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CHRIS DALL: Hello, and welcome to the Osterholm Update: COVID-19, a weekly 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. It's July 22, and coronavirus infections, hospitalizations, and deaths are continuing to spike around the country. According to the New York Times, yesterday was the first day since early June that the country reported more than 1,000 COVID-19 deaths in a single day. The surge in cases is prompting new calls for mask mandates and shutdowns,

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and we're one week closer to the beginning of the school year, which for some of the hard-hit states in the South, is just around the corner. We're going to talk about the current situation in the United States, and the challenge of reopening schools in the face of widespread community transmission on this episode of the Osterholm Update. We'll also discuss more mask studies, the nation's continuing problems with testing, and answer a listener email on herd immunity, but first, Dr. Osterholm will start with his weekly dedication.

DR. OSTERHOLM: Well, thank you very much Chris, and thank you all for being with us again. As I've said before, and continue to say that we sure appreciate you spending time with us. We know you have different choices for getting your information on this, so thank you for being a part of this. This week the continuation of our, we'll look at schools, reopening schools, and how we're going to try to accomplish that. I think it's only appropriate to dedicate this to the teachers, the many staff members that make it possible for our children to receive an education from the

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bus drivers, to the kitchen staff, to the janitors, to the principals and superintendents, to the librarians, the paraprofessionals, the school nurses, I could go down the laundry list of all the people that support our educational efforts, and the teachers. The teachers who are those people who have our children's lives, literally in their intellectual and emotional hands for so many hours out of their early lifetime. Thank you, this is dedicated to you. I know these are very difficult times for you, and hopefully today we can at least shed some light on possible roads forward and things that we need to consider as we think about living through the next months with this terrible, terrible pandemic.

CHRIS DALL: Mike, I feel like the last few weeks I've been asking you, essentially a variation on the same question, and this week will be no different. What's your assessment of where we are in the pandemic, and without a clear federal strategy for suppressing the coronavirus, are we likely to see the number of cases continue to rise for the foreseeable future?

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DR. OSTERHOLM: Well, we have ourselves into quite a mess, a real mess, and at this point, much like water running down the side of a hill, you can pretty well know that it's going to get to the bottom of the hill, the question is which track is it going to take? And I think that's where we're at right now with this pandemic. Let me just say at the outset, as I have said in previous episodes, and knowing that this was coming, knowing we are going to see this kind of situation

emerge because of the way we are approaching the control of this virus in the United States, and as some other countries are doing, we would be confronted with a time asking ourselves, are we going to just live with 65-70 thousand cases a day or more? And the fact of the matter is some will say, well look at the cases are starting to drop in Arizona.

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That's absolutely true, and I can tell you that's a very, very welcomed piece of information for those living in Arizona, but as soon as some time passes, I have no doubt that they're going to come back again, because people, if they don't change their behavior, in terms of distancing and the ability to transmit this virus to each other, this is going to be almost like a whack-a-mole situation where we just have to keep pounding it down over and over again. So what's really confronting us is a choice. We, as I said last week, know that other countries have demonstrated with clarity that if you drive down the number of new cases to in that level of 1-5 cases per 100,000 population, then the potential for testing and tracing will actually work, and testing, which you've all heard about, is a huge challenge today. We are far outstripping the testing capacity we have in this country, and that's not going to be fixed anytime soon.

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I would actually be greatly relieved if we weren't potentially 70,000 cases a day, but rather 5,000 cases a day, and that would allow us to do the very targeted and rapid turn-around for testing. If we do that, and that will only be accomplished if we, in a sense, go into what some would call a full shutdown. This can be done in a regional basis, and I know as soon as I say those words it's like nails on a chalkboard for some, for others it's a torturous pain, for others it's loneliness, it's thinking about having to relive again, what we've been through, but did not complete, and so I raise this issue right now, I'm convinced as a country we will not obtain the kind of coexistence with this virus that we're seeing right now in many countries around the world, some that were on fire in a horrible way last spring,

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but then had the discipline, had the foresight to drive this thing down, and then bring about the kind of control programs that are necessary. As we talk about school openings today, this is going to be a huge piece of whether we can open schools, and how we open those schools. So I keep coming back to this issue, I know it's not popular, in fact, it's just the opposite. It's one of those ones where you have to ask yourself, what kind of pain and suffering, economic disruption would happen? And if we do go into another full shutdown, whether it be regional, where we have an increased number of cases like we're seeing in a number of parts of the country, although I caution you, because I think the upper midwest right now is about maybe 2-3 weeks from popping if we don't do more here to slow things down, so don't think this is just a South or West issue. This is a whole country issue,

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and I think we have to take some lessons from the state of New York. You know, I have been very involved with that as some of you know on this podcast. Governor Cuomo asked me several months ago if I'd be one of two people to review, on a daily basis, their numbers on their dashboards relative to reopening or relaxing restrictions or tightening them up, and I have to say to their credit, they have done a remarkable job of monitoring this pandemic in the state of New York, and in the metropolitan area of New York City, and while it's not perfect, it is an example

of what can be done. Look at the lack of cases. Look at the lack of deaths in New York compared to the rest of the country, and so we can do this. We can do this. The question is, will we? And you know, going back to the Oil Fram commercial of many years ago, for those of you on this podcast who are as old as I am, you may remember, the old line was, "You can pay me now, or you will pay me later," and I think that's the challenge we have before us.

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Now our whole goal is trying to live in coexistence, even though it's going to be a painful one with this virus until we do get effective vaccines, and you know, we are hoping for that. I think there's, you know, very positive news over the course of the last week on vaccines, but as I also shared last week with the CEO of Merck's comments about this, it's really not a slam dunk yet. Imagine if we could develop herd immunity from a vaccine and not from actual infection, wouldn't that be an incredible gift? So, Chris, I just come back to the same thing, it is the same story over and over again, the challenge is this past week, just think how many more deaths have occurred since we last recorded our podcast. We're now over a thousand today in this country, and so next week at this time we'll be talking about 7,000 deaths have occurred since we recorded this one.

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That's the tragedy, so we can do this. We can do this. The rest of the world has shown us. It's whether or not we take that opportunity to do so, and if we don't, we will end up paying a terrible, terrible price as these transmissions of the virus continue largely, largely unchecked in many of our communities.

CHRIS DALL: Last week we began a conversation about school reopenings, and this week we are continuing that conversation. You spent a lot of time looking into the issue and reading various statements and guidelines on reopening that different groups have put out, Mike, are you seeing anything that leads you to believe we can safely reopen schools in the coming weeks?

DR. OSTERHOLM: Well, you know, for every complicated question, there's a simple answer, as H. L. Mencken once said, it's usually wrong. Please indulge me in the sense that we're trying our best. I don't have a simple 1-2-3 prescription of what you should do, and it is going to vary in this country substantially, but let me just show you what we do know, and what we can do with that information that we know.

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First of all, I received an email last week from Ed, who very appropriately said in the subject line, "Do you know that Southern schools open in TWO WEEKS?" with two weeks in all caps, and this was dated July 17th. Ed, thank you. You're absolutely right. There is an urgency here, that we all are feeling and understanding. Let me just say at this point, I am going to go out on a limb in realizing that this may not be practical for some areas, but the more superintendents I talk to, it's surely possible. I think we need at least another 3-4 week pause before we can really take action with any certainty on school openings, and if I could use one word throughout this entire discussion, it's flexibility, flexibility, and flexibility. So, in terms of prevention, it's distance, distance, and distance, and in terms of our educational system, it's flexibility, flexibility, and flexibility.

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I'm going to come back to a point that I made last week. There is no right answer here, it is going to vary. I can tell you that there are wrong answers. The first wrong answer is that there is somehow a magic blueprint that means if you just do this everything is going to be okay. It is not. We have to look at the next year as our COVID year in education, and what that means is we are going to be doing things that we couldn't never imagined in terms of how we educate our kids, how we respond to what's happening in our communities, and how we anticipate what might happen next. What do we hold ourselves accountable for? How do we handle our kids? And in a sense, I'm willing to say right now, this COVID year of education is going to be a do-over. It's going to be. Just accept it and live with it, and live with it in a way where somehow we don't see ourselves as failing, because we're not doing it the way we did it twelve months ago, and I think that, just giving ourselves permission to know that this is going to be a challenge, and that you know what, yes our kids are going to suffer educationally,

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there are health issues that are going to happen, you know probably the—it's even hard to talk about. I talked to a teacher this week who actually trying through last spring to reach out to students who were in very difficult home situations, potentially dangerous home situations, but because a young grade-schooler was so embarrassed by the trailer he lived in, that even on a very inclement weather this kid came out to the teacher's truck outside to talk to her, because he didn't want her inside the trailer, because you could tell he was so embarrassed. You know, those are hard, hard stories to hear. So, I think that one thing we have to understand is, again, this is not going to be normal. Don't expect it to be normal. Don't hold ourselves accountable to normal.

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Hold ourselves accountable to get through it with as much grace and as much wisdom, and as much, I guess what I would say, fortitude as possible. That's the message I want to leave today as we go through this whole school situation. Number two, there is no magic pixie dust, okay? I don't want to hear from somebody, if you just did it this way it would work. It's going to take an entire catalogue of possible approaches, I think, to work, and in that sense I understand that I am not in keeping with the mantra right now of national edicts down to the school district saying how to do it. I'm going to be very clear right now, whether this puts me in good stead with various elected officials of both parties, in all levels of government, this should be a decision left at the school district level. I've talked to a number of superintendents, lots of teachers, I've talked to people who are advising,

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in various organizations, the educational system, and the one thing that comes through time and time again, is that we need that flexibility, because no two school districts are alike, whether they're urban or rural, whether they're North or South, whether there are 80% of the students who are at a disadvantaged class level, it's really a challenge, and so I have faith in the superintendents. I have not met one superintendent or one teacher yet, that doesn't want everyone back in the classroom. I haven't met one teacher or one superintendent who isn't trying to find a way to best educate our kids and keep them safe, and I just am certain of the fact that we have to leave this discretion to the local leaders. In that regard it is the school boards,

the superintendent, the administration, it's the teachers, it's the support staff, it's the families, it's that dialogue back and forth.

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Again, I come back to a point I made last week, of seeing more and more data supporting this, about a third of parents in this country absolutely need to have their kids back in school or they don't have jobs, and if they don't have jobs they don't have pay checks, and if they don't have pay checks they don't have a place to live or food to eat, and so they've got to have help. At the same time, there are a third of the parents who are absolutely horrified of the thought of sending their child into a school where they think they're going to potentially acquire an infection that could kill them, or bring the virus home and kill a family member, and there's a third of those parents who are just sitting there saying, "please, tell me what to do, and what timeline are you going to do it so I can accommodate accordingly?" So, given that, I'm going to say right now that the issue is flexibility, and at this point I'll give you some guidelines of what I think that flexibility might look like, but I hope that is an overriding issue, and please don't look at each other and say, "you're wrong and I'm right."

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Look at it as, I have this need, I have this concern, how can we address it together, with my needs and my concerns, and I think that's going to be the message. The second thing is we need resources. Oh boy, do we need resources. I understand that K-12 has historically been a state funding issue, with local levies, of course, being critical to that. The federal government has largely invested in higher education, and some degree, childcare, but this is one where we need the federal assets so badly. I am certain. I am certain of this, that when our great-grandkids look at what happened, and they read about the pandemic of 2020, just as we have done reading about and understanding the pandemic of 1918, one of the measures that we will be judged by, is how did we handle our kids? What did we do for education? What did we do?

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Did we make them pawns in a battle between different levels of government? Did we make them into an ideologic punching bag in terms of what we believe is absolutely the only way to do it? No, we can't do that. So I have to say right now, is one of those measures is going to be how much support they have. Currently in the HEROES proposed legislation that passed the House several months ago, there is 100 billion dollars for school safety and for preparation. Well, you know what? This can't come next year. This has got to come now. It's got to come right now. As any of you know, who have listened to this podcast, and now my career, I have served in the last 5 presidential administrations, I served two Republican governors, two Democratic governors, one independent governor, as state epidemiologist, and you know, my job is to be a private in the public health army, and to do my job for everyone and anyone who is in our leadership position. So, you know, I don't weigh into the partisan politics as some people would like me to do.

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I believe my voice should be independent and it should be without reference to ideology, but I can tell you now, with absolute certainty, Washington, you have got to respond. We need help. If we're going to deal with this school issue, it's as simple as that. So, I look at this issue, with

100 billion dollars for supporting the kinds of activities that have to happen in schools, all the accommodations and facilities, hiring additional staff, paraprofessionals who can help keep classroom sizes small, looking at additional buildings that might need to be used for classrooms, how we're going to deal with bussing situations, how to deal with just finding hotspots for kids that don't have internet connection otherwise. You know, I heard stories from schoolteachers and administrators, where they literally took school busses into rural areas of this country last spring, just so that the school bus could serve as a hotspot.

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That's the kind of creative things we need right now that can't happen, and it won't happen, without this support. So that's number one. Number two, I will go through this in just a minute, but expect that kids are going to get infected. They are, and we can't prevent that. We can reduce it, but we can't prevent that. Why? In large part because we are a country on fire, and what happens in our communities will spillover into our schools, and as I'll share with you in a moment, the countries that have successfully dealt with this issue have largely been able to get their schools back, did it all under the conditions that there was not a house on fire in their communities, and we aren't in that position at all. So, I just, at this point, will say that, you know, I'm not going to be pollyannish about this, and I'm not going to promise you something that I know can't happen. We will have kids get infected. There will be school teachers and school staff that will get infected.

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The question is what impact will that have on each of these, individually, personally, and what will it have on the community itself? The next consideration that we have to put front and center is time. You know, if schools don't start in two weeks, it's not as if it's going to be, somehow, success or failure for the students this year, so I urge that any school district that has set a timeline for starting schools, you have to consider, if we're not ready, don't do it, because if we're not ready at the beginning you will fail, and that failure will set a precedence for what will then be the next failure and the next failure. You know, try your best to get it right. Now, having said that, I understand that parents need definite dates, they need times, because they've got to figure out, "Am I working? Am I not working? Do I have childcare or not?" And so, within the context of that, we really have to look at what kind of support we can provide parents,

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whether it's additional child daycare, whether it's the kind of kids time out, explore club activities, which to a certain degree have gone along pretty well in this country even through this summer, and so we've got to help with that situation, but I know that some will say that this is not practical, but I've heard from far too many administrators this past week that actually said, boy could I use two more weeks or three more weeks, because the guidance have all just come out, and I still don't know what kind of money I'm going to have to do what I need to do to make this school safer, and you know, trying to start in that kind of a setting is, to use an analogy I've used before in this podcast, it's like trying to plant your petunias in a Category 5 hurricane. It's a real challenge. So, I think this is part of where the flexibility is. Let me remind everybody that, as I've talked about before, I really see this situation in four buckets. Really critical buckets. 1 are the kids. First and foremost it's about our kids, but at the same time,

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we can't project onto our kids what are some of our issues, and what I mean by that is some parents, and I've talked to some who are frightened about this situation, and who, in a sense basically have concluded that a lack of safety is automatic, and I think we need to have that discussion, and I understand as a grandfather, as a father, that is really a critical issue, but we've got to look at the data and say, it's not going to be a perfect situation, but does that mean then that we don't send our kids to school, and I'll comment on that more in a moment. We have over one-fourth of all of our teachers, paraprofessionals, other staff members in our schools, who actually have an underlying risk factor for severe COVID-19 disease. That we have to be mindful of, and then in our families, I think one of the things that most people don't realize is that early in the pandemic, particularly in places like New York, one of the major enhancing factors in the number of deaths,

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particularly among those over age 65, were the multigenerational living conditions, where you had a young adult, with young children, who was living with Mom and Dad, and that individual was an essential worker and had to go to work, brought the virus home, Mom and Dad or grandpa and grandma as the kids would call them, never left home. They did everything right like they were supposed to, but they were living with someone who was coming home, so today we know that there about over, at least 3.3 million Americans that are over 65 that live in a household with a school aged child up to 18, so we've got to be mindful of that situation as we think about families, and then our communities in general. You know, I say this with complete conviction that I'm comfortable right now having a COVID year with our educational system, and I think we all need to do it, and if we even need to have students redo a year,

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you know when we get done with this, we don't want to leave anyone behind, we don't want to have had students miss opportunities that they will lose for the rest of their life, but let's be flexible. Let's be creative. You know, I look at this right now and I don't see anything we're doing that we can't undo in the future if in fact, we agree, let's just be flexible and creative, and maybe next year much like they have done in parts of our country after Katrina or major hurricanes where students were out of school for months, they did a redo year, and I think we need to think about that very possibility here, with the idea that it really is some of the pressure to say, "if I don't get it right in the next 24 hours, I'm wrong for the rest of my life." No, you're not. We have a chance to redo that. So where do we go from here? What do we look at and what are we thinking about? I think that it's one that again, we have to understand where the leadership of our schools are at.

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One of the superintendents I talked to this week was a Des Moines public schools superintendent, Tom Ahart. Talking to him was inspiring. Tom is clearly an incredibly dedicated professional who has a school district that has many challenges, and this guy is as committed as they come to it, and actually he was quoted in a local news story saying, "the lack of clear and often times contradicting guidance from the federal and state governments has left local officials, including school districts, to their own devices to determine what is best for their community. The input from and support of our parents has meant a great deal as we navigate the once in a lifetime moment in time." I think he said it so well. So, I come into this with this

attitude too, that let's sort out all the guidance and I'll try to go through some of that today, because it is conflicting. You know, we have spent a tremendous amount of time at CIDRAP, 0:26:00

particularly Cory Anderson, one of our very outstanding star employees who really has had an opportunity to dig into both the policies as well as the actual disease incidence and what we know about the spread of this virus in schools, would tell you it is confusing. It's tough. You know, I've looked at it until I'm blue in the face and I have to say, I don't always understand it but I do understand that we have these contradicting policies, now we have to go forward. So let me just take a look at what we know about illness, and frankly, it is a real challenge, because what we have are really two kinds of environments. We have one where, in communities around the world, in countries that have controlled this virus, then reopened schools. That is a very, very different kind of thing. That is going for a walk on a very beautiful 72 degree day in Minneapolis with a light breeze, blue skies, and just, the world is a wonderful place.

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As opposed to, going out for a little walk when it's 27 below, with a wind chill of -42, and the snow drift is up to your knees, trying to slip slide along, and thinking, "Oh my, this is an interesting walk." So, what we have to understand is those schools that opened in those blue skies, that's one thing, versus what would happen if you opened under a house on fire condition, and that's where I think we're at today. I've seen all these studies that have said, well, this is what would happen with kids, this is how they get infected, this is not, I don't think we can say any of that. We're learning that we're the communities that have lots of activities, it spills over into kids. Kids will likely transmit it, at least to some degree, adults will get infected, and we have to be prepared for that. For example, I just would not put a lot of stock in the preliminary conclusion that children are less susceptible for becoming infected, and thus less capable for transmitting disease.

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While this may be true and some of the policies surely hit home on that, at this point as we got more and more information on clusters of cases that occurring in hotter areas, we see that in fact, there may be much more in the way of transmission, and even the recent study that just came out from Seoul, Korea, which was a contact follow-up study when they looked at children 10-19 years of age, they had a secondary attack rate of 18.6% of kids that were infected by other kids. Would this mean that's what would happen if we saw this in other locations? I think it's sure possible. When you look at other countries that reopened, yes rates of community transmission were important, but also what was their testing capacity and strategies? How did they follow-up if an outbreak started to happen or if cases occurred? And, how did the schools look when they reopened?

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Did only select grades go back? Overall if you look at the data quality, and we again have sorted through this, it's really quite poor. We found studies where they made extensive comments about what happened in Sweden, for example, versus Finland, but what they didn't tell you is that for almost 15 weeks in Sweden, you, as a child, didn't get tested unless you were hospitalized. So if you had cases occurring, you wouldn't even have known that, so to compare that to Finland, where they actually did testing in students, was really not appropriate. So I think

that, at this point, I could go through and spend literally an hour, just going through study by study, to point out, you know, what has happened or not happened with students, and let me just say, there have been a series of outbreaks that you know, may not be well known. In Canada and the United Kingdom, they both have had daycare outbreaks with 16 and 23 cases respectively.

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2 elementary schools in Canada had outbreaks, one with 7 cases, another with 9, and a school in Israel had an outbreak with 33 cases. We've seen outbreaks in high schools, with cases that have ranged from 60 to 178 cases, and these again, spilled over to some faculty or staff, but was primarily in the students, and one theme that we do see over and over again with the older students is those basically in junior high or high school where we see more transmission than we see in the younger age groups. So, the point being is that we will have these kinds of things happen here if we open with a very high level of transmission in our community. Even here in Minnesota, when we look at what's happened, as of this past week, 943 of our cases in Minnesota have been in kids 0-5 years of age.

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That's about 2% of the total, but 943 cases are quite a bit. If you look at 6-19 year olds, we've had 4,525 cases, or 10% of our total case load have been there. Well if these schools are open, this transmission is going to occur there too. Just, as it didn't occur, because none of these cases were reported largely during when these schools were in session. Just imagine if school is in session. So the most important thing to understand is we will have cases in schools. We will have transmission, and that gets us to the point of then what are we going to do about it in terms of our follow-up. How will we follow up? What will we do to actually know that in fact, we're handling this? And so, one of my first questions is, and schools should not start up wherever you are, unless you can answer the question, what do you do if a teacher tests positive for SARS-CoV-2 infection? Will they be required to be out of work for X number of days, weeks?

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How will that be handled? Will they get sick leave pay? If a teacher has X classes a day and Y students in each class, will they X times Y student number need to stay home, be "quarantined" for the next 14 days? If you have someone who lives in the same household as a teacher, and the teacher tests positive, does the teacher now need to have that family member take time off or vice versa? If a family member test positive and the teacher is living with them, is the teacher off? I could go through all of these different questions. These have to be answered up front. Know the best you can, how you are going to handle these, and these have to be done with state and local health department support, and one of the things I heard, and this is hard because I come from the public health world, you know, having been in a state health department for 25 years, I've heard over and over from school districts, largely many of the state and local health departments have not been that helpful,

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and the reason is they didn't have the answers either. Well, we don't have a choice anymore. We have to have some answers, so these kinds of situations will happen. So, step number one there's got to be a partnership between the state and local health officials, potentially medical

authorities within the community, although I have seen a variety of different opinions from doctors, who would handle things very differently, and again if they're doctors that are not well steeped in policy that may be a challenge, but that's got to be there. So that's number one. You've got to have state and local health department support in whatever you're doing to reopen the school. If it's not there, then I don't think that you can go ahead. Now how do we put into context this severity of disease with kids? Well, you know, it's very painful to talk about this piece of it in such an academic way. A child dying is a tragedy, as I said in the last podcast, that can't be measured in a rate, nor should it ever be.

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It's a numerator all by itself. We've just had a 9 month old here in the state of Minnesota die, and we have to put that into context of everyday life. The world is not a safe place if safe means nothing bad will ever happen. Bad things happen. What we have to do is minimize how much they happen, but let me just give you some sense of this, because I think it gives you an idea of what we're looking for in terms of comparative, and again, these are not numbers these are people, these are kids, these are our loved ones, but if you look through July 8th in this country, 9 children under the age of 1 year have died from COVID. 7, 1-4 years of age, 14, 5-14 years of age, and 149 from 15-24 years of age. So again, 9 under 1 year, 7 1-4 years, 14, 5-14 years, and 149 over 15-24.

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If I look at the issue of deaths in kids overall, and you try to compare that with what happens in everyday life, it's a very sad commentary, and I know that this happens very rarely in many parts of the country, but it happens, last year in children 1-4 years of age, there were 1,226 kids died from unintentional injuries. There were 353 kids who died from homicides. 326 kids who died from cancer, and 122 kids who died from influenzal pneumonia. So that's 1-4 years of age. Remember, 7 kids so far have died from COVID in that same time period. The reason I'm bringing this up is not to be insensitive, I can't even imagine being a parent of one of these children, it just really is hard, but it is comparative,

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we can do this, I think, and we can still fit into the everyday scope of life so that we have to understand, yes we're going to have these bad things happen, but we don't stop having school because of unintentional injuries, or influenza, or any of these other areas, and I could go through the laundry list here and show you that COVID-19, in those under 24 years of age doesn't even hit the top-25 causes of death in any of these years, not even close, and so I'm prepared to say, it's not going to be perfectly safe, and we can't guarantee a parent that it's perfectly safe, but what we have to do is tell them we're going to make it as safe as we possibly can, and we're going to make it safe within the context of what their everyday lives have been. I think that's a very important message, and the same thing is true with our teachers. In a study done by the Kaiser foundation,

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they went back and looked carefully at teachers in schools throughout the United States to see who would be at greater risk of a serious illness if infected with coronavirus, and as I mentioned before, they found 1 quarter, 1.5 million at-risk teachers right now, so if I'm one of those teachers, I can understand why I would have real concern going back into the classroom, and

again, I talk to teachers, these are a lot of heart-tugging stories, I'm sorry but they are. One teacher who broke down on the phone with me who just wanted so badly to be back with her students, so badly, but she has a significant risk factor for serious outcome. She's older, and her world was so conflicted. We have to find a way to involve these teachers, and this is where the hybrid comes in. Okay, let's get creative here, guys. These are the teachers who are so motivated, but they would do a much better job at distance learning, and they want to have that interaction with those students, so how do we use them?

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So I think one of the things school districts need to do right now is partition out, you might say, their faculty by who's able to be in the front lines, who's willing to be in the front lines, who can't be or shouldn't be, and how are we going to have them contribute to the everyday school. So I'm already prepared to say that they're part of the hybrid picture, which is going to be necessary, and that we use them as part of the situation of still providing education but not putting them at risk, and then I think we need to think out of the box. This is going to be huge. I talked earlier about the outreach issue with the school bus, you know, serving as a hotspot for students to get access to internet. I never thought about that before. I had so many teachers that had so many creative ideas for how to deal with this. We've got to capture those, and again, don't think of school as usual. You know, how to do sidewalk chats as opposed to basically being in the classroom,

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you know, how to use the warm weather for outdoor classes so that we dissipate that virus. You know, distance learning, as I said over and over again, is worth investing in regardless of a pandemic. There's a lot of value to that model that we have to come to understand, and now is the time to do that. Also that, I heard it over and over again, is that fact that in terms of the common saying in education is to go slow to go fast, and in education that means to build up socially and emotionally before doing reading and math, and that has been completely forgotten right now in a way, and students and teachers need that so much, so ask the students, how are we going to do that? How are we going to best be socially and emotionally together before we start doing reading and math, and I heard a number of creative ways that teachers had to do that, that wasn't just on another side of the computer screen.

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So I think that this is another opportunity here where, again, capturing that in a school district, and that's going to vary by school district and by challenge. If you look at who wants to come back and teach, I mentioned earlier, about the third, third, and a third of parents wanting their kids in school, I saw in the last couple of weeks, in talking to so many teachers, let me just tell you they want to be back. In a survey done by the University of Minnesota, it was clear that state educators here preferred to teach in a classroom, but yes they were worried about COVID-19, and what they basically said in the 13,000 educators that responded in May and June, that while they had moved to distance learning, they also understood that the classroom was by far the better place to be, and they said, in a sense, that there shouldn't be any concrete answers as to whether distance learning should be continued in the fall or not, it would depend on what was happening with cases in the community,

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but that, in fact, the teachers themselves were so desirous of being in the classroom. So I'm going to take that at face value, nobody is just going to say, out of convenience, "okay, we're going to teach from a distance." That's just not going to happen. Let me just get quickly to who has recommend what. This, if I were a school administrator right now, or teacher, or parents, I would be so confused. We looked in depth at the summaries of 14 different groups, who've made recommendations about school, and I've got to tell you in reading them, they were all well intended, really well intended, people gave it their best, but they were all over the map on what to do or not to do. If you look at the American Academy of Pediatrics, clearly they are a very important group, who, the health of children is their entire purpose, and they basically highlighted the repercussions of what will happen if schools are closed.

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You know, they did touch on the available science, that so far, at that point suggested children may not play a role in amplifying the virus. Well, that wasn't completely clear, I think, when we looked at the data on virus transmission and think that surely, younger kids, you know, grades 5 and younger, will have potentially less transmission but there will be some, and that, in fact, if you have older kids, they may very well be in a similar vein of transmission as adults. So we can't just say, "Kids aren't going to be as likely to get it, move forward." The American Association of School Administrators, another group that obviously is on the front line, the shock absorber between the community and the educational system, didn't advocate any one way or another for in-person schools or distance learning, and instead their guidelines really detailed how school administrators should be approaching certain issues to make the best of whatever circumstances occur.

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I have been nothing short of highly impressed with the school administrators and what they're trying to do. They've got a bad, bad situation on their hands and they're trying to add that kind of accommodation, adjustment response, and I just have faith in school administrators more than I ever have right now. Let's let their leadership shine and have them help us get through this, and if a school district comes back and says, this is our plan, this is why, support it, and even if it doesn't completely agree with you, I do believe that most administrators are trying to do the right things. This isn't a blind kind of, just follow whatever they say, but I think somebody has to take the lead, and they're doing it. The American Federation of Teachers, obviously critical in terms of their input, basically, they recognized the challenges ahead, and actually said, "Reopening society and economy hinges on successfully reopening schools," but they were very clear on reopening successfully didn't mean just all the doors were open,

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and so what they basically did is they promoted adoption of evidence based measures that seeks to align those measures to meet the needs of students and staff with constant recognition that plans may change. Again, flexibility. I'm afraid I'm not going to be all that helpful to them, because unfortunately we don't have a lot of measures yet that are evidence based, we're using what we have from looking at respiratory transmission of an infectious agent like this, and trying to go with that, but it's still a challenge. They do embrace, you know, the programs of screening and testing and contact tracing, isolation, all of these things, which I come back over and over again, this is where public health has to be critical in all of this. School teachers were

not trained to be contact tracers. Superintendents were not trained to be contact tracers. This is where we really need the partnership. If you look at the council of chief state school officers,
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they basically too have provided that sense of flexibility, the idea though supporting social, emotional, and mental health needs during the COVID situation is very high. They detail the needs to support students with disabilities, how to shorten the digital learning gap for those who have and don't have the appropriate computer access or the computers themselves, how to deal with that, and they also said in their most recent press release, that "whether it's conducted in-person, remotely, or a combination of both, it's most important that we deliver a quality education to all students, and that we do it safely for everyone involved in our education system." I think that theme is what should hold true throughout. The National Academy of Science, Engineering, and Mathematics, an organization that I'm a part of, basically came out in a new report this past week about reopening K-12,
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they said weighing the public health risks posed by the coronavirus, against educational risks of not having in-person instruction, and the impact that closed schools could have on existing racial and social inequalities, and I think that that's true, it's obvious, we understand that, but we have been dealt this hand, I look at the fact here and say that in many cases if your house is on fire you can't have in-school education, you just can't, and so we should strive for in-school, but I'm not sure that that's an issue. The report did note that you can't reopen schools, and they can't be 100% safe as long as the pandemic persists. I have a challenge with the 100% safe, as I've already said, I don't think that happens anywhere, but the bottom line message is that yes, we understand that the pandemic is really a key issue. I can go through other lines, let me just say the National Association of Secondary School Principals basically have echoed what the superintendents have.
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They surveyed school leaders to assess their confidence in their school districts ability to preserve the health of staff and students physically reopening in the fall. Interestingly, just 35.2% of the 1,450 principals responded that they felt somewhat confident or extremely confident that they had the ability to do that, and so I think, and further digging down into that, a lot of them it was about resources. They just said, "I don't have the resources to do it." So, that would change if we had the resources that I talked about earlier. Rather than go through all the rest of these, I just want to point out that nobody had the magic prescription. Nobody. Nobody had the magic prescription, and so I think that overall theme that we identify here is that schools must maintain flexibility for full time remote instruction warranted by community infection rates, and that was going to be a very, very critical point.
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They also came through that the need to provide plans for mitigating the public health risk due to COVID-19 before schools ever reopen so that they have in place, how will we handle if a teacher is positive, if a student is positive, what will we do? Those plans need to be in place. They need to have special consideration for special education needs for both in person and remote learning. We heard over and over again from teachers from special ed that this is a special relationship issue, and that we needed to provide those teachers with the adequate

personal protective equipment, and to try to bring those students into class, because distance learning was just a severe challenge in that setting, so that may be one that we needed to look at. We also heard over and over again that school districts should opt for different start times than they have already scheduled. Right now we didn't see any that said they should start earlier, because most of them were in houses on fire kind of environments, but if they started in October,

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after hopefully more control occurs in their communities, this would be advantageous. At the same time, they didn't recognize the need for parents to have some information about when schools would open so that the accommodation for kid's care and work could be made, and this is a huge issue where I think creative opportunities for kids to be together are needed. I've asked over and over again, well if kids are together in explore club, then what's different than being in school itself? That hasn't been completely clear to me, but I think that is one reason why getting open sooner, if we can, is really important for that, and the one thing we heard over and over again from parents in particular, is communication, communication, communication. You know, if you don't know what your final answer is, or you're not sure what you're going to do that's okay right now, just tell us what you're doing to know what you're going to do and where does that go. So how would I handle this right now in terms of whether we open or don't open, and how we're going to open, and what that means?

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You know, if you're in a state right now where you have transmission driven, pretty much, into the ground, you probably can start opening. Maine, Montana, Alaska, Hawaii—they're all states right now that look to be showing, you know, the kind of containment that we would say you could probably open as normal, with all the other accommodations we talked about, however. Now, that could change in a heartbeat. If you're seeing more than 25 cases daily per 100,000 population, like Arizona, Texas, and Florida, you know, I don't know anyway you can open a building safely, in the sense of accommodating here. So it's really in between, it's all those places that are really not yet, basically, at that level. To know whether my community is in that place where it can start again,

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I would say basically if you were at 5 cases or less per 100,000 population, if you had decreasing numbers of cases for the past 14 days, and if your hospitals have at least a 25% extra capacity to handle cases, then I think you're talking about reopening, knowing that it's still going to be a challenge, but those are the numbers I would use, and I heard over and over again from school superintendents, I wish somebody would just give me a number, so at least I could go to a meeting, and have that, so I'm going to throw that out. 5 cases per 100,000 population or less per day, you have 14 days of decreasing numbers of new cases, and you have at least a quarter of your hospital beds available should there be a surge and you need to address it. If you have that then I think you're potentially in a place of looking at where to go forward. So, let me conclude this by saying I didn't give you any answers that you probably didn't already know.

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I hope that validated the fact that the challenges we have are immense, but they're something that we can do. We can respond to this. Number one, we need resources from Washington D.C. Number two, we need flexibility. We need creativity. Number four, we've got to be mindful of everyone's interests, they're concerns, they're fears, and address them in a positive way. Don't dismiss anybody here, but at the same time, we've got to move forward, and being in a state of inaction is not going to help. Next, consider this a COVID year. This is one of those situations where if we need to do a redo, do it. If a year from now we're back to some semblance of an old normal, we'll never go back completely to an old normal, then we'll just have taken this year's experiences as an opportunity to learn a lot about education and the critical nature of it and why we value it so much,

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and next I think that last but not least is again just be helpful to everyone. I worry that we're going to see members of our community who have a very rigid view of what education should be this year trying to force certain actions or kinds of experiences on the community, and I'm going to say right now, I'm going to turn the keys of the education experience to my children, back to my school boards, back to my superintendents, back to my teachers, back to my public health agencies and say, "You have to help us, and we'll get through this," and we'll keep you posted as we get new information, I will promise you right now there's not going to be any clear black and white kinds of instruction coming down, it's more of just a process, and we can get through this. We will get through this, and our kids will be better for it. We will learn.

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They will learn. We will feel pain, they will feel pain, but we will learn, and at the end I want more than anything to have my great-grandkids look back and say, you know, you guys did that pretty well.

CHRIS DALL: We continue to get a lot of great questions from our listeners, and our email question this week is about SARS-CoV-2 and herd immunity. Ed writes, "I've heard a report that immunity from SARS-CoV-2 may only last weeks or months. I know we're a long way from knowing for sure, but that would seem in keeping with the other coronaviruses, and therefore a definite possibility. Does herd immunity rely on immunity of a year or more to work? If so, would immunity for weeks or months take herd immunity off the table as a way out of this." And Mike, in answering this, maybe you could provide a bit of a refresher on the concept of herd immunity. DR. OSTERHOLM: Thank you Ed, for your very thoughtful question. It's a complicated issue of which it's clear that you have some sense of this, and it's one that we're all wrestling with as it is at the very heart of how we're going to ultimately end this pandemic.

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As Chris asked, just let me say a few things about herd immunity. What happens is, with the concept of herd immunity, is you have an infectious agent in a community that keeps transmitting to one another, if in fact that condition infers some immunity it means now that once I'm infected, and recover, and now have immunity, I'm exposed next time to that virus or that bacteria, I don't get infected, because in fact I'm now already protected. Well, think of the more protected people you have in your community, the less chance I have as someone who is newly infected of infecting them. So suddenly, instead of having 10 people in front of me, all who are

at risk of getting infected because I am and they're not, and they don't have any protection, now 8 of them are already protected.

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My chances of transmitting are much, much lower, and so what we're looking for is having enough people in the population who are protected so that on average I don't transmit to more than one person, and when that's less than one, then the numbers go down. So from 1 to .99 to .98, each time with excessive transmission, you just see it eventually burn out. On the other hand, if I transmit to 1.1 persons on average, or 1.5, the number just keeps growing, because now there's more than replacement of me as I recover in terms of what's in the community. So what we're trying to do is drive transmission down to below an R_0 of what we call 1, and that's a much more complicated concept of what is R_0 , and how does that actually act in the community, but what it's all based on is the idea that there is some durable immunity. The idea that it's not just short term immunity for a couple of months, and so the question you raised is a really important one, we don't know yet if we get durable immunity, because if we don't we may achieve a short term herd immunity if we have lots of infections, but then people all become susceptible again,

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so they kind of change, you know, from a plus to a minus sign, instead of being plus positive I'm protected to a minus, no I'm not, that would mean that these now would represent the potential for new infections. This surely is a challenge with this disease, it's a challenge with the vaccine, and we're following this, and there's a recent review article published by a dear colleague and friend Stanley Pearlman from the University of Iowa on the issue of immunity with SARS-CoV-2 and other coronaviruses, and it leaves some real challenges as you read this paper about where are we at? We don't know. So this is going to be one of the most important aspects of what we're learning in the future, is if I get infected with this, am I developing immunity? Is it durable? If I get vaccinated with a new vaccine, is my protection durable, meaning lasting from months to years? And until we answer that question, your question is still going to be front and center on all of our minds, in terms of where we go forward with this.

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CHRIS DALL: So, Mike, the discussion on masks continues, there have been a couple of studies that came out in recent weeks on the efficacy of masks. Where are you on this topic?

DR. OSTERHOLM: Masks continue to be a point of great confusion for many, and what I mean by that is confusion from the standpoint of what they actually state and what we actually know.

As we talked about last week, we had the CDC director saying that we could drive this pandemic into the ground if we just had a large portion of our population wear masks for 4-6 weeks. We had a study that came out from the University of Washington's Institute for Health Metrics and Evaluation that got a lot of play saying that they modeled the point that if 95% of the population would wear these cloth face coverings, 40,000 lives would be saved. We had a New York Times piece today that came out again,

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from the governor of Michigan, someone who has done an outstanding job responding, called "Mask Up, America" reciting all of these different numbers, Goldman Sachs saying again that if a large portion of the population would wear a mask, the number of cases would drop

precipitously. I really remain concerned about this issue in terms of masks, again not because I don't support it, and let me be really clear at this point, and we have a commentary coming out today that I wrote responding to comments made by the Masks for All group about my podcast, and what I said in my podcast, and this was the one that was done several months ago, an old review of the masking issue, and there were a number of erroneous statements made in the commentary.

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They clearly misunderstand the issue of respiratory protection. So let me just be really clear today there are four points that I think I want to drive home that everyone can take away from this podcast so you're very clear on where I'm at on this. Number one: I support the wearing of cloth face coverings or masks by the general public. I support it. Two: you've got to stop citing CIDRAP and me as grounds not to wear a mask, whether mandated or not. We are not the basis for that. Number three: don't, however, use the wearing of cloth face coverings as an excuse to decrease other crucial, likely more effective protective steps like physical distancing. That is so important, and number four: also don't use poorly conducted studies to support a contention that wearing cloth face coverings will drive the pandemic into the ground, but even if they reduce infection risk somewhat, wearing them can be important. So, you know, for the first time in my career, I find myself in the middle of something, nuancing two extremes, and yet I turn out to be the extreme, which is ironic,

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and so I just want to point out that my concern remains that we are going to be putting people in harms way, because they think that in fact they're protected more than they really are, and I could go through a number of examples, but take Hong Kong right now. Today they had their highest number of cases on record since the beginning of the pandemic of 113 new cases, largely community acquired. They have the most stringent masking requirements of anywhere in the world, there's a \$5,000 if you're in public transportation and you don't have your mask on, and that is surely likely slowing down transmission in Hong Kong by having everyone wear a mask, but you can see right there it's not driving it into the ground, and so that kind of rhetoric is really unfortunate, because it gives people the sense that rather, there is more protection than there might be. Again, saying that there surely could be some, wear your mask.

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Two studies have just been published in the last week and a half. One in The Lancet, a systematic review and meta-analysis on this from a group largely supported by the WHO. Another one that came out in the Annals of Internal Medicine, another overview review of all the studies, this was supported by the Agency for Healthcare Research and Quality. Both are quite well done. Both of them support exactly the position I've just shared with you. So the ideas of these modeling studies, and anybody can model anything, I can make anything look great by the assumptions I assume, so next time you hear about one of these studies coming out at the Institute for Health Metrics and Evaluation for example, you know, it looks good, it looks great, but when you crawl inside the black box, it's meaningless. They don't have any more data to support this than just assumptions, and so please keep wearing your mask, but please most importantly distance, and if you're going to be with people be outdoors, and don't slow down your life that way.

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You can do that outdoors, but I worry that far too many people today, we see them crowded together with cloth face coverings on, they lift them up to talk for a while, they, you know, eat, they drink, and then they put them back down. We still see a quarter of people wearing them under their nose, not on top of their nose, and so that's the thing that will never, ever have a major impact on transmission if you're not wearing them even correctly. Number two is that they will not drive this pandemic into the ground, and the more times you say it doesn't make it any different so we need quality, quality studies to support this, but I think this is important that people understand that our position is wear them, it's an incremental improvement, go for it, we're working on it right now in our study on infectious dose to get a better idea just how much they protect, but I can tell you in the mean time, it's distance, distance, and distance, and it's physical distance, not social distance.

CHRIS DALL: Any final thoughts, Mike?

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DR. OSTERHOLM: Yes. Well, thank you again to all of you who have listened to this podcast and to the growing family of individuals who give us your feedback. As I said last week, we read everyone one of the emails you send us. Thank you. They're incredible. Very, very supportive of what we're doing and you have many suggestions. Sometimes you have criticisms, like the one from Ed today about not addressing schools in the South and he was absolutely right. We always welcome your feedback in that regard. I think, for me, I'd like to leave this in more of a sharing of something with you that I've not done, and you have been so kind to share with me, and so I'd like to leave you with a poem, and I'll explain a little about the poem at the end of it. The title of it is called "Your Poem":

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"You've come to know me. My words are windows to my head and my heart. I wish I knew you, for now we are bound by a common cause to ease the pain and suffering and to share kindness. We are on this journey together. You've come to know me. I wish I knew you, searching for answers to the question of our future, making plans for now as we imagine tomorrow, protecting our children and our elders too. You've come to know me. I wish I knew you, finding purpose in something bigger than ourselves. Smartly understanding the strength of our growing numbers, our collective voice brings both strength and gentleness. You've come to know me. I wish I knew you. Fear gives way to courage. Doubt gives way to hope. Loneliness gives way to shared empowerment. You've come to know me. And I do know you. I feel your support more each moment. Your questions are my questions.

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We share the answers when we find them. We hold each others hands when times are dark, and we celebrate together the day these painful moments are behind us. I know you, and I need you. That is why this is your poem." I wrote that to all of you this past weekend. It's my dedication to you, and thank you for all you've done for me personally, for the group at CIDRAP, for the work we're doing. I know that sounds probably somewhat ridiculous, but I do feel like there is a growing family here. The kinds of feedback we get from you and the kinds of thoughts that you share with us, we are all in this together, and I can feel that, and so as we leave today's podcast, just remember that pandemic of kindness is waiting for you. Go for it. Be kind.

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Be thoughtful. Be tolerant. Understand in the school situation there is no one answer. There's going to be many answers, and many of them are going to be right, and we just have to help each other be right, we have to help each other be strong, we have to help each other be safe, and I do know you, and thank you for that. I'll never, ever forget that gift.

CHRIS DALL: Thank you, Dr. Osterholm, and thanks for listening to the Osterholm Update: COVID-19, a weekly podcast from the Center for Infectious Disease Research and Policy. We'll be back next week for another episode. Until then, you can keep up with the latest COVID-19 news by visiting our website, cidrap.umn.edu.