# National Alert System for Critical Antimicrobial Resistances (CARAlert)

The National Alert System for Critical Antimicrobial Resistances (CARAlert) collects surveillance data on priority organisms that are resistant to last-line antimicrobial agents. The priority organisms with critical antimicrobial resistances (CARs) currently included in CARAlert are:

| Species | Critical resistance |
|---|---|
| Enterobacterales | Carbapenemase producing, and/or ribosomal methyltransferase producing |
| *Enterococcus* species | Linezolid non-susceptible |
| *Mycobacterium tuberculosis* | Multidrug-resistant – resistant to at least rifampicin and isoniazid |
| *Neisseria gonorrhoeae* | Ceftriaxone or azithromycin non-susceptible |
| *Salmonella* species | Ceftriaxone non-susceptible |
| *Shigella* species | Multidrug-resistant |
| *Staphylococcus aureus* | Vancomycin, linezolid or daptomycin non-susceptible |
| *Streptococcus pyogenes* | Penicillin reduced susceptibility |

Between 1 January 2017 and 31 December 2018, a total of 2,979 CARs from 91 originating laboratories across Australia were entered into CARAlert. Key findings from analyses of these data are:

- Carbapenemase-producing Enterobacterales (CPE) were the most commonly reported critical antimicrobial resistance (CAR) in 2018. CPE continue to be dominated by those of the IMP type, found most often in the *Enetrobacter cloacae* complex

- Successful control of a local outbreak of OXA-48-like *Escherichia coli* in May–July 2017 highlighted the value of timely surveillance data and rapid outbreak response

- CARs reported from aged care homes were predominantly CPE or daptomycin-nonsusceptible *Staphylococcus aureus*

- 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)

- The emergence of sporadic cases of ceftriaxone-nonsusceptible *Neisseria gonorrhoeae* (no isolates in 2017 to six isolates in 2018) indicates the need for ongoing surveillance of this CAR

- Confirmation of linezolid-nonsusceptible *Enterococcus* species almost tripled in 2018, with increases in both *E. faecium* and *E. faecalis*. A high proportion were from bloodstream isolates compared with other CARs

- Of multidrug-resistant *Mycobacterium tuberculosis*, 15% (6 of 39 isolates) were from overseas patients

- Frequency of reporting of CPE highlights the importance of sustained implementation of the Commission's [Recommendations for the control of carbapenemase-producing Enterobacteriaceae (CPE). A guide for acute care health facilities](#). The Commission will work with states and territories on strategies to promote consistency of screening and infection control practices to improve CPE containment

- Azithromycin non-susceptible *N. gonorrhoeae* are common in Australia, and there were fluctuations in numbers between and within states and territories during the reporting period. Maintaining effective surveillance of *N. gonorrhoeae* resistance, continuing programs for prevention and control of sexually transmissible infections, and implementing outbreak response strategies are all essential to minimise the spread of untreatable gonorrhoea.

The Commission is working with states and territories, and relevant experts to develop a national model for an antimicrobial resistance surveillance and outbreak response network. The model will promote alignment of state and territory protocols; avoid duplication of processes in relation to surveillance, screening, testing and outbreak response; and be adaptable to local requirements.

Four new CARs will be reported to CARAlert during 2019:

o Transferrable resistance to colistin in Enterobacterales
o Carbapenemase-producing *Acinetobacter baumannii* complex
o Carbapenemase-producing *Pseudomonas aeruginosa*
o *Candida auris*, which is a multidrug-resistant yeast that has caused outbreaks in multiple countries.

## Further information

AURA Surveillance System:          [www.safetyandquality.gov.au/AURA](http://www.safetyandquality.gov.au/AURA)

CARAlert:          [www.safetyandquality.gov.au/CARAlert](http://www.safetyandquality.gov.au/CARAlert)