

## Pumps, glucose monitors keep Type 1 diabetes in check

By Katherine Kallergis - Special to the Miami Herald

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Enid Sosa, a senior at Maritime and Science Technology Academy, demonstrates her volleyball skills at the school, Friday, Nov. 14, 2014, in Virginia Key. Enid lives with type I diabetes and leads a support group at Miami Children's Hospital.

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Jose Basulto's continuous glucose monitor reads 270 mg/dl shortly before a 7:30 p.m. race. It's higher than he'd like, but that would change once he started cycling.

His blood glucose was at 750 when he was diagnosed with Type 1 diabetes nearly 30 years ago. Basulto's symptoms included blurred vision, severe weight loss and feelings of weakness and dullness. He went from 175

Jose Basulto, who has had Type 1 diabetes since he was in college, competes in an American Diabetes Association Tour de Cure race in 2013. He is in the red shirt.  
Liam Crotty - Liam Crotty Photography

Basulto got into competitive cycling around the time he was diagnosed – toward the end of his senior year of college. He got back into competition about four years ago and started the [Florida Velodrome Association](#), a nonprofit organization dedicated to building a strong track racing community in Florida.

Like many patients, he knows first-hand that he can predict how his body will respond to exercise, eating and stress, but that doesn't mean those predictions will be accurate. He sets a target range on his continuous glucose monitor so that it alerts him if his blood glucose is out of that range.

“My body is going to respond the way it's going to respond,” he said.

He would rather it be too high than too low. An ideal blood glucose level is between 70 and 130 mg/dl before meals, and less than 180 two hours after starting a meal (depending on the person), according to the American Diabetes Association.

“The far bigger risk is that my blood glucose goes down dangerously low,” Basulto said.

In addition to using a continuous glucose monitor, he wears an insulin pump – both technological improvements from when he was diagnosed.

“If I could convince teenagers that it’s OK to have these things, we would have healthier teenagers,” he said.

Basulto, a married father of two, said that he’s never needed help from anyone or experience complications directly related from his diabetes. He’s passionate about finding a cure but also about promoting a healthier lifestyle for all. In addition to being a vice chairman of the Memorial Healthcare System, he’s a founding trustee of the Florida Velodrome Association and a member of the community leadership board for the American Diabetes Association’s Broward and Palm Beach chapter.

“Everyone needs to exercise,” he said. “How do we get people to take better care of themselves and make better choices?”

Type 1 diabetes is not brought on by a lifestyle issue, said Dr. Luis Gonzalez-Mendoza, director of the division of pediatric endocrinology at Miami Children’s Hospital. Rather, the body does not produce insulin. This affects only about 5 percent of all U.S. diabetes cases. It doesn’t take months or years to develop, as Type 2 does; it usually takes about two weeks.

“As parents, we think we did something wrong,” he said. “But we really cannot blame anybody for this.”

Miami Children’s diagnoses anywhere from 75 to 109 children in a given year for Type 1 diabetes. That range hasn’t really changed over the years. Diagnoses peak between ages 5 and 7 and during adolescence.

Type 1 diabetes is caused by the self-destruction of cells in the pancreas that make insulin and an unknown environmental factor that triggers it.

“You have to replace the insulin, and the challenges are very significant,” Dr. Paul Jellinger said. “No matter how planned out the treatment is, you cannot replace the body’s natural state.”

Insulin pumps are one way to deliver insulin. Too much insulin lowers a person’s blood sugar; too little raises it.

“Today, with insulin pumps and continuous glucose monitors, the ability to control the unstable patient is much better than it was in the past,” he said.

Chronic long-term high blood sugar can cause loss of vision and kidney failure, said Jellinger, an endocrinologist at Memorial Regional Hospital in Hollywood.

“Education is a huge part of the treatment. [Patients] have to be thinking about how much insulin they should take based on blood sugar levels, meals and activity,” Jellinger said.

It’s important to exercise, Jellinger said, but it’s also important to understand how that affects a person’s blood sugar.



Enid Sosa was 14 when she was diagnosed with Type 1 diabetes. She remembers being terrified and not knowing much about the disease, except for what she inferred from her grandparents having Type 2 diabetes.

“I’ve always been very healthy,” she said. “After the diagnosis, you see how important it is to be healthy.”

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Enid, now 17, said she was and is “deathly afraid of blood and needles.” After spending three days in the hospital learning about carbohydrate counting, monitoring blood sugar and maintaining a healthy lifestyle, her mom took care of her when they went home. But she quickly learned she wanted to take control of her treatment.

“I’m still kind of scared of needles but it’s become part of my life,” she said.

Enid, a senior at MAST Academy, said she learned to embrace her diagnosis despite how complicated everything became. “In middle school, I was required to go to the school nurse every time to check my blood sugar,” she said. “It hurt me more than it helped me.”

In February of her eighth-grade year, and in between school trips and events like prom, her grandfather died.

She contacted the Juvenile Diabetes Research Foundation, joined the JDRF Walk to Cure Diabetes (now OneWalk) and raised more than \$1,000. Since then, she’s become a trained mentor for newly diagnosed patients, hosted a symposium at her high school and did a public service announcement with Univision, among other accomplishments.

Her main goal? Increase diabetes education.

Along with JDRF and Miami Children's Hospital, Enid started the [Sugar Rush group](#), a support and education group for teens with Type 1. Sugar Rush meets the second Wednesday of every month at Miami Children's.

"Kids in denial realize how important it is to take care of themselves. Ultimately, we're the only ones who understand each other," Enid said.

For kids, challenges include managing stress, monitoring blood sugar and injecting themselves with insulin – in school and around their friends. The stress of taking an exam, for example, will raise a child's blood sugar, according to Dr. Jay Skyler, deputy director at the Diabetes Research Institute at the University of Miami Miller School of Medicine.

"The challenge is that the patient needs to be on top of it 24/7, 365 days a year. Everything impacts the diabetes and vice versa. Learning how to keep things in balance is an extraordinary challenge for people," Skyler said.

"If you develop diabetes when you're 6 or 7, by the time you're an adolescent you know how to handle it," he said.

If you're 13 or 14, it can be "totally devastating emotionally."

Alex Hall, 13, was diagnosed with Type 1 about four years ago. He experienced symptoms typical of diabetes over the course of the week before he was diagnosed: extreme thirst, fatigue, frequent bathroom trips.

Although it's never a good time to have diabetes, Alex's dad, Greg, said that Alex was old enough to be aware of the disease but not young enough to have an identity crisis.

"Obviously, at the age of 9, all of the kids don't understand, and teachers don't know a lot about it," Hall said. "He's been somewhat shy about it, but he tells his friends. We encourage it. The more people who know he has Type 1, the better."