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ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Improving Diabetes Care with Technology: A Look at Continuous Glucose Monitors

Dr. Wysham:
Welcome to *Diabetes Discourse* on ReachMD. I'm Dr. Carol Wysham, and joining me to discuss technology in diabetes care is Dr. Irl Hirsch, a Professor in Diabetes Treatment and Teaching Chair at the University of Washington School of Medicine in Seattle, Washington. Dr. Hirsch, welcome to the program.

Dr. Hirsch:
Thanks, Carol. Always great to be here.

Dr. Wysham:
Very happy to have you here to discuss what I know is one of the topics near and dear to your heart. Let's just start by discussing your thoughts on what you think the most impactful technology advances have been in diabetes care.

Dr. Hirsch:
It's a great question. Like many people, I can go back 30 and 40 years and remember what the world was like with urine glucose testing, no pens, no pumps, especially as we talk about type 1 diabetes because that is certainly where the technology has exploded the most. And I don't think people today give enough credit to the introduction of home-blood glucose monitoring in the 1980s. If not for those very crude finger sticks that we did back in the 1980s, early 1980s and then on to the mid and late 1980s, we never would've been able to do the Diabetes Control and Complications Trial, which started in the late 80s, ended in the early 90s and, of course, without that data, we might still be arguing 'is it important to control blood glucose levels, tightly?' Now, finger stick glucose testing wasn't the only thing, but I think without that, we never could have done the DCCT and never get to where we are today. Having said all of that, clearly continuous glucose monitoring, both for type 1 and type 2 diabetes today, has just revolutionized diabetes care. We now have our seniors who can act very freely without worry of their hypoglycemia unawareness. We have parents taking care of their toddlers who don't have to worry about their children getting hypo- or for that matter, hyper-glycemic. And in fact, when you really look at the data, what you see is with all the technology, specifically insulin pump therapy, what most patients will tell you is that dealing with an open-loop insulin pump where the pump and the sensor work separately or having finger stick glucose testing, or CGM, the continuous glucose monitor is the more important technology than the pump and of course, the goal from all of this was to put the two together and that, of course, is where we are right now as by next year at time, we very well could have four different of these hybrid, closed-loops on the market.

Dr. Wysham:
And I think it's important to know that this technology is very user-friendly, both from the patient perspective, as well as a professional perspective. Well, I'm thinking about a lecture that I attended that you were giving several years ago about your initial experiences with continuous glucose monitoring and I recall that you were quite amazed at what access to that technology taught you about diabetes care and how to provide better care for your patients. Can you reflect on your thoughts about that now?

Dr. Hirsch:
Oh, my. It's really a great question. I remember one of the first patients, it was actually part of a research trial that we put on a continuous glucose monitor, it was a woman who had her diabetes over 50 years and once the glucose stream started coming through, she broke down and cried and I thought, "This is a reaction that is unusual. We won't see it again." But what happened was patient after patient after patient, including the men patients, I should point out, got very emotional because I see so many patients who do not feel their low blood sugars and now being able to see it, being able to share it with their loved ones, their family members, it really has turned things around in amazing ways and it has taught, not only patients, but it has taught, at least, me as a physician and I can't speak

for anybody else, Carol, but it has taught me so much about diabetes. And there are so many examples. But, just a couple, how the same food can impact different people's blood sugars in different ways. How exercise and how we really didn't understand how exercise impacts glucose in somebody taking insulin and that's become a real interest of mine. And maybe even the most interesting is with automated insulin delivery and people wearing one of the sensors that works for automated insulin delivery, how every single day is different for what that patient needs and now that the sensor can tell the pump how much insulin to give overnight, every night the amount of insulin is different and when it goes up and when it goes down. And we've learned a lot about that, but what we've also done is learn why we've all been so frustrated over the years with insulin therapy, in general, because there are so many things that impact it and now, we're at a point with the technology that the sensor can tell the pump what to do because of all the imperfections we have with insulin delivery. So as much as anything, I'm learning every day from my patients how little I knew the day before.

Dr. Wysham:
Yep. I think that's the comment that you made in that lecture was how little, you felt like it taught you how little you knew about diabetes care. But I know you've come a long way since that time. So, I think you touched on this, a little bit before, but from your patient's perspective, how do you think the access to continuous glucose sensing has helped in their self-management? Do you see that truly impacts how they go about their day-to-day business?

Dr. Hirsch:
Oh, yeah. Very much so. And like I mentioned before, even coworkers and colleagues who are, sort of, on the brink of having diabetes, it's impacted the way they do their lifestyle. It's all been very interesting because at the beginning of the pandemic in the primary care world, we did see at the University of Washington, some interest in this, but what happened during the pandemic is that the interest just exploded for several reasons. Physicians were spending more time at home, patients were spending more time thinking about things, watching tv, and there has been direct-to-consumer marketing, which I'm not necessarily a huge fan of, but in this case, I think it pushed diabetes to a better place because both of the major CGM companies were advertising and patients were coming to their primary care physicians asking about it. The physicians wanted to do more, so a colleague of mine, Dr. Savitha Subramanian, decided to do a University of Washington CME, but our timing was tight, we only had 3 weeks to schedule it and it was just a 2 hour CME in the middle of the day on a Friday and with only 3 weeks lead time, we had over 300 primary care providers because there was so much interest in this topic. So, I don't think that would've happened without the pandemic. I think it's actually one of the many, many silver linings and to support that point, we just published a paper online about a week ago and diabetes technology and therapeutics where we had access to one of the continuous glucose monitoring cloud-based data from people all over the United States and what we showed is that the time and range that is the glucose control actually improved during the pandemic and perhaps not surprisingly, in those states and those counties with a higher socioeconomic situation there was more of an improvement. But as opposed to all the joking about the 'quarantine 15', overall diabetes control in the country actually got better over the last year. I don't know if you knew that or not.

Dr. Wysham:
I didn't. I didn't. That's very interesting. For those just tuning in, you're listening to *Diabetes Discourse* on ReachMD. I'm Dr. Carol Wysham and I'm speaking with Dr. Irl Hirsch about technology use in diabetes. So, we've spoken about technology and diabetes, I want to dive a little bit deeper and talk about your own clinical experiences.

I think it would be interesting to hear more about how you think COVID has impacted how you see patients. Can you talk a little bit about the changes that have happened in the past 9 or 10 months in your practice?

Dr. Hirsch:
Sure. It's a great question and a lot of people want to better understand this. Like everybody, we were forced to move very quickly to telemedicine. A couple of points about that, this was already in the plans. It's just that it was supposed to be a two year roll-out. We didn't' roll it out in two years, we rolled it out in one week. Of course there were a few bumps with things like billing codes and that type of thing, but it actually worked amazingly well in my view and I'm pretty critical about things, but I have to give everybody, especially, my home institution credit, how quickly we were able to roll it out. So that was one issue. The other issue was, as somebody who pretty much now only practices diabetes, I don't do much general endocrinology anymore; what I need more than anything is data and I'm talking about the CGM data for many of my patients, the pump data, for some of my patients, the glucose meter data. But actually, even without the pandemic, we were at a point that we could look at all this data because the data is usually shared through the cloud, especially with most of the newer devices and if the data is shared through the cloud, we can bring it down into our clinic, put it into our electronic medical record and when I'm working with a patient on Zoom, I can share my screen and we can look through where the problems are and where the successes are. And as it turns out, this has all worked amazingly well for us. It took me a while to get used to it and I will tell you that I still do prefer face-to-face visits, especially with older patients with neuropathy, people where I'm not sure the blood pressures I may be getting from home are correct, people on pumps, I really do wanna look at their skin sites and that type of thing. And I enjoy the face-to-face interaction more because that's just my personality, but with all that being said, this has been an

amazing success, I think. The way we do diabetes with telemedicine and if you would've told me, I would've been saying this 11 months ago, I would not have believed it.

Dr. Wysham:
Well, do you have any last comments for our audience, Irl?

Dr. Hirsch:
I do think that the world of technology is going to continue to improve. There's going to be more data in the next couple of years about CGM use in the hospital, which I'm very excited about. And I also think there will be new technologies in the future about CGM, making it more accessible, more affordable, and more accurate. And I think we will see that in the next few years. In fact, I guarantee it.

Dr. Wysham:
Well, what a great way to round out our discussion on technology use in our diabetic patients. I want to thank you, Irl, for joining me in this discussion today. Dr. Hirsch, it was really great having you on the program.

Dr. Hirsch:
And thanks for having me.

Dr. Wysham:
I'm Dr. Carol Wysham. To access this and other episodes in our series, visit ReachMD.com/DiabetesDiscourse, where you can Be Part of the Knowledge. Thanks for listening.