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ReachMD

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

A Look at Comprehensive Telehealth for PPDM

Dr. Buse:

Patients with persistently poorly controlled type 2 diabetes, or PPDM for short, face disproportionately negative outcomes, but implementing comprehensive telehealth interventions can help us manage PPDM and improve patients' overall outcomes. But are there any barriers preventing this implementation?

Welcome to *Diabetes Discourse* on ReachMD. I'm Dr. John Buse. And joining us to share highlights from his recent research on comprehensive telehealth for PPDM is Dr. Matt Crowley, who is an Associate Professor of Medicine in the Department of Medicine in the Division of Endocrinology, Metabolism and Nutrition at Duke University.

Dr. Crowley, thanks for being here today.

Dr. Crowley:

Hey, it's my pleasure, John. Thanks for having me.

Dr. Buse:

So let's just jump right into your study. Matt, I loved it. Can you give us some background on why you did this study, this setting, and that sort of thing?

Dr. Crowley:

Yeah, sure. Well, as you kind of alluded to in your intro, a lot of our patients with type 2 diabetes maintain an elevated A1c over time despite kind of getting the available care that they can access in their healthcare system. That might include primary care, endocrine, clinical pharmacy, diabetes education and other opportunities. So we defined this group of patients as having PPDM, as you said, or persistently poorly controlled diabetes mellitus. Our research shows that these folks with PPDM make up about 10 to 15 percent of all type 2 folks overall. So, you know, we're really interested in focusing on this group.

While there's research to suggest certainly that telehealth can improve outcomes in type 2 diabetes, evidence is limited in a few areas, and, for example, that includes like how effective telehealth actually is for this PPDM population. We have very little information about kind of comparing different telehealth approaches in PPDM or in general patients. And then I think the most important gap that we were trying to target with this study was really the fact that telehealth interventions often have been designed to depend on grant-funded resources, research staff. The question really is how can we design telehealth interventions to be practically delivered using existing staffing and infrastructure within healthcare systems so as to facilitate use in real-world settings.

Dr. Buse:

Just one thing I wanted to clarify early for our audience, was this in the VA, if I remember?

Dr. Crowley:

Yes. This, this study was in the VA which is which is its own real world of sorts, uh, and that is that's an important thing to keep in mind with it study. The VA is a really fascinating system where there is some infrastructure that may not exist in other systems.

Dr. Buse:

And so, how did you put the study team together and the protocol?

Dr. Crowley:

Well, we had done a good amount of pilot work looking at how we could leverage existing staffing and equipment and infrastructure within VA to do this sort of complex telehealth intervention. Specifically, within VA, there's something called the Home Telehealth

Network which basically includes, nurses who are experienced in doing telemonitoring with patients and essentially, every VA around the country has these staffs, so we figured that if we could design a comprehensive intervention to be delivered through that existing infrastructure, we would have a good shot of, you know, making it into standard practice and thus addressing that gap we'd identified as related to translation of telehealth into the real world.

So we ended up conducting this study that compared, you know, two home telehealth nurse-delivered interventions for improving A1c and PPDM. Both were designed for practical delivery within VA. And so the two interventions were the comprehensive intervention combined five components, telemonitoring, self-management support, diet and activity support, medication management, and depression support. And then the other intervention was a sort of a simpler approach that combined telemonitoring and care coordination.

Dr. Buse:

And what were the results?

Dr. Crowley:

Well, we found that both of the interventions improved A1c. Over 12 months we saw about 1.6 percent improvement and that's A1c percentage points for the comprehensive group versus 0.98 for the simpler approach, and that was a clinically and statistically significant A1c difference of 0.61 at our primary time point, which was 12 months. We also saw significant differences favoring the comprehensive intervention in a number of our secondary outcomes, like diabetes distress, diabetes self-care, self-efficacy. BMI was similar between the 2 arms, and then we didn't see a significant difference in depression scores.

Dr. Buse:

That's good. A 0.6 difference between the two arms, you know, that's basically the level of effect you need to get a drug approved in the United States. Did you have a sense for what components of the intervention made the most difference, and is that based on process evaluation data or just a gut feeling?

Dr. Crowley:

Yeah, that's a good question, and I could answer it both ways. So, first off, you know, based on our previous kind of work leading up to this trial, it's fairly clear to us that the patients benefit differently from different combinations of the intervention components in the comprehensive intervention. The therapeutic relationship that develops between the nurse and the patient over time is a really important part of this too. That's based on prior qualitative work. Clearly, optimizing medication management is an important piece of the puzzle, and we actually have a cool therapeutic inertia paper that's in the works that one of our residents here at Duke is leading. We have ongoing qualitative process, evaluation work that's going to shed a lot of light on kind of patient impressions and mechanisms of effect, and that will soon be in submission. And then the last thing we're doing to kind of get at this question that I think is really exciting is sort of a formal mediator analysis to examine, you know, the intervention component's relative contributions to the intervention effect. And I have to admit, John, I went to school a little bit on your paper on diabetes care looking at mediators of effect in the LEADER trial and when we were designing this study, we identified secondary outcomes that correlated with each of the intervention components so that we would be able to do a really rigorous mediator analysis.

Dr. Buse:

That's great. For those just tuning in, you're listening to *Diabetes Discourse* on ReachMD. I'm Dr. John Buse, and today I'm speaking with Dr. Matt Crowley about his research on telehealth intervention versus telemonitoring in care coordination in patients with type 2 diabetes.

Matt, what were some of the obstacles preventing telehealth from being implemented into clinical practice in your study that would translate into our audience members thinking about how they might apply this in their setting?

Dr. Crowley:

Yeah, it's a great question, and it was a central focus of this study to begin with. So, within the VA, as you know, this is a bit of a different version of the real world than other systems. There really were relatively few barriers that we encountered. As I said, there's staff that exist within VA to deliver telehealth interventions that we're able to leverage for the purpose of this comprehensive intervention. There's already the ability to incorporate data into the EHR. Some of these things do represent real barriers though in trying to implement this sort of approach outside of VA and other systems. You know, are there going to be available staff who are trained appropriately to deliver telehealth? Is it possible to get patient-generated data into the EHR? This is a huge question and actually is a focus of our one funded study we have happening at Duke right now. And then another question is just around, you know, reimbursement and sustainability. Reimbursement pathways exist for comprehensive telehealth approaches through Medicare, and other insurers, but they're, they're somewhat limited, incompletely understood by many of us. That's actually a big focus of this other ongoing study that I mentioned too.

Dr. Buse:

And you mentioned the payment issues. You reported there were cost differences of about \$1,500 based on the difference between the two interventions. Is that really the full cost of care, the drugs that people took, their hospitalizations, etc., etc., or is that just based on the time that was spent by the interventionist?

Dr. Crowley:

Yeah, so that number, John, the \$1,500 difference that you quoted, that is specifically intervention costs, which includes labor costs that are like the, you know, the nurse, dietitian, medication manager, psychiatrist, time spent in delivering the intervention, and then capital costs like the home telehealth equipment, overhead, supplies, etc. So, what's missing there, so far is a full understanding of healthcare utilization costs, including meds, including, you know, ER visits, hospitalizations, and we actually do have a full cost-effectiveness, cost-effectiveness analysis ongoing with this work.

Dr. Buse:

Yeah, but I do think that's a huge opportunity with regards to, you know, causing healthcare systems and payers to think about implementing these kinds of program, which I think have tremendous promise. You know, thinking about the Duke healthcare system or UNC healthcare system, you know, it could be implemented at UNC if we decided that was the priority. Do you think it could be done at Duke?

Dr. Crowley:

Yeah, I do. As I mentioned, we have an R01-funded study going on right now where we're trying to kind of understand not only can this sort of intervention be delivered effectively for PPDM-type patients within the Duke system but what really are the nuances of implementing a comprehensive telehealth approach within sort of a fee-for-service context, and that includes these practical issues related to staffing and such but also the costs and reimbursement. So we are actively looking at that, and I am very optimistic, actually, that we'll be able to get this into practice at Duke and maybe hopefully at UNC too. But, no, I think the intervention costs are clearly only part of the discussion, and it's likely that, as we all know, improving A1c and some of these other outcomes is likely going to translate to downstream benefits related to healthcare utilization. And my hope and expectation is that although, you know, there is a certain intervention cost that goes along with implementing a comprehensive intervention, such as the one we looked at, that that would eventually be offset or more than offset by some of the downstream benefits that you mentioned.

Dr. Buse:

Yeah. And, you know, I think, particularly for the patient population that you study, the people with pretty high A1cs, that's where an A1c lowering really makes a big difference as opposed to if you were studying a population that started with an A1c of 7.5 and you got them down to 6.8, the absolute benefit of that kind of intervention might be less, but really looking forward to your full cost-effectiveness study. Any final thoughts or takeaways you'd like to share with the audience?

Dr. Crowley:

Yeah. You know, I think there's always been a great argument for kind of comprehensive telehealth approaches and using them specifically for these folks who are not responding well to, to sort of "standard care."

I think the pandemic has driven an increased interest and use of telehealth, but I always like to make the point that what we've done with telehealth during the pandemic I don't think is necessarily what I would call true telehealth. You know, often times we're delivering our care by video or by phone, and we did that of necessity during the pandemic. Some of that has persisted, of course. But when you look at the overall system of care, we're still having these intermittent encounters with patients, you know, maybe once every three, four, six months just doing the encounters by phone or video rather than clinic. So, in essence, we're still doing clinic-based care. It's just by phone or video rather than face-to-face.

I think really the opportunity is to move it outside the clinic setting to augment what's happening in clinic, in order to, you know, have more frequent lighter-touch contact, gather data continually and act upon it in order to really maximize the potential telehealth to benefit these folks who really need it. I think the pandemic has increased our appetite for telehealth and really increased the urgency we should have to doing comprehensive telehealth-based care for the folks who need it most.

Dr. Buse:

That's a great note to end on as we come to a close. I'd like to thank my guest, Dr. Matt Crowley from Duke, for sharing his research on comprehensive telehealth interventions for patients with type 2 diabetes. Matt, thank you for speaking with me today.

Dr. Crowley:

Hey, no problem, John. Thank you. Always great to talk to you.

Dr. Buse:

For ReachMD, I'm Dr. John Buse. To access this episode and others from our series, visit ReachMD.com/DiabetesDiscourse where you can be Part of the Knowledge. Thanks for listening.