

# HUNTING THE NIGHTMARE BACTERIA

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NEWSCASTER: It's a deadly nightmare bacteria—

NEWSCASTER: The CDC has called it a nightmare.

NARRATOR: —a kind of dangerous bacteria that is increasingly resistant to the strongest antibiotics.

That's what brought us to Tucson, Arizona, in 2013, to find out what happened to Addie Rerecich after she complained to her mother about a pain in her hip.

TONYA RERECICH: I thought, "Well, you know, she's just finishing up softball." She had been to the track meet, you know, all kind of— well, it could have been an injury. I gave her some Ibuprofen. As the night wore on, her pain got worse. She didn't sleep much that night, woke me up a couple of times asking if she could take a hot bath or have another Ibuprofen.

NARRATOR: The next day, Tonya Rerecich, a nurse for 16 years, took Addie to a local hospital, where they said she had symptoms of a virus. But over the next few days, the pain spread and the fever got worse.

TONYA RERECICH: I was afraid at that point. I remember being very afraid. And so I packed a bag and we went to another hospital that had specialized in children's care. I remember thinking, "She looks bad. This is bad. Something's really, really wrong."

They put her on antibiotics. They were— her blood pressure was dropping. They, you know, were making space in the ICU for her. The next morning, she needed oxygen via mask. They looked at part of her lungs and diagnosed her with pneumonia.

I remember sitting there, watching the sun come up and thinking, "How did she get so sick? How did this happen so fast?"

SEAN ELLIOT, M.D., Infectious Disease Specialist: I met Addie in a hospital bed in the intensive care unit. She was lying there, breathing quickly. She was scared. She had little infected boils all over her body. What really looked most likely when I saw her was a staph bacteria causing septic shock. And Addie fit a pattern that I recognized with community-associated MRSA.

DAVID E. HOFFMAN, Correspondent: When you say community— I mean, this is what you mean, that a kid picks it up in a playground with a scraped knee, right?

Dr. SEAN ELLIOT: Correct.

NARRATOR: The spread of MRSA, a staph bacteria that causes infections resistant to many antibiotics, has long been a big problem inside hospitals. But over the last two decades, it's also been found outside, in the community.

Dr. SEAN ELLIOT: In Addie's case, she was a skin picker. She, as do many kids, picked at her little scabs. And that was likely what introduced the staph infection.

NARRATOR: But the staph was just the start of Addie's troubles.

Dr. SEAN ELLIOT: She already had evidence of an early pneumonia, and it looked like she was about to get a lot sicker.

TONYA RERECICH: I asked him what were the odds of her making it, getting well.

DAVID E. HOFFMAN: What did he say?

TONYA RERECICH: He said 30 percent. But he had to think about it for a minute, and I knew he was lying to me. I knew. By the time your blood has bacteria in it, you're in real trouble.

NARRATOR: The staph infection had so damaged her lungs, the doctors had no choice. To save her life, they put her on a lung bypass machine, called ECMO.

TONYA RERECICH: I remember saying, "ECMO?" with a squeaky voice, like, "No! Really? You're not really talking about ECMO?"

NARRATOR: This was total life support.

TONYA RERECICH:It's got huge tubes that are put into an artery and a vein. And the patient's blood comes out of their body, runs through the machine, and the machine does what your lung does.

NARRATOR:The tubes presented a whole new set of dangers.

TONYA RERECICH:Those tubes can harbor bacteria.

NARRATOR:And one of the dilemmas of modern medicine. The interventions that can save you can also put you at serious risk.

Dr. SEAN ELLIOT:Any patient we put on ECMO has a much higher risk of having additional infections. That's just the nature of the beast.

DAVID E. HOFFMAN:Is that what happened here?

Dr. SEAN ELLIOT:Correct.

DAVID E. HOFFMAN:And she got a particularly nasty one. What was it called?

Dr. SEAN ELLIOT:Stenotrophomonas.

NARRATOR:Stenotrophomonas is an entirely different kind of bacteria from staph. Found in hospitals, it can live inside breathing tubes. And it's extremely difficult to treat.

Dr. SEAN ELLIOT:The problem with Stenotrophomonas is even at the outset, it's already a very resistant bacteria. There are only four or maybe five antibiotics normally that are able to treat that particular bacteria.

NARRATOR:Addie was confronting the frightening new face of antibiotic resistance, a group of bacteria called Gram-negatives.

DAVID E. HOFFMAN:So can you explain to me why these Gram-negatives are so stubbornly nasty?

Dr. SEAN ELLIOT:Gram-negative bacteria— it's a medical term, and it really references the armor that surrounds the Gram-negative bacteria. That armor makes it very difficult for normal antibiotics to get into the bacteria and to kill it. So Stenotrophomonas is incredibly difficult to treat because it has that serious body armor surrounding it.

NARRATOR:The ability of Gram-negatives to aggressively fight off antibiotics was now playing out in Addie.

TONYA RERECICH:She was first put on one antibiotic that's good for Stenotrophomonas, and it worked for a while. And then guess what? The antibiotic doesn't work anymore. Let's give her a different one. Well, and then it would, you know, work a couple weeks, three weeks. And then the Stenotrophomonas would sort of, like, bloom back up, rear its ugly head, so to speak.

Finally, one day, they said something I never thought I would hear. The Stenotrophomonas is pan-resistant— "pan" meaning resistant to everything, like a panorama.

NARRATOR:Addie and her mother had entered the post-antibiotic era.

Dr. SEAN ELLIOT:I had to go to her and say, "I don't have— I don't have options based on medical science. I've run out of options. I don't see a way out of this."

TONYA RERECICH:I remember a long weekend went by. And they had asked me to sign the papers to let her go. And I did.

NARRATOR:There was one only hope left of saving Addie's life, to surgically remove the infection.

TONYA RERECICH:I remember asking the doctors then about lung transplant. And they said no, that it couldn't be done, that it would be too dangerous.

Dr. SEAN ELLIOT:The problem was that she was too sick to be transplanted. And that sounds a bit strange because you think of a transplant as the final life-saving thing you've got. But because of that resistant Stenotrophomonas, the expected survival of transplanting her was not good. In fact, you might say close to zero.

NARRATOR:Doctors faced a question of medical ethics, whether to risk such a valuable resource as a young set of lungs when Addie's chances of survival were so low.

DAVID E. HOFFMAN:What tipped the balance?

Dr. SEAN ELLIOT:I think it was Addie's mom, Tonya, who was such a strong advocate and didn't give up. And it was also the fact that this was not an unresponsive body lying on the table. This was a young girl who was communicating with us and had temper tantrums and sparks of life, which we could all see on the ECMO apparatus.

I mean, the— how can you say no to this, you know, living, alive human being who's communicating with you?

NARRATOR:But Addie would still have to wait in the intensive care unit, hoping to get a new set of lungs.