# Episode 95: Expect the Unexpected

**Chris Dall:** [00:00:06] 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. Last Friday, March 11th marked two years since World Health Organization Director General Tedros Adhanom Ghebreyesus first described COVID-19 as a pandemic. And last week, in a speech reflecting on the past two years and the future, Tedros said that despite the positive global trends we've seen in recent weeks, the term still applies. Although reported cases and deaths are declining globally and several countries have lifted restrictions, the pandemic is far from over, and it will not be over anywhere until it's over everywhere, he said. A stark reminder of the pandemic not being over can be seen right now in places like China, Hong Kong and South Korea, where cases, hospitalizations and deaths are higher than they've been at any point during this pandemic. It can also be seen in some European countries where health officials are keeping a wary eye on rising case numbers and hospitalizations that at this point aren't easily explained. And the W.H.O. this week reported its first increase in global cases since the end of January. Today, on this March 17th episode of the podcast, we're going to talk about what's going on in Asia and in Europe and what the European situation might tell us about where the US is headed. We'll also get an update on the situation in Ukraine and answer a COVID query about whether a fourth dose of COVID-19 vaccine will be needed and when. But before we get started, as always, we'll begin with Dr. Osterholm's opening comments and dedication.

**Michael Osterholm:** [00:02:09] Thank you, Chris. And welcome to all of you to another episode of the update. As I say weekly, welcome to all of you. If this is your first time with us, I hope that we provide you with the information that you find helpful. For those who are routine listeners and are continuing to listen, even though much of the world has wanted to drop off from the COVID reality, thank you for joining us again and again. I will say at the outset and it seems as if this is becoming a broken record statement, but these podcasts only get more challenging as we try to understand where we're at and where we're going. It's amazing to think that the first podcast episode was recorded on March 24th, 2020, and since that time of almost two years, we've now had 101 episodes, 95 regular episodes and six special episodes. And I have to say that they don't get any easier. You'd think by now we'd learn how to do this, like riding a bike. But as the information comes in, it gets more and more complicated. Today's dedication really is about something that's front and center in our world today. It's about the pain and suffering of being a refugee. We see it front and center with Ukraine and what's happening there. But the UN refugee agency estimates as of last year there are over 82 million individuals in this world who were forcibly displaced. Of which 25 million qualify as actual refugees. And the sad point of that is over one half of those refugees are less than 18 years of age. They're kids. We're seeing that with what's happening in Ukraine and the movement of people from Ukraine into the adjoining countries and watching the pain of that. This podcast is dedicated to all of you. Surely it won't make any difference really in your world. But the fact is, we must never forget about the least of our brother in this world and what is happening to them. Now, on the good news note, as we get started and this time of year is ample, ample evidence of good news when it comes to the light situation. Today, March 17th, the most special day in my late mother, Abby Ryan's life, St Patrick's Day. Here in the Minneapolis-St Paul area, we will have 12 hours and 9 seconds of sunlight. That is a substantial increase over of 22 minutes in 5 seconds from the 11 hours and 38 minutes of sunlight of one week ago. And we are now gaining light at 3 minutes and 9 seconds a day. We will continue to gain sunlight over the course of the next three months. However, the rate of increase will slow down as it gets closer to that June 21st date. But right now we're celebrating and for all of our colleagues in the Southern Hemisphere, we are projecting our ever increasing sunlight in your ever decreasing sunlight world. And thank you again for being with us. I hope that we can provide you with some context to this very crazy world called COVID.

**Chris Dall:** [00:05:23] Mike to start our international update, let's zero in on the western Pacific region where several countries are seeing their highest number of cases and deaths during the pandemic. What's going on in this region?

**Michael Osterholm:** [00:05:35] Well, for the most part, Chris, what's happening right now in the Western Pacific region is almost exactly what we've seen happening in every other region of the world throughout the past several months. It really is just the latest example of Omicron doing what it does. You may recall that back on January 28th, Dr. Zeke Emanuel and I actually authored an op ed piece in The New York Times saying that what is happening in China today was going to happen. So in a sense, this is not unexpected. I'm not going to pretend that we've cracked the code when it comes to Omicron. We haven't. In fact, we're still trying to understand the real world implications of the BA.2 Omicron sub lineage versus the original BA.1, which I'll touch on more in a bit. But based on what we do already know about this variant, I don't think that what's been playing out in the Western Pacific region, including China, should really come as a surprise to anyone. As a quick overview of the situation. If you look at the latest numbers published by the World Health Organization, you'll see that the region reported a record high case total last week, which stretched past 5 million. For context, this was the same region that reported less than 250,000 cases over the course of an entire week in late December. So in the 11 weeks since that point, which really marked the beginning of the region's surge, their weekly case totals have grown by more than 20 fold. Now what we're going to talk about, the Western Pacific region and what's happening there. It's notable that if you look at the countries reporting the highest incidence of cases right now, yes South Korea, Vietnam and of course, China are all part of that western region. But also this week, we saw Germany, the Netherlands and France also make it into that top list, and I'll come back to those European countries later. But it's a reminder that as much as we're focused on the Western Pacific right now, we also have emerging activity in Europe. To help put this into perspective, the latest total cases from the Western Pacific region was enough to more than offset declining cases in four of the five remaining W.H.O. regions, pushing last week's global case numbers to just under 11.6 million, which was up from 10.5 million the week prior. Again, if you look at the W.H.O. dashboard, you'll see that this was the first weekly increase we've seen in global cases since we reached the record high Omicron Peak set in late January. At that time it was 23.3 million. Of course, as everyone knows, a surge in cases, unfortunately and it's all too often followed by a growing number of deaths, especially when these case surges record record high levels. Well, that's happening in the Western Pacific, where deaths have more than doubled since last January, already placing the region just below levels reached during their deadliest delta wave this past September. Unfortunately, with more than 6,600 deaths reported last week and with such high levels of transmission still being reported, I think the Western Pacific region will far surpass their deadliest weekly total of 6,900 deaths. So despite what's happening here in the US, where many seem to view the declines from our own recent Omicron Peak as a signal that this pandemic is over, there are still a number of countries and an entire region experiencing some of the worst surges to date. Now, I know we've touched on a number of these places in the past several episodes. And to anyone who's listened to this podcast over the course of the past several weeks, it might seem like these different Omicron surges I've described are almost one in the same at this point. With every few weeks marking a new handful of hotspot countries facing a surge that will inevitably lead to record high cases. At the same time, it's worth recognizing the fact that a lot of this overlap is a byproduct of Omicron actually being remarkably consistent. Remember, with previous variants like Alpha and Delta, there always seem to be those places that should have outbreaks based on the number of people vaccinated and yet we never saw an uptick in cases in those communities. In some situations, an eventual surge would almost seem localized like alpha, after having a major impact on Europe, basically hit largely just Michigan and Minnesota in the United States. And other situations be more widespread, but only after an unexplained dormant phase like Delta hitting Eastern Europe last fall. And then there were those places where certain variants didn't seem to take off much at all, like Delta in many Latin American countries. Well, that hasn't been the case with Omicron. Once it becomes established in an area, it spreads. It becomes the dominant variant and it drives up cases. Honestly, I'm hesitant to use the word inevitable to describe this virus, which has a track record of being unpredictable. But with Omicron, the surges have almost felt inevitable. Now, some might somehow view that as justification for doing nothing. No, no. That is absolutely the wrong approach. The right approach would involve making every effort to prepare for the variants arrival. Of course, I know that's easier said than done. And there were those places hit early on by Omicron that didn't have the opportunity to further prepare, even if they had wanted to. Other places might have had weeks. Well, realistically, what impactful changes could be made in one or two weeks? Three weeks? Again, it's not a lot of time, even for the most proactive of countries, but at the end of the day, it's still time to do different things like preparing for the public in your messaging, emphasizing the importance of those additional third doses, and encouraging high quality respiratory protection, which hasn't been done in many places, including the United States. And finally, there were those places that were maybe afforded the luxury of a month or more before Omicron would set up shop. Of course, many of these places, including Hong Kong, Singapore, South Korea and Vietnam, are the ones that are still experiencing that surge. However, while I fully recognize that an ongoing surge can cause things to change, I think the general trajectory of activity between some of these places is already quite evident. In other words, I think you can get a sense for those places that prioritize shoring up their vulnerable versus those that left some gaps unprotected. Now, in all these places New Zealand, Australia, Hong Kong, Singapore, South Korea, Vietnam, China, the Omicron surge has caused cases to reach record highs. Again, this shouldn't come as a surprise. And although the vaccines alone couldn't completely shield these places from the case surges, we can see the difference they're making when it comes to the levels of severe disease and deaths that have resulted. As an example, South Korea, which is reporting their highest number of cases yesterday at 400,000 cases and the highest number of daily deaths since the start of the pandemic. And this is a challenge and shouldn't be minimized. But on a per capita basis, their latest death rate was about 4.5 per million population. Although that number will likely continue to grow, I don't anticipate that it will reach the levels report out of Hong Kong, which is approaching nearly 38 deaths per million. This is now the highest death rate in the world. Tuesday, Hong Kong reported 27,765 cases and 228 new deaths, more deaths than they'd had in the first two years of the pandemic. So why the stark contrast? Again, it comes down to one single word: vaccines. What proportion of the population have received adequate protection from the vaccines? On top of that, are you providing that protection to the most vulnerable? With more than 90% of South Korea's elderly population having received an additional dose, you can see that they've built up a significant amount of protection among members of a group that are at the higher risk of poor outcomes. Remember, that country still hit record high deaths from this surge. However, while I know this has been extremely challenging for South Korea, just imagine that the vaccination rates in their elderly population were similar to Hong Kong, where basically two in three residents 80 and older didn't even have two doses when the surge arrived. Tragically, with what's playing out in Hong Kong, we don't have to imagine because we're seeing it firsthand. So why do I say this? Well, it's not to belabor the point, and clearly there are no do overs. Instead, I raise it because the situation in China, which we covered in last week's episode, has only gotten much worse. On Tuesday, they reported more than 5,100 total cases among 21 Chinese provinces and municipalities, including Beijing, Shanghai and Shenzhen. The total is up from several hundred cases being reported on a daily basis just last week and the few dozen cases China reported in early February. Omicron now accounts for at least 80% of the activity. Again, officials are reacting to outbreaks with the familiar approaches they've relied on in the past. As a result, as of yesterday, there were more than 52.5 million Chinese residents across numerous cities and even an entire province in lockdowns. We're already hearing about a growing number of impacts this is having on major supply chains. Businesses are suspending operations and there are substantial shipping delays. Let me make it clear, I do not see how these strict lockdowns will stamp out Omicron in China, but at best it may just slow it down. I do believe China is starting to realize that any sizable outbreak will likely put them on a path that's more similar to Hong Kong than South Korea. Why? Well, like Hong Kong, they have struggled to shield their most vulnerable. Remember, just over 50% of Chinese residents 80 years and older are fully vaccinated. This means that an estimated 15,000,000 80 plus year olds in the country lack that protection. In addition, as I discussed last week, we have real concerns about how effective the Chinese vaccines Sinopharm and Sinovac actually work against Omicron. So why weren't they preparing for the possibility of Omicron spreading in the country and challenging the utility of their zero-COVID approach? I believe seriously, they did not understand from an epidemiologic standpoint the increased transmission of Omicron compared to all the other previous variants we've seen with SARS-CoV-2. In that regard, they surely underestimated the power of Omicron in terms of its transmission. That now is going to play out for the weeks ahead and particularly from global supply chain standpoint, I think the world is going to recognize that China's approach to COVID in the end was not any more successful than anyone else's.

**Chris Dall:** [00:16:34] So let's turn now to Europe, where the United Kingdom, France, Germany and the Netherlands are among the countries seeing an uptick in cases and some are seeing hospitalizations climbing as well. It appears there could be several factors at play, but do you have a sense of what's driving this, Mike?

**Michael Osterholm:** [00:16:50] Well, let me provide a perspective for this answer right up front. Remember that key word, humility. This is an example of where we have to be well steeped in humility, because no one can tell you with any real confidence what's happening and why. This virus is doing what this virus does. Its unpredictability, even with an Omicron variant that we have come to learn about all of COVID. And so let me just put that caveat upfront. I'm going to give you my best shot at this, but I truly believe it'll take potential weeks before we have a better understanding of why we're seeing what we're beginning to see. So, Chris, based on the data we've seen and the conversations I've had with many of my colleagues, both from Europe and from here in the United States, we are all asking the same question. So this is the greatest irony of all. In an update I just gave on the Western Pacific region, I mentioned the consistency we've seen with Omicron surges to date at least these initial surges, those initial viral blizzards I mentioned that the consistency we've seen with Omicron surges to date is remarkable. But once that initial surge is done, I don't think we do know what's coming next. And we have to be mindful of that. Of course, some places are still really experiencing that initial surge of Omicron, much as we just discussed about the Western Pacific region. And others are looking in the rearview mirror at what has happened to them over the past several months and what they're doing to recover. And from what I've seen in all these different places, that consistency we saw early has now gone out the window once the initial surge is over. That being said, a number of countries in Europe are seeing these recent increases after weeks or even months of fairly steady declines off of their Omicron peak. In fact, this appears to be happening in around half of all the European countries. You mentioned the U.K., France, Germany and the Netherlands in the lead up to your question. Chris, similar upticks are also emerging in countries like Belgium, Finland, Italy and Switzerland. Overall, the activity there has driven up per capita cases for the European Union as a whole since late February. And it's not just cases, hospitalizations in a number of these countries are also on the rise. So why these sudden reversals? Remember, everybody was talking is this now an endemic situation? Is this something we can expect to see next year? What does this mean? Well, at this point, it's unclear. Now, there are a few different theories and explanations that have been raised which surely could be contributing. But none of them none of them can explain what's happening. First of all, there is the growing prevalence of BA.2 as an Omicron sub-lineage. As I've pointed out in previous conversations, this was something we expected to see happen based on its increased transmissibility. I'll say more about this in a moment. Number two, maybe it's possible waning immunity, even with booster doses. We have to understand that at 5 to 6 months out from the last dose of vaccine, particularly the mRNA vaccines, this may be a new reality, waning immunity. And then, of course, there's the relaxation of restrictions. The whole idea of masking and the issue of how people were able to come together in public places. Could this facilitate transmission? I've already commented enough times on what I think is the limited utility of inadequate masking, meaning just mandating putting something in front of your face. But surely we know that with high quality masking we can make a difference. So the challenge is, is that when you start digging into these possibilities, there just aren't any clear patterns as of today. Of course, we've seen the BA.2 lineage take over BA.1 in a number of countries. And studies have indicated that, as I pointed out, BA.2 is possible up to 30% more transmissible than BA.1. But the timing of when BA.2 became dominant and when these upticks started doesn't match up very well with the actual increase in cases. Remember, in countries like South Africa, the BA.2 sub lineage didn't seem to lead to any uptick in cases at all after it displaced BA.1. So it's not just that simple answer of the sub-lineage changing. A similar theme emerges when you look at the possibility of waning immunity. Some have attributed the UK's uptick to waning immunity, even from additional doses, since they're now five or six months out from administering those. But distribution of those doses went by age group, meaning older individuals received their additional doses first, then the next age group were eligible, etc.. In other words, if we're a product of waning immunity from additional doses, you might expect a much higher burden in those older age groups who are further out from that dose. However, in reality, we are seeing cases growing at similar rates across all ages. Remember, this wasn't the case when the initial Omicron surge took off there. So it can't be solely explained by waning immunity from booster doses. And finally, there's the idea that these upticks are a direct result of countries choosing to relax certain restrictions. Again, it's hard to know what role, if any, of these have actually played. There is not a direct relationship between the relaxation of these restrictions and then suddenly one, two or three weeks later, an uptick in cases. So where do I come back to? Humility. We just don't know. But we need to pay attention to what's happening here because it very well likely is giving us a view into the future. Remember all the issues I just talked about here, whether it be the prevalence to BA.2, possible waning immunity, the relaxation of restrictions are all reality issues here in North America. So we shouldn't be surprised if we see increasing case numbers here in the United States. And let me add one footnote to this issue. We don't know where this surge that's occurring in Europe right now is going to go. Will it only continue to increase for the next week or two? Will it be four or five weeks? What role will vaccines play in protection? What will happen to those who have previously been infected? Will they have long term immunity from the virus? We just don't know. I could not tell you if my life depended on it, how high this next peak is going to go. I can just tell you that it's happening and we have to be mindful of that.

**Chris Dall:** [00:23:27] While we're on the topic of Europe, Mike, do we have any information on the COVID situation in Ukraine or in the countries that are housing the bulk of Ukrainian refugees?

**Michael Osterholm:** [00:23:37] Well, Chris, as I started this podcast with a dedication to the refugees of the world, it's clear that there are many who are suffering, who are experiencing conditions of war throughout the world. But none right now is more obvious and more difficult to watch than what's happening in Ukraine. As far as what's happening with COVID, for the most part, we still have very little information about that. Ukraine has not reported any new cases or deaths as a government reporting entity since the day of the Russian invasion February 24th, when over 27,000 daily cases were reported. A hospital in Lviv has reported that some regions of the country that have been less affected by the violence have started tracking cases and deaths again, with 6,112 cases and 115 deaths reported on March 9th. But this is, of course, lacking data from many parts of the country. Just as much of the country does not have the capacity to test and report cases. They have also lost the ability to vaccinate their population, which was only 35% vaccinated with two doses before the invasion. Even for those fully vaccinated with two doses, waning immunity is surely a real concern, especially since less than 2% of their population has received a booster dose. There have been at least nine health care facilities in Ukraine hit by Russian attacks, and hospitals that are still standing are likely overwhelmed with trauma patients and supply shortages, which means patients with severe COVID are very unlikely to get adequate treatment. As I noted in a previous podcast, polio also remains a concern in the country, especially given the living conditions in many bomb shelters and refugee camps. But just like with COVID, the government has been unable to report on whether or not they have seen any new cases. And as you noted in your opening question, Chris, there's also concern about COVID spread within countries that are hosting large numbers of Ukrainian refugees. As of March 14th, Poland has now taken in 1.8 million refugees from Ukraine. Hungary, Slovakia, Moldova and Romania have all taken in over 200,000 individuals. All of these countries are past their Omicron Peak and fortunately are currently seeing declines in overall case numbers. But it is possible this could change as more refugees arrive needing to live in crowded conditions that could lead to COVID transmission. In short, this is the worst of the worst coming together, infectious diseases and war. And we're seeing it firsthand.

**Chris Dall:** [00:26:20] Turning now to the United States, while cases, hospitalizations and deaths continue to decline here, I think for many of our listeners who have an eye on the situation in Europe and are well aware of previous patterns during this pandemic, the question now is, will we be seeing a similar uptick in cases in the next few weeks? Mike, is there any reason history won't repeat itself?

**Michael Osterholm:** [00:26:42] Chris, again, the operative word with this question and the answer: humility. Humility. As I just noted, we've seen a rise in case numbers in more than half of the European countries over the past 2 to 3 weeks. But as I noted, it remains unclear why this is occurring. As a result of this lack of clarity, we can only project to the United States the fact that we have very similar conditions here, as I noted, occurring in Europe with regard to the increasing prevalence of BA.2, the potential for waning immunity, and the fact that most restrictions are being relaxed throughout the entire country. So we don't know. But given this fact, I think we can expect increased transmission of this virus here. And in a moment, I'll give you the first evidence we have that that's likely occurring. I think this does pretend another surge in the United States, the magnitude of impact which cannot presently be determined. And that is obviously very unpleasant news to those who had decided the pandemic was over and they had moved to what has been called, quote unquote, the endemic period. So what is our current status? The US has now had a decline in cases since mid-January when we had a national daily average of 738,000 cases. Let me repeat that, 738,000 cases reported. 49 states have continued to see declines in cases, while only one state, Texas, has seen a very small a 1% increase in cases over the past two weeks. We are now at a daily average of about 32,000 cases a day, only 4.5% of the cases reported two months ago. Overall, the US is seeing an average number of cases, which is 47% lower than the daily average we just saw two weeks ago. This is the lowest daily average we have seen since July 19th, 2021, prior to the Delta surge. On Tuesday, daily hospitalizations were at nearly 28,000, down 43% from just two weeks before. And there were 1,200 daily deaths on average, which is down 32% from two weeks before. Hospitalizations and ICU admissions are also the lowest they've been since mid to late July 2021. Given that 35% of the US population remains unvaccinated and less than half of those who are vaccinated have received a booster dose, I don't believe for a second that these declining rates will be sustained, especially given what we're observing happen in Europe and what we're beginning to see here with the wastewater surveillance. As most of you know, one way to monitor populations of COVID is through this wastewater surveillance where we detect the virus, which is being excreted in the stool by infected individuals. We've typically seen that trends in wastewater levels are highly indicative of trends in COVID cases in the days and weeks to follow, meaning that we would expect to see case numbers rise in areas we are seeing increased presence of the virus in wastewater. CDC's wastewater data is showing an increase in virus activity in over a third of the sites from which they have collected samples from March 1st to March 10th. This is compared to the time period of February 1st to February 10th, when there were only 15% of the sites increasing and 80% showing decrease in activity. I believe these wastewater trends are a clear signal that an uptick in cases and hospitalizations is on the way. So in short, again, I can't explain to you why these increases are occurring in Europe or why we're beginning to see an increase in activity in wastewater surveillance. I can just tell you, I think the virus is coming back. This is a hard message for people to hear. Again, the most important thing we can do is get as many people vaccinated at least three doses as quickly as possible to try to reduce the potential for serious illness, hospitalizations and deaths. And knowing that, again, this virus is throwing us another 210 mile an hour curve ball. For those who had predicted its demise, for those who had predicted the fact that we would be in a summer of quiet, we just have to understand, this is SARS-CoV-2. This is COVID. This virus is largely dictating the rules of the game. We are the ones that are trying to compete against it.

**Chris Dall:** [00:31:13] Another question here on the national situation, Mike. Last week, Congress passed a government funding bill that stripped out about $15 billion in COVID funding. And the Biden administration has actually requested even more, I think it was $22 billion. Regardless, we now have no funding for future COVID efforts, and the Biden administration has announced that they're going to start winding down some programs. What are your thoughts on this?

**Michael Osterholm:** [00:31:41] Well, I worry very much, Chris, that we as a world are again assuming that COVID is over with. This is a challenge that I've worried about for months. You've heard me say it on this podcast time and time again. It won't be over until it's over, and we have no idea when that will be. So when one looks at the need to provide resources to respond to COVID, if you believe it's over, there's no reason to need to respond. Now, I think the situation is a little bit different here in Washington with regard to this issue. It's not about the pro-response or anti-response groups. It's about the fact that among at least certain Republicans, they've had a concern about how much money was moved to the states, what it was used for, and how much is still available. And so their response was, if we need to fund additional programs relative to COVID, we should claw back that money and use it if it was not spent or it was spent for something not intended. You know, it's kind of hard not to agree with that. But the administration is saying the states are not going to move this money back. The governors were very loud and clear about that. So what's happened? In the meantime funding for very critical programs is now held hostage. You're right, the administration asked Congress to immediately provide $22.5 billion in emergency funding to deal with one, providing adequate monoclonal antibodies to the states. With a lack of funding, there'll be fewer monoclonal antibodies sent to states and the inability to purchase additional treatments. Number two, there will be fewer tests available to Americans. Number three, there will be less surveillance for future variants, including the wastewater data program I just talked about. And we even run the risk of running short on vaccines. Now, how can anybody be against trying to fund these things? These are not controversial. So what we need to do is appreciate that the issues here are not about funding these programs as such, they're about where does the money come from. Now, ironically, as I talked about in this podcast several weeks ago, I was part of a group that put forward a roadmap for what we need to do in the next year to really prepare ourselves to respond to COVID day in and day out, whether we see new surges or not. To how we can make our buildings safer? How can we make transportation safer? And that had a price tag of $100 billion for which we felt was very cost effective because of the amount of damage it could do to our economy, to human suffering, health care costs, etc.. So no one's even asking for the $100 billion the administration is asking for the $22.5. And as you noted, Congress came back and even cut that to $15 billion, which they still didn't get passed. So this is critical. We have to get this done. We can't hold this hostage. Human lives are at risk. We are now playing with infectious disease fire. So we've got to resolve where the money comes from to pay for these things. They're not controversial. They're not issues of political ideology, at least in terms of what we're trying to support. How the money gets there, may be. But I would hate to think that we would risk human lives for a political point right now. And so our hope is, is that this can be quickly resolved. And these monoclonal antibodies, these tests, the surveillance activities, the vaccines all can be procured with the funds that we so desperately need right now.

**Chris Dall:** [00:35:32] Dear Dr. Osterholm, for those of us over 60 who are vaccinated with three doses but are now 5 to 6 months out, what is going to be the recommendation? Get a fourth vaccine or wait for the new Omicron specific vaccine? And Mike, this is a question that we're getting from a lot of listeners, and it's a timely one. As Pfizer and Biontech this week requested emergency use authorization for a fourth shot in people 65 and older. So what can you tell listeners who are in a similar situation to Patricia?

**Michael Osterholm:** [00:36:01] Well, Patricia, first of all, thank you for that very thoughtful question. It is one that is being asked by many right now. And even among those younger than 65 years of age, will a fourth dose eventually be necessary? Let me just kind of set the stage for this discussion. As we've been detailing throughout the history of this podcast, understanding how these vaccines we use protect us and what that immunity means over time has been something we're learning about every day. You know you can't study three years worth of protection for a vaccine that's only been used for 15 months. So one of the challenges we have right now is we're learning about waning immunity, which is what this whole discussion is all about. Do I need an additional dose? Now, initially, remember, the two dose vaccine appeared to have been the magic bullet. Not everyone agreed with that, including me, that I knew we needed to follow these out to understand the durability of this immunity. And over time, we came to realize that for those 65 years of age and older, those who are immune compromised, clearly we needed a third additional dose. As you may recall, I've been urging for some time that we stop calling people fully vaccinated after two doses, but all along this should have been a three dose vaccine. And so now today, I want to call that fully vaccinated. The fourth dose would be then, in a sense, the first booster dose. And I think the data that I've seen so far from Israel, which is limited, would support that in fact, a fourth dose may be very important in reducing the incidence of serious illness, hospitalizations and deaths, particularly for those who are older. The Pfizer data that has been submitted to the FDA, I think will support that position. So I think it will be only in short order that you'll see a new recommendation come out that not only now should those who are immune compromised, for which a fourth dose was recommended some months ago, but for those 65 years of age and older it will also be recommended. Now, where does that go from there? Well, I think that ultimately you're going to see data, just as we saw with third dose, where our group, for example, at CIDRAP has looked very carefully at the data on third dose among all ages. And we can show that it does reduce serious illness, hospitalizations and deaths, even in those who are young, healthy adults, 18 to 39 years of age, all the way up through the age spectrum. So that that's why today third doses are routinely recommended for virtually everyone. Well, what is it going to mean? Are we going to say a fourth dose then for everyone? And I think that's a real possibility. But this is where it gets difficult, and that is the fact that we cannot boost our way out of this pandemic with these vaccines. I'm convinced of that. Are we going to need a new dose every six months? Are they going to be once a year? And I think this is something that we just have to consider that, yes, this may become an annual immunization at the very least, and even then it may be largely to help protect us from serious illness, hospitalizations and deaths not getting infected. And we just have to understand that's a possible future scenario. Now, on a global basis, this is going to be extremely, extremely difficult, if not impossible to carry out. How do we get people vaccinated right now with two doses or three doses in many parts of the world? And then on top of it added an annual immunization? If you look at, for example, with annual flu shots around the world, only a very small percentage of the world's population ever has access to a seasonal flu vaccine. And now we're going to make this a vaccine available for the whole world? Of course, this doesn't account for the fact that we have so much vaccine hesitancy and hostility in places that it may not matter what you recommend, they won't take it anyway. But the point being here is, is that we are going to need new and better vaccines, and we will be putting forward with our efforts an entire plan for how we need to get to vaccine 2.0, 3.0, 4.0. That may potentially provide us much more durable protection over time and one that has a much broader spectrum of protection. So to answer your question, I think you're going to be recommended to get a fourth dose of vaccine very shortly. It won't be Omicron-specific. Remember, again, even with Omicron-specific vaccines, the next variant could show up tomorrow and it wouldn't be Omicron. And so I think we are going to have a lot of discussion even about coming up with variant specific vaccines, but it's in the works, but we can't boost our way out of this pandemic, and that's something we're going to have to look at very carefully.

**Chris Dall:** [00:41:00] Just to note for our listeners that we don't have a beautiful place to share with you today, but if you have one for us and remember it doesn't have to be a physical location, please email us at osterholmupdate@umn.edu. So Mike, what are your take home messages and closing thoughts for today?

**Michael Osterholm:** [00:41:18] Chris. I have three take home messages. The first one, the Western Pacific region, has some very, very tough days ahead and notably China. And I think that the economic implications of what's going to happen in China in terms of supply chains, the other global crisis of Ukraine is going to lend itself to a very, very difficult situation in terms of what the Chinese do with their zero-COVID approach. If they continue to lock down large areas, then the world has to expect that we're going to have a lot of very serious knock off impacts. For example, as I've shared on this podcast with you before, our group here at the University of Minnesota and CIDRAP have been following very carefully and in a comprehensive manner the actual availability of 156 critical life saving drugs, drugs that we need every day or people die. What's on the crash cart? What's in the emergency room? What's on the ambulance rig? And of those 156 drugs, they are virtually all generic drugs, many of them have active pharmaceutical ingredients that come from China. If we lose parts of China, either because of a war or right now because of supply chains that can't be met because of COVID, the impact of this could be huge. And so we're continuing to follow that. And I just want to make it very clear that what happens in the Western Pacific region is of vital importance to the world. Of course, it's important to the health of those individuals living there, but it's also very important to the health of the world. My second point, expect the unexpected. It was very unfortunate just this past week, there was a new story on the front page of the Minneapolis Star Tribune newspaper, my hometown newspaper, which actually quoted an infectious disease expert from the Mayo Clinic. And the story actually said the fortunate thing right now is we're continuing to see case numbers fall as we approach this new normal. And it went on to say immunity should be widespread enough to suppress COVID-19 through spring and much of the summer in the United States, the individual said. The fall remains the big unknown, and that's where it's going to be important for all of us to keep our eye on. Well, what information did that individual have that allowed them to make that statement? None. Because just what we're seeing happen in Europe, what we're seeing right now in the early data from the wastewater surveillance, we have made assumptions over and over again that we've hit that, quote unquote, endemic period where we have widespread immunity. You surely could have said that about all these countries in Europe six weeks ago after the big Omicron surge, on top of what had previously been a Delta surge, which on top had previously been a alpha surge, and then on top of it all the vaccination and yet look what's happening. And so I just wish people wouldn't make these statements publicly like this with such definition, because then the public comes back days and weeks later and says, Wait a minute, you told me that this was done and you're from a prestigious institution, so therefore you must know what you're talking about. And that's what we've been really caught in the back and forth. So please understand we must expect the unexpected yet. This pandemic has not done. And I know as many of you dislike hearing me say, that I'm Dr. Doom., Dr. Gloom. No, I'm trying to be a realist. I'm just trying to be a realist. Finally, let me just say the third point. Vaccine, vaccine, vaccine. And I could probably add in 957 more vaccine labels after that. That is still going to be the key in reducing serious illness, hospitalizations and deaths. And all that I can say is, is that for those who are vaccinated with three doses and now likely four doses, your chances of having a serious illness, being hospitalized or dying are dramatically lower than those who do not have that level of vaccines on board. Even for those who are immune compromised, this may give you an added benefit that while it may not keep you from becoming ill, it will keep you from dying. Wow. What a gift. What a gift. So please continue to push vaccines. So Western Pacific, key. Expect the unexpected, key. Getting vaccinated, key. Those to me are the three take home messages from this week.

**Chris Dall:** [00:46:15] And do you have a closing song for us?

**Michael Osterholm:** [00:46:19] I do, Chris. As you know, you and I spend a fair amount of time every week trying to figure out how can we best tie all of this podcast together in some meaningful way. And surely there are many out there who have authored great words of wisdom, thoughtfulness, emotionally tugging comments that helps kind of bring it all together at the end. This was a hard week to do that. This is a week that we're hurting. We're realizing, wait a minute, another wave may be coming. It's a world that's realizing that the issues in Ukraine provide such challenges for us. So we tried to find a song that would actually reflect that, but with hope. And I think we did. We actually came upon R.E.M.'s "Everybody Hurts," a song that we used in Episode 34, December 3rd, 2020, hard to believe that long ago. "Everybody Hurts" is a song by R.E.M. as I noted, it was from their eighth studio album, "Automatic for the People," released as a single in April of 1993. It peaked at number 29 on the US Billboard Hot 100 and reached the top ten on the charts in Australia, Canada, France, Iceland, Ireland, the Netherlands and the United Kingdom. In 2003, Q ranked "Everybody Hurts" at a number 31 in their list of the top 1001 best songs ever. In 2005, Blender ranked the song at number 238 on their list of greatest songs since you were born. There were four songwriters here that authored this song. Bill Berry took the lead, but it was Peter Buck, Michael Mills and Michael Stipe. I think the song captures the moment, "Everybody Hurts." "When the day is long and the night, the night is yours alone. When you're sure you've had enough of this life. Well, hang on. Don't let yourself go. Because everybody cries and everybody hurts sometimes. Sometimes everything is wrong. Now it's time to sing along. When your day is night alone. Hold on, hold on. If you feel like letting go, hold on. If you think you've had too much of this life. Well, hang on. Because everybody hurts. Take comfort in your friends. Everybody hurts. Don't throw your hand. Oh, no. Don't throw your hand if you feel like you're alone. No, no, no. You are not alone. If you're on your own in this life, the days and nights are long when you think you've had too much of this life to hang on. Everybody hurts sometimes. Everybody cries. And everybody hurts sometimes. And everybody hurts sometimes. So hold on. Hold on. Hold on. Hold on. Everybody hurts. No, no, no. You are not alone." "Everybody hurts," by R.E.M.. Well, thank you so very much for being with us again this week. As I leave you, I feel like I've created more chaos and confusion than I did bring clarity to the topics at hand. But then this is COVID. This is the world that we live in with it. Now is the time to remember those you love. This week, someone who is a dear friend of mine died from COVID. I wished I had spent more time before he did, telling him how much I appreciated him and what he meant to me. Well, for many of you, fortunately, you won't have friends, family or colleagues die of COVID, but it's never too early or too late to tell them how much they mean to you. I wish I had done more of that this week. I didn't. So just think about that. Think about the moms and dads, the aunts and the uncles, the grandpa and grandmas, the brothers and sisters, the sons and daughters who have been suffering at the hand of COVID for the past two years and who are not with us right now. Now is the time to remember them, but to also celebrate those we're still with. So be kind. Be kind this week. Go out of your way just one time to do something you would not normally do and watch somebody respond appreciating that you were kind. So we look forward to you joining with us next week. We promise we'll be back. I can only hope that I can provide you more clarity on what's happening with this new surge of cases, what it means. And in the meantime, be kind. Be safe. And thank you so much for being with us.

**Chris Dall:** [00:51:20] 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. This podcast is supported in part by you, our listeners. If you would like to donate, please go to CIDRAP.umn.edu/donate-now. The Osterholm update is produced by Maya Peters, Cory Anderson, Angela Ulrich, Meredith Arpey, and Sydney Redepenning.