# Episode 98: A Stay-Tuned Moment

**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. We've spent a lot of time over the past two years talking about the patterns of peaks and valleys established by the SARS-CoV-2 virus and its numerous variants. And if you're a regular listener, you're quite familiar with these patterns. But we seem to be in a place right now where what happens next and whether those patterns will continue is an open question. In the US, we've been expecting to see a nationwide increase in new COVID-19 cases driven by the BA.2 variant, but it has yet to develop and what it will look like is unclear. And with testing and surveillance declining in the U.S. and many other countries, as people and policymakers move on from the pandemic, we may have less insight into what is actually happening, much less what comes next. That will be the focus of our discussion here today on this April 7th episode of the podcast as we assess the state of the COVID-19 pandemic here in the US and around the world. We'll also answer a COVID query about the spread of avian influenza and share the latest beautiful place submission from our listeners. But before we get started, as always, we'll begin with Dr. Osterholm's opening comments and dedication.

**Michael Osterholm:** [00:01:49] Thank you, Chris, and welcome to all of you back to another episode of The Update. We're so glad to have you with us. If you're a first time listener, I hope that we can provide you with information that's useful and helpful. For those who are part of the podcast family, welcome back. It's always good to have you with us. It means a great deal to us. And again, I say time and time again, but I can't say it enough times how much we appreciate your cards, your emails, your thoughts, your support. And the fact of the matter is, if we look at our audience dynamics in terms of numbers of listeners and people who download the podcast, it's remained very consistent over the course of recent months, which says something about your loyalty and that you still have an interest in finding out more information about what's going on with COVID. Well, today, like I do so often with these podcast introductions, I will warn you upfront, there's going to be some ambiguity, there's going to be some lack of clarity. There's going to be a lot of I don't knows. But we'll tell you what we do know. I will share with you what I saw this morning when I woke up and looked at that crystal ball alongside my bed that had the five inches of caked mud on it. To give you a sense, at least where I think we're going with the next stages of this pandemic. As far as the dedication today, I had intended to dedicate the podcast to this particular group of individuals, but it was really elevated in terms of its importance in the last two days based on what the US federal government has announced in terms of upping its efforts. And it's all around the issue of long COVID. For all of you who have been infected with SARS-CoV-2, we do appreciate many of you who have gone on and developed these symptoms of long-covid and often lasting many months, if not now, into several years. A recent estimate of the number of individuals experiencing long COVID here in the United States ranges from 7.7 million to 23 million individuals. That's a lot of people. And when we look at the kinds of illnesses that people are experiencing, the idea that it's this kind of chronic symptoms of brain fog, of lack of energy, of cardiac involvement, muscle aches, basically an inability to live your life as you did before COVID. This is very significant. As I just noted, there was actually new action with regard to long COVID in the last several days. A memorandum was issued by President Biden basically ordering the Department of Health and Human Services to accelerate the enrollment of the NIH study, which is aiming to recruit 40,000 people to study the issue of Long-COVID. Unfortunately, as of today, only about 3% of the recruitment goal for the study has actually been met. And this is more than a year after the agency received $1.2 billion to do so. So I think there's hope, as I've said in previous podcasts, we want to support those of you suffering from Long-COVID as much as we possibly can, and we will continue to follow closely the activities of the US Government in this regard, so that we may first of all learn what in fact does long-COVID mean clinically. Second, what can be done about it from a therapeutic standpoint? And also what we can do to support from a psychological standpoint the challenges of now experiencing this condition. So today, this podcast is dedicated to all of you who are suffering from Long-COVID. Now I have to conclude, of course, the opening here on good news. Today, April 7th in Minneapolis, Saint Paul there will be 13 hours and 5 minutes and 58 seconds of sunlight. That's up 21 minutes and 45 seconds from just a week ago on March 31st. Exciting. And since the winter solstice on December 21st, we've now increased our light here, 4 hours, 19 minutes and 47 seconds. I can feel it. I can feel it. And it's exciting to think about the fact that the daylight will continue to increase. And on June 21st, not that far away, we will be at 15 hours, 36 minutes and 50 seconds of light. This is exciting. This is something we want to embrace. And for all of our colleagues in the southern hemisphere, we're sending you our light. So, again, thank you for being with us today. We'll fasten our seatbelts here and begin trying to understand what is and isn't happening in the world of COVID.

**Chris Dall:** [00:06:26] So Mike, let's begin our review of the current state of the pandemic with the Western Pacific region. And let's start with China. What's the latest on their efforts to maintain their zero COVID strategy?

**Michael Osterholm:** [00:06:39] Well, Chris, all I can say is, oh, my. You know, the way I see it right now, China is slowly but steadily moving further and further into a bad, bad situation. Now, let me try to add some light to the situation of where they're at and where they're likely going. Remember, there are two aspects to the Chinese situation that we have to be mindful of. Number one is that through the course of the pandemic, using the draconian measures they have, the complete community lockdowns, mandatory testing, etc., they have been able to control each and every one of the surges due to the previous variants. But as we've talked about numerous times on this podcast, Omicron has changed that. Prior to Omicron, the variants in China were a lot like forest fires where ultimately they could be controlled. Now Omicron has made this situation into trying to control the wind. You can't. You can deflect it. You can divert it, but you can't stop it. And so what they're trying to do is do that, stop Omicron in a way that is just not biologically plausible. And as a result of that, they're taking extreme measures to shut down their society with just a few cases occurring in any community. And they're going to occur. So what they've got to do is recalibrate. They've got to come back and understand that, you know, we can't stop all Omicron transmission. How will we live with it? So that's an important context. Let me just give you the sense of where we're at right now in China. On Tuesday, they reported a total of over 16,400 locally transmitted cases, many of which were either from Shanghai or Jilin, a province in northeast China. In fact, Shanghai accounted for more than 80% of the country's total cases, with nearly 13,400 reported there alone. If you look at the data reported by the China's National Health Commission, a vast majority of Shanghai's cases are asymptomatic. For example, on Tuesday, a total of 98% of the city's cases were labeled asymptomatic. Now, to be fair, with the citywide testing they're doing, there's no doubt that they are likely picking up a number of asymptomatic cases that otherwise might not seek out testing due to their lack of symptoms or very mild symptoms. And some of their data does indicate that the number of asymptomatic cases that ultimately go on and identified now as pre-symptomatic will have illness onset within the next day to three days. At the same time, there actually are a number of stories that call into question the accuracy of public reported data in China. Late last week, there were on the ground reports of outbreaks at care facilities in Shanghai and many recent deaths in patients. However, according to a Wall Street Journal article published last Thursday, the city's government has yet to report any COVID outbreaks or deaths in these facilities. So it's likely that we're not getting the complete story and therefore not representative of what's really happening. Regardless of the potential for underreporting in Shanghai, officials there have reported more than 73,000 cases in the city since activities started growing there in early March. In fact, since last weekend, when Shanghai announced their plan to initiate a two step lockdown, the number of locally transmitted cases detected there has risen more than three fold. Of course, the original plan was for the eastern half of the city to be locked down last Monday through Friday to allow for wide scale testing. Then on this past Friday, the western half of the city would be locked down for testing until Tuesday of this week. Well, that hasn't exactly been the case. In fact, as of Tuesday, the lockdown was extended to the entire city. So people living in certain districts that have detected cases for quite some time have essentially been locked down for weeks. Now we're seeing more and more reports of the public's patience starting to wear thin. In many instances, residents confined to their homes have struggled to get access to food or even care that they need for non-COVID related issues. Even something as critical as renal dialysis. Some have questioned the city's policy, requiring all cases, even those who are asymptomatic, mildly symptomatic, to be sent to a designated isolation facility. On occasion, the policy has led parents being separated from their children, which has recently added to public dissent. And finally, there are some examples of false positive test results placed in someone in these facilities only to later find out that they weren't infected at all. Last Friday, officials from Shanghai actually issued a public apology, saying the following, "Our awareness of the highly infectious and insidious Omicron mutant strain was not sufficient, and our preparation for the significant rise in infections was not comprehensive. We sincerely accept your criticism and are working hard to improve it." End of quote. As of this Tuesday, more than 38,000 personnel, including health care workers and members of the military, were deployed to Shanghai from other regions of the country to offer help. However, despite that help and occasional rumors of slight tweaks to policy changes, there is no real end in sight for the situation there, which one city official described this past Tuesday as extremely grim. So Shanghai's facing a rise in cases, a severe shortage of medical resources, particularly facilities used to house cases and growing impatience from the public. Meanwhile, as was shared by a professor from Hong Kong University this past week, it would likely take weeks for the city to get the situation under control, and that's assuming that there are no mistakes or additional missed cases. Just look at Jilin, the province in the northeast. They've been dealing with an outbreak for more than a month. Since early to mid-March, all 24 million residents across the entire province have been locked down. In fact, this Thursday will mark the 28th consecutive day in which all 9 million residents of the province capital city have been living under a complete lockdown, where only one household member can leave to get essential supplies every couple of days. Well, as of Tuesday, there were still nearly 2,500 cases reported across the province, many of which were from its capital, a number of far too high for reopening in China's mind. So what are the implications for Shanghai and even China as a whole? Well, with Shanghai known as the country's financial capital and home to major manufacturing operations and the world's largest shipping port, the economic implications are very real and for that matter, not just for China, but for the entire world, as so many critical supply chains originate in this area. At this point, the port and car manufacturers have been able to continue operations due to their closed loop approach, where employees literally live at their workplace. However, there have still been growing delays that are further straining supply chains for around the world, and many companies with operations there have started to reduce sales forecast for the year. According to one economist at the University of Hong Kong, the current shutdown of Shanghai is costing China at least $46 billion a month. And remember, all it takes is one hiccup, one missed case, one false, negative, etc. and any progress can be quickly undone with this variant. So China is playing a high stakes game of Whack-A-Mole. And as of right now, their approach has around 23 Chinese cities and 193 million residents living in total or partial lockdown. And there's no sign of China's backing off this strategy for the time being. Recent statements from officials have continued to publicly endorse heavy handed measures and efforts to stamp out the spread. And the state run media has gone so far as to say that the country's zero-COVID strategy is effective and it is working. So why have they been doubling down? Well, first of all, there's the political reality of the situation with the Communist Party expected to meet in the fall and kick start President Z's third term. Prior to Omicron, they used their successful containment of COVID as a symbol of national pride. So there is some belief that they won't be changing their approach anytime soon. And of course, on top of that reality, there are those sizable gaps in protection across their population that they likely know is a potential disaster. Again, just look and see what happened in Hong Kong. So I think that they know that opening the floodgates without making every effort to get three doses of vaccine into arms, particularly in the elderly, would present a huge and publicly very damaging challenge. Overall, I think something's got to give in China. With a variant as contagious as Omicron and a growing, frustrated public, I think it's just a matter of time before the dam gives way and zero-COVID policy will be altered. I see no other way, but China's got to learn to live with COVID. This doesn't mean that you just go willy nilly and pretend it doesn't exist, but also zero COVID policy with these extensive long lockdowns I am certain will not be successful.

**Chris Dall:** [00:16:19] Meanwhile, in Europe, it seems like the BA.2 wave is declining in more countries. Is that what you're seeing, Mike?

**Michael Osterholm:** [00:16:26] Well, let me start, Chris, by saying that whatever was happening in parts of Europe throughout the past month or two does appear to be in retreat, at least for now. Cases in the region as of the last week stood at just over 4.6 million, which admittedly is still quite high and basically represents one out of every two cases reported worldwide last week. But it's actually Europe's lowest weekly case total since late December. And it comes after several weeks of rising numbers that have surpassed five and a half million each of the last two weeks. So while we still acknowledge that these case numbers are pretty high, at least it's progress. Of course, the region's bump in cases wasn't the result of uniform rises across all European countries. Instead, as we covered in the past several podcast episodes, it was essentially being driven by increasing activity in selected countries such as Austria, Belgium, France, Germany, Ireland, Italy, Switzerland, and the United Kingdom. Now, nearly all of those places have seen consistent declines. In fact, there are only a handful of exceptions across the entire region where cases have climbed over the past week, notably Albania, Belgium, France and Malta. For every other country in the continent, the past week brought with it declines in cases. So why the declines? Honestly, I'm not sure. As I've said before, I'm not sure what exactly caused cases to go back up in some of these countries in the first place. Yesterday, David Leonhardt from the New York Times published a piece in The Times interviewing me with regard to what I thought the future of BA.2 was in the United States. And I made it clear no one knows. Before I do my best, though, to add some additional information to these remarks, I do want to make a note that even with Europe's bump in cases this past month, deaths in the region have dropped each of the past seven weeks, falling from 26,500 in early February to 10,500 last week. So the overall numbers continue to fall, which is very important to keep in mind. That being said, there are several countries in Europe with recent case increases that have reported a growing number of deaths. Again, this includes Ireland, Greece, France, the U.K., Austria, Belgium and Germany. Of course, for many of these places, most of which have vaccinated larger shares of their population than we have here in the US, the latest rates of severe disease and death remain lower than what was reported in previous surges, even with the recent uptick. And in this regard, we'll get to society's shifting mindset of this virus in a bit. But I have to say, I'm finding myself more and more hesitant when it comes to attributing these surges to BA.2. At the very least, if they are due to BA.2, there's some unexplained irregularity with when and where things take off. Remember, this type of irregularity was basically the norm leading up to Omicron. In fact, if you listen to this podcast long enough, I'm sure you'll recall the laundry list of caveats that accompany discussions of alpha and delta surges. When did they occur? Why did they occur? How did they occur? We often didn't know. Well, when Omicron took over, that changed. Basically, it was as simple as cause and effect. When Omicron became dominant in a country, cases took off there. Almost like we went from solving a high level calculus equation to just basic multiplication. Now the BA.2 the sub-lineage of Omicron that's displacing BA.1, it seems like we're back to calculus. I can tell you, we've looked at sequencing data for every country in Europe where BA.2 has become dominant and marked roughly when the sub-lineage took off. We then looked at an epi-curve for each of these countries and focused on what cases were doing around the time BA.2 took over. And after that, I'm honestly not quite sure what relationship, if any, exists between BA.2 and case surges. Granted, if you look at some countries like the UK, Germany, France and the Netherlands, the two seem to work in tandem with cases growing right alongside BA.2's dominance. But there are a number of countries where that's not the case. In fact, based on our review BA.2 related surges appear to be more of the exception than the rule. Well, at least surges that almost immediately coincide with BA.2 taking over. There's always the possibility that BA.2 can drive up cases but has some unexplained dormant period. For reference, I think it's important to know that the following countries have actually seen BA.2 become dominant, but surges just have not happened. These include Sweden, Spain, Poland, Turkey, Norway, Lithuania, Czech Republic, Croatia, Portugal, Slovenia and Slovakia and other non European examples, including Indonesia and South Africa. So I think this is another one of those moments where we have to take a step back and avoid making any strong, sweeping conclusions about what, when and where something is going to happen. If anything, the calculus equation we failed to solve before Omicron is back and it's got even more variables at this time. What this all leads to is a simple answer of trying to understand what's going on. Humility, absolutely requires humility. I don't know what's going to happen. I do believe there will be other variants after Omicron and BA.1 and BA.2, but I don't know what's going to happen over the course of the next weeks to months. And anyone that automatically assumes that BA.2 will cause case surges in the United States have obviously not done their homework.

**Chris Dall:** [00:22:20] So now to the United States, where it feels like we're in a bit of a holding pattern. The nationwide decline in cases has plateaued for the past few weeks, but BA.2 now accounts for 72% of circulating variants in the country, and cases are rising in the Northeast. But we aren't yet seeing a nationwide increase in cases. So, Mike, if we are going to see a nationwide surge, is it just going to take a little longer to develop? Or is it possible that with so many people using at home rapid tests right now, could it already be happening and we just don't really have a clear picture of what's going on?

**Michael Osterholm:** [00:22:54] Well, as I just said, it's impossible to know whether or not the US will experience a BA.2 surge similar to some countries in Europe. I just shared with you a number of countries that were not seen the same experience of surges associated with major increases in BA.2 activity. I'm kind of reminded of that old line, Remember the Alamo? Well, I would always say to people in the COVID world, remember Alpha and Delta. Those surges were never uniformly occurring across a wide geographic area. They were not all stacked in time in the same time period. And to this day, I cannot understand why a year ago, when Alpha did finally arrive to the United States from Europe, it didn't spread across the country, but rather really two states, Minnesota and Michigan, got hit hard, really hard and absence of cases elsewhere. Think of Delta. How many times have we talked about the different patterns of Delta? That situation where it arose in India late last spring causing a very major peak in cases and the classic kind of bell shaped curve cases went up and came down very quickly, went back to baseline. And then let's take Delta and what happened in the U.K., as you recall me saying last July, the U.K. had about 1,500 cases of COVID a day. When Delta took off, those numbers jumped quickly to over 50,000 cases a day. Case numbers then peaked, started coming back down, made one think it was going to be similar to the pattern we'd seen in India, and then case numbers leveled off in the high 20,000s per day and actually went back up again. And that pattern persisted for some time, right up almost until the time Omicron took off in the late part of the year. Well, what happened in the United States? We also, besides seeing that summertime major peak in the southern sunbelt states, saw in August, the case numbers rising to Delta in the upper Midwest. We saw it across into the northeast, southern Canada and then into the far northeastern states. And that surge literally persisted almost until Omicron replaced it in the end of the year. Why these very different patterns? How did we go with very little activity in LA and New York, with Delta? And yet when Omicron came and hit him both hard. So I think this is the unknown part that we just have to keep coming back to. So this is why I say we aren't certain what will happen here in the United States. I am very happy to report that cases have declined 6% in the last two weeks here. There was a 35% decline in the number of patients in the ICU and a 40% decline in the number of daily deaths. 21 states and Washington, D.C. are seeing increases in cases, but many of these increases are very small, and many of these states still have daily case rates of less than 15 per 100,000. Much, much lower than we were seeing a few months ago and much lower than we are currently seeing in European countries that are in the midst of their BA.2 surge. Most of the states seeing notable increases in cases are in the Northeast with New Jersey, New York, Connecticut and Massachusetts seeing over a 50% increase in cases in the last 14 days. We have to be very careful again, these case numbers actually reflect very low numbers of cases. So doubling 5,000 to 10,000 is very different than doubling 100 to 200. And we're seeing much more of those lower numbers. Even though cases are increasing, hospitalizations are still decreasing in New Jersey and New York and Massachusetts and increasing only by 1% in Connecticut. Though, we know that hospitalizations can be a lagging indicator, and it is possible that these numbers could rise later in the regions BA.2 surge. Just as we saw in Europe, there are some exceptions to this and that we have states seeing increases despite relatively low BA.2 prevalence. Nebraska, which has now reported an average of 77 cases a day, with a rate of about four per 100,000, which is a very low number. So doubling that is not necessarily a big issue. Or Nevada, which is in a similar spot where 151 cases on average per day, a rate of five per 100,000. Again so we can say, well, these areas have had more than a doubling of cases in the last two weeks. But those numbers are so small, it's significance from a population based standpoint are still limited. We are seeing states with high BA.2 prevalence experience, little to no increases in cases. BA.2 became dominant in Texas at around the same time it did in the northeast region. But last week, Texas only saw a 3% increase in cases. We don't know for certain if and when Texas will experience to BA.2 surge given these numbers. Also, as you mention in your question, Chris, the declines in testing in the country could make it difficult to know if such a surge actually does occur. According to the CDC, a seven day moving average of almost 598,000 tests were performed on April 2nd. This is the lowest we have seen since July 2021, and we are not seeing any indicators that the decline is slowing. In fact, with many states ending or phasing out their free PCR testing programs and closing community testing sites, even more Americans may opt to use rapid tests or not get tested at all. And we may see an even sharper decline in this daily number of tests performed. Not only does this bring about challenges in understanding where we're at in this pandemic, which I will address in more detail later in the episode, it could also worsen the current disparities in COVID cases, hospitalizations and deaths in the US. Though PCR tests may still be available at low or no cost for those with private health insurance or Medicare/Medicaid, the roughly 10% of Americans who remain uninsured may have to pay for their PCR tests out of pocket, which many of them cannot afford to do. In addition, the closing of many community testing sites and ending of many states mail-in testing programs means that testing may be harder to access for those in rural communities, those without reliable access to transportation, and those who are only able to allocate a small amount of time to getting a COVID test. We can expect this to exacerbate the already existing racial disparities in cases, hospitalizations and deaths. Remember that even before testing became harder to access, we saw black and Hispanic Americans hospitalized for COVID at 2.5 times the rate as white Americans. Indigenous Americans were hospitalized over three times the rate. Similarly, black, Hispanic and indigenous Americans died of COVID at 1.7, 1.9, and 2.2 times the rate of white Americans. We can expect that new barriers to testing can worsen these outcomes, especially considering that black and Hispanic Americans make up a disproportionate amount of the uninsured population in the United States. It is likely that a lack of available testing, especially PCR testing, will lead to increase COVID transmission within our communities and with the country's test and treat strategy, we can assume that a lack of testing will result in a lack of treatment for many individuals. Though lateral flow tests or the home test, as we call them, may be an option for some uninsured individuals who may be able to afford a $10 antigen test but not $125 PCR test, there are still two major problems with this. First, $10 may still be too expensive for some people, especially when they need to buy those tests for multiple people in their households. Second, we know that lateral flow tests are nowhere near as accurate as PCR tests, particularly in the early days of infection. If someone can only afford a lateral flow test, they may get a false negative that prevents them from getting the treatment they need. And this could, of course, increase their chances of being hospitalized and dying of COVID. So overall, it does not look like the US is necessarily headed for the same type of BA.2 related surge that we've seen in some parts of Europe. And so far, only the Northeast seems to be experiencing a potentially notable increase in cases, despite a national BA.2 prevalence of 72%. That said, regardless of whether or not we see a major surge result from BA.2, the US appears to be setting itself up to worsen the disparities that have already existed throughout the entire pandemic. We are still, to a large extent, at a stay tuned moment in the United States waiting to see what exactly BA.2 does, what changes result from this reduced availability of testing and who in the country it will affect most.

**Chris Dall:** [00:32:03] So Mike, as I noted in the introduction, that decline in testing isn't just happening here, it's happening in many countries as countries adopt a living with COVID mindset. In particular, the United Kingdom has cut back on a number of its COVID-19 surveillance programs, programs that the US and other countries have relied on during this pandemic. So are you concerned that we're going to be flying blind when it comes to potential surges and new variants?

**Michael Osterholm:** [00:32:30] Chris, England announced the end of its free testing program in mid-February, when daily cases had been declining for six weeks. It is likely that when the country announced this testing policy that they assumed cases would continue to decline. However, on April 1st, when these changes went into effect, cases had more than doubled what they were when the announcement was made and the country literally failed to react accordingly. The country is no longer providing free lateral flow tests to asymptomatic people, with a few exceptions for groups like frontline health care workers and adult social care staff. Free symptomatic PCR testing is now only available for groups eligible to receive COVID treatment, hospital patients and those being discharged to hospice and other care homes. People in England with symptoms of a respiratory infection are now being asked to try to stay at home and avoid contact with other people, but are not required to isolate and in most cases will not be tested. With so little testing being done, it is very likely that we will see the number of reported cases decline rapidly in the UK, not necessarily because of a significant reduction in actual transmission, but because we no longer have adequate data available. We may also see what appears to be a rise in case fatality, particularly since PCR testing is now only available for hospitalized and high risk patients. This, of course, would not actually be indicative of more serious illness and an actual rise in case fatality, but would instead be the result of this smaller denominator of cases, a greater percentage of which will be at high risk for severe disease and death. This will make it far more difficult for us to understand what is happening with COVID in the UK. We won't know how much transmission is occurring, especially in those not at increased risk for severe disease and death and those who cannot afford to pay for their own tests. We won't know, as we did before, how their vaccines are or are not working. We also won't have a good idea of how severe the disease really is since the percentage of cases resulting in hospitalization and subsequent death will likely be greatly inflated. England has also scaled back their sequencing efforts that allowed them to detect new variants and estimate the prevalence of existing ones. The UK previously led the world in sequencing COVID tests, reporting almost 200,000 sequences last month. For comparison, the US is third in the world in sequencing and reported 35,000 sequences last month, far lower than the 200,000 reported by the UK. But with two of the country's major routine sequencing surveys shut down last week and a third one at a significant reduced capacity. Along with the sharp decline in the number of daily PCR tests, it's estimated that the UK's sequencing output could drop by 80%. Included in this reduction in sequencing efforts is the reduction in wastewater sequencing, which has served as a very important indicator for future surges and variants. The UK will now be forced to rely on lagging indicators such as new daily hospitalizations and new daily deaths when making future public health decisions. This makes it difficult for the country to be proactive in their public health response, meaning that they will have no choice but to be reactive, implementing public health measures weeks after they are needed. But the impact of this reduction in testing and sequencing output will extend far beyond the UK. Much of the world has come to rely on their data to understand the prevalence of existing variants and the emergence of new ones. And as the UK is scaling back these efforts, we are not seeing any other countries, including the United States, stepping up to fill the gap. On Monday, the US Senate announced a bipartisan deal of $10 billion to fund COVID therapeutics, tests, vaccines and other supplies, and none of it was allocated to helping vaccinate other parts of the world. In addition, we learned yesterday that one half of that 5 billion of the 10 billion may actually be needed to pay Pfizer for what were already delivered drugs. Therefore, this is also means that there will be substantially less for the purchase of new drugs, vaccines or testing. As we discussed last week, many parts of the world, including many countries in sub-Saharan Africa, have incredibly low vaccination rates. Nearly 50 countries have less than a quarter of their population vaccinated with two doses or one dose for the single dose vaccines. 19 of these countries are at less than 10% fully vaccinated, and 11 have less than 5% of their population fully vaccinated. While the United States can't be fully responsible for what goes on around the world in the global vaccine efforts, our support has been critical. And so losing that support means that there will be ever increasing challenges to getting more of the world vaccinated. Not only does this pose a significant risk for the people in these countries, but the widespread transmission of the virus that will result from this lack of vaccination will likely lead to the emergence of new variants that could put the entire world at risk, vaccinated or not. Most of these countries with low vaccination rates were already struggling with reporting and sequencing cases, so they depend entirely on other countries like the US and the UK for data on variants. This lack of funding for global vaccination efforts means that with the emergence of new variants, our ability to detect them will be dramatically reduced. These policies that reduce testing are not strategies for living with COVID. They are attempts to pretend that we are living without it, even though that is just not the case and the consequences of these policies will be seen throughout the world.

**Chris Dall:** [00:38:22] More than two years into this pandemic, with vaccines and treatments now widely available, we no longer have an emergency mindset about this virus, as we've just been discussing. While we know SARS-CoV-2 is not the flu for a variety of reasons, including long COVID, that's how we're starting to perceive it as a society. So, Mike, does that make sense to you? Or do we need to maintain a more vigilant approach with the coronavirus than we do with flu or other viruses?

**Michael Osterholm:** [00:38:51] Chris, what we're really talking about here is reality. We're talking about humans being human. We're talking about fatigue. We're talking about mental stress. We're talking about the desire to move forward into a post-pandemic world with or without evidence that we have a right to do that. This is not a surprise. Go back to the 1918 pandemic of H1N1. And we know that the first year there was relatively high levels of compliance with public health recommendations about distancing, even wearing cloth masks, etc.. But as the pandemic went into 1919 and then into early 1920, the mood changed. The public changed. They no longer listened to public health. They were tired of the pandemic. Well, we're in the same place today. So I think we have to understand that this is not a data driven decision for the population to do X or Y. It's this is where we're at. I covered this in previous podcasts when I talked about the changes in recommendations for non-pharmaceutical interventions, masking, distancing, all these issues, and the fact that this past spring, the relaxation from these mandates didn't come from public health. There wasn't measures put out there at the time saying if you hit this level of cases, you've got to do X. If you get below that level, you can do Y. It was the governors who were reading the tea leaves of the public had decided that, in fact, we were done with this pandemic. Masks are going, you know, distancing is going, etc., etc.. And I understand that. They were really reading the will of the people. And so I think we have to understand we're there now. We are there now. And I don't see it changing substantially, even with a major increase in cases. And influenza is the one disease that we have, we're used to living with it on a daily basis. We're used to living with it year after year. Again, I remind people, just think back what even happened in 2009 with the H1N1 pandemic of that year. This isn't just seasonal flu. This was pandemic influenza. And what happened was that virus emerged in April of 2009 from parts of Mexico spread around the world. Within one month it was in at least 142 different countries. From the period of its spread to a peak in late May and then a drop in the cases throughout the summer, we saw no real activity in this country to do any mitigation. There was nothing about masking. There was nothing about distancing. And then we saw case numbers start to increase again in mid-August. And we went on and many countries around the world actually had a September to October peak that was substantially higher than the spring peak. And actually, if you look at the number of deaths that occurred in the younger age population, the number of years of potential life lost was quite significant. Not once during that time did we talk about implementing non-pharmaceutical interventions. Nobody talked about masking, nobody talking about we had to close down events, we had to lock down, wasn't even on the agenda. That's how people perceived that influenza pandemic. Now, fortunately, it was not nearly as severe in terms of number of deaths as we saw in 1918, but that was where people's minds were at in 2009. So now let's fast forward to today. People have gotten back to that point of where we'll accept what's happening in our community like we did with pandemic influenza in 2009. Let me just review some of the data for you. As we look at the COVID pandemic, we do have to acknowledge that what happened with COVID in 2019 is different than 2020, is different than 2021, and now is different than 2022. If you look at the case fatality rates, you look at the likelihood of severe illness, well before a vaccine emerged, well before people may have had some immunologic protection from previous infection. We have seen this become much more of a milder illness in many. And in fact, there are a number of people in our society who think of this no differently than flu. Scratchy throat, fever, sniffles for a couple of days and I'm fine again. And that is the reality. However, the tip of the iceberg of severe cases, hospitalizations and deaths has still stayed quite elevated. And that's what we haven't really gotten across. Let's just take an example of what's happened with hospitalizations. If you look today, the hospitalizations right now are at about 11,000 people hospitalized for COVID and about 2,000 people in ICUs. If you look at the peak of hospitalizations, which was this past January 6th, it was up to 132,447 hospitalizations, about 40 per 100,000. But let's just take these numbers, compare them to influenza. If you look at the 2018, 2019 seasonal flu, where at the peak of hospitalizations and people over 65 years of age, the number of cases hospitalized is about 21 per 100,000 population. That is only half of what we've seen with the peak number of cases hospitalized with COVID this past January. People are now beginning to equate the similarity between what has happened with flu and how we've handled it and what's been happening with COVID. So I think when you start understanding that the numbers of severely ill people with COVID surely can be much greater than we would see with seasonal flu and those rare events of a pandemic influenza. Generally speaking, when you see a period like now, the number of hospitalizations is not that dissimilar from an average to bad flu year. And so it's not surprising that people are responding accordingly. The one area I think that we do need to keep mindful of and understand is children. Among children in the US, the COVID-19 pandemic has caused a cumulative of 1,341 deaths. By comparison, since flu associated deaths in children became a nationally notifiable condition in 2004, the total number of flu associated deaths among kids during one season has ranged from 37 during the 2011 and 2012 season to 186 during the 2017-18 season. During the 2009 pandemic, 358 pediatric deaths were reported between April 2009 through October 2010. So there you can see that COVID clearly has had a much greater impact in terms of deaths in kids. And yet, if you were to survey the average person on the street out there, they would tell you COVID has only had limited impact on kids. So I don't know that we can take the numbers and compare them and juxtapose them and say, aha, this means we should do something different. It is true, COVID has been much more severe in kids than we see even with previous influenza pandemics and what we see with seasonal flu. So where does this all take us to? Well, it really this is all about is perception and fatigue. So I think that while we will continue to see these ups and down peaks with cases of COVID, time by itself will mean we'll become more and more attenuated to the impact. And I have said in multiple occasions in recent weeks, I never see the United States again reestablishing some of these lockdown like procedures, the kinds of things we talk about with mandates. I think the governors have already answered it. The tea leaves have been read and the public is done. So one of the things we have to be prepared for right now is living with COVID in a very different public perception than we've had in the past. And that is going to make it more difficult to try to limit transmission. But it's also, I think, what the society has announced it wants, and that's what will happen.

**Chris Dall:** [00:47:30] So speaking of other viruses, that brings us to this week's COVID query, which is from Caroline, who dug into the CIDRAP news archives and found this item from 2004. Dateline January 14, 2004 CIDRAP News, quote "One of the worst fears of infectious disease experts is that the H5N1 avian influenza virus now circulating in parts of Asia will combine with a human adapted flu virus to create a deadly new flu virus that could spread around the world," unquote. So, Mike, clearly we here at CIDRAP had been following avian influenza for a long time. And as you know, we are currently in the midst of another global H5N1 outbreak, which is affecting poultry farms here in the Midwest, elsewhere in the US and elsewhere around the world. So Caroline wants to know, "how concerned are you about the spread of H5N1? Are you concerned about a possible combination of bird flu with COVID or human adapted influenza?"

**Michael Osterholm:** [00:48:27] Well, following up on the answer I just gave about the perception of COVID in our communities and how it compares to flu. Let me preface these remarks by saying, back in 2004, I did use to sleep with one eye open looking for H5N1. Today I don't. I sleep with that eye open but it's about COVID. And it's unclear what these avian strains really mean to us and what they're going to do in terms of human illness. Let me go back to the 2004, 2005 time period, because I was very involved with trying to prepare a response should a pandemic emerge from a reasserted H5N1 bird virus and human viruses. At the time we saw this emerge, particularly in Indonesia and then other areas of Asia where H5N1 as an avian bird virus and a virus that largely lived in the guts of these avian species, could rarely, if ever, infect humans. And never did we see really ongoing transmission from one human to another. That began to change in 2004, where we started to see more and more infections in humans tied to contact with poultry or other wild birds. And the fact that it did cause very severe illness in these people and in limited situations, there was evidence of at least 1 to 2 generations of transmission. We were scared. We thought this could be it. Again, reflecting back on what 1918 looked like. Well, for the next several years, we continue to have these spillover events from birds to humans but rare, rare. Until we saw a major outbreak along the Nile River in Egypt, where a number of individuals with close contact to poultry there became infected. But again, no evidence that that virus then became a new virus being in humans. And then suddenly it just disappeared. H5N1 literally disappeared on the global basis, and none of us understood why it started, as it did in poultry, why it transmitted as it did in humans. There were some that suggested the mutational changes were occurring such that it was becoming a mammalian transmissible agent, meaning it could be transmitted between mammals, i.e. humans and the world needed to be ready. In the end, it in fact, this was a period when there was a great debate about gain of function work where two laboratories were trying to gin up H5N1 from birds in laboratory models using ferrets to actually see if they could predict the genetic changes that might be present in making it a human to human transmitted virus. And of course, some of us were very concerned what if that happened and accidentally the virus got out of the lab? Almost the same debate we're having right now with regard to COVID and what happened in Wuhan. So I think the challenge we had at the time was trying to understand why the virus emerged, why it was transmitted to humans in a very limited way. And then what did that mean? Well, I think we're here again, almost revisiting what happened back in 2004 and to the 2007 time period. Let me just take a step back, though, and say in 2015 and I was very involved with these outbreak investigations. We saw for the first time widespread H5 in this case N2 avian virus transmission in the flyways of North America, where it was brought in by wild birds, got into the poultry and turkey production areas. The virus was spread likely via aerosols. And we saw these major outbreaks with over 50 million birds actually died or were put down in production facilities in the upper Midwest. The data were clear and compelling that there was aerosol transmission, sometimes as far as 10 to 15 miles downwind of an infected barn infecting another barn. And this was really concerning. We had no evidence of human transmission during that time. Nothing appeared to occur from a bird to a human. Now we're in this same spot again, except this time with H5N1. Now, it's notable that in the poultry and turkey industry in general, I think they didn't dismiss 2015. That was a big event, trust me, a big event. But I think it was one of those things as seen as once in a lifetime kind of Category six hurricanes, because they hadn't had a problem with it before that. And I think the challenge was that many of the barns that had been built to hold these large poultry operations did have enough access where air moved in and out. It wasn't airtight. The air was not being filtered coming in. And that's what I think led to these infections. And you know, there were some efforts made after 2015 to tighten up what they call biosecurity in these barns. But still, the air was wide open to come in and out. This reminds me a lot of the debate on aerosols with regard to SARS-CoV-2. Well, so here we are after decades and decades of not having any widespread problem except for this one in 2015, kind of dismissed as a once in a lifetime phenomenon. And now we've got another one. And this one is even larger. This is in all the flyways in North America. And it's very likely that in the end, the total number of birds that will be lost will far exceed that of even what happened in 2015. But the questions being raised here, does that put us at increased risk as humans for actually acquiring this infection? Well, I don't want to get infected with the virus, and I don't know what it will take to get infected with the virus. We've made every effort to increase worker protection who are in these barns, who are having contact with these. We see right now wild birds dying right here. Even in our own state, we're seeing an increasing number of everything from bald eagles to other migratory birds are being found dead and infected with H5N1. So I don't know what the risk is. I don't know if these avian species will never really cross into the human world. Remember, H1, H2 and H3 have been the causes of previous pandemics. Could be that over time, going back in history, you know, centuries ago, up to decades ago, before we even had any ability to culture viruses, that there were other H type viruses besides one and two and three that caused a human pandemic. So far, we've not seen that. So the bottom line message is this is a really important moment. It's a stay tuned moment. We've got to stay on top of it. But I don't see at this point any unique risk that we've picked up with this virus, suggesting that all the cases we've seen prior to this time with an H5 virus, whether it was back in the 2004 to 7 time period, the major explosion of cases in poultry workers in the Nile River Valley in Egypt. Again, not with ongoing transmission. What does that portend for our future? I don't know. So we'll stay vigilant here. We'll continue to watch this. But I don't think that it holds necessarily a risk that some are equating here, that it's a given. We're going to see bird to human transmission, which then could result in human to human transmission. Again, this is another humbling moment. We don't know.

**Chris Dall:** [00:56:20] Mike, where is our latest beautiful place submission from?

**Michael Osterholm:** [00:56:25] You know, Chris, through the course of these podcasts that we've been doing now for two plus years, I've learned a lot. I've learned a lot about viruses. I've learned a lot about public health response. I learned about how people look at the world of an infectious disease pandemic. But one of the most important and valuable lessons I've learned is how to understand and appreciate beauty. This has taken on a whole new world for me. And I think today's example of this beautiful place is just that. Sometimes it's a geographic place. Sometimes it's a place in your mind. Sometimes it's a combination of both. And we pick this one today from Leslie in Minneapolis as what I think represents the very essence of fully understanding beauty. And I hope you as the audience will agree with this that this is really, truly a beautiful place. Leslie wrote, "Dear Dr. Osterholm, Your Beautiful Place segment brings loveliness and meaningfulness to us each week. Thank you. My beautiful place is not exotic and in fact became conflictual as a beautiful place when the pandemic hit. This beautiful, though not changed place, has been the large oak table in our dining space. Years ago, on the occasion of our 25th wedding anniversary, our kids wanted to throw a big party for us. After bantering a bit about a party, I said that we would so much more prefer a gift of a large table that could hold all of us for meals, good conversations, projects and togetherness. So the large oak table became our anniversary acknowledgment and has held literally many memorable times in the past 24 years. When COVID hit, our family could not gather around this table. We desperately missed formative birthdays of grandchildren and family holiday celebrations. The table was lonely. But in the midst of the isolation that my husband and I were experiencing, the table began to be our place. We read there, drank coffee, played cards and scrabble. The laptops found a spacious home. My knitting project sprawled across the beautiful solid oak. It Has become a solid place in a not solid, moving target world. There we've listened to your podcast and could make informed decisions about our next choices. There we've been grounded. This table has become the warm, solid center of our COVID lives, even though it cries out in the missing of its other loved ones. We pray to see it full again with loved ones. And yet we'll remember how it has served us well as a beautiful place in a very uncertain, painful time. Our beautiful place, gratefully, Leslie." You cannot help but feel that beautiful place. Even if you can't see it in your mind's eye, you can feel it. Leslie, thank you for sharing that with us. A very, very special note. I'm quite certain there are a number of people out there that have their oak tables in their lives, whether it's really a table or whether it's made from oak. They have their oak tables in their lives. And I appreciate so much you're sharing this with us. Thank you very, very much.

**Chris Dall:** [00:59:53] What are your take home messages for today, Mike?

**Michael Osterholm:** [00:59:57] Well, Chris, my first point really follows the thoughts and the words of Lewis Carroll, who once said, "If you don't know where you're going, any road will get you there." I feel like we're at that point right now in this pandemic. We want so much to believe it's over. We want so much to believe that what we've experienced is only in the past and at the same time, we don't know exactly where the future is going to take us or what that road might look like. So for me, I believe that we are at a place that is of uncertainty. It's a place where we don't know. And I think the most important lesson we can learn from this time is just to acknowledge that, to say we don't know, to say this is what it could be, this is what it might be. This is what it is now. Prepare for the worst. Live life to the best. And so to me, I want to keep coming back to don't give up. Don't, don't suddenly drop all the testing. Don't drop all the capability to deliver drugs. Don't lose your surveillance capacity. I know that's going to cost money. But it's a resource we will greatly, greatly regret not having should we see a resurgence of one of these variants, one that basically does not respond to the immune protection that our vaccines or previous infection has given us. As I covered today, we are already seeing the dismantling of what response capabilities we put together throughout the world. I think that is shortsighted. That to me reminds me of the fire department that decides after the big fire to sell their trucks because they need some money. And besides, the big fire is done. You know that's not going to work. The next one is that BA.2, the big unknown. It is the unknown. Again, I don't know what it's going to do. I think it's somewhere between a one and a ten. Probably not a ten completely. Probably not a one, but at least somewhere in there. Well, that's of no help to anyone. But that's where we're at. If you look at the data from Europe, you can see where it's gone up and you can see where case numbers have gone up. But look at all the examples I gave you today where case numbers have gone up dramatically in countries without BA.2 increasing and BA.2 has increased in a number of other countries where cases didn't increase. I'm kind of reminded of that old line, you know, a broken clock is right twice a day. So just because a country has an increase in cases and BA.2 went up, is that cause and effect? I don't know. So at this point, I would not conclude in this country we are going to have a major surge with BA.2. We might, but I don't think so. What we could see is more regional activity, much as I talked about with what we saw with Alpha and what we saw with Delta. Maybe that will happen. But the bottom line is, anyone that tells you BA.2 is going to cause this big surge, we don't know. We need to prepare it as if it might, but we don't know. Finally, I just want to end on the dedication note that I had at the beginning of the podcast for all of you who are suffering from long COVID. We think about you. We care. And frankly, I've been extremely disappointed in the lack of organizational response from our governments, from public health agencies, from the medical community as a whole, in terms of understanding what is it that you're experiencing and what is it we can do about it to make it a life better for you? And so right now, I think we have one of those moments where people are finally grasping the gravity of this situation, and we will stay on top of it from our perspective here at CIDRAP to report on what is happening. Why do we only have 3% of the people that were to be recruited in a 40,000 person study of Long-Covid at NIH recruited in the first year? My God, there are long COVID cases everywhere out there. Many who would do anything to participate in an effort like this, to understand what's happening and to their bodies and what's happening to their minds and what they can do about it to improve it. So I just conclude by saying, hang in there. I do really believe that things are going to accelerate quickly in terms of responding to this issue, and God knows it's desperately needed.

**Chris Dall:** [01:04:28] And do you have a closing song for us today?

**Michael Osterholm:** [01:04:31] I do. And as you know well, Chris, every week we face a greater challenge to have something that's relevant, something that's meaningful to people, and not just try to fill up idle airtime. And I'm reminded this week of a song in part with regard to the Grammys and, frankly, the recent death of one of its lyricists. This is a song that I can actually remember hearing many years ago when it first came out as a film after having been a long time Broadway musical. The song I'm referring to is "Somewhere," sometimes referred to as "Somewhere There's a Place for Us," or simply "There's a Place for Us." It's from the original 1957 Broadway musical "West Side Story." As I just alluded to, it was made into a film in 1961 and then more recently, now in 2021. The music was composed by Leonard Bernstein with lyrics by Stephen Sondheim. As you know, Mr. Sondheim just died recently, and it is a song that, as you related to the movie, you may have one mental image, but if you've never seen the movie and just think about the words of everyday life, I think it takes on that special meaning that we are looking for right now, trying to find our place out there. So here it is "Somewhere," Music composed by Leonard Bernstein, lyrics by Stephen Sondheim. "There's a place for us. Somewhere, a place for us. Peace and quiet and open air. Wait for us somewhere. There's a time for us. Someday, a time for us. Time together with time to spare. Time to look. Time to care. Someday. Somewhere, we'll find a new way of living. We'll find a way of forgiving. Somewhere. There's a place for us. A time and a place for us. Hold my hand. We're halfway there. Hold my hand and I'll take you there somehow. Someday. Somewhere." "Somewhere" by Leonard Bernstein and Stephen Sondheim. I hope for all of you can feel that somewhere out there that there's a place. Hopefully we're getting to it. Hopefully we can hold each other's hands. And we're more than halfway there, even, I hope. Thank you for being with us again. I appreciate your kind, kind cards, letters, input. Some of it is more direct, not necessarily kind, but very thoughtful and very helpful. And we welcome that, too. I just want to also say that this is another week where as COVID starts to fade into the news media woodwork, we must be reminded that there's still hundreds of people dying every day from COVID in this country. They're our moms and our dads, our grandpas and our grandpas, our brothers and our sisters, our friends and our colleagues. And we can't minimize that ever. And I know for many of you who are listening to this podcast, you never forget. You never forget. And we don't. So thank you for being with us again. Have a great week. Hope these case numbers continue to drop. I hope we can all feel a sense of increased safety. For those who are immune compromised, I will just say I understand the challenges you have right now of trying to protect yourself. Definitely get that fourth dose. Get it. I would tell everyone over age 50, get the fourth dose. We'll talk about that next week with some of the new data are emerging about fourth dose. How long might it work or not work? What it might do. But for right now, I urge anyone over age 50 who have been approved to receive the vaccine to get it. Get it as soon as possible. So thank you. Have a great week. Be kind. Be safe. Thank you so much.

**Chris Dall:** [01:08:40] 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 Sydney Redepenning, Cory Anderson, Angela Ulrich, and Meredith Arpey .