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Diabetes Doesn't Run My Life

McKenzie Jones, 17, doesn't let diabetes slow her down. Just ask her rivals on the tennis court.

BY TOD OLSON

AS YOU READ

What is it like to have type 1 diabetes?

To watch McKenzie Jones play tennis is to see an athlete in total control. She can finish points with a killer forehand, and she never gets rattled on the court.

But it's what happens between games that makes McKenzie a true champion.



Once or twice a match, McKenzie reaches into a stylish purse, which is never far from her side. While her opponent pops open a Gatorade, McKenzie takes out a portable blood-testing kit. She pricks her finger with a tiny needle and touches the drop of blood to a paper test strip. She sticks the strip in a palm-sized meter, which measures the level of sugar in her blood. If she doesn't like the results of the test, she leaves the court to give herself an injection. Then she comes back to finish crushing her opponent.

It might seem strange to see a 17-year-old girl performing a medical procedure in the middle of a tennis match. But McKenzie goes through this ritual 5 to 10 times a day. She has to—because McKenzie has type 1 diabetes, and this ritual is what keeps her alive.

Out of Gas

Imagine having to check your blood every time you eat a yogurt for breakfast, play sports after school, or feast on chips at a sleepover. Get the balance of food and medicine wrong, and you could pass out or end up in the hospital. Lose the test kit and it's—well—way worse than losing your racket on the first day of the U.S. Open.

Welcome to life with diabetes.

For McKenzie and the roughly 1.25 million other Americans with type 1 diabetes, the disease is a constant companion. It turns daily life into an obstacle course

McKenzie used to wear an insulin pump—a device that delivers insulin to the body through a small tube under the skin. But she had to go back to giving herself needle injections after she had some complications with the pump.



that requires nonstop attention to navigate. That's because diabetes impairs one of the body's most basic functions: the ability to turn food into energy.

Think of your body as a car, and food as the gas. When you eat, your digestive system breaks down food into a simple sugar called glucose. To absorb glucose, cells—think of them as tiny car engines—need another chemical, a hormone called insulin. Insulin “unlocks” cells so they can take in glucose and use it for energy—energy that McKenzie needs to chase the ball on the court.

That's how the system works—when it's running smoothly. With diabetes, the system breaks down. The body either doesn't produce enough insulin (type 1 diabetes) or doesn't respond to it well (type 2 diabetes; see the box on page 22 for

more about the difference). Glucose stays in the bloodstream; cells don't get their fuel. People with type 1 diabetes have to check their blood constantly and give themselves injections of insulin to keep the system running.

By the Numbers

McKenzie was around 5 years old when her body stopped producing insulin. Her family was on vacation at Disney World, and McKenzie felt terrible. Her skin turned ghostly pale. She craved water and had to go to the bathroom constantly. After a day or two, she knew exactly where to find every bathroom in the park.

McKenzie had a friend whose older brother had diabetes. The friend's mother thought McKenzie's symptoms sounded familiar. When McKenzie's family got home to

North Carolina, they went to the friend's house to test her blood.

“I saw the needle and freaked out,” McKenzie remembers. But it wasn't just the needle that worried her. Even at 5, she understood that diabetes would change her life.

The test showed her blood sugar to be five times too high. McKenzie was at risk for lapsing into a coma—or worse. When diabetes is well-managed, a person can live a long life. But diabetes can still be dangerous. More than 75,000 Americans die each year of complications from the disease.

After the blood test, McKenzie's parents rushed her to the hospital. Doctors gave her insulin to stabilize her blood sugar. She was safe, but she had received an abrupt introduction to life with diabetes. At one point she had 10 Band-Aids on her fingers from all the testing. “I got over my fear of needles pretty quick,” she says.

Doctors taught McKenzie's parents how to care for a child with diabetes. As McKenzie got older, she took over from her parents. With a finger prick and the meter, she tests her blood every time she eats.

McKenzie lives by the numbers on that meter. Normal is 80 to 120. When her blood sugar gets too high, she can get thirsty and hungry, and she gets a headache. That's when she knows it's time to give herself a shot of insulin. When her blood sugar starts to drop, she gets lightheaded, so she digs into her supply of fruit snacks to get sugar into her system quickly.

If McKenzie's blood sugar dips below 40, she's in danger of passing out. One time, in economics class, she started drawing graph lines that **meandered** around the page. When a friend noticed, McKenzie tested herself and found her blood sugar level was down to 50. If it had dropped lower than 40, she would have needed glucagon—a hormone that quickly brings up blood sugar levels. She's never had to take it, but she keeps glucagon in her kit, just in case.

Sweet Pee

McKenzie's life may sound complicated, but she knows she's lucky. Had she been diagnosed 150 years ago, she wouldn't have lived to see high school.

The first record of diabetes dates back to 1552 B.C., in ancient Egypt. One of history's first known doctors, a man named Hesy-Ra, wrote about patients who urinated too frequently, which today is a known symptom of the disease.

For centuries, no one



COURTESY OF THE JONES FAMILY/MAJOR L. KAY/MAJOR MOMENTS (MCKENZIE PLAYING TENNIS)

COURTESY OF THE JONES FAMILY (MCKENZIE WITH CHILDREN)



McKenzie traveled to Guatemala to test children for diabetes.

Can Diabetes Be Cured?

What will it take to stop this disease forever? **BY TOD OLSON**

understood what caused diabetes, but in the Middle Ages, doctors had a clever way to diagnose it. They hired “water tasters” to sample a patient’s urine. If the sample tasted sweet, they knew the patient was sick. Only centuries later would doctors understand that the body gets rid of excess sugar in the bloodstream through urine.

In the early 1800s, scientists put the pee-tasters out of work by developing a chemical test for blood sugar. But doctors still didn’t know how to treat diabetes. For centuries, they had given people with diabetes everything from dates and quince (a pear-like fruit) to “jelly of viper’s flesh.” Starvation seemed to be the only treatment that did any good.

Without a way to manage their blood sugar, people with diabetes suffered miserably. Children with

type 1 rarely lived more than a year after they were diagnosed. Adults with type 2 went blind or lost limbs because of poor circulation. As the ancient Greek doctor Aretaeus put it, life for people with diabetes was “short, disgusting, and painful.”

Finally, in 1921, doctors found the key to diabetes: insulin. The following year, they figured out how to inject insulin into diabetes patients. That discovery took the “short” and “disgusting” out of a diabetes diagnosis.

As for “painful,” it depends on how you feel about needles.

“That’s Just Life”

McKenzie refuses to let diabetes run her life. She’s active in Girl Scouts and clubs at school. She’s played number one singles on the tennis team since her freshman year. Last summer, she traveled to

Guatemala, where she helped test nearly 400 kids for diabetes.

Wherever she goes, her test kit stays by her side. Of course, there are times when the disease gets in the way. That’s especially true in competitive situations, when stress can mess with her blood sugar level.

Last year, McKenzie went to a competition for students interested in business. The night before her team’s presentation, her blood sugar plummeted. She stayed up half the night eating gummy candies and protein bars to bring it back up.

She woke up exhausted, but not discouraged. “In situations like that, your body has to come first,” she says. “That’s just life with diabetes.”

And the presentation?

McKenzie and her team earned a perfect score. ●

The Different Types of Diabetes

There are multiple types of diabetes, and they all have to do with blood sugar. Type 1 and type 2 are the most common. McKenzie has type 1 diabetes.

With type 1, the organ that produces insulin—the pancreas—stops doing its job. No one knows exactly what causes this to occur. Current research suggests that it may be a combination of genetics (that is, genes passed down from a parent) and other factors.

Type 2 diabetes usually develops later in life and



is more common than type 1. People with type 2 do produce insulin, but their cells build up a resistance to it. Unhealthy diet, obesity, a family history of the disease, and other factors may put a person at risk for developing type 2 diabetes.

For people with either type 1 or type 2, diet and exercise are important. While McKenzie needs insulin to control her blood sugar, some people with type 2 diabetes can get by without it and can manage their diabetes by eating healthy and staying active.



been exploring how to take beta cells from a healthy pancreas and implant them into a person with diabetes. The problem is that the immune system tends to kill those transplanted cells. Researchers at the Massachusetts Institute of Technology (MIT) have invented something that could solve this problem. They created a Jell-O-like substance that hides the beta cells from the immune system.

It’s like an “invisibility cloak,” says Daniel Anderson, one of the MIT researchers. “It coats the cells and allows them to function and live, but protects them from the immune system.”

A Matter of Time

Other researchers are focusing on improving quality of life. Their solution? An artificial pancreas that could detect blood sugar levels and dispense insulin when needed. This means people with diabetes wouldn’t have to constantly test and inject themselves. The artificial pancreas would do that automatically.

Right now, no one knows when diabetes will become a thing of the past. Harvard University researcher Frank Doyle predicts we’ll have an automated insulin system—like the artificial pancreas—within five years. Finding a cure will likely take much longer.

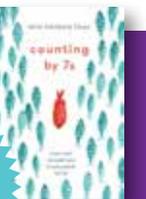
But according to most scientists, it’s only a matter of time. ●

*DIABETES REFERS TO A GROUP OF DISEASES, INCLUDING TYPE 1, TYPE 2, AND GESTATIONAL.

WRITING CONTEST

What challenges do people with diabetes face? How has science helped people with this disease? Answer both questions in a well-organized informational essay. Support your answer with details from both texts. Send your essay to **McKENZIE JONES CONTEST**. Five winners will get *Counting By 7s* by Holly Goldberg Sloan. See page 2 for details.

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