

Podcast 44: A Real Patient Story with Adult-Onset Type 1 Diabetes

Dr. Rita Kalyani, MD: Welcome to Diabetes Deconstructed, a podcast for people interested in learning more about diabetes. I'm your host, Dr. Rita Kalyani, at Johns Hopkins. We developed this podcast as a companion to our patient guide to diabetes website. If you want a trusted and easy to understand resource for diabetes or to listen to previous podcasts, please visit hopkinsdiabetesinfo.org.

For today's podcast, it is my pleasure to introduce Beth, a person who has adult-onset type 1 diabetes who will be sharing her journey with this condition. Along with Beth, we are pleased to welcome Dr. Jordan Perlman.

Dr. Perlman is an assistant professor of endocrinology at the Johns Hopkins University School of Medicine. Her clinical practice focuses on using diabetes technologies in geriatric and disabled populations. She is involved in clinical trials, testing new algorithms for automated insulin delivery systems. She has been recognized for her work on continuous glucose monitoring metrics, and the associated risk of microvascular complications. Dr. Perlman was also named a top doctor in endocrinology by Baltimore Magazine in 2023 and 2024.

We are thrilled to welcome Dr. Perlman and Beth here today. Welcome.

Beth: Thank you.

Dr. Jordan Perlman, MD: Thanks, Dr. Kalyani. So, Beth, I know everybody is really excited to hear your story. Can you tell us a little bit about the circumstances of your diagnosis? When were you first told that you had diabetes?

Beth: Sure! Thank you again for covering this topic, because type 1 diabetes is rare, and my adult onset is the rarest of the rare, correct me if I'm wrong. It is a tough group to be in for sure. I was originally diagnosed with type 2 diabetes. It was really gestational diabetes when I became pregnant with my son, who's now 22 years old.

I was seeing a family physician; I was young, and a friend of mine suggested that I see her doctor, who had delivered her child. So, I didn't even go to an OBGYN. The doctor was very wonderful; he was a brand-new physician out of medical school. And what happened was my glucose test, during my pregnancy; the results apparently never made it back into my file. So, I went undiagnosed with gestational diabetes. We don't really know how long I was undiagnosed for, but I became extremely ill, of course, in my second trimester. My physician at the time was worried I was getting dehydrated and told me to drink Gatorade (a sports drink containing electrolytes and glucose), which, of course, was just exasperating all my symptoms. Eventually I called my doctor, and he said, "You have to come to the emergency room." They tested my glucose, which was somewhere in the five hundreds. They admitted me right away. And my physician told me that those glucose test results had not made it back into my file — he didn't catch it. I was referred to an OBGYN who specialized in high-risk pregnancies. So, from that point on, I became a high-risk pregnancy. It was very difficult to control my gestational diabetes; I was on bed rest, and it was just difficult. After my son was born, it was a miracle, and I no longer had diabetes. They brought me a piece of cake in the hospital, and I was like, "Get that away from me!" and they were like, "We just want you to try this." My glucose remained completely beautiful — perfect — there was no increase. That was a really wonderful moment for me.

Fast forward five years. My husband and I really wanted to try for another child, but my doctors told me that I was at higher risk, not just for gestational diabetes, but for

becoming type 2 permanently. I really did everything I could to make sure I was in prime health to get pregnant. I got pregnant. We were living here in Baltimore at the time, and I started seeing a high-risk obstetrician and just a wonderful OBGYN. He managed my gestational diabetes — I did in fact develop it. It was very well controlled throughout my pregnancy. However, upon the birth of my daughter, who is now 17, I was diagnosed as a type 2 diabetic.

So, for many years, I was treated as a type 2, but I was really a brittle type 2 (diabetic). I had a lot of difficulty controlling my glucose; I was on metformin, of course, and the insulin-resistance drugs that you take. We were experimenting with different drugs. Then eventually test results showed—this was about five years ago, so I was about 45 years old or 46—test results showed that I was no longer a type 2 (diabetic). I was a type 1 diabetic, and that was pretty devastating.

JP: Wow. That is very complicated. It's a really interesting story, and it sounds like you had to go through a lot before you got your diagnosis of type 1 diabetes with adult onset. I'm just curious, for those who are listening, if you could tell us a little more. You said that during your first pregnancy, your doctor said that you were getting dehydrated. How did your doctor know? Or how did you know that you were in trouble during your first pregnancy? What kind of symptoms were you having?

Beth: Sure. I had every possible complication you could have during pregnancy, with the exception that I never developed preeclampsia, but that was the only thing I didn't develop. My symptoms were thirst and incredible fatigue. I remember trying to get up the stairs to my apartment, and I was just on the second floor—I felt like I was wading through six feet of snow, like my body just had no energy. I couldn't satisfy my thirst; I was sleeping all the time; I felt like I had brain fog, and because I was pregnant, people were like, "Oh, you're tired because you're in your second trimester."

My family was noticing my symptoms. I had a lot of edema in my feet and my legs. In fact, I think I had a baby shower, and two days later, I was in the hospital for extreme swelling. They were just trying to get it all under control. I developed—now this is not necessarily a symptom of diabetes, but maybe a complication—I developed severe cellulitis in my leg, which was extremely painful. They had to do an X-ray; they were worried about blood clots. I had to sign away my life to have the X-ray as a pregnant woman. I would say to family, "I'm the only one who goes into the hospital, into labor and delivery, and leaves still pregnant." I was just hospitalized many times. Those were the early symptoms. By the time I was getting hospitalized, they knew that I was an uncontrolled gestational diabetic, but it was very rough going.

JP: You mentioned that your diabetes was then well controlled during your second pregnancy. What changed during your second pregnancy? What were you doing to control blood sugars during your second pregnancy?

Beth: The difference was excellent health care. I was now in Baltimore; I just had access to excellent health care from the very beginning. We went into the pregnancy knowing that I was going to develop gestational diabetes, most likely, and that because of my medical history, it had to be very tightly controlled. I had weekly doctor's visits. I think by my second trimester, I was going in twice a week to see my OBGYN. And I was on insulin, so we were controlling my glucose with insulin and with a very strict low-carb diet.

JP: So, you were taking (insulin) shots during your pregnancy?

Beth: Yes.

JP: After you delivered your daughter, you were told that the diabetes had now become type 2 diabetes; were you still taking insulin after you delivered your daughter?

Beth: For a while, it was controlled with Metformin and with Liraglutide (Victoza), and honestly, I was on a few different pens for a while; I can't even remember all of them. I had really significant insulin resistance and still do, and that's a scary place to be.

JP: Are you talking about with regards to how much insulin you're requiring now as an adult or how much you were requiring during pregnancy?

Beth: So during pregnancy, because I was type 2, I was on insulin, but I wasn't on a whole lot—maybe 5 units to treat any number of carbs. I'm not being medically accurate here because I just can't remember what my ratios were, but I was not taking a ton of insulin. Maybe my total daily dose at that time—an expression I didn't even know to use incidentally but use now—with my second pregnancy was probably around 35 or 45 units of insulin. As I increasingly became harder and harder to control, as my daughter grew, and years went on, my A1C numbers were like 7%, 8%, or 9%, really not where you want to be. By the time my A1C was 9%, that's really when we realized that I had become a full-blown type 1 diabetic.

JP: Yeah, so let's talk about that transition. You may know this already, but for those of you listening, one of the ways that doctors often consider a misdiagnosis when it comes to type 2 diabetes versus adult-onset type 1 diabetes is how quickly a patient progresses from needing your typical type 2 diabetes medications like Beth described—so your oral medications and your non-insulin injectable medications like liraglutide (Victoza), semaglutide (Ozempic), and tirzepatide (Mounjaro)—and how long it takes a patient to fail those medicines and need to start taking insulin. I think you said that it took you five years to go from a diagnosis of type 2 diabetes to getting your diagnosis of Latent Autoimmune Diabetes in Adults (LADA). That is a pretty quick progression for a young person diagnosed with type 2 diabetes to go from non-insulin medications to insulin medications.

I do think that is a pretty classic red flag for a doctor to consider whether or not you might have an autoimmune process like type 1 diabetes versus type 2 diabetes. I think that that in and of itself is pretty telling. When you delivered your daughter and then you were told you had type 2 diabetes, what was your understanding of how common it was for patients with gestational diabetes to then develop type 2 diabetes?

Beth: I think my husband and I were really hopeful that if I developed gestational diabetes with the second pregnancy, I would be lucky and deliver, and I would have that magical moment I did with my son, and I would no longer be diabetic at all. I think in my third trimester, my doctor was on vacation, and I had an appointment with another OBGYN, who delivered information in a very different way to me and said, "You're going to deliver, and

you're going to be a type 2 diabetic." I was just like, "What!? What do you mean? Is it that certain? I'm 100% becoming a type 2 for life!?" It was really shocking. I really didn't know just how likely it was, and I wasn't getting bad information. I just really, for whatever reason, didn't understand that—yes, I am most likely going to become a type 2 with my second child. Now, looking at my family and family medical history, I had a cousin who had gestational diabetes with both of her pregnancies, and she's not a diabetic; she did not become a type 2. Type 2 diabetes is rampant in my family: my father has been a long-time type 2; I have three siblings; my sister has type 2, and my brothers are okay. My mom developed it later in life. Then just any number of aunts and uncles developed type 2 later in life. But to our knowledge, there hasn't been any type 1 diabetes in our whole extended family.

JP: That's very interesting. But believe it or not, it is not uncommon. Type 1 diabetes doesn't necessarily run in families, but type 2 diabetes is very highly genetically correlated. When you were failing all of those medications for type 2 diabetes and your A1C was going up and up and up, do you remember what tests were done to determine if you had type 1 diabetes versus just difficult-to-control type 2 diabetes?

Beth: While I was type 2, I was having all the standard tests, and if you could maybe remind me of what some of them are.

JP: Yeah, if a doctor suspects that a patient may have type 1 diabetes instead of type 2 diabetes, there's a series of tests for autoantibodies—so antibodies in the body that mistakenly target your pancreas—as well as an assessment of how much insulin your pancreas is producing. So adult-onset type 1 diabetes, classic type 1 diabetes, they typically present with at least two of these autoantibodies, these antibodies against the pancreas. And if it's found early, sometimes patients will have some residual insulin function from their own pancreas. But oftentimes, by the time we find out that someone has type 1 diabetes, they may not have any remaining insulin function. That's when it gets really dangerous because those patients are at high risk for a complication called diabetic ketoacidosis. That was a buzzword for a lot of people because it can mean death. It's a really serious complication. I'm thinking that it's likely that your type 1 diabetes was diagnosed on a series of blood tests after you continued to have a rising hemoglobin A1c using these oral and non-insulin type 2 diabetes medications.

Beth: Correct, so they did the antibody test, and I was no longer producing any antibodies, and my pancreas was no longer producing any insulin. And I cannot emphasize enough the importance of good physicians. When I was pregnant with my son, I was in Buffalo, New York, and I was young. I wasn't really plugged into communities with young parents and people who could refer me to good health care and good physicians. All that changed when I came to the wonderful state of Maryland and Baltimore with Hopkins and GBMC.

This sounds ridiculous, but with the advent of Facebook, I eventually joined. Once it was just becoming very difficult to control diabetes, and then when I was diagnosed with type 1 diabetes. That was here in Baltimore, incidentally. But I literally got a call from a nurse, not even my endocrinologist, who called to say you're now a type 1 diabetic. I didn't know what that meant. I kind of knew, but she said, "You can stop all of your type 2 medications. You can stop Liraglutide (Victoza), you can stop your metformin, and we're just going to treat you with insulin." Then my endocrinologist, who'd been treating me for years, left the practice. So, I had no guidance. I stopped taking my type 2 (diabetes) medications. And what I'm

going to tell you is that my glucose went through the roof: my glucose was at 300 mg/dL; it was at 400 mg/dL, and I couldn't get it under control.

I didn't know what to do, and I joined this Facebook group for type 1 diabetes. A few people reached out to me because they could tell I didn't know anything; I didn't know what a bolus was. I have a PhD in English, incidentally, and I know how to research things. I couldn't figure out what I was supposed to do. Via Facebook, somebody referred me to Hopkins, and I had to wait six months as a new patient to get into him, but they said, "It's worth it." So for six months, I really did not have a whole lot of guidance for treating what was now my type 1 diabetes, but a friend who I'd made through the Facebook group—and I don't recommend ever taking medical advice from anyone who's not a physician—but she had been a type 1 her whole life. She'd been a juvenile diabetic, and she said, "Beth, take your metformin again." And I started taking my metformin, and I was able to reduce my glucose. Not as much as I would like, but at least it was making a difference while I was waiting to get in to see my new endocrinologist.

RK: So Beth, thank you so much for sharing the challenges of trying to figure this all out. It's so interesting to hear about the role of social media in providing some information and support. I wonder, as we talk about how difficult it can be, especially in adults, to diagnose the type of diabetes, if we could talk a little bit about what we thought was going on during your pregnancy. Often, one type doesn't change into another. We think more often that you probably had type 1 diabetes, and it was likely misdiagnosed because gestational diabetes is very common in women when they're pregnant. Perhaps it wasn't until you got to the point where your body wasn't producing insulin that they started to think about the type.

I wonder, Dr. Perlman, if you could shed some light on the misdiagnosis versus having one type versus another, because we don't usually think about one type becoming another type, but the messaging is important. Beth, I think what you're sharing is some of the confusion about that.

Beth: Definitely.

RK: And trying to navigate that. Dr. Perlman, I wonder if you could provide us some insights into that.

JP: Absolutely. I think the big takeaway here is that hindsight is 20/20. I think it was a totally reasonable assumption, particularly because you'd had gestational diabetes twice, and you said that you have a pervasive family history of type 2 diabetes. I do think that it was a reasonable assumption, after you delivered your daughter, that you had type 2 diabetes. But there are certain things that we will sometimes look for to indicate whether someone has type 1 or type 2 diabetes.

Oftentimes, type 2 diabetes comes with a lot of other metabolic problems, hypertension, high blood pressure, high blood lipids or high cholesterol, and obesity. Even though it is quite common for us to see type 2 diabetes after gestational diabetes, there are certain things that would make us question that diagnosis.

I think that your story of, as Dr. Kalyani described it, having to wait a long time and to wait until your pancreas stopped making insulin to get a diagnosis of adult-onset type 1 really is, unfortunately, a classic story. But yes, it is likely that you had the beginnings of type 1 diabetes and not type 2 diabetes after you delivered your daughter. And because the disease classically progresses slower in adults, it was able to hide out and pretend to be type 2

diabetes until you had no remaining insulin function and your body was dependent on insulin injections to survive. So, I do think that the course is quite classic, but I think it's important for our listeners to understand that it was likely—it is likely—that you had type 1 diabetes after you delivered your daughter, and that it really just progressed slowly.

Beth: I do think you are absolutely correct about that. Even in just the past few years, I'm seeing more and more research on what you referenced as LADA, or latent autoimmune diabetes in adults. When I was diagnosed with type 1 (diabetes) several years ago, that was not in the conversation. I found that on a website, and I wasn't even sure if that was in mainstream medical research yet, just as a patient looking for answers. So, I do think that you are right. I think I had a lot going on metabolically; I am treated for hypothyroid, and now I'm treated preventatively for high blood pressure, just to keep everything at bay.

JP: Can you tell us a little bit more about how you're currently managing your adult-onset type 1 diabetes?

Beth: Thank you for asking the question because I really want to share this with people who might be in my situation. How do you control this really tricky type 1 that comes on in adulthood? I was already on a continuous glucose monitor (CGM). It was wonderful being able to see my glucose levels. I'm a huge fan of CGMs, and I've only ever used Dexcom, but that was my first game changer.

Then the second game changer for me was the pump (an insulin pump). I've been on the pump since 2020; it was the highlight of the pandemic for me. I was able to get the pump, and my insurance covered it.

Three game changers: my endocrinologist, the CGM, and the pump. My A1C was maybe still around 7.5% or 7%, still hard to get any lower than that. What I was really struggling with was weight gain from all the insulin. Because of my insulin resistance, which is so much higher than somebody who's a juvenile diabetic and has been managing their diabetes pretty well throughout their life, I was taking—this just still astounds me—upwards of 100 units of insulin a day to control my diabetes.

I maybe wasn't doing the best job with my diet. But I wasn't sitting around eating entire pizzas or candy bars and ice cream, and I was still taking a hundred units of insulin. I put on 30 to 40 pounds. I had never been heavy in my life. Now I was tipping the scales; I couldn't fit into any of my clothes; I was at the weight that I was at when I was pregnant. I was really depressed because I could not get the weight off. I go to the gym, and I get on a bike, and my glucose would instantly crash, and I'd be drinking juice, which was no help in trying to control my weight. It was really tough. Everybody is talking about semaglutide (Ozempic) and tirzepatide (Mounjaro), and it's not FDA approved for type 1 (diabetes). Then there's me, and there are the other type 1s who are adult onset and have insulin resistance, and mine is pretty significant. Then the insurance rejected it.

My sister, who has type 2 diabetes, is on semaglutide (Ozempic); she was just having great results. I was sitting on the sidelines thinking it's just so unfair that my insurance won't cover it. But we kept trying. I learned from my Facebook group that if your doctor checks the right box for your insurance that says insulin resistant, many insurances will cover it. As your listeners may know, semaglutide (Ozempic) and tirzepatide (Mounjaro), that whole class of drugs, is so expensive out of pocket; it's \$1200–\$1500 a month. I just couldn't do it; there was no way. So tirzepatide (Mounjaro) gets approved by my insurance, and that was the fourth major game changer for me. I have more energy—I'm not at a hundred percent as a diabetic—but I have more energy. I have also lost about 30 pounds. I'm fitting into clothes

that I haven't fit into for seven years. All of my numbers, all of my tests for cholesterol and high blood pressure—I am at the best health I have been at since my thirties. There was definitely a transition at first with the nausea and whatever. But thankfully I've adjusted to it.

JP: I know we could do an entire podcast series on insurance and coverage. I certainly want to touch on something important that you said, which is the issue of insulin resistance. I think it's an outdated idea that only people with type 2 diabetes can have insulin resistance. Insulin resistance is something that can also affect people with type 1 diabetes.

There are many causes of insulin resistance; the one that you mentioned was weight. Unfortunately, with insulin resistance, gaining weight is a feedforward mechanism because you gain weight, you develop insulin resistance, and then that extra weight causes you to develop more insulin resistance. Then it's a self-fulfilling prophecy. It's true that patients with type 1, adult-onset type 1, and type 2 diabetes can all have insulin resistance. I think that moving forward, it's going to be interesting to see what the studies show us about the use of these GLP medications and type 1 diabetes.

Going back to your use of the insulin pump, the automated insulin delivery system. Can you tell us more about how you adjusted to that as an adult? One of the things that I often think when I treat patients with adult-onset type 1 is how much easier this must be—and I'm not saying that being a child with type 1 diabetes is easy; it's certainly not—but if you've lived your whole life, not having to wear devices or worry about taking insulin with your meals, I think it must be a lot harder to adjust to this kind of technology. So I'm wondering if you could tell us about your experience using this automated insulin delivery technology. Do you have any advice for other adults who may be struggling with the technology piece of this?

Beth: I love technology; I always have. I think even for those who may be averse to the idea of having tubing and a little electronic device on their person at all times, you get used to it. Like you said, Dr. Perlman, it's so much easier. It takes the math out of it if you don't like math, or you don't like having to figure out your ratios of carbs to insulin. I don't wake up in the middle of the night with my CGM going off. I think they call it the "sunrise effect," if I'm not mistaken. But my glucose goes up in the early hours of the morning before I wake, so my t:slim pump will cover for me. It's amazing. I have to bolus before a meal, but I just punch in how many carbs I'm going to be eating.

If you're a type 1 diabetic, you just get really used to doing that. Before the pump, I was using apps to help me track my carb intake and my insulin usage. That was early data that I was able to give my endocrinologist before I was on a pump. It's a lot. It's like walking around and having to have Excel spreadsheets so you can figure out how your body is handling carbs. I pretty much just wear clothing with pockets now because I just slide my pump into a pocket, and I cut a little hole in a pocket, and that's where my tubing goes.

You figure these things out, or if you're in a Facebook group or you have a community—Hopkins has a group for diabetics to meet. You learn these little tricks of the trade that can make life easier. I can look at my total daily dose, and it's just knowledge is power, and the pump gives you control over that information to give you control over your diabetes.

RK: Beth, it's so great to hear how technology has really supported the management of diabetes for you. As Dr. Perlman mentioned, sometimes when you're diagnosed with a chronic disease later in life, it can take some more adjustment. It sounds like you've adjusted and thrived so well with your current treatments. Part of the challenge that I think you've

highlighted that I thought was worth commenting on was what we call the "overlapping physiologies of diabetes"—even though you have the diagnosis now that they found the type 1 diabetes, given your family history and the weight gain, you also probably do have some insulin resistance. We see that even with children who are diagnosed with type 1 diabetes as they get older, if they have other risk factors for insulin resistance or type 2 diabetes, we can see that high insulin need. I really do appreciate you sharing your story and especially the challenges of having not only a confusing diagnosis but maybe having aspects of both type 1 diabetes and insulin resistance.

Now that you've had these years of meeting with healthcare professionals, being told at various stages of testing what they think you have and what you have, and with the support of the Facebook group—how do you feel now that you have the diagnosis?

Beth: I feel so much better than I did five years ago when I was really scared. I feel like I'm tuned into my body in ways that a healthy adult or even an unhealthy adult is not tuned in to their bodies. I like that because, again, my doctors and my PCP are on top of making sure I'm managing my diabetes and any kind of complication that can arise from it. I think my children are very aware, and my husband is very tuned into my health. My husband's phone is linked to the app because I tend to work from home, by myself, or I'm in my office by myself. If I'm having a low, my husband gets alerted, and he checks in with me to make sure I'm okay and that I have access to some quick carbs. I feel empowered to really control my disease and aim for being the healthiest that I can be so I can live a long, healthy life for my family.

JP: That's really great. Is there anything specifically that you would want other doctors and healthcare providers to know, in terms of how we can better support individuals with adult-onset type 1 diabetes?

Beth: I think you all doing this podcast is just fantastic. I would just say, I don't think a lot of medical professionals or endocrinologists necessarily know the great resources that are out there for type 1 diabetics. There are some great websites. These are things that were shared with me through the type 1 diabetic community. I think just making sure that patients have resources outside of the doctor visits. I see my endocrinologist twice a year; I see his nurse practitioner twice a year. That's just two to four touchpoints a year. Diabetes is tricky, but there are podcasts like this one.

JP: In our clinic, we definitely take advantage of some of the newer technology options, particularly when it comes to helping patients learn to count carbohydrates. ChatGPT is a great resource.

Beth: Oh, wow. I hadn't even thought of that.

JP: Yeah, artificial intelligence (AI), I think, is really helping patients with diabetes learn to do things like carb count. As Dr. Kalyani mentioned earlier, I think it's great that you've been able to connect with other patients, to learn about their stories, and see if they have any “tricks of the trade” that will work for you.

RK: Thank you, Beth, for being on our podcast and for sharing your story, which I'm sure will resonate quite a bit with other listeners out there, and for sharing the resources also that you have found helpful to navigate this.

One thing I did want to ask Dr. Perlman is if you might want to touch briefly on the terminology that we now use for adult-onset type 1 diabetes versus latent autoimmune diabetes of adulthood, which is sometimes used as well.

JP: The terminology, I think, for the layperson can be tricky. I think the bottom line is just to understand that both latent autoimmune diabetes in adults versus adult-onset type 1 versus type 1 diabetes all have a very similar pathophysiology. They have a similar cause. It all has to do with autoimmune destruction of pancreatic beta cell function—so the cells in the pancreas that make insulin get destroyed. I think the more recent terminology is adult-onset type 1 diabetes. If you hear someone referring to it as latent autoimmune diabetes in adults, or LADA, they're referencing adult-onset type 1 diabetes.

RK: It can be confusing even for us in the health care field. We can only imagine how confusing it is for a person with diabetes. The bottom line is to learn as much as you can, to understand as much as you can, and to get the treatment as promptly as you can.

Beth, your story has been so great to hear, not only about the challenges and how you were able to find support to navigate those but also to hear what a great place you're in right now and how well you've been doing.

I wonder, in parting, if you might have some words for anyone out there who is struggling with their diabetes and wondering, like you did, is this the right diagnosis? Who else can I ask? What would you say to them?

Beth: I would say number one, find a great endocrinologist; research who the best endocrinologists are, and know that you can leave an endocrinologist if you're not getting the answers that you need or want or think that you need. Number two, never give up. Never give up. This disease has its ups and downs, and I've certainly experienced the whole gamut, and it can get you down, but just never, ever give up on yourself or your disease. You can get control of it.

JP: That's wonderful to hear. We definitely love the positive encouragement. I agree with you; if you, for some reason, feel in your gut that something isn't right, you absolutely should seek out somebody who can help you find the answers. In endocrinology, that's a big part of our job: looking for answers and making diagnoses. It was really great to hear your story, and I'm really impressed with how well you've integrated technology into your life as an adult and that you haven't been hesitant. You've just gone for it, and I think that is really impressive.

Beth: Thank you so much. Thank you all for the wonderful work that you're doing supporting diabetics and diabetes education. It's just so important to have these resources and experts in the field.

RK: Well, thanks so much again for being on our podcast. We really appreciated your time and your willingness to share your story. Thanks again. Thanks, Dr. Perlman, for your expertise and shedding light onto adult-onset type 1 diabetes, which I think we are going to hear more and more about. We really did appreciate having you both on our podcast today, so thank you.

Beth: Thank you.

JP: Thanks.

RK: I'm Dr. Rita Kalyani, and you've been listening to Diabetes Deconstructed. We developed this podcast as a companion to our Patient Guide to Diabetes website. Our vision is to provide a trusted and reliable resource based on the latest evidence that people affected by diabetes can use to live healthier lives.

For more information, visit hopkinsdiabetesinfo.org.

We love to hear from our listeners. The email address is hopkinsdiabetesinfo@jhmi.edu.

Thanks for listening. Be well and see you next time.