

Resistant bacteria on the rise across Australia

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Escherichia coli. Credit: Rocky Mountain Laboratories, NIAID, NIH

A national study led by University of Adelaide researchers has confirmed that antibiotic resistant strains of disease-causing bacteria, such as *E. coli*, are steadily on the rise in Australia.

The results of the study, conducted for the Australian Group on Antimicrobial Resistance, are published on the website of the Department of Health, which funded the research.

"Emerging resistance in common pathogens is a world-wide phenomenon, and this is a significant issue for healthcare practitioners and their patients," says the lead author of the report, Professor John Turnidge, Affiliate Professor of Molecular and Biomedical Science at the University of Adelaide.

"Compared with many other countries in our region, [antibiotic resistance](#) rates in Australia are still relatively low. However, there are some worrying trends in the latest data which, for example, show a doubling of resistance among E. coli against some important reserve antibiotics.

"Importantly, this study looked at samples from patients who were not hospitalised, so these are rates of antibiotic resistance out there in the general Australian population," Professor Turnidge says.

Samples were collected at 29 health centres around Australia in 2012, from non-hospitalised patients with urinary infections. The study tested 2,025 species of Escherichia coli (E. coli), 538 of Klebsiella and 239 of Enterobacter, and the results compared with the previous community study in 2008.

Overall, antibiotic multi-resistance (resistant to three classes of antibiotics) was found in 7.6% of E. coli samples compared with 4.5% four years earlier, 5.1% of Klebsiella (compared with 4.4%) and 5.4% of Enterobacter (4.2% in 2008).

While common strains of E. coli can cause urinary tract and other localised infections, some strains of E. coli can invade the blood stream and cause septicaemia (blood poisoning), which can result in up to 20%

mortality.

"E. coli is the species of most concern to us because it's showing a noticeable increase in resistance to one of the most commonly used antibiotics - its resistance to amoxicillin is now at 44%," Professor Turnidge says.

"E. coli's resistance is also increasing to one of our last-line oral antibiotics, ciprofloxacin, which has risen from 4.2% to 6.9% between 2008 and 2012. This is despite the antibiotic being restricted to needy cases in the community.

"We're now seeing some E. coli [resistance](#) to reserve intravenous [antibiotics](#), which practitioners would normally only use once the patient is sick enough to admit to hospital, with blood poisoning for example."

Provided by University of Adelaide

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