

Cured by a virus: Woman receives experimental treatment for debilitating infection

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For five years, Patti Swearingen battled an infection that refused to go away. Doctors prescribed round after round of antibiotics, but the infection kept coming back. Eventually, the microscopic war inside her body left Swearingen so weak and debilitated she could barely leave her living room couch.

In March, she and her husband Gary decided that modern drugs had failed them. Instead, they turned to a treatment from the past. As reported in The Dallas Morning News and on KXAS-TV (NBC5), they flew 6,500 miles to a small clinic in Tbilisi, Georgia. There, doctors had her drink live viruses twice a day for two weeks.

Now Swearingen's medical records confirm the outcome: She is cured.

"I feel great," said Swearingen, speaking from the sun-filled dining room of her house in Rowlett. "I honestly feel like I've gone from death to life in a few months."

The viruses she drank are called bacteriophages, or phages for short. Similar to probiotics, they permeate our guts and nasal passages and exist everywhere in nature, including in the soil and in drinking water.

They are bacteria's natural enemies. As parasites, they invade bacterial

cells and use their machinery to replicate, destroying bacteria in the process.

Before penicillin was developed in the 1940s, doctors used phages to treat infections like strep throat and appendicitis. News reports from the '20s and '30s in magazines like Newsweek hailed phages as "nature's G-men," "infinitesimal friends of mankind" and "helpful little bodies."

Antibiotics, when they arrived, proved more potent, and [phage therapy](#) died out in the West. Doctors in Poland and in Georgia continued to use bacteriophages as alternatives to antibiotics.

Now, as bacteria have become increasingly resistant to antibiotics, interest in phage therapy has grown.

Recently, the University of California San Diego announced the opening of the first phage therapy center in North America. The Center for Innovative Phage Applications and Therapeutics will conduct clinical trials of phage therapy and help provide phages on an emergency basis to patients for whom other treatment options have run out.

While case studies and anecdotal evidence suggest that phages can be safe and effective, the treatment has not passed rigorous clinical trials in the United States. For that reason, the therapy has not been approved by the U.S. Food and Drug Administration.

Experts at UC San Diego say it's time to determine whether phages can be a useful weapon in the war against superbugs.

"Phage therapy has long deserved this chance to be evaluated," said Steffanie Strathdee, associate dean of global health sciences at UCSD and co-director of the new phage therapy center. "We want to answer once and for all if it's something that deserves to get scaled up."

In 2017, Strathdee and a team of UCSD colleagues used phages to save the life of her husband, Tom Patterson, also a UCSD professor. He lay comatose and dying after contracting a drug resistant infection during a vacation in the Middle East.

Strathdee and her colleagues partnered with experts at the U.S. Navy, which has its own bacteriophage bank; Texas A&M University; San Diego State University and biotech startups to develop experimental cocktails of bacteriophages to treat Patterson. The approach worked; Patterson awoke within days and fully recovered. He was the first U.S. patient with a bacterial blood infection to be successfully treated intravenously with phages.

The case attracted wide media coverage, and Strathdee's inbox filled with requests from patients and families waging their own bacterial battles. "I've been having a second job as a phage wrangler," she said.

In the two years since Strathdee's husband recovered, physicians at UC San Diego Health have used phages to treat five other patients under an emergency protocol from the Food and Drug Administration.

Their [clinical trials](#) will evaluate phages for use against lung infections in patients with cystic fibrosis, to treat infections in those with artificial joints and organ transplants, and for complex urinary tract infections like Swearingen's.

Swearingen, too, learned about phages after watching a TEDx video featuring Strathdee and contacting her for advice.

She learned the path to acquiring phages for her condition in the U.S. was long and uncertain. So she and her husband made the decision to fly to Tbilisi's Phage Therapy Center.

Georgia's experience with phage therapy dates to the 1930s. The French-Canadian researcher who developed phage [therapy](#) befriended a Georgian bacteriologist when both worked at Paris' Pasteur Institute. Together, they co-founded Tbilisi's George Eliava Institute of Bacteriophages, Microbiology and Virology, which mixes most of the [phages](#) in use across Georgia today.

Swearingen enjoyed her experience in Tbilisi and praised the doctors and microbiologists who cared for her.

"Tbilisi is wonderful," she said. "If you can go, go."

But she recognizes that many patients are too ill to travel or can't afford the cost. She estimates that she spent about \$7,000 on treatment and travel combined.

"We need this in the United States," she said. "These little things are just incredibly wonderful."

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