Australian Commission on **Safety and Quality** in Health Care

AURA
Antimicrobial Use and Resistance in Australia

CARAlert annual report: 2025

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Executive Summary

This report provides analyses of data on confirmed critical antimicrobial resistances (CARs) submitted to the National Alert System for Critical Antimicrobial Resistances (CARAlert) for 2025, and trend data between 2017 and 2025.

There was an overall 10.2% increase in CARs reported between 2024 (*n* = 3,391) and 2025 (*n* = 3,737). Carbapenemase-producing *Enterobacterales* (CPE), which are the most frequently reported CARs to CARAlert, continue to be a concern for patient safety. Bacteria that produce carbapenemase enzymes are almost always resistant to other important antibiotic classes, such as other β-lactams, β-lactamase inhibitor combinations, fluoroquinolones and aminoglycosides. This means that effective treatment options for infections may be very limited, and lengths of stay for hospital admissions will likely increase.

Issues for health care and patient safety identified by 2025 CARAlert data analyses include:

- Increasing rates of CPE in Australian hospitals
- Changes in community-onset CARs, with upward trends of *Neisseria gonorrhoeae* and *Salmonella* species
- Ongoing reports of CARs in aged care home residents albeit at very low levels
- Ongoing implications for increased health service demand and complexity of care due to CARs.

National overview of key findings: 2025 compared to 2024

- CPE (including those with ribosomal methyltransferase or transmissible colistin resistance) were the most frequently reported CARs (45.7%) in 2025.
- The second most reported CAR was azithromycin-nonsusceptible *N. gonorrhoeae* (low-level, minimum inhibitory concentration [MIC] < 256 mg/L) (33.6%).
- The number of CPE (either alone or in combination with other CARs) reported in 2025, compared to 2024, increased by 11.7%. The proportional increase was highest in the Australian Capital Territory (ACT; up 120%), South Australia (SA; up 94.4%) and Western Australia (WA; up 59.7%). Nationally, NDM types were the dominate genes reported (47.1%), although IMP types dominated in New South Wales and Queensland.
- The number of *N. gonorrhoeae* reports to CARAlert in 2025 increased compared to 2024 (up 21.7%). Of the 1,312 reports in 2025, 49 were ceftriaxone-nonsusceptible (MIC ≥ 0.125 mg/L), seven of which were also azithromycin-nonsusceptible (high-level, MIC ≥ 256 mg/L), and classified as extensively drug resistant. A further six isolates were azithromycin-nonsusceptible (high-level). The remaining *N. gonorrhoeae* reports were azithromycin-nonsusceptible (low-level).
- From 2024 to 2025, the number of reports of carbapenemase-producing *Pseudomonas aeruginosa* and carbapenemase-producing *Acinetobacter baumannii* complex increased slightly.
- There was a decrease in the number of reports of multidrug-resistant (MDR) *Shigella* species from 2024 to 2025 (down 15.4%). There was a 2-fold increase in the numbers from SA and the ACT. The number of reports decreased from Victoria and WA.
- Reports of linezolid-resistant *Enterococcus* species decreased in 2025 compared to 2024 (down 59.3%).
- There was an increase in the number of ceftriaxone-nonsusceptible *Salmonella* species (up 45.2%). There were 11 (7.3%) ceftriaxone-nonsusceptible typhoidal species reported in 2025.
- There were five reports of MDR *Mycobacterium tuberculosis* in 2025, compared to 17 reports in 2024.
- There were 21 reports of *Candidozyma* (*Candida*) *auris* in 2025, compared to 16 reports in 2024.

- Where the setting was known, the majority of CARs were reported from hospitals (53.8%) followed by community settings (46.0%); Less than 0.2% of CARs were reported from aged care homes.

What will be done to improve patient safety?

In response to the issues identified in analyses of CARAlert data between 2017 and 2025, the Australian Commission on Safety and Quality in Health Care will continue to:

- Collaborate with the Australian Centre for Disease Control (CDC) for the monitoring and reporting on CARs reported to CARAlert, maintenance of the CARAlert system and communicate CARAlert and other Antimicrobial Use and Resistance in Australia (AURA) surveillance data and key findings to states, territories and relevant experts
- Maintain the currency of and promote compliance with the *Australian Guidelines for the Prevention and Control of Infection in Healthcare*[1] as required by the National Safety and Quality Health Service (NSQHS) Standards[2] and National Safety and Quality Primary and Community Healthcare Standards[3] (Primary and Community Healthcare Standards)
- Maintain the currency of and promote implementation of guidance for specific organisms, such as the *Recommendations for the control of carbapenemase-producing* Enterobacterales *(CPE): A guide for acute care health service organisations*[4] and promote consistency of screening and infection prevention and control practices, and outbreak responses to improve containment of CPE and other carbapenemase-producing organisms
- Use CARAlert and other AURA data to refine and strengthen approaches to infection prevention and control and antimicrobial stewardship (AMS), and support implementation of the NSQHS Standards[2], the Primary and Community Healthcare Standards[3] and the AMS Clinical Care Standard[5]
- Liaise with the Aged Care Quality and Safety Commission and aged care provider organisations and promote use of *The Aged Care Infection Prevention and Control Guide*[6] to support implementation of infection prevention and control and AMS programs in aged care homes to meet the requirements of the strengthened Aged Care Quality Standards[7], particularly the Aged Care Clinical Standard[8]
- Support collaboration between the states and territories and hospital and community care settings to prevent and control CARs
- Prepare analyses of antimicrobial resistance data for and liaise with Therapeutic Guidelines Limited, the organisation that develops guidance on antimicrobial prescribing in Australia.

Results from CARAlert, 2025

Information about the National Alert System for Critical Antimicrobial Resistances (CARAlert), and methods used for the analyses presented in this report are included in Appendices 1 and 2. Data were extracted on 13 February 2026 for this report.

Between 1 January 2025 and 31 December 2025, a total of 3,737 critical antimicrobial resistances (CARs) from 82 originating laboratories across Australia were entered into CARAlert by 23 of the 28 confirming laboratories nationally that participate in CARAlert (Appendix 3). There was an average of 311 entries per month (range: 242 in September to 394 in January).

Critical antimicrobial resistances by state and territory

Most CARs were reported for patients who lived in the most populous states (New South Wales [NSW], *n* = 1,086, 29.1%; Victoria, *n* = 1,510, 40.4%; Queensland, *n* = 532, 14.2%). There were fewer than 15 reports from Tasmania and the Northern Territory (NT), respectively (Table 1).

Carbapenemase-producing *Enterobacterales* (CPEs) (including those with ribosomal methyltransferase or transmissible resistance to colistin) were the most frequently reported CAR (1,708/3,737, 45.7%) in 2025. Compared to 2024 (*n* = 1,529), there was a 11.7% increase in reports of CPE in 2025; the greatest increase was seen in the Australian Capital Territory (ACT; up 120%), South Australia (SA; up 94.4%) and Western Australia (WA; up 59.7%).

Compared to 2024, the number of azithromycin-nonsusceptible *Neisseria gonorrhoeae* (low-level resistance [LLR], minimum inhibitory concentration [MIC] < 256 mg/L) reports increased 1.2-fold in 2025. The greatest increase was seen in WA (up 3.2-fold), and Queensland (up 2.5-fold). There was a decrease in reports from SA.

Ceftriaxone-nonsusceptible and/or azithromycin-nonsusceptible (high-level resistance [HLR], MIC ≥ 256 mg/L) *N. gonorrhoeae* decreased in 2025 (*n* = 55 in 2025; *n* = 69 in 2024). All states reported lower numbers of this CAR in 2025.

There was a decrease in the number of multidrug-resistant (MDR) *Shigella* species reported in 2025 (down 15.4%). Decreases were seen in WA (down 67.7%) and Victoria (down 46.2%). Reports from SA and ACT doubled in 2025.

The number of ceftriaxone-nonsusceptible *Salmonella* species reported in 2025 increased 1.5-fold compared to 2024. The greatest increase was seen in NSW (up 2.7-fold). There was a slight decrease in the number of reports from Queensland. Less than 1 in 15 (11/151, 7.3%) of all reports were typhoidal species.

A little over one-half of carbapenemase-producing *Pseudomonas aeruginosa* reports in 2025 were from NSW (61/107, 57.0%).

There was a 2.5-fold decrease in the number of linezolid-resistant *Enterococcus* species reported in 2025. The greatest decrease was seen in reports from Queensland (down 4.0-fold), Victoria (down 3.8-fold), and WA (down 2.7-fold).

Candidozyma (*Candida*) *auris* was reported from five states, with no reports from Tasmania or the territories. Compared to 2024, there was a 31.3% increase in the number of reports in 2025.

Enterobacterales with transmissible resistance to colistin (*mcr-1.1*) were reported in one *Escherichia coli* isolate from NSW; this isolate also harboured a bla_{NDM} gene.

Table 1 Number of critical antimicrobial resistances reported to CARAlert, by state and territory, 2024 and 2025

Species	Critical resistance	State or territory, 2025								Year		Relative change*
		NSW	Vic	Qld	SA	WA	Tas	NT	ACT	2024	2025	
Acinetobacter baumannii complex	Carbapenemase-producing	11	5	3	1	0	0	0	0	21	20	▼ 4.8%
	Carbapenemase- and ribosomal methyltransferase-producing	0	23	5	1	5	0	0	1	26	35	▲ 34.6%
Candidozyma (*Candida*) *auris*	–	2	8	2	5	4	0	0	0	16	21	▲ 31.3%
Enterobacterales	Carbapenemase-producing (alone or in combination with other CARs)	660	430	332	138	115	5	6	22	1529	1,708	▲ 11.7%
	Carbapenemase-producing	653	364	321	130	99	5	6	22	1,420	1,600	▲ 12.7%
	Carbapenemase- and ribosomal methyltransferase-producing	6	66	11	8	16	0	0	0	107	107	0.0%
	Carbapenemase-producing and transmissible resistance to colistin	1	0	0	0	0	0	0	0	2	1	–
	Ribosomal methyltransferase-producing	0	6	3	0	1	0	0	1	12	11	▼ 8.3%
	Transmissible colistin resistance[†]	0	0	0	0	0	0	0	0	0	0	–
Enterococcus species	Linezolid-resistant	15	19	6	0	3	0	2	3	118	48	▼ 59.3%
Mycobacterium tuberculosis	Multidrug-resistant – at least rifampicin- and isoniazid-resistant strains	0	2	0	3	0	0	0	0	17	5	▼ 70.6%
Neisseria gonorrhoeae	Azithromycin-nonsusceptible (low-level)	116	858	112	19	148	0	0	4	1,009	1,257	▲ 24.6%
	Azithromycin-nonsusceptible (high-level)	2	0	2	0	2	0	0	0	30	6	▼ 80.0%
	Ceftriaxone-nonsusceptible	29	1	1	0	2	0	1	1	28	35	▲ 25.0%
	Ceftriaxone-nonsusceptible and azithromycin-nonsusceptible (low-level)	1	3	0	1	1	0	0	1	5	7	–
	Ceftriaxone-nonsusceptible and azithromycin-nonsusceptible (high-level)	5	1	0	0	1	0	0	0	6	7	–
	Gentamicin-resistant	0	0	0	0	0	0	0	0	0	0	–
Neisseria meningitidis	Ciprofloxacin-nonsusceptible	0	4	0	0	0	0	0	0	4	4	–

Table 1 *continued*

Species	Critical resistance	State or territory, 2025								Year		Relative change*
		NSW	Vic	Qld	SA	WA	Tas	NT	ACT	2024	2025	
Pseudomonas aeruginosa	Carbapenemase-producing	61	14	7	7	8	1	1	0	82	99	▲ 20.7%
	Carbapenemase- and ribosomal methyltransferase-producing	0	5	1	0	2	0	0	0	15	8	▼ 46.7%
Salmonella species	Ceftriaxone-nonsusceptible	24	68	15	6	32	3	0	3	104	151	▲ 45.2%
Shigella species	Multidrug-resistant	159	63	42	12	20	2	3	11	369	312	▼ 15.4%
Staphylococcus aureus	Linezolid-nonsusceptible	1	0	1	0	0	0	0	0	0	2	–
	Vancomycin-nonsusceptible	0	0	0	0	1	0	0	0	0	1	–
Streptococcus pyogenes	Penicillin reduced susceptibility	0	0	0	0	0	0	0	0	0	0	–
Total (reported by 13 February 2026)		**1,086**	**1,510**	**532**	**193**	**345**	**11**	**13**	**47**	**3,391**	**3,737**	**▲ 10.2%**

CAR = critical antimicrobial resistance; High-level = azithromycin MIC ≥ 256 mg/L; Low-level = azithromycin MIC < 256 mg/L; MIC = minimum inhibitory concentration; ▲ = increase; ▼ = decrease; – = not applicable

* Relative change = absolute change between 2024 and 2025, for each CAR, expressed as a percentage of 2024 base reported, where 10 or more CARs were reported in 2024

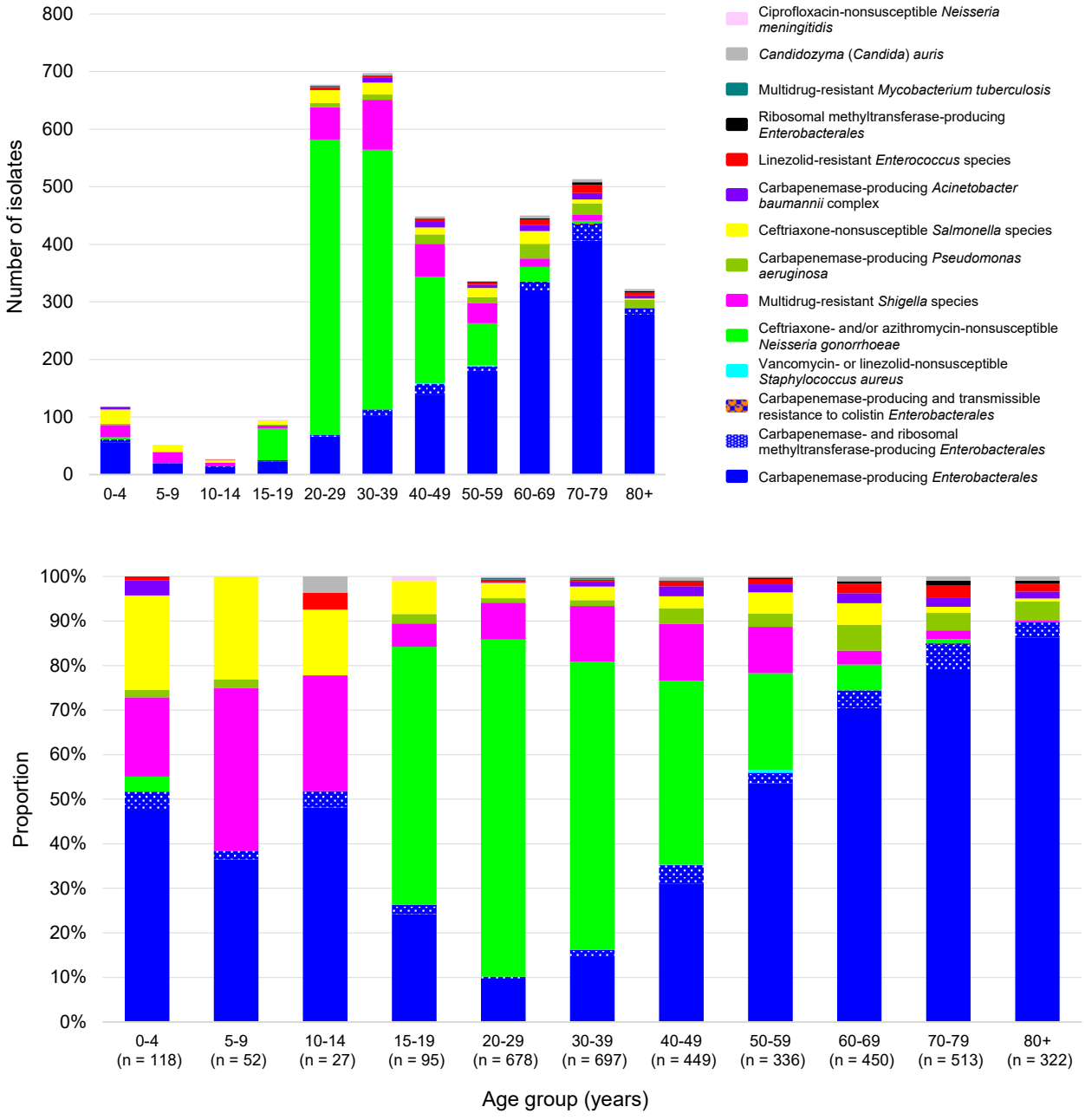
† When not seen in combination with carbapenemase-producing *Enterobacterales*

Critical antimicrobial resistances by age group

CARs were isolated from patients of all age groups; the median age was 40–49 years (Figure 1). Almost three-quarters of CPE were isolated from people aged 50 years and older (1,248/1,708, 73.1%). Most of ceftriaxone- and/or azithromycin-nonsusceptible *N. gonorrhoeae* was reported for people aged 15–59 years (1,277/1,312, 97.3%); and 75.3% (235/312) of MDR *Shigella* species were in people aged 20–59 years.

Only 5.3% (197/3,737) of all CARs were reported in children aged less than 15 years; CPE (*n* = 95), MDR *Shigella* species (*n* = 47) and ceftriaxone-nonsusceptible *Salmonella* species (*n* = 41) were most frequently reported for this age group (183/197, 92.9%). For the 0–4-year age group, CPE was the most frequently reported CAR (*n* = 61); followed by ceftriaxone-nonsusceptible *Salmonella* species (*n* = 25), and MDR *Shigella* species (*n* = 21).

Figure 1 Critical antimicrobial resistances reported to CARAlert, by age groups, 2025



Critical antimicrobial resistances by facility type

Where the setting was known, just over one-half of CARs were detected in either hospitalised patients or hospital outpatients (1,738/3,231, 53.8%). Smaller proportions were isolated in the community (1,487/3,231, 46.0%) and in aged care homes (6/3,231, 0.2%) (Table 2).

Table 2 Number of critical antimicrobial resistance isolates reported to CARAlert, by setting, national, 2025

Species	Critical resistance	Setting					Total
		Public hospital	Private hospital	Aged care home	Community	Unknown	
Acinetobacter baumannii complex	Carbapenemase-producing	15	1	0	2	2	20
	Carbapenemase- and ribosomal methyltransferase-producing	31	0	0	3	1	35
Candidozyma (*Candida*) *auris*	–	14	0	0	6	1	21
Enterobacterales	Carbapenemase-producing	1,188	82	6	197	127	1,600
	Carbapenemase- and ribosomal methyltransferase-producing	64	5	0	32	6	107
	Carbapenemase- producing and transmissible resistance to colistin	1	0	0	0	0	1
	Ribosomal methyltransferase-producing	5	3	0	3	0	11
	Transmissible resistance to colistin	0	0	0	0	0	0
Enterococcus species	Linezolid-resistant	30	1	0	15	2	48
Mycobacterium tuberculosis	Multidrug-resistant – at least rifampicin- and isoniazid-resistant strains	5	0	0	0	0	5
Neisseria gonorrhoeae	Azithromycin-nonsusceptible (low-level)	47	1	0	1,047	162	1,257
	Azithromycin-nonsusceptible (high-level)	0	0	0	4	2	6
	Ceftriaxone-nonsusceptible	0	0	0	3	32	35
	Ceftriaxone-nonsusceptible and azithromycin-nonsusceptible (low-level)	0	0	0	4	3	7
	Ceftriaxone-nonsusceptible and azithromycin-nonsusceptible (high-level)	0	0	0	2	5	7
	Gentamicin-resistant	0	0	0	0	0	0
Neisseria meningitidis	Ciprofloxacin-nonsusceptible	0	0	0	3	1	4
Pseudomonas aeruginosa	Carbapenemase-producing						
	Carbapenemase- and ribosomal methyltransferase-producing						
Salmonella species	Ceftriaxone-nonsusceptible	35	4	0	82	30	151
Shigella species	Multidrug-resistant	119	5	0	74	114	312
Staphylococcus aureus complex	Linezolid-nonsusceptible	2	0	0	0	0	2
	Vancomycin-nonsusceptible	1	0	0	0	0	1
Streptococcus pyogenes	Penicillin reduced susceptibility	0	0	0	0	0	0
Total (reported by 13 February 2026)		**1,630**	**108**	**6**	**1,487**	**506**	**3,737**

High-level = azithromycin MIC ≥ 256 mg/L; Low-level = azithromycin MIC < 256 mg/L; MIC = minimum inhibitory concentration
Note: Information on setting for *N. gonorrhoeae* is often not available.

CPE accounted for a just over three-quarters of all reports from hospitals (1,340/1,738, 77.1%). In the community, almost all of reports were CPE (229/1,487, 15.4%), ceftriaxone and/or azithromycin-nonsusceptible *N. gonorrhoeae* (1,060/1,487, 71.3%), ceftriaxone-nonsusceptible *Salmonella* species (82/1,487, 5.5%) or MDR *Shigella* species (74/1,487, 5.0%). There were six reports from aged care homes, all of which were CPE.

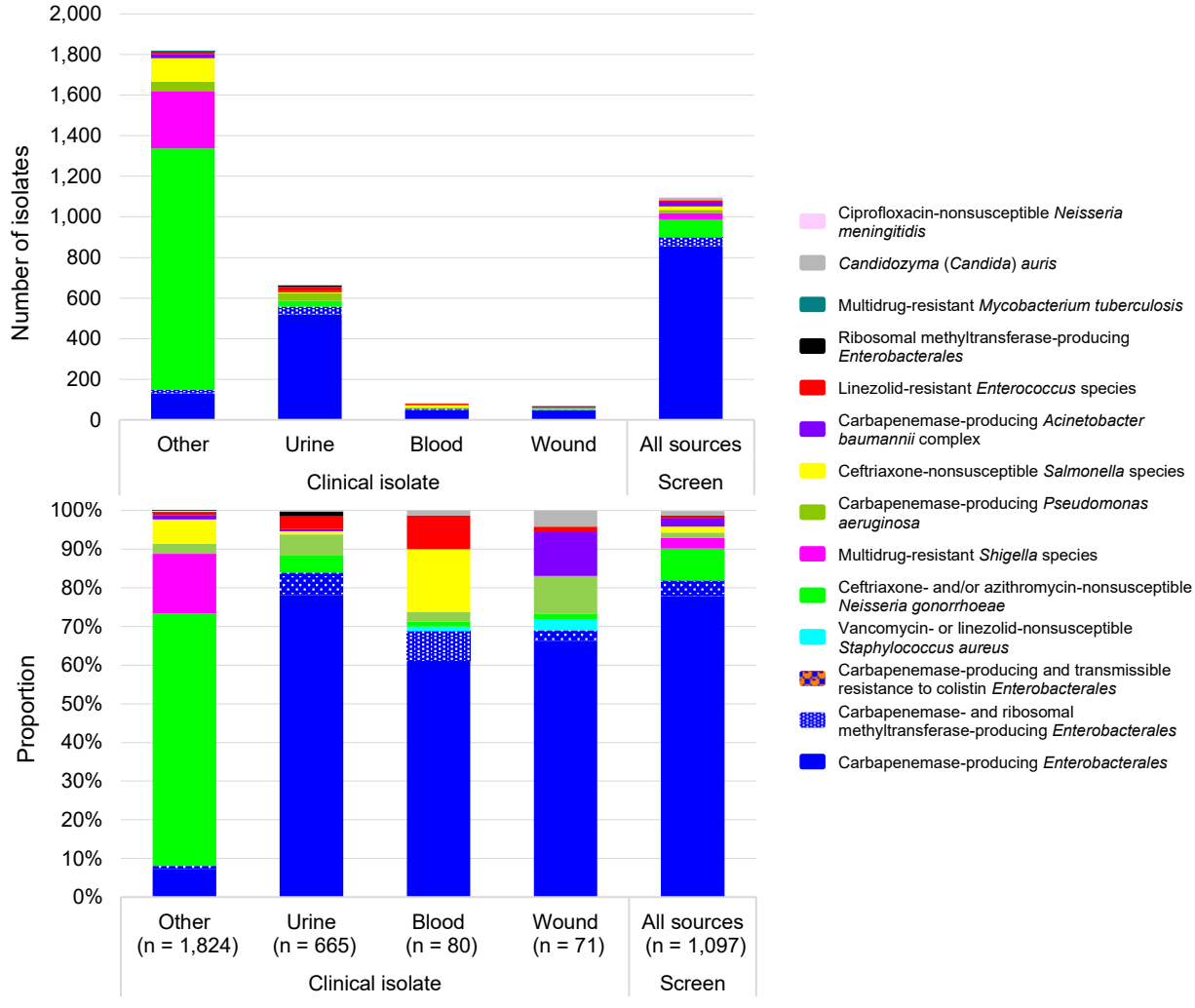
Critical antimicrobial resistances by specimen type

A little over two-thirds of all CARs reported in 2025 were from clinical specimens (2,640/3,737, 70.6%), which are specimens collected for diagnostic purposes, rather than for screening. These included urine (*n* = 665), blood (*n* = 80), wound (*n* = 71), and other (*n* = 1,824) such as genital or respiratory specimens (Figure 2).

Of CPE reports, 47.4% (810/1,708) were from clinical specimens. Just over two-thirds of CPE isolates from clinical specimens were from urine (558/810, 68.9%) – an important specimen for *Enterobacterales* as the urinary tract is a common site of infection. Almost 1 in 15 (55/810, 6.8%) CPE from clinical specimens were from blood cultures. CPE comprised 68.8% (55/80) of all CARs confirmed from blood specimens.

Six other CARs were also reported from blood cultures in 2025: ceftriaxone-nonsusceptible *Salmonella* species (*n* = 13), linezolid-resistant *Enterococcus* species (*n* = 7), carbapenemase-producing *P. aeruginosa* (*n* = 2), *C. auris* (*n* = 1), linezolid-nonsusceptible *Staphylococcus aureus* (*n* = 1), and azithromycin-nonsusceptible (low-level) *N. gonorrhoeae* (*n* = 1).

Figure 2 Critical antimicrobial resistances reported to CARAlert, by specimen type, 2025



Note: 'Other' refers to specimen types other than urine, wound or blood, such as genital, faecal or respiratory tract

Summary by CAR, with trend data for 2017–2025

Data for each CAR for 2025, nationally and by state and territory, are shown in Figures 3 to 32. Trend data for 2017 to 2025 are also presented, where applicable.

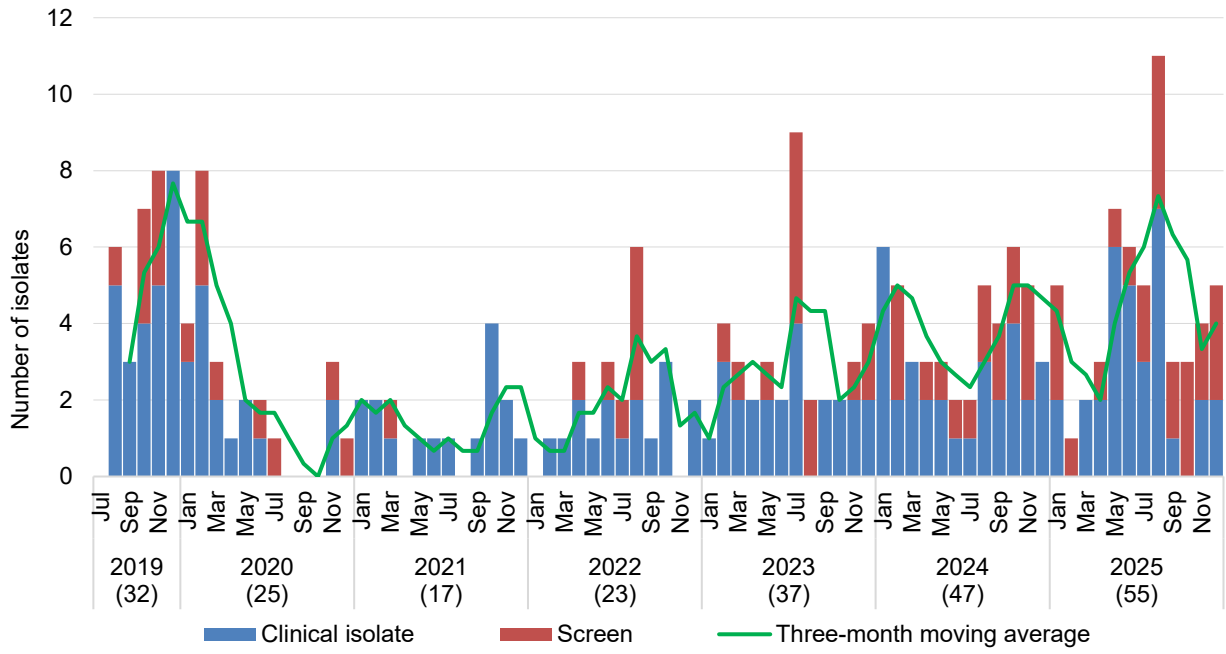
Acinetobacter baumannii complex

Acinetobacter baumannii complex is a group of environmental organisms that have caused prolonged outbreaks in hospital settings, such as intensive care and severe burns units. *A. baumannii* infections are associated with patients with compromised physical barriers and immunity, most commonly in hospital. The most common infections caused by this species complex are ventilator-associated pneumonia and severe burn infections. Reporting of carbapenemase-producing *A. baumannii* complex to CARAlert began in July 2019.

There were 55 reports of carbapenemase-producing *A. baumannii* complex in 2025, from all states and territories except Tasmania and the NT (Figures 3 and 4). OXA-23-like types were dominant (*n* = 50; alone, *n* = 45). NDM types were mostly reported in combination with OXA-23-like (*n* = 4) or alone (*n* = 3). Two OXA-24/40-like, one in combination with OXA-23-like, and one OXA-58 type were also reported.

Where setting was known, a vast majority (47/52, 90.4%) of carbapenemase-producing *A. baumannii* complex were reported from hospitals (Table 3).

Figure 3 Carbapenemase-producing *Acinetobacter baumannii* complex, number reported to CARAlert by specimen type, national, 2019–2025



Note: Reported from July 2019.

Figure 4 Carbapenemase-producing *Acinetobacter baumannii* complex, number reported to CARAlert by carbapenemase type and specimen type, state and territory, 2025

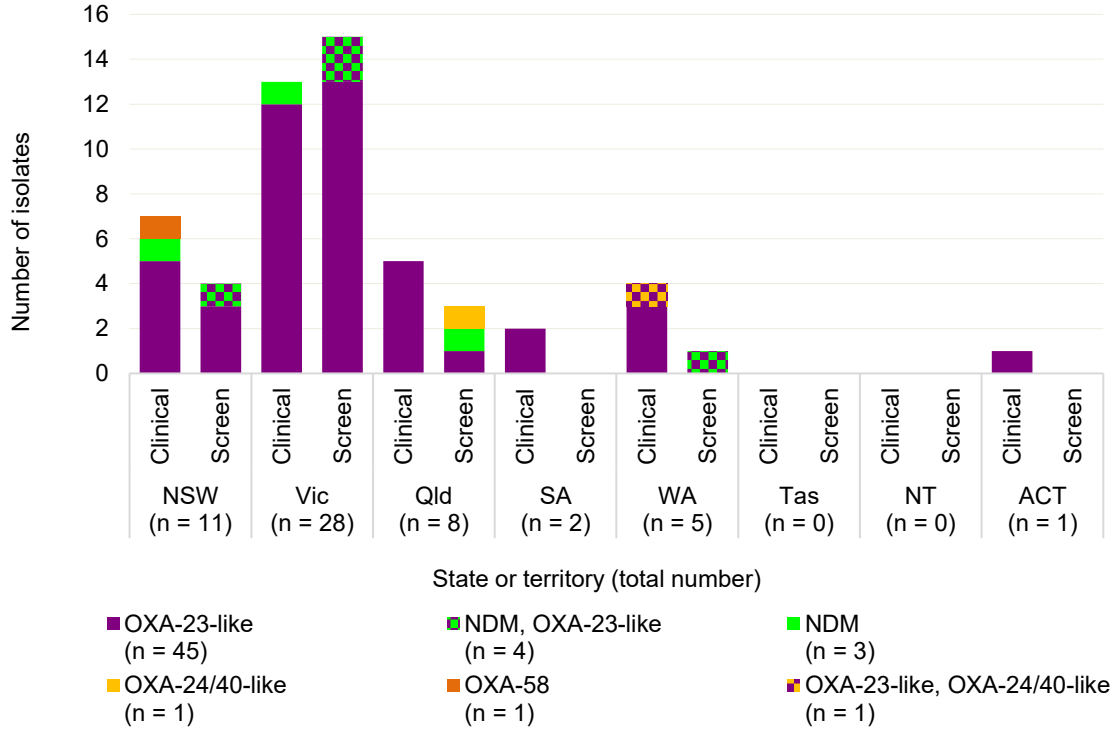


Table 3 Carbapenemase-producing *Acinetobacter baumannii* complex, number reported to CARAlert by setting, state and territory, 2025

Setting	State or territory								Total
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	
Total	**11**	**28**	**8**	**2**	**5**	**0**	**0**	**1**	**55**
Public hospital	10	23	7	1	5	0	0	0	46
Private hospital	0	0	1	0	0	0	0	0	1
Aged care home	0	0	0	0	0	0	0	0	0
Community	0	3	0	1	0	0	0	1	5
Unknown	1	2	0	0	0	0	0	0	3

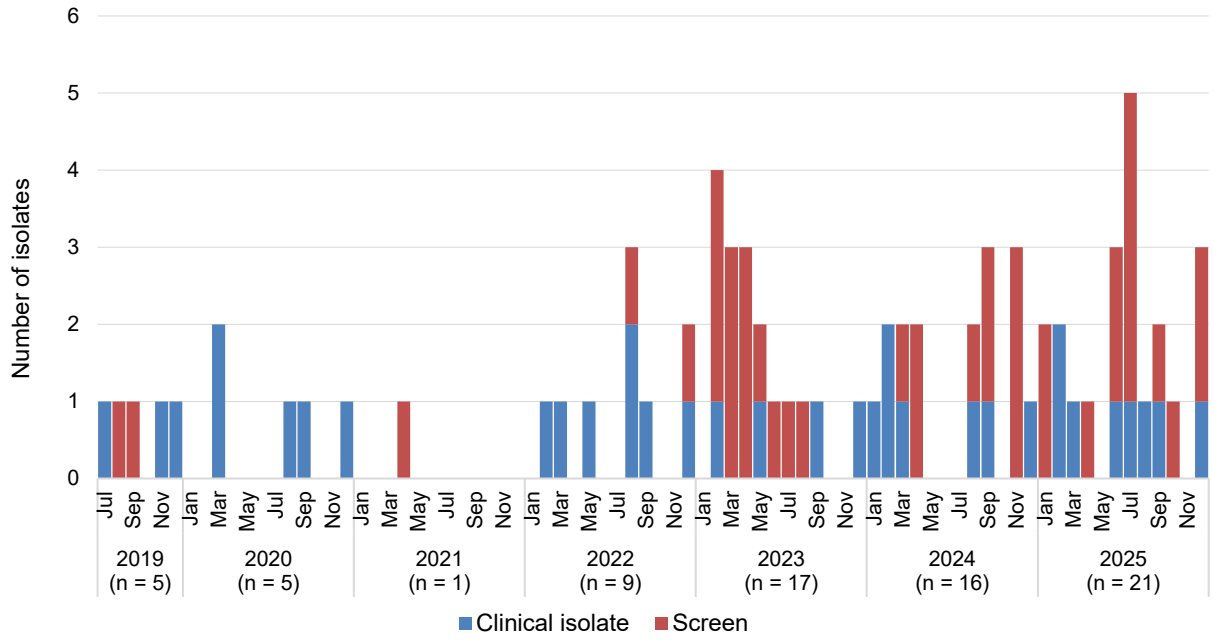
Candidozyma (*Candida*) *auris*

C. auris is an emerging MDR *Candida* species that has been associated with international outbreaks of invasive infections in healthcare facilities. Reporting to CARAlert for *C. auris* began in July 2019.

There was an increase in the number of reports of *C. auris* in 2025 (*n* = 21) compared to 2024 (*n* = 16) (Figure 5).

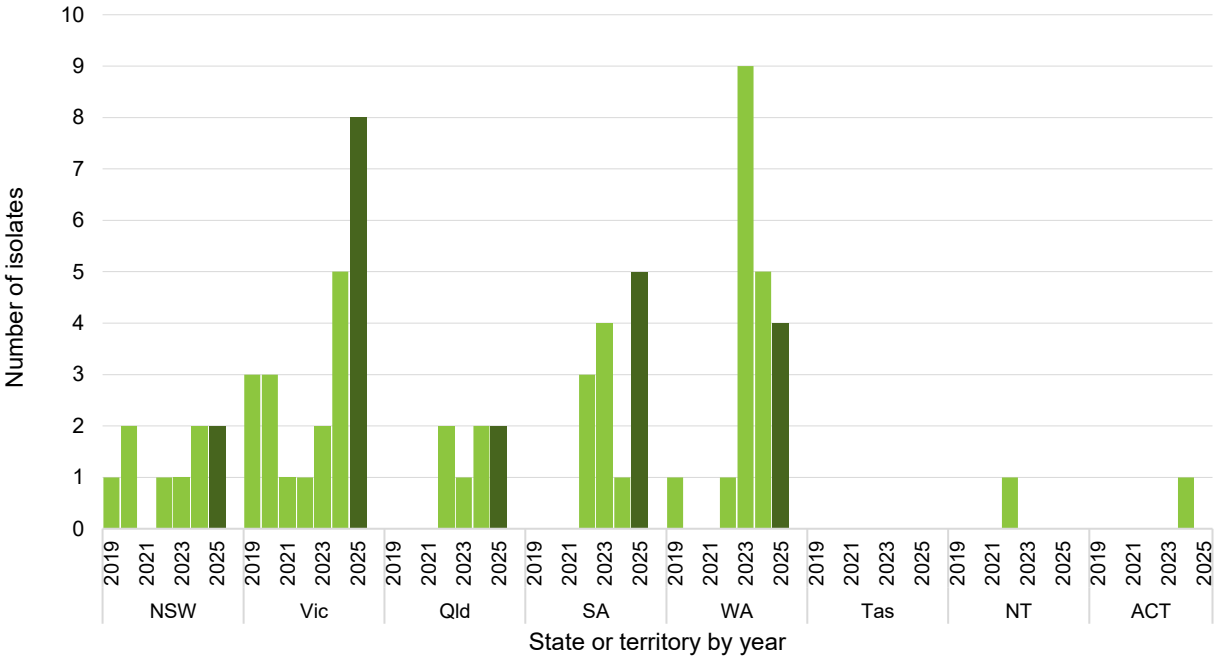
C. auris reported in 2025 were from all states except Tasmania: eight reports from Victoria, five reports from SA, four reports from WA, two reports each from NSW and Queensland (Figure 6).

Figure 5 *Candidozyma* (*Candida*) *auris*, number reported to CARAlert by month, national, 2019–2025



Note: Reported from July 2019.

Figure 6 *Candidozyma* (*Candida*) *auris*, number reported to CARAlert by state and territory, 2019–2025



Notes:
1. Reported from July 2019.
2. Dark bars indicate values for 2025.

Enterobacterales

Infections of the urinary tract, biliary tract, intra-abdomen, and bloodstream are commonly associated with *Enterobacterales*. Following a gradual decline from 2019 to 2021, there was an increase in the number of reports of carbapenemase- and/or ribosomal methyltransferase-producing *Enterobacterales* in 2022, which continued into 2025 (Figures 7 and 8).

There were 1,708 reports of CPE in 2025, an increase of 11.7% compared to 2024 (*n* = 1,529); there were 600 reports in 2021. Carbapenemases were found in 37 species/complex (14 genera) of *Enterobacterales*, with eight carbapenemase types reported (Figure 9). Three carbapenemase types – NDM (698/1,708, 40.9%), IMP (602/1,708, 35.2%), and OXA-48-like (236/1,708, 13.8%) – when produced alone, accounted for 89.9% (1,536/1,708) of all *Enterobacterales* with a confirmed carbapenemase.

NDM types alone accounted for 40.9% (698/1,708) of all carbapenemases; they were found in 22 different species (Figure 9). NDM types were found mainly in *Escherichia coli* (395/698, 56.6%), as were OXA-48-like types (172/236, 72.9%). Three species/complexes accounted for 81.9% of all CPE: *E. coli* (663/1,708, 38.8%), *Enterobacter cloacae* complex (383/1,708 22.4%), and *Klebsiella pneumoniae* complex (353/1,708, 20.7%).

Monthly trends for the top five carbapenemase types (IMP, NDM, OXA-48-like, NDM-OXA-48-like, and KPC) reported over nine years are shown in Figure 10 (national).

All states, except Victoria and Tasmania, and the ACT reported an increase in the number of CPE reports in 2025; most notably SA (*n* = 138 versus *n* = 71), WA (*n* = 115 versus *n* = 72), and the ACT (*n* = 22 versus *n* = 10) (Figure 11). Three-year trends by state and territory are shown in Figure 12.

The number of NDM types reported in 2025 (alone or co-produced with other types) continued to increase (*n* = 804 in 2024; *n* = 676 in 2024, up 18.9%). NDM types, either alone or in combination, were found in all states and territories, and account for 47.1% of all CPE reported. In SA, NDM types accounted for just a substantial majority (111/138, 80.4%) of all CPE reported. Similarly, in Victoria, NDM types accounted for 64.0% (275/430) of all CPE reported. NDM types made up all CPE reports from the NT (*n* = 6), and just over one-half (12/22, 54.5%) of CPE reports from the ACT. Six different genes were found in the isolates sequenced (442/804, 55.0%): *bla*$_{\text{NDM-5}}$ (264/442; 59.7%), *bla*$_{\text{NDM-1}}$ (144/442; 32.6%), *bla*$_{\text{NDM-7}}$ (21/442; 4.8%), *bla*$_{\text{NDM-4}}$ (11/442; 2.5%), and one each of *bla*$_{\text{NDM-6}}$ and *bla*$_{\text{NDM-60}}$.

The number of IMP types (alone or co-produced with other types) reported in 2025 (*n* = 626), was similar to 2024 (*n* = 600). IMP types accounted a little over one-half of all CPE reported from Queensland (197/332, 59.3%) and just over one-half from NSW (347/660, 52.6%). In WA, the IMP types accounted for 32.2% (37/115) of all CPE reported, down from 41.7% (30/72) in 2024. In Victoria, only 8.8% (38/430) of all CPE were IMP types, down from 13.2% in 2024. There were no IMP types reported from SA, Tasmania or the NT. Almost all isolates that have been genetically sequenced (252/626, 40.3%) were *bla*$_{\text{IMP-4}}$ (*n* = 250); the other gene reported was *bla*$_{\text{IMP-59}}$ (*n* = 2).

In 2025, the number of reports of OXA-48-like CPE (alone or co-produced) nationally increased (*n* = 328) compared with 2024 (*n* = 257, up 27.6%). The number of reports from WA doubled (*n* = 32 in 2025; *n* = 16 in 2024). Among isolates that were sequenced (200/328, 61.0%); the most common genes were *bla*$_{\text{OXA-181}}$-like (94/200, 47.0%; *bla*$_{\text{OXA-181}}$ [*n* = 63], *bla*$_{\text{OXA-232}}$ [*n* = 18], *bla*$_{\text{OXA-484}}$ [*n* = 13]), or *bla*$_{\text{OXA-48}}$-like (77/200, 38.5%; *bla*$_{\text{OXA-48}}$ [*n* = 49], *bla*$_{\text{OXA-244}}$ [*n* = 27]; *bla*$_{\text{OXA-1167}}$ [*n* = 1]).

Reports of KPC-producing *Enterobacterales* in 2025 was similar to the number reported in 2024 (*n* = 40 in 2025; *n* = 41 in 2024). One in 5 of the KPC types were co-produced with other types. KPC types were predominantly reported from Victoria (*n* = 22), NSW (*n* = 9), and Queensland (*n* = 6), mostly from different hospitals. Two other states reported cases (WA [2] and SA [1]). Two KPC variants were detected from the 27 isolates that were sequenced: *bla*$_{\text{KPC-2}}$ (*n* = 20) and bla$_{\text{KPC-3}}$ (*n* = 7).

Other carbapenemase types reported were IMI (*n* = 14), OXA-23-like (*n* = 6), VIM (*n* = 4) and GES (*n* = 1).

Co-production of carbapenemase increased to 6.7% in 2025 (115/1,708), up from 4.8% in 2024 (74/1,529). The majority of co-produced genes in 2025 were NDM+OXA-48-like (*n* = 84, up from *n* = 50 in 2024), IMP+NDM (*n* = 17), and IMP+OXA-48-like (*n* = 5).

In 2025, there was variation in the proportion of isolates reported from clinical and screening specimens by state and territory (Figure 13). This may be due to differences in local infection prevention and control policies or in response to local outbreaks. Relatively more reports from screening specimens were identified from Queensland and SA.

There were notable regional differences in the distribution of the top five carbapenemases by specimen type (Figure 14) and by setting (Table 4).

The CPE crude rate (clinical isolates) per 100,000 population was 2.9 nationally. In 2025, the highest rate was in NSW and the ACT (3.9 and 3.7, respectively) (Figure 15). In WA the rate increased to 2.5 (up from 1.4 in 2024), while In Victoria the rate decreased to 3.3 (down from 4.8 in 2024).

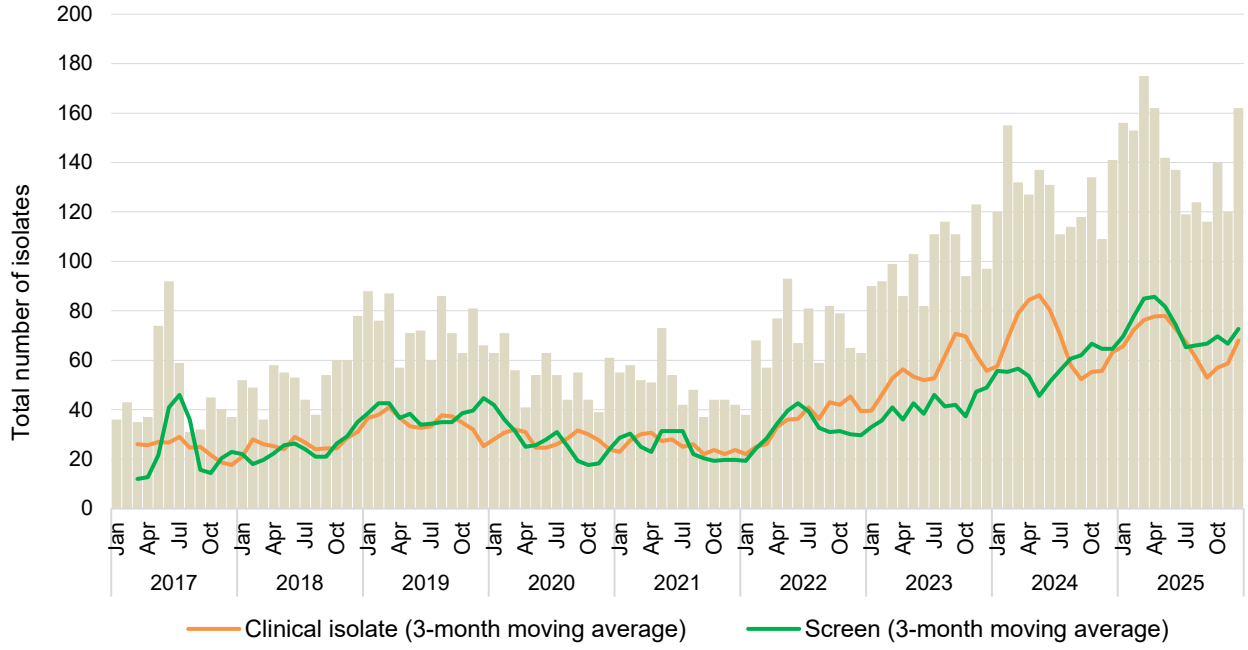
Since 2016, 325 hospitals have reported at least one CPE. CPE were reported from 149 hospitals during 2025, down from 164 in 2024. Of these hospitals 10.7% (16/149) did not report a CPE during the period 2016 to 2024. Of the hospitals that reported CPE prior to 2024, 177 did not have any reports in 2025.

In 2025, ribosomal methyltransferases were detected in 118 isolates of *Enterobacterales*, representing eight species/complexes; 90.7% (107/118) of these also had a carbapenemase. The ribosomal methyltransferases were mostly found among *K. pneumoniae* complex (58/118, 49.2%) and *E. coli* (51/118, 43.2%). Four ribosomal methyltransferase genes were found in the isolates sequenced: *rmtB* (73/118, 61.9%), *armA* (19/118, 16.1%), *rmtF* (13/118, 11.0%), *rmtC* (*n* = 5), *rmtB*+*rmtF* (*n* = 5), and *armA*+*rmtB* (*n* = 3).

Transmissible resistance to colistin refers to the presence of *mcr* genes other than *mcr-9*. This variant is not associated with a colistin-resistant phenotype but is typically found on HI2 plasmids which may carry bla_{IMP-4}.[9] One *E. coli* isolate with *mcr-1.1* was reported from NSW in 2025. This isolate also harboured a bla_{NDM} gene. This CAR has been reported to CARAlert since July 2019.

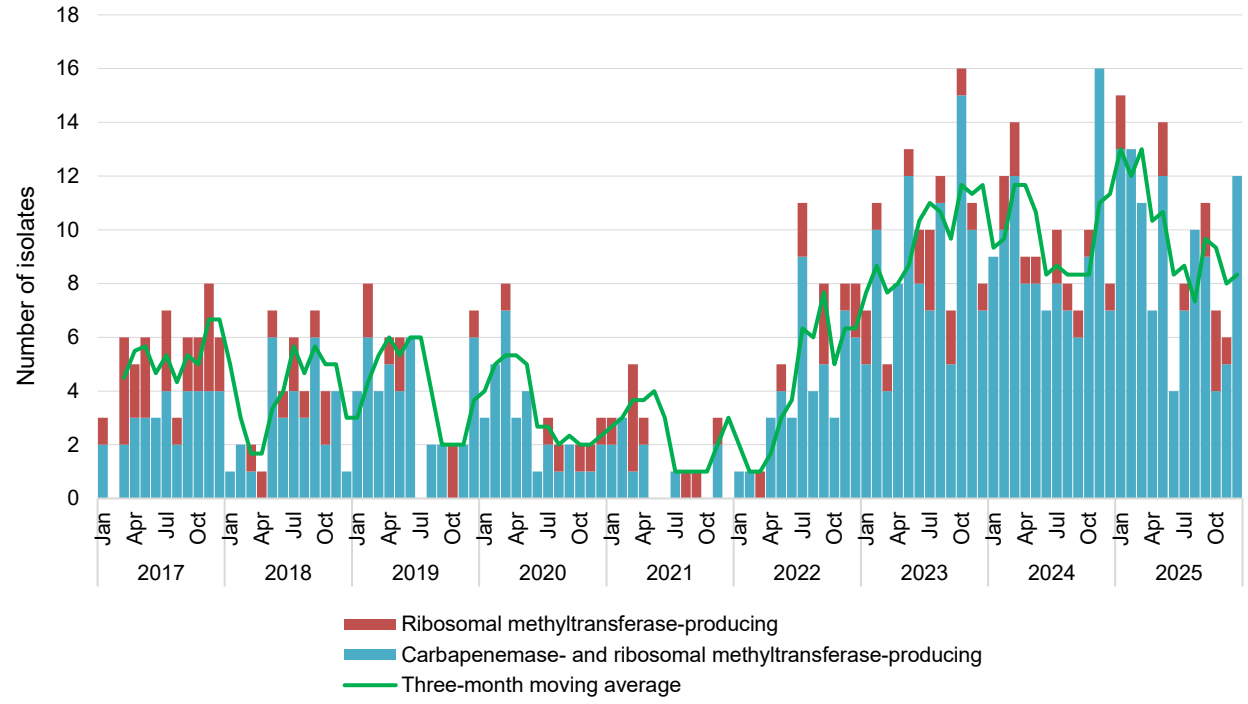
National data

Figure 7 Carbapenemase-producing *Enterobacterales*, number reported to CARAlert by month and specimen type, national, 2017–2025



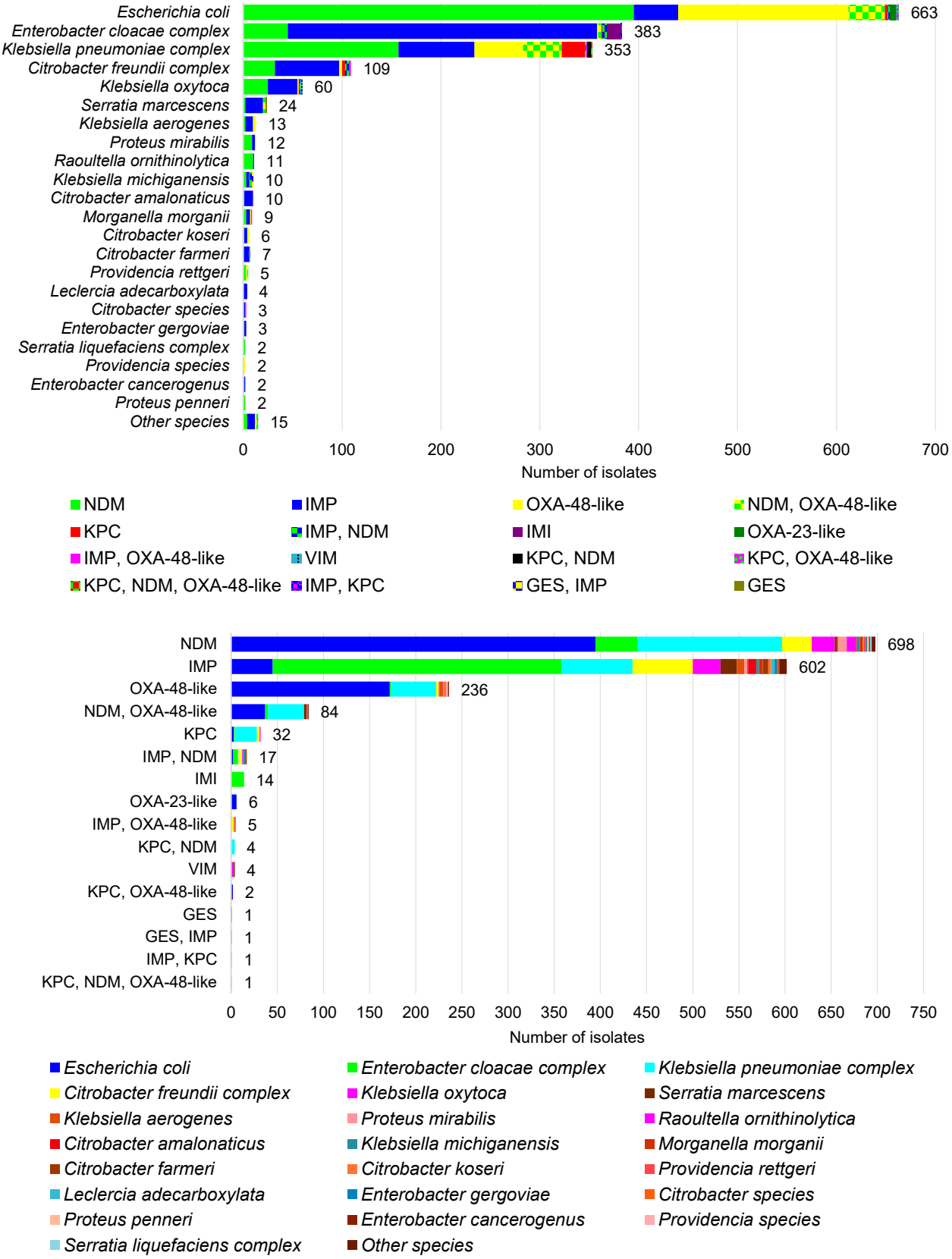
Note: Carbapenemase-producing *Enterobacterales*, includes those co-producing ribosomal methyltransferase and/or transmissible colistin resistance.

Figure 8 Ribosomal methyltransferase-producing *Enterobacterales*, number reported to CARAlert by month, national, 2017–2025



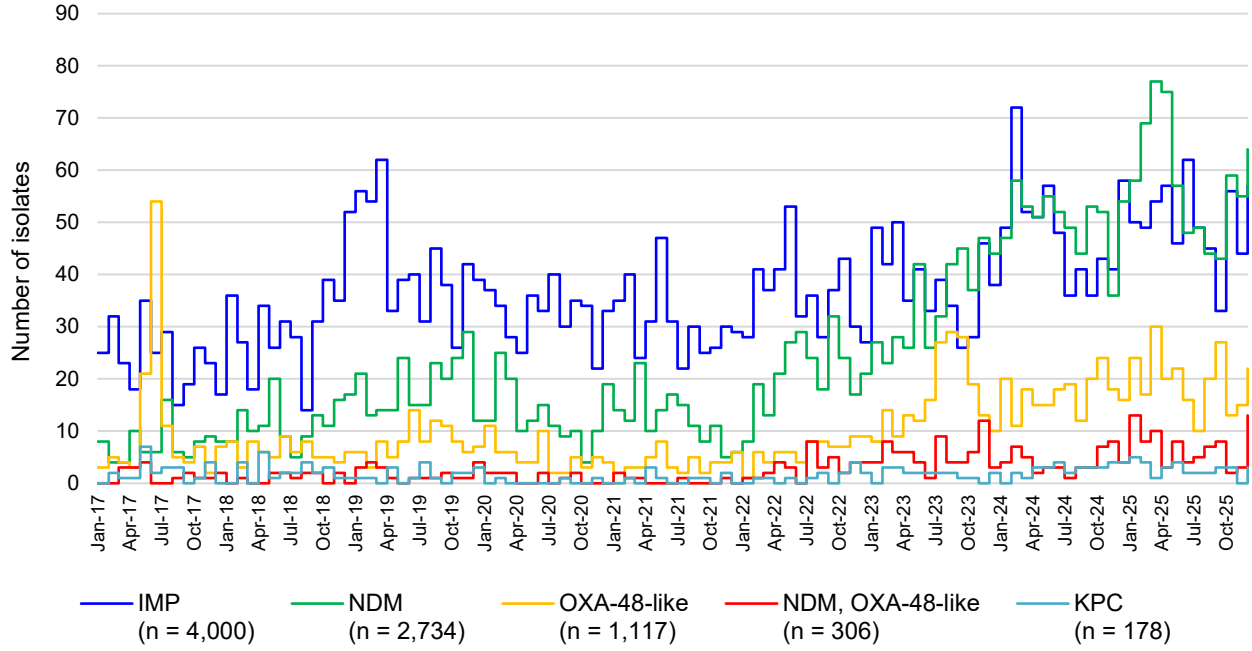
Note: Ribosomal methyltransferase-producing *Enterobacterales*, includes those that also produce carbapenemase.

Figure 9 Carbapenemase-producing *Enterobacterales**, number reported to CARAlert by species and carbapenemase type, national, 2025



* Carbapenemase-producing (*n* = 1,600), carbapenemase- and ribosomal methyltransferase-producing (*n* = 107), carbapenemase-producing plus transmissible colistin resistance (*n* = 1)

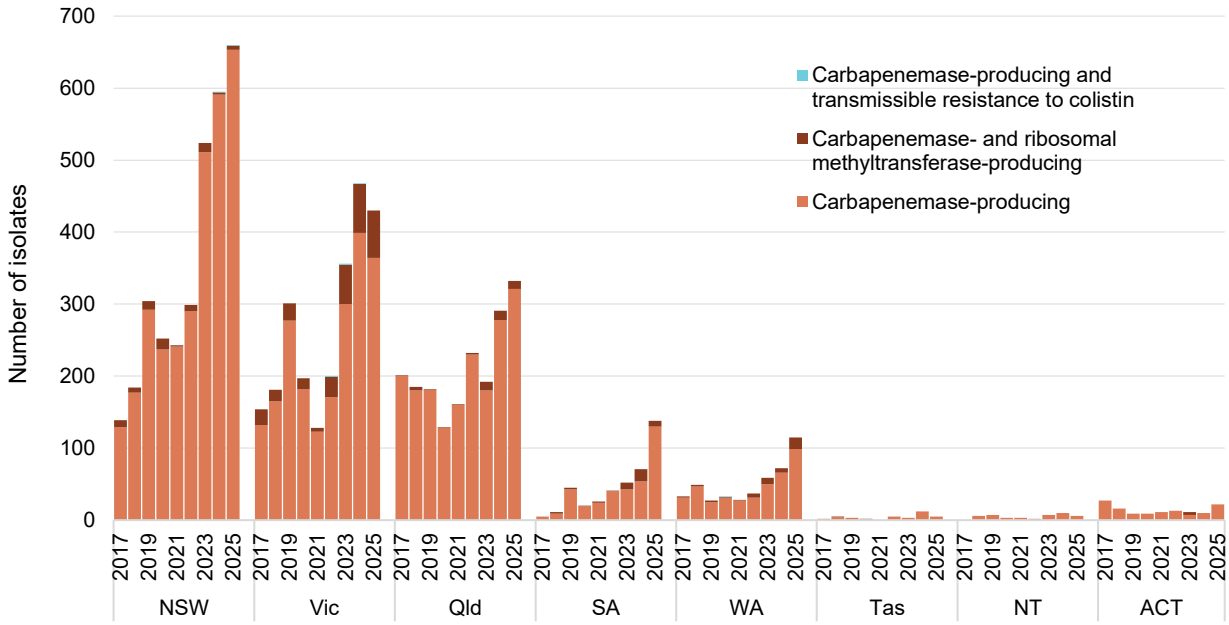
Figure 10 Trend for the top five carbapenemase types* reported to CARAlert, by month, national, 2017–2025



*Alone or in combination with another type for the reporting period indicated

State and territory data

Figure 11 Carbapenemase-producing *Enterobacterales,* number reported to CARAlert by state and territory, 2017–2025



Note: Transmissible colistin resistance reported from July 2019.

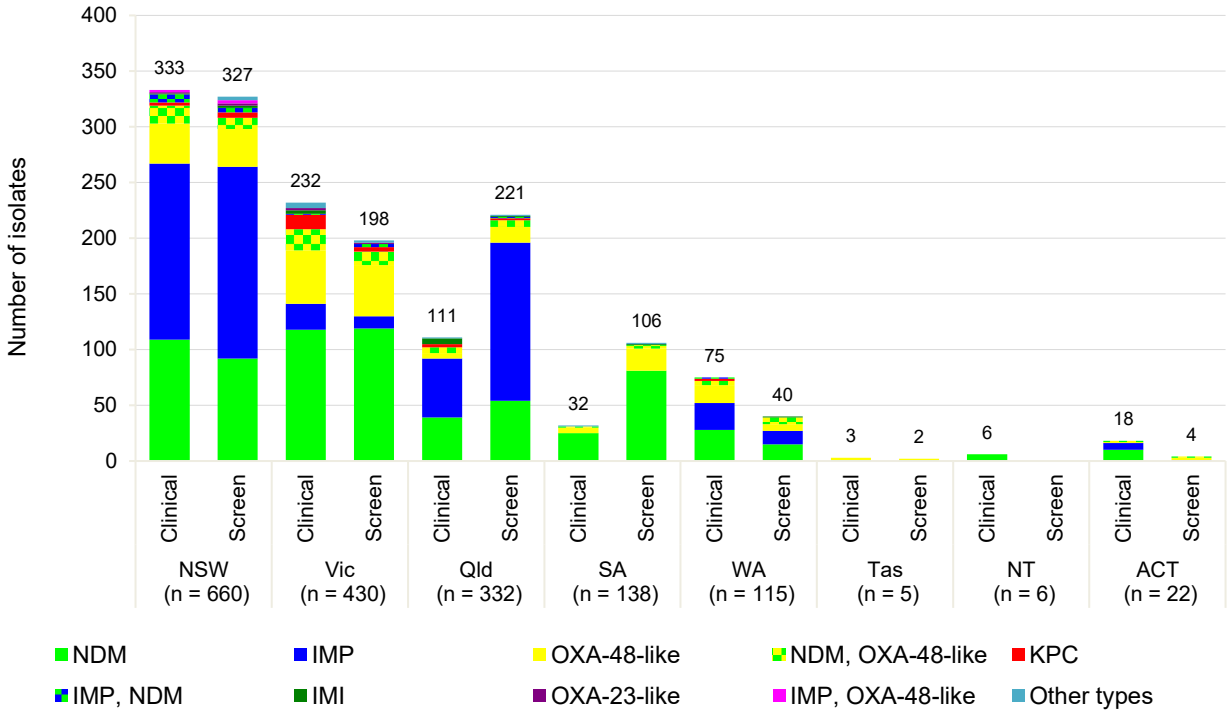
Figure 12 Three-year trend for the top five carbapenemase types from *Enterobacterales* 2023–2025

Type	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
IMP	34 14	7 1	20 5	<1 0	4 0	0 0	<1 0	1 0	58 29
NDM	21 6	26 10	10 3	18 1	5 1	2 0	2 0	2 0	74 22
OXA-48-like	8 3	18 5	3 0	3 0	3 0	<1 0	<1 0	1 0	28 9
NDM+OXA-48-like	2 0	2 0	1 0	<1 0	<1 0	0 0	0 0	0 0	4 1
KPC	3 0	4 0	2 0	1 0	2 0	0 0	0 0	<1 0	10 2
All types	64 26	45 21	31 9	21 2	13 3	2 0	2 0	3 0	163 73

Straight green line in cell = no carbapenemase type for that state or territory during the reporting period; Blank cell = maximum three-month moving average was one or less

Note: Line graphs represent three-month moving average for the period 1 January 2023 to 31 December 2025, for each type (reported alone or in combination with another type), where maximum monthly average was greater than one.

Figure 13 Carbapenemase-producing *Enterobacterales**, number reported to CARAlert by carbapenemase type and specimen type, by state and territory, 2025



* Carbapenemase-producing (*n* = 1,600), carbapenemase- and ribosomal methyltransferase-producing (*n* = 107), carbapenemase-producing plus transmissible colistin resistance (*n* = 1); Other types: VIM (NSW [2], Vic [2]); KPC, NDM (Vic [3], Qld [1]); KPC, OXA-48-like (Vic [2]); GES (SA [1]); IMP, KPC (NSW [1]); IMP, GES (Qld [1]); KPC, NDM, OXA-48-like (SA [1])

Figure 14 Top five carbapenemase-producing *Enterobacterales* types reported to CARAlert, by state and territory, 2017–2025

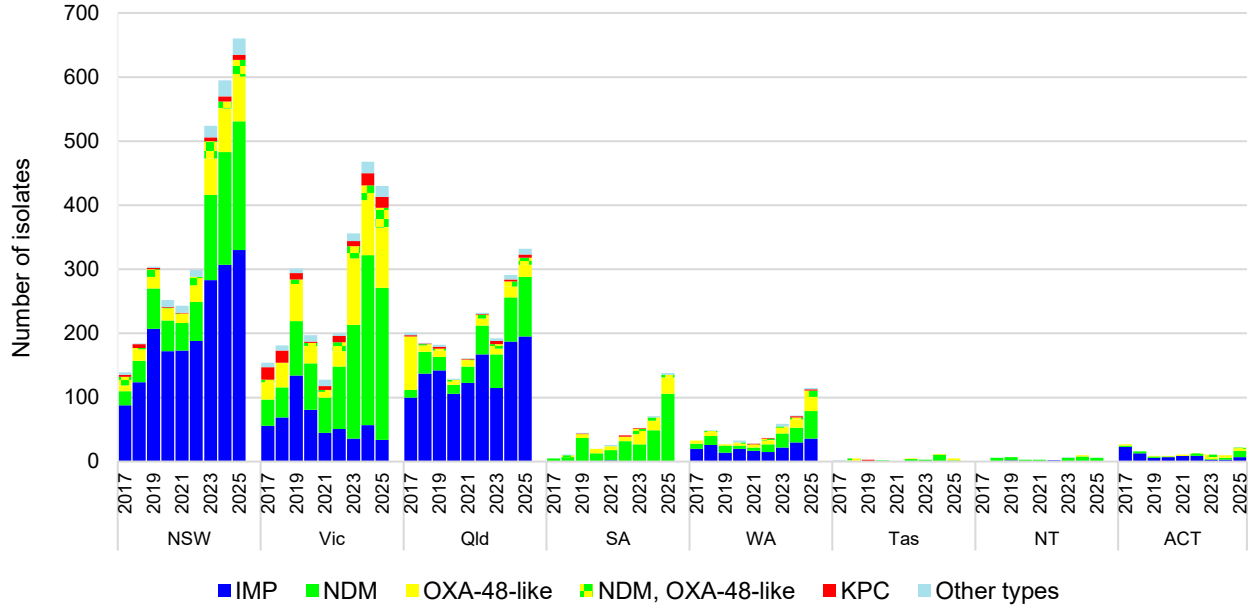
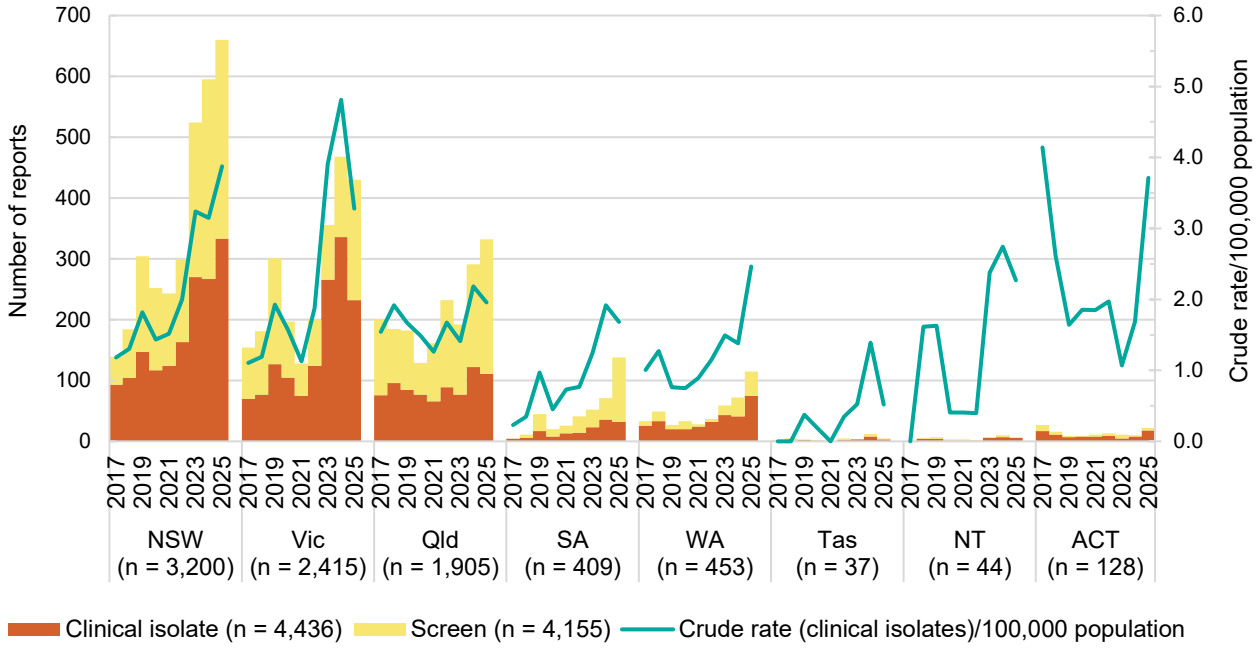


Figure 15 Carbapenemase-producing *Enterobacterales* reported to CARAlert, by specimen type and by state and territory, 2017–2025



Note: Crude rate based on mid-year population for each State and Territory (available at National, state and territory population | Australian Bureau of Statistics).

Table 4 Top five carbapenemase types from *Enterobacterales**, number reported to CARAlert by setting, state and territory, 2025

Carbapenemase type	Setting	State or territory								Total
		NSW	Vic	Qld	SA	WA	Tas	NT	ACT	
NDM	**Total**	**201**	**237**	**93**	**106**	**43**	**2**	**6**	**10**	**698**
	Public hospitals	156	129	70	91	19	0	5	4	474
	Private hospitals	3	8	9	1	5	1	0	0	27
	Aged care homes	1	0	0	0	0	0	0	0	1
	Community	8	81	10	13	15	0	1	1	129
	Unknown	33	19	4	1	4	1	0	5	67
IMP	**Total**	**330**	**34**	**195**	**0**	**36**	**0**	**0**	**7**	**602**
	Public hospitals	288	23	154	0	25	0	0	6	496
	Private hospitals	1	1	34	0	3	0	0	0	39
	Aged care homes	3	0	0	0	2	0	0	0	5
	Community	6	9	6	0	5	0	0	1	27
	Unknown	32	1	1	0	1	0	0	0	35
OXA-48-like	**Total**	**70**	**94**	**19**	**25**	**22**	**3**	**0**	**3**	**236**
	Public hospitals	55	49	18	21	16	2	0	2	163
	Private hospitals	2	4	1	2	2	0	0	0	11
	Aged care homes	0	0	0	0	0	0	0	0	0
	Community	1	38	0	2	4	1	0	1	47
	Unknown	12	3	0	0	0	0	0	0	15
NDM + OXA-48-like	**Total**	**26**	**31**	**11**	**4**	**10**	**0**	**0**	**2**	**84**
	Public hospitals	16	19	7	4	6	0	0	2	54
	Private hospitals	0	0	2	0	2	0	0	0	4
	Aged care homes	0	0	0	0	0	0	0	0	0
	Community	0	8	2	0	2	0	0	0	12
	Unknown	10	4	0	0	0	0	0	0	14
KPC	**Total**	**8**	**17**	**5**	**0**	**2**	**0**	**0**	**0**	**32**
	Public hospitals	8	12	3	0	1	0	0	0	24
	Private hospitals	0	0	0	0	0	0	0	0	0
	Aged care homes	0	0	0	0	0	0	0	0	0
	Community	0	5	1	0	1	0	0	0	7
	Unknown	0	0	1	0	0	0	0	0	1

* The top five carbapenemase types account for 96.7% (1,652/1,708) of all CPE reported for this period. Other types were IMP+NDM (*n* = 17: NSW, Victoria, Queensland, WA); IMI (*n* = 14: NSW, Victoria, Queensland, SA, WA); OXA-23-like (*n* = 6: NSW, Victoria); IMP+OXA-48-like (*n* = 5: NSW); VIM (*n* = 4: NSW, Victoria); KPC+NDM (*n* = 4: Victoria, Queensland); KPC+OXA-48-like (*n* = 2: Victoria); GES (*n* = 1: SA); IMP+KPC (*n* = 1: NSW); IMP+GES (*n* = 1: Queensland); and KPC+NDM+OXA-48-like (*n* = 1: SA)

Enterococcus species

Enterococcus species including *E. faecalis* and *E. faecium*, commonly cause urinary tract, biliary tract and other intra-abdominal infections, and bloodstream infections. In 2025, reports of linezolid-resistant *Enterococcus* species (*n* = 48) decreased 2.5-fold compared to 2024 (*n* = 118) (Figure 16).

Linezolid-resistant *Enterococcus* species were reported from all states and territories except SA and Tasmania in 2025 (Figure 17). Variation in the number of reports from the states and territories may be due to differences in testing and reporting practices by the originating laboratories. Some laboratories may only test linezolid on *Enterococcus* species if other resistances are detected. Notwithstanding that variation, there was a clear upswing in numbers in 2023 and 2024 compared to previous years (Figure 16), mostly from Victoria and Queensland (Figure 17). The number of reports subsided in both states in 2025.

In 2025, a vast majority linezolid-resistant *E. faecalis* (29/31, 93.5%) and just over one-third of linezolid-resistant *E. faecium* (6/17, 35.3%) harboured *optrA* genes.

Figure 16 Linezolid-resistant *Enterococcus* species, number reported to CARAlert by month, national, 2017–2025

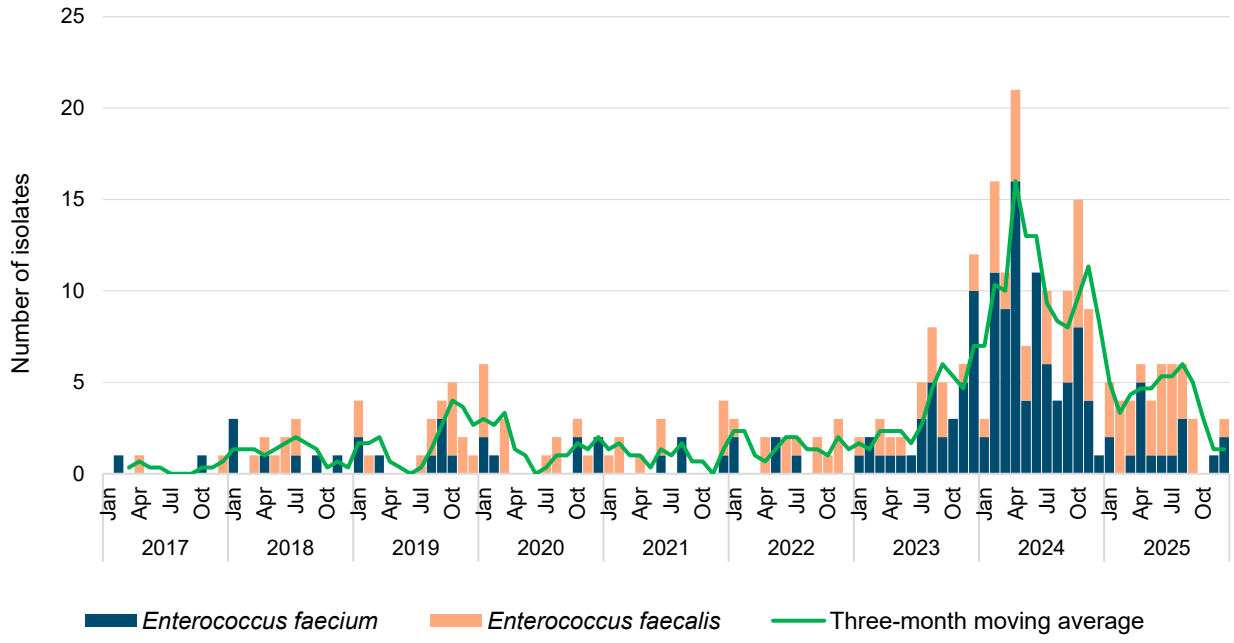
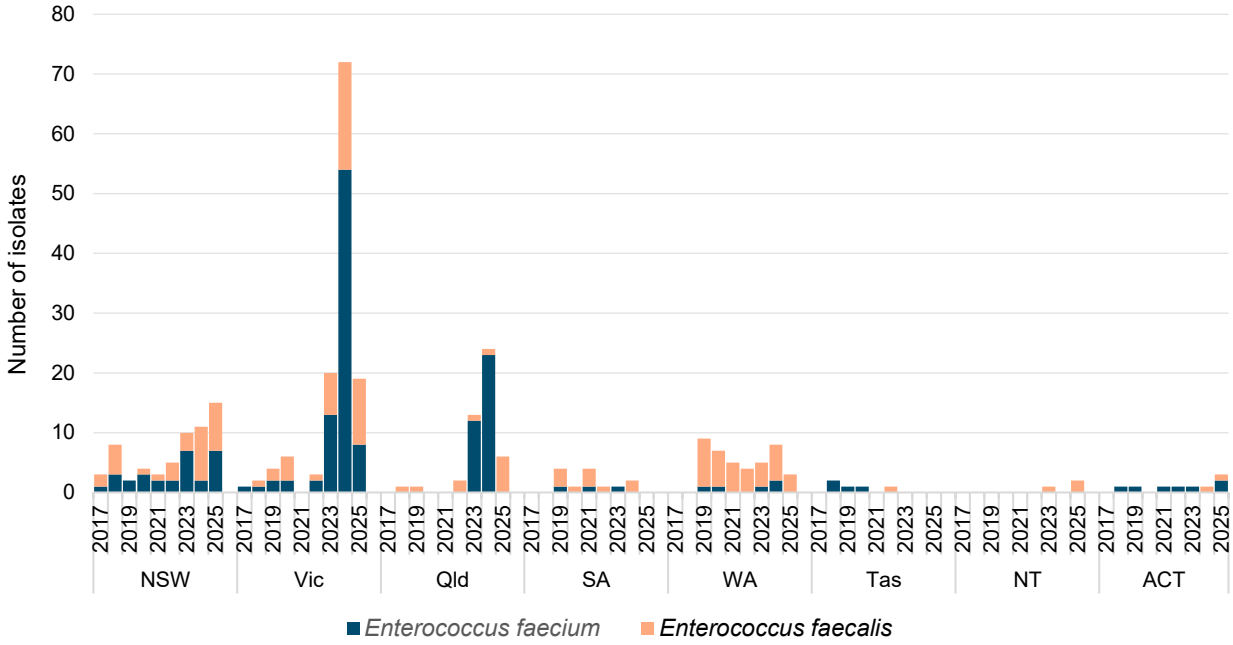


Figure 17 Linezolid-resistant *Enterococcus* species, number reported to CARAlert by state and territory, 2017–2025



Mycobacterium tuberculosis

Mycobacterium tuberculosis causes tuberculosis, which has a variety of clinical manifestations, but most commonly presents as lung disease. Low numbers of MDR *M. tuberculosis* were reported from 2017 to 2025 (Figure 18). In 2025, the MDR *M. tuberculosis* reports to CARAlert were from SA (*n* = 3) and Victoria (*n* = 2) (Figure 19).

There may be additional cases of MDR *M. tuberculosis* in 2025 that have not been captured in this report (see Appendix 2).

Figure 18 Multidrug-resistant *Mycobacterium tuberculosis,* number reported to CARAlert by month, national, 2017–2025

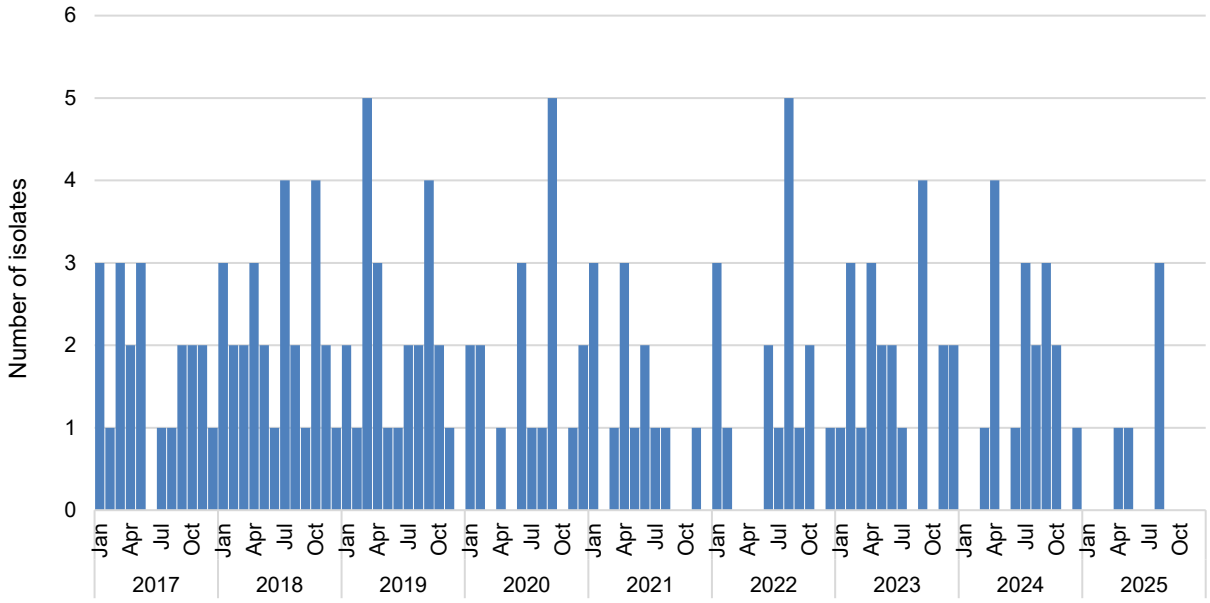
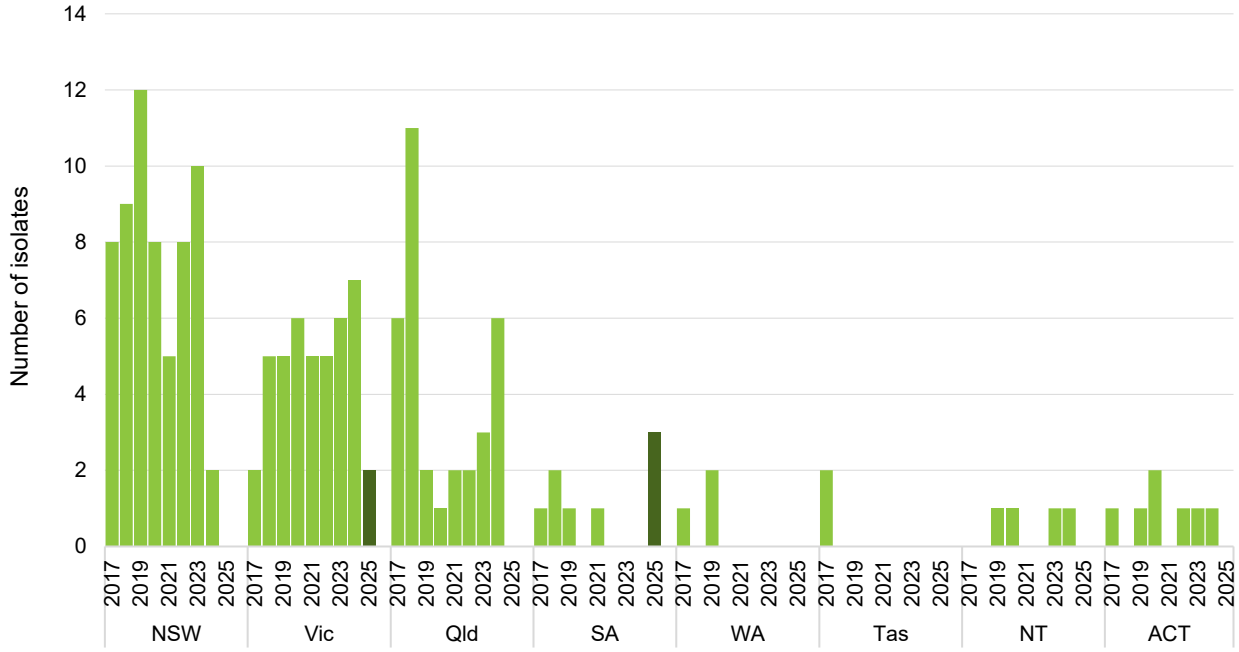


Figure 19 Multidrug-resistant *Mycobacterium tuberculosis*, number reported to CARAlert by state and territory, 2017–2025



Note: Dark bars indicate values for 2025.

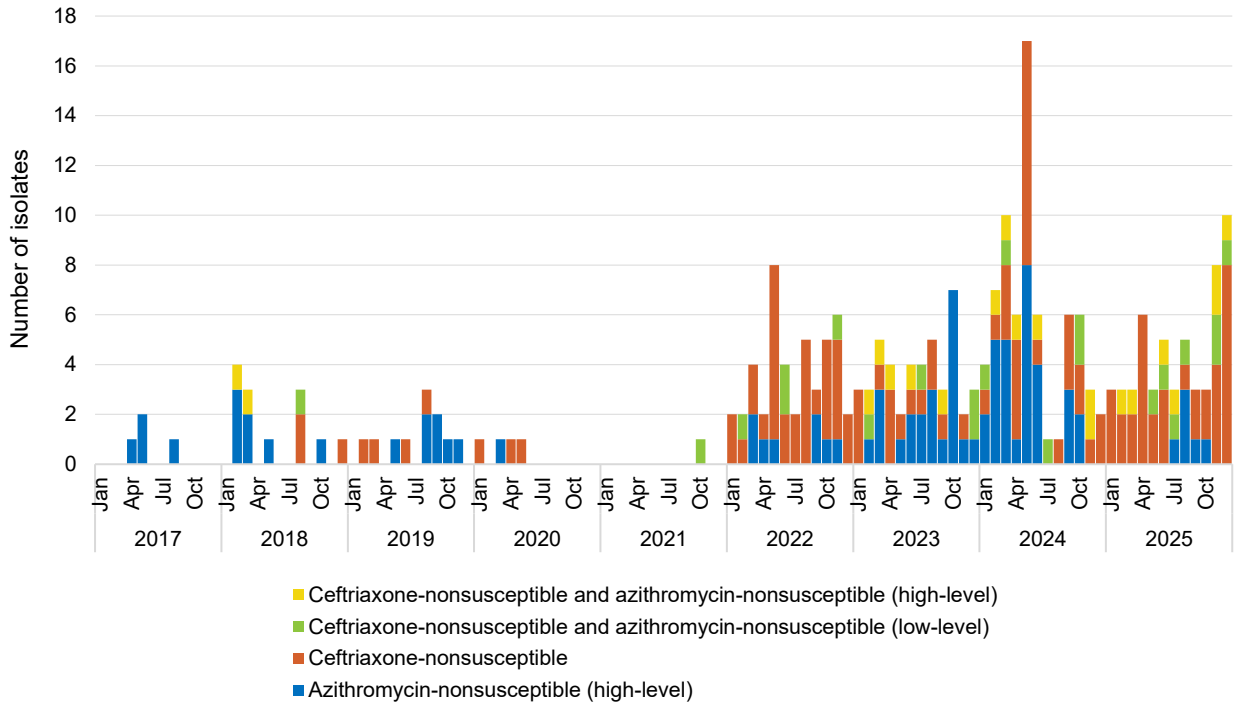
Neisseria gonorrhoeae

N. gonorrhoeae causes gonorrhoea, a largely sexually transmitted infection that most commonly manifests as urethritis in men and cervicitis in women.

There were sporadic reports of ceftriaxone-nonsusceptible and/or azithromycin-nonsusceptible (HLR) *N. gonorrhoeae* between 2017 and 2021 (Figure 20). Ceftriaxone-nonsusceptible isolates were reported to CARAlert in 2016 (*n* = 4); then there were six reports in 2018, four reports in 2019, three in 2020, one in 2021.There was a sharp increase in the number of reports in 2022 (*n* = 37) and 2023 (*n* = 23). There were 49 reports made to CARAlert in 2025 from NSW (*n* = 35, up from 23 in 2024), Victoria (*n* = 5), WA (*n* = 4), ACT (*n* = 2), and one each from Queensland, SA, and the NT. Of these reports, 14 were also azithromycin-nonsusceptible (HLR, *n* = 7; LLR, *n* = 7).

Thirteen azithromycin-nonsusceptible *N. gonorrhoeae* (HLR), including those that were also ceftriaxone-nonsusceptible (*n* = 7), were reported in 2025; there were 36 reported in 2024.

Figure 20 Ceftriaxone-nonsusceptible and/or azithromycin-nonsusceptible *Neisseria gonorrhoeae,* number reported to CARAlert by month, national, 2017–2025

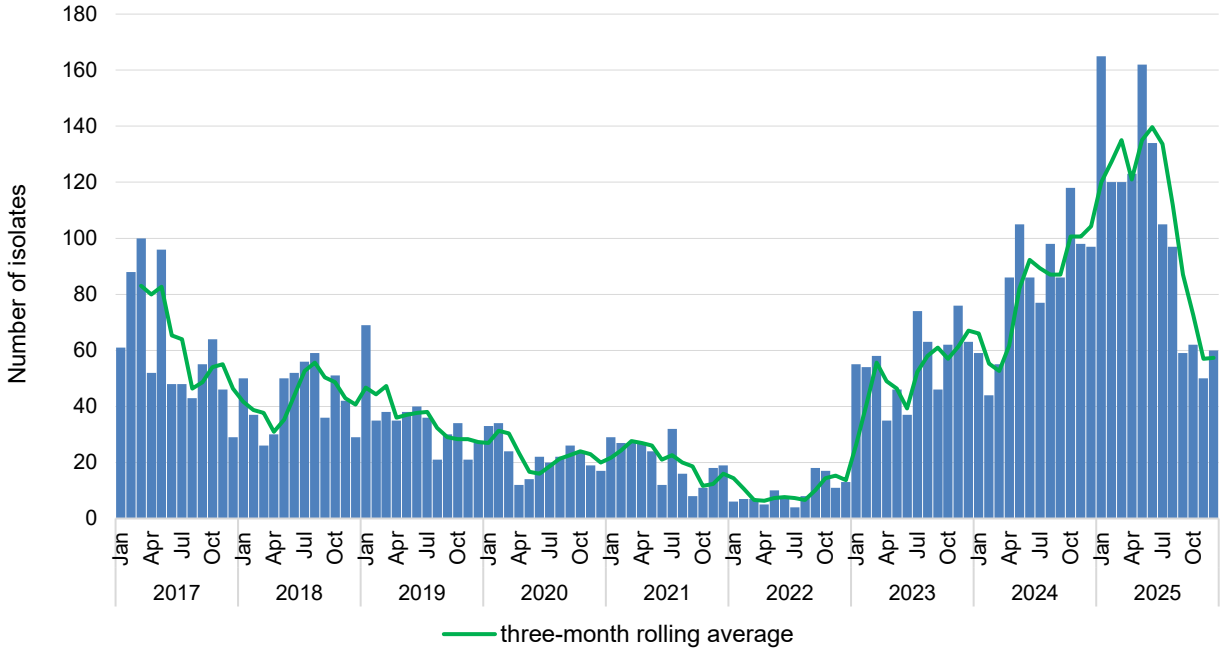


High-level = azithromycin MIC ≥ 256 mg/L; Low-level = azithromycin MIC < 256 mg/L; MIC = minimum inhibitory concentration

There was a 1.2-fold increase in the number of reports of azithromycin-nonsusceptible *N. gonorrhoeae* (LLR) in 2025 (*n* = 1,257) compared to 2024 (*n* = 1,009) (Figure 21). Just over two-thirds of these reports were from Victoria (858/1,257, 68.3%), where the number increased from 415 in 2023 to 793 in 2024 (Figure 22). In WA, there was a 3.2-fold increase in the number of reports (*n* = 148, up from *n* = 46 in 2024), and in Queensland there was a 2.5-fold increase (*n* = 112, up from *n* = 44 in 2024).

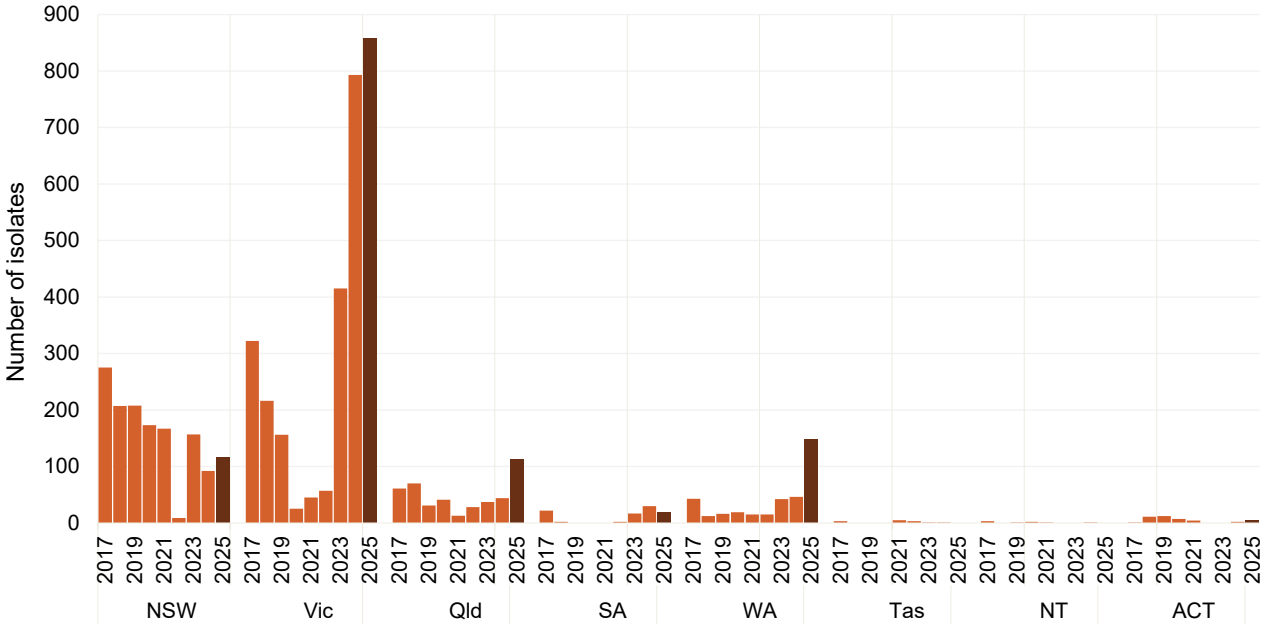
Gentamicin-resistant *N. gonorrhoeae* was added to reporting from 2023. This CAR is yet to be reported to CARAlert.

Figure 21 Azithromycin-nonsusceptible *Neisseria gonorrhoeae* (low-level resistance), number reported to CARAlert by month, national, 2017–2025



Low-level = azithromycin MIC < 256 mg/L; MIC = minimum inhibitory concentration

Figure 22 Azithromycin-nonsusceptible *Neisseria gonorrhoeae* (low-level resistance), number reported to CARAlert by state and territory, 2017–2025



Low-level = azithromycin MIC < 256 mg/L; MIC = minimum inhibitory concentration
Note: Dark bars indicate values for 2025.

Neisseria meningitidis

N. meningitidis causes meningococcal disease, commonly meningitis, which is an infection of the membrane covering of the brain and spinal cord known as the meninges. Ciprofloxacin-nonsusceptible *N. meningitidis* was added to reporting to CARAlert from 2023. There were four reports of this CAR in 2025, all of which were from Victoria.

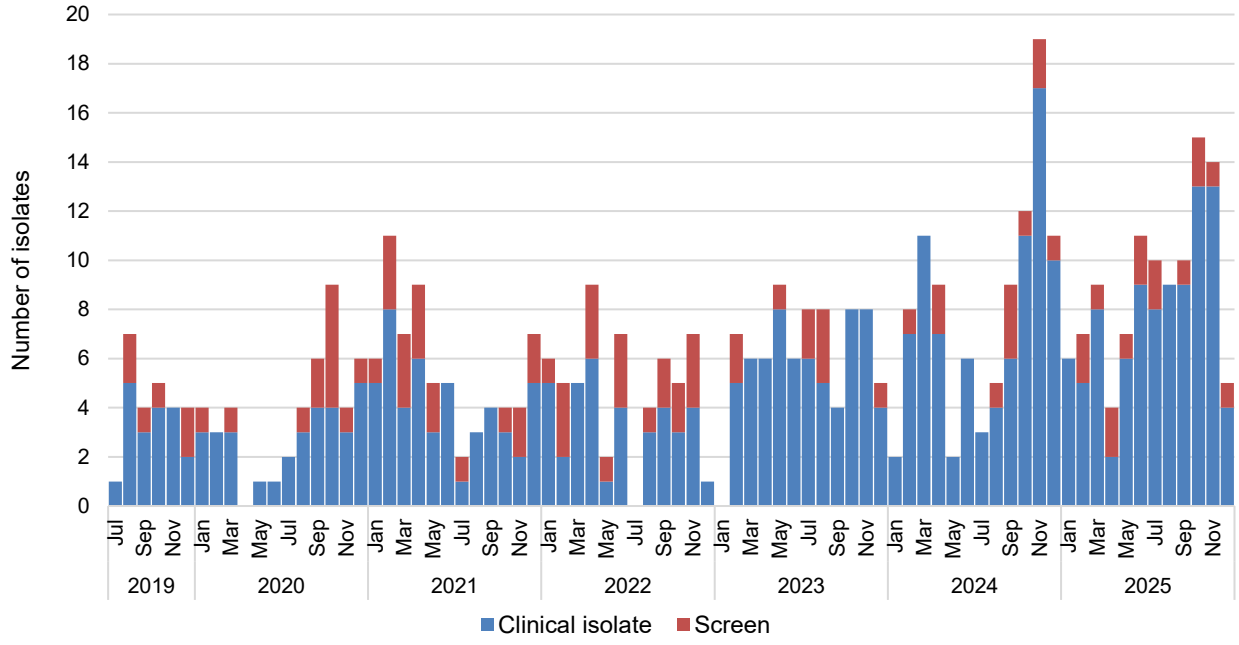
Pseudomonas aeruginosa

P. aeruginosa infections primarily affect hospitalised or immunocompromised patients. Patients with catheters or drains are considered at high risk for carbapenemase acquisition. Reporting for carbapenemase-producing *P. aeruginosa* began in July 2019.

In 2025, 107 carbapenemase-producing *P. aeruginosa* were reported, an increase from 2024 (*n* = 97, up 10.3%) (Figures 23 and 24). Almost all (104/107, 97.2%) isolates produced either NDM (*n* = 34), GES (*n* = 32), VIM (*n* = 23), or IMP (*n* = 15). GES types dominated the reports from NSW (30/61, 49.2%), while NDM types were most common in reports from WA (5/10, 50.0%), and SA (4/7, 57.1%). Two DIM types were reported from Queensland.

Where setting was known (89/107, 83.2%), a vast majority (79/89, 88.8%) of carbapenemase-producing *P. aeruginosa* were reported from hospitals (Table 5).

Figure 23 Carbapenemase-producing *Pseudomonas aeruginosa*, number reported to CARAlert by specimen type, national, 2019–2025



Note: Reported from July 2019.

Figure 24 Carbapenemase-producing *Pseudomonas aeruginosa*, number reported to CARAlert by carbapenemase type and specimen type, by state and territory, 2025

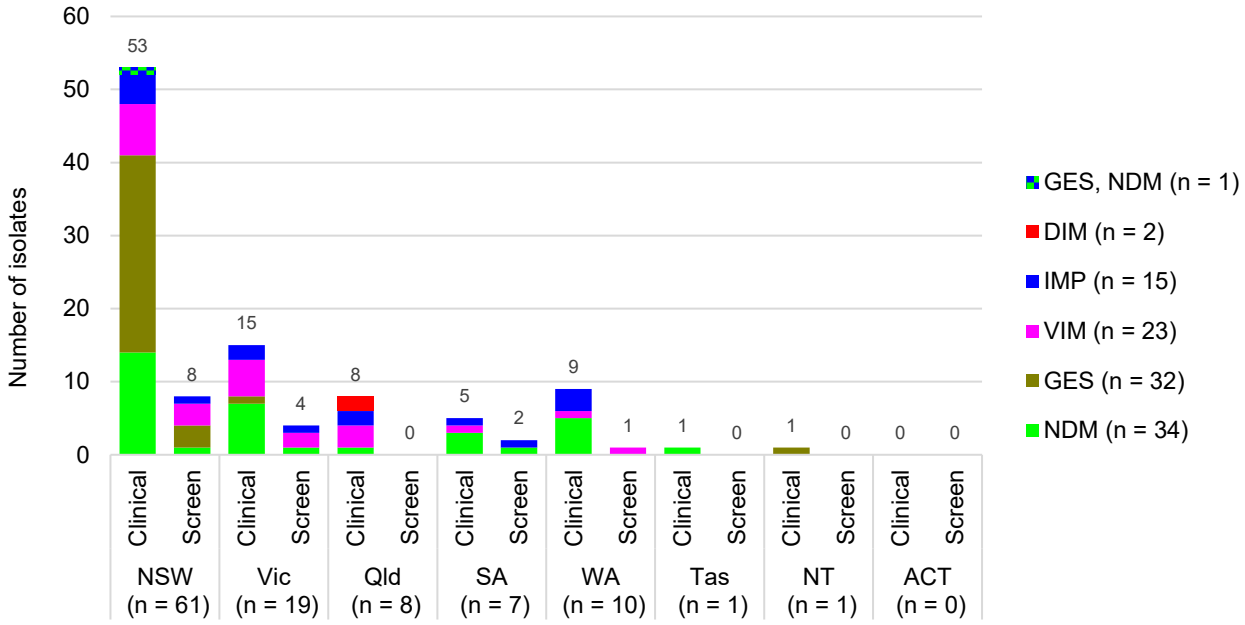


Table 5 Carbapenemase-producing *Pseudomonas aeruginosa*, number reported to CARAlert by setting and state and territory, 2025

Setting	State or territory								Total
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	
Total	**61**	**19**	**8**	**7**	**10**	**1**	**1**	**0**	**107**
Public hospital	42	12	4	6	7	1	1	0	73
Private hospital	2	0	3	0	1	0	0	0	6
Aged care home	0	0	0	0	0	0	0	0	0
Community	0	6	1	1	2	0	0	0	10
Unknown	17	1	0	0	0	0	0	0	18

Salmonella species

Salmonella species are important causes of bacterial gastroenteritis. Most cases are acquired through food-borne transmission. Reports of ceftriaxone-nonsusceptible *Salmonella* species in 2025 (*n* = 151) increased 1.5-fold compared to the number reported in 2024 (*n* = 104) (Figure 25).

A vast majority of the ceftriaxone-nonsusceptible *Salmonella* reports were from non-typhoidal species (140/151, 92.7%). The non-typhoidal species contained an extended-spectrum β-lactamase (ESBL) (128/140, 91.4%), or a plasmid-mediated AmpC (pAmpC) (12/140, 8.6%) (Figure 26).

There were 11 typhoidal species reported in 2025 (from NSW [6], Victoria [4], and WA [1]); the majority harboured an ESBL (*bla*$_{\text{CTX-M-15}}$ [*n* = 7], *bla*$_{\text{CTX-M-104}}$ [*n* = 1], *bla*$_{\text{SHV-12}}$ [*n* = 1]) and two harboured pAmpC (*bla*$_{\text{CMY-2}}$ [*n* = 1], *bla*$_{\text{DHA-1}}$ [*n* = 1]) (Figure 26). Thirteen typhoidal species were reported in both 2022 and 2023, with five or less reports in 2018 to 2021, and in 2024. The proportion of ceftriaxone-nonsusceptible typhoidal species, as reported to CARAlert, to the number of paratyphoidal or typhoid fever notifications[10] was 3.4 (11/327) in 2025; it was 1.4 (5/345) in 2024.

Ceftriaxone-nonsusceptible *Salmonella* were reported from all states and territories except the NT in 2025. The number of reports increased in NSW (*n* = 24 in 2025; *n* = 9 in 2024), Victoria (*n* = 68 in 2025; *n* = 44 in 2024) and WA (*n* = 32 in 2025; *n* = 22 in 2024) (Figure 27).

Reports from hospitals are likely due to admissions associated with severe disease acquired in the community (Table 6).

National data

Figure 25 Ceftriaxone-nonsusceptible *Salmonella* species, number reported to CARAlert by month, national, 2017–2025

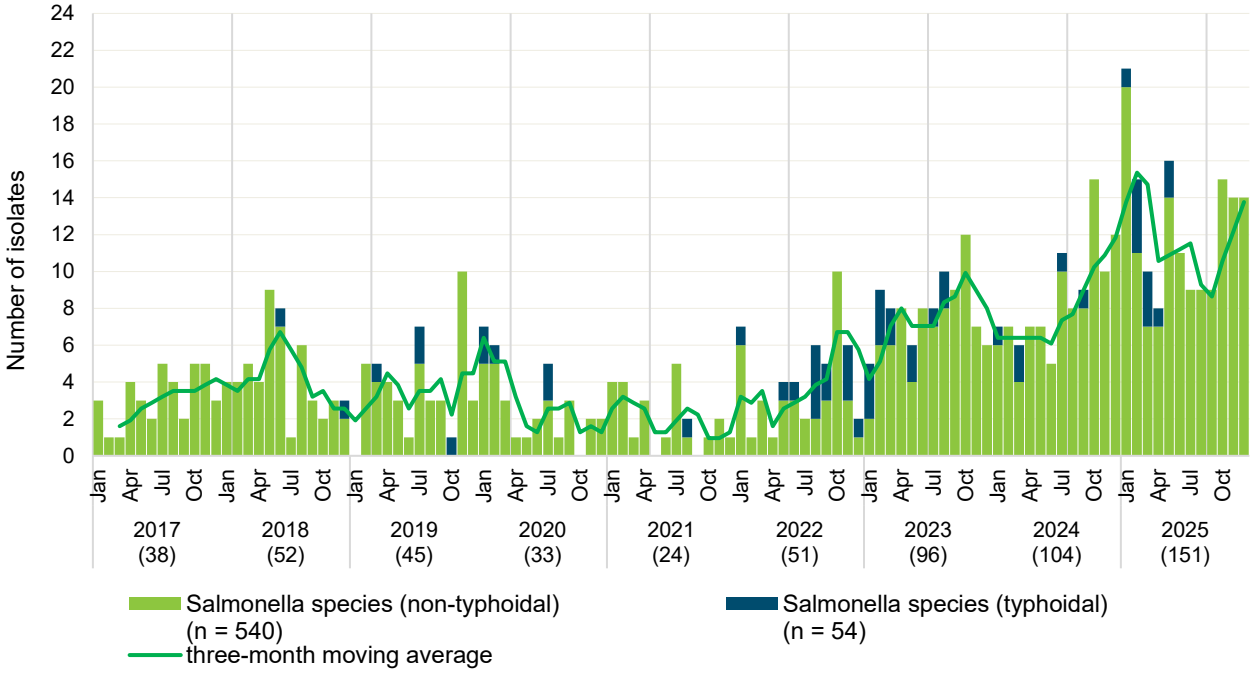
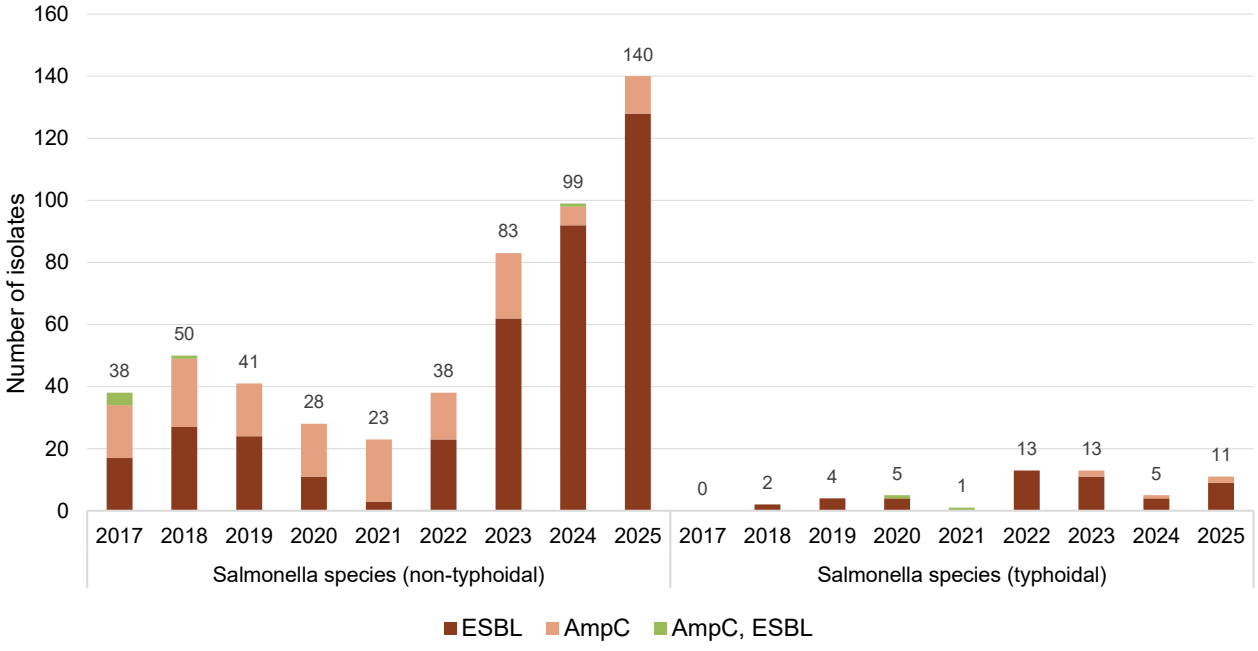


Figure 26 Ceftriaxone-nonsusceptible *Salmonella* species, by resistance phenotype, national, 2017–2025



AmpC = plasmid-mediated AmpC; ESBL = extended-spectrum β-lactamase

State and territory data

Figure 27 Ceftriaxone-nonsusceptible *Salmonella* species, number reported to CARAlert by state and territory, 2017–2025

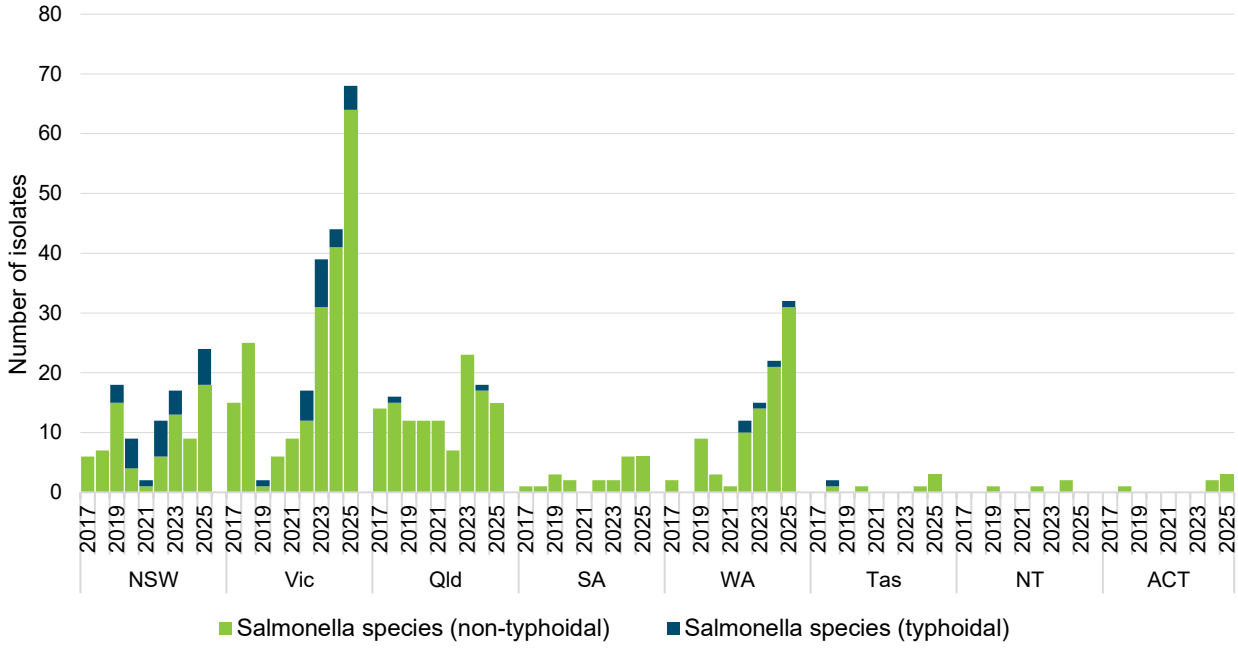


Table 6 Ceftriaxone-nonsusceptible *Salmonella* species, number reported to CARAlert by setting, state and territory, 2025

Setting	State or territory								Total
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	
Total	**24**	**68**	**15**	**6**	**32**	**3**	**0**	**3**	**151**
Public hospital	8	12	5	1	9	0	0	0	35
Private hospital	0	0	2	0	2	0	0	0	4
Aged care home	0	0	0	0	0	0	0	0	0
Community	1	45	7	5	20	3	0	1	82
Unknown	15	11	1	0	1	0	0	2	30

Shigella species

Shigella species infections are commonly food-borne or sexually transmitted. In 2025, there was a decrease in the number of MDR *Shigella* species reports compared to 2024 and from a peak in 2023 (*n* = 312 in 2025; *n* = 369 in 2024; *n* = 469 in 2023); there were 42 reports in 2021 and 99 in 2022 (Figure 28). The reports were predominantly from NSW (159/312, 51.0%), Victoria (63/312, 20.2%) and Queensland (42/312, 13.5%). The number of reports of MDR *Shigella* from SA and the ACT increased over 2-fold in 2025 from 2024; WA decreased 3.1-fold in 2025 (*n* = 20; *n* = 62 in 2024) (Figure 29).

The estimated proportion of shigellosis notifications to the National Notifiable Diseases Surveillance System[10] that were MDR decreased from 12.4% (369/2,967) nationally in 2024 to 10.8% in 2025 (312/2,881: range 4.1% [3/73] in the NT to 32.4% [11/34] in the ACT) (Figure 30). In 2023, the proportion was 16.1% (469/2,915).

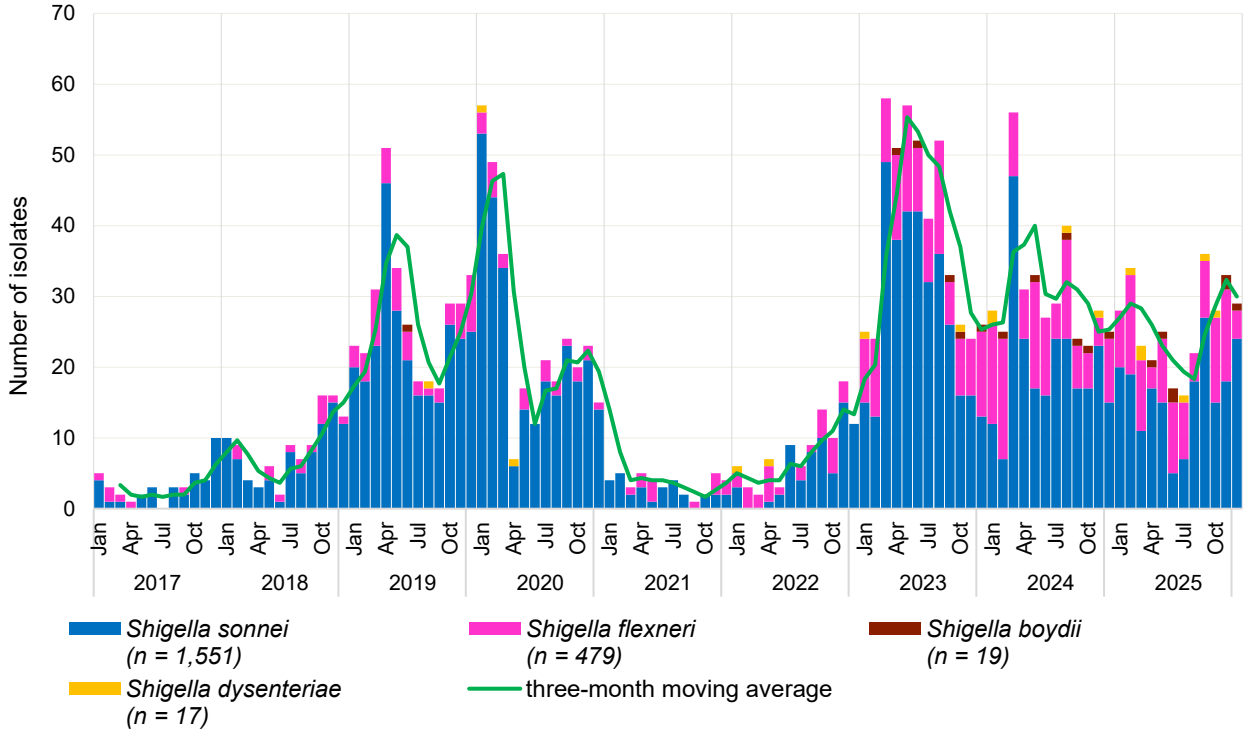
Where setting was known (198/312, 63.5%), a little under two-thirds (124/198, 62.6%) of the MDR *Shigella* species were reported from hospital settings (Table 7).

Reports of MDR *Shigella* species increased rapidly from 2018 due to a prolonged clonal outbreak of *S. sonnei* with *bla*$_{\text{CTX-M-27}}$ associated with men who have sex with men. There were two large outbreaks across two states, with a peak in numbers in April 2019 (74.5% from Victoria) and another in January 2020 (61.4% from NSW). There was a sharp fall in the monthly number of reports of this CAR from April 2020 onwards, continuing throughout 2021 to reach the lowest level since CARAlert began. This fall coincided with the introduction of COVID-19 restrictions throughout Australia. However, as borders re-opened, the number of reports of ESBL-producing *S. sonnei* has increased from 17 in 2021, 62 in 2022 to 321 in 2023. The number of reports decreased in 2024 (*n* = 228) and 2025 (*n* = 187). A vast majority of the ESBL-producing *S. sonnei* that were sequenced in 2025 harboured *bla*$_{\text{CTX-M-15}}$ (100/107, 93.5%); whereas, in 2023, a little over two-thirds of ceftriaxone-nonsusceptible *S. sonnei* harboured *bla*$_{\text{CTX-M-27}}$ (198/282, 70.2%).

A slim majority of MDR *S. flexneri* were ceftriaxone-susceptible (53/103, 51.5% in 2025; 73/115; 63.5% in 2024). In 2025, just under one-half of MDR *S. flexneri* were ESBL (CTX-M) (47/103, 45.6%, up from 34/115, 29.6% in 2024). pAmpC types were detected in low numbers.

National data

Figure 28 Multidrug-resistant *Shigella* species, number reported to CARAlert by month, national, 2017–2025



State and territory data

Figure 29 Multidrug-resistant *Shigella* species, number reported to CARAlert by state and territory, 2017–2025

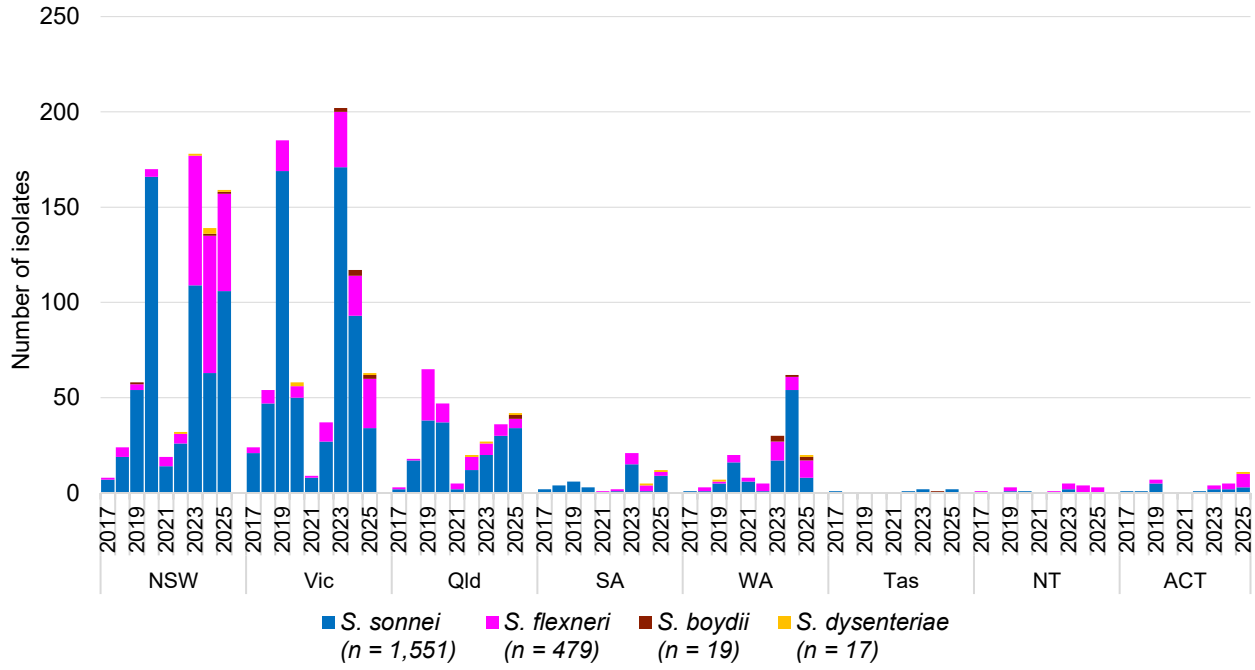
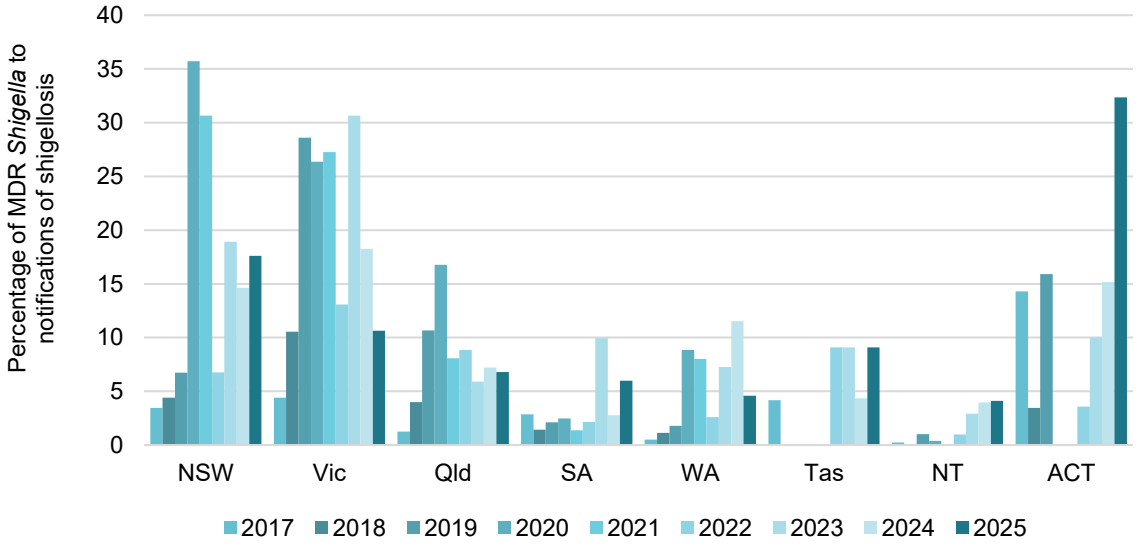


Table 7 Multidrug-resistant *Shigella* species, number reported to CARAlert by setting, state and territory, 2025

Setting	State or territory								Total
	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	
Total	**159**	**63**	**42**	**12**	**20**	**2**	**3**	**11**	**312**
Public hospital	66	19	14	2	11	2	0	5	119
Private hospital	0	2	3	0	0	0	0	0	5
Aged care home	0	0	0	0	0	0	0	0	0
Community	6	23	24	9	7	0	3	2	74
Unknown	87	19	1	1	2	0	0	4	114

Figure 30 Multidrug-resistant *Shigella* species as reported to CARAlert as a percentage of shigellosis notifications, by state and territory, 2017–2025



Note: Notifications of shigellosis may include diagnosis by PCR only.
Source: National Notifiable Diseases Surveillance System[10]

Staphylococcus aureus

S. aureus is a common pathogen causing a wide variety of infections of varying severity.

Sporadic reports of linezolid and/or vancomycin resistance have been reported since 2017 (Table 8). In 2025, two linezolid-nonsusceptible S. *aureus* (one each from NSW and Queensland), and one vancomycin-nonsusceptible *S. aureus* from WA were reported in 2025 (Figure 31).

Reporting of daptomycin-nonsusceptible *S. aureus* to CARAlert was suspended from 1 January 2023 given variation in testing and reporting practices by originating laboratories and difficulty in interpreting phenotypic data (see Appendix 1).

National data

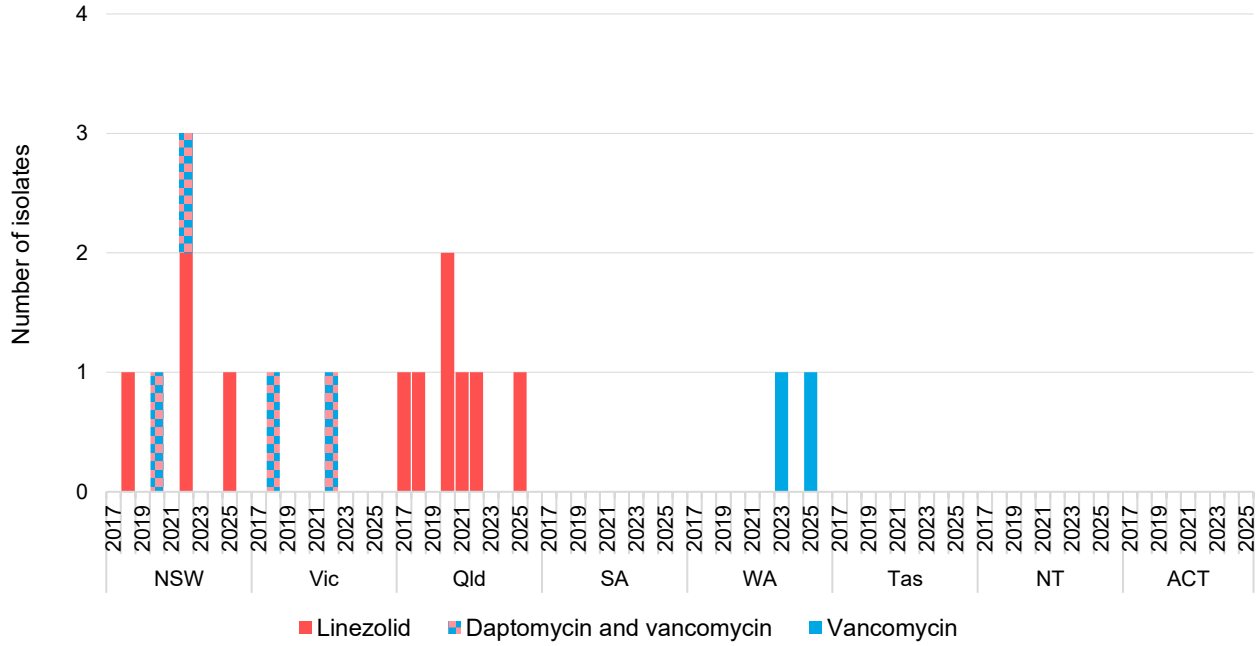
Table 8 Vancomycin- or linezolid-nonsusceptible *Staphylococcus aureus*, number reported to CARAlert by month, national, 2017–2025

Antimicrobial	2017	2018	2019	2020	2021	2022	2023	2024	2025
Linezolid	1	2	0	2	1	3	0	0	2
Vancomycin	0	1*	0	1*	0	2*	1	0	1

* vancomycin and daptomycin non-susceptible
Note: No *S. argenteus* and *S. schweitzeri* were reported to CARAlert from 2017 to 2025.

State and territory data

Figure 31 Vancomycin- or linezolid-nonsusceptible *Staphylococcus aureus,* number reported to CARAlert, national, 2017–2025



Note: Daptomycin-nonsusceptible *S. aureus* was suspended from reporting to CARAlert on 1 January 2023 (see Appendix 1).

Streptococcus pyogenes

Streptococcus pyogenes most commonly causes skin and soft tissue infections, and acute pharyngitis, but may cause serious and life-threatening infections such as scarlet fever, bloodstream infections, bone and joint infections, toxic shock syndrome, necrotising fasciitis and pneumonia.

There have been no reports of *S. pyogenes* with reduced susceptibility to penicillin between 2017 and 2025.

Discussion

Rates of carbapenemase-producing *Enterobacterales* in Australian hospitals

Enterobacterales are the most common cause of urinary tract, biliary tract and other intra-abdominal infections, and bloodstream infections. Patients are most likely to be affected by CPE in hospital settings, particularly those who experience prolonged hospitalisation.

There was a 11.6% increase in the number of carbapenemase- and/or ribosomal methyltransferase-producing *Enterobacterales* reports from 2024 to 2025. This increase was evident in isolates from hospitals and continues the upward trend observed since early 2022, which followed a decline of CPE reports since 2019. Factors that may have contributed to the decline of CPE reported to CARAlert from 2019 to 2021 include improvements in recognition and infection prevention and population movement control efforts over this period, especially the public health measures introduced during the COVID-19 pandemic response. It is possible that the resumption of international travel has contributed to the increase in reports of CPE to CARAlert since 2022. CPE have also become notifiable in some states and territories, which may have contributed to this upward trend.

In 2025, CPE were dominated by NDM types and IMP types alone. NDM-producing *Enterobacterales* were reported across all states and territories and showed an increasing trend over 2022 to 2025. In 2025, over 47% of all CPE reports were NDM types (either alone or co-produced with other types), up from 19.6% in 2016. By contrast, reporting of IMP types remained relatively steady over the period 2018 to 2022 (between 52.8% and 63.9%) but decreased to 39.2% in both 2023 and 2024, and to 36.7% in 2025. The decline in reports of IMP types was notably in Victoria. IMP types remain dominant in reports from NSW and Queensland. Although NDM types are generally thought to be acquired overseas, identification of local transmission and appropriate infection prevention and control actions are important priorities. The range and number of CPE types will continue to evolve because of changing local and global epidemiology. Each carbapenemase type has a slightly different spectrum of activity against different β-lactam antimicrobials.[11] Typing of CPE is important for supporting appropriate antimicrobial prescribing to treat infections caused by CPE.

The differences between states and territories in the proportion of screening isolates may indicate local variations in surveillance, infection prevention and control, and screening practices. Local outbreaks are likely to have required increased infection prevention and control and surveillance resources in affected hospitals over short periods of time. The impact of outbreaks on other aspects of hospital work and patient flows may be substantial in the absence of timely infection prevention and control action. The variation between states and territories in reports of CPE as a proportion of all CARs, and the frequency of reporting of CPE, indicates the need for local decisions about containment priorities.[12]

In 2025, 3.6% of all CPE reports occurred in the 0–4-year age group. The mode of acquisition of these CARs is not known; however, CPE outbreaks can occur in the neonatal intensive care unit setting. The long-term impact of this type of resistance on neonates is unknown. Education of clinicians on the risks of neonatal acquisition of antimicrobial-resistant organisms, and review of the appropriateness of antimicrobial use and infection prevention and control in the neonatal care setting are encouraged.

Patients are likely to be affected by CPE if they are hospitalised for a prolonged period; have been hospitalised or had surgery overseas; have had multiple, or recent exposure to different antimicrobial agents, especially cephalosporins, fluoroquinolones and carbapenems; have diabetes mellitus; are on mechanical ventilation; are admitted to the intensive care unit; or have an indwelling medical device (such as a central venous catheter, urinary catheter or biliary catheter).[4]

The clinical impact of each of the CPE types, and the potential impact of co-infection, are not well understood.[13]

Ongoing reports of CPE, and other carbapenemase-producing organisms to CARAlert, albeit at low levels, highlight the value of active surveillance and the importance of compliance with the *Australian Guidelines for the Prevention and Control of Infection in Healthcare*[1], and use of guidance for specific organisms, such as *Recommendations for the control of carbapenemase-producing* Enterobacterales *(CPE): A guide for acute health service organisations*.[4]

Arrangements for specialist oversight of and access to restricted antimicrobials, such as carbapenems, should continue to be a priority for all Australian hospitals, along with the implementation of systems that meet the antimicrobial stewardship actions of the National Safety and Quality Health Service Standards.[2]

Changes in community-onset critical antimicrobial resistances

N. gonorrhoeae was the most commonly reported CAR from the community setting for all years since CARAlert commenced, except for 2020, where there were more MDR *Shigella* species. The emergence of gonococcal antimicrobial resistance (AMR) in Australia has long been influenced by the introduction of MDR strains from overseas.[14, 15] A number of reports from other countries of ceftriaxone-resistant *N. gonorrhoeae* strains have raised global concerns about the effectiveness of current recommended treatments.[16-18] This also prompted the addition of reporting of gentamicin-resistant *N. gonorrhoeae* to CARAlert from 2023. In Australia, the recommended treatment for *N. gonorrhoeae* is ceftriaxone in conjunction with azithromycin.[19, 20] This regimen was introduced in Australia in 2014 to limit further development of resistance to ceftriaxone.[21]

The low background rate of azithromycin-nonsusceptible *N. gonorrhoeae* (low-level) in Australia is well established.[22] Reports of azithromycin-nonsusceptible *N. gonorrhoeae* (low-level) increased in 2025 in all states except SA. Reports of this CAR declined from 2017 to 2022, and increased nearly 9-fold to a peak in May 2025, before rapidly declining again. In 2025, there were increasing number of reports of this CAR from Queensland and WA. The clinical implications of this low-level resistance are not clear.

Ceftriaxone-nonsusceptible *N. gonorrhoeae* increased, and azithromycin-nonsusceptible *N. gonorrhoeae* (high-level) decreased in 2025, with the majority of the reports from NSW, a trend that started in 2022. In 2025, 1 in 7 of the ceftriaxone-nonsusceptible *N. gonorrhoeae* were also azithromycin-nonsusceptible (high-level) and classified as extensively drug resistant. These changes indicate that ongoing monitoring of resistance in gonococcal disease is required because of the importance of emerging changes in susceptibility for treatment guidelines.

Reports of MDR *Shigella* species declined in both 2024 and 2025, after peaking in 2023. The estimated proportion of shigellosis notifications that were MDR decreased in 2025 compared to 2024. The decrease was noted in all states and territories where there were five or more reports, except in NSW, SA, and ACT, where the proportion increased.

Reports of MDR *Shigella* require ongoing close review by states and territories. Public health messaging should continue to highlight the risk of sexual transmission of *Shigella* species, particularly in men who have sex with men, and provide guidance on ways to reduce the risk of transmission.

Also of recent concern is the emergence of ESBL-producing non-typhoidal *Salmonella* species, lower numbers of these were seen from 2017, but appear to have increased substantially in 2023 to 2025. How this relates to the epidemiology and sources of *Salmonella* infections overall across Australia remains to be explored.

Critical antimicrobial resistances in aged care homes

In 2025, six CARs were reported from aged care homes; all of which were CPE from patients with urinary tract infections. This marks a decline from 24 reports in 2022, following the suspension of reporting daptomycin-nonsusceptible *S. aureus* to CARAlert. While the number of reports is very low, aged care home residents have increased vulnerability to infections, and are at risk of acquiring or transmitting infections due to the frequent movement of aged care home residents between acute settings.

In aged care homes, suspected infections of the skin and soft tissue and urinary tract are the most common reason for antimicrobial prescriptions[23], and are commonly caused by *S. aureus* and *Enterobacterales*, respectively. These organisms may be spread by contact with contaminated surfaces or medical equipment and hands of healthcare workers, visitors and residents. Environmental cleaning and hand hygiene are important prevention and control strategies. In group living situations, infections may also be inadvertently spread from person to person, for example by sharing personal items such as bed linen, towels or clothing.

Specific measures are required in all care settings for CPE. To support the capacity to prevent and control transmission of CPE, aged care homes should comply with the infection prevention and control requirements of the strengthened Aged Care Quality Standards[7], which include compliance with national guidelines.[1] In August 2024, the Commission published *The Aged Care Infection Prevention and Control Guide*[6] to support implementation of the strengthened standards and to supplement national guidelines[1] for the aged care workforce and those providing care for older people.

Health service demand and complexity of care

CARs increase hospital length of stay, deaths, and health service resource needs. Estimates of the impacts of AMR vary by organism and are not available for the majority of CARs. Recent estimates of the impact of CPE include an additional 29 inpatient days, compared to non-CPE cases, after the isolation of the organism.[24] Patients with MDR infections were also less likely to receive appropriate antimicrobial therapy initially.[24] For vancomycin-resistant enterococci, when they first emerged, estimated increases per case were 61.9% for hospital costs and an additional 13.8 days length of stay.[25]

Increases in CARs also require ongoing close review by states and territories as there are limited oral antimicrobial options, and intravenous antimicrobials may be required to treat some MDR infections. There may also be resource implications for the health system because of increased testing, hospital admissions and transmission in the community.

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Appendices

Appendix 1: About CARAlert

The National Alert System for Critical Antimicrobial Resistances (CARAlert) was established by the Australian Commission on Safety and Quality in Health Care (the Commission) in March 2016 as a component of the Antimicrobial Use and Resistance in Australia (AURA) surveillance program.

Funding for CARAlert and the Commission's AURA Project is provided by the Australian Centre for Disease Control (CDC) and previously the Australian Government Department of Health, Disability and Ageing (the Department), with contributions from the states and territories by meeting the costs of confirmatory testing and data submission processes.

CARAlert is based on routine processes used by pathology laboratories for identifying and confirming potential critical antimicrobial resistances (CARs), in which participating confirming laboratories submit data to CARAlert on priority organisms with critical resistance to last-line antimicrobials. Isolates collected from patients are reported to CARAlert as either a clinical isolate, that is a specimen (e.g., from blood, urine, wound) taken to guide clinical diagnosis, or as a screen for infection prevention and control purposes. No patient-level data are held in the CARAlert system.

In 2025, 28 confirming laboratories participated in CARAlert (Appendix 3) and there have been over 19,800 reports to CARAlert since reporting began.

CARAlert data on confirmed cases of CARs can be used to identify seasonal, geographic and national trends. The potential for CARAlert to act as an early warning system for CAR outbreaks to enable timely infection prevention and control responses is dependent on timely reporting of CARs by confirming laboratories.

The CARs reported under CARAlert are listed in Table A1. These CARs were drawn from the list of high-priority organisms and antimicrobials that are the focus of the AURA surveillance program.

The CARAlert system generates a weekly summary email to report information on confirmed CARs to state and territory health authorities, the CDC and confirming laboratories.

The CARAlert Data Explorer, a publicly-accessible and interactive data dashboard, was first published in June 2025. The Data Explorer offers customised analytics and trends for CARs and is complementary to CARAlert data updates and annual reports.

CARAlert data can support timely responses to CARs by hospitals, and state and territory health departments. Some states have made selected CARs, such as carbapenemase-producing *Enterobacterales* and *Candidozyma* (*Candida*) *auris*, notifiable either using their public health legislation or by policy. Some states and territories have standalone systems for monitoring selected CARs, which complement CARAlert, but these are not widespread. Over time, CARAlert data has the potential to inform a broad range of safety and quality improvement programs.

Table A1 List of critical antimicrobial resistances reported to CARAlert, 2025

Species	Critical Resistance
Acinetobacter baumannii complex*	Carbapenemase-producing†
Candidozyma (*Candida*) *auris*†	–
Enterobacterales	Carbapenemase-producing and/or ribosomal methyltransferase-producing
	Transmissible colistin resistance†
Enterococcus species	Linezolid-resistant
Mycobacterium tuberculosis	Multidrug-resistant – resistant to at least rifampicin and isoniazid
Neisseria gonorrhoeae	Ceftriaxone-nonsusceptible and/or azithromycin-nonsusceptible
	Gentamicin-resistant§
Neisseria meningitidis	Ciprofloxacin-nonsusceptible§
Pseudomonas aeruginosa	Carbapenemase-producing†
Salmonella species	Ceftriaxone-nonsusceptible
Shigella species	Multidrug-resistant
Staphylococcus aureus#	Vancomycin- or linezolid-nonsusceptible**
Streptococcus pyogenes	Penicillin reduced susceptibility

* For CARAlert, *A. baumannii* complex includes *A. baumannii*, *A. calcoaceticus*, *A. dijkshoorniae*, *A. nosocomialis*, *A. pittii* and *A. seifertii*
† Reported to CARAlert from July 2019
§ Reported to CARAlert from January 2023
# For CARAlert, *S. aureus* includes *S. argenteus* and *S. schweitzeri*
** Reporting of daptomycin-nonsusceptible *S. aureus* was suspended from January 2023
Note: Low level-azithromycin-nonsusceptible *N. gonorrhoeae* was excluded from the weekly summary following review in 2018.

The Commission reviewed the CARs reported to CARAlert in 2018 and 2022, in conjunction with the states and territories and a range of clinical experts. Respective changes implemented were:

- Four new CARs were reported to CARAlert from July 2019: Carbapenemase-producing *Acinetobacter baumannii* complex, *C. auris*, transmissible resistance to colistin in *Enterobacterales* and carbapenemase-producing *Pseudomonas aeruginosa*.
- Two new CARs were reported to CARAlert from January 2023: Gentamicin-resistant *Neisseria gonorrhoeae* and ciprofloxacin-nonsusceptible *N. meningitidis*.
- One CAR was suspended from reporting to CARAlert from January 2023: Daptomycin-nonsusceptible *Staphylococcus aureus.* Reporting of this CAR will be reconsidered when more reliable testing methods are available.

Complementary to the Commission's review of CARs, the Department conducted an evaluation of CARAlert in 2022–2023.

Since 2023–24, a key deliverable for the AURA Project has been the development of a transition plan to transfer operation of CARAlert to the CDC.

Information on CARAlert processes and considerations for interpreting CARAlert data is in Appendix 2.

Appendix 2: Methodology

CARAlert reporting processes

All of the following criteria must be met for organisms and resistances to be categorised as a critical antimicrobial resistance (CAR) for reporting to the National Alert System for Critical Antimicrobial Resistances (CARAlert):

- Inclusion as a priority organism for national reporting as part of the Antimicrobial Use and Resistance in Australia (AURA) surveillance program[26]
- A serious threat to last-line antimicrobial agents
- Strongly associated with resistance to other antimicrobial classes
- At low prevalence in, or currently absent from, Australia and potentially containable
- Data not otherwise collected nationally in a timely way.

Candida auris was added as a CAR for reporting to CARAlert in 2019 despite not being an AURA surveillance program spriority organism.[26] This change was in response to feedback from respondents to the 2018 review of CARs, and international concerns for its multi-drug resistance and association with invasive infection outbreaks in healthcare facilities in 2017.

CARAlert is based on the following routine processes used by pathology laboratories for identifying and confirming potential CARs:

- Collection and routine testing – the isolate is collected from the patient and sent to the originating laboratory for routine testing
- Confirmation – if the originating laboratory suspects that the isolate is a CAR, it sends the isolate to a confirming laboratory that has the capacity to confirm the CAR
- Reporting to clinicians in accordance with usual laboratory processes – the confirming laboratory reports back to the originating laboratory, which in turn reports to the clinician who initially requested the microbiological testing
- Submission to CARAlert – the confirming laboratory advises the originating laboratory of the result of the test, and the originating laboratory reports back to the health service that cared for the patient from whom the specimen was collected; the confirming laboratory then submits the details of the resistance and organism to the secure CARAlert web portal.

The results of confirmatory testing are provided to the originating laboratory as soon as possible after confirmation. Generally, confirming laboratories submit a CAR report within seven days of the isolate being confirmed as a CAR.

Information collected in CARAlert includes: the originating and confirmatory laboratory, specimen identifier, specimen collection date, CAR, CAR type or subtype if applicable, organism name, specimen type, facility type, patient age range, patient sex, and state or territory of patient residence and state or territory of record.

No patient-level data are held in the CARAlert system. Authorised officers in each state and territory health department have direct access to the CARAlert web portal directly for further information about their jurisdiction, including the name of the public hospital where a patient with a confirmed CAR was cared for, and to extract reports on their data.

Australian public and private laboratories that have the capacity to confirm CARs were identified through consultation with state and territory health authorities, the Public Health Laboratory Network and the Australian Group on Antimicrobial Resistance. In 2025, 28 confirming laboratories participated in CARAlert (Appendix 3), and there was at least one confirming laboratory in each state and territory. The CARs that each of the confirming laboratories are able to confirm are regularly reviewed.

All data analyses for this report were performed using Microsoft Excel 365.

Data considerations

The following are important considerations for interpreting CARAlert data:

- Participation in CARAlert is voluntary
- The data are based on the date that the isolate with the confirmed CAR was collected
- State or territory refers to the jurisdiction within which the hospital is located, or within which the patient resides for isolates from the community. If place of residence is unknown or overseas, the state or territory of the originating laboratory is reported.
- The same CAR/type/species is not submitted where the sample originated from the same patient who had the same previous CAR, and the isolate was collected on the same day, or collected in the same admission or within three months
- Number of CARs reported does not always equal the number of patients, as patients may have more than one CAR, or species, detected in a specimen
- Cut-off date for data that are included in the CARAlert Data Explorer, data updates and reports is four weeks after the end of each reporting period; Data were extracted on 13 February 2026 for this report
- Data may vary from that previously published as the reported number of CARs may have been updated to include additional submissions received or removed after the previous publication date; Comparison between reports may be influenced by delays in confirming laboratories reporting CARs to CARAlert due to late submission, which also means that the data analysed for this report may not be complete for the 2025 calendar year at the time of publication
- National summary data are provided; comparison across states and territories is provided for organisms where large numbers are reported and a comparison is meaningful
- Local operating procedures for laboratories may not currently include testing for all the critical resistances included in CARAlert; however, all laboratories are encouraged to actively screen for CARs
- Authorised officers in each state and territory health department have direct access to the CARAlert web portal for further information about their jurisdiction, including the name of the public hospital in which a patient with a confirmed CAR was cared for, and to extract reports on their data.

Appendix 3: CARAlert confirming laboratories, 2025

The Commission thanks all originating and confirming laboratories for their support for the National Alert System for Critical Antimicrobial Resistances (CARAlert) and the Antimicrobial Use and Resistance in Australia (AURA) surveillance program. The following confirming laboratories participated in CARAlert in 2025:

State or Territory	Institution
New South Wales	NSW Health Pathology, Children's Hospital Westmead, Westmead
	NSW Health Pathology, Concord Hospital, Concord
	NSW Health Pathology, Gosford Hospital, Gosford
	NSW Health Pathology, John Hunter Hospital, New Lambton Heights
	NSW Health Pathology, Liverpool Hospital, Liverpool
	NSW Health Pathology, Royal North Shore Hospital, St Leonards
	NSW Health Pathology, Royal Prince Alfred Hospital, Camperdown
	NSW Health Pathology, St George Hospital, Kogarah
	NSW Health Pathology, The Prince of Wales Hospital, Randwick
	NSW Health Pathology, Westmead Hospital, Westmead
	St Vincent's Pathology (SydPath), Darlinghurst
Victoria	Alfred Pathology Service, Melbourne
	Dorevitch Pathology, Heidelberg
	Melbourne Pathology, Collingwood
	Microbiological Diagnostic Unit Public Health Laboratory, Melbourne
	Monash Pathology, Clayton
	Victorian Infectious Diseases Reference Laboratory (VIDRL), Melbourne
Queensland	Mater Pathology, South Brisbane
	Pathology Queensland, Central laboratory, Royal Brisbane and Women's Hospital, Herston
	Pathology Queensland, Forensic & Scientific Services, Coopers Plains
	QML Pathology, Murarrie
	Sullivan Nicolaides Pathology, Bowen Hills
South Australia	SA Pathology, Royal Adelaide Hospital, Adelaide
Western Australia	PathWest Laboratory Medicine WA, Fiona Stanley Hospital, Murdoch
	PathWest Laboratory Medicine WA, QEII Medical Centre, Nedlands
Tasmania	Royal Hobart Hospital, Hobart
Northern Territory	Territory Pathology, Tiwi
Australian Capital Territory	ACT Pathology, Garran

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