Public information key to combating rising 'superbug' threat

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With predictions that drug-resistant 'superbugs' could cause up to 10 million deaths a year by 2050, a new CSIRO survey has revealed a low level of community knowledge about antibiotics.

The rise of superbugs, which claimed the lives of an estimated 700,000 people globally in the past year, has been attributed to the <u>overuse of antibiotics</u>.

To combat the growing problem, the OUTBREAK project was set up in 2019 by the University of Technology Sydney, CSIRO and other partners. In a world first, the project aims to use Artificial Intelligence to predict superbug outbreaks and stop them before they reach the health system.

The team is also aiming to share trusted information on antibiotic-resistance and build community knowledge in Australia. To understand the current situation, Australia's national science agency surveyed 2217 Australian adults.

Results included:

- 92% did not know the difference between viral and bacterial infections
- 13% of Australians wrongly believe coronavirus can be treated with antibiotics
- 19% thought antibiotics were needed to treat the common cold
- 14 pre cent have taken antibiotics prophylactically ("just in case") when traveling overseas

CSIRO biosecurity research director Paul De Barro said the results were concerning.

"The misuse and overuse of antibiotics is a huge problem because it's fueling the rise of drug-resistant 'superbugs," which cause life-threatening infections but are immune to normal antibiotics," Dr. De Barro said.

"When we run out of effective [antibiotics](#), we'll be back in the medical dark ages of the pre 1940s, where a scratch or simple infection killed, so it's critical that the public are educated on this issue."

Some estimates indicate that superbugs, also known as antimicrobial resistance (AMR), could cost the global economy US$100 trillion by 2050 including a 5-10% reduction in Australia's GDP.

The [OUTBREAK](#) project will use Artificial Intelligence to analyze enormous amounts of data from areas including agriculture, wastewater and hospitals to map and predict drug-resistant infections in real time, and model the best way to manage outbreaks before they reach the healthcare system.

"This is a world-first and a unique opportunity to get on the front foot in the fight against superbugs," Dr. De Barro, who is part of the OUTBREAK Executive Team, said.

Until now many AMR studies have focused solely on antimicrobial resistance in human health. This has left significant gaps in our understanding, as antibiotic-resistant germs are also found in animals, food, water, soil and air.

"OUTBREAK uses a One Health approach, which means that, as well as people, we will look at how animals, plants and the environment contribute to antimicrobial resistance," OUTBREAK Chief Executive Officer Branwen Morgan from UTS said.

"This will help us to intervene in ways that will have the greatest positive impact on our health and economy," Associate Professor Morgan said.

"Drug-resistant bacteria can infect anyone regardless of age, gender or location. To fight them, we need to fully understand which ones are a

threat to our health and how they are spreading into and within Australia."

Provided by CSIRO

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