Doctors reverse type 1 diabetes

TIMOTHY NSUBUGA

What comes next?

Type 1 diabetes is still a silent killer

When the 25-year-old woman from Tianjin, China, sat down to eat a bowl of hotpot- one of her favorite meals – it felt like something close to a miracle.

For years, she had lived under the strict rules of Type 1 diabetes. Every meal had to be calculated. Every bite came with the risk of dangerous swings in blood sugar. Insulin injections were part of daily life.

Then something extraordinary happened.

After receiving an experimental stem cell transplant, doctors say her body began producing insulin again, naturally. Within three months of the procedure, the young woman no longer needed insulin injections. More than a year later, her blood sugar remains stable.

"I can eat sugar now," she told the journal *Nature*, describing how she had resumed eating normally without the dangerous spikes and crashes that once defined her life.

The case, reported in the scientific journal *Cell* and highlighted by *Nature* and *Times Now News*, is being described reversal of Type 1 diabetes using reprogrammed stem cells.

For millions of people living with diabetes, the result has sparked a surge of

And in countries like Uganda, where diabetes is rising steadily but treatment options remain limited, the implications could be profound.

A DISEASE THAT CHANGES LIVES OVERNIGHT

Type 1 diabetes is very different from the more common Type 2 diabetes.

Instead of developing slowly over time, it often appears suddenly, especially in children and young adults. The disease occurs when the body's immune system mistakenly attacks and destroys the beta cells in the pancreas that produce insulin.

Insulin is the hormone that allows the body to use glucose, or sugar, from food as energy. Without it, sugar builds up in the bloodstream, leading to dangerously high blood sugar levels.

Doctors describe the disease using a simple explanation: the body loses its ability to regulate its own fuel.

Symptoms often appear once 80 to 90 percent of insulin-producing cells have been destroyed. Patients may experience: excessive thirst, frequent urination, unexplained weight loss, and extreme fatigue. Other warning signs include blurred vision, constant hunger, slow-healing wounds, and a fruity smell on the breath caused by diabetic ketoacidosis, a life-threatening condition.

Managing the disease typically requires lifelong insulin injections, strict diet control, and regular blood sugar monitoring.

UGANDA'S QUIET DIABETES BURDEN

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In Uganda, diabetes is often overshadowed by infectious diseases such as malaria, HIV/AIDS, and tuberculosis. But health experts say the condition is steadily growing.

According to the International Diabetes Federation (IDF), Uganda has about 1.69 million people living with diabetes. Of these, around 18,200 people have Type 1 diabetes, including approximately 5,200 children and adolescents aged between 0 and 19.

Type 1 diabetes represents about 10 percent of the country's total diabetes burden.

Many cases are treated in major referral centers such as Mulago National Specialised Hospital, Nsambya Hospital, and Arua Regional Referral Hospital, which together reported more than 1,000 pediatric cases by late 2024.

But for many Ugandan families, managing the disease remains difficult.

Insulin must be stored properly, monitored carefully, and used consistently. For patients in rural areas, access to regular testing supplies and specialized care can be a challenge. Children diagnosed with Type 1 diabetes often face a lifetime of medical appointments, strict dietary rules, and daily injections.

Against this backdrop, the idea of restoring the body's ability to produce its own insulin feels almost revolutionary.

> Still, scientists stress that the treatment remains experimental and will require much larger clinical trials to confirm both its safety and effectiveness.

HOW THE NEW TREATMENT WORKS

The experimental treatment in China uses stem cells, which are special cells capable of developing into many different types of tissue in the body.

In the study, doctors extracted cells from the patient's own body and reprogrammed them in a laboratory to become insulin-producing cells, also known as islet cells.

These cells were then transplanted back into the patient.

During a surgery lasting less than half an hour, doctors injected roughly 1.5 million islet cells into the woman's abdominal muscles. Traditionally, such cells are transplanted into the liver, but researchers chose the abdominal muscle because it allows doctors to monitor the cells using magnetic resonance imaging and remove them if necessary.

Before the procedure was attempted in humans, the stem-cell-derived cells had been tested in mice and non-human primates, where researchers observed promising results.

About three months after the transplant, the woman's body began producing enough insulin to regulate her blood sugar levels naturally.

Doctors reported that her glucose levels remained within the recommended range for more than 98 percent of the day.

CAUTION

Medical researchers have reacted to the results with both excitement and caution.

"They've completely reversed diabetes in the patient, who was requiring substantial amounts of insulin beforehand," said James Shapiro, a transplant surgeon and researcher at the University of Alberta in Edmonton, Canada, as quoted by *Times Now News*.

The breakthrough builds on earlier experiments involving islet transplantation, where insulin-producing cells from donor pancreases are transplanted into patients. That approach has shown promise but faces a major obstacle: there simply are not enough donor organs available.

Stem cells could solve that problem because they can be grown in laboratories and programmed to become different tissues, including pancreatic cells.

In theory, that could create a nearly unlimited supply of insulin-producing cells.

Still, scientists stress that the treatment remains experimental and will require much larger clinical trials to confirm both its safety and effectiveness.

WHAT IT COULD MEAN FOR AFRICA

Across Africa, diabetes is increasing as lifestyles change, urban populations grow, and diets shift.

disease are also emerging in some African populations, including variants sometimes referred to as Type 1B diabetes, which may be linked to nutritional factors and patterns of ketosis-prone diabetes.

In Uganda, doctors say the rising number of diabetes cases reflects a combination of genetic vulnerability, viral triggers, and changing lifestyles.

For patients and families managing Type 1 diabetes today, insulin remains the only reliable treatment.

But breakthroughs like the stem cell therapy reported in China suggest that the future of diabetes care may look very different.

A GLIMPSE OF A DIFFERENT FUTURE

The young woman in Tianjin still visits doctors regularly. Researchers continue to monitor her condition closely, looking for any signs that the transplanted cells may stop functioning.

But more than a year after the surgery, she remains diabetes-free.

For scientists, the case represents an early glimpse of what regenerative medicine might achieve.

For patients around the world—including thousands in Uganda—it offers something just as powerful: the possibility that one day diabetes may not have to last a lifetime.