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## Running Out Of Treatments: The Problem Superbugs Resistant To Everything

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"Doctors in many countries have gone back to using old antibiotics that were abandoned 20 years ago because their toxic side effects were so frequent and so bad", says Professor Matthew Falagas from the Alfa Institute of Biomedical Sciences in Athens, Greece and Tufts University School of Medicine, Boston, Massachusetts. "But superbugs like Acinetobacter have challenged doctors all over the world by now becoming resistant to these older and considered more dangerous medicines."

"Even colistin, a polymyxin type antibiotic discovered 60 years ago, has recently been used as a salvage remedy to treat patients with Acinetobacter infections", says Professor Falagas. "And it was successful for a while, but now it occasionally fails due to recent extensive use that has caused the bacteria to become resistant, leading to problem superbugs which are pan-drug resistant, in other words resistant to all available antibiotics."

The Greek researchers have also shown in new data analyses that Acinetobacter is a more serious threat than previously thought -- it doesn't just cause severe infections, it kills many more patients than doctors had realised. Acinetobacter can cause pneumonia, skin and wound infections and in some cases meningitis.

The scientists have also identified a whole range of drug resistant strategies being used by the bacteria, including the production of compounds which can inactivate the drug treatments, cell pumps that can bail out the drug molecules from inside bacterial cells making them ineffective, and mutating the drug target sites making the drug molecules miss or fail to latch onto the specific regions of the bacterial cells that they were aiming for.

"There have already been severe problems with critically ill patients due to Acinetobacter baumannii infections in various countries", says Matthew Falagas. "In some cases we have simply run out of treatments and we could be facing a pandemic with important public health implications".

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