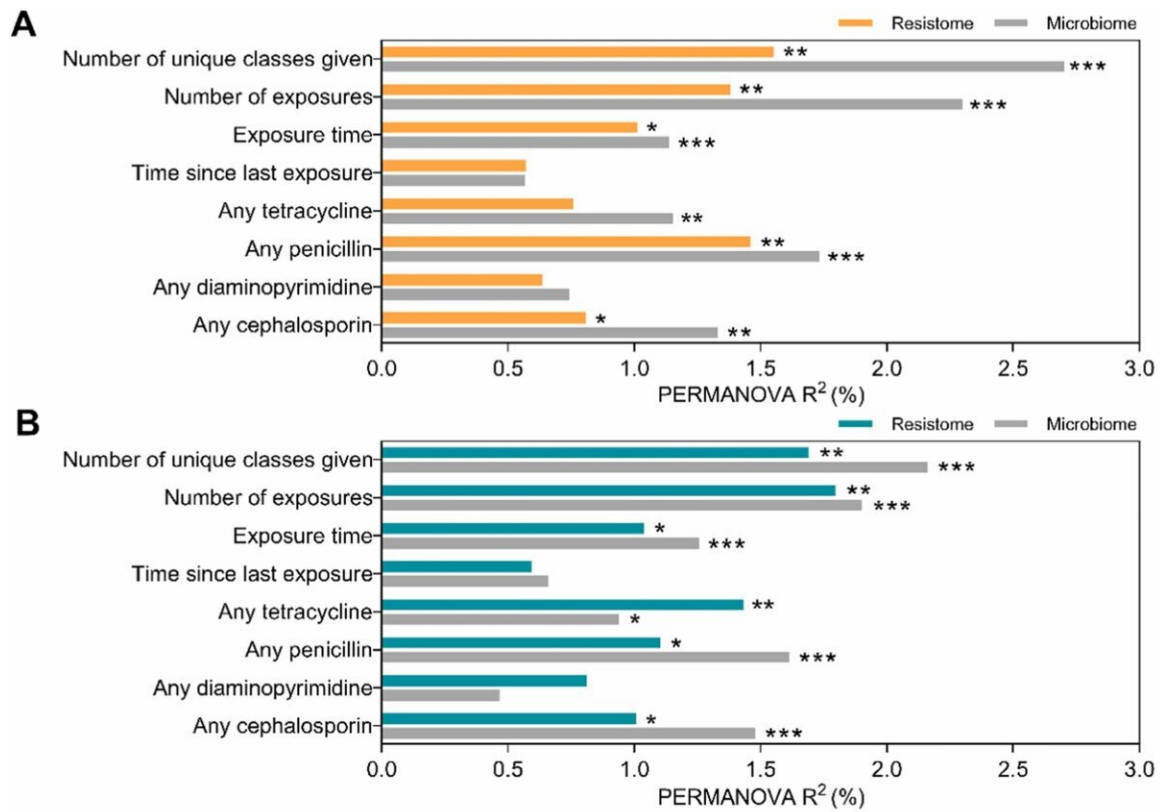


Study explores link between antibiotic use in aged care and superbug spread

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Effect of antibiotic exposure on the elderly gut microbiome and resistome. Credit: *Journal of Infection* (2024). DOI: 10.1016/j.jinf.2024.106243

There's an urgent need for more careful antibiotic management to protect older people living in residential aged care from the dangerous

spread of antibiotic resistant bacteria or "superbugs," researchers from Flinders University and SAHMRI warn.

A [study](#) published in the *Journal of Infection*, explores the link between the widespread use of antibiotics in [residential aged care](#) and the resulting antibiotic resistant bacteria in the gut that can be passed on to other residents. The paper is titled "Exposure to doxycycline increases risk of carrying a broad range of enteric antimicrobial resistance determinants in an elderly cohort."

"Commonly used tablet antibiotics in the elderly increase many types of resistance bacteria carried in the gut and these so-called 'superbugs' can increase resistance to other important life-saving antibiotic drugs," says lead author and Ph.D. student, Sophie Miller.

"High rates of antibiotic prescriptions in aged care settings are likely to be contributing to the proliferation of these bugs, which can lead to [longer hospital stays](#), higher medical costs and increased mortality.

"This trend not only compromises the effectiveness of antibiotic treatment but also poses a significant risk of treatment failures in an already vulnerable community."

The [World Health Organization](#) names [antibiotic resistance](#) as one of the biggest threats to global health, [food security](#), and development, with a growing number of infections—including pneumonia, tuberculosis, gonorrhoea and salmonellosis—becoming harder to treat as antibiotics used to treat them become less effective.

"Responding effectively to the global health threat of antibiotic resistance requires a detailed understanding of the influence and impact of antibiotic prescribing patterns," says Sophie Miller.

The researchers analyzed stool samples collected from 164 residents from five long-term aged care facilities in South Australia to learn more about the genes carried by their gut bacteria that lead to antibiotic resistance.

"We discovered that an antibiotic commonly prescribed to aged care residents was strongly associated with an increase in resistance to other antibiotics the resident had not been prescribed," she says.

Alarming, research revealed nearly all participants carried these resistant genes without displaying any symptoms, raising significant concerns for this particularly vulnerable demographic.

"Our findings suggest that even antibiotics that are not typically associated with major modifications in gut bacteria can significantly escalate the presence of resistance genes," says Miller.

Senior author Professor Geraint Rogers, Director of the Microbiome and Host Health Program at SAHMRI and Matthew Flinders Fellow in the College of Medicine and Public Health at Flinders University, says the implications of this study extend beyond individual patient care.

"As the population ages and [life expectancy](#) extends, the implications of our findings emphasize the importance of a holistic approach to antibiotic management in long-term aged care settings," says Professor Rogers.

"There are concerns that practitioners may be over prescribing antibiotics, potentially increasing the risk of resistant bacterial infections, and this study's findings suggest a need for extra caution when prescribing them for older patients."

More information: Lucy Carpenter et al, Exposure to doxycycline

increases risk of carrying a broad range of enteric antimicrobial resistance determinants in an elderly cohort, *Journal of Infection* (2024).
[DOI: 10.1016/j.jinf.2024.106243](https://doi.org/10.1016/j.jinf.2024.106243)

Provided by Flinders University

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