

## Episode 60: A Formidable Foe

**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 in 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. At a Fourth of July celebration held this past weekend on the White House grounds, President Joe Biden told the gathering of more than 1000 people to think about how far the nation has come over the past year. Well, the virus hasn't been vanquished, the president said, we know this, it no longer controls our lives, it no longer paralyzes our nation, and it's within our power to make sure it never does again. The president does have cause for optimism. Covid-19 cases and deaths remain at all time lows nationwide. And yet with the highly transmissible Delta variant of the coronavirus spreading in the US and causing new surges in states with low vaccination rates, concerns are emerging about what the coming weeks and months will look like in those parts of the country. The new questions are being raised about the potential need for booster shots for the vaccinated. What happens from here in the US and how public health experts and government officials communicate to the public about a virus that is diminished but not yet vanquished will be among the topics on this week's episode of the podcast. We'll also provide an update on the international situation, discuss the latest news on the Delta variant and how the vaccines are holding up against it, answer covid query, and tell you about a beautiful place that helped one of our listeners get through the pandemic. But first, we'll begin with Dr. Osterholm's opening comments and dedication.

**Michael Osterholm:** [00:02:02] Thanks, Chris. It's great to be with all of you again, thank you for joining us on this podcast. We very much appreciate you taking time to join us and trying to understand the world of covid-19. I hope that all of you are having an enjoyable summer for those in the northern hemisphere. And for those in the Southern Hemisphere, we recognize that your summer is getting closer. Today is going to be, I think, one of the most challenging podcasts we've put together. And, you know, I've said that in the past, but I think you'll understand as we go through the information

we're going to cover today, that the unknown makes predictions about the future very difficult. And if there was ever a time for a dose of super humility, it's going to be on this podcast today in terms of trying to understand where we're at and where we're going. Today's dedication for the podcast reflects the importance of the single most critical tool we have in responding to this pandemic. It's called vaccine. You know it well. And we're going to talk a lot about vaccines today. This podcast is dedicated to those who are on the front lines, making every effort they can to get additional people vaccinated day after day after day, sometimes very challenging because those who refuse to get vaccinated respond in unfortunate ways. It's also challenging to watch individuals who are close to getting vaccinated, who then unfortunately do become infected with covid-19 and end up in hospitals and in some cases dying. So today, this dedication is for all the front line vaccine workers, wherever you are, whatever position you're in, whatever you're doing to get people vaccinated. We dedicate this podcast to you.

**Chris Dall:** [00:03:56] Mike, as we look at the international situation more than a year and a half into this pandemic, the coronavirus continues to find new vulnerable populations in countries that have already seen multiple waves of infection. With only a fraction of the globe vaccinated and the ability of this virus to mutate into more transmissible versions now well-established, is there any end in sight? Is there any chance that the virus burns itself out?

**Michael Osterholm:** [00:04:23] As I noted in the opening, this podcast is going to be filled with humility because in fact, I think that the more I study and understand what's unfolding with this pandemic, the more I question what the future might look like and why. And for all of you out there who want solid answers with a roadmap to completion for the pandemic, this is probably not the podcast you want to listen to. For those of you that are struggling like so many of us, to try to understand each week, each month what the pandemic means, what it will mean for us here in the United States, for the rest of the world, stay tuned, this is your podcast. Let me just start out by really going over points that we've covered many times in this podcast. When we were into this pandemic in those first 12 months or so, we really didn't fully understand or appreciate the importance of variants with a coronavirus infection. Remember, early on we thought that that was kind of like describing yellow cars, red cars, green cars and blue cars, but they're all the same car. These genetically changed viruses through mutation processes really were not involved in functional aspects of the disease, didn't make it more

infectious, didn't mean that they cause more severe illness, and it surely wasn't about evading the immune protection that might have come from vaccines or from previous natural infection. But then we did understand at the end of last year that there were important considerations with these variants. And since that time, we've continued to learn on almost a daily basis that this virus is in much more control of what it's doing than anything we're doing, other than vaccination. When I think about where we were last January, February, there was a part of me that had felt some confidence in being able to say, you know what, this thing is following exactly the course that I anticipated. As some of you know, last summer, I made the case that there would be summer activity, substantial activity that was in the southern hemisphere. In the fall, I said, you know, the worst is yet to come. And despite the fact many didn't want to believe that we saw October, November with the upper Midwest and the northeastern states lighting up big increases, we saw the South lit up again in January. Globally, we saw countries that had not had major activity suddenly emerge with major activity. And I felt like we kind of know what this is going to do. We can anticipate it. And then along came B117 or what we call alpha variant now. You may recall how that lit up in Europe in January and February, started to spread around the world. And we said, you know, it's going to be a matter of just weeks before it becomes the dominant variant in the United States. This is a variant that is at least 40 to 75-80 percent more infectious than the previous strains of the virus we dealt, it was more likely to cause severe illness. Buckle your seat belt. North America, you're going to get hit hard come March, April. Well, you know what? North America didn't. Michigan did, Minnesota did, why the rest of the United States didn't light up, even though we watched this variant spread through the country. We don't know. I was one of those that thought it was going to be a real challenge. This was my first real bout with humility and the need to say, wait a minute, this didn't do what you might have expected it to do. I've never seen a respiratory transmitted infectious agent light up a state like Michigan and yet not cause the same kind of phenomena in the adjoining states. What was going on there? I don't know why. So now here we are looking into a new variant, the Delta variant, and it's the thing everyone's talking about. People are making all kinds of predictions about it. And today, I'll share with you this is what I think it will do. But at the same time, I have to be honest and say maybe it will be like B117, not quite like that. I think it's clear that the initial information we have today supports the fact that it's not going to be like B117. Globally, we're seeing the same thing. I also will comment today on the issue of seasonality. You know, I hear a number of my colleagues who are on the media circuit saying, oh, no, this is going to be an easy

summer. It will be a fall/winter surge we have to worry about. And I've been very skeptical of that because everything I've seen so far says there's no evidence of seasonality, whether it's the Northern/Southern Hemisphere occurrence, whether it is, in fact, when surges occur in countries. And I think right now what we're beginning to see in the United States is potentially a major surge in unvaccinated individuals with Delta variant. This is us right now. This is summer. This isn't fall or winter. And for those who seem to have postponed the need to consider what the Delta variant may do now, I think are going to be surprised that it won't be a fall/winter surge. It will be a summer surge with potentially tails into the fall/winter. So when we look at this issue of where we're going, the next question is what will be the new variants of the future? And I know people keep talking about variant development in countries like the United States, where there's limited vaccination in certain populations. But I keep reminding everyone, remember, there are 6.4 billion people living in the low and middle income countries of the world, for which vaccine is almost nonexistent. Today, only seven percent of the entire world's population are vaccinated against this virus, seven percent. That's it. And most of those who are living in the low and middle income countries who won't have access to this vaccine for months and months to come, that's where the new variants are going to continue to come spinning out of in the large numbers. And I don't know what will be the next Delta plus or the next Delta plus, plus, plus. And I think that this is, again, where the humility comes in. We must say, you know, this is what we have seen happen from going from those variants of last July, last September, to the variant Alpha, to the variant Delta. What will be the next one that will be a major challenge and will it would be worse? Can they get worse? Maybe not. Will they be more infectious? Will they, in fact, cause more serious illness? Will they evade the immune protection of the vaccines even more than the current variant Delta does? So I think that to answer the question, will this burn out, no it's not going to. This is going to be with us for a long time, if not forever. Can we bring it under better control? Absolutely. If we can vaccinate the world right now, we'd be in a very different place. Are we doing enough to get the world vaccinated? Absolutely not. At this point, we are taking a garden hose to a forest fire, and it's really important to understand that we have to realize that taking care of the entire world with this virus is going to be everything about taking care of any place in the world, including the United States. So let me just leave it by saying, we are not going to run out of reasons to do this podcast for a long, long time to come. People may get tired and not want to listen to it, but we'll have reasons to do it. And those reasons come back to one simple thing. It's our fathers and our mothers, our grandparents, our

siblings, our kids, our nieces, nephews, our colleagues. All of these people who are unvaccinated, are at risk of becoming infected with this virus. And I've said many times, and I will continue to say it, this highly infectious virus, transmitted by the respiratory route, doesn't care if you think that you can basically wait out the clock and be at the end of the pandemic okay, but not having been vaccinated. This flu virus will find you. It will find you and you will wish you had been vaccinated at some point. So today, our job continues to be reminding people this is not going away, that despite the fact it is a semi-euphoria in many parts of the United States, that the pandemic's over, it is not over globally. And until it's over globally, it won't be over here either in terms of what the variance may bring us, even with this amazing miracle vaccine that we have. So I hope that that sets the table for what we're about to discuss for the rest of the podcast. That's where I'm coming from and coming with great humility.

**Chris Dall:** [00:13:15] As we've been discussing over the past few episodes, the more transmissible Delta variant is driving the surge in many countries. What else are we learning about the transmission of this virus around the world?

**Michael Osterholm:** [00:13:27] One of the things we're learning about this virus is that we can't count on it being like a flu virus. I see many, many people who have tried to take the influenza pandemic model and suggest that, well, you know, within two to three years at most, this is going to morph into the seasonal model. Meaning seasonal flu occurs after two or three years and various surges that occur with the influenza virus. At this point, I don't think we have any sense of what's going to happen long term. What does this mean in terms of one day will this just become a seasonal virus? Let me just give you a sense of what I'm talking about. One of the things that we have to understand is that if you know Delta epidemiology in any one given week, you know Delta epidemiology for that week. If you think about what's been happening over the course of the duration, one of the things has been the repeated surges in countries. Month after month after month, these are occurring. For example, just just take a look at Iran. They are now in their fifth surge, fifth surge. And we talked at one point about after one or two surges, having enough people infected and protected with immunity that these surges wouldn't continue, much like we'd see with influenza. You know, you can have a three, maybe four surges at most, and then it moves on into the classic seasonal flu model. In Iran, their first surge was in late March, early April 2020, major impact. Second surge was in early June 2020. The third surge was in November to mid

December 2020. And they had a fourth surge in late March, mid-May. I heard numerous people say at that point, well, now they had finally likely hit that threshold of what some call herd immunity. They had enough people infected and now they're in their fifth surge and it may be the worst one of all. So I think if you if you look at this and realize that there are a number of countries, I can just go through a very brief list of Peru, Brazil, Argentina, Colombia, Chile, Portugal, Netherlands, Bahrain, Israel, Oman, Kuwait, Kazakhstan, Bangladesh. I mean, there's a whole number of these countries that have had multiple waves of infection over and over again. So I think at this point we could go for months in a given country and it could be relatively quiet, including the United States and then have it resurge again. When we talk about the US based cases, I will reflect on that because I think a lot of people assume that the quote unquote, quiet period that we've more recently experienced since January with the major decrease in cases since then, has all been due to vaccine. Vaccines, played a very key role, no doubt about it. But there are a lot of people who have not been vaccinated in this country who have also not been infected over the last four months, five months. Why? And we're going to talk about that a bit more. But to help you better understand what's going on globally, let me just kind of give you a snapshot as of this week. In mid-April of this past year, we saw case numbers globally hit an all time high, 5.7 million cases reported per week. Now, we know that's underreporting problems. There's all kinds of issues here that come to bear on what the actual number really means. But for the sake of a relative tip of the iceberg, where 5.7 million cases of those 1.4 million came from the Americas, 1.4 million came from Europe, and over 2.27 million came from Southeast Asia, primarily India. Now, following that high peak, cases have dropped precipitously, particularly because of the issue of India case numbers dropping. So that if you look, for example, just over 2.5 million cases reported the week of June 14th, which at this point that kind of hit the low. And since that time, case numbers are coming back up again. June 21st, 2.6 million, June 28th, 2.7 million. And now these have been due to upticks largely in case numbers in Africa, Europe and Southeast Asia, outside of India. We are at this point looking from a death standpoint, after nine straight weeks of decline in global deaths after nearly 97,000 were reported that week of April twenty sixth, we've now gone in June twenty first to 58,000 deaths, June 28th 54,000 deaths. But now, with Africa's death numbers going up, that number has leveled off. And I think we're going to see another ride up again. And so when we look at what's happening, we now have to understand that this is kind of like a classic whack a mole approach to understanding the transmission in these countries. For example, if you look at the United States right

now has had a 14 percent decline in new cases in the past week, South America, 19 percent decline, Central and South Asia, two percent decline. On the other hand, Europe, particularly certain Eastern countries and Russia have had a 36 percent increase. The Middle East and North Africa, nine percent increase, sub-Saharan Africa, 14 percent increase. And now East Asia and Oceania, 23 percent increase. So it's kind of this cycle where it goes from one place to another to another to another. And I think at this point, that's one of the hallmarks we're going to see, are these countries with surges from different time periods. If right now we look at the 12 countries with the highest case rates four countries are in Asia and the Middle East, Mongolia, Cyprus, Kuwait and Oman. Four countries are in Africa, Namibia, Tunisia, South Africa and Botswana. Three of the countries are in Latin America, Colombia, Argentina and Cuba. And one of the countries in Europe, the United Kingdom. That's the top 12 countries in the world. Look how they're spaced all over. And so this is going to be a pattern that I think we're going to continue to keep seeing. We're going to watch some countries decreasing in numbers of cases and then other countries coming back up again. We're now seeing countries where there's increasing peak activity, Cuba, Guatemala, Honduras and the British Virgin Islands. Cuba specifically is facing a sharp spike in activity. And so this is going to continue to play out over and over again. Just quickly, if we look at Asia and the Middle East right now, we're seeing the seven day average for cases has been back on the rise since late June. Why is that? Well, as much as India has declined, we're seeing eight countries that are now at record highs Bangladesh, Cambodia, Indonesia, Myanmar, Thailand, Vietnam, Iraq and Kuwait. Indonesia with just 5.2 percent of their population fully vaccinated, Indonesia is now experiencing a steep rise in cases and deaths. They've reached all time record highs. Bangladesh, as I just mentioned, the same thing. Let me just move to some other areas of the world, Africa right now, Africa is in what they call a full scale third wave, with cases for the region reaching new pandemic highs and deaths quickly growing. Just a year ago, we kept asking ourselves why were cases not occurring in Africa and there were all kinds of explanations that people came up with today, none of them make any sense because, in fact, Africa is just like the rest of the world. The growth rate in cases for the entire African region is higher than it's ever been. Both north and south of the equator, again suggesting that seasonality is not the key issue there. South Africa, which is experiencing a record high third wave of cases with deaths also quickly increasing. The country's president just described this past week the latest wave as devastating and stated that it was causing South Africa's health care system to completely buckle. Look

at Europe at this point. With more than 1.6 million cases reported throughout Europe the week of March 22nd, the big peak, the region experienced 12 consecutive weeks of decline, falling to less than 340,000 cases the week of June 14th. But now look what's happening. In the past two weeks, they've gone from 340,000 cases to three hundred eighty eight thousand cases last week. This week they're at 532,000. They're coming back. A summer type surge. Although no countries or regions are reporting peak activity, current trajectories in places such as the U.K., Portugal, Russia, Spain, Greece and Luxembourg have generated real major concern. So if we try to understand the international picture, clearly vaccine plays a role in some of the countries. But for most of the countries where a vaccine really is not a major factor, then we have to realize this is the natural history of this virus. It will come and go. Why does it come and go? What is it that means it may impact an area for three, five, eight, 10 weeks? We don't know. Then be quiet and then come back again weeks to months later. That's the pandemic of the future we're going to see with this global scenario.

**Chris Dall:** [00:22:58] Turning to the United States, the Delta variant now accounts for roughly 50 percent of new cases nationwide, and it's driving new cases and hospitalizations in several states, most notably Missouri and Arkansas. So, Mike, is this going to be similar to the trajectory of the alpha variant, which only caused significant surges in a handful of states? Or could this be different?

**Michael Osterholm:** [00:23:20] Well, anyone who is going to project what these variants are going to look like three months, six months from now are looking into a crystal ball that is covered with six inches of mud because I don't think anyone can, with any real expertise, say what's going to happen. Let me just share kind of a general update what we're talking about with the variance. We've already discussed the Delta variant. I'll just say right up front right now. Fifty one percent of the current viruses being identified in the United States over the course of the past week to 10 days are, in fact, the Delta variant. But let me give you a sense of what the WHO leadership has been saying about these variants and where they're at. Over the past couple of weeks, there's been heavy emphasis on how the world's path forward with this virus is really challenged by this real wild card called a variant. Tedros, the director general of the WHO said this past week, "we are in a very dangerous period of this pandemic. In those countries with low vaccination coverage, terrible scenes of hospitals overflowing are again, becoming the norm. But no country on earth is out of the woods yet. There is



now some sharing of vaccines happening, but it's still only a trickle which is being outpaced by variants." That's a pretty stark description of where we're at, but I think it's an accurate description. Maria Van Kerkhove, who is one of the leaders in the covid activity at WHO said this past week, "we don't have a crystal ball to see how long this will last. The virus is evolving and there will be more variance. The trajectory in each country is up to the plans that are in place and the ability to implement them. And, of course, taking into account that the virus will do what it's going to do." In terms of Delta itself, Tedros said this past week, the Delta variant is dangerous and is continuing to evolve and mutate. It has now been detected, as we know, in 98 countries and is spreading quickly in countries with low and high vaccination coverage. It is reminiscent of what happened with Alpha, but it's also taking over in many of the countries where Alpha had dominated for so long. Now, one of the challenges, as you know, it has been with Delta is not that it's just more infectious. Remember, we've already talked about the fact that the alpha variant B.1.1.7, was anywhere from 40 to 70 percent, some say as high as 100 percent more infectious than previous viruses. Now we're seeing that the Delta variant is at least 40 to 60 percent more infectious than Alpha. That's a pretty substantial increase. When we look at the issue of what happened with Alpha, we're seeing now Delta falling right behind, taking over and actually beginning to become that dominant variant that we're seeing there. The challenge is, of course, it's more infectious. We've already talked about that. There is real question as to whether it's causing more severe disease. Some of that I think is yet an artifact of which populations are getting infected, meaning older populations, younger populations, that by itself could have a big impact on what the apparent serious disease picture looks like. So there's more information that needs to be gotten for that. But the third issue, which has really caused us a lot of concern, it has been the issue about evading immune protection, whether it be from the vaccines or whether it be from the natural infection and immunity you develop from that. The public health England has really served as the international model for providing us data on what's happening in England, in particular with the variant and what it means. When they put out in June 25th a report looking at the capability of some level immune protection, particularly as relates to one dose of vaccines versus the second dose, when they looked at the vaccine effectiveness against symptomatic disease, and remember, they had the AstraZeneca two dose as well as the two dose Pfizer vaccine. When they looked at vaccine effectiveness against the alpha variant, at one dose, it was 49 percent against symptomatic disease. It was 89 percent with two doses against symptomatic disease. When you looked at Delta, it was

one dose with 35 percent compared to 49 percent with Alpha, and it was only 79 percent with two doses compared to the 89 percent for Alpha. So it was clearly a reduction. If they looked at vaccine effectiveness against hospitalization, the same issue. For Alpha one dose of 78 percent, for Delta one dose was 80 percent. Both showing, I would call that remarkably good protection against hospitalization, but with two doses they both demonstrated high protection. 93 percent for two doses against the alpha variant. 96 percent against the Delta variant with two doses. So I think one of the messages we're getting here is, in fact, that these variants may actually cause breakthrough infections of actual disease, but it's a much less severe disease. It's much less likely to cause hospitalization and much less likely to cause death. Now, we have to understand that this is still an emerging issue. There's been a recent paper that's come out of Israel in the past several days suggesting that the level of protection, even against hospitalization and serious disease is much less associated with the Delta variant. I'm going to talk a little bit more about that as we talk about the United States picture right now. I think it's fair to say that the protection we're getting with two dose mRNA vaccines and the two dose AstraZeneca is really a remarkable level of protection against hospitalization and serious illness. Now, I'll come back to more in a moment and talk about the J & J single dose vaccine. At this point, I just also want to add that the other variants that are out there, there's a thing called Delta Plus, AY.1. This is the sub-lineage of delta that contains additional mutations. If we look at Epsilon, which is the variant that originally was the B14271479 or the California variant. If we look at lambda, a new variant that's been identified in South America, all of these are really functioning in a very similar way. And we don't know if any of these are going to become important in terms of the occurrence of cases or whether the Delta variant will continue to be the dominant one or what the next one will be. At this point, the take home message vaccine vaccine vaccine is still working against severe disease and hospitalizations. And we have to do whatever we can to get people vaccinated. And that's going to be our best weapon against the Delta virus. Let me just spend a couple of moments talking about what is happening in the United States right now with regard to the incidence of disease and where we see things going. Let me repeat a point I made earlier, that for those who have said, don't worry, the summer is not going to be a problem, it's going to be a surge in the fall and winter, I'd be very, very, very cautious about assuming that that's the case. What activity we're beginning to see right now suggests that, in fact, unlike B117 or alpha, which did not spread throughout the United States and cause serious disease in multiple states, every indication is right now the delta is beginning to

do that. Well, why is that? Well, if you look at where we're at with vaccinations right now, if you take all comers, everyone, all ages, only 55 percent of the population have at least one dose. 47 percent fully vaccinated. Now, we realize that includes kids under age 12, which are not eligible for a vaccine yet, but nonetheless, they are part of the pool. They can become infected, they can become seriously ill and they can transmit the virus. If we look at those 18 and up, 67 percent in this country, we've had at least one dose. 58 percent are fully vaccinated. That fully vaccinated is not a reassuring number. Remember also, I pointed out earlier that even with one dose, the challenge we have with these variants in terms of while they may reduce serious illness and hospitalizations, they still may cause infection. If we look at the group 65 years of age and up the group clearly at highest risk for serious outcomes, 88 percent have one or more doses, which is great news. And 79 percent are fully vaccinated. Almost a fourth of all, the person 65 years of age and older are not yet fully vaccinated. And so we still have work to do there in terms of the potential incidence of serious illness. Now, if we look at our cases, what's happening, just as I pointed out before, we have these peaks and troughs of cases and things can turn on a dime in terms of what appears to be a decreasing problem. If we look at cases as of July 7th, right now, we have a seven day average of about 12,914 cases. Today, however, we were reporting over 23,000 cases. Over the last 14 days, there has been a 14 percent increase in cases. If we look at the actual number of tests being done that has dropped over 12 percent over the last 14 days, and I suspect you're going to see that changing relatively soon, given the increasing number of cases. If we look at hospitalizations, which are a classic lagging indicator, meaning they only go up seven to 14 days after cases go up, right now we have 16,991 hospitalizations on average over the last seven days per day. That's a two percent decrease over the last 14 days. If we look at deaths, the same thing is happening. Seven day averages, about 250 deaths. That's a 19 percent decrease over the last 14 days. That would be expected to be reflective of what was happening two to three weeks ago. But if you look at what's happening over the last 14 days, I think this is where you see a very sobering picture. 31 states, including the District of Columbia, have reported increases in cases of which 21 states, including the District of Columbia, have reported increases of greater than 20 percent in the number of cases. This is clearly a very different picture than we've seen since late January. 21 states have reported increases in hospitalizations. Eight reported increases greater than 20 percent, very different than we have seen since the January peak. And the case numbers dropping. Let's just look at six different states that are showing the real impact of the

Delta variant. In Missouri, case numbers are rising substantially, they've increased by 43 percent in the last 14 days, hospitalizations have increased 25 percent in the last 14 days. If you've been following the news media, you know that in southwestern Missouri and northwestern Arkansas, there's been a substantial increase in cases there, which intensive care units are filled. They're experiencing the worst days of the pandemic to date. In Arkansas, which is the neighbor I just mentioned there. They, too, have seen an 88 percent increase in cases in the last 14 days. Hospitalizations have jumped 45 percent during that same time period. In Arkansas, only 35 percent of residents are fully vaccinated. We're seeing substantial increases in places like Nevada, where now they have seen cases increased 42 percent in the last 14 days. Hospitalizations have gone up 62 percent during that same time period. Only 42 percent of the residents are fully vaccinated. Utah, cases have gone up 31 percent in the last 14 days. Hospitalizations 34 percent in the last 14 days, 37 percent of residents fully vaccinated. Louisiana, 85 percent increase in the last 14 days, hospitalizations up eight percent during that same time period. Only 35 percent of the residents fully vaccinated. Just two more to cover here. If you look at Wyoming, there they've had an 11 percent increase in the last 14 days and cases, hospitalizations have gone up 12 percent during that same time period. Only 35 percent of residents fully vaccinated. And let me just conclude of Florida, where we actually have artificially low case numbers due to the way that they've now embarked upon their reporting. We do know, however, while case numbers may not be accurate in that state, hospitalizations have gone up 17 percent in the last 14 days. Only 46 percent of residents are fully vaccinated. And at this point, Delta has become the dominant variant in the United States. Missouri is greater than 90 percent Delta. Arkansas, 80 percent. Nevada, 80 percent. Utah, 70 percent. Louisiana, 60 percent. Wyoming, 60 percent. And Florida is now at 46 percent. So you can see that these case increases are following where the Delta variant is actually emerging. Now, to put this into a little bit of additional perspective, what we're seeing really is an urban suburban community split. And what I mean by that is if you look at the rate of new daily cases, they've fallen below three per 100,000 residents in large cities like Atlanta, Boston, Chicago, Detroit, Houston, Minneapolis, New York, Philadelphia, San Francisco and Washington, D.C.. As a point of comparison, the national rate of new daily cases peaked last winter in those same areas over 75 per 100,000. They're now basically below three per 100,000. You say if you're in those locations, the pandemic is over. However, but in less populated areas, but nonetheless very diverse throughout the country, areas that tend to be more politically conservative and skeptical of vaccines,

the virus is now surging largely from the Delta variant. The states with the worst outbreaks that I just mentioned, Arkansas and Missouri, each with more than 60 new daily cases per 100,000, followed by Florida 10, Nevada 10, Wyoming nine and Utah eight per 100,000 cases. So that what we're seeing here is really this relationship to the under-vaccination now becoming the greatest single predictor of looking at what's happening with cases. To add one last piece to this, I just want to add what I think is really a remarkable number that should hopefully give all of us a reason to believe that the vaccines are our answer. If you look at what we're seeing in terms of number of deaths in this country, if you look for the month of May, the latest data we have from the CDC and well before the Delta variant took off, only about 150 of the more than 18,000 covid deaths in May were in fully vaccinated people, or less than one percent. That translates to about five deaths per day attributed to fully vaccinated Americans, experienced from breakthrough infections, particularly in the older population. But that compares to 300 deaths per day in the unvaccinated population. So let me just repeat this. If you look at this, it translates to about five deaths per day in the fully vaccinated Americans, compared to 300 deaths per day in the unvaccinated. One final note, just to give you some sense of this. And clearly, this is not a population based number. This is a county based number. And some of these are smaller counties. But think about this. We have over a thousand counties in the United States right now where less than 20 percent of the population has received even a single dose. That's remarkable. What is happening, why is this? And I just want to remind everyone that this virus will not discriminate. It will find all of you if you are not vaccinated, this virus will find you and it will have you. And you can't run out the clock on this. So I urge people to do that and do it. Now, please do not be swayed into some kind of complacency because people keep talking about the fall/winter surge. We're seeing that surge beginning to emerge right now in this country, in those areas with under vaccinated populations.

**Chris Dall:** [00:40:11] So, Mike, you've laid out the danger is that the Delta variant in particular poses to the unvaccinated, but I think that there are many listeners out there who, while fully vaccinated, are still concerned about the Delta variant and how much protection they have against it and are wondering about whether booster shots may be needed, especially those people who received the Johnson and Johnson single dose vaccine. What can you tell our listeners at this point about potential need for boosters?

**Michael Osterholm:** [00:40:40] I've surely covered for you how both the mRNA vaccines and at least the AstraZeneca as a adeno-vaccine platform work and how important they are to get those we are all struggling with. What does a one dose J&J vaccine mean, when we talk about one dose data or two dose data? And this has been a real struggle for me personally. I'll just tell you up front, I have surveyed 21 of my colleagues who I have great respect for. These are the people that I would go to if I were trying to get the kind of advice that I'd want for one of my family members who are ill. And of those individuals, all of them but one said, you know, I would definitely recommend to individuals to get a booster dose of an mRNA vaccine if I had one dose of J&J. One individual said I would only recommend to high risk individuals for severe disease, people who are immune deficient, immune compromised, that they would do that. And I have felt really uncomfortable in the regards of having kind of what might be considered by some as this inside professional information. And while it has been discussed in the media, you haven't seen many people coming out just saying do it. And and I think that's not fair, we should have this is a public discussion, but it calls the question as to why don't we have more data on J&J? Well, I already mentioned before only about 12 million doses of one dose J&J vaccine have been administered in this country, which is just a small percentage of all vaccine doses. So we haven't had that much experience yet with it. The Brits did not, in fact, use J&J so they could not factor that into their analyses. But I think the real challenge we have right now is why don't we have more information even here in the United States that could at least provide direction to the public? None of us, at least I surely don't want to be the one saying I'm smarter than the ACIP or the FDA and therefore follow my advice on what to do with a vaccine versus theirs. We all know that would be irresponsible in a way. And yet when we talk about our own families and what we would do in that kind of off label concept, why shouldn't the public know about that? Now, there was a study that came out this past week that suggested, based on eight patients and following up on their immune response as J&J recipients in terms of in the laboratory, would their immune response to their antibody levels or t cell activity, would it protect against a serious illness, hospitalization or likely even fully protecting you against clinical infection? In the data suggested the one dose J&J would do that. That's a real paucity of data. We need more information. So I've urged my colleagues at the federal level at the highest levels of the federal government. We need more clarity on this right away. And I very much support the fact my one colleague who said, you know, I would recommend this to anyone who's immune compromised to immune deficiency, that may not respond well to one dose. As

we've seen, even with the mRNA vaccines, in some cases, three dose approach may be the right approach for those who have this underlying condition. I would say to you, if you are one of those individuals and you have received one dose J&J, get an additional dose of mRNA vaccine. I know I'm not a clinician. I'm an epidemiologist. I surely am not the FDA or the ACIP, but I'm trying to reflect what has been my experience with the people I most respect and admire in this business. And that's what they're telling their private family members, colleagues, friends, etc.. So I hope that in the end, we find that that's not the case. I do have concerns about the J&J vaccine data. We know from it's the work that was done with the beta variant and how that actually was a situation where the vaccine only provided, at best, moderate protection against clinical disease, that it would somehow, after one dose, provide high level protection against Delta or even for that matter, you know, really good protection against serious illness or hospitalization. So this is one we have to resolve quickly. It's one that we don't have the answer to at this point other than to say rather be safe than sorry. Now, some people are going to have a hard time getting a second dose of any vaccine if they've had J&J. I've had many friends who have said they've been turned down because their insurance company keeps track of who's gotten vaccinated and they go to a pharmacy or to a doctor's office and they're denied access to a second vaccine. This is really, I think, unacceptable at this point. We need to get this figured out as quickly as possible. So I implore my colleagues at the federal level, please bring as much information to the table and clarity as you can, even with incomplete information.

**Chris Dall:** [00:45:59] So, Mike, this brings me to something I mentioned in the introduction, how public health experts, doctors and government officials communicate about where we go from here. So on the one hand, we're getting the message that the worst of the pandemic is in the past. But many people still have questions about vaccine's efficacy in the face of the variance about the need for booster shots and about whether we should still be wearing masks in certain situations. And answers seem to be all over the place. So do we need a new focus on what the message should be about living with this virus?

**Michael Osterholm:** [00:46:34] Well, as I have said on repeated occasions on this podcast, we have had to go through the painful, painful months and months of learning how to die with this virus and what that means to us. And we are now in a period where it is important to emphasize how do we live with this virus? What does that mean? The

masking issue is a good example. What does it mean in terms of trying to get people vaccinated? Can we feel safe going back into public spaces where a substantial number of people will not be vaccinated and not wearing any kind of respiratory protection? And I think at this point, the challenge we have is coming through with clear and compelling information about what we know and don't know. I think we need to take a page from our colleagues at Public Health England who have put out a series of publications based on the data that they have generated with cases, the epidemiology of the vaccine, effectiveness, all the issues that they've done there. And they've put them out in such a timely manner. And they've combined that with their professional advice as to what it means or doesn't mean in terms of the data. We've not done a good job with that. I, I have nothing but the highest compliments for the vast majority of work that this administration has done to get vaccines out. I've said multiple times, this is totally an apolitical comment, but we are very fortunate to have a vaccinator in chief. President Biden has done everything that you could ever hope for of someone being a public spokesperson and and continuing to keep that message front and center. I have nothing but the highest respect for him, but that's not a political statement that's just based on the reality of what he's done. But where I really have concerns right now is this lack of clarity, like the J&J vaccine, like the issue of masking, because every time one of these debates ends up in the public media, we just lose credibility, we lose credibility as public health, and we need to be anticipating these, we need to be thinking about what are the next 10 questions that are likely to emerge in the next one month that we could get on now that we could actually begin to address. So we have something to tell people and we have some way of building a consensus among our public health colleagues. What does this mean? You know, does it help to have, you know, one of the major counties in this country say everybody needs to wear a mask and then the CDC director say, no, you don't. And then the leading NIH experts saying, well, he wears one in a public setting. So we have to avoid that. And it's understandable why it occurs because there is incomplete information. It's not like somehow I have all the answers either. But we should be anticipating these questions. We should be. You know, the idea of what this summer might look like. Well, right now, here's an example. We are beginning to see a whole series of major outbreaks occur with summer camps. It's remarkable. Just in the last 10 days. Are we on top of that? What does that message mean for so many of our kids that are going to summer camps? You know, I don't want to wait until we have the 13th outbreak, of which several people die. That makes the front page of all the major media venues in the United States and then we have to address it. So I have had these



discussions at a very private level with, again, my colleagues at the highest level of government. We need to do a better job. And we're not. I can't tell you how many people today call me, email me and say I have this kind of underlying immune deficiency, what should I do? I go to my doctor and they don't know what to do either. You know, for us to send people to their general practitioner to get this kind of advice is absolutely wrong if we're not giving them that advice themselves, meaning if we're not providing the background, all we've done is defer to difficult question to somebody who is less prepared to answer than the people who deal with it every day. And that's wrong. So I think we are leaving a lot of our frontline clinicians really at the mercy of what they're getting out of their local newspapers or national newspapers. And so we need to have a whole new focus on communication and how we deal with it. And so I'm hopeful that we can do a better job. Health England has surely, I think, given us a way to look at that. So let me just conclude by saying we must do a much better job. We owe it to the public. We owe it to our medical community. We owe it to public health leaders. What are those substantive key issues that we must provide advice on even if we don't have all the information? And how are we going to get that information if we haven't to date? So I'm sorry we haven't done a better job. I don't think we have. And I think that today that should be one of the highest priorities of this country is to help clarify how do we message about this pandemic and what does that mean?

**Chris Dall:** [00:51:53] So now to our covid query segment, this is where we try to answer questions about the decisions that you are listeners are trying to make, the situations you're trying to navigate and the risks you're assessing on a daily basis in this post vaccination covid world. Our covid query this week is from conference skeptic who wrote, Hi, Dr. Osterholm and CIDRAP team. I'd love to get your perspective on attending a large medical industry conference in Boston at the end of July. In the before times, his annual conference was attended by more than 10,000 physicians and industry professionals from around the world. This year's conference will be a combination of online and in-person. Although in-person attendance will be much lower this year, maybe closer to three to five thousand. They already have people registered from dozens of countries. There's no vaccination requirement for attendees and no mask mandate on sight, either by the Commonwealth of Massachusetts or by conference organizers. Meeting attendees will be in convention center rooms listening to presentations and visiting industry booths in the exhibit hall. Do you think attending is relatively safe for someone who's fully vaccinated with no particular risk factors? Or do

the Delta variant, the potential for other as yet unknown variants, and lack of data around vaccine effectiveness with the newest variants warrant sitting this one out? Another point of consideration. I'm going to be up north on a family vacation in the following week with my 81 year old mother, who was fully vaccinated in March. So, Mike, what would you tell a conference skeptic?

**Michael Osterholm:** [00:53:18] This is one of those issues that it's not about the data. You know, we all want to have some number that we can internalize and then make a, quote, unquote, scientific decision. This is about how comfortable do you feel? You know, 38,000 individuals dying each year on our highways in the United States. How many of us do not get into a car for that reason? It's what we're comfortable with is what we believe that that's just part of our everyday life. I have to say, as someone who is over age 65, who has been vaccinated with mRNA vaccines, both doses, you know, I don't know if I'd feel comfortable being in a setting like that where the likelihood of someone being infected in that room without knowledge of who's been vaccinated and who's not is real, particularly with individuals coming from around the world. And so I understand where some would say, what do you mean, come on, that risk is very low. What's the chances of that happening? You know, I'll say, well, what's the level of vaccination in that group? You'd hope because of the type of meeting it is, most people would be vaccinated. Are they coming from a part of the world they can get access to vaccine? Likely if they're in the medical community as such. But I think that this is what we really haven't addressed yet is how do we process and work through this type of risk analysis. So personally, I wouldn't go to a meeting like that just because I'm not comfortable yet in that setting. And I can't explain exactly why or why not, any more than I can explain to you why I am absolutely comfortable getting in my car every day and driving somewhere, particularly in bad traffic in inner city areas. So I think to me, I'm unfortunately not going to give you a comfortable answer. But if you're someone with both doses of vaccine, no underlying health conditions, I've already shared with you the percentage of those who are dying, who are actually fully vaccinated, very, very, very low, then you may come to that conclusion. This is fine. I feel comfortable in there or you may come to the conclusion I'm not ready yet. And both of those are the right answer. Both of those are. And I think that's the important thing. Feel right about yourself and then you'll do the right thing. And so thank you for your question. Also, with regard to the family vacation the following week, that includes your 81 year old mother. Two things I guess I would add here is that, one, it sounds as if there's other people

going to be on the vacation with you. And the most important thing for your mother is to surround her with vaccinated, protected people. So I hope that the family makes that a priority. The second thing is, while your risk is extremely, extremely low of going to the conference in Boston and getting infected there, as someone who has had both doses of vaccine with no underlying immune deficiencies, but the point being is, is that you would be yourself infectious, likely a week later if you should have a breakthrough infection, which then then means that you would potentially be in a place to infect your mother. We're still working on getting more data on how often breakthrough infections mean that people are actually infectious themselves. It likely is less than that of if you've never been vaccinated. But that still is an open question. So to me, I would say at this point that should factor into your Boston trip, too, if you want to, not to put your mother at any increased risk, even a very, very small you likely would say, I don't want to be potentially coming down with a covid-19 infection at the very time I'm on this vacation with my mother. But again, it's going to be about how do you surround her? How do you bubble her with vaccinated people?

**Chris Dall:** [00:57:13] And to our listeners, please keep those questions coming, you can email us at osterholmupdate@umn.edu. So Mike, in our last episode, you asked our listeners to send us a few words or paragraphs about a beautiful or special place that has meaning to them. And we're going to close out this episode of the podcast with an email from a listener in Michigan. What's this week's Beautiful Place, Mike?

**Michael Osterholm:** [00:57:37] First of all, I want to thank all of you who submitted finding beauty in our world and sharing that with us, that they were really very touching. And I think as an audience, you will all appreciate the the kind of visual image and the warm heart feeling that these can give. This one comes from Carol and Carol wrote, Fortunately, I have no stories of heartbreaking loss during this pandemic. My husband and I are mostly retired and hunkered down for the duration. Our daughter was in Canada, unreachable and the best gift we could give her was peace of mind that we were doing all we could to remain healthy and uninfected. Marquette, Michigan, is on Lake Superior. There is a gorgeous mile long bike path that hugs the shoreline. We made it our resolve to walk it twice a day. As much, we're getting out of the house to exercise for simply filling the long days. Each day, we eagerly took note of the new wildflowers appearing, the chokecherries ripening, the pollinators arriving. Most every day, we would spot an eagle soaring high above us. After a rain, we could see the

glistening webs of orb weavers. The plant that became most important to us, though, was the common milkweed. Its fragrant blooms last a long time and each day we used it as our health barometer. Can you smell it? We would ask each other with a smile and hope we both answered yes. The beautiful milkweed. When the plants went to seed, we collected a few pods to try to have some for ourselves outside our own door. This summer is a bit different. We are fully vaccinated but have fallen in love with the shoreline walk. This week the milkweed started to bloom and we again asked, Can you smell it? But the fear is gone. That fragrance will forever remind us of our covid year and we are so grateful for the science that brought us this lifesaving vaccine, but also grateful for the opportunity to stop and smell the milkweed. Sincerely, Carol, from Marquette, Michigan. Carol, thank you for that very thoughtful image and wonderful message. It is something we all need right now. So it's a special gift to us, to all the listeners. And please, as Chris noted, please send us more of these. We will get them on the air the best we can. And let me just leave you all this week with kind of that final word of saying, I'm sorry, I couldn't give you more direction, more specific information on what this pandemic is going to do. I have such respect for this virus. It's a foe. It is a real foe and it is one that is ruthless. It is one that we still can have a upper hand advantage if we're vaccinated, but it's one that if we decide not to do that, doesn't care what our political, religious or other beliefs were, why we didn't get vaccinated. It's one that still may prey upon those who are immune compromised or immune deficient, not through any fault of their own. We need to do what we can to get you better and more specific information, how we can protect you. So I leave you today with the hope that over the course of the next weeks, we do convince more and more people to get vaccinated and that we as a world do everything we can to get vaccine to those low and middle income countries. We need about 10 Manhattan projects to make vaccine and we need a thousand Marshall plans to get it into everyone's arm around the world. If we could do that, then we could end these podcasts, we could put this into the history books and call it done and over. But until we do that, we can't. And I just come back and remind us all something that I think most of the people on this podcast do not need to remind you of, but it's still something that is at least useful in terms of bringing us back to reality. Is it all of these cases, all of these deaths that I talked about today are our mothers and our fathers, our brothers and our sisters, our children, our aunts and uncles, our colleagues, people we admired and people we care about. That's why we have to get people vaccinated. So thank you for spending your time with us. We appreciate it. And and keep the cards and letters coming in. We do read them all. I

promise you we do. So thank you very much and look forward to talking to you in two weeks. Thank you.

**Chris Dall:** [01:02:31] Thanks for listening to this week's episode of the Osterholm Update. If you're enjoying the podcast, please subscribe, rate, and review. And be sure to keep up with the latest covid-19 news by visiting our website [CIDRAP.umn.edu](https://CIDRAP.umn.edu). This podcast is supported in part by you, our listeners. If you would like to donate, please go to [CIDRAP.umn.edu/donate-now](https://CIDRAP.umn.edu/donate-now). The Osterholm Update is produced by Maya Peters, Cory Anderson and Angela Ulrich.