

AURA 2019: Antimicrobial Resistance

[AURA 2019: Third Australian report on antimicrobial use and resistance in human health](#) provides data and analyses from the Antimicrobial Use and Resistance in Australia (AURA) Surveillance System, primarily from 2016 and 2017.

Key findings

National rates of resistance for many priority organisms have not changed substantially from those reported in [AURA 2016](#) and [AURA 2017](#). However, several notable upswings in resistance are important to consider in the context of infection prevention and control, and antimicrobial prescribing. Analyses of data collected from the passive and targeted antimicrobial resistance (AMR) programs that contribute to AURA have shown the following:

- In *Escherichia coli*, resistances to common agents used for treatment continue to increase. Resistance to ciprofloxacin and other fluoroquinolones continued to rise in isolates from community-onset infections, despite restricted access to these agents on the Pharmaceutical Benefits Scheme. These changes in resistance may mean increasing treatment failures and greater reliance on last-line treatments such as carbapenems
- In *Enterococcus faecium*, the overall rates of vancomycin resistance are declining nationally, although the absolute number of isolates with vancomycin resistance continues to increase
- In *Neisseria gonorrhoeae*, rates of azithromycin resistance initially remained low, with a slight upward trend from 2012 to 2015. There has been a sharp upward trend since 2015, with resistance in 2017 now at 9.3%. The total number of notifiable cases also continues to increase
- In *N. meningitidis*, the number of notifiable cases increased, and reduced susceptibility to benzylpenicillin reached almost 45% in 2017. Resistance to benzylpenicillin is now almost 6%, which may affect treatment guidelines
- In *Salmonella*, ciprofloxacin resistance in typhoidal species (*S. Typhi* and *S. Paratyphi*) exceeded 60% in 2017, confirming ciprofloxacin should no longer be relied on for empirical treatment. These high rates are partly because of recent changes to susceptibility testing breakpoints
- In *Staphylococcus aureus*, patterns of methicillin resistance continue to evolve. Community-associated methicillin-resistant *S. aureus* has become prominent in remote and very remote regions. This requires a renewed focus on infection prevention and control in community and acute settings



- Carbapenemase-producing Enterobacterales (CPE) were the most commonly reported critical antimicrobial resistance (CAR) in 2018
- CARs reported from aged care were predominantly CPE or daptomycin-nonsusceptible *S. aureus*
- Of CARs reported from bloodstream specimens, 81% were CPE. Oral therapies may not be available for many of these infections meaning that hospital-based intravenous therapy is the only treatment option
- There were large increases in multidrug-resistant *Shigella* species (from 32 isolates in 2017 to 64 isolates in 2018) and ceftriaxone-nonsusceptible *Salmonella* species (from 38 isolates in 2017 to 51 isolates in 2018)
- There were sporadic cases of ceftriaxone-nonsusceptible *N. gonorrhoeae* (no isolates in 2017 to six isolates in 2018)
- Confirmation of linezolid-nonsusceptible *Enterococcus* species almost tripled in 2018, with increases in both *E. faecium* and *E. faecalis* compared with other CARs, a high proportion were from bloodstream isolates
- Of multidrug-resistant *Mycobacterium tuberculosis*, 15% (6 of 39 isolates) were from overseas patients.

International comparisons in antimicrobial resistance

- Internationally, rates of resistance to fluoroquinolones in *E. coli* and *Klebsiella pneumoniae* (represented by resistance to ciprofloxacin) have increased between 2015 and 2017. Although resistance rates in Australia remain low compared with most European countries, fluoroquinolone resistance rates have increased compared with some countries, including the Netherlands
- Compared with European countries, rates of resistance in key gram-positive pathogens are moderate to high in Australia. The prevalence of vancomycin resistance in *E. faecium* remains higher in Australia than in any European country, even though rates have levelled off in recent years.

Further information

For more on the AURA Project, please visit: www.safetyandquality.gov.au/AURA