Defeating serious MRSA infections using an everyday drug that shouldn't work
#OldDrugs4NewBugs

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A new drug combination is the first step towards improving treatment of drug resistant golden staph (MRSA) - a breakthrough that could potentially save hundreds of lives, every day.

The finding comes after researchers based in seven different hospitals across Australia trialed combining regular treatment with a penicillin-like drug. A drug that Dr Joshua Davis and A/ Prof Steven Tong from the Global and Tropical Health Division at Menzies School of Health Research (Menzies) explains should not work.

"Standard treatment for drug resistant golden staph infection involves using a drug called vancomycin which is not all that powerful against the MRSA strain. In a new approach we are re-purposing an old, inexpensive drug, for new antibiotic resistant pathogens," Dr Davis said

"In this case we have added a penicillin-like (beta-lactam) drug to vancomycin. This is counter intuitive because MRSA is considered completely resistant to penicillin-like drugs,

"Our study revealed that when vancomycin and a beta-lactam are combined they work synergistically. We found that the combination therapy had a large impact in reducing the time MRSA survived in the bloodstream by 35 per cent".

The World Health Organization has called for greater research into antibiotic resistant pathogens with concerns growing that some infections could become untreatable in the future.

A/Prof Tong explains, "The most serious form of MRSA infections is bloodstream infection. If infected, even with the best treatments available, the patient is subjected to a mortality rate of about 20 per cent. In resource limited settings, this mortality can be 50 per cent,"

MRSA infection imposes a substantial burden on healthcare systems, with a recent national Australian study finding that approximately 24 per cent of golden staph bloodstream infections were caused by MRSA.

Golden Staph is not only serious health problem locally but throughout the world.

"In the United States, more people die from MRSA infections than from HIV – so you can see why we consider this to be a priority,"

"We're excited that the results of this pilot study have led to the NHMRC funding a much larger international clinical trial to determine if the addition of the beta-lactam not only reduces the survival of MRSA in the bloodstream, but whether this strategy reduces death and relapse in MRSA bloodstream infection" A/Prof Steven Tong concluded.

ENDS

Media note:

Menzies Background
Menzies School of Health Research is Australia's leading Medical Research Institute dedicated to improving Indigenous, global and tropical health. We have a 30 year history of scientific discovery and public health achievement. Menzies works at the frontline, joining with partners across the Asia-Pacific as well as Indigenous communities across Northern and Central Australia. We collaborate to create new knowledge, grow local skills and find enduring solutions to problems that matter.

Menzies School of Health Research
Josh is an infectious diseases specialist and an early career researcher at Menzies. Josh is currently based at Newcastle, New South Wales, where he is working as a part time senior staff specialist at John Hunter Hospital. For more information about Dr Joshua Davis, visit his researcher profile: http://www.menzies.edu.au/page/Our_People/Researchers/Josh_Davis/

As an alternative face to face contact in Darwin, Associate Professor Tong is an infectious diseases physician with research interests in infectious diseases affecting Indigenous people. He aims to combine clinical epidemiology with molecular genetic approaches to better understand the patterns and transmission of diseases due to agents such as MRSA:
http://www.menzies.edu.au/page/Our_People/Researchers/Steven_Tong/

Menzies would like to acknowledge the following collaborators:

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- Nepean Hospital, New South Wales
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- Centre for Infectious Diseases and Microbiology, Westmead Hospital, New South Wales
- Royal Perth Hospital & Fiona Stanley Hospital, Western Australia; Blacktown Hospital, New South Wales
- Liverpool Hospital, Sydney, New South Wales; Royal Prince Alfred Hospital, New South Wales
- Royal Darwin Hospital, Darwin, Northern Territory
- Microbiological Diagnostic Unit, Victoria
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