

## What Are We Missing? Easier to Immunize - Part 2



PODCAST 22

**00:23**

**Dr. Jane Caldwell:**

Dr. O'Leary is a pediatric infectious disease specialist and professor of Pediatrics at the University of Colorado.

As director of the Colorado Children Outcomes Network (COCONet), a practice-based research consortium, he and his colleagues focus on identifying barriers to vaccination. Dr. O'Leary is with us today to talk about developing and testing interventions to address barriers to vaccinations.

Dr. O'Leary, welcome to *On Medical Grounds*.

**Dr. Sean O'Leary:**

Happy to be here.

**00:58**

**Dr. Jane Caldwell:**

As you know, August is National Immunization Awareness Month. Can you tell us why the CDC picked August to promote vaccinations?

**Dr. Sean O'Leary:**

You know, I'm not entirely sure of the history, but my best guess would be that it's because August is a big back to school time for most kids in the U.S. and so a lot of visits, well child visits, etc. happen in July and August and it's a great time to get caught up on vaccines. So that would be my best guess for why CDC chose August as its immunization month.

**01:32**

**Dr. Jane Caldwell:**

The CDC has reported a 14% drop in vaccine orders from 2021 compared to 2019, and measles vaccine is down by more than 20%. Why the reduction?

**Dr. Sean O'Leary:**

Yeah, it's a big problem. I think a lot of it, well, first I'll say it's multifactorial, but it is all directly as a result of the pandemic. People going into the doctor less. Doctors' offices having fewer appointments available because of staffing shortages. Public health departments that normally would be giving vaccines, routine vaccines to children, stretched really thin because of the pandemic and suspending vaccination services. So there are a lot of different reasons that we we've seen this big drop in vaccination coverage.

**02:23**

**Dr. Jane Caldwell:**

Many children missed their regular wellness checkup and recommended childhood vaccinations during the past two years. How do we catch up following these disruptions from the COVID-19 pandemic?

**Dr. Sean O'Leary:**

Yeah, that's absolutely correct. One of the ways we've maintained such high vaccination coverage in the U.S. over the decades are school and childcare requirements. And so there are certain vaccines that are required to enter school because we of course want to keep our children safe at school and keep vaccine preventable diseases from spreading at school and so the way that works is that when kids enroll in school at the beginning of the school year, someone at the school is supposed to check to see that they're up to date on their vaccines, and if they're not up to date, then they can be.

It depends on the individual state in terms of how the laws work exactly, but in general what happens is if they're not up to date on their vaccines, they are told, ..."you have a week or two weeks to go get your child caught up on vaccines." We need to see that record and then if they're not caught up, they're actually excluded from school. And so there's a real incentive, of course, to get the kids caught up in their vaccines in that set up.

**03:39**

**Dr. Jane Caldwell:**

I read an interesting quote in *MedPage Today*. This is from William Schaffner. He's an MD at Vanderbilt University Medical Center in Nashville, TN. He said, "It's the reverse of the old saying, 'It's gone but not forgotten.' Polio is forgotten, but it's not gone." Have we forgotten the past and the serious consequences of certain diseases? What are some of the long-term effects of the preventable diseases like polio and mumps, diphtheria and smallpox?

**Dr. Sean O'Leary:**

So for example, polio is a great example that, you know, we haven't had any wild type polio in the U.S. since, gosh, many decades and since we've been using the inactivated poliovirus. No really, no polio at all or sorry, inactivated polio vaccine, no polio at all in the U.S. for decades so now we have a case in New York State, and it looks like the virus may be circulating there as well at this point. So yeah, we have these diseases that parents have never seen that we risk having a resurgence.

**04:47**

**Dr. Jane Caldwell:**

What are some of the long-term effects of polio?

**Dr. Sean O'Leary:**

Well, polio is an interesting virus. For many people it is simply a mild infection where they don't really feel like they're very sick. But about one out of every 200 cases develops what's called paralytic polio. It's a very contagious virus, and so it can spread within communities and many people may not know they have it, but they're spreading it. And then certain individuals unfortunately will develop this paralysis and that can look like a number of different things, but basically, they can use lose the use of their limbs. In some cases they can become completely paralyzed and you may have seen pictures or heard of iron lungs that those

came out of polio because people, children lost the ability, children who got infected with poliovirus and then developed paralytic polio, lost the ability to breathe on their own and so they were put into iron lungs.

**05:52**

**Dr. Jane Caldwell:**

How about smallpox?

**Dr. Sean O'Leary:**

Well, smallpox. We did successfully eradicate smallpox in the 1970s. The last human case was in, I believe, in 1978, thanks to a lot of effort in a very big global push on a vaccination campaign. And so there really there's no circulating smallpox. There is the concern that it could be used as a bioweapon, so we maintain smallpox vaccine stockpiles here in the U.S. on the off chance that it is used as a bioweapon. But what we're seeing now, of course, is monkeypox. And monkeypox is somewhat related to smallpox. It's in the same family of viruses and can look similar although it is not as severe as smallpox, fortunately.

**06:46**

**Dr. Jane Caldwell:**

Prior to the pandemic, were we seeing a downward trend in childhood vaccinations?

**Dr. Sean O'Leary:**

So prior to the pandemic, actually we were seeing vaccination coverage steadily go up. I think we people hear a lot about vaccine hesitancy and vaccine refusal, but the fact is that the vast majority of parents in the U.S. vaccinate their children. We have rates north of 90% for most of the childhood vaccines, and we had seen those percentages actually going up in the years leading up to the pandemic. And then of course we've seen this precipitous drop since the pandemic started.

**07:27**

**Dr. Jane Caldwell:**

Let's talk about vaccination misinformation. Have the Internet and social media been the major drivers?

**Dr. Sean O'Leary:**

Just to be clear on the difference, misinformation is just information that's incorrect that is spread unknowingly by people who think it's correct. Disinformation is when people purposely spread misinformation. Now there are lots of ways that that can spread. It can spread in, you know, of course individual conversations. It can spread in the lay media, but of course the big what we've seen over the last couple of decades is just an explosion of misinformation and disinformation spreading on social media. And so, yes, the internet has been a major driver of a lot of the misinformation and disinformation that's been spreading over the last couple of decades.

**08:20**

**Dr. Jane Caldwell:**

As a nationwide trend, are there children who receive their early shots but now aren't getting their boosters?

**Dr. Sean O'Leary:**

Well, so yeah, just so your listeners are clear there are kind of three periods we think of with childhood vaccination. There's kind of the infant or childhood series, which is between birth and about 18 months or

so, and then there is the, what we call the kindergarten shots, where children are due at four to six years, and then there there's a series of adolescent vaccines. And so we have seen a drop off in some of those booster shots as a result of the pandemic, but I have not actually seen data suggesting that we have a big uptick, for example, in children who got all of their infant vaccines and now are the parents are refusing their boosters. Certainly that happens, but I'm not aware of data suggesting that that's happening any more now than it was in the past.

**09:18**

**Dr. Jane Caldwell:**

Tell me about the Colorado Children Outcomes Network.

**Dr. Sean O'Leary:**

So the type of research I do could be generally classified into what's called health services research or outcomes research. And so the Colorado Children Outcomes Network is a large network of pediatric primary care practices who have agreed to participate in research studies. And these are not the, generally the what the typical sort of clinical trials for medications or vaccines or things like that though and those certainly still happen and do happen sometimes in our network, but the type of research we do is really more about research that's relevant to the primary care provider on a day-to-day basis. And so a lot of the work that we do has to do with vaccines and vaccinations. So we work with our clinicians. We work with parents and the practices, in all of these pediatric practices, to understand, you know, what are they, from the providers perspective, what are they seeing in terms of barriers to vaccination from the parents. Same thing from the parents perspective. And then we work with the practices to develop interventions that hold promise for increasing vaccination uptake. And that's one example of some of the research that we do.

**10:40**

**Dr. Jane Caldwell:**

So what are the major barriers that you're seeing in 2022?

**Dr. Sean O'Leary:**

A lot of the barriers that we saw as a result of the pandemic, of course, have to do with logistics, getting people into the clinic. A lot of clinics are short staffed right now for example. One evidence-based strategy to increase vaccination coverage is to have nurse-only appointments or to have extended hours where parents can just drop in and get a vaccine. Most of the clinics that I work with at this point, and I think this is true in a lot of the country, they don't have the staff right now to be able to handle those types of things. So there's these sort of extra times where they would be giving vaccinations. They're not able to do that, so that that's certainly a barrier.

You know, other barriers, of course, vaccine hesitancy and refusal. We still see a lot of the same things we saw in 2022 that we've seen prior to the pandemic. Some parents have concerns about the safety of vaccines, some parents, you know, as we as we discussed, visibility of a lot of these diseases has really gone away because of the vaccine, how effective the vaccines are and so a lot of parents don't feel like the vaccines are necessary. A lot of those things are still true. Now, of course, there is some concern that some political rhetoric that we've seen around COVID-19 vaccines how we've seen somewhat of a partisan divide, unfortunately, with the COVID-19 pandemic that some of that may spill over into childhood vaccines.

I've heard some stories about parents to whom that's happened. But on the other hand I've also heard stories on the other side of that coin. Stories from pediatricians, for example, of parents who, prior to the pandemic, completely refused all vaccines now are coming in and saying, you know what? I want to get my kids caught up on their vaccines. We really need these.

**12:41**

**Dr. Jane Caldwell:**

You mentioned interventions. How do you measure their effectiveness?

**Dr. Sean O'Leary:**

Yeah, that's a great question. So typically when we do a study, we have what are called the primary outcomes and in most cases with vaccination studies what we're looking at is, is actual vaccination coverage. And so most of the time what we'll do is that we do a lot of what are called cluster randomized trials where we will recruit a bunch of practices to participate in intervention. Let's say we recruit 24 practices and there are different ways of randomizing but sort of the classic way would be to say, half of these, let's say 12 of them will get an intervention and the other half will just continue with usual care. And that intervention may be a communication training program, it may be a reminder program for families, something like that. And then what we'll do is measure the vaccination coverage of the children within those practices at baseline, prior to when the intervention happens. And then we will implement the intervention over a period of time, usually one to three years, something like that. And then we will re-measure the vaccination coverage at the end of the study and then compare between the two practices to see did the intervention show effectiveness. Now those are the primary outcomes.

We also measure things, a lot of what we might call secondary outcomes, where we are looking at, you know, how did the parents perceive the intervention? Was it acceptable to them? Was it simple to enter, to do the intervention within the clinic? Did it require a lot of extra time on the part of the providers? All of those things are really important when we start to think about that. If we do demonstrate effectiveness in one of these clinical trials, how do we disseminate that to a broader population? So there are a lot of things that we need to understand about the intervention when we do these trials.

**14:38**

**Dr. Jane Caldwell:**

Is cost an issue for some parents?

**Dr. Sean O'Leary:**

Cost can of course be an issue with just about anything you're talking about with health care. Here, the good news with vaccines is that, in the early 90s, the Vaccines for Children program was created. The Vaccines for Children program covers vaccines for any child who is on Medicaid, any child who is uninsured, and any child who is Alaskan native, or American Indian. And so all of those are provided free of charge to the parents at no cost now. One of the issues there, of course, is in some geographic locations within the U.S., it may require a lot of travel for a family to get to a place where they can receive a vaccine. So there are those types of barriers that aren't directly related necessarily to the cost of the vaccine, but can be, you know, "costly" for the family to be able to do.

**15:36**

**Dr. Jane Caldwell:**

How can healthcare providers receive better access to these interventions?

**Dr. Sean O'Leary:**

There was a study done quite a few years ago that looked at when an intervention is proven effective in medicine, how long does it take to get that intervention into general use. And what that study showed was that it took about 17 years for an intervention that was shown to be evidence-based to get into routine use and practice. And, you know, one of the goals of the research, the type of research that I do, is to really collapse that so that it gets down to, you know, essentially zero. We find an effective intervention and we roll it out to the general population and so there are a lot of ways that that can happen. One, of course, is staying up to date on the existing literature. That can be difficult for a busy provider. So, you know, things that we do to try and disseminate our interventions are a lot of times through professional societies. For example, through the American Academy of Pediatrics, we will host town halls. We will send messages by e-mail. We'll put messages, for example, in *AP News* that a lot of the providers read. So we do our best to get those interventions rolled out as best we can. Also, of course, giving a lot of education at different academic meetings, those kinds of things to help get the word out on effective interventions. I don't want to make this sound easy. It is a real challenge. But there are lots of ways that we try to get these effective interventions disseminated.

**17:19**

**Dr. Jane Caldwell:**

Where can we find more information on the Colorado Children Outcomes Network?

**Dr. Sean O'Leary:**

Now if you were just to Google for example COCONet you could find more information about it. But then also you can find some of the research we've done as well by using, you know, for providers who are familiar with searching the medical literature: A lot of our work is on PubMed.

**17:42**

**Dr. Jane Caldwell:**

So does COCONet have an intervention which handles healthcare professionals who are opposed to vaccines? Or who are vaccine hesitant?

**Dr. Sean O'Leary:**

Well, so that's a, that's a whole other discussion. You know, fortunately, the vast majority of clinicians are, you know, understand the science and recognize the importance of vaccines and that the benefits far outweigh the risks. It does become a real problem when you do have someone like a healthcare professional who is in a trusted role really. You know, parents and patients really trust doctors and nurses above just about anybody else in society. So when we have one of these sort of fringe or rogue healthcare professionals who's, you know, promoting misinformation, that's a real problem.

And so there are different ways. It really depends on the situation and how you do that there. But I would say there's not actually, there haven't been studies on this, fortunately, because these providers are generally few and far between. When you're talking about, you know for example, primary care physicians,

the vast majority of primary care physicians stock and recommend vaccines according to the CDC and AAP recommended schedules.

**19:03**

**Dr. Jane Caldwell:**

What were you hoping that I would ask you today?

**Dr. Sean O'Leary:**

We haven't talked about COVID. I don't know if you want to go there.

**Dr. Jane Caldwell:**

Go ahead.

**Dr. Sean O'Leary:**

You know what we saw with the COVID-19 vaccines in terms of getting them developed in such a short period of time was nothing short of miraculous and really has saved millions of lives around the world. What we saw with the rollout here in the U.S. is fortunately the people that were at the highest risk got vaccinated in very high numbers so our uptake in adults 65 and over is very, very high, well north of 90% for these vaccines. So again saving hundreds of thousands of lives in the U.S. alone.

As we go down in age group though the uptake has, it has not been quite as robust. It's still quite high for 12 plus, but we're seeing less, sorry, let me say that what we're seeing in the younger ages under 12 is not as high of an uptake. So roughly 40% of kids 5 to 11 have been vaccinated with at least one dose and the under 5 uptake as we're doing this recording, the vaccine has been approved to that age group for a few months now and we're seeing pretty slow uptake. There are a number of factors involved in terms of, you know, some of it related to access issues. But a lot of it is that a lot of folks have moved on from the pandemic at this point and don't view it as a threat anymore, and they also don't view as a threat for their children. The problem though is for someone who's completely unvaccinated, COVID-19 is still a threat. And we know that getting infected with COVID and surviving does provide some protection, but that protection wanes and we know that vaccination on top of that does provide more protection.

The fact is that in children under age 5, COVID-19 in the last year is actually the number 4 cause of death. And so when you see, when you look at the other, you know, say top ten causes of death, it's things like motor vehicle accidents and drownings and childhood cancers. And if we had a simple safe intervention that could prevent any one of those, right, we would jump at it. But fortunately we do have that with COVID-19 in the vaccine, but a lot of parents aren't getting it right now. So I think that's something that really a lot of parents should reconsider and check with their pediatrician and or family doctor and go ahead and get that vaccine.

**21:49**

**Dr. Jane Caldwell:**

Dr. O'Leary, we appreciate your work with interventions and your goal to shout it from the rooftops that parents need to get their children vaccinated.

Thank you so much for taking time from your busy schedule to talk with me.

**Dr. Sean O'Leary:**

My pleasure.

**Dr. Jane Caldwell:**

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