

Antimicrobial resistance: What is it and why should you care?

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Transcript

[0:00 Introduction]

Dr. Jon Stokes: Here's what you need to know about antibiotic resistance. I'm Jon Stokes. I'm an Assistant Professor in the Department of Biochemistry and Biomedical Sciences at McMaster University.

[What is antibiotic resistance 0:09]

Dr. Jon Stokes: At a very high level, antibiotic resistance is the phenomenon whereby antibiotics that typically work to kill bacteria no longer work to kill bacteria because the bacteria that those antibiotics are trying to kill can evade the antibiotic.

[How do we discover new antibiotics faster? 0:23]

Dr. Jon Stokes: So, the question is, how do we discover new antibiotics faster and less expensively than we have before? One approach that we're using here at McMaster is leveraging artificial intelligence methods. AI can help us by increasing the rate at which we can discover novel chemical matter with antibacterial properties, but also novel chemical matter that is inherently safe for humans.

[How prevalent antibiotic resistance and what is the potential impact? 0:45]

Dr. Jon Stokes: Antibiotic resistance is something that I consider to be an under-discussed pandemic of sorts. So, for example, in 2019, roughly 1.3 million people died because of a drug-resistant infection, and no one talks about it. And that number without, you know, immediate action to invent new antimicrobial agents, is projected to expand to 10 million deaths per year by 2050, which is actually not that far away.

I'm a believer in the fact that antibiotics uphold the entirety of modern medicine. If you want a new hip, or a new knee, or if you need an organ transplant, or you need to go on cancer chemotherapy, or you had a preterm birth, all of these, like sophisticated modern medical procedures, only exist and are only routinely practiced because of our ability to control infection. You can practically get your new knee. If the probability of untreatable infection is so high that the risk outweighs the benefit of that new knee, you're not getting that new knee.

And it's these scenarios, me and my folks in my lab are working so hard to avoid. We're always trying to outsmart, outrun the inevitable evolution of resistance to any new antibacterial agent we discover. Every new antibiotic we discover will inevitably have resistance evolve against it. We'll always need new antibiotics.

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