

Episode 75: Evolving Science

Chris Dall: [00:00:00] Hi, everyone. Before we get into this week's episode of the Osterholm update, we here at CIDRAP have an exciting announcement. Season two of our podcast series "Superbugs and You" just launched. This series focuses on the threat of antimicrobial resistance, and it features conversations with patients, physicians, and scientists about what we can all do to reduce the threat of drug resistant infections. Click on the link in the episode description to tune in. And please enjoy the trailer.

Marnie Peterson: [00:00:36] More and more common medications are losing their ability to fight dangerous infections, accelerating a hidden crisis that threatens the health of people around the world.

Guest 1: [00:00:47] I need antibiotics to treat people 10 years from now and antibiotics. They're the only drugs we give to people where if I give you a drug, it might mean that it might not work for your mother in six months. And that's really different.

Marnie Peterson: [00:01:03] In season two of "Superbugs and You," we will continue to explore the factors that contribute to the rise in antimicrobial resistance.

Guest 2: [00:01:11] Antibiotics are probably the most emotionally laden therapies that we have. It is a very difficult to change prescribing behaviors because physicians and patients alike are really attached to antibiotics often when when we don't really need to use them.

Marnie Peterson: [00:01:29] We will also discuss why it's so important to preserve these antibiotics, especially for the most vulnerable among us.

Guest 1: [00:01:37] But I think it's important to remember that antibiotics have in many ways transformed the care of our cancer patients. Their bodies lines of defense against infection are significantly disrupted, and we often must rely solely on antibiotics to mitigate that risk of infection.

Marnie Peterson: [00:01:54] There are actions we can all take today to curb the spread of drug resistant infections. Join us in taking part in this important work.

Guest 3: [00:02:02] In the same way that I have a conversation about why you need to put sunscreen on to avoid cancer. Well, why have you stopped your antibiotics halfway? It should be logical. It should be common knowledge. Antimicrobial resistance should be common knowledge.

Chris Dall: [00:02:27] 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. As I sat down to write the introduction for today's episode, I decided to take a look back at some of my podcast scripts and notes from last year at this time. Now, I was intrigued by what I found. In late October 2020, the U.S. was averaging around 73,000 new COVID-19 cases and just under 1,000 deaths a day. A surge of cases spreading out from the Midwest was well underway. People were being advised to limit holiday gatherings, and vaccines were still a glimmer on the horizon. On October 28th, a member of the White House coronavirus task force said the nation was at a critical point in the pandemic response. Fast forward a year, and the U.S. is again averaging around 70,000 new cases a day. Similar case numbers to last year, but now with more than 1,400 daily deaths and 50,000 Americans are hospitalized with COVID-19, with hospitals in some states cracking under the strain. The outlook, however, is very different. Cases have substantially declined from the peak of the late summer surge. COVID-19 vaccine booster shots are giving many people a more hopeful outlook about the coming months, and vaccine authorization for young children is near. Maybe we've just become numb to the numbers, but the general sense is that we're on the down slope. But how long will that continue? That's one of the things we'll be discussing on this October 28th episode of the Osterholm update as we assess the current state of the COVID-19 pandemic. What will the next few months look like? We'll also discuss the impact that booster shots and vaccine authorization for young children may have, examine the evolving science

on vaccines, and answer a COVID query about protection from previous infection. But first, as always, we'll begin with Dr. Osterholm's opening comments in dedication.

Michael Osterholm: [00:04:43] Thank you for that very thoughtful opening. This is a time of reflection to think, where are we at today? Where have we been? And most of all, where are we going? And Chris, I want to thank you and the other podcast team members for your contribution this week to thinking about what will our future look like. What is it that we might consider? And it's in that light that I also make this week's dedication. I speak for myself on this particular aspect of the podcast, but I think I also speak for a lot of other people out there. I'm confused. I'm challenged, I'm hopeful, and sometimes I'm afraid. Here I am as an individual who has had both of his Pfizer doses, as well as a booster dose, and yet I'm trying to navigate what is the safe place to be today. How can I feel safe? I have not yet been to a restaurant since March of 2020. I still have challenges about how I feel being in close contact with my grandchildren, who hopefully next week will be able to get vaccinated, but now are not. I'm one that I understand risk. It's my business. You know, what is the risk of something happening if it's one in 10 versus one in a billion? How do I relate to that kind of risk? How do I conduct my life? So this week's podcast is really dedicated to those people like me that are still trying to navigate and within their own emotions. What can I do? What might I do? What shouldn't I do in terms of helping me get through this pandemic? I don't want to live like this forever. I don't want to feel as if I have to question everything I do about, will it put me at risk even with my vaccination status as it is? And so I think this week is one where as we get children vaccinated, that's surely going to help a lot of grandparents. It's going to help a number of parents in terms of dealing with this issue. But we'll also see parents who will categorically reject getting their children vaccinated. We're all navigating how do we get to the future? For those of you who are struggling like me, this podcast is dedicated to you.

Chris Dall: [00:07:14] Mike, one of the reasons why we begin each episode with a look at the global situation is because, as you noted last week, in doing so, we can learn a lot about what the U.S. might expect to see in the coming weeks and months. So what global trends have caught your eye over the past week?

Michael Osterholm: [00:07:28] Well, Chris, since January of last year, when I recognized that this novel virus that we were tracking since its earliest days in China

would cause the next pandemic, I knew that we'd be embarking on a journey. As some of you may recall on my March 10th, 2020 appearance on the Joe Rogan podcast, I actually said that I thought over the next 18 months, we could expect to see at least 480,000 deaths. And that was at a time when in this country we were literally counting the number of deaths as a double digit number. And this has been a journey for me that has not had a lot of surprises relative to its ultimate global impact. And so I knew that we would be confronted with a lot of these issues. I didn't know exactly what the journey would bring or how long it would last for certain. But I knew that challenging days were ahead. Fast forward to now, more than a year and a half later, and unfortunately, I'm still seeing more clouds on the horizon. And while I'm sure some will say that this projection falls right in line with typical bad news Mike Talk, I think it's supported by the global trends we're seeing play out. Since August, when the world was reporting more than 4.5 million cases a week, we've now found ourselves in a valley. For seven consecutive weeks we saw cases drop falling to just under 2.8 million at the time of last week's episode. And now, as of this last week, we're back up, approaching almost three million cases. Deaths have also grown, with just under 50,000 reported in the past week. So why the increase? Well, I still can't completely explain why this virus does what it does. Nor can anyone else. And if they do tell you they know exactly what it does is, I've said time and time again, be careful. They probably have a bridge they want to sell you. But it's clear that Europe is still the current regional hotbed. While every other region of the world continued to report stable or declining activity, Europe documented levels of growth that cancel the progress out. More than half of the three million cases reported this past week were from Europe, which reached its highest level since this past January. And the death toll there is also at its highest point since April. Eastern Europe is still bearing the brunt of the virus, with all 12 countries on the Washington Post list of places with the highest death rates in the past week all located there. And while some countries there, including Georgia and Romania, are seeing signs of potential peaks, cases have continued to spike in all the other countries. One of the countries, Latvia, where average daily cases are almost two and a half times higher than they've been at any previous point during the pandemic, and deaths are approaching record highs. The country, which has fully vaccinated just over half of its population, announced a four week national lockdown that began last Thursday, with shops, schools, restaurants and entertainment venues all closed until mid-November. They're the first European country to implement a lockdown in response to the delta surge, with the prime minister reporting that their health system is in danger. Russia, which we touched on last week,

is also still struggling with its record breaking surge, with only one in three residents fully vaccinated. Average daily deaths in the country are now nearly twice as high as they were during any previous peak prior to the Delta variant's arrival. Some hard hit regions have turned to shutting down workplaces in an attempt to limit the spread. Moscow is going even further, starting this Thursday, Moscow is implementing its strictest lockdown since last June, closing schools and all businesses deemed non-essential. But like we said last week, Europe's challenges aren't exclusive to the eastern half of the continent. A handful of countries in the West, including Belgium, Denmark, Germany, Ireland and the UK, have also been reporting growth. Each of these countries have vaccinated at least 66% of their entire population, with Belgium, Denmark and Ireland actually sitting at nearly three in four residents fully vaccinated. Of course, if you look at the number of COVID deaths in these places, which remain relatively low compared to the previous case surges, you can clearly see that vaccines are having a major impact. Still, the virus is making an impact. For example, in just the past week, health officials in the U.K. reported that emergency departments in several hospitals were in a terrible place and already struggling to cope. So what does this mean for the rest of the world? In Africa, cases and deaths are at both at their lowest point in nearly the past year. Are they in the clear? Well, with less than 6% of the population fully vaccinated, I think is to say that plenty of Africa remains highly vulnerable to this virus. A similar situation is playing out in Latin America, where cases and deaths are also lower than they've been since the virus's earliest days in the region. We're seeing multiple countries there that have taken advantage of the lull and ramped up vaccination rates. Still, while Chile and Uruguay have vaccination rates that rank among the highest in the world, many others have yet to fully vaccinate even half of their residents. The same trend is playing out across much of Asia and the Middle East, where a majority of countries are experiencing declines, even with wide pockets of vulnerability. Unfortunately, until we do much more in the way of vaccination, I have zero doubt that we will see this virus surge back in these areas and cause much more disruption. Just look at Singapore, which has the world's fourth highest percentage of its population fully vaccinated at 82% yet continues to see notable levels of activity. And while their high vaccination rates have spared a lot of severe disease and death, with nearly 99% of the cases reported as mild or asymptomatic and much lower incidence among fully vaccinated individuals, they're still seeing a growing number of patients in the ICU. And I'll end with China, where 75% of the residents are fully vaccinated. Since mid-October, they've been dealing with yet another outbreak of their own, which has resulted in more

than one hundred cases in one third of the country's provinces. Once again, they've opted to double down in their zero COVID strategy and have turned to their usual heavy handed tactics in affected areas. Ultimately, this virus, as I've said time and time again, is a leaky bucket virus. It can, and it will take advantage of any lapse and protection, I think, to understand where we're at today with respect to the virus in the future. We have to understand because we do not know why we see these surges, why we see cases take off and why we see the numbers reduce again within that surge. Clearly understanding that we can have an impact on the size of that surge. How high does the peak cases get with our vaccination programs? How much severe illness and hospitalizations can we reduce with our vaccination programs? But we can't stop these surges from happening. We have susceptible people. I've thought about a metaphor that might help people understand this kind of, in a sense, act of mother nature. Think of rainfall. Today, we're talking about flooding. Ironically, in California as well as on the East Coast. And when we think of these heavy rains and flooding. It's Mother Nature acting out what Mother Nature is doing. But the question is, what can we do to reduce the impact of these floods? Can we improve on how we use our floodplains? What can we do to hold back water so that it doesn't quickly run off of environments that are now full of concrete and asphalt? And when we look at that kind of impact, we can't stop the precipitation, therefore we can't stop the floods. But we, in fact, can have a big impact on what damage those floods do, both in terms of physical damage and the risk to life and limb. That's where we're at with this virus. We can't change the virus being the virus. It's going to do what it's going to do in nature and we don't understand why. Why do we see these surges? Why right now are things so quiet in Africa and other parts of the world? And yet why are they flaring up in Eastern Europe and Russia? Why is our surge going away right now? It's not because we've suddenly taken on a whole new set of behaviors or that we've suddenly had a major increase in the number of people vaccinated. We don't know. But what we can do is minimize the impact of those surges of that transmission. And that's where we're going to keep talking over and over again about vaccines. So think of vaccines as floodplain management, think of vaccines as water storage environments. Think of vaccines as the way to evacuate people in advance of rapidly encroaching floods. We can't stop the rain, but we can stop the amount of damage and pain that occurs both in flooding and with vaccines.

Chris Dall: [00:16:40] I laid out some of the current U.S. numbers in the introduction, roughly 70,000 cases and 1,400 deaths a day, 50,000 hospitalized again much better

than we were doing in September, but still really high numbers. So do you see these numbers continuing to decline or are we going to hit a plateau soon? And do you think we'll continue to see this pattern of regional surges going forward?

Michael Osterholm: [00:17:05] A lot of us are confused. A lot of us want to believe it's done and over. That June time period that we went through where psychologically we ended the pandemic. Unfortunately, the virus didn't end it as we planned. So what is happening today? Well, if you look at the U.S. as a whole, there is no denying that we found ourselves in a much better spot than we were in July, August, and the first half of September. You know, since the height of the surge, we've seen cases and hospitalizations cut in half and deaths are clearly on the decline. It's a marked improvement. It has to feel a lot better in a lot of places. At the same time, as you talked about in the opening, Chris, our current levels remain well above what we saw this past summer prior to Delta's arrival. At that time, we were reporting less than 12,000 cases a day, hospitalizations dipped below 17,000, and daily deaths dropped to under 200. The least activity we'd seen in this country since some of the earliest days of the pandemic. So we still have a ways to go to get back to our pre delta baseline. Nonetheless, the declines are real and fairly widespread, with 40 states right now contributing to case decreases over the past week. Our own state of Minnesota, after seeing its peak about three weeks ago, it was in that same position. And it also the declines include many of the southern Sunbelt states that were hit hard by Delta, along with states in the east and the southeast. In addition to the state of Minnesota, in the Midwest we've seen Wisconsin and the Dakotas are now reporting big declines. Still, we have eight states where the per capita case rates are more than double the national average, which sits at about 21 cases per 100,000 residents. Alaska tops the list with nearly 100 cases per 100,000 population, a number that would place it among the top 10 countries in the world with the highest case rates if in fact Alaska were a country. Some other states where case rates remain elevated are located in the Mountain West, including Montana, Idaho, Utah and Colorado. We're also keeping our eye on a handful of states reporting recent case growth, like Washington State, New Mexico and Utah. But my primary focus continues to be on places like L.A. and New York City, which have both yet to report any spike in cases with this delta surge. However, as of Tuesday, there were still at least 38% of L.A. County residents and 34% of New York residents who had yet to be fully vaccinated. If we saw the virus really heat up in either of those places, we could easily move away from our current trajectory. Remember what's happened in Europe.

Remember what's happened in these countries where they appear to have very high levels of protection, a sense of moving beyond the virus, only to have it return. When we look at where we're at today and the risk for a future surge in any one given region in the country, it all comes down to one simple question how many people are susceptible to the virus infection in that area? How many? And this has been a challenge for us to understand. We know today that if you look at the total U.S. population of 329.5 million people, that 57.4% or 190 million are fully vaccinated. 42%, 139 million are either unvaccinated or partially vaccinated. And today we know that partially vaccinated people still are quite susceptible to infection. If we look at those people who could be vaccinated right now, meaning not the kids, which hopefully that will change soon, but those who are in the categories approved as of today, there are 63 million people who are eligible to get vaccine but haven't done so. So when you look at that, that's a sizable number of people. Now, some of those people are going to be protected from having been infected before. And some of the people who have been vaccinated are not likely to be protected yet because of waning immunity. So when you put these two together, over time, the question becomes how many people are really susceptible in your community? How many people in your community today are susceptible because while having been vaccinated, they have had sufficient waning immunity that they are now susceptible not only to infection, but illness and maybe even severe illness. How many people in your community have not been vaccinated but had a previous COVID infection that now is protecting them for some period of time at some level that we're still not clear about and we'll talk about that more in a moment. So when we add this all together and we've looked at it any number of ways where you tried to understand vaccination status, susceptibility, previous infection status, and never having been vaccinated or infected. Our best estimate is that probably at least 70 million people in this country are still susceptible. That's about 20% of the population. Now, that's a large number of people that could still get infected, that could still be part of a surge. And I remind people that, you know, we we want to think that we're further along than I think we really are. I think this number may in fact be a really underestimate of how many people are still susceptible. And I just think about what's happened in countries like Iran. This is a country that we've been following closely since the beginning of the pandemic. They were one of the countries early in the pandemic that got hit hard with the first wave of virus activity. After their second surge in Iran, people thought they've hit herd immunity, they've had enough people infected now sure seemed like it, and then they had a third surge. Well, they've now hit herd immunity and then they had a fourth surge.

Oh, now they've had herd immunity. This past summer with the Delta variant, they had a fifth surge and they had the highest number of cases, serious illnesses, hospitalizations, and deaths in the entire pandemic. So I think the point that I was trying to raise in the international discussion carries over to this national discussion now. We do have enough people here in this country to actually have another substantial surge. Will it be even across the country? No, not likely any more than this recent Delta surge was. Will cases in the United States eventually return back to that pre delta surge baseline with less than 12,000 cases a day and deaths less than 200? I don't know. But at this point, we have to understand we're not done. My biggest fear is that we will go into that June 2021 mindset again, a mindset that basically said it's done, it's over. The fact that we had people on the Fourth of July celebrating Independence Day from COVID and look what's happened. So, you know, I don't want to dampen anyone's hopes for the future, we will move on from this virus. How we'll move on yet is still unclear to me. But I also don't want people to become reckless and to think that somehow, basically, no matter what we do, we're not going to be impacted again. I already see health care systems, in a sense, breathing a sigh of relief they've now gotten through the worst. Not only has the eye of that Category five hurricane passed them by, but even now the outside wall seems to be gone. That's not true. So at this point, I will just say that from a national perspective, things hopefully will continue to get better. But just know in some locations that will not be the future, at least for a period of time. And in many locations, we could still see substantial activity occurring. So as we talk more today about vaccines and boosters and so forth, we'll also get into the discussion about will the level of protection we see today in our communities be the level of protection we'll see six to 12 months from now. These are all questions, will we have a new variant develop? Will we see something happen that we couldn't have anticipated that means, oh my, we're back at the table again with a different type of SARS-CoV-2 virus that now puts us at risk of losing some of that protection we've had from vaccines or previous infection? So these are still challenges.

Chris Dall: [00:26:04] We discussed the booster shot issue last week, but just to review after last week's episode, the CDC officially gave the go ahead for booster shots for certain recipients of the Moderna vaccine and for everyone who initially received the Johnson & Johnson vaccine. They also endorsed a mix and match approach to boosters. So now we have upwards of 70 million Americans eligible for booster shots,

according to the White House. Mike, how do you think this will affect the trajectory of the pandemic over the coming months?

Michael Osterholm: [00:26:33] I don't know. That's as straightforward as I can tell you, but let me give you my best insights. First of all, we have to keep our focus on first doses. That is still what we're going to see the largest number of individuals who are at risk not only for infection, but for serious disease, hospitalizations, and deaths. So I just want to keep us focused on that and say we cannot for a moment step back from that. I categorically reject the notion from some that we can do one or the other deal with first doses or deal with booster doses. We can walk and chew gum at the same time. Ok. We have to do both. But when we look at the issue of booster doses, as you know, I was someone who was very strongly supportive of the fact that we would need booster doses or as I like to call them, the third dose of a three dose prime or two doses of a two dose prime vaccine months ago. But as you can see, as more data becomes available, it is clear that we are see waning immunity, particularly with the mRNA vaccines. I think we're going to have an interesting discovery in the days ahead with the J&J vaccines. As you all may recall, the early data on the J&J vaccine demonstrated that after a single dose, you had less protection against infection, serious illness, and hospitalizations than you did after the two doses of the mRNA vaccines. That is in fact, why the advisory committee of the FDA and the FDA subsequently agreed was that there was a need for an immediate dose of vaccine for J&J, not a booster as such, but one at two months. But as more data becomes available, it suggests that the J&J vaccine, which over the course of a single dose six month follow up, didn't decrease in protection like we saw with the mRNA vaccines. And with a second dose of J&J vaccine, there is now evidence that protection with that vaccine may get into the mid nineties in terms of prevention of infection, hospitalizations, and death, and also have a long term durability. Which I think we don't know yet with the mRNA vaccines, what that means. Will we see six months from now the need for another booster or will in fact, we have adequate protection? Some will say, you know, the number of breakthrough cases, a term that has become somewhat challenged by many and I don't disagree, breakthrough doesn't necessarily explain what's happening here as a term. But for the sake of our discussion, let's just talk about those people that get infected, whether they have symptoms or not, whether they have serious illness or not, or deaths after they've been supposedly fully vaccinated. As I've already commented about the J&J vaccine, I won't bring that up again in terms of durable immunity because it may be possible that we won't see

waning immunity with that vaccine for some time. But with the mRNA vaccines, which has have been the workhorse vaccines of our response in this country, we do have to ask ourselves what will happen with durable protection over time. And you know, when you look at the current risk of breakthroughs, it does have to be put into perspective. I'll just share data from Minnesota, a state that I think has done as good a job of any of trying to determine how many cases were breakthrough cases and what their ultimate outcome was. If you look right now in our state where we have in terms of fully vaccinated Minnesotans age 12 and older, 3,182,000 people. Again, 3,182,000 people have been fully vaccinated. If you look at total cases of breakthrough infections, and I'm sure they do not represent all cases, but I think it's a good estimate. We have 51,586 such cases. That's 1.6% of those fully vaccinated. Now, I've always had a problem with people saying these are very rare events, and maybe we're changing that description as time goes on. But for many people, they'd say 51,000 total cases is not rare. If you look at the number of people hospitalized who have had breakthrough cases and their hospitalization being associated with COVID, we have 2,425. Again, not a small number, but that's 7.6 cases per 10,000 population, or 0.076%. You know, that's still a very small number. And if you look at the total number of deaths that are breakthrough cases, it's 331 and these are deaths attributed to COVID. That's 0.01% or 1 per 10,000 fully vaccinated individuals. Now not all fully vaccinated people have been at risk of getting infected yet, so from all the epidemiologists out there, I understand that. So it's not truly a rate of the number of people protected when infected, but the total number of people who have been just vaccinated and have gone on and either been a case, hospitalized, and died. So the point being is that 331 is a really very, very small number, compared to 3,182,000 people. But don't tell the public it's a rare event because they won't believe that when you say 331 such people. Granted, most of these individuals had underlying risk factors for serious disease or even other conditions, including age, with the median age well over 70 years. But also we are seeing, as time goes on, more breakthrough cases in individuals who are younger, who don't have necessarily all the same comorbidity risk factors for serious disease. What we don't know is what's going to happen over time. If I don't get a booster and I'm eight months out, will my risk be the same when I'm 10 months out, when I'm 14 months out, when I'm 18 months out? And so in a sense, we might be actually returning people back to the susceptibility pool of individuals. And we don't know. I hope not. I hope that's not the case. So at this point, all I can say is is that I think it's very wise to push the boosters. I very much support that. I would much rather be sorry for something I did than something I didn't do. In the sense

of finding out one day that we could have prevented a lot of hospitalizations or even deaths by having provided that booster concept and that we're going to be studying this over time. We're going to continually assess what these vaccines are doing. And let me just remind everyone again. When these vaccines were first developed, we developed them in, in the sense, an amazing time scale from what we would expect to see with any other primary research and development for a vaccine instead of doing it in years. We did it in months. And there are two factors that are really important in considering that, one is the bucket of safety, the other is the bucket of performance. We answered the safety questions over and over again with hundreds of millions of people now being vaccinated as to the really amazing safety record that these vaccines have for the number of people being vaccinated. We don't have to revisit that. But in terms of the speed at which we move forward, we're still trying to understand how to best use these vaccines. What should be the dose? What should be the number of doses, how should those doses be spaced out over time to maximize on the immune response? And so we're still doing that. And so I think that the decision on the boosters was the right one. I think that we will over time demonstrate that. I'm concerned that, you know, having 70 million people today that are eligible for a booster and we're only vaccinating as boosters about 350,000 people a day, it's going to take us a long time to get those individuals fully vaccinated and we'll have to wait and see what that means in terms of cases that will occur as people get further out from their initial series. But please do not despair about these vaccines. Don't give up. They are still very powerful tools, and as I have said many, many times, these vaccines are simply remarkable. They're remarkable, but they're not perfect. Remember that the remarkable, but not perfect. And as I struggle with my own personal issues about how I put myself at risk or don't. I have to keep reminding myself these vaccines are remarkable. Even if I should get infected, right now, the chances of me having a serious illness, a hospitalization, or a death has been substantially, substantially reduced. And that's an important message. Now the question is, how will that play out over time? And that's what we'll be answering in the days ahead.

Chris Dall: [00:35:51] The FDA's vaccine advisory board this week voted in favor of recommending the Pfizer vaccine for children ages five to 11. Now we know that this is just the first step in this process. But if the FDA and CDC ultimately sign off on vaccines for this age group, which is expected, what kind of impact is that going to have?

Michael Osterholm: [00:36:11] Well, as any listener to this podcast knows, I have had a real interest in what's happened to our children with COVID-19, and in particular, I had a tremendous interest in what happened in our schools. Notably from August through mid-October, more than 2,000 schools in the United States actually shut down in-person classes because of the situation with COVID. COVID-19 has had a real impact on our kids. I keep hearing people say over and over again that there is this narrative that young children are not affected by this coronavirus. That's simply not true. Since the beginning of this pandemic, at least 1.8 million children between the ages of five and 11 have been diagnosed with COVID-19. Kids in this age range now currently constitute more than one in 10 new infections. More than 8,600 children have been hospitalized and with one in three hospitalizations requiring intensive care. And I say it with real pain, at least 143 young children have died. During the past year, COVID-19 has been the eighth leading cause of death in young children, but more specifically, with this most recent surge, it actually moved up to the sixth leading cause of death among children five to 15 years of age. So I hope that we get over the sense that, in fact, is this really a serious situation in kids? It can be. And one of the things we haven't talked about in any of the discussions about approval of the vaccines for kids necessarily is what do they contribute to the community in terms of infections? And this is a very important issue. It's the very point that I raised in my opening comments. I love my grandchildren. I love my grandchildren. But have I been concerned being around them over the course of the last year and a half? You bet I have. And so from the standpoint, are they going to be the reason why I might have a breakthrough infection? Could be, I don't know. And we're now at a point of doing the risk benefit question, does this pose a potential harmful outcome to kids getting vaccinated versus not? But we know the not side is a real problem. And while there have been limited number of cases of myocarditis reported in older adolescents into young adults, we've not seen that yet reported with these vaccines and their use of a lower dose in younger kids. Now I grant you that the number of kids studied is still small, but I think that the overall risk is much, much lower for developing a myocarditis infection versus getting infected and developing that same condition. And the CDC concluded the same. My concern is moving forward is how are we going to get these kids vaccinated? If you look at the vaccination rates for those who are 12 to 15 years of age, only 56.5% have had one dose and only 46.7% are fully vaccinated, not even 50%. And in some states, less than 30% of kids that age are fully vaccinated. We see a slight increase in the number of kids vaccinated who are 16 to 17, with 63% of those having at least one dose and 54% being fully vaccinated. So this

really still leaves us with well over 7.4 million kids between 12 and 17 who have not even had a single dose yet, and this vaccine has been approved for them. So if we look at what we might expect to see with the five to 11 year olds, I think we're going to have some challenges. In looking at a survey that was done by the Kaiser Family Foundation and conducted through September 13th to 22nd, parents were interviewed about whether they are likely to have their children between the ages of five and 11 vaccinated. And in that survey, they found that only a third of parents 34% say they will vaccinate their five to 11 year old kids right away once a vaccine is authorized for that age group. About a third of the parents, 32% say they will wait and see how the vaccine is working before having their five to 11 year olds vaccinated. And notably, the share who say they definitely won't get their five to 11 year olds vaccinated remain steady at one in four or 24%. So we still are going to have a challenge with kids in converting vaccines into vaccinations. I do believe we will have a real challenge trying to get these kids vaccinated. Yes, in fact, the incidence of serious illness, hospitalizations and deaths is lower in kids than it is in adults. But again, remember this was during this recent surge, the sixth leading cause of death in kids. And so we want to get our children vaccinated. I can only hope that with the support of pediatricians, family practitioners, community medicine personnel we'll convince parents how important this vaccine is in terms of assuring that their kids won't suffer one of these serious illnesses, but also the amount of protection it will help bring to their homes, to their neighborhoods, to their classrooms, to their daycare facilities, wherever they're at. And this is so important and ask every grandparent on the face of the Earth. Do they want to have that close physical relationship with their grandkids? Yes, they do. And this will be a big step in helping add that extra layer of protection to those individuals who otherwise might not be fully protected even with their vaccines.

Chris Dall: [00:42:21] Mike, vaccine boosters and vaccination of children will be the topics of an online discussion hosted by the University of Minnesota that you will be moderating tomorrow. Can you tell our listeners a little bit about this discussion?

Michael Osterholm: [00:42:34] Well, let me begin by saying that I am truly honored to be part of an organization at the University of Minnesota known as the Consortium on Law and Values in Health, Environment and the Life Sciences. CIDRAP is a member organization within that consortium and led by Professor Susan Wolf, we have had a series of highly interactive webinars where panelists discuss the most pressing issues

regarding COVID and respond to the questions. And we do have one tomorrow. And while many of you will not be listening to this podcast until after this event, which is being held on Friday, October 29th, it will have occurred. We'll have a link on our website where you can go back and actually see the entire webinar. And this particular webinar is entitled "Debating COVID-19 Vaccine Boosters: Public Health Strategy in a Shifting Landscape." We're very honored to have three distinguished panelists that will be discussing this issue. First, we have Eric Topol, who is executive vice president of Scripps Research and director and founder of the Scripps Research Translational Institute. Dr. Sarah Long, who's a professor of pediatrics at Drexel University College of Medicine, emeritus chief of the Section of Infectious Diseases at St. Children's Hospital for Children. And finally, Dr. Yvonne Maldonado, who's chief of the Division of Pediatric Infectious Diseases at Stanford University School of Medicine and medical director of infection prevention and control and attending physician at the Lucile Packard Children's Hospital at Stanford. These three panelists are distinguished international experts that will really bring, I think, different points of view to this discussion. As you noted, Chris, I'm very honored to be moderating this session along with Professor Susan Wolf, who is the chair on the Consortium of Law and Values in Health, Environment and the Life Sciences at the university. So I urge you to tune into this.

Chris Dall: [00:44:34] Mike, you spoke a few moments ago about how we're going to continue to research these vaccines over the coming months and and in past episodes, as you've discussed waning vaccine protection, the need for booster shots, and how new data are changing how we think about the vaccines, you've used the term corrected science, but after talking with some colleagues, you've come to the conclusion that a better term is needed. Can you explain your thinking on that?

Michael Osterholm: [00:44:58] Well, the first point to make is, you know, you can teach an old dog new tricks and I'm that old dog, and I have to say I appreciate learning and then turning that learning around into hopefully something meaningful. And what I've been trying to convey for the past months has been the fact that science is a process whereby we implement something, then we study it, and learn about it. And what we learn then gets incorporated back into the implementation to improve on whatever it is we're trying to do. And then we study that and we learn and then from those lessons we implement again and we keep getting better with each one. That's what science should be all about. I wish all of us could have that perfect vision to know the exact science in

any one given moment with clarity and a comprehensive view, but we don't. We have to study to get better. So I actually had borrowed the term corrected science from a colleague, Randy Olson, a communication expert who I've talked about many times on this podcast. I did so with that in mind that in fact, we're talking about this iterative process of implementation, studying, and learning and reimplementing. And some colleagues came back and said, you know, corrected science isn't playing well out here because what it means is you were wrong and you had to correct it. And that's not the case at all. The iterative process with this science method is not about being wrong. It's about learning more and getting better. So I've actually come to change this, to call it evolving science. It's one where we get better. Each time we do the studies, we have this iterative process and this is what we should expect in the future. So over the course of the next six, 10, 24 months, whatever it might be, we will continue to get better at how we use vaccines. What can they do? What can't they do? We will continue to learn over the next 12 to 24 months. How can we better use these vaccines? What can we do to improve upon their protection or their feasibility in being used in low and middle income countries, etc.? And that should not be seen as anything other than a good thing. So I categorically reject when I get pushed back and say, look at somebody said this or said that or said this about this vaccine or this approach. And my answer is, yep, that's what happened. And thank God it did, because look how we've learned. Look how we're making this a better thing. Imagine if we decided in 1932, we had the best cars that could possibly be built and we're done. And today we were still dealing with 1932 models of cars, we'd all laugh. Now it's crazy. No, I want that 202 new electric car coming off the assembly line. Well, that's what's happening with us in science. As we deal with these vaccines, we're making them better. And as the science goes on, this is evolving science and celebrate it. Don't be afraid of it. Don't blame it. Celebrate it.

Chris Dall: [00:48:30] Now to this week's COVID query, this one is from Barbara, who asks a variation of a question that many people have right now, particularly in regard to vaccine mandates. She writes, "Please ask Dr. Osterholm to address whether the immunity gained with natural infection is comparative to that gained from the vaccines and could confirmation of an infection be used in lieu of vaccine passports in those places that require them?" And Mike, let me just add on to this. This is an argument you're hearing from many people who are upset about vaccine mandates. They say I've been infected already, why do I need to have a vaccine?

Michael Osterholm: [00:49:08] Well, I will say straight out, we have bungled this issue as the science community. We have. These are legitimate points. You know what kind of protection comes from previous infection? How long does it last? How does it compare to vaccine protection? And not get split into two camps, either previous infection is the gold standard, it's perfect or previous infection doesn't really matter. It doesn't exist. And just as I just talked about this issue of evolving science, this is an example of one of those areas. It's all about evolving science. You know, the question is being asked here is what does prior infection immunity mean for me? And I have to say there is no clear answer yet, but we can try to lay out what we know and don't know. First of all, there is clearly some protection that occurs after having previously been infected with this virus. That protection is variable. It depends on the time since you were infected. It depends on, in some cases, the seriousness of the illness in terms of how sick you were may actually mean that you have a better immune response and it has to do a lot with your underlying health conditions. You may not have had the same kind of immune response as someone else who does not have an immune compromised condition, as you do, if you have that. So first of all, we have to acknowledge that. What has happened is that the data that have been presented from a variety of studies haven't always been clear. They've been conflicting. That's not new in science. It has a lot to do with how the studies you do, when you do them. You know who in fact, is included in those studies. How far out were they from their previous infection? It has to do also with the fact that we still don't completely understand what is a correlate of protection with these vaccines. A correlative protection is an immunologic measure. Oftentimes, it's expressed as antibody and how much you have. But with COVID-19, it becomes complicated because there's different kinds of antibody. There's neutralizing antibody, there's different subclasses of antibody. Also, it has to do with how much the cellular immune response thing called T-cells play a role. And we've had a hard time determining exactly what constitutes protection. And even in this most recent discussions around the mix and match studies, we've seen people conclude that certain combinations of vaccines are superior to others because of a certain antibody level. But we don't even know for certain if that antibody is actually the correlate of protection. Which means, in fact, that maybe it isn't quite what we think it is. So knowing that that's the case and knowing that we do see breakthrough infections with those who have been vaccinated, but we also see them with people who had actual infection themselves. So I come back to saying I can't answer this question based on immunity because I'm not a vaccine immunologist, but I talk to a lot of them that I respect very

much. And we all come with the same kind of conclusion is we don't know yet what constitutes immune protection. So let's just agree right now that even if I were to measure your antibody six months after having had an infection or your vaccine, I couldn't necessarily tell you for certain that you were or were not protected. So there we have a challenge right now to, first of all, confirm you really had infection. How do we do? That was in fact, it's something a test that we can feel confident really did determine that you had a COVID-19 infection. And then after that, we don't know necessarily what your level of protection happens to be, and that is true over time. I think one of the things that we've come away with, though, are studies like one that was published in the Morbidity Mortality Weekly Report of the CDC in August, which showed in a study of hundreds of Kentucky residents with previous infection through June 2021. Those who were unvaccinated had over two times the odds of becoming reinfected compared to those who were vaccinated with even a single dose. So let me repeat that. This was a study done in individuals who had previous infections who then were either given a dose or two doses, depending on the mRNA vaccines. They may have had two doses versus those who had nothing but their natural infection protection and those who are unvaccinated had a two times higher risk of getting reinfected, which I think this comes down to something pretty simple. And that is, if you've had a previous infection, can be confirmed, then that should count as one dose of vaccine. Then on top of that, you should get the additional doses, whether it be one dose of mRNA vaccine or whether it be two doses of the mRNA vaccines, and then with the subsequent booster for both. I don't know, but I really am concerned that we've let this become another divisive issue among those who, from a mandate standpoint, say I'm not going to get vaccinated again because I've already had infection. And yet the data says, you know, you still are at risk and therefore at least get a dose and then let that infection count as one or the other doses. So we'll see what happens in the mandate discussion. I hope that this doesn't become another divisive moment. I think we do want to recognize that previous infection does provide some immunity, but at the same time, not overstate the fact that as some have done, that it seems to be the perfect answer because we surely have compelling evidence is not. At the same time, for those who say, you know, it really provides only limited, if any, protection, I think the data don't support that either. So you might say I have a camp in both buckets and I'm straddling the middle.

Chris Dall: [00:55:41] Mike, where is this week's beautiful place?

Michael Osterholm: [00:55:45] This week's beautiful place comes from Anita, who lives in Virginia and who wrote us a wonderfully kind email thank you, Anita! And embedded in that email was her description of her beautiful place. And so her note, "Dr. Osterholm, I want to share my beautiful place that I go to near my home in Virginia. It is a gorgeous farm whose owner opens it up to the public to visit. I love going there to hike the farm, especially when the sunflower fields are blooming. They fill my heart with joy and take my mind off the sadness in our world for the time that I hike the farm. Sunflowers are so expressive. It's almost like they speak to you. It's especially beautiful during the monarch butterfly migration, and the fields were full of them today. It gives me great joy to walk among these beautiful, cheerful flowers and to see all the birds, butterflies, ladybugs and bumblebees that love the flowers too. My best regard to all of you at CIDRAP, Anita." Anita, thank you so much. The pictures really are beautiful, and just looking at them provide such a calming, beautiful effect. And as someone who has done a great deal of tallgrass prairie restoration in my lifetime as one of my hobbies, I am particularly fond of these flowers and and what they do. So thank you very much. I urge all of you to go take a look at this and experience your own sense of beauty and peace.

Chris Dall: [00:57:17] And if you're a regular listener to our podcast and you've found a special place of comfort or solace during this pandemic and want to share it with us. Please email us at osterholmupdate@umn.edu So Mike, what are your take home messages and closing thoughts for today?

Michael Osterholm: [00:57:34] Well, before I share either of those, I just have to come back to one central focus point of these podcasts. Boy, I rattled off a lot of numbers today, I've talked about a lot of issues. But I want us all to never forget. That all of this is about the people whose lives have been ravaged by COVID-19. Whether it be that person I talked about in the dedication that may never have experienced COVID-19, even in your immediate family. But you still are challenged emotionally, how to handle it in life today. Whether you're someone who has been seriously ill yourself and now experiencing long COVID. Someone who has lost a loved one, a father or mother or grandpa or grandma or a son or a daughter, a neighbor, a colleague. We must never forget. COVID is not numbers, COVID is all about people. And so I just come back to that each week because it's such an important reminder for me. It's it's my touchdown, it's what keeps me focused on why we must do what we must do with this virus. So having said that, what are my takeaways? Well, as I have said, time and time again,

we're not done with this pandemic in the U.S. and globally. I worry that we're coaxing ourselves back into that June mindset. We can't. Anybody who thinks they can predict more than 30 days out with this pandemic is doing that based on pixie dust. It's that straightforward. So we have to be aware and ready to continue to respond to this pandemic and at the very heart of that is vaccine vaccine vaccine. Number two, evolving science should not be confused with misleading the public. We have got to do a much better job in public health of communicating what are we trying to do? Where are we trying to go? Why are we in this confusion, in this challenge about whether you've previously been infected or not and whether you need an additional dose of vaccine or what this may mean for your protection? We need to do a better job of discussing evolving science and doing the studies that we need to answer those questions about evolving science. Number three, we need to prioritize both first doses to those yet not vaccinated and boosters both. We can walk and chew gum at the same time. We must continue to prioritize getting people around the world vaccinated with both. And finally, the last point we need to support, however we can, the global response to COVID through our vaccination programs. Less than 6% of those living in Africa have had access to the vaccine. Many parts of the world, the disparity between those that have and those that do not have is real. Now I'm happy to report that over the course of the next six to 12 months, we're going to see a dramatic ramp up of vaccine availability for the world. And that's good news. That's really good news. But it doesn't mean that a vaccine automatically turns into a vaccination. And I fear that we're going to see in many countries of the world the same kind of pushback, if not absolute rejection of vaccines, as we've seen here in the United States. We need to be better prepared for that. We need to help support, how can we provide the education and the system support to get people vaccinated? That is what is going to be the tool that we can use that will win the overall battle with this virus. So let me close today with a song lyric that is near and dear to me and one that I've listened to ever since I was a kid. It's one that we've used twice before in Episode 11 on June 10th, 2020, "Driven by the data," we used this as a closing. We also used this song in Episode 52 on April 22nd of this year. The title of that episode was "A Balancing Act." This is a song that was written and recorded by American singer songwriter Bill Withers. It was released in April 1972 as the first single from his second album, Still Bill. It reached the number one singles on both the Soul Singles and Billboard Hot 100 for three weeks in July 1972 and among Rolling Stone's top 500 songs of all times ranked 208. Unfortunately, Mr. Withers is no longer with us. He died on March 30th of 2020 in L.A.. The title of the song, and I'm sure

many of you are familiar already with it, is "Lean On Me." "Sometimes in our lives we all have pain. We all have sorrow. But if we are wise, we know that there's always tomorrow. Lean on me when you're not strong and I'll be your friend. I'll help you carry on. Won't be long till I'm going to need somebody to lean on. Please swallow your pride if I have things you need to borrow. For no one can fill those of your needs that you won't let show. You just call on me, brother, when you need a hand. We all need somebody to lean on. I just might have a problem that you'll understand. We all need somebody to lean on. Lean on me when you're not strong and I'll be your friend. I'll help you carry on. For it won't be long til I'm going to need somebody to lean on. You just call me brother when you need a hand. We all need somebody to lean on. I might just have a problem that you'll understand. We all need somebody to lean on. If there is a load, you have to bear that you can't carry. I'm right up the road. I'll share your load if you just call me. Call me. If you need a friend, call me if you need a friend. Call me if you need a friend." Well, thank you for joining us again for another podcast. I hope that the information is helpful. I also just want to say that the song lyrics that I just shared with you is something that I have felt in spades from so many of you with the very kind and very thoughtful, encouraging messages and all of the CIDRAP podcast staff feel the same way. You have been an amazing someone to lean on throughout this entire pandemic. And as we're not done yet, we still have more leaning to do, it goes both ways. And I hope that we can help you in the weeks ahead. Have a COVID mental vacation week too if you can, hopefully feeling better. Most of all, in a world today that is so troubled and divided, it's hard to do what I'm about to ask you to do, but it's never been more important be kind, be thoughtful, be kind. It's easy not to do that. But be kind.

Chris Dall: [01:05:26] Thanks for listening to this week's episode of the Osterholm update. If you're enjoying the podcast, please subscribe, rate, and review, and be sure to keep up with the latest COVID-19 news by visiting our website CIDRAP.umn.edu. This podcast is supported in part by you, our listeners. If you would like to donate, please go to CIDRAP.umn.edu/donate-now. The Osterholm update is produced by Maya Peters, Cory Anderson, Angela Ulrich, Meredith Arpey, and Sydney Redepenning.