

Reporter: Now, a device called the bionic pancreas could make it easier to manage the daily ordeal of living with type 1 diabetes. The experimental device is wearable and mimics what a natural pancreas does when continually regulating blood sugar. Researchers say it has passed its first real world test. A monitor connected to a smart phone automatically triggers doses of insulin to bring down high sugar levels, and unlike other artificial devices, this one can also boost low sugar levels with a dose of glucagon. Now joining us is Dr. Minisha Sood, endocrinologist, at Lenox Hill hospital here in New York City, and you're not just an endocrinologist, you're also director of inpatient diabetes, so you know what you're talking about. This sounds really interesting.

Dr. Sood: It's exciting.

Reporter: Has it really made that much of a difference? Tell me about how important this bionic pancreas is.

Dr. Sood: So this is an important step in the development that spans six decades now, in the pursuit of an artificial pancreas. Now they're calling this a bionic pancreas, but really what it comes down to is; it's a device that can sense glucose, sense blood sugar levels, in the space in between cells underneath the skin, and then deliver that information wirelessly to the pumps that contain insulin and glucagon. Insulin lowering blood glucose, and glucagon raising it, to maintain a normal blood sugar for patients.

Reporter: So give us an idea of what this thing looks like, it's outside the body?

Dr. Sood: It's outside the body.

Reporter: Okay.

Dr. Sood: There's a glucose sensor that attaches to the skin and that communicates wirelessly with the monitor, the device that the smartphone that displays the glucose reading, and then also with the pumps, the controlling of the pumps. Now the pumps are also situated as tiny tubes that are attached to the skin and they are connected to pumps that deliver insulin and glucagon, on the other side of the abdomen.

Reporter: Right, so the sensors are picking up information from blood or sweat or where are they picking up the information?

Dr. Sood: So, it's called interstitial fluid and it's the fluid in between cells that usually closely correlates with blood sugar.

Reporter: That's really fascinating, is there a downside to this?

Dr. Sood: There are downsides. So one is; if wireless communication is interrupted, the delivery of glucagon and Insulin can be interrupted as can the detection of the glucose level, and also that patients may or may not input the information correctly so, it really has minimal input from patients. Number one, what type of meal was it, at least the device that was described in today's article, and also what's the size of the meal. So if not every meal is put in, then the device can only work as well as the information it's receiving.

Reporter: And we know, sometimes we fib about how much we're eating.

Dr. Sood: Yes.

Reporter: So this is for Type 1 diabetes though, just to remind people there's Type 1 there's Type 2. What's the difference?

Dr. Sood: So, Type 1 diabetes is a chronic condition in which a person cannot make insulin. The pancreas simply does not make insulin. In type 2 diabetes, patients often do make insulin maybe later on into the disease they lose the ability to make insulin, but Type 1 Diabetes differs from Type 2 in it is a condition that cannot be cured and cannot be controlled solely with oral medication, diet, or weight loss.

Reporter: And I know, I don't know if it's still called juvenile diabetes, or if they've changed that, but it doesn't necessarily only show up in children?

Dr. Sood: Correct. Type 1 diabetes can be diagnosed in adults.

Reporter: So what sort of impact can this have on the lifestyle of someone who has Type 1 diabetes?

Dr. Sood: This can have a tremendous Impact. If you think about the lifestyle of a Type 1 diabetic, their day can involve multiple blood glucose tests by pricking the skin from 3 to 10 times a day. It involves insulin injections, either by syringe and vile, you know, the old school method, or by insulin pen delivery device, or even insulin pump, but if they're injecting, it can involve anywhere from 2 to 7 injections a day depending on whether they do it with meals or with snacks also. And then the feared, feared consequence of using insulin, especially for type 1 diabetics and those with brittle disease, meaning they can't really respond to low blood sugars well, is low blood sugar hypoglycemia. So what's beautiful about the bionic pancreas is the glucagon delivery, which raises blood sugar to protect patients from low blood sugar.

Reporter: It sounds like something out of a science-fiction, happening today, which is great. Dr. Minisha Sood, endocrinologist for Lenox Hill Hospital in New York City; thank you for joining us.

Dr. Sood: Thank you for having me.

