Discover New Tech For Beating Type 2 Diabetes Transcript

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Introduction and Career Journey

Welcome to another episode of reversing your Type 2 diabetes Summit. 2.0. This is your co-host Dr. Will Hsu. And today I have the pleasure of speaking to one of my former colleagues, Dr.

Ken Snow, who is really going through a great professional journey, being the head of adult diabetes at Harvard's Joslin Diabetes Center, then went on to industry first on the payer side, working for CVS and then went to Insulet, which is a smart pump company.

And then now to a new start up and Dr. Snow, I tell you, I can't I can't wait to have a conversation with you. Tell us a little bit about your journey from being a clinician now to being such a strategist right in and figure out how to integrate technology and the people living with Type 2 diabetes.

Thanks Will and Good morning it pleasure to be with you today. And it's it's always wonderful to to speak with old friends and colleagues. I've had a really terrific professional experience of my career.

And as you as you kind of pointed out, I had the privilege of of being at the Joslin Clinic and being a practitioner, treating folks with diabetes for nearly 20 years and then joined industry and joined initially what was Aetna, and then that was Aetna was acquired by CVS Health and so was on the payer side There.

And it really is a different mindset to move from being on the on the provider's side of having immediate interaction with patients every single day and helping to improve their lives and help them live longer, healthier lives and get them to be able to manage through the journey of diabetes.

How Insulin Helps in Type 2 Diabetes

And then joining the payer side where, you know, obviously from an outside perspective, people recognizable, they're the folks who pay the bill or hopefully they're the folks who will pay the bill.

But in addition, for that, money payers are very interested in making sure that they get a good bang for their buck, that the that the therapies that are being utilized are having a positive impact on patients and how they can make sure that their members, their patients are getting the best care possible if they're going to be paying for it.

They want to make sure that patients are getting benefit from it, that the money's not being wasted. And that was really an eye opener for me to be able to see that perspective of the pay, a journey that often doesn't get told and then leaving the payer side and joining the technology side.

As you mentioned, first in Insulet and now a Sequel Medtech, both technology companies that are working along the same lines of trying to improve the the life of people with diabetes.

So I wanted to let you know a little bit about our listeners, why these are individuals who want to take control over their own health and they don't want to be on a lifelong dependence on medication.

They want to get off their medicine, they want to feel healthy, they want to instead reverse their Type 2 diabetes, right? So this is why I wanted to have a conversation with you, because technology and health technology can help in the journey to better glucose control, but also to diabetes remission.

And and I've always been fascinated by some of the early studies, and most of them are smaller studies that show intensive insulin therapy can actually get people off long term dependance on medicine.

Right. And that's why we're talking about people with Type 2 diabetes. And and so that's why I wanted to invite you

and just talk about what's the role of insulin, what's the role of of these smart device, smart pumps.

There are every day getting smaller and getting smarter. Right. In the role for Type 2 diabetes, specifically also to the potential to improve their beta cell function and and to reducing their glucose toxicity.

Doing a lot of words there, but can you please explain to us in intelligent but but not so technical terms, please. Okay, I'll do my best here. It it's a broad question.

You know, I think that we can think of insulin as really having two major roles are two different places in the lifecycle. Somebody with with Type 2 diabetes, there's this role that oftentimes is at the beginning where intensive therapy bringing blood sugars down into into a normal range can get rid of this effect, which we really wish it didn't occur, but we know it does, where very high blood glucose levels actually block the ability of the cells in the pancreas to release insulin.

We would think that under that kind of stress and stimulus, that the pancreas would do a better job. But sometimes just the high glucose levels themselves inhibit the pancreas from doing its best job possible.

And so the blood sugars are worse by bringing them down through the use of insulin temporarily, that process can be reversed. The beta cells can that the cells in the pancreas can then work up to their sort of maximal potential.

They can do their best job and and once that happens, they can then on their own or with a minimal amount of assistance from medication, keep blood sugars in good range.

So that's one major place where insulin plays a role. The other place where it plays a role is later on in the process, where unfortunately for many folks with type 2 diabetes, part of the disease process, no fault of their own, not anything that they're doing.

This is not bad management or bad people. It is part of the disease where they produce less insulin over time. And so there are folks who have had the disease long enough that they no longer produce enough insulin, even with everything else going right.

And that's when they begin needing to look at supplemental insulin, not because of anything wrong that they're doing, but just that they've been fortunate enough to be living a long life and that they've had the disease long enough so that now they're needing supplemental insulin to help make up for what the body's no longer making.

So the pharma industry has come up with many different versions of insulin to shorter acting, rapid acting, ultra rapid acting, extra long, long every every size you can, you can you can kind of imagine, right.

So if that's the case, then where does technology fit in from a medical device perspective? Right. You already have the insulin that can work in different durations and onset of actions.

Why Insulin Can Still Be Useful with Insulin Resistance

But but then what is the role of these technology like POMS and others and Pens what? How do they help? Well. I think one of the biggest advances regarding the pump technology, and particularly closing the loop where the pump gets information on your blood sugars and knows where you are and how you're doing is really a game changer for those who need insulin therapy, because as you mentioned, there are a whole host of types of insulin, particularly around when they work and how long they work for.

And all of this is trying to make it easier for the person with diabetes to be able to take their insulin, not have to, you know, be injecting themselves, you know, every hour, but rather trying to minimize that down and matching up when the insulin is working with when the insulin is needed or.

But this is a great challenge if you just think about, you know, in the morning, how much insulin do you need in the afternoon? Well, you can do your best guess, but it's only that because you don't know what you're going to be

doing that afternoon because you put in your best thought of where it's going to be or even in the next few hours.

Regarding, you know, the meal that you're going to eat and what activity you're going to do. But things change, things come up. And so it's a very difficult thing to do and it's a very difficult thing for humans to do correctly, to be able to not only guess where it's going to be, but also give the amount of insulin that would be needed for what's going to happen.

Where technology comes in is technology can work with in terms of an insulin pump, work with an insulin sensor where it's collecting blood glucose information every 5 minutes and feeding it to the pump.

And the pump then knows exactly where you were, where you are now, and can begin guessing where you will be over the next 5 minutes, the next hour and the next couple of hours and give very small amounts of insulin as needed to keep the blood sugar in the right range.

And so now, without having to inject multiple times a day, the pump is doing these multiple mini injections, micro injections of insulin as needed to keep that blood sugar from going to higher, from going to low.

And this is a game changer that's been shown to be you know, this has now been shown to be highly successful folks with Type 2 diabetes because no one can be monitoring their blood sugar every 5 minutes.

The pump can. Work. So I'm going to be asking some some tough questions that our our listeners are going to want to answer. Right. So Type 2 diabetes is often characterized by people's inability to use insulin effectively.

We call that insulin resistance. And if if people with Type 2 diabetes have insulin resistance, why get more insulin in cases like that? And what's the argument for that?

And then we'll come back to the technology specific technology pieces. But I think that that's a piece I think a lot of our listeners saying, oh, insulin gets better, right?

So while I'm insulin resistant already, why would I want to have more insulin? Well, as part of any kind of treatment strategy and Type 2 diabetes, we we always try to improve insulin since the typically make people less resistant.

Insulin Pump Technology and Closed-Loop Delivery

And that's why part of the fundamental part of treatment of Type 2 diabetes involves encouraging greater activity exercise because that's known to improve insulin sensitivity.

If people carry excess weight to lose some weight because losing some of that weight also helps make people less resistant to the action of insulin. So that's always there.

But for some people, despite those actions and even some medications that improve insulin sensitivity as well, we are not able to bring the level of insulin resistance down enough so that the amount of insulin that a person can make is adequate to control their blood sugar and when that's the case, they need more help.

They need more insulin to overcome this resistance and make sure that they're getting enough insulin so that their blood sugars come down into an acceptable range.

And that's where the role of insulin comes in. So that's why we're no more is needed. So are you saying that there could be a utilization for insulin for a specific period of time?

It may not be a lifelong solution. Not everybody needs a life long solution of of this dependance on insulin. Is it a correct statement of what you just said?

I just want to make sure that the listeners understand this. Yes. For some that is absolutely true. Through a combination of improving their own insulin resistance, improving the beta cell function, the the pancreas cell

function that we talked about earlier, it's quite possible that some people will be able to take insulin for for a period of time and then be able to come off of it for others.

That's not going to be the case. So so it's really individually dependent and in this case by case. So so can you let's come back to to kind of your core competency.

Right. So that now you understand technology very well. Can you give us a little bit of a survey of the landscape of insulin delivery technology that's available to patients nowadays?

What are there different types, different forms of these insulin pump and and what are the what are the differences? Sure. So there are a number of different insulin pumps that are now on the market and it is becoming a much more interesting space just because more options mean more options for patients and there are differences between them.

And so even now in the pump space, it's becoming a much more personalized visit situation where a person can decide what are the things that are important to them and what are the things that are less important to them.

But, you know, in terms of features in the pump, certainly accuracy and reliability are key features. And and so that's one aspect is the aspect of wearability.

How does somebody wear the device? Is it put on the body? Is it worn on the body with a tube connecting it? Is it kind of a hybrid between the two where you can wear it on the body if you so choose, but also put it on your clothing if you so choose, so that there are differences of wearability and there's differences in cost and coverage from from insurance companies.

So that plays a significant role as well, how much insulin they contain. And for these smart pumps, these clothes loop pumps that at detecting insulin, they have different sort of brains inside of them, different algorithm, some that work differently, some are much simpler in terms of less things that the user can adjust.

But on the other hand, that gives them less control over their disease. Others have more options for vacation time just and that gives them more control over the disease.

So so there's a lot of differences between them and that allows the person to be able to select the one that that they feel would be best for them. So let's go into that a little bit more. Right.

So the ones that are worn on the body versus one that's called tethered, where they they the infusion infusion set is attached to the is the insulin delivery device.

So tell us a little bit about what are the pros and cons of these two different types and what are some of the brand names that our listeners can look up and do their own research?

Sure.

Pump Types and Device Options

So, you know, available in the United States, four pumps that have one directly on the body, folks would be able to look up either the omni Pod five or the tandem mobi, and these are connected right onto the body.

The advantage of them is that there is no tethering to the disadvantages wherever you put it. That's where it's going to be for the next few days until more three days until or two or three days until you move it.

And when you move it, you don't actually move it. You take it off and you put a new one on. So wherever you put it, you're kind of stuck with it there.

And again, this becomes a personal issue for some that matters a lot. For others, it's not it's not an issue. The ones

that are so called tethered or attached with with tubing.

So the devices are worn, let's say, on clothing. And then there's a small tube that runs from the pump to the body where it or where it attaches and delivers the insulin.

And so folks would recognize or could look for Medtronic 780 G or the tandem T slim. Both of those are currently available on the market and those you have greater flexibility on where you can wear it.

You can you can hang it on your belt loop, you can put it in pocket, but so there's that flexibility of where you can wear, you can wear it. And, you know, for instance, the device that we hope our device which will be which is before the FDA being reviewed right now.

So it's not yet available on the market, but hopefully will be of you know, this year we're kind of a hybrid between the two. It does have a small tube.

And so as such, you can you can hang it on your clothing like either the mini mad or the tandem. But on the other hand, there's also the ability to stick onto the body so that you can put it, you know, on your body and really not have a tube running anywhere other than the sort of one inch from this device into your body.

So it kind of is a hybrid between the two. So there's lots of different options of how these warm. That's fantastic. Thank you for that. The survey of the landscape.

Our listeners are always their pioneers. They always want to get a leg up on the information. And and so this new technology that you and your company are developing, what is the name of this technology or this company?

So the company is sequel MedTech, AC, Q and MedTech Sequel MedTech and our pump is the twist. The okay w i s t and that name is a reflection of the way that the pump is loaded and insulin is put into the pump.

But it's a twist mechanism which makes it very easy for users. So and when the when it does become commercially available in the near future, what can our listeners be looking forward to in terms of its differentiating features?

What is different about it that's that that this stands out right against other options for for our patients. There's a few things that do, and one is where we are a highly accurate device that uses really cutting edge technology and how it measures and delivers the insulin as the pump.

And we'll get into the details of that. Other than this is though. So here is is one. Bell accuracy and cutting edge technology. The other is as I mentioned about this hybrid ability to be able to wear it on body if you wish, or wear it on clothing, if you prefer.

And the ability to change that at whenever you want.

Sequel Medtech and the Twiist Pump

So, you know, you can put it on your body today and decide that you want to take it off and move it someplace else. And you know, later on today and you can do that.

So it gives the wearer that kind of flexibility. And then I think a third major feature is that we utilize as our brain in the pump, the logic behind behind all of this is the tide pool algorithm.

And the tide pool algorithm is the first algorithm that was approved by the FDA as a standalone algorithm to be used. And the results in clinical practice have shown that the tide pool algorithm is sub is is quite good, gets great results for folks.

It was actually designed as open source was uses the people who designed it initially were people with diabetes who were designing it for people with diabetes and making it available out on the web.

And that algorithm, that sort of logic will now live in our pump and be available for anybody who wishes to use it. So. So so three features are right here, right?

So one is accuracy, right? The second one is the ability to wear the way you want it. And then number three is this brain power behind this medical device.

So it sounds like it's something that our listeners will be looking up and learn more. Good luck with with the FDA, the submission and approval. And so Ken as we draw to a close this this conversation.

You know you've had a very rich experience coming from decades of clinical practice, taking care of patients, then contributing to kind of the economics right, figuring out the economics of how these new technology is going to be paid for.

And then you die. You go right into the thick of it in in terms of coming up and proving that these new technology work through your work at this these these medical device companies, what perspective do you have in terms of people living with Type 2 diabetes?

What do they have to look forward to? Well, well. It's been well, let me answer that in the sense of we know that, you know, the goal for folks with Type 2 diabetes is to live a long and healthy life.

It's not suffer from diabetes, but to live with it. When I was in practice, I used to tell my patients that the goal is that you lived to be 100 years old and that you'll die.

And when someone says that you had diabetes, they'll say, Oh, really? I never knew that. That's our goal for people that the diabetes would be something they'd have to live with but not get in the way of their living.

And unfortunately, despite all the different kinds of insulins and all the different advances that have been made, we have not really achieved that goal for for many patients, many people have still had challenges trying to achieve the level of good blood sugar control that we know leads to good health.

And so the goal is always can we get folks blood glucose under control because that's what's going to keep them healthy.

Future Outlook for People with Type 2 Diabetes

Let them live to be 100 years old and and die from something else and not from any of the problems of diabetes and and be healthy for that. For all that time.

We now have these new technologies which are really demonstrating that they can really help keep people's blood glucose under control and with less work.

So better control, better health with less work, That's. Yeah, that's an important issue, is that less work is really relevant to people. It's a 24/7 job for people.

It's a 24/7 job. And what's and the way we've done this in the past is, well, more things, more pills, more injections. If it was one injection of insulin, now let's make it two or three or four injections a day.

It's always been more work. And what we're looking at now through the use of technology is less work. Let's just let it run. You're not having to inject multiple times a day.

You're not having to check your finger sticks, which beyond being annoying and expensive, it was painful or it is pain. So all of a sudden there's better technology out there that allows folks to do less work.

Not yet no work, but less work and live healthier lives and achieve that kind of blood glucose control that they're looking for and maybe being able to sort of forget about their diabetes for a little bit, you know, for part of the day.

Fantastic Dr. Ken Snow, the chief scientific officer at Sequel Medtech, right? Yes. Did I get that right? You did. If people if people wanted to find out more about this emerging new technology or where can they find find out more?

Well, I certainly will put in the plug and folks can come to our Web site sequelmedtech.com And as as our product advances through the regulatory process and and as we get closer to being to market later this year, we'll have far greater amounts of information on the website.

Thank you. Dr. Snow Thank you for joining us today. This will conclude this episode of reversing your Type 2 Diabetes Summit 2.0.