

## Episode 82: A Viral Blizzard

**Chris Dall:** [00:00:00] Hi, everyone. Before we get started with this week's episode of the Osterholm update, I wanted to let you know that CIDRAP is commemorating its 20th anniversary this year. Since its inception in 2001, our team has created what is now a globally renowned center tackling the world's toughest challenges in infectious disease and public policy, including COVID-19, Ebola virus, Zika, Antibiotic resistance, universal flu vaccines, and drug supply shortages. In celebration of this milestone anniversary and to ensure we're able to continue our important work into the future, Christy Walton has pledged a \$4 million challenge to complete a \$10 million fundraising campaign. A \$1 match will be made for every \$2 donated, helping to build a solid endowment to support CIDRAP's work. Please visit [cidrap.umn.edu/donate](https://cidrap.umn.edu/donate) and thank you. And now to this week's episode of the Osterholm update. 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. If you don't know exactly what to think about the Omicron variant, how it may impact the course of the pandemic here in the United States and around the world, and what it may mean for you and your family, you're not alone. There is a fire hose of research about Omicron coming out on a daily basis and making sense of all the data, just trying to keep up with all of it is difficult, even for the experts. So this week on the Osterholm Update podcast, we're going to try and catch our collective breath and fill you in on all the latest information being gathered on the Omicron variant and what it all means. As always, we'll also provide an update on what the still dominant Delta variant is doing around the world and here in the United States, and take stock of the U.S. vaccination effort. We'll also share the latest Beautiful Place submission from one of our listeners. But first, as always, we'll begin with Dr. Osterholm's opening comments and dedication.

**Michael Osterholm:** [00:02:30] Thanks, Chris. As I begin this podcast, I have to put a disclaimer on it. Some would say similar to what I've done in the past, but this one is in

a league of its own. It is so difficult at this point, as Chris alluded to, in terms of the rapid fire of the new information around Omicron to actually know what to tell you because it is coming out so rapidly, the information is confusing and frankly challenging. I will try to give you my best shot at distilling what we know on Wednesday, December 15th, the day before this was posted, knowing full well that by the end of the week, it could change substantially. So I'll try to do my best not to get into the weeds, but to stay at the high level and say this is what I think I see coming. I will say without any reservation whatsoever that the next few weeks will be, for me, an unprecedented event in my 46 year career in public health. Over the next several weeks, I feel certain that we will see major changes in the occurrence of COVID-19 in our communities, what it means to us clinically and public health policies that will come from that. I think we are going to see a viral blizzard literally ascend upon the world with Omicron. And the question will be what will that mean clinically, from a public health standpoint, from a medical delivery standpoint, what will that mean? And so, you know, some would say, you know, I might be prone to exaggeration or I surely have painted, you know, pictures of the future that many didn't agree with. I'll just tell you right now it's hard for me to paint a picture about what's going to happen based on my experience because I don't know. But what I fear is what I see coming is this viral blizzard, and I will try to give you a sense of that today in this discussion. In terms of my dedication today, I want to share with you some information that I think is often missed in what we often call the unrecognized aspect of the COVID pandemic. The U.S. Census department just released new household data survey, which is representative for the entire country on looking at adults not working at the time by main reason for not working. And as you know, we've all been talking about workforce and, you know, the issue of employment and trying to find people to work. And what they found, extrapolating these data to the country that there are currently over 13 million people in the United States that are not working because they're caring for someone or are sick themselves with COVID. They're caring for children, not in school or daycare because of COVID. They're caring for an elderly person because of COVID, or they're so concerned about getting or spreading COVID in the workplace. Thirteen million people right now have been impacted with this pandemic just in those regards. And so for me, I'm dedicating this podcast to you, the people who are on the front lines of the home. You're on the front lines of caregiving that we don't often think about and give credit to. And it has got to be tough for many of you where employment is important from a financial standpoint. And yet you're at home taking care of these

individuals. And by the way, in the survey, these are people who want to go to work, but they're not working for this reason. So this podcast is dedicated to you.

**Chris Dall:** [00:06:30] So, Mike, as we've established, the research on the Omicron variant is coming at a fast and furious pace. So I'll start with the same question I started with last week. What have we learned in the past week on those three crucial characteristics that we focus on with variants of concern, transmissibility, severity and immune escape and is a clearer picture of Omicron starting to emerge?

**Michael Osterholm:** [00:06:54] Chris, when you ask about what have we learned in the past week, probably the more relevant question is what have I learned in the past half an hour before I got on this podcast? And in fact, the podcast crew and I were literally working on this information just 30 seconds before I got on this podcast. News is breaking by the minute. And in that regard, I just come back to a point I made in the introduction. I will give you my best shot and what's happening knowing full well, how quickly this information will become outdated. But make no mistake about it, we are about to see a viral blizzard with Omicron that is going to be unlike anything I've seen other than probably the 2009 H1N1 influenza pandemic in terms of global spread. That one again did exact a human health price in 2009 that was not often recognized with nowhere nearly as severe as we would anticipate for a 1918 like pandemic, but the spread was dramatic. Within one month, it was documented in over 142 different countries after it was first discovered. This virus, the Omicron virus, is functioning very much in the same way. It is already globally distributed and now we're beginning to see it literally explode at local levels, and I'll talk more about that. So what do we know? Well, first of all, let me be clear, I think that this virus, while it is a SARS-CoV-2 virus, it's a variant of the original ancestral virus that we saw come out of Wuhan. It is very different in so many important ways than the other variants we've seen to date. And hopefully this become more, more apparent as we talk through what's happening. But let me just right now give you a sense of where things are at. What we're seeing is extensive transmission. As of December 14, Omicron has been detected in 75 countries and in the United States in 34 states and Washington, D.C.. But let me be really, really clear. This is worldwide in its distribution and the number of cases that are being reported is just about a mere speck of what actually is happening out there. I could give you a data on a number of different countries and a number of cases, but it's changing by the hour. So just come away with the fact that it's everywhere and it's going to be

spreading widely everywhere, and it's probably going to do that quickly, not over months and months, with surges in many different areas and no activity in other areas. I think this is going to be more global in its nature. We are seeing a number of reports of outbreaks with high attack rates, even among fully vaccinated groups of people. Right here in the United States on Tuesday, an outbreak was reported at Cornell University, where between December 6th and the 13th, 903 COVID cases were detected among students it is reported that a very high proportion of the cases were caused by the Omicron variant in fully vaccinated students. Some of the students had even received booster doses. Fortunately, there have been no reports of severe illness yet. The school has literally shut down its campus and has moved all final exams online. Now I'm going to come back to the vaccine issue in a moment because you might interpret from these last several statements that the vaccines are not important, not true. We'll come back to that. So if Omicron is so infectious, should we expect it to replace Delta? First, it will depend on what is driving the increased transmission we're seeing. We need to know more inherently and how infectious Omicron is and to what extent it is able to evade prior immune protection, particularly that specific to the Delta variant. Only time will tell that. Time that we all at this point feel like we don't have, but we're going to have to wait for. We should expect, I think, one of three things to happen. The first possible is that Delta and Omicron will co-circulate. This would be most likely to happen if both of them have the same infectivity, and Omicron is able to evade Delta specific immunity. We've seen this happen with strains of flu, which is why your seasonal flu shots contain multiple strains that co-circulate. The second possibility is that Omicron beats out Delta and becomes the dominant strain. This would be most likely to happen if Omicron is inherently more infectious and there is considerable cross protection with the Delta specific strain. And third, the last possibility is that we experience an Omicron wave, followed by a resurgence of Delta and the extinction of Omicron. This would be the most likely to happen if Omicron is not inherently more infectious, even if it has a higher immune escape. Only time will tell which of these will be reality, but we should have a good indication, I think, in the next few weeks by watching what happens to delta cases, relative to Omicron cases in the U.S. and in Europe. If in fact this is the reality, we will see delta cases drop dramatically and within probably three to four weeks. So from that standpoint, we are in a viral battle. It's Omicron against Delta and we don't know where that's going to play out yet. I'll come back to that more in a moment as we talk about disease severity and the possible implications of that. So the second point you raised is what have we learned about the severity? Preliminary data from the first three weeks of

Omicron circulation in South Africa show that the risk of hospital admission among adults diagnosed with COVID-19 is at least 29% lower for Omicron variant infection compared to infections in South Africa's first wave in 2020, which was dominated by then the first variant after Wuhan, the variant called D614G. And after you adjust for vaccination status, it's clear that at this point, the Omicron variant is not causing the same level of severe illness. Compared to the earlier waves, hospitalized patients currently have a lower likelihood of being admitted to high care and intensive care units. One piece we're waiting for more data on is the severity of Omicron among children. Preliminary data from South Africa suggests that children under age 18 have a 20% higher risk of admission for complications of COVID-19, when infected with Omicron while keeping in mind that overall children show a very low incidence of severe COVID-19 complications. Pediatric units in South Africa are seeing an increase in pediatric admissions similar to South Africa's third wave of infection, which was delta occurring from June to September. Even though it is becoming clear that in regions for Omicron is becoming dominant, there has been less hospitalization and deaths than expected. It's not clear whether Omicron actually causes less severe disease in naive hosts, meaning that the virus is less virulent or if we're seeing the impact of immune protection from vaccines or prior infection. We'll be able to tell when we see the impact on, for example, older people who have not been vaccinated or previously infected, or those who are severely immunosuppressed. This leads us to the next point. What have we learned about immune evasion? Well, the data are still showing evidence of immune evasion with decreased protection of previous infection or vaccination against the Omicron variant. One indicator of immune evasion is reinfection among people who have been previously infected. We are seeing that reinfection is increased with Omicron clearly. Preliminary data from South Africa indicates approximately a three to eight fold increased risk of reinfection with the Omicron variant compared to prior variants. Another study that looked at neutralization properties of the SARS-CoV-2 Omicron variant found that neutralizing antibody titers against Omicron were low, even below the limit of detection in a significant fraction of people with prior infection. One note of this discussion is that of those who continue to assert that previous infection is by itself sufficient for ongoing protection, these data are clear and compelling, that's not the case. Even those who have been previously infected do need to be boosted with vaccines. Regarding vaccination, in the first few weeks of South Africa is Omicron driven fourth wave a study that included over 200,000 people with positive COVID tests showed that vaccinated individuals who received two doses of the Pfizer vaccine had a

33% protection against infection relative to the unvaccinated. This represents a substantial drop in the 93% protection during the delta wave. However, there is good news. The good news is that these same vaccinated individuals who received two doses of the Pfizer vaccine had 70% protection against hospital admission in the same time period. But this is yet a significant drop in protection against hospital admission reduced from around 93% in South Africa's delta driven wave. Protection against hospital admissions was maintained across all ages and people from 18 to 79 years of age, with slightly lower levels of protection for the elderly, 67% of people aged 60 to 69 and only 60% in people aged 70 to 79. So there is good news here. These vaccines can blunt the serious illness impact of even Omicron. We don't know much yet about how much protection boosters will offer. Based on a limited number of UK cases, protection against infection after two doses dropped down to 34%, but boosted back up to 75%. These numbers could potentially be associated with a five fold higher breakthrough infection rate after a booster compared to previous variants. Bottom line is, we still need data on how a third dose of vaccine protects against infection, severe disease, hospitalization, death and how long that protection lasts. In the meantime, don't wait until we find out what that information is. Now is the time to get vaccinated. Now, just hours ago, a study was released from Hong Kong University, which looked at why the situation with Omicron may be so different from that in Delta. This study, which has now just been submitted for peer review, provides, I think an early insight on some of the biological characteristics that Omicron holds, which could have real implications for the epidemiology of this variant. Essentially, the study involved using tissue from the human respiratory tract that was removed during previous unrelated procedures as an experimental model. Through this method, which has previously been used to study emerging viruses like avian influenza and MERS, the researchers can take a select virus or in this case of variant and have it infect different parts of the human lung. From there, they can measure a number of things, including the speed at which the virus or variant replicates. Once the data is collected, they can then compare the results with data from previous viruses or variants and characterize any differences. So in their latest results, just reported with Omicron, the researchers found that it replicated much faster than both the original SARS-CoV-2 variant and delta in the human bronchus. This finding suggests that there can be a lot more Omicron virus present in that part of the respiratory tract fairly early in an infected host, which could help explain its heightened ability to transmit. However, the researchers also found that Omicron didn't appear as capable of replicating in lung tissue itself. This is good news. Compared to the original

SARS-CoV-2 variant, Omicron multiplied in the lung 10 times slower after those initial 24 hours post-infection. The reduced ability to replicate in the lungs could be a significant hint that Omicron might not cause the same levels of severe disease that we worry about. However, it's important to note that this study doesn't account for the things that play a role in the disease severity, including the host immune response. So by no means this study does not provide us the definitive holy grail information. There's still a lot of work that needs to be done to clarify disease severity, but it clearly provides some early and I think important clues as to how Omicron operates. Based on this information, I think we can expect to see a very different clinical picture emerge with Omicron versus delta. And the challenge for all of us right now is to understand what that will look like. And that's going to be the 64 trillion dollar question over the course of the next several weeks.

**Chris Dall:** [00:20:16] So, as you noted Mike, Omicron has now been reported in at least 74 countries and health officials in the United Kingdom, Norway and Denmark are warning that it's spreading rapidly in those countries. But as we discussed last week, many countries around the world are still in the midst of delta driven surges. So what's the current global COVID-19 situation look like and how much is it being affected by Omicron at this point?

**Michael Osterholm:** [00:20:39] Well, Chris, this is obviously a very important question, especially as it relates to the update on Omicron we just went over. Let me just be really clear, any information I provide you here was outdated an hour ago. That in fact, things are changing so quickly and also I often say the absence of evidence is not evidence of absence. Even if we don't have reports of major Omicron activity taking place in many parts of the world, I think it is. And so we will learn about that as time goes on. At this point, it's becoming increasingly clear that Omicron really represents the next leg of this pandemic journey we're on. So we need to keep working to better understand what that means. However, at the same time, we can't lose sight of the fact that there are still many places in the world that have had their hands full right now, thanks to Delta. I'm sitting at ground zero here in Minnesota with that today. For these places, which include the U.S., any glimpse into the future that overlooks the current reality would be a major mistake. In a way, it would be almost like driving on a really foggy day and seeing what happens to be a turn ahead of you. Today happens to be very foggy here in Minneapolis and St. Paul. But the fog makes it unclear. Of course, the driver wants to

know how to react. So they take a long, hard look forward. Meanwhile, as they're trying to determine what direction the turn is going to take them and how sharp it is, they're looking past the moose, that's standing in the middle of the road, right in front of their headlights. Well, if you know how big a moose is and they're big. I really hope that your highest priority in this situation would involve doing whatever is necessary to prevent or minimize any harm and damages that a collision would cause. Otherwise, it might not matter what the upcoming turn brings. Well, right now, I think there are places where this collision is imminent or already underway. I think you'll see in a minute what I mean in terms of focusing on Omicron and not seeing Delta. Before I get into that, let me start out by going through the latest international numbers posted on the W.H.O. dashboard. At the time of our recording for last week's episode, the dashboard was apparently missing some data on cases and deaths. As a result, I reported that the global cases for that week fell just short of four million and deaths stood at nearly 51,000. However, after the delayed totals were accounted for, global activity ended up being higher than we reported, with weekly cases surpassing 4.2 million and deaths hitting 52,300. So instead of seeing our first week with decreasing cases since early October, which I mentioned in last week's episode, we actually saw an increase last week. And unfortunately, that is the case yet again. As of this Tuesday, the W.H.O. reported that last week's case totals exceeded 4.25 million, marking the eighth consecutive week of increasing cases. Meanwhile, deaths approached 50,000. Zooming in a bit, you can see that four of the six W.H.O. regions are now experiencing elevated activity, including Africa, the Americas, Europe and the Western Pacific region. Otherwise, Southeast Asia and the Eastern Mediterranean region are currently the exceptions, with their levels remaining steady and fairly low compared to previous phases of the pandemic. Remember, just one month ago, the surge in Europe made them the exception, with the five other regions all reporting plateaus or declines. So what's driving this? Well, first there is the emergence of Omicron, which has essentially driven the uptick in Africa and is contributing to a growing number of cases in the other regions like Europe and the Americas. However, a lot of the heightened activity we've been seeing in Europe, the Americas and the Western Pacific region is still largely being attributed to Delta. Of course, we've covered these delta surges in Europe and the U.S. during previous episodes. But other countries, including South Korea and Vietnam, which are both part of the W.H.O.'s western Pacific region, have been dealing very recently with record breaking delta surges of their own, so it's not in the rearview mirror. At the same time, we're moving further and further into this transition phase, which basically involves



Omicron and its relationship with Delta, as I mentioned in last week's episode and during the previous update Omicron's ability to transmit is remarkable. And we're seeing more examples where it's out competing delta and driving up case numbers. Much like we saw it play out in South Africa, for example, Omicron now appears to be the dominant variant in London and is growing in other parts of the UK, with data suggesting its frequency is doubling every two to three days, prompting Prime Minister Boris Johnson to warn that a tidal wave of Omicron cases is coming. Sure enough, on Wednesday, the UK reported their highest single day case total since the start of the pandemic, hitting 78,610 new cases. For context, their previous record high was in January and stood around 68,000. In Norway, which is also reporting their highest case total since the start of the pandemic, Omicron is expected to overtake Delta in a matter of days. A similar situation is playing out in Denmark, where average daily cases are an all time high, that is now almost double their previous peak. Even in Canada, our neighbor to the north, we're seeing Omicron's impact, with Ontario reporting a rapid rise in cases that has coincided with the variant's growing frequency. For each of these locations mentioned above, the dynamic transmission that's been tied to Omicron has already generated a response. In Denmark, Norway and the U.K, we're seeing more and more emphasis being placed on the importance of third doses for all adults. Ontario is also expanding its campaign to get three doses into arms. Alongside the growing emphasis on third doses, we're seeing more restrictions being considered and implemented in some of these places, for example. England is once again mandating masks in certain situations and is in the early stages of rolling out vaccine passports for venues like nightclubs or sporting events. Denmark now requires bars and restaurants to close earlier than normal and has shifted schools to remote learning before the winter break. And in Norway, an indoor mask mandate has been put in place and gatherings are being restricted. Again, this is the response we're seeing to Omicron, with countries clearly concerned about the unknown threat it could present to their health care systems. In addition, it will be very interesting to see China's response to Omicron, with the country reporting its first cases of the variant on Monday. Up to this point, they've stuck to their zero COVID strategy, which has been repeatedly challenged by Delta. You may recall that I've talked about this in previous podcasts, and I have been questioning the ability for them to maintain a zero COVID policy. Just this week, an outbreak in a Chinese province that's known for its manufacturing prompted more than 20 companies to suspend operations to comply with local government orders, which have also resulted in tens of thousands of residents being quarantined, the suspension

of domestic flights, and widespread testing and tracing. If Omicron presents an even greater challenge, will China stick with the zero tolerance policy? Any answer to that question could have major implications, particularly as it relates to global supply chains. Even outside of China, what can we expect if Omicron's heightened transmissibility brings us to a new higher baseline? Even looking beyond just a disease standpoint, what do record-setting cases mean when it comes to isolation protocols and work? With their new single day highs for cases, both Denmark and the UK are expecting a sizable portion of their workforce to stay home and isolate. What ripple effects could we expect if that happens elsewhere? How will this impact certain work areas? I can envision a period in the next several weeks where many health care workers around the world, although vaccinated, will become infected with Omicron. They may be mildly ill, if even ill at all. Will they be allowed to work? Well the collapse of the combination of cases seeking medical care and the potential for a number of health care workers to actually be off of work because of their infection status. What will that mean? This is a pretty scary scenario, but it's one I think we're going to confront around the world. So there are a lot of questions that remain, which means that we still are in that unsatisfying and all too familiar wait and see mode. Clearly, we have a growing number of places closing on that wall of fog I mentioned earlier. We have yet to fully understand what awaits us on the other side. Again, time will tell and we'll do the best we can to keep you updated in the weeks ahead. I do believe we will see some dramatic events over the course of the next few weeks on a global basis. In the meantime, just remember, regardless, whether you're approaching a moose or a fog filled turn, there are tools that we have that can help us avoid or minimize harm. For example, on a windy road that's chock full of moose crossings and a lot of fog, you'd do much better off with the fresh set of brakes and good tires. Well, in this case, those three doses of vaccine are equivalent to the highest quality brakes or tires on the market. And while they don't guarantee that the road you're on will be obstacle free, they surely can help you navigate in a much safer way, which certainly beats the alternative.

**Chris Dall:** [00:30:53] Here in the United States, we're in the midst of the second wave of delta activity, with the seven day average of daily cases now above 120,000, several states calling in the National Guard to help with hospital staffing, holiday gatherings approaching, and the threat of Omicron looming. So, Mike, you've talked about that blizzard. Are we staring at that blizzard right now? And how concerned are you about the ability of our already stretched health care system to handle this?

**Michael Osterholm:** [00:31:23] Well, I do believe we are on the cusp of that blizzard, and the real challenge will be what that blizzard will look like. As you alluded to in your question, Chris, the situation here in the U.S. is really becoming this culmination or mixture of so many different ingredients, and we really don't know what the final product will ultimately look like in the weeks and months ahead. Unfortunately, one thing we do know in this country is what Delta is capable of. Even with the clear-cut lessons offered to us in the form of delta driven surges in places like India, Indonesia, Iran, Japan, South Africa, Israel and the UK, it still seems like it caught far too many of us off guard here in this country. Remember, on April 19th of this year, more than two months before our first delta wave, anyone 16 years of age and older in this country became eligible to receive a COVID vaccine. At that time, the U.S. was closing in on 590,000 deaths. So you'd like to think an announcement like that would be met with unopposed celebration. Of course, many did celebrate the news and booked the first appointment they could find, but a sizable chunk of the population didn't seem to share that same sentiment. Regardless, for the next month and a half, activity in this country dropped, eventually reaching the lowest levels being reported since the start of the pandemic. For many, COVID was now a thing of the past. Around the same time in April, India was an absolute house on fire, and talk began about this new highly infectious variant of the virus that helped fuel their surge. Well, as I hope we all know now, a variant that emerges on the other side of the world can end up our own backyard in no time, as is Omicron, and basically reshape our future with COVID. So while I won't belabor the point by retracing the entire journey of Delta in the U.S., I want to highlight what this variant has meant for the country. This week, the total number of COVID deaths in the U.S. surpassed 800,000. A sobering number, to say the least. But what makes it even more tragic is the fact that more than 210,000 of these deaths have occurred since the days where an adult in this country became eligible for a vaccine. And the vast majority of these deaths were caused by Delta. Yet here we stand basically six months out from the earliest days of our first delta wave, and it is still not done with us. In fact, since October 25th, when the country's average number of daily cases dropped below 70,000, representing the lowest point of the valley that separates our first and second delta waves, we've essentially seen this major resurgence. Now, as of this past Tuesday, less than two months out from that valley, average daily cases are back above 122,000. Remember on October 25th they were at 70,000. Today they are at 122,000. Hospitalizations have grown from less than 46,000 to more than 66,000 hospitalization

per day. And once again, nearly 1,300 Americans are dying from this virus on a daily basis. Some might conclude that the vaccines have had little impact, simply not true. In a very thoughtful publication by the Commonwealth Fund this past week, they estimated that approximately 1.1 million additional COVID deaths and more than 10.3 million additional COVID hospitalizations were prevented through November of 2021 by vaccines. That tells you what we could have done had we even had more use of vaccines by much of the population. So meanwhile, where are we today with vaccination? On October 25th, just over 58% of U.S. residents were fully vaccinated. As of Tuesday. That percentage stood at 61%, representing an increase of less than three percentage points in this very critical time with the Delta resurgence. In fact, at this point, the U.S. doesn't even rank among the top 60 countries and territories in the world when it comes to the percent of the population fully vaccinated. Again, not the response you'd expect or hope for from a country that is all too familiar with the pain and suffering that the virus can bring. And that's exactly what it's doing. Otherwise, over the last two weeks, cases have increased in 44 states, including the District of Columbia, with 32 reporting increases of at least 40%. Meanwhile, a total of 42 states have reported a rise in hospitalizations, with 22 documenting growth of 20% or more. Many of our hotspot regions that we've covered in recent episodes, like the Upper Midwest and the Northeast, remain that way. For example, Wisconsin now has the highest case rate in the U.S., with 100 cases per 100,000. Hospitalizations in the state are also growing very quickly. Then there's Michigan, which has had the highest number of hospitalizations per capita in the country, 47 per 100,000 population. Again, even in Michigan, which got ravaged by alpha last spring hospitalizations are at their highest level since the start of the pandemic, and similar situations are playing out in other Midwestern states, including Illinois, Indiana, Iowa, Minnesota and Ohio. For the health care workers in the state, the situation is as dire as it's ever been. I can tell you from my firsthand experience in my many conversations with these folks that this is in fact a very dire time. Just read the news that has been coming out in these states in the past week. In Wisconsin, hospital leaders have said they've reached a crisis point, with multiple regions of the state having zero ICU beds available. The same thing is happening in Minnesota, where some hospitals are now so overwhelmed with COVID patients they've had to postpone numerous procedures. An article published in the Minneapolis Star Tribune newspaper on Tuesday spoke to the reality of the situation, detailing the story of a 57 year-old Minnesota woman who has now had to suffer with excruciating knee pain for three months due to the lack of the capacity in the state's hospitals brought

about by COVID. Earlier this week, nine of the state's leading health care providers published a full page ad that featured a large, bold and powerful headline, "We're overwhelmed." On Tuesday, the Minnesota Hospital Association CEO shared the following, "We are running out of words to describe the crisis we are seeing in Minnesota. Our heart is aching. Our beds are full. Our emergency departments are full. Our hallways have patients in them, some on breathing machines. And at this point, our care capacity is stretched to the very limits." And in Michigan, a similar situation is playing out, with most of the state's hospitals now in code red triage, meaning they no longer can accept transfers. In all of these states, the message has been clear and compelling. Please get vaccinated. During a recent interview, one of the leaders of a major health system in Michigan was asked how people can support health care workers. He replied with the following, "If you really want to support your staff and you really want to support health care, heroes get vaccinated. It's not political. We need everyone to get vaccinated." Well, I'm not sure it can be made any clearer than that. Remember, this message is coming from the health care workers that live and work in our cities, towns and neighborhoods. Most have dedicated their lives to help us out during some of the most difficult and painful moments, and they're continuing to do so now. Even amidst the wave of seemingly endless patients, the majority of who are unvaccinated, they're doing whatever is possible with the staff and space they have available. Whether that involves using hallways or cleaning out conference rooms in return, they're simply asking us to exercise precautions and get vaccinated. If that request continues to be ignored, I fear that the weeks ahead, which should be one of the highlights of our year thanks to the holidays, will be memorable for all the wrong reasons in too many families. And as a result, we'll see more and more examples of COVID disrupting the routine health care services that many members of our society rely on each and every day. So I worry a lot about what's happening right now with Delta, both in terms of those who are becoming seriously ill, along with the massive burden that's being placed on health care workers. Now, with the Omicron entering the mix, I'm not sure what to expect during the months ahead. I think we can surely anticipate rising cases, but I think a key determinant in our fate ultimately falls upon the clinical picture of the disease. I desperately hope that this variant results in less severe disease. Otherwise, it doesn't take much to imagine what could play out if the clinical picture is similar to Delta, something which at this point I don't believe is the case. But nonetheless, we won't know for the next several weeks. In the meantime, whether it relates to Delta or Omicron, I take great comfort in the fact that I received three doses of

vaccine. If that's what it takes to support our health care workers who quite honestly deserve far, far more than that. I'm more than happy to oblige. Time will tell. What will the battle between Omicron and Delta look like? And when that happens, that will be the determining feature of which fork in the road this pandemic takes here in the United States and, for that matter, much of the rest of the world.

**Chris Dall:** [00:41:07] So, Mike, you just talked about the lagging vaccination effort in this country, but even before the Omicron variant came along, U.S. officials had begun urging fully vaccinated Americans to get booster shots, and that is now taken on new urgency with the Omicron variant. Is the U.S. getting people boosted at the rate it needs to be? And how does the booster effort affect the ability to get first and second doses to the rest of the world?

**Michael Osterholm:** [00:41:32] Chris, let me just start out with one very important point in this whole discussion. These vaccines are remarkable tools. They are remarkable tools, but they're not perfect. We know that to achieve the most protection we can, we now need this three dose approach for the mRNA vaccines and at least a two dose approach for the adenovirus vector vaccines, i.e. J&J. And at this point, I don't want people to be confused by are vaccines working or not. As I stated earlier, even with Omicron, we're seeing people who are fully vaccinated or, more importantly, with boosters having significantly less severe illness. So if you want to understand why vaccines are important, just continue to remember that you have anywhere from 12 to 15 times lower risk of dying from a COVID infection being vaccinated than not being vaccinated. That I think is such a critical point. So let me address the issue of boosters as anyone who's been listening to this podcast knows, I dislike that term immensely. I have been arguing for many months that we always should have considered this as a three dose prime series and that had we done that, we wouldn't be having the controversy about, well, wait a minute, the vaccine is not working, I'm not going to get it. As of today, we estimate that about 35% of people eligible for a booster dose in the U.S. has received one so far. Only 35%. Approximately 155 million people in the U.S. are eligible for a booster dose because they were fully vaccinated, that includes the two doses of Moderna, Pfizer, or one dose of J&J, at least six months ago or two months ago for the J&J vaccine. But only 54 million people the U.S. has received a booster dose. Understand that if you want to complete that protection that you have from the first two doses, this booster dose is really critical. Just four months ago, anyone who

talked about a booster dose was seen as advocating for a luxury dose of a vaccine that would hopefully reduce you from having even minor illness and taking vaccine away from the rest of the world. Today, we know that's not the case. Two doses of vaccine is a 50 foot rope. People are all drowning a hundred feet out. A booster dose gives you the full hundred feet of the rope. That's what you need to save people. So I think it's really important to get that message across. The number of people getting booster doses each day in this country peaked on December 6th at 958,000. Since then has decreased slightly, but does remain higher than the previous daily peaks we saw earlier in the fall, in October and November. There is very sobering news, though, however, how inadequate our booster dose work has been, particularly for those who are at highest risk of serious illness, hospitalizations and deaths. In a very important article that was published in the CNN website this week, they were able to document that only about half of fully vaccinated nursing home residents have received a booster dose of a COVID-19 vaccine, leaving this high risk group especially vulnerable to both Delta and, for that matter what we expect to see with Omicron. In addition, only about three quarters of long term care facility staff are fully vaccinated with their initial series of one or two doses, fewer than two thirds in some states. And only about a quarter of fully vaccinated staff have received a booster dose. Think about that, and only about a quarter of fully vaccinated staff have received a booster dose. If there was any place, we should be trying to bubble protection, it's in long term care facilities and yet we have been largely unsuccessful. So this is going to be a very important area over the course of the next several weeks, particularly as Omicron continues to spread quickly around the world. I hope that we have enough coverage in long term care not to see a major increase in illnesses, severe illnesses and deaths in this population, but I fear that the reality may be we are just too under-vaccinated in that group to accomplish that. Let me just make one last comment about the issue of doses of vaccine to the low and middle income countries of the world. People who have suggested that booster doses were robbing them of vaccine doses have a legitimate concern in the sense that we do have to realize that if we use more vaccine in one area, it may take it away from another area. But this is not a simple picture. And what I mean by that is, first of all, we all agree we should be moving vaccine to where the real disease issues are. And frankly, right now, they have been primarily in the United States, North America in general and in Europe. And so in a sense, that's what we're trying to prevent most of the infection. Now with Omicron I think that's going to change, the whole world will be lit on fire. But I think the important point to make here is is that it's not just simply having doses of vaccine

and delivering them to a country. For example, we learned this past week that the major vaccine manufacture in India was cutting its production in half because nobody was buying their vaccine. You know, that's that's not an indication of a vaccine shortage. Now there is clearly a shortage for the world, but the questions have all become why. Is it because countries aren't capable of distributing the vaccine? In many instances, that's one aspect that we have to address. The world has to assist these countries that don't have the infrastructure to get vaccines out. With that, it's not enough just to deliver vaccines. You've got to turn them into vaccinations. Then we also see in many countries of the world the same kinds of vaccine hesitancy and even vaccine hostility that we see here in the United States. You can't vaccinate someone who refuses to be vaccinated unless under force. And so we have a lot of work to do globally. So I just want to point out to you right now that I do believe that booster doses, as they've been called, that terrible term, here in places like the United States, are important in addressing this pandemic. We need to continue to up manufacturing capacity for the world and we need to assist the world in delivering these vaccines, whether it be infrastructure from the public health standpoint or even education in terms of helping people understand the importance of these vaccine doses. But for right now, I feel confident that we're getting the maximum out of our doses in terms of trying to protect people from a serious outcome with a SARS-CoV-2 virus.

**Chris Dall:** [00:48:50] Mike, where is our latest beautiful place submission from?

**Michael Osterholm:** [00:48:54] Well, Chris, as you know, I love this part of the podcast, to me, this is a highlight and I feel like it's a very important way to connect with our special podcast family. This one comes from California from Sandra. She writes, "Hello fabulous CIDRAP Osterholm podcast team, sending each of you thanks and good wishes for your good health and a holiday season full of peace and joy as much as is possible, given the demands of the work you all do to help us understand the changing landscape of the land of COVID. I have a beautiful place submission, the Shea Center Therapeutic Writing Center in San Juan Capistrano, California. In April 2021 I began volunteering at Shea as a side walker for our clients with physical, emotional and cognitive disabilities, children through seniors and military veterans receiving physical therapy and occupational therapy on horseback called hippotherapy. Then I became a horse leader in a barn steward as well. It quickly became my beautiful place during the disconcerting challenge of coping with the land of COVID. The peace and serenity of



the Shea environment would fill me completely from the moment I stepped out of my car and my feet landed on the crunch of pea gravel and took in my first deep sniff of horses and hay, my shoulders dropped and my heart felt the joy and anticipation of my volunteer day ahead. In the process of volunteering, it quickly became apparent why it felt so good deep in my soul to be part of this wonderful environment. The clients we serve benefit from the generous TLC they receive from the kind and giving spirit of our herd of horses, the kind and professional therapy staff, the supportive and appreciative volunteer staff, and the always helpful and kind team that drive and care for the horses. A sense of calm, peace and delightful therapeutic fun permeates the wonderful outdoor environment. Because it is an outdoor and therapeutic environment, we've been able to continue to serve our clients for this last year of COVID and boy, do the clients benefit. It is a truly magical place where I confess to always feeling I receive far more than I give from clients, horses and staff alike. Shea Center has been my peace of mind and a way to cope with all the things COVID, in turn helping me to be a better spouse, mother, grandmother, friend and therapist to everyone in my life. I am grateful and pleased to know so many others feel it too. By the way, I was hired on as an occupational therapy assistant in October 2021 to fill in for a few therapists on maternity leave. What a privilege and an honor. Shea continues to be in my beautiful place inside and out in this new position. I've attached a couple of photos of me at work to share the joy. That's me in the yellow shirt. Kind regards, Sandra." Well, we will post these pictures to the website. You must look at them. They're beautiful, and I can only say thank you to Sandra and all of her colleagues who do the hippotherapy. I actually have personal experience from a family setting with that type of therapy. It is remarkable and what a beautiful thing to be doing during this time of COVID at such a beautiful place. I hope you all go take a look. Thank you, Sandra, so very, very much for sharing this with us.

**Chris Dall:** [00:52:27] And just to remind our listeners, if you found a special place of comfort or solace during this pandemic and want to share it with us, please email us at [osterholmupdate@umn.edu](mailto:osterholmupdate@umn.edu). We love hearing about and seeing the places that have helped get you through this difficult time. Now to our closing Mike, what are your take home messages and closing thoughts for the day?

**Michael Osterholm:** [00:52:49] I think, Chris, it's very clear any summary of today's podcast can be really, in many ways summarized in two words: Omicron and Delta. And how does that fog and the moose come to play in all of this? We don't know. I hope that

one day we can report back that Omicron came through as Mother Nature's gift. It resulted in widespread transmission of a very mild disease that brought us some immunity. It basically outdid Delta, took away some of the severe cases. I don't know that, no one does. It very well may be that it's a much milder disease in Delta, but because of the sheer numbers of cases coming forward at us in the next three to six weeks, then it overwhelms our health care systems even more. That, too, is a possibility. I don't know what the future is. All I know is we are going to live in a COVID world for the weeks and months ahead. And in that summary, the one thing you can do more than anything else, protect yourself, your family, your loved ones, all the people you work with, your neighbors, the people you go to church with, the people you go to social events with. Be fully vaccinated with your booster too. That will give you the best opportunity to prevent any kind of serious illness from occurring and maybe even have some impact on transmission. So I leave it with this degree of uncertainty, but at the same time, the idea that there is something we can do, we're not helpless. We need to get people vaccinated. Before I move into our final lyrics of the podcast, I just want to acknowledge a sense of inadequacy that in fact, there are so many questions that you have that I have that the podcast team has that we just couldn't answer today. This is a time where we're tired. We really want some clarity. How long can this go on? What can happen next? And having answers, if nothing else, at least gives one a roadmap to the future. We don't have that right now. We'll do our best to try to interpret it for you. I do believe that the next weeks of the pandemic may be the most remarkable of the entire pandemic to date. And what I mean by that is the uncertainty is clear. But the potential implications are huge. I also want to just again remind everyone and I don't need to for this podcast family, but it's almost a prayer for me. We can't forget that each one of these cases is someone's father or mother or grandfather or brother and sister, a friend, a colleague. The deaths, they never go away. The people who are suffering from long COVID, the people who live in a sense of fear because although they're fully vaccinated, although they're trying to do everything they can to protect themselves, their underlying health conditions put them at increased risk of not being fully protected by the vaccine from serious disease. I think about all of you, I think of what is going on inside your heads, what is happening in your hearts. And so as I close this podcast, I just want everyone to remember that we will get through this. We will and we can do a lot to minimize the number of people that aren't there with us when we get through. Just get vaccinated. I have to leave us on an upbeat note today. I, I'm here another week. You're stuck with me one more time. That's a gift. Let me share with you the lyrics to a

song today that means a great deal to me. It was made famous by a singer whose voice is as close as I think you can get to a velvet voice. This is a song that has an interesting history to it. It was actually based initially on an instrumental theme used in the soundtrack for Charlie Chaplin's 1936 film *Modern Times*. Mr. Chaplin actually wrote this song in terms of the music. It was written in 1936 at the time of the film and then in 1954, actually, the lyrics were added by John Turner and Geoffrey Parsons. And at that point again, the song was there, but not really made famous. It wasn't until the very special Nat King Cole recorded the first version with the lyrics in 1954, reaching number 10 on the Billboard charts and number two on the UK singles chart. The version is also being used at the beginning of the 1975 movie *Smile*. This song has been recorded by many others, but no one has done it like the great Nat King Cole. This song "Smile." "Smile, though your heart is aching. Smile even though it's breaking. When there are clouds in the sky, you'll get by if you smile through your fear and sorrow. Smile and maybe tomorrow you'll see the sun come shining through for you. Light up your face with gladness, hide every trace of sadness, although a tear may be ever so near, that's the time you must keep on trying. Smile. What's the use of crying? You'll find that life is still worthwhile if you smile. That's the time you must keep on trying, smile, what's the use of crying? You'll find that life is still worthwhile if you just smile." So I send a smile to you on behalf of all of our podcast team. Thank you again for spending time with us. It means the world to us. Thank you for the many messages, the letters, the emails we get. As I've said week after week, we read them all. We read every one of them and they mean a great deal to our team. And I hope that the next week is a safe week. I hope the next week brings you more and more holiday cheer and that you, like so many others who want to have holiday get-togethers, are able to make that happen. But people who are fully vaccinated, we will obviously have more information to you in the days ahead about what fully vaccinated means with regard to Omicron. But I just want you to take a moment, be thankful for what we have. And remember to be kind. It's hard right now. Boy, is it hard? Be kind. Be thankful and thank you so much for listening.

**Chris Dall:** [01:00:18] 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](http://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](http://CIDRAP.umn.edu/donate-now). The Osterholm update is produced by

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