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# Diabetes May Be Reversed By Long-Used Vaccine For TB

By Shannon Pettypiece - Aug 9, 2012 8:13 AM ET

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Q QUEUE

A tuberculosis vaccine in use for 90 years may help reverse [Type 1 diabetes](#) and eliminate the life- long need for insulin injections, say Harvard University researchers raising money to conduct large, human studies.

Patients with Type 1 diabetes must inject insulin daily to control their blood sugar because their bodies don't produce the hormone, the result of an errant immune system that destroys insulin-producing cells in the pancreas. The vaccine, called [bacillus Calmette-Guérin](#), or BCG, stimulated production of a protein that killed the insulin-attacking cells, according to the findings of an early-stage study published yesterday in the journal PLOS One.

Enlarge image



Photographer: Izzy Schwartz/Getty Images

Insulin injections help control Type 1 diabetes for the 3 million Americans with the disease, though there is no cure for the condition usually diagnosed in childhood. Results of the trial showed that two of the three patients given BCG had signs of renewed insulin production. The researchers now plan a larger study that could yield results in three to five years.

"We think this can be taken all the way to the market and that is what we are trying to do." said [Denise Faustman](#), director of Harvard-affiliated Massachusetts General Hospital's immunobiology laboratory, who led the study.

The vaccine, a weakened form of the tuberculosis bacteria, stimulates production of TNF, a cell-signaling protein that plays a role in cell death. With more TNF, the body can attack those harmful immune cells while leaving the rest of the body's defenses intact. The vaccine is approved by the [U.S. Food and Drug Administration](#) for tuberculosis though it isn't generally recommended for use in the U.S. The vaccine also is approved to fight bladder cancer.

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## Study Results

In the study, researchers administered two doses of the BCG vaccine to three patients who had been diagnosed with Type 1 diabetes. The patients were followed for 20 weeks and two

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of the three were found to have an increase in the death of the insulin-harming cells and a rise in elevation in C-peptide levels, suggesting the production of insulin.

“These patients have been told their pancreases were dead,” Faustman said. “We can take those people, give them a very low dose twice and see their pancreases kick in and start to make small amounts of insulin.”

## To Market

Faustman and her colleagues at Massachusetts General in [Boston](#) are working to get the vaccine to market. After their early findings in studies with mice, she said they tried to interest every major [drugmaker](#) in developing the vaccine as a possible cure for diabetes. All told her there wasn't enough money to be made in a cure that used an inexpensive, generically available vaccine, Faustman said.

So now, she is trying to raise money to pay for the expensive larger human trials. Her lab so far has received \$11 million of the \$25 million needed to pay for the next stage of testing. All of the money is coming from private donors, the largest of which is the [Iacocca Family Foundation](#).

“It's a cheap man's approach in how to get in the clinic,” she said.

The vaccine's ability to raise levels of cell-killing TNF also is being studied as a way to treat multiple sclerosis. In a study in [Italy](#), researchers found the vaccine may prevent progressions of brain lesions in patients with advanced stages of MS, Faustman said.

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