

Breakthrough against hospital superbug

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Team leader, Professor Jose Bengoechea, from the School of Medicine, Dentistry and Biomedical Sciences at Queen's is shown. Credit: Queen's University Belfast

Researchers at Queen's University Belfast have developed a cutting-edge new medical therapy that could protect UK hospital patients against a lethal superbug.

The new treatment, which uses a molecule called an inhibitor to prevent the hospital superbug *Klebsiella pneumonia* from blocking the body's natural defences, has the potential to save thousands of lives in the UK

each year. *Klebsiella*, which has [mortality rates](#) of 25-60%, can cause bladder infections and pneumonia and is resistant to all major antibiotics.

The research team, from the School of Medicine, Dentistry and Biomedical Sciences at Queen's, found that *Klebsiella* can survive inside white blood cells called 'macrophages', which are meant to protect the human body from infection. The superbug takes over a protein in the blood cell called 'Akt', paralyzing the cell and making it the perfect shelter to avoid being killed by antibiotics.

The team showed that by treating the cell with the inhibitor - which stops 'Akt' protein from working - the blood cell is once again capable of killing *Klebsiella* and the infection can be completely eliminated.

Team leader, Professor Jose Bengoechea, from the School of Medicine, Dentistry and Biomedical Sciences at Queen's, said: "The global problem of antimicrobial resistance is fast becoming one of the major health issues of modern times. Of particular concern is the mounting prevalence of infections caused by *Klebsiella pneumonia* which has been identified as an urgent threat to human health by the UK government and the World Health Organisation due to extremely drug resistant strains.

"Our research has helped us gain a better understanding of the vulnerable pathways of human defences, meaning we have been able to develop a potentially ground-breaking new therapy that will block the bug and stop it in its tracks. This is the latest example of the commitment of researchers and staff at Queen's to advancing knowledge and achieving excellence for the benefit of society."

The research team at Queen's plan to carry out pre-clinical trials over the next months to further confirm their findings and move the therapy forward into human clinical trials.

More information: DOI: 10.1111/cmi.12466

Provided by Queen's University Belfast

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