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Steph Dewar: From UPMC Children's Hospital of Pittsburgh, welcome to That's Pediatrics. I'm Steph Dewar, one of the hospital's based pediatricians here.

John Williams: I'm John Williams from Pediatric Infectious Diseases.

Steph Dewar: Joining us today is our guest, Dr. Kristin Ray, she's an Assistant Professor of Pediatrics at the University of Pittsburgh School of Medicine, and a member of our division of General Academic Pediatrics. Welcome Kristin, it's great to have you here today.

Kristin Ray: Thanks so much, I'm excited to be here.

Steph Dewar: We are very curious to hear about a lot of the work that you've been doing as far as patient access and referrals. We wonder if you could tell us a little bit about the project that you've been involved with?

Kristin Ray: Absolutely, I'd love to talk about that. One of the things that I'm very interested in, as a clinician and from a research perspective, is improving the way that patients move from primary care to specialty care. Thinking about that referral process, and not just the end outcome of whether the patient gets an appointment but also the patient experience of going through that process. I've been doing a couple of range of projects over time looking at this to better understand it and also to test some potential solutions thinking about that particular piece of primary care specialty care referrals. One of those some of that work started qualitatively so doing interviews with families and asking them about their experience, seeking subspecialty care. One thing that was really illuminating there was that as a clinician, I tend to think about the visit and focus on the visit and do they get to the visit and what happens there?

But for families, so much of their emotional experience of seeking some specialty care was about the scheduling process and the uncertainties of knowing who to call, when they were going to get called back, and how long that process might take. That prompted one of the more intervention pieces that we've done is a couple years ago Children's transition to an electronic referral process that allowed when patients were referred, that information to be sent directly to the subspecialists and subspecialists clinics would call and schedule those appointments. We used some quality improvement methodologies to test the impact of that, and we found that it did result in more patients being scheduled and more visits being attended. Although, still a lot of room to improve further, which has laid the groundwork for other possible interventions as well.

John Williams: I'm curious about that, how difficult is it for a family either here at Children's Hospital of Pittsburgh or in the country to get to a specialist provider like a pediatric cardiologist or gastroenterologist or infectious disease doctor?

Kristin Ray: It varies depending on many things. One is the specialty referred to because we know that there is a range of availability and supply of different specialties with some having larger numbers of providers working in them than others, developmental and behavioral pediatrics is one that often shows up as just having far too few for the demand. Another barrier then is geographic location and that many, many of those pediatric subspecialists are located where pediatric hospitals are. For kids in some parts of the country, that can be a three or four hour drive including patients we serve here who are coming in from other parts of the state. But then there's also additional issues for in terms of what the scheduling processes are like and what families have to do to get the appointments. Some families are more savvy or experienced at navigating healthcare systems and some are not.

All of those different issues layer on top of each other. One survey that was done maybe a couple years ago reported that of families referred for subspecialty care, 25% reported that they had significant difficulties accessing that subspecialty care whether that was difficulty moving through the processor. Actually, getting the appointment varies but it certainly is something that families experience.

Steph Dewar: That's interesting, you, I guess, happened on something that was a struggle for families and used some qualitative processes. I'm just wondering, what was it that piqued your energy around this issue?

Kristin Ray: Yes. I think for me even growing up, we moved a lot and it was clear that the circumstances where people live shapes their educational opportunities and their healthcare opportunities, and all of those sorts of things. That became apparent even through mobile childhood but also moving into my medical training. I trained in inner city Philadelphia, but then took every opportunity I could to do rural rotations, away rotations. That included Lancaster, Pennsylvania, and Gallup, New Mexico, and Browning, Montana. Just the degree to which access to care shifts with geography was very apparent through those experiences. In part because of wanting to still understand and also serve that rural population more, after finishing residency, I worked for the Indian Health Service in New Mexico on the Navajo Reservation. So there we were four hours away from Albuquerque, which was our referral center.

It made many of these issues very apparent including seeking emergent care for newborns and trying to transfer kids out immediately when they needed that. But also helping to way with families, you know, was an allergy appointment worth the four hour drive down and getting someone else to meet their kids when they got off the bus. Because they weren't going to be back in time to meet the other kids at the end of the school day and all of those issues. It became very real for me through that experience, and then coming back to after

that it was when I came to Pittsburgh to do my general pediatric fellowship and additional research training. Was one of the issues that was most on my mind in returning to the research world as well.

I should say the other thing that, that experience showed is while we had big geographic distance, many of the specialty divisions in New Mexico were very readily available on the phone and would do a lot of having us and labs and then calling them and interpreting them. So different models of how we co-managed care, which was also exciting to be part of.

John Williams: It's so interesting to hear how people get to where they are and the experiences people have. When I was a resident here, which was let's just say a few years ago, a lot of us went and spent a month on the Navajo Reservation in Window Rock. I went and spent a month there and I know what you mean, it was a very different experience in terms of access to specialists. The things that you did as a pediatrician that you would never do in an urban area, it really changed the way we practiced. I'm curious to hear you talk about some of these things are addressable or changeable or there may be interventions and others aren't, right? Not that we would want to make people move from rural areas to urban areas, so what are things you've looked at in your research to try and overcome barriers to fix the things that we can fix?

Kristin Ray: Two of the interventions I'm most excited about currently for this issue are one is telemedicine and then the other is electronic consultations and they are paired or similar interventions in that they use technology but they operate in different ways. So just to talk about what those look like, telemedicine I think can encompass a wide range of things, but a telemedicine visit is where a patient and a provider are connected through audio visual teleconference connection where they can see each other, they can hear each other. Depending on the setup where the patient is, there may be someone there to help do some physical exam components and describe it to the specialist. There are tele stethoscopes, tele otoscopes that can be put in someone's ear to transmit images or sounds or those sorts of things.

It's a way to accomplish many components of a visit, but perhaps not everyone at distance. It is an option for addressing the geographic barrier, in particular, and I think is something that's really exciting for thinking about rural communities. But at the same time to make it have the highest amount of information transmitted, you need to have a place set up to do this. Where those places are, how well they are distributed still becomes an issue. Then the other side of it is while it may increase connection so that people can connect across geographic space, it doesn't necessarily increase capacity at all. You still have the same night number of subspecialists being asked to see more patients than they have time for in many specialties. The other possible intervention that I think could pair nicely with increased telemedicine is called electronic consultations.

That's more of it's something that's done in some of the healthcare systems in California and in the VA system. It's a way for generalists and specialists to communicate to each other about a patient's care needs to come up with a plan about what the patient needs. Next. It's usually done through what's called store and forward communication. The general pediatrician might type in some information in a templated form, maybe attach a picture. It's similar to the telederm model that I think you may be familiar with here, and then the specialist then reviews the information and sends recommendations back. It may say the recommendations could be, "I'm really glad you sent this information to me, I want to see this patient next week," and that could be a possibility. It may also be, "We should see this patient. We have an appointment probably two months, but in the meantime, send these labs so they can show up with more information."

Or it could say, "I think you've done a great job working through this patient to date. I think the next step would be to do a trial of this medication, and if that doesn't work, then send them on to me. It's a way to triage the urgency of a referral but also enhance the amount of care that a child may get before even entering into the specialist office, and perhaps even avoiding the visit for some families which reduces the amount of time that they have to spend, and also could potentially... With all the carriers then coming a little more through the general pediatrician, it's a little more centralized, more centered in the medical home. This is something that several adult systems have done and there's just a new report out, one of the groups in Boston has started doing this as well. But we've been working to try to work towards a system here that we're hoping to pilot with one of the specialties in the near future.

John Williams: I just have to say, we're infectious disease doctors in my group and we like pus. I feel like we've been missing out on that in a telederm setting.

Steph Dewar: I think that the telederm model is a very interesting one. I also think there's a lot of interesting challenges with telemedicine. You alluded to one of them, which is the inability to actually touch the patient and need a proxy of some sort to do that for you. I would think a proxy that you trusted depending on the type of examination that needed to be done. Another thing that you didn't mention, and I just want to clarify for some folks is the issue of time and reimbursement. I think we shouldn't ignore that and I wonder what thoughts or models you're aware of are out there?

Kristin Ray: Yes, and so in the current landscape, and it's still some perhaps insured or dependent, but in the current landscape, most specialists could bill for the interactions. In the electronic consultation piece, the general pediatrician may not be able to bill for their time and it is putting more time on them. I think there is an ongoing awareness of that thinking about what does that mean for population management and is there a way to value that to value the providers' time and energy? There has been some... There was a recent report from CMS that have put out a possible new code for the generalist side of the work in this

interaction. But whether that trickles down to child health reimbursement at some point will remain to be seen.

Steph Dewar: I think the telederm model here at Children's, at least, on the inpatient side is a really useful tool that we have which does exactly what you described. It's a timely way to get feedback from a dermatologist that may or may not then subsequently require that subspecialist to come physically and see that patient perhaps collect some pus maybe for those who would be interested.

John Williams: I would be interested.

Steph Dewar: But also then provide treatment recommendations from afar so I think that model was a very useful one, at least, in my experience on the inpatient side, and an emergency department, I think it's a common thing that we use. Oddly enough, Dr. Williams, you mentioned that perhaps it's been a while ago since you trained in residency and I would say a similar thing probably I was back further than you. But I know that some of our younger trainees and colleagues are a little more tech savvy perhaps. I think that we should embrace the fact that perhaps this is the way that medicine is going, that we use technology more and more and the face to face isn't mandated as much in care.

Kristin Ray: I like to think of these all as a bunch of tools that it's not that we will always do care one way or another, but to enhance our toolbox so that for an individual patient's needs and their circumstances we can decide what's the best way to meet their needs and answer the question that we have on hand.

John Williams: You've published a lot of nice papers showing that there are ways around some of these barriers. But I'm really intrigued on this point that we're on now because, like Dr. Dewar, we're both dating ourselves in our training here. But I think Steph and I both have Smartphones iPhones in our pocket now. On my iPhone, I can make an appointment to get my car serviced, I can pay all maybe. I can do my most of my life things on the smartphone. Is there a national movement to address some of these barriers? Because I got to tell you, my teenagers will be stunned if they can't do exactly what you're talking about in a few years.

Kristin Ray: Yes, and I think that speaks to some of the interventions that I'm discussing are provider to provider and I think more and more patients are going to want to do connections directly. I think an interesting challenge, as pediatricians and particularly as primary care pediatricians, is that there's been growth in what many people call direct to consumer telemedicine. Which are companies that will see patients in their homes through a computer or a smartphone and assess respiratory infections and rashes and those sorts of things. I think that's somewhere that for a couple of reasons, reimbursement being one in particular, primary care, the medical home has not been able to keep up with the availability that these national companies are providing. I think that is a place that is I feel like as somewhat acute challenge that we need to think about how

can we, within the primary care space, make ourselves as accessible as possible to our patients?

Again, while still maximizing the quality of care and recognizing there may be some visit reasons that don't make sense through this, but thinking about are other people offering to do that? In which case, how do we try to keep them within our sphere and our care. As much as we believe that continuity and care within the medical home is the best place for a kid to be getting their care.

John Williams: I'm curious to hear a little more about how you got into it? You described your peripatetic childhood moving a lot and your appreciation for those kinds of challenges. I also moved a lot, so I hear that. But how did you always know you wanted to be a pediatrician and how did you get into research in this area?

Kristin Ray: I think, in some ways, interest in pediatrics and interest in research leapfrogged at different points. There were points where I felt very so much that I wanted to work with children, there were points that I felt very much I wanted to do research, at some points I was doing a fair amount of more basic science research in college. But got to a point where I felt like the distance between what I was doing in the lab to the patients that I wanted to improve things for felt a little far. I actually transitioned for a while to doing more investing a lot of my energies in more advocacy work, and then gradually found that I wanted to make things still more generalized. That's where I moved back into this more health services research field in thinking about how healthcare systems work and how we can make them better able to serve patients. I think interest or maybe an evolving kind of you never quite get to the total final point, and we keep evolving.

One of the additional areas I'm very excited about is quality improvement work now, because I think that it, in some ways, is the translational side of health services research. It's how you take ideas and rapidly implement them and monitor their improvement. So merging both rigorous health services research but also rigorous quality improvement methodology is I think they're both important in my career going forward. I enjoy being able to study things in a generalizable way, but also try to make change now that is better for patients.

Steph Dewar: One of the things when we talk about technology, it's interesting to reflect back what it was like to practice medicine with a paper, a piece of paper and a pen.

John Williams: I think we're dating ourselves again.

Steph Dewar: We are but-

Kristin Ray: I do this too.

Steph Dewar: ... it's interesting that-

John Williams: Okay, just to clarify, it was not that long.

Kristin Ray: Yeah.

Steph Dewar: It wasn't that long ago and we also talk about how you start to respond to your email and it wasn't that long ago that we didn't actually have email. Sometimes it's interesting that in those email exchanges, I sometimes find it necessary to actually just pick up the phone and talk to someone directly rather than have that exchange back and forth. I'm just wondering what, as a primary care pediatrician, to reflect on how much support you can give a family remotely or digitally as opposed to personally and inner personally and what your thoughts are about that?

Kristin Ray: I think that's a great question, and I think that there is a lot that we can do over the phone, and certainly for families, being able to do a follow-up over the phone means that they don't have to pull a child out of school if they're better. They don't have to miss work and all of those pieces. I think that, in some ways, it's the just plain old calling people is undervalued as some of these other models in terms of telemedicine are able to potentially get reimbursed. There's still such issues with reimbursement for phone calls, and so thinking about... Really, I feel like our care, going back to that idea of a toolbox, it really is a full spectrum and it should include all the way back to a phone call and thinking about what that means for reimbursement. Moving away from fee for service models may avoid some of that thinking about how we price out each of these. But, yeah, I think each piece of those can be helpful and being able to move between them is valuable.

Steph Dewar: There's another approach in primary care, and I'm not sure what your experiences, where there are group aged well child care visits bring half a dozen nine month olds together with their families. I'm not sure what your experiences with that or your thoughts and feelings about that?

Kristin Ray: Some of my colleagues in the office have been piloting this, and so there've been a couple of cohorts of groups that have gone through. I think it's an exciting model and a way to address some of the... Thinking about if you go through your morning seeing a bunch of four month olds, there are some things you're going to say to each of them. If you're able to say that one time to all of them, it may free up time to be able to delve into other ideas. But also there can be some cross learning, cross reinforcements, and solidarity in being there with other families. I think there's some potential efficiencies, but also some additional value. I think it all goes back we've been talking some about primary care redesign as a term that comes up that... I think it really involves going back to the basics and thinking about what is it that we want to offer to families?

You first think about the what and then once we've decided on that, then we can layer in, "Okay, well, how? What's the best way to do this and what's the best way to do this, and then what does that all look like when we weave it

together?" There's a lot of groups across the country doing some really interesting work in that area, but I hope we can contribute to that as well here.

John Williams: Well, Dr. Ray, it's been really a pleasure having you join us on the podcast this week, and thank you so much for sharing your research and your passion for children's health and getting better help for kids everywhere.

Steph Dewar: And thanks all of you for listening to That's Pediatrics here at UPMC Children's Hospital of Pittsburgh. Hope you join us next time.