Patient Story

How phages may help combat drug-resistant infections

Video	Audio
Rooster Nats	(NATS)
Vivien Williams	On an autumn morning in the rolling bluff lands of Southeastern Minnesota ...
Barb Haverty	"Peace and tranquility."
	… you're likely to find Barb …
Barb Haverty	“Yeah.”
	… and John Haverty.
Church bells ringing nats	(NATS)
John Haverty	"A great little church right down the road, little white church."
	But not long ago …
Rooster chicken nats	(NATS)
Barb Haverty	"Retire on this little farm."
Walking through leaves nats	(NATS)
	… John wasn't able to walk the land with Barb, toss a Frisbee for the pup …
John Haverty	“That a boy, Doug.”
Driving car nats	(NATS)
	… or travel the country roads in his convertible.
Car driving away nats	(NATS)
John Haverty	"I kind of hit rock bottom and just kind of, like, I don't even know if I want to believe in myself anymore. What's the point? Really, I'm a burden to my family. I'm a burden to myself. I'm not ever going to be productive again. I mean, I

	don't know where to go."
Vivien Williams	You see, for 11 years, John struggled with a bacterial infection after a knee replacement that did not respond to conventional treatments such as surgery and antibiotics.
John Haverty	"That was the beginning of the cascading failures of 17 surgeries, five different strains of bacteria. We never ever killed the bacteria in my leg over all these years."
Robin Patel, M.D.	"Antibacterial resistance is a crisis that we're dealing with in the world today."
Vivien Williams	The Centers for Disease Control and Prevention reports that each year in the U.S., close to 2.8 million people will get infected with antibiotic-resistant bacteria and fungi, and nearly 35,000 of those people will die from the infection. John feared he, too, would become a statistic.
John Haverty	"They said, well, we've done all we can do, really."
	Doctors told John that in order to save his life, he'd have to lose his leg.
Gina Suh, M.D.	“38.0.”
	Just when they began to lose hope, John and Barb learned about an experimental treatment. Desperate for help, they went to Mayo Clinic in Rochester, Minnesota.
Gina Suh, M.D.	"When I first met him, he was in a wheelchair."
VO: Dr. Suh	Mayo Clinic infectious diseases specialist Dr. Gina Suh is one of John's doctors.
Gina Suh, M.D. **Infectious Diseases** **Mayo Clinic**	"He was faced with, at the age of 62, an amputation. And, we didn't really choose him. He chose us. John and his wife, Barb, advocated for themselves. They did their own research, and they came to us and they said, 'You know, what about phage therapy?'"

Robin Patel, M.D.	"Phages are viruses that infect bacteria."
	Dr. Robin Patel chairs the Division of Clinical Microbiology at Mayo Clinic and studies phages in her lab.
Robin Patel, M.D. **Clinical Microbiology** **Mayo Clinic**	"When you hear the term virus, it makes you very, very nervous because you think of things like the flu, for example. But those kinds of viruses are viruses that target us and our cells. Viruses that target bacteria, which are what phage are, are very specific for bacteria."
	Phage therapy is actually very old. It was used in the early 1900s, but was abandoned when new antibiotics showed unprecedented success. But now that antibiotic resistance has become a critical issue, researchers are once again exploring phages as another way to treat bacterial infections and as an alternative for people who are allergic to antibiotics.
	Here's how phages work: When injected, a phage migrates to the bacterial infection and lands on the surface. Once there, it injects genetic material into the bacteria cells. It then replicates and destroys the bacteria cells. The copies then disperse and attack other bacteria cells.
Velcro nats	(sounds in procedure room)
	Because research into phages is so new, there was no guarantee phage therapy would work for John.
John Haverty	"I was, like, please, I have nowhere else to turn. I'll do anything."
Barb Haverty	"But we prayed and we prayed, and we prayed."
Gina Suh, M.D.	"He actually responded incredibly quickly. After only two doses we started to visibly see an improvement."
Barb Haverty	"We thought well, this is a fluke, it'll come back."

John Haverty	"You think, 'Oh, my God, this is a miracle.'"
	After nearly losing his leg and his life to a drug-resistant infection, John considers himself cured.
John Haverty	"This is the first time I could really ever picture myself being an old man and walking my dogs down the road. My life has changed."
Gina Suh, M.D.	"When I heard that, I was just overjoyed. That makes, my whole day, my whole year."
	Both Dr. Suh and Dr. Patel say that, even though phage therapy worked for John, more research is needed before it can be offered widely.
Gina Suh, M.D.	"My hopes are big."
	Researchers need to find out many things including if phages are safe for everyone, if they'll work for other patients, how to efficiently grow them in what are called "phage farms," and how best to administer them.
John and Barb laughing	“Hahaha.”
Vivien Williams	But for John and Barb …
John Haverty	"It’s freedom. It’s given me my life back."
	… phage therapy has given them a new life.
John Haverty	"It's just been an incredible ride, and now I'm going to be an advocate. I'm going to be a broker of hope for those millions of people that have antibiotic-resistant bacteria."
Nats Cornfield	(NATS)
Vivien Williams	And they consider every day spent together on their farm …
John Haverty	“This is what it’s all about at the end of the day …
Vivien Williams	… to be a gift.
John Haverty	… just being out with my dogs and my wife, and enjoying life and this beautiful

	fall day.”
Rooster Nats	(NATS)
Jon Haverty	"Being here offers us the peace and the solitude, and the reward of living.”
John whistle nats	(NATS)
Vivien Williams	For the Mayo Clinic News Network, I’m Vivien Williams.