic? The other thing that I hope I shared with you today was the sense of why humility is so important in this pandemic. Because we do have unknowns, we still have a lot to learn. We will make mistakes. And hopefully when we make those mistakes, we will offer apologies and corrections and we will learn from them. Corrected science, implement, study, learn, implement, study and learn. That's what we're here for. In terms of the summaries today, the first one is this virus isn't done with us. 65 million Americans are still not

vaccinated who could be, and billions around the world are still not vaccinated, and in many cases, they don't have access to vaccine yet. So we have to understand that this is a critical issue that this virus is not done. Do not see the drop in cases right now as the end of this pandemic in the United States. It's critical to understand why our work is still so important going forward. The second point is that there are no easy answers why cases are or are not occurring in any region. It's not a simple answer. Seasonality is one of those examples where people keep using it, but they don't really have a leg to stand on from a data standpoint. It is clear that surges and the height of those surges can be really, truly impacted by the number of people vaccinated and protected. But why the surge starts, why it ends? That's Mother Nature, and we don't understand that. And so when a surge starts, we can begin to plan for it and say, OK, like a forest fire starting. This is what it might look like. This is what we need to do. This is how we need to be prepared. And that's going to be an important message. The third summary point is we are in the corrected science world and we have to understand that that's the mode we're in right now with these vaccines. How do we best use them to reduce morbidity and mortality among the world? So understanding that we're going to keep learning more about the vaccines and there may be more changes occurring in the future about how we use the vaccines, who gets vaccinated with what vaccine? What's the dosing? What's the space between doses? That could still all be in flux. But it's not because people have made mistakes. It's not because there's a lack of rigor to our scientific studies. It's the fact that we're actually doing what you want us to do. We study it, we make sure we understand it, and then we implement and then we make it better. And so those are my three take-home points, and it's in that vein that I want to say that as part of this podcast family, this next one is for all of us, for each other. This is one that as a song that I've used before, on episode 22 back in September 3rd of 2020, over a year ago, it's Randy Newman's "You've Got a Friend in Me." It's from the Toy Story soundtrack. This was recorded in 1995 for the Disney Pixar animated film Toy Story. There have been sequels two through four, where in each instance this song was replayed again. It was nominated for an Academy Award for Best Original Song and a Golden Globe for Best Original Song. Unfortunately, it didn't win either one, but it really says, I think what we all right now should feel when we look at each other. Even if it's hard to do, we should consider this. So here it is. Randy Newman, "You've Got a Friend in Me." "You've got a friend in me. You've got a friend in me. When the road looks rough ahead and you're miles and miles from your nice warm bed, you just remember what your old pal said. Boy, you've got a friend in me. Yeah, you've got a friend in me. You've

got a friend in me, you've got a friend in me. You've got troubles. I got'em too. There isn't anything I wouldn't do for you. We stick together and we see it through because you've got a friend in me, you've got a friend in me. Some other folks might be a little bit smarter than I am. Bigger and stronger, too, maybe. But none of them will ever love you the way I do. It's me and you, boy. And as the years go by, our friendship will never die. You're going to see it. It's our destiny. You've got a friend in me. You've got a friend in me. You've got a friend in me." So I close on that note. Thank you for your friendship. Thank you for your support. Thank you to the podcast team for putting this together again this week. Remember, we're going to stick to this 100 episode issue. That's our goal. Ok, let's get this thing taken care of. Get enough vaccine out there to really make a difference for the world. So thank you. Have a good, safe week and just know that we're here together and we will get through this even with all the unknowns. So be kind. Please be kind. Be safe. Thank you.

Chris Dall: [01:18:44] 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](https://cidrap.umn.edu). This podcast is supported in part by you, our listeners. If you would like to donate, please go to [CIDRAP.umn.edu/donate-now](https://cidrap.umn.edu/donate-now). The Osterholm update is produced by Maya Peters, Cory Anderson, Angela Ulrich, Meredith Arpey, and Sydney Redepenning.