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Trial shows using two drugs not better than one when treating MRSA blood infections

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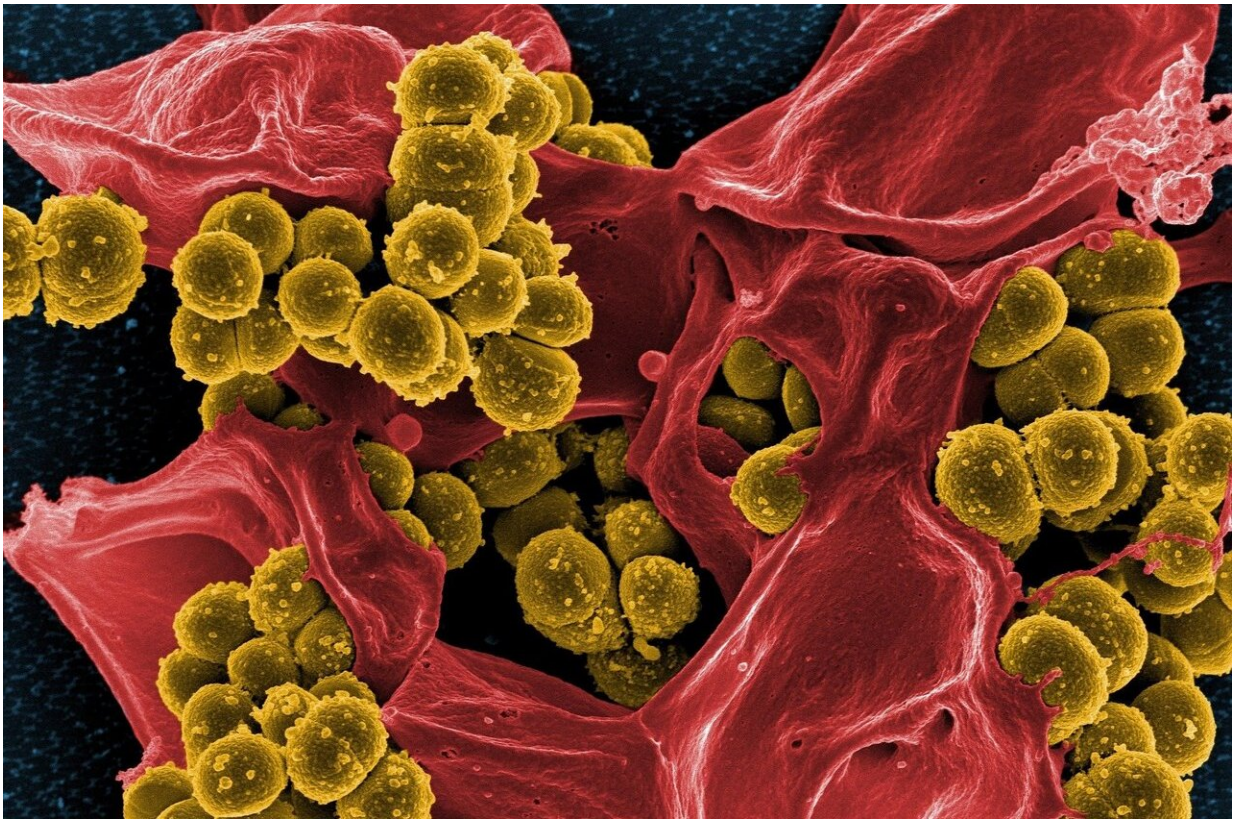

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Researchers attempting to improve the treatment for methicillin-resistant Staphylococcus aureus (MRSA) blood infections have discovered the combination of two antibiotics was no better than one, and led to more

adverse effects.

MRSA bloodstream infections have a mortality rate between 20 and 25 per cent and cause around 1000 infections a year in Australia.

In what is the biggest trial of MRSA bloodstream infections to date (352 participants from Australia, Singapore, New Zealand and Israel), the CAMERA2 clinical trial, researchers from the Menzies School of Health Research (Menzies) and the Peter Doherty Institute for Infection and Immunity (Doherty Institute) were surprised to see the drug combination wasn't as effective as anticipated.

"The current treatment for MRSA bloodstream infections is an old drug called vancomycin, but it doesn't kill MRSA quickly. So there is an urgent need to find new treatment solutions for this deadly infection," said Professor Joshua Davis from Menzies.

"Many laboratory studies have shown that combining vancomycin with a penicillin-class antibiotic results in improved killing of MRSA."

In this clinical trial involving patients from four countries, half of the participants were randomly allocated to receive vancomycin therapy and the other half received a combination of vancomycin and a penicillin-class antibiotic.

Published today in the journal *JAMA*, results showed that although the MRSA was killed more quickly, this did not translate to fewer deaths. Surprisingly, combination treatment led to more episodes of kidney injury.

One of the lead researchers, Royal Melbourne Hospital Clinician Researcher at the Doherty Institute, Associate Professor Steven Tong, said this was a significant finding in the future treatment of MRSA

infections.

"Clinicians now have the latest evidence as to what works and what doesn't when treating MRSA bloodstream infections, and this trial shows more is not better," Associate Professor Tong said.

This work will now continue with a National Health and Medical Research Council (NHMRC) $5 million grant to conduct the Staphylococcus aureus Network Adaptive Platform trial (SNAP).

"Golden staph is a bacterium that causes over 5000 bloodstream infections a year in Australia, with a mortality rate of 20 per cent, and yet despite these numbers, there is little evidence to guide best management," Associative Professor Tong said.

"This grant brings together a global collaboration to conduct the largest ever clinical trial for Staphylococcus aureus bloodstream infections and address common questions around how to best treat these infections for patients all over the world."

More information: Steven Y. C. Tong et al, Effect of Vancomycin or Daptomycin With vs Without an Antistaphylococcal β-Lactam on Mortality, Bacteremia, Relapse, or Treatment Failure in Patients With MRSA Bacteremia, *JAMA* (2020). DOI: 10.1001/jama.2020.0103

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