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Introduction

This report provides supplementary data relevant to Chapter 4 (Antimicrobial resistance) of the *Fifth Australian report on antimicrobial use and resistance in human health* (AURA 2023), which is available in full on the website of the Australian Commission on Safety and Quality in Health Care.

Information on sources of data about antimicrobial use and antimicrobial resistance is included in Chapter 2 of AURA 2023.

AURA 2023 Chapter 4: Antimicrobial resistance

Table S4.1 shows some changes in the prevalence of resistance in some organisms from 2017 to 2021. Increases were noted in multidrug-resistant *Shigella sonnei*, clindamycin-resistant *Streptococcus agalactiae*, and *S. pyogenes*. Reports of *Neisseria gonorrhoeae* with resistance to azithromycin decreased.

Table S4.1: Summary of antimicrobial resistance for high-priority organisms

Organism	Main types of infection	Most common setting	Important antimicrobials for treatment	2017, % resistant	2018, % resistant	2019, % resistant	2020, % resistant	2021, % resistant
<i>Acinetobacter baumannii</i> complex	Ventilator-associated pneumonia, severe burn infections	Intensive care units, burn units	Ciprofloxacin/norfloxacin	3.9	4.8	5.8	5.3	2.8
			Gentamicin	3.3	4.0	3.9	2.3	1.8
			Meropenem	2.9	3.2	3.7	2.1	1.5
			Trimethoprim-sulfamethoxazole	6.9	8.8	7.3	8.1	5.5
<i>Enterobacter cloacae</i> complex	Urinary tract infections, biliary tract infections, other intra-abdominal infections, bacteraemia	Hospitals	Cefepime	6.2	6.4	2.5	3.3	4.6
			Ceftriaxone/cefotaxime	27.7-31.9	28.7-31.9	28.5-29.1	29.1-31.7	27.6-31.0
			Ciprofloxacin/norfloxacin	3.0-8.1	3.5-8.2	3.7-8.8	3.6-8.6	3.5-8.5
			Gentamicin	3.9-7.2	4.5-7.4	3.6-7.9	3.8-7.0	3.5-5.1
			Meropenem	0.8-1.4	1.0-1.7	1.1-2.5	1.1-2.1	1.0-1.3
			Piperacillin-tazobactam	28.8-34.1	29.3-30.9	29.1-30.1	26.3-31.7	28.3-29.6
			Trimethoprim (urine)	19.3	19.2	18.5	17.2	17.3
			Trimethoprim-sulfamethoxazole (non-urine)	7.9-16.3	9.6-15.4	9.0-15.5	9.1-16.3	7.8-13.7

continues

Table S4.1: continued

Organism	Main types of infection	Most common setting	Important antimicrobials for treatment	2017, % resistant	2018, % resistant	2019, % resistant	2020, % resistant	2021, % resistant
<i>Enterococcus faecalis</i>	Urinary tract infections, biliary tract infections, other intra-abdominal infections, bacteraemia, endocarditis	Community, hospitals	Ampicillin/amoxicillin	0.4–0.6	0.2–0.7	0.0–0.3	0.0–0.3	0.1–0.2
			Ciprofloxacin/norfloxacin (urine)	15.0	12.4	9.5	8.3	7.3
			Linezolid	0.4–0.7	0.4–0.9	0.1–0.5	0.2–0.8	0.1–0.6
			Nitrofurantoin (urine)	0.3	0.6	0.6	0.4	0.5
			Teicoplanin	0.0–0.3	0.0–0.1	0.0–0.4	<0.0–0.3	0.0–0.3
			Vancomycin	0.3–0.4	0.1–0.3	<0.1–0.2	0.1–0.3	<0.1–0.3
<i>Enterococcus faecium</i>	Urinary tract infections, biliary tract infections, other intra-abdominal infections, bacteraemia	Hospitals	Ampicillin/amoxicillin	87.7–96.6	85.5–96.5	87.1–96.7	87.7–96.2	86.1–97.2
			Linezolid	0.3–1.0	0.2–0.3	0.3–0.3	0.0–0.5	0.3–0.5
			Teicoplanin	11.0–19.1	6.7–21.5	1.1–19.3	5.0–12.2	9.0–14.7
			Vancomycin	36.8–45.4	33.8–40.9	31.9–38.3	27.1–34.8	30.1–36.3

continues

Table S4.1: continued

Organism	Main types of infection	Most common setting	Important antimicrobials for treatment	2017, % resistant	2018, % resistant	2019, % resistant	2020, % resistant	2021, % resistant
<i>Escherichia coli</i>	Urinary tract infections, biliary tract infections, other intra-abdominal infections, bacteraemia	Community, hospitals	Amoxicillin-clavulanic acid	14.5-21.5	11.6-21.7	11.7-22.9	11.3-24.1	12.1-22.3
			Ampicillin/amoxicillin	45.7-52.8	45.4-53.9	45.4-54.2	43.8-52.8	41.6-50.4
			Cefalexin (urine)	7.5	8.3	8.7	8.4	7.8
			Cefazolin	22.4-27.9	24.9-26.4	26.7-27.6	22.4-28.7	20.6-22.7
			Ceftriaxone/cefotaxime	5.9-12.1	6.5-12.6	6.8-14.7	6.7-17.0	6.1-15.1
			Ciprofloxacin/norfloxacin	10.6-12.5	11.5-13.0	12.2-14.9	12.2-16.1	11.4-15.0
			Gentamicin	5.4-8.1	5.7-8.4	6.3-9.1	6.1-8.3	5.7-7.7
			Meropenem	0.01-0.03	0.03-0.13	0.00-0.15	0.02-0.14	0.01-0.12
			Nitrofurantoin (urine)	1.1	1.1	1.1	1.0	0.9
			Piperacillin-tazobactam	5.8-8.8	5.7-8.0	5.6-8.4	4.7-8.8	4.2-7.5
			Trimethoprim (urine)	24.5	24.3	24.5	24.0	22.5
			Trimethoprim-sulfamethoxazole (non-urine)	22.8-29.3	22.9-28.3	23.6-28.7	23.2-27.7	21.7-26.6
			Multidrug-resistant (blood)*	11.1	12.3	12.6	12.2	9.9

continues

Table S4.1: continued

Organism	Main types of infection	Most common setting	Important antimicrobials for treatment	2017, % resistant	2018, % resistant	2019, % resistant	2020, % resistant	2021, % resistant
<i>Klebsiella pneumoniae</i> complex	Urinary tract infections, biliary tract infections, other intra-abdominal infections, bacteraemia	Community	Amoxicillin-clavulanic acid	6.4-8.9	4.8-8.1	4.8-8.6	4.2-10.2	4.8-9.5
			Cefazolin	8.6-11.4	8.6-11.4	8.6-11.4	8.6-11.4	8.6-11.4
			Ceftriaxone/cefotaxime	4.0-7.5	3.9-7.4	4.1-7.5	3.4-7.8	3.5-7.6
			Ciprofloxacin/norfloxacin	6.2-7.2	6.5-7.7	6.7-7.3	6.2-7.7	6.9-7.4
			Gentamicin	2.8-4.1	2.6-3.5	2.5-3.6	2.4-3.9	2.4-3.3
			Piperacillin-tazobactam	8.7-10.0	8.6-8.6	7.8-8.8	6.5-9.5	6.0-8.4
			Meropenem	0.2-0.4	0.1-0.8	<0.1-0.8	0.1-0.4	<0.1-0.5
			Trimethoprim (urine)	13.1	12.8	12.5	12.1	12.6
			Trimethoprim-sulfamethoxazole (non-urine)	9.5-12.2	9.2-14.0	9.5-12.5	10.7-12.9	9.4-12.5
			Multidrug-resistant (blood)*	4.6	6.2	5.6	4.4	2.6
<i>Mycobacterium tuberculosis</i>	Pulmonary tuberculosis, extrapulmonary tuberculosis	Community	Isoniazid (mono-resistant)	5.2	5.7	5.3	4.3	5.2
			Rifampicin (mono-resistant)	0.2	0.3	0.3	0.4	0.2
			Multidrug-resistant†	2.0	1.8	1.8	1.4	1.9
<i>Neisseria gonorrhoeae</i>	Gonorrhoea	Community	Azithromycin	9.3	6.2	4.6	3.9	4.7
			Benzylpenicillin	26.1	21.1	22.1	26.6	38.1
			Ceftriaxone (decreased susceptibility)	1.1	1.7	1.3	0.9	0.9
			Ciprofloxacin	27.5	25.6	28.4	36.3	52.9

continues

Table S4.1: continued

Organism	Main types of infection	Most common setting	Important antimicrobials for treatment	2017, % resistant	2018, % resistant	2019, % resistant	2020, % resistant	2021, % resistant
<i>Neisseria meningitidis</i>	Bacteraemia, meningitis	Community	Benzylpenicillin (decreased susceptibility)	44.9	35.4	21.0	13.1	13.0
			Ceftriaxone	0.0	0.0	0.0	0.0	0.0
			Ciprofloxacin	0.7	0.5	0.0	0.0	2.2
			Rifampicin	0.4	0.0	0.6	0.0	0.0
<i>Pseudomonas aeruginosa</i>	Urinary tract infections, bacteraemia, burn infections, cystic fibrosis exacerbations	Community, hospitals	Ceftazidime	5.5	5.6	5.4	5.1	4.5
			Ciprofloxacin	7.0	7.7	7.6	7.3	6.7
			Gentamicin	5.8	5.7	5.1	4.7	3.7
			Meropenem	4.1	4.0	3.9	3.0	2.8
			Piperacillin-tazobactam	6.8	7.1	6.8	7.1	6.5
<i>Salmonella</i> species (non-typhoidal)	Gastroenteritis, bacteraemia	Community	Ampicillin/amoxicillin	6.5-8.2	4.6-8.6	5.5-6.6	2.9-7.0	0.6-6.3
			Ceftriaxone/cefotaxime	0.8-2.0	0.0-1.6	0.7-1.7	0.6-1.3	0.3-2.2
			Ciprofloxacin	0.9-2.7	2.0-5.9	2.0-4.8	0.6-1.3	0.3-2.2
			Trimethoprim-sulfamethoxazole	2.1-3.6	1.3-3.3	0.9-1.9	0.7-2.3	0.0-2.8
<i>Salmonella Typhi/Paratyphi</i>	Typhoid fever (bacteraemia)	Community	Ampicillin/amoxicillin	10.7	7.6	7.7	15.9	0.0
			Ceftriaxone/cefotaxime	0.0	1.7	3.2	7.4	0.0
			Ciprofloxacin	46.8	71.0	79.7	74.3	25.0
			Trimethoprim-sulfamethoxazole	10.1	7.6	6.7	10.9	0.0

continues

Table S4.1: continued

Organism	Main types of infection	Most common setting	Important antimicrobials for treatment	2017, % resistant	2018, % resistant	2019, % resistant	2020, % resistant	2021, % resistant
<i>Shigella flexneri</i>	Bacillary dysentery	Community	Ampicillin/amoxicillin	93.3	97.5	94.1	96.2	96.0
			Ceftriaxone/cefotaxime	4.1	0.6	5.3	1.3	2.3
			Ciprofloxacin	13.2	1.9	7.2	1.4	4.5
			Trimethoprim-sulfamethoxazole	22.6	17.6	26.9	20.2	24.0
<i>Shigella sonnei</i>	Bacillary dysentery	Community	Ampicillin/amoxicillin	29.0	31.1	62.2	56.0	32.9
			Ceftriaxone/cefotaxime	0.4	3.2	13.0	23.8	5.7
			Ciprofloxacin	10.5	23.6	52.9	36.8	10.0
			Trimethoprim-sulfamethoxazole	77.5	87.2	87.7	61.8	34.3
<i>Staphylococcus aureus</i>	Skin, wound and soft tissue infections; bone and joint infections; device-related infections; pneumonia; bacteraemia; endocarditis	Community, hospitals	Benzylpenicillin	83.4-87.4	82.6-87.3	83.1-86.7	82.7-86.5	81.8-85.2
			Clindamycin	13.5-14.3	13.6-14.8	14.8-14.9	14.2-14.7	13.0-14.7
			Erythromycin (and other macrolides)	15.8-16.0	15.3-15.9	16.3-16.7	15.0-15.9	15.2-16.1
			Oxacillin (methicillin)	17.3-20.1	16.5-19.3	17.5-19.6	16.1-19.4	15.3-18.2
			Tetracycline (and doxycycline)	3.6-4.3	3.9-4.3	3.7-4.9	3.5-4.2	3.4-4.1
			Trimethoprim-sulfamethoxazole	3.1-3.3	2.2-2.5	2.3-2.8	2.5-2.9	2.1-2.9

continues

Table S4.1: continued

Organism	Main types of infection	Most common setting	Important antimicrobials for treatment	2017, % resistant	2018, % resistant	2019, % resistant	2020, % resistant	2021, % resistant
<i>Staphylococcus aureus</i> (methicillin-resistant)	Skin, wound and soft tissue infections; bone and joint infections; device-related infections; pneumonia; bacteraemia; endocarditis	Community, hospitals	Ciprofloxacin	18.3-38.3	17.8-33.0	17.6-32.7	15.3-29.0	13.6-24.6
			Clindamycin	18.8-31.2	19.3-29.2	19.4-28.6	19.3-29.0	18.8-23.4
			Daptomycin	0.0-0.4	0.2-0.4	0.0-0.3	0.4-0.7	0.5-0.7
			Erythromycin (and other macrolides)	22.8-36.3	21.8-32.3	22.0-32.1	20.8-29.4	20.0-26.9
			Fusidic acid	2.7-3.1	3.2-3.3	3.0-3.9	2.8-3.9	2.8-4.4
			Gentamicin	6.1-14.6	6.7-10.8	7.0-14.4	6.2-11.8	5.5-11.0
			Linezolid	<0.1-0.1	<0.1-0.2	0.0-<0.1	0.0-<0.1	0.0-<0.0
			Rifampicin	0.5-1.9	0.4-0.7	0.5-0.7	0.6-0.8	0.7-0.7
			Trimethoprim-sulfamethoxazole	6.5-10.3	6.0-8.0	6.5-9.7	6.9-9.1	7.0-7.3
			Tetracycline (and doxycycline)	7.8-16.4	7.8-12.4	8.1-15.0	6.8-14.5	6.7-10.7
			Vancomycin	0.0	0.0-<0.1	0.0-<0.1	0.0-<0.1	0.0-<0.1
<i>Streptococcus agalactiae</i>	Skin and soft tissue infections, urinary tract infections, bone and joint infections, newborn bacteraemia and meningitis	Community	Benzylpenicillin	<0.1	<0.1	<0.1	<0.1	0.1
			Clindamycin	30.2	30.6	33.6	34.6	35.4
			Erythromycin (and other macrolides)	30.6	32.3	33.9	34.3	35.5
			Trimethoprim	8.8	8.0	11.7	10.3	10.0

continues

Table S4.1: continued

Organism	Main types of infection	Most common setting	Important antimicrobials for treatment	2017, % resistant	2018, % resistant	2019, % resistant	2020, % resistant	2021, % resistant
<i>Streptococcus pneumoniae</i>	Otitis media, sinusitis, acute exacerbation of chronic obstructive pulmonary disease, pneumonia, meningitis, bacteraemia	Community	Benzylpenicillin (outside the central nervous system)	2.0-2.2	1.0-1.8	1.0-1.3	0.4-1.3	1.4-1.7
			Ceftriaxone (and cefotaxime)	0.5-0.8	0.8-1.1	0.3-0.6	0.0-3.9	1.9-2.9
			Clindamycin	19.4-21.4	14.1-19.1	6.6-19.1	8.8-19.6	6.2-15.1
			Erythromycin (and other macrolides)	16.7-24.3	14.0-23.5	13.1-23.4	8.7-25.1	15.9-21.3
			Trimethoprim-sulfamethoxazole	22.4-23.5	19.5-21.5	11.1-19.3	18.4-18.4	16.3-20.3
			Tetracycline (and doxycycline)	14.8-18.0	13.8-17.0	11.6-17.5	13.3-20.7	11.6-17.6
<i>Streptococcus pyogenes</i>	Skin and soft tissue infections, bone and joint infections, necrotising fasciitis, bacteraemia	Community	Benzylpenicillin	<0.1	<0.0	0.0	0.0	<0.0
			Clindamycin	4.1	5.3	7.3	7.7	11.2
			Erythromycin (and other macrolides)	4.5	6.0	8.8	10.1	9.3
			Trimethoprim-sulfamethoxazole	0.9	1.3	0.9	1.4	2.0

* Multi-drug resistance is defined as resistance to at least one agent in three or more antimicrobial categories. Antimicrobial categories (agents) were aminoglycosides (gentamicin or tobramycin), carbapenems (meropenem), extended-spectrum cephalosporins (ceftriaxone or ceftazidime), fluoroquinolones (ciprofloxacin). Resistance determined using EUCAST 2022 breakpoints for all years

† Resistance to at least isoniazid and rifampicin, with or without resistance to the other two first-line agents (ethambutol and pyrazinamide)

Notes:

1. Percentages for 2017 to 2019 may have changed from previous reports as more data have become available.

2. A number range is shown when different specimen sources were analysed. If only one specimen source or all specimen sources were analysed, there is no range.

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.2: *Acinetobacter baumannii* complex resistance (all specimen sources), 2017–2021

Antimicrobial	2017, % resistant (n)	2018, % resistant (n)	2019, % resistant (n)	2020, % resistant (n)	2021, % resistant (n)
Ceftazidime	17.1 (1,366)	14.4 (1,479)	11.3 (894)	9.2 (1,021)	10.2 (1,317)
Ceftriaxone/cefotaxime	97.0 (167)	93.7 (159)	98.4 (127)	92.6 (203)	91.3 (208)
Ciprofloxacin/norfloxacin	3.8 (2,237)	4.5 (2,094)	5.7 (1,334)	5.2 (871)	2.8 (1,011)
Gentamicin	3.3 (2,341)	3.9 (2,359)	3.8 (1,874)	2.2 (2,025)	1.7 (2,242)
Meropenem	2.8 (2,138)	3.2 (2,112)	3.6 (1,722)	2.1 (1,872)	1.4 (2,090)
Piperacillin-tazobactam	12.2 (1,787)	12.8 (2,051)	11.8 (1,639)	9.7 (1,795)	12.0 (2,000)
Trimethoprim-sulfamethoxazole	7.3 (2,092)	9.0 (1,988)	7.5 (1,528)	8.5 (1,821)	5.7 (2,070)

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.3: *Acinetobacter baumannii* resistance, by clinical setting, 2017–2021

Antimicrobial	Year	Hospitals (public and private), % resistant (n)	Community, % resistant (n)
Ceftazidime	2017	14.4 (736)	20.6 (607)
	2018	12.7 (932)	17.6 (533)
	2019	12.1 (638)	8.9 (236)
	2020	9.7 (660)	8.8 (341)
	2021	7.2 (825)	15.4 (473)
Ceftriaxone/cefotaxime	2017	94.9 (39)	98.3 (120)
	2018	95.0 (40)	93.6 (110)
	2019	100.0 (33)	97.8 (90)
	2020	86.4 (103)	99.0 (97)
	2021	86.0 (107)	96.9 (97)
Ciprofloxacin/norfloxacin	2017	3.6 (1,375)	4.1 (800)
	2018	3.1 (1,373)	7.4 (693)
	2019	5.9 (918)	5.0 (382)
	2020	6.6 (648)	1.0 (201)
	2021	2.3 (735)	4.6 (239)
Gentamicin	2017	3.6 (1,426)	2.7 (852)
	2018	2.5 (1,465)	6.7 (848)
	2019	4.0 (1,242)	3.4 (592)
	2020	3.0 (1,282)	0.9 (673)
	2021	1.2 (1,375)	2.6 (801)

continues

Table S4.3: *continued*

Antimicrobial	Year	Hospitals (public and private), % resistant (n)	Community, % resistant (n)
Meropenem	2017	2.9 (1,366)	2.6 (722)
	2018	1.8 (1,370)	6.2 (712)
	2019	3.6 (1,198)	3.7 (489)
	2020	2.4 (1,221)	1.5 (585)
	2021	1.4 (1,327)	1.7 (702)
Piperacillin-tazobactam	2017	13.8 (1,149)	10.0 (578)
	2018	10.5 (1,250)	16.6 (765)
	2019	11.2 (1,042)	12.8 (561)
	2020	10.3 (1,099)	8.7 (641)
	2021	12.2 (1,192)	12.3 (767)
Trimethoprim-sulfamethoxazole	2017	7.5 (1,320)	7.2 (720)
	2018	7.5 (1,246)	11.3 (708)
	2019	6.5 (1,047)	9.6 (446)
	2020	7.3 (1,191)	10.7 (563)
	2021	5.9 (1,313)	5.3 (698)

Sources: AGAR, APAS, HOTspots (public hospitals); AGAR, APAS (Qld, SA) and SNP (private hospitals); APAS, HOTspots and SNP (community)

Table S4.4: Onset setting and 30-day all-cause mortality for the three most commonly isolated *Enterobacterales* species (blood culture isolates), 2020–2021

Species	Year	Community-onset, n	Community-onset mortality, % (n)	Hospital-onset, n	Hospital-onset mortality, % (n)	Total, n	Total mortality, % (n)
<i>Escherichia coli</i>	2020	2,770	8.6 (239)	550	14.9 (82)	3,320	9.7 (321)
	2021	2,726	9.8 (266)	597	13.4 (80)	3,323	10.4 (346)
<i>Klebsiella pneumoniae</i> complex	2020	595	11.6 (69)	224	15.2 (34)	819	12.6 (103)
	2021	625	14.9 (93)	281	12.5 (35)	906	14.1 (128)
<i>Enterobacter cloacae</i> complex	2020	196	11.7 (23)	166	15.1 (25)	362	13.3 (48)
	2021	195	14.9 (29)	166	15.1 (25)	361	15.0 (54)
All <i>Enterobacterales</i>	2020	4,285	9.9 (425)	1,211	15.0 (182)	5,496	11.0 (607)
	2021	4,285	11.2 (479)	1,352	13.2 (179)	5,637	11.7 (658)

Source: AGAR (national)

Table S4.5: *Enterobacter cloacae* complex resistance, by specimen source, 2017–2021

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Ceftazidime	2017	26.5 (709)	29.5 (3,269)	21.5 (2,904)	25.8 (6,882)
	2018	24.8 (763)	28.5 (3,311)	23.2 (3,016)	25.8 (7,090)
	2019	25.3 (838)	28.7 (3,343)	23.0 (2,624)	26.1 (6,805)
	2020	23.2 (850)	29.7 (3,365)	22.9 (2,883)	26.2 (7,098)
	2021	25.9 (900)	26.6 (3,688)	22.3 (3,072)	24.8 (7,660)
Ceftriaxone/ cefotaxime	2017	31.9 (959)	28.1 (825)	27.7 (4,609)	28.4 (6,393)
	2018	31.9 (999)	28.7 (823)	30.0 (4,404)	30.1 (6,226)
	2019	29.1 (1,054)	28.5 (845)	29.1 (4,248)	29.0 (6,147)
	2020	29.8 (1,103)	31.7 (826)	29.1 (4,618)	29.5 (6,547)
	2021	31.0 (1,197)	27.6 (841)	28.7 (4,714)	29.0 (6,752)
Ciprofloxacin/ norfloxacin	2017	3.8 (980)	8.1 (6,995)	3.0 (4,699)	5.9 (12,674)
	2018	5.4 (1,023)	8.2 (6,873)	3.5 (4,541)	6.2 (12,437)
	2019	5.8 (1,099)	8.8 (7,241)	3.7 (4,301)	6.8 (12,641)
	2020	5.7 (1,130)	8.6 (7,263)	3.6 (4,675)	6.5 (13,068)
	2021	5.2 (1,221)	8.5 (5,482)	3.5 (4,835)	6.1 (11,538)
Gentamicin	2017	5.9 (987)	7.2 (5,508)	3.9 (4,849)	5.7 (11,344)
	2018	5.4 (1,030)	7.4 (5,689)	4.5 (4,654)	6.0 (11,373)
	2019	5.8 (1,106)	7.9 (5,601)	3.6 (4,430)	6.0 (11,137)
	2020	5.8 (1,135)	7.0 (5,635)	3.8 (4,808)	5.5 (11,578)
	2021	4.7 (1,231)	5.1 (6,008)	3.5 (4,947)	4.4 (12,186)

continues

Table S4.5: continued

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Meropenem	2017	0.8 (953)	1.4 (4,197)	0.9 (4,461)	1.1 (9,611)
	2018	1.0 (1,000)	1.7 (4,189)	1.6 (4,462)	1.6 (9,651)
	2019	2.5 (1,093)	1.1 (4,525)	1.5 (4,265)	1.4 (9,883)
	2020	2.1 (1,114)	1.3 (4,829)	1.1 (4,603)	1.3 (10,546)
	2021	1.3 (1,226)	1.0 (5,285)	1.1 (4,864)	1.0 (11,375)
Piperacillin-tazobactam	2017	34.1 (774)	29.5 (2,784)	28.8 (3,696)	29.6 (7,254)
	2018	30.7 (986)	29.3 (3,247)	30.9 (4,382)	30.2 (8,615)
	2019	30.0 (1,095)	30.1 (3,929)	29.1 (4,375)	29.6 (9,399)
	2020	26.3 (1,134)	31.7 (4,127)	27.8 (4,765)	29.2 (10,026)
	2021	29.5 (1,224)	29.6 (4,582)	28.3 (4,893)	29.0 (10,699)
Trimethoprim	2017	18.8 (701)	19.3 (7,535)	8.6 (3,167)	16.3 (11,403)
	2018	16.9 (722)	19.2 (7,506)	10.7 (3,098)	16.8 (11,326)
	2019	16.7 (760)	18.5 (7,708)	9.3 (3,264)	15.8 (11,732)
	2020	17.0 (769)	17.2 (7,700)	10.0 (3,095)	15.2 (11,564)
	2021	14.5 (865)	17.3 (8,039)	8.3 (3,148)	14.8 (12,052)
Trimethoprim-sulfamethoxazole	2017	16.3 (935)	18.4 (3,349)	7.9 (4,573)	12.8 (8,857)
	2018	15.4 (996)	19.0 (3,353)	9.6 (4,477)	13.8 (8,826)
	2019	15.5 (1,074)	16.4 (3,422)	9.0 (4,277)	12.7 (8,773)
	2020	16.3 (1,096)	15.4 (3,422)	9.1 (4,677)	12.3 (9,195)
	2021	13.7 (1,223)	14.2 (3,903)	7.8 (4,904)	11.0 (10,030)

Note: Members of the *Enterobacter cloacae* complex are considered intrinsically resistant to ampicillin, amoxicillin-clavulanic acid, cefazolin and cefoxitin.

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); SNP (Qld, northern NSW)

Table S4.6: *Enterobacter cloacae* complex resistance (blood culture isolates), by state and territory, 2017–2021

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Amikacin	2017	0.7	0.0	0.0	0.0	0.0	0.0	nd	nd	0.2 (442)
	2018	0.0	0.0	0.0	0.0	0.0	nd	0.0	nd	0.0 (413)
	2019	0.0	0.0	0.0	0.0	0.0	5.0	0.0	nd	0.2 (427)
	2020	1.8	5.7	0.0	0.0	0.0	0.0	nd	nd	1.8 (450)
	2021	2.1	0.0	1.1	0.0	0.0	0.0	nd	5.3	1.1 (453)
Cefepime	2017	8.3	4.0	0.9	7.7	3.6	11.8	nd	nd	5.4 (442)
	2018	7.8	6.2	7.7	3.3	0.0	0.0	16.7	nd	6.0 (419)
	2019	3.4	2.2	2.1	3.0	2.1	0.0	0.0	nd	2.3 (427)
	2020	2.4	8.0	9.6	0.0	0.0	5.3	nd	nd	4.4 (450)
	2021	7.7	2.2	3.4	4.2	0.0	0.0	nd	5.3	4.0 (453)
Ceftazidime	2017	26.2	37.3	18.7	23.1	14.5	23.5	nd	nd	24.7 (442)
	2018	25.9	30.8	15.4	23.3	14.8	31.3	33.3	nd	22.2 (419)
	2019	24.6	26.9	16.8	18.2	10.4	30.0	14.3	nd	21.5 (427)
	2020	24.4	28.7	24.1	21.7	17.5	10.5	nd	nd	23.8 (449)
	2021	23.9	26.9	20.5	33.3	20.6	6.3	nd	36.8	23.6 (453)

continues

Table S4.6: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Ceftriaxone	2017	26.9	40.0	23.4	26.9	20.0	23.5	nd	nd	27.4 (442)
	2018	26.7	35.4	19.7	30.0	16.7	31.3	33.3	nd	25.1 (419)
	2019	26.3	32.3	17.9	18.2	10.4	30.0	14.3	nd	23.4 (427)
	2020	29.9	31.8	28.9	26.1	17.5	15.8	nd	nd	27.8 (450)
	2021	27.5	29.0	20.5	37.5	19.0	18.8	nd	42.1	26.3 (453)
Ciprofloxacin	2017	7.6	5.3	1.9	7.7	3.6	11.8	nd	nd	5.7 (442)
	2018	12.1	4.6	7.7	3.3	3.7	0.0	8.3	nd	7.4 (419)
	2019	5.9	8.6	7.4	0.0	4.2	0.0	0.0	nd	5.9 (427)
	2020	6.7	6.9	9.6	4.3	0.0	0.0	nd	nd	5.8 (449)
	2021	8.5	3.2	5.7	0.0	3.2	0.0	nd	10.5	5.3 (453)
Gentamicin	2017	9.7	4.0	6.5	7.7	3.6	11.8	nd	nd	7.2 (442)
	2018	12.1	6.2	6.8	3.3	0.0	6.3	8.3	nd	6.9 (419)
	2019	7.6	9.7	3.2	0.0	2.1	0.0	0.0	nd	5.4 (427)
	2020	7.9	19.3	7.2	0.0	0.0	5.3	nd	nd	8.4 (450)
	2021	9.9	3.2	3.4	12.5	0.0	6.3	nd	10.5	6.0 (453)
Meropenem	2017	3.4	0.0	1.9	0.0	1.9	0.0	nd	nd	2.0 (440)
	2018	4.3	1.6	2.6	0.0	0.0	0.0	0.0	nd	2.2 (418)
	2019	2.5	5.4	0.0	0.0	2.1	0.0	0.0	nd	2.1 (427)
	2020	3.7	9.1	2.4	0.0	0.0	0.0	nd	nd	3.6 (449)
	2021	4.2	1.1	1.1	0.0	0.0	0.0	nd	5.3	2.0 (452)

continues

Table S4.6: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Piperacillin-tazobactam	2017	23.1	43.1	20.2	10.0	nd	20.0	nd	nd	26.3 (266)
	2018	25.0	26.6	16.7	23.3	19.2	31.3	16.7	nd	22.0 (413)
	2019	22.9	23.7	21.3	15.2	14.9	30.0	14.3	nd	21.4 (425)
	2020	25.0	25.0	23.2	26.1	19.3	10.5	nd	nd	23.6 (449)
	2021	31.9	30.4	25.3	25.0	20.0	25.0	nd	42.1	28.3 (446)
Ticarcillin-clavulanic acid	2017	30.1	41.3	24.3	nd	23.6	23.5	nd	nd	29.9 (354)
	2018	29.9	29.2	23.5	nd	20.4	31.3	25.0	nd	25.6 (348)
	2019	29.0	32.3	22.1	nd	18.8	30.0	14.3	nd	26.4 (345)
	2020	37.9	31.8	30.5	nd	21.1	15.8	nd	nd	30.7 (349)
	2021	30.7	31.2	25.0	nd	21.7	31.3	nd	42.1	28.4 (359)
Tobramycin	2017	10.3	4.0	5.6	11.5	3.6	11.8	nd	nd	7.5 (442)
	2018	12.9	6.2	9.4	3.3	0.0	6.3	8.3	nd	7.9 (419)
	2019	5.9	12.9	5.3	0.0	2.1	5.0	0.0	nd	6.3 (427)
	2020	9.1	19.3	8.5	0.0	0.0	5.3	nd	nd	9.1 (449)
	2021	10.0	3.2	3.4	12.5	0.0	6.3	nd	10.5	6.0 (448)
Trimethoprim	2017	20.1	17.3	22.4	34.6	18.2	11.8	nd	nd	20.6 (441)
	2018	20.9	21.5	20.5	13.3	13.0	6.3	16.7	nd	18.9 (418)
	2019	16.9	20.4	20.0	12.1	14.6	15.0	14.3	nd	17.6 (427)
	2020	23.2	28.4	22.0	21.7	12.3	5.3	nd	nd	21.4 (449)
	2021	22.5	19.4	15.9	8.3	8.3	12.5	nd	21.1	17.6 (450)

continues

Table S4.6: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Trimethoprim-sulfamethoxazole	2017	19.3	16.0	22.4	30.8	16.4	11.8	nd	nd	19.5 (442)
	2018	19.8	20.0	19.7	10.0	7.4	6.3	16.7	nd	17.2 (419)
	2019	17.8	18.3	21.1	9.1	12.5	10.0	14.3	nd	16.9 (427)
	2020	22.6	27.3	20.5	21.7	8.8	5.6	nd	nd	20.3 (449)
	2021	22.5	16.1	14.8	4.2	8.5	12.5	nd	21.1	16.3 (449)

nd = no data (either not tested or tested against an inadequate number of isolates)

Notes:

1. Members of the *Enterobacter cloacae* complex are considered intrinsically resistant to ampicillin, amoxicillin-clavulanic acid, cefazolin and cefoxitin.
2. The numbers of isolates for each state and territory are in the following table.

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2017	145	75	107	26	55	17	7	10	442
2018	116	65	117	30	54	16	12	9	419
2019	118	93	95	33	48	20	14	6	427
2020	164	88	83	23	57	19	6	10	450
2021	142	93	88	24	63	16	8	19	453

Source: AGAR (national)

Table S4.7: *Enterococcus faecalis* resistance (blood culture isolates), by state and territory, 2017–2021

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Ampicillin	2017	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (601)
	2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (675)
	2019	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (698)
	2020	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (666)
	2021	0.6	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.1 (701)
Linezolid	2017	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (603)
	2018	0.0	0.9	0.0	0.0	1.1	0.0	0.0	0.0	0.3 (674)
	2019	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (698)
	2020	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (663)
	2021	0.0	0.0	0.0	0.0	0.9	0.0	nd	2.8	0.3 (698)
Teicoplanin	2017	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (601)
	2018	0.5	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.3 (675)
	2019	0.9	0.0	0.0	0.0	0.0	0.0	nd	2.8	0.4 (698)
	2020	0.0	0.0	0.0	0.0	1.1	0.0	nd	0.0	0.2 (666)
	2021	0.6	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.1 (702)

continues

Table S4.7: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Vancomycin	2017	0.0	1.7	0.0	0.0	0.0	0.0	nd	0.0	0.3 (601)
	2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (675)
	2019	0.5	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.1 (698)
	2020	0.0	0.0	0.0	0.0	1.1	0.0	nd	0.0	0.2 (666)
	2021	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (702)

nd = no data (either not tested or tested against an inadequate number of isolates)

Notes:

1. Not all isolates were tested against all agents.
2. The numbers of isolates for each state and territory are in the following table.

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2017	150	110	96	58	91	12	10	35	562
2018	152	130	98	52	87	27	7	40	593
2019	187	119	102	31	94	31	10	28	602
2020	211	117	131	57	91	31	11	26	675
2021	218	128	124	64	80	41	7	36	698

Source: AGAR (national)

Table S4.8: *Enterococcus faecium* resistance (blood culture isolates), by state and territory, 2017–2021

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Ampicillin	2017	89.8	92.5	95.6	85.7	82.3	88.2	nd	95.5	90.0 (479)
	2018	90.7	96.1	75.9	84.2	90.7	91.7	91.7	92.3	90.2 (488)
	2019	93.7	94.5	91.9	88.6	91.1	92.0	69.2	73.7	91.9 (590)
	2020	88.3	91.9	82.4	77.5	87.5	nd	nd	96.8	88.3 (487)
	2021	93.5	93.3	97.9	97.9	94.9	92.9	nd	100.0	94.7 (491)
Linezolid	2017	0.0	0.0	0.0	0.0	0.0	0.0	nd	0.0	0.0 (480)
	2018	0.0	0.8	0.0	0.0	0.0	0.0	0.0	3.8	0.4 (491)
	2019	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.2 (593)
	2020	0.0	0.0	0.0	0.0	0.0	nd	nd	0.0	0.0 (489)
	2021	0.7	0.0	0.0	2.1	0.0	0.0	nd	0.0	0.4 (490)
Teicoplanin	2017	45.5	17.2	13.3	17.9	4.8	5.9	nd	27.3	24.9 (481)
	2018	42.0	21.5	5.5	10.5	11.1	17.4	8.3	38.5	24.4 (488)
	2019	33.0	19.5	4.8	11.1	3.6	24.0	0.0	15.8	20.2 (594)
	2020	22.2	9.8	5.7	0.0	8.1	nd	nd	9.7	13.0 (486)
	2021	22.3	12.8	10.6	4.3	10.2	14.3	nd	14.3	14.0 (492)

continues

Table S4.8: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Vancomycin	2017	51.5	64.2	33.3	57.1	14.3	29.4	nd	27.3	47.0 (481)
	2018	51.0	61.5	12.7	31.6	18.5	54.2	83.3	42.3	44.9 (490)
	2019	43.5	66.5	15.9	31.1	5.4	40.0	46.2	21.1	41.6 (594)
	2020	29.4	64.2	14.3	7.9	8.1	nd	nd	19.4	32.6 (485)
	2021	33.1	61.6	14.9	40.4	13.6	42.9	nd	28.6	40.2 (492)

nd = no data (either not tested or tested against an inadequate number of isolates)

Note: The numbers of isolates for each state and territory are in the following table.

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2017	167	134	45	28	63	17	5	22	481
2018	152	130	55	38	54	24	12	26	491
2019	209	164	63	45	56	25	13	19	594
2020	180	123	35	40	64	10	6	31	489
2021	139	164	47	47	59	14	8	14	492

Source: AGAR (national)

Table S4.9: Proportion of vancomycin genotypes in *Enterococcus faecium* (blood culture isolates), by state and territory, 2013–2021

State or territory	Year	Isolates tested	Typed, no.	van genes, %	vanA, % of total (n)	vanA and vanB, % of total (n)	vanB, % of total (n)
NSW	2013	108	93	43.5	6.5 (7)	0.0 (0)	37.0 (40)
	2014	104	97	52.9	31.7 (33)	0.0 (0)	21.2 (22)
	2015	116	114	56.9	39.7 (46)	1.7 (2)	15.5 (18)
	2016	124	122	50.8	41.9 (52)	0.8 (1)	8.1 (10)
	2017	167	160	51.5	44.3 (74)	0.0 (0)	7.2 (12)
	2018	152	147	55.3	44.7 (68)	0.0 (0)	10.5 (16)
	2019	209	204	48.8	37.3 (78)	0.0 (0)	11.5 (24)
	2020	180	177	33.9	25.6 (46)	0.0 (0)	8.3 (15)
	2021	139	134	33.8	25.9 (36)	0.0 (0)	7.9 (11)
Vic	2013	80	80	55.0	0.0 (0)	0.0 (0)	55.0 (44)
	2014	94	93	72.3	0.0 (0)	0.0 (0)	72.3 (68)
	2015	120	117	71.7	12.5 (15)	0.0 (0)	59.2 (71)
	2016	109	109	66.1	11.9 (13)	2.8 (3)	51.4 (56)
	2017	134	132	69.4	14.9 (20)	1.5 (2)	53.0 (71)
	2018	130	130	63.8	17.7 (23)	1.5 (2)	44.6 (58)
	2019	165	165	68.5	18.8 (31)	0.6 (1)	49.1 (81)
	2020	124	124	65.3	6.5 (8)	0.8 (1)	58.1 (72)
	2021	164	164	64.6	11.6 (19)	0.0 (0)	53.0 (87)

continues

Table S4.9: *continued*

State or territory	Isolates tested	Typed, no.	<i>van</i> genes, %	<i>vanA</i>, % of total (n)	<i>vanA</i> and <i>vanB</i>, % of total (n)	<i>vanB</i>, % of total (n)	
Qld	2013	37	37	43.2	2.7 (1)	0.0 (0)	40.5 (15)
	2014	37	37	45.9	0.0 (0)	0.0 (0)	45.9 (17)
	2015	31	31	67.7	22.6 (7)	9.7 (3)	35.5 (11)
	2016	43	42	30.2	2.3 (1)	0.0 (0)	27.9 (12)
	2017	45	45	33.3	8.9 (4)	0.0 (0)	24.4 (11)
	2018	55	53	12.7	7.3 (4)	0.0 (0)	5.5 (3)
	2019	64	62	17.2	4.7 (3)	0.0 (0)	12.5 (8)
	2020	35	35	17.1	5.7 (2)	0.0 (0)	11.4 (4)
	2021	48	42	12.5	10.4 (5)	0.0 (0)	2.1 (1)
SA	2013	32	32	59.4	0.0 (0)	0.0 (0)	59.4 (19)
	2014	46	45	56.5	0.0 (0)	0.0 (0)	56.5 (26)
	2015	44	44	52.3	0.0 (0)	0.0 (0)	52.3 (23)
	2016	43	41	44.2	0.0 (0)	0.0 (0)	44.2 (19)
	2017	28	27	53.6	14.3 (4)	0.0 (0)	39.3 (11)
	2018	38	38	36.8	10.5 (4)	0.0 (0)	26.3 (10)
	2019	45	44	31.1	11.1 (5)	0.0 (0)	20.0 (9)
	2020	39	39	7.7	0.0 (0)	0.0 (0)	7.7 (3)
	2021	47	43	36.2	4.3 (2)	0.0 (0)	31.9 (15)

continues

Table S4.9: *continued*

State or territory	Year	Isolates tested	Typed, no.	<i>van</i> genes, %	<i>vanA</i>, % of total (n)	<i>vanA</i> and <i>vanB</i>, % of total (n)	<i>vanB</i>, % of total (n)
WA	2013	42	42	4.8	0.0 (0)	0.0 (0)	4.8 (2)
	2014	50	50	20.0	2.0 (1)	0.0 (0)	18.0 (9)
	2015	53	53	13.2	5.7 (3)	0.0 (0)	7.5 (4)
	2016	54	54	16.7	11.1 (6)	0.0 (0)	5.6 (3)
	2017	63	62	17.5	6.3 (4)	0.0 (0)	11.1 (7)
	2018	54	53	27.8	18.5 (10)	0.0 (0)	9.3 (5)
	2019	56	56	7.1	3.6 (2)	0.0 (0)	3.6 (2)
	2020	63	62	9.5	7.9 (5)	0.0 (0)	1.6 (1)
	2021	59	59	13.6	10.2 (6)	0.0 (0)	3.4 (2)
Tas	2013	5	5	0.0	0.0 (0)	0.0 (0)	0.0 (0)
	2014	7	7	14.3	0.0 (0)	0.0 (0)	14.3 (1)
	2015	8	8	25.0	0.0 (0)	0.0 (0)	25.0 (2)
	2016	14	14	42.9	0.0 (0)	0.0 (0)	42.9 (6)
	2017	17	17	29.4	5.9 (1)	0.0 (0)	23.5 (4)
	2018	24	24	58.3	25.0 (6)	0.0 (0)	33.3 (8)
	2019	25	25	44.0	28.0 (7)	0.0 (0)	16.0 (4)
	2020	10	10	30.0	20.0 (2)	0.0 (0)	10.0 (1)
	2021	14	14	42.9	14.3 (2)	0.0 (0)	28.6 (4)

continues

Table S4.9: *continued*

State or territory	Year	Isolates tested	Typed, no.	<i>van</i> genes, %	<i>vanA</i>, % of total (n)	<i>vanA</i> and <i>vanB</i>, % of total (n)	<i>vanB</i>, % of total (n)
NT	2013	3	3	na	na (0)	na (0)	na (3)
	2014	1	1	na	na (0)	na (0)	na (0)
	2015	8	8	75.0	0.0 (0)	0.0 (0)	75.0 (6)
	2016	4	4	75.0	0.0 (0)	0.0 (0)	75.0 (3)
	2017	5	4	60.0	0.0 (0)	0.0 (0)	60.0 (3)
	2018	12	12	83.3	0.0 (0)	0.0 (0)	83.3 (10)
	2019	13	13	46.2	0.0 (0)	0.0 (0)	46.2 (6)
	2020	6	5	66.7	0.0 (0)	0.0 (0)	66.7 (4)
	2021	8	8	87.5	0.0 (0)	0.0 (0)	87.5 (7)
ACT	2013	18	18	33.3	0.0 (0)	0.0 (0)	33.3 (6)
	2014	41	41	22.0	2.4 (1)	0.0 (0)	19.5 (8)
	2015	22	22	54.5	40.9 (9)	0.0 (0)	13.6 (3)
	2016	22	22	72.7	63.6 (14)	0.0 (0)	9.1 (2)
	2017	22	21	22.7	22.7 (5)	0.0 (0)	0.0 (0)
	2018	26	26	42.3	42.3 (11)	0.0 (0)	0.0 (0)
	2019	19	19	31.6	26.3 (5)	0.0 (0)	5.3 (1)
	2020	31	31	19.4	9.7 (3)	0.0 (0)	9.7 (3)
	2021	14	14	28.6	14.3 (2)	0.0 (0)	14.3 (2)

continues

Table S4.9: *continued*

State or territory	Year	Isolates tested	Typed, no.	van genes, %	vanA, % of total (n)	vanA and vanB, % of total (n)	vanB, % of total (n)
Australia	2013	325	310	42.2	2.5 (8)	0.0 (0)	39.7 (129)
	2014	380	371	48.9	9.2 (35)	0.0 (0)	39.7 (151)
	2015	402	397	55.5	19.9 (80)	1.2 (5)	34.3 (138)
	2016	413	408	48.7	20.8 (86)	1.0 (4)	26.9 (111)
	2017	481	468	48.4	23.3 (112)	0.4 (2)	24.7 (119)
	2018	491	483	48.5	25.7 (126)	0.4 (2)	22.4 (110)
	2019	596	588	44.8	22.0 (131)	0.2 (1)	22.7 (135)
	2020	488	483	34.8	13.5 (66)	0.2 (1)	21.1 (103)
	2021	493	478	40.8	14.6 (72)	0.0 (0)	26.2 (129)

na = insufficient number of *Enterococcus* species isolated to calculate the percentage for the NT (2013, 2014)

Source: AGAR (national)

Table S4.10: *Escherichia coli* resistance, by specimen source, 2017–2021

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Amikacin	2017	0.2 (1,370)	nd	nd	0.2 (1,370)
	2018	0.2 (1,312)	nd	nd	0.2 (1,312)
	2019	0.4 (1,382)	nd	nd	0.4 (1,382)
	2020	1.0 (1,545)	0.1 (1,809)	0.0 (167)	0.5 (3,521)
	2021	0.6 (1,811)	0.1 (1,917)	0.0 (150)	0.3 (3,878)
Amoxicillin-clavulanic acid	2017	17.9 (11,842)	14.5 (136,806)	21.4 (9,942)	15.2 (158,590)
	2018	17.6 (11,834)	11.6 (194,842)	21.4 (9,842)	12.4 (216,518)
	2019	18.7 (12,326)	11.7 (206,950)	22.7 (10,292)	12.6 (229,568)
	2020	17.4 (13,131)	11.3 (205,858)	24.1 (10,921)	12.3 (229,910)
	2021	17.1 (13,949)	12.1 (215,542)	22.4 (11,298)	12.9 (240,789)
Ampicillin/amoxicillin	2017	52.7 (12,337)	45.8 (206,589)	52.4 (10,770)	46.5 (229,696)
	2018	53.7 (12,530)	45.4 (204,232)	53.2 (10,630)	46.2 (227,392)
	2019	54.0 (13,161)	45.4 (209,320)	53.2 (10,970)	46.2 (233,451)
	2020	51.2 (14,128)	43.9 (210,395)	52.9 (11,709)	44.8 (236,232)
	2021	49.3 (14,995)	41.7 (219,940)	50.6 (12,035)	42.6 (246,970)
Cefalexin	2017	15.3 (235)	7.5 (118,372)	22.7 (339)	7.5 (118,946)
	2018	14.5 (248)	8.3 (117,056)	17.6 (369)	8.4 (117,673)
	2019	16.3 (355)	8.7 (118,410)	17.0 (435)	8.8 (119,200)
	2020	16.8 (291)	8.4 (115,491)	21.1 (383)	8.5 (116,165)
	2021	14.1 (269)	7.8 (117,876)	15.6 (397)	7.9 (118,542)

continues

Table S4.10: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Cefazolin	2017	22.3 (7,208)	17.9 (64,583)	27.8 (5,576)	19.0 (77,367)
	2018	24.7 (7,376)	18.4 (64,150)	26.2 (5,580)	19.6 (77,106)
	2019	26.5 (7,432)	19.3 (59,854)	27.5 (5,571)	20.7 (72,857)
	2020	22.2 (7,757)	18.6 (69,146)	28.5 (5,461)	19.6 (82,364)
	2021	20.3 (8,466)	15.7 (82,767)	22.8 (5,182)	16.5 (96,415)
Cefepime	2017	4.9 (1,791)	nd	nd	4.9 (1,791)
	2018	3.7 (1,755)	nd	nd	3.7 (1,755)
	2019	5.3 (1,828)	nd	nd	5.3 (1,828)
	2020	4.3 (1,941)	1.4 (1,783)	2.6 (153)	2.9 (3,877)
	2021	4.1 (2,238)	1.4 (1,917)	3.6 (138)	2.8 (4,293)
Cefoxitin	2017	5.2 (5,690)	5.8 (50,058)	7.0 (4,487)	5.8 (60,235)
	2018	4.8 (6,490)	5.7 (50,268)	6.2 (5,351)	5.7 (62,109)
	2019	4.1 (7,091)	5.5 (52,756)	6.3 (5,470)	5.4 (65,317)
	2020	4.0 (7,606)	5.2 (55,313)	6.5 (6,023)	5.2 (68,942)
	2021	3.7 (8,956)	5.1 (62,747)	6.3 (7,183)	5.0 (78,886)
Ceftazidime	2017	9.2 (8,023)	7.3 (50,430)	10.5 (5,761)	7.9 (64,214)
	2018	10.1 (8,913)	7.9 (50,640)	9.8 (6,595)	8.3 (66,148)
	2019	10.9 (9,487)	8.5 (55,058)	11.5 (6,666)	9.1 (71,211)
	2020	9.9 (9,948)	8.5 (57,638)	14.6 (9,039)	9.4 (76,625)
	2021	9.2 (10,858)	7.6 (64,462)	13.6 (9,335)	8.5 (84,655)

continues

Table S4.10: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Ceftriaxone/cefotaxime	2017	10.5 (12,319)	5.9 (198,408)	12.2 (10,560)	6.4 (221,287)
	2018	11.8 (12,628)	6.5 (200,176)	12.7 (10,657)	7.1 (223,461)
	2019	12.4 (13,305)	6.8 (208,135)	14.7 (11,018)	7.5 (232,458)
	2020	12.1 (14,119)	6.7 (207,686)	17.0 (11,589)	7.5 (233,394)
	2021	11.0 (14,971)	6.2 (217,596)	15.1 (11,945)	6.9 (244,512)
Ciprofloxacin/norfloxacin	2017	12.4 (12,266)	10.6 (175,916)	12.4 (10,141)	10.8 (198,323)
	2018	12.7 (12,601)	11.5 (176,037)	13.1 (10,232)	11.7 (198,870)
	2019	13.9 (13,269)	12.2 (185,050)	14.9 (10,630)	12.4 (208,949)
	2020	13.5 (14,071)	12.2 (181,514)	16.2 (11,301)	12.5 (206,886)
	2021	11.4 (14,920)	13.9 (120,884)	15.2 (11,667)	13.8 (147,471)
Gentamicin	2017	8.2 (12,338)	5.5 (121,085)	7.3 (10,776)	5.9 (144,199)
	2018	8.4 (12,653)	5.8 (114,842)	7.0 (10,830)	6.1 (138,325)
	2019	9.0 (13,318)	6.3 (107,688)	8.6 (11,154)	6.8 (132,160)
	2020	8.1 (14,126)	6.2 (109,711)	8.4 (11,718)	6.6 (135,555)
	2021	7.7 (14,996)	5.8 (118,942)	7.3 (12,034)	6.1 (145,972)
Meropenem	2017	0.0 (11,089)	0.0 (53,653)	0.0 (9,335)	0.0 (74,077)
	2018	0.0 (11,962)	0.0 (53,829)	0.1 (9,692)	0.0 (75,483)
	2019	0.0 (12,819)	0.0 (56,225)	0.2 (10,236)	0.0 (79,280)
	2020	0.0 (13,655)	0.0 (59,370)	0.1 (11,020)	0.0 (84,045)
	2021	0.0 (14,788)	0.0 (68,351)	0.1 (11,718)	0.0 (94,857)

continues

Table S4.10: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Nitrofurantoin	2017	1.6 (3,625)	1.1 (189,659)	2.0 (2,427)	1.1 (195,711)
	2018	2.0 (3,674)	1.1 (189,738)	2.7 (2,540)	1.2 (195,952)
	2019	2.0 (3,769)	1.1 (193,879)	2.2 (2,359)	1.1 (200,007)
	2020	2.0 (3,824)	1.0 (203,275)	2.1 (2,591)	1.0 (209,690)
	2021	1.2 (4,100)	0.9 (211,942)	1.7 (2,493)	0.9 (218,535)
Norfloxacin	2017	nd	10.6 (174,274)	nd	10.6 (174,274)
	2018	nd	11.5 (174,573)	nd	11.5 (174,573)
	2019	nd	12.2 (181,812)	nd	12.2 (181,812)
	2020	nd	12.2 (178,157)	nd	12.2 (178,157)
	2021	nd	14.0 (117,369)	nd	14.0 (117,369)
Piperacillin-tazobactam	2017	6.2 (11,467)	5.7 (58,335)	8.7 (9,731)	6.1 (79,533)
	2018	5.8 (12,090)	5.6 (58,913)	7.9 (10,042)	5.9 (81,045)
	2019	6.2 (13,264)	5.5 (61,471)	8.3 (10,600)	6.0 (85,335)
	2020	5.5 (14,052)	4.7 (62,626)	8.8 (11,281)	5.4 (87,959)
	2021	5.0 (14,938)	4.3 (71,397)	7.5 (11,672)	4.8 (98,007)

continues

Table S4.10: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Tobramycin	2017	8.2 (10,600)	6.2 (55,841)	7.3 (7,555)	6.6 (73,996)
	2018	8.8 (10,006)	6.3 (56,120)	7.3 (7,805)	6.7 (73,931)
	2019	9.5 (10,584)	6.7 (58,631)	8.8 (7,809)	7.3 (77,024)
	2020	8.5 (11,089)	6.3 (61,554)	8.8 (10,596)	6.9 (83,239)
	2021	7.8 (12,025)	6.1 (64,698)	7.3 (11,052)	6.5 (87,775)
Trimethoprim	2017	32.5 (9,656)	24.6 (206,408)	26.1 (7,441)	25.0 (223,505)
	2018	32.7 (9,788)	24.4 (205,526)	27.0 (7,499)	24.9 (222,813)
	2019	33.4 (8,658)	24.6 (210,912)	27.7 (7,643)	25.0 (227,213)
	2020	31.1 (8,980)	24.1 (210,329)	26.6 (6,348)	24.5 (225,657)
	2021	30.5 (9,695)	22.6 (220,003)	23.5 (6,327)	23.0 (236,025)
Trimethoprim-sulfamethoxazole	2017	29.3 (11,124)	24.2 (53,959)	23.1 (10,006)	24.8 (75,089)
	2018	28.2 (12,029)	24.1 (53,875)	23.3 (10,275)	24.7 (76,179)
	2019	28.7 (12,882)	24.2 (56,509)	23.9 (10,733)	24.9 (80,124)
	2020	27.6 (13,689)	24.1 (57,775)	23.4 (11,369)	24.6 (82,833)
	2021	26.5 (14,849)	22.6 (64,754)	22.0 (11,909)	23.1 (91,512)

nd = no data (either not tested or tested against an inadequate number of isolates)

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.11: *Escherichia coli* resistance (blood culture isolates), by state and territory, 2017–2021

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Amikacin	2017	0.3	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.2 (4,355)
	2018	0.2	0.4	0.2	0.0	0.2	0.0	0.0	0.0	0.2 (4,567)
	2019	0.4	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1 (4,884)
	2020	0.9	1.8	1.1	0.2	1.4	0.0	2.0	0.5	1.1 (4,870)
	2021	1.3	0.8	0.9	1.1	2.4	0.0	3.6	2.4	1.4 (4,920)
Amoxicillin-clavulanic acid	2017	8.9	8.9	10.3	5.6	7.4	5.2	5.7	7.6	8.4 (4,354)
	2018	8.7	10.9	7.5	7.7	8.2	8.7	12.5	8.3	8.8 (4,533)
	2019	8.6	8.5	6.5	nd	7.5	6.0	9.8	7.0	7.8 (3,962)
	2020	8.8	7.2	7.6	nd	7.5	6.5	9.6	3.5	7.7 (3,906)
	2021	9.4	7.3	7.9	nd	9.3	4.6	7.6	4.4	7.9 (3,920)
Ampicillin	2017	56.9	55.5	52.9	43.8	57.5	42.0	59.6	50.6	54.4 (4,353)
	2018	55.9	64.9	54.6	49.1	56.3	45.7	70.0	56.7	56.8 (4,567)
	2019	56.6	56.8	54.3	50.2	58.6	51.2	72.2	54.8	56.3 (4,881)
	2020	54.6	52.3	53.9	48.4	51.9	48.8	65.5	50.5	53.1 (4,867)
	2021	52.7	54.1	51.1	50.1	57.9	40.4	67.0	49.0	53.3 (4,919)
Cefazolin	2017	25.5	23.3	20.2	15.6	24.9	20.8	19.1	20.3	22.7 (4,281)
	2018	26.1	29.6	21.9	18.8	25.7	15.2	33.8	21.0	24.8 (4,535)
	2019	25.7	25.8	20.0	nd	23.8	17.9	30.7	26.5	24.1 (3,961)
	2020	25.5	25.8	18.0	nd	21.8	17.9	31.5	19.7	23.3 (3,905)
	2021	23.8	23.3	20.3	nd	27.1	11.9	28.6	18.9	23.0 (3,920)

continues

Table S4.11: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Cefepime	2017	6.7	3.4	2.7	3.8	3.5	2.3	3.5	1.9	4.1 (4,354)
	2018	4.8	3.6	2.6	3.7	3.7	1.6	4.4	2.5	3.7 (4,569)
	2019	5.7	4.6	1.2	7.7	2.6	1.5	3.4	4.3	4.1 (4,884)
	2020	4.8	4.7	0.8	5.0	2.6	1.0	3.6	1.5	3.6 (4,871)
	2021	4.9	3.0	1.4	6.2	3.1	1.4	2.7	3.9	3.6 (4,920)
Ceftazidime	2017	9.1	5.7	5.2	2.1	6.6	4.0	4.3	3.8	6.3 (4,355)
	2018	6.5	8.3	6.1	6.2	7.1	3.8	5.6	4.5	6.6 (4,569)
	2019	8.4	9.0	3.7	7.3	6.0	6.0	5.4	9.7	7.1 (4,885)
	2020	7.8	8.3	4.5	5.6	5.4	3.0	7.1	2.5	6.4 (4,871)
	2021	7.8	6.5	4.8	6.6	6.1	4.1	4.5	4.9	6.3 (4,919)
Ceftriaxone	2017	13.5	14.0	9.4	4.2	11.3	5.2	9.2	11.4	11.2 (4,355)
	2018	13.3	17.1	11.3	8.1	15.5	7.1	17.5	12.7	13.4 (4,569)
	2019	14.9	16.7	8.2	12.3	12.2	7.0	16.1	16.1	13.3 (4,885)
	2020	15.3	17.0	8.9	9.0	12.4	6.0	18.3	13.1	13.3 (4,871)
	2021	13.6	13.0	10.2	11.0	14.2	5.5	13.4	13.1	12.4 (4,919)

continues

Table S4.11: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Ciprofloxacin	2017	16.3	15.6	12.9	8.3	16.2	5.7	15.6	12.0	14.4 (4,353)
	2018	15.8	18.1	10.3	11.6	20.5	7.6	12.5	17.8	15.2 (4,569)
	2019	16.9	18.3	10.4	13.9	17.3	12.9	20.0	20.5	16.0 (4,882)
	2020	17.5	20.0	11.6	9.8	17.5	8.0	20.8	15.2	16.1 (4,870)
	2021	12.1	13.2	8.5	8.5	16.2	10.6	17.0	13.6	12.3 (4,917)
Gentamicin	2017	8.3	9.6	7.5	5.2	10.1	3.4	9.9	12.7	8.5 (4,353)
	2018	8.8	7.8	7.0	7.9	10.6	3.8	13.8	7.0	8.4 (4,570)
	2019	9.2	10.6	7.6	7.5	8.8	6.0	16.6	11.3	9.2 (4,881)
	2020	8.8	10.1	7.8	6.9	7.9	4.5	17.8	10.1	8.8 (4,871)
	2021	9.4	7.2	7.4	7.9	10.3	3.2	15.2	8.7	8.6 (4,920)
Meropenem	2017	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1 (4,353)
	2018	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1 (4,568)
	2019	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.1 (4,882)
	2020	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0 (4,869)
	2021	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (4,918)
Piperacillin-tazobactam	2017	6.3	4.3	7.3	4.2	7.1	2.9	3.5	5.1	5.9 (4,345)
	2018	6.8	8.7	5.2	3.5	4.6	3.9	6.9	5.8	6.0 (4,546)
	2019	6.5	5.4	5.2	3.9	6.0	3.5	6.8	8.2	5.7 (4,867)
	2020	6.1	6.4	5.3	2.3	6.0	5.0	5.1	3.6	5.4 (4,849)
	2021	6.0	7.6	5.9	3.2	9.4	4.1	8.1	3.4	6.5 (4,890)

continues

Table S4.11: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Ticarcillin-clavulanic acid	2017	24.6	15.1	18.8	nd	18.6	14.9	17.0	13.9	18.4 (3,463)
	2018	22.1	20.7	13.3	nd	16.5	13.6	19.4	17.8	17.8 (3,671)
	2019	16.2	17.4	17.2	nd	18.3	15.4	22.9	20.1	17.6 (3,834)
	2020	17.6	17.0	15.5	nd	14.2	13.9	17.8	11.1	15.9 (3,749)
	2021	14.6	15.7	12.7	nd	18.0	6.0	18.8	9.2	14.7 (3,772)
Tobramycin	2017	9.4	10.3	8.4	5.9	11.3	3.4	11.3	12.0	9.4 (4,355)
	2018	9.1	9.2	7.1	9.1	12.4	3.3	16.9	6.4	9.3 (4,569)
	2019	9.9	12.1	7.5	8.6	9.0	7.0	16.6	10.8	9.8 (4,885)
	2020	9.2	11.5	7.3	8.1	9.0	4.5	20.3	8.6	9.5 (4,869)
	2021	9.6	7.6	7.1	6.8	11.5	3.2	17.0	7.3	8.8 (4,903)
Trimethoprim	2017	33.7	34.6	35.1	25.0	35.4	16.8	46.1	33.5	33.6 (4,353)
	2018	35.7	37.3	33.6	29.9	37.5	24.5	44.4	28.7	35.0 (4,565)
	2019	33.0	35.0	32.8	31.0	35.2	23.9	54.6	34.9	34.1 (4,884)
	2020	33.3	30.4	35.4	29.9	32.6	21.4	53.3	28.8	32.7 (4,870)
	2021	31.4	32.5	35.4	28.9	33.9	19.3	51.3	22.8	32.3 (4,908)
Trimethoprim-sulfamethoxazole	2017	32.1	32.1	32.7	22.3	32.3	13.8	41.1	31.6	31.1 (4,350)
	2018	32.7	34.9	31.4	26.7	33.8	21.3	39.4	25.5	32.0 (4,566)
	2019	30.0	32.2	29.6	28.2	31.9	21.4	48.8	29.6	30.9 (4,880)
	2020	31.0	27.4	33.1	27.8	29.2	17.9	50.3	27.8	30.1 (4,864)
	2021	29.0	29.7	31.4	24.2	31.1	17.4	48.7	22.8	29.5 (4,906)

continues

Table S4.11: continued

nd = no data (either not tested or tested against an inadequate number of isolates)

Note: The numbers of isolates for each state and territory are in the following table.

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2017	1,170	794	858	289	771	174	141	158	4,355
2018	1,225	770	868	405	801	184	160	157	4,570
2019	1,379	922	817	440	736	201	205	186	4,886
2020	1,493	899	628	479	776	201	197	198	4,871
2021	1,281	1,086	693	471	741	218	224	206	4,920

Source: AGAR (national)

Table S4.12: *Klebsiella pneumoniae* resistance, by specimen source, 2017–2021

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Amikacin	2017	0.6 (318)	nd	nd	0.6 (318)
	2018	0.6 (339)	nd	nd	0.6 (339)
	2019	1.1 (350)	nd	nd	1.1 (350)
	2020	1.1 (365)	0.0 (360)	0.0 (113)	0.5 (838)
	2021	0.7 (431)	0.0 (406)	0.0 (110)	0.3 (947)
Amoxicillin-clavulanic acid	2017	7.5 (2,617)	6.3 (19,820)	9.0 (4,244)	6.9 (26,681)
	2018	6.4 (2,701)	4.7 (28,094)	8.1 (4,021)	5.2 (34,816)
	2019	7.8 (2,726)	4.8 (29,536)	8.5 (4,131)	5.4 (36,393)
	2020	7.4 (2,983)	4.3 (30,950)	10.4 (4,350)	5.2 (38,283)
	2021	6.0 (3,151)	4.9 (32,016)	9.6 (4,443)	5.5 (39,610)
Cefalexin	2017	10.2 (49)	4.9 (13,033)	12.9 (85)	4.9 (13,167)
	2018	10.6 (47)	4.9 (13,640)	7.1 (98)	5.0 (13,785)
	2019	7.6 (66)	5.1 (14,400)	14.2 (113)	5.1 (14,579)
	2020	8.7 (69)	4.5 (14,799)	7.1 (84)	4.5 (14,952)
	2021	3.1 (65)	4.7 (14,899)	14.7 (95)	4.8 (15,059)
Cefazolin	2017	11.6 (1,765)	7.7 (11,842)	11.1 (2,756)	8.7 (16,363)
	2018	10.9 (1,693)	7.6 (12,106)	10.8 (2,547)	8.4 (16,346)
	2019	14.0 (1,785)	8.0 (10,991)	12.8 (2,578)	9.5 (15,354)
	2020	11.5 (1,871)	7.7 (12,127)	11.7 (2,513)	8.8 (16,511)
	2021	8.6 (2,009)	6.8 (15,050)	11.5 (2,459)	7.6 (19,518)

continues

Table S4.12: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Cefepime	2017	4.7 (404)	nd	nd	4.7 (404)
	2018	5.1 (467)	nd	nd	5.1 (467)
	2019	3.9 (461)	nd	nd	3.9 (461)
	2020	4.9 (465)	0.9 (347)	3.2 (94)	3.2 (906)
	2021	2.0 (547)	1.5 (392)	5.4 (92)	2.1 (1,031)
Cefoxitin	2017	5.1 (1,342)	4.5 (9,384)	6.2 (2,033)	4.9 (12,759)
	2018	4.9 (1,503)	3.9 (9,830)	5.5 (2,121)	4.3 (13,454)
	2019	4.9 (1,565)	4.3 (9,767)	6.0 (2,177)	4.6 (13,509)
	2020	4.0 (1,767)	3.7 (10,763)	6.9 (2,477)	4.2 (15,007)
	2021	4.0 (2,107)	3.5 (12,016)	5.1 (2,920)	3.9 (17,043)
Ceftazidime	2017	7.5 (1,875)	4.3 (9,532)	7.0 (2,605)	5.2 (14,012)
	2018	6.5 (2,108)	4.4 (10,018)	7.4 (2,711)	5.2 (14,837)
	2019	5.6 (2,162)	4.6 (10,067)	5.8 (2,644)	5.0 (14,873)
	2020	6.2 (2,340)	3.6 (11,144)	7.2 (3,001)	4.7 (16,485)
	2021	4.8 (2,559)	4.1 (12,247)	6.8 (3,052)	4.6 (17,858)
Ceftriaxone/ cefotaxime	2017	7.5 (2,712)	4.1 (27,319)	7.5 (4,480)	4.8 (34,511)
	2018	7.0 (2,890)	4.0 (28,582)	7.6 (4,297)	4.7 (35,769)
	2019	5.6 (2,962)	4.2 (29,574)	7.7 (4,346)	4.7 (36,882)
	2020	5.8 (3,193)	3.5 (31,072)	8.0 (4,562)	4.2 (38,827)
	2021	5.1 (3,432)	3.6 (32,211)	7.7 (4,662)	4.2 (40,305)

continues

Table S4.12: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Ciprofloxacin/ norfloxacin	2017	7.2 (2,694)	6.7 (25,428)	6.1 (4,261)	6.6 (32,383)
	2018	7.5 (2,864)	6.6 (26,304)	6.4 (4,127)	6.6 (33,295)
	2019	6.8 (2,927)	6.6 (27,388)	7.3 (4,188)	6.7 (34,503)
	2020	7.7 (3,175)	6.2 (28,430)	7.8 (4,439)	6.5 (36,044)
	2021	6.9 (3,385)	7.3 (20,181)	7.1 (4,536)	7.3 (28,102)
Gentamicin	2017	4.1 (2,713)	2.8 (17,703)	4.0 (4,539)	3.2 (24,955)
	2018	3.3 (2,897)	2.6 (18,742)	3.7 (4,344)	2.9 (25,983)
	2019	3.3 (2,963)	2.6 (17,567)	3.6 (4,399)	2.8 (24,929)
	2020	3.5 (3,197)	2.4 (18,735)	3.9 (4,602)	2.8 (26,534)
	2021	3.2 (3,413)	2.4 (19,820)	3.3 (4,689)	2.7 (27,922)
Meropenem	2017	0.4 (2,545)	0.2 (10,051)	0.4 (3,986)	0.2 (16,582)
	2018	0.4 (2,764)	0.1 (10,556)	0.8 (3,925)	0.3 (17,245)
	2019	0.5 (2,870)	0.1 (10,467)	0.9 (3,979)	0.3 (17,316)
	2020	0.3 (3,098)	0.1 (11,382)	0.4 (4,243)	0.2 (18,723)
	2021	0.3 (3,387)	0.1 (12,662)	0.6 (4,538)	0.2 (20,587)
Norfloxacin	2017	nd	6.7 (25,099)	nd	6.7 (25,099)
	2018	nd	6.7 (25,974)	nd	6.7 (25,974)
	2019	nd	6.7 (26,797)	nd	6.7 (26,797)
	2020	nd	6.2 (27,817)	nd	6.2 (27,817)
	2021	nd	7.4 (19,515)	nd	7.4 (19,515)

continues

Table S4.12: continued

Antimicrobial	Year	Blood, % resistant (n)	Urine, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Piperacillin-tazobactam	2017	8.7 (2,646)	8.9 (10,853)	9.9 (4,207)	9.1 (17,706)
	2018	8.5 (2,812)	8.4 (11,464)	8.6 (4,085)	8.5 (18,361)
	2019	8.2 (2,947)	7.6 (11,419)	8.7 (4,184)	8.0 (18,550)
	2020	7.1 (3,175)	6.5 (12,178)	9.6 (4,421)	7.3 (19,774)
	2021	6.6 (3,389)	6.0 (13,319)	8.5 (4,530)	6.6 (21,238)
Tobramycin	2017	5.3 (2,409)	3.0 (10,486)	5.8 (3,319)	3.9 (16,214)
	2018	5.4 (2,381)	2.8 (10,991)	4.8 (3,218)	3.6 (16,590)
	2019	4.0 (2,380)	2.5 (10,927)	4.1 (3,160)	3.0 (16,467)
	2020	4.3 (2,566)	2.4 (12,032)	4.8 (4,043)	3.2 (18,641)
	2021	3.2 (2,811)	2.5 (12,276)	3.2 (3,665)	2.7 (18,752)
Trimethoprim	2017	15.0 (2,224)	13.1 (27,942)	11.4 (2,947)	13.1 (33,113)
	2018	16.6 (1,991)	12.9 (29,158)	11.8 (2,785)	13.0 (33,934)
	2019	16.0 (1,986)	12.6 (29,963)	11.2 (2,759)	12.7 (34,708)
	2020	18.0 (2,158)	12.2 (31,529)	14.4 (3,523)	12.7 (37,210)
	2021	15.9 (2,335)	12.7 (32,588)	11.5 (2,899)	12.8 (37,822)
Trimethoprim-sulfamethoxazole	2017	12.1 (2,533)	9.2 (10,137)	9.7 (4,286)	9.8 (16,956)
	2018	14.0 (2,787)	9.6 (10,657)	9.4 (4,147)	10.2 (17,591)
	2019	12.4 (2,873)	10.1 (10,533)	9.6 (4,242)	10.4 (17,648)
	2020	12.9 (3,109)	9.1 (11,268)	11.0 (4,450)	10.2 (18,827)
	2021	12.5 (3,393)	10.0 (12,281)	9.5 (4,655)	10.3 (20,329)

nd = no data (either not tested or tested against an inadequate number of isolates)

Note: *Klebsiella pneumoniae* is considered intrinsically resistant to amoxicillin/ampicillin.

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.13: *Klebsiella pneumoniae* resistance (blood culture isolates), by state and territory, 2017–2021

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Amikacin	2017	0.3	0.5	0.0	0.0	0.0	0.0	3.3	0.0	0.3 (1,068)
	2018	0.0	0.9	0.0	1.1	0.0	2.9	0.0	0.0	0.3 (1,170)
	2019	0.3	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.4 (1,190)
	2020	0.5	1.4	1.1	0.0	0.0	0.0	0.0	0.0	0.6 (1,141)
	2021	0.0	1.2	0.0	0.9	0.0	0.0	0.0	2.2	0.4 (1,243)
Amoxicillin-clavulanic acid	2017	4.4	6.5	4.5	4.3	5.7	6.7	6.7	5.1	5.2 (1,066)
	2018	4.8	8.9	4.8	7.7	2.2	2.9	5.4	8.3	5.4 (1,160)
	2019	8.2	9.9	4.8	nd	3.8	5.9	4.4	8.3	6.7 (985)
	2020	4.1	8.1	4.3	nd	3.7	0.0	2.7	2.6	4.7 (956)
	2021	5.9	3.5	2.0	nd	4.4	0.0	3.0	0.0	3.5 (995)
Cefazolin	2017	11.3	21.1	8.1	12.7	9.4	0.0	10.0	10.3	11.9 (1,056)
	2018	14.0	23.4	11.9	18.7	4.3	14.7	18.9	11.1	14.1 (1,160)
	2019	15.5	20.3	8.4	nd	6.9	9.8	17.8	17.1	13.2 (984)
	2020	10.9	19.6	6.5	nd	5.8	6.7	29.7	7.9	11.4 (955)
	2021	13.0	8.5	6.3	nd	8.8	6.8	15.2	6.5	9.1 (992)

continues

Table S4.13: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Cefepime	2017	4.1	4.0	1.2	5.6	4.4	3.3	6.7	2.6	3.6 (1,068)
	2018	5.6	7.0	0.4	5.5	1.1	2.9	8.1	2.8	3.8 (1,169)
	2019	5.2	5.2	0.0	5.6	0.6	3.9	0.0	5.6	3.3 (1,190)
	2020	3.5	5.7	1.1	4.9	0.5	3.3	5.4	0.0	3.1 (1,141)
	2021	3.9	1.5	0.5	3.5	1.0	0.0	0.0	2.2	2.0 (1,243)
Ceftazidime	2017	5.8	12.6	1.6	1.4	3.8	3.3	6.7	7.7	5.5 (1,068)
	2018	7.3	11.7	4.8	9.9	2.2	5.9	13.5	5.6	7.0 (1,170)
	2019	8.9	10.4	3.6	9.0	1.9	5.9	11.1	11.1	7.1 (1,190)
	2020	7.8	11.9	3.2	7.4	3.2	3.3	24.3	5.3	7.4 (1,141)
	2021	8.9	4.6	2.0	4.4	3.9	4.5	9.1	4.3	5.3 (1,243)
Ceftriaxone	2017	7.5	19.6	3.3	5.6	5.7	3.3	6.7	10.3	8.3 (1,068)
	2018	8.6	19.2	4.1	8.8	4.3	11.8	13.5	5.6	9.0 (1,169)
	2019	9.5	15.1	3.6	7.9	3.8	5.9	13.3	11.1	8.4 (1,190)
	2020	8.6	16.2	3.8	7.4	2.6	6.7	27.0	5.3	8.6 (1,141)
	2021	10.7	4.6	2.4	6.1	2.9	4.5	15.2	4.3	6.0 (1,243)

continues

Table S4.13: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Ciprofloxacin	2017	5.5	17.6	6.1	2.8	6.3	0.0	6.7	7.7	7.8 (1,067)
	2018	9.3	24.3	5.6	8.8	7.5	11.8	13.5	8.3	11.0 (1,169)
	2019	10.4	17.0	5.2	15.7	5.0	7.8	15.6	8.3	10.2 (1,189)
	2020	10.2	17.7	6.5	9.9	2.6	6.7	16.2	13.2	9.9 (1,140)
	2021	8.6	7.3	8.8	9.6	3.9	4.5	6.1	4.3	7.3 (1,243)
Gentamicin	2017	4.8	9.0	2.4	4.2	3.8	3.3	0.0	5.1	4.7 (1,067)
	2018	4.3	4.2	3.0	7.7	3.2	5.9	5.4	8.3	4.3 (1,170)
	2019	6.9	6.1	2.4	4.5	2.5	5.9	13.3	5.6	5.2 (1,190)
	2020	7.3	7.6	2.2	2.5	1.6	6.7	16.2	5.3	5.4 (1,141)
	2021	4.2	4.2	3.4	4.4	2.5	0.0	9.1	2.2	3.7 (1,243)
Meropenem	2017	0.3	1.0	0.8	0.0	0.0	0.0	0.0	0.0	0.5 (1,066)
	2018	2.0	0.9	0.0	1.1	0.5	0.0	0.0	2.8	0.9 (1,169)
	2019	0.6	2.8	0.4	0.0	0.0	0.0	0.0	0.0	0.8 (1,190)
	2020	0.3	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.2 (1,140)
	2021	0.6	0.4	0.0	0.0	0.5	0.0	0.0	0.0	0.3 (1,243)
Piperacillin-tazobactam	2017	7.5	8.1	6.1	7.0	7.6	3.3	3.3	7.7	7.1 (1,061)
	2018	8.7	11.7	6.3	6.6	4.3	5.9	8.1	8.3	7.7 (1,164)
	2019	9.5	8.5	7.6	4.5	6.3	7.8	22.2	8.3	8.5 (1,189)
	2020	7.9	11.1	5.4	6.2	3.7	0.0	8.1	2.6	6.9 (1,135)
	2021	13.1	10.4	10.7	7.0	6.9	6.8	9.1	4.3	9.9 (1,241)

continues

Table S4.13: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Ticarcillin-clavulanic acid	2017	6.8	15.1	8.9	nd	9.4	6.7	13.3	7.7	10.1 (851)
	2018	10.5	19.6	8.6	nd	3.8	11.8	16.2	13.9	11.1 (944)
	2019	16.9	18.9	8.0	nd	6.3	9.8	22.2	16.7	13.1 (960)
	2020	10.4	12.4	7.0	nd	6.3	3.3	21.6	7.9	9.5 (918)
	2021	9.8	8.8	5.9	nd	6.4	2.3	9.1	4.3	7.4 (963)
Tobramycin	2017	5.1	14.1	3.3	4.2	3.1	3.3	6.7	7.7	6.1 (1,068)
	2018	4.3	18.7	2.6	6.6	3.8	5.9	13.5	8.3	7.1 (1,170)
	2019	7.8	13.7	2.0	6.7	1.9	5.9	13.3	11.1	7.0 (1,190)
	2020	8.1	10.5	2.2	3.7	2.1	0.0	24.3	5.3	6.5 (1,141)
	2021	6.0	3.8	3.4	6.1	2.0	0.0	9.1	4.3	4.3 (1,239)
Trimethoprim	2017	16.7	25.6	14.6	12.7	12.6	10.0	23.3	17.9	17.1 (1,067)
	2018	22.7	31.3	18.9	23.1	14.5	20.6	21.6	19.4	21.9 (1,167)
	2019	17.8	24.1	15.7	20.2	15.6	11.8	24.4	33.3	18.8 (1,190)
	2020	18.6	28.6	14.1	16.0	6.9	6.7	40.5	21.1	18.1 (1,141)
	2021	24.3	16.9	17.6	16.7	10.9	4.5	18.2	6.5	17.2 (1,241)

continues

Table S4.13: continued

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (<i>n</i>)
Trimethoprim-sulfamethoxazole	2017	14.7	23.6	13.0	8.6	10.1	6.7	23.3	12.8	14.8 (1,066)
	2018	20.2	28.0	17.0	18.7	9.7	14.7	18.9	19.4	18.9 (1,170)
	2019	15.5	22.6	13.3	19.1	10.0	11.8	17.8	27.8	16.1 (1,190)
	2020	15.4	24.9	12.0	14.8	6.3	6.7	29.7	18.4	15.4 (1,139)
	2021	18.8	10.8	12.7	12.3	7.4	4.5	18.2	6.5	12.7 (1,240)

nd = no data (either not tested or tested against an inadequate number of isolates)

Notes:

1. *Klebsiella pneumoniae* is considered intrinsically resistant to amoxicillin/ampicillin.

2. The numbers of isolates for each state and territory are in the following table.

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2017	293	199	246	72	159	30	30	39	1,068
2018	302	214	270	91	186	34	37	36	1,170
2019	348	212	249	89	160	51	45	36	1,190
2020	371	210	185	81	189	30	37	38	1,141
2021	337	260	205	114	204	44	33	46	1,243

Source: AGAR (national)

Table S4.14: *Mycobacterium tuberculosis* resistance to first-line antimycobacterial agents, 2009–2021

Isolates and resistance patterns	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total TB cases notified to NNDSS*	1,269	1,362	1,386	1,315	1,259	1,340	1,248	1,364	1,438	1,436	1,581	1,619	1,477
Total number with resistance data	965	1,046	1,058	976	922	1,023	968	1,037	1,067	1,095	1,093	1,116	962
Fully susceptible	826	925	940	844	799	892	835	905	943	959	959	975	851
Mono-resistance to isoniazid	56	47	38	42	48	49	54	55	56	62	58	48	50
Mono-resistance to rifampicin	5	2	1	1	3	5	3	2	2	3	3	5	2
MDR-TB	22	27	25	21	19	15	24	21	21	20	20	16	18
pre-XDR-TB	0	0	0	0	0	0	0	0	0	0	0	0	3
XDR-TB	0	2	0	0	0	1	2	0	0	1	1	0	0
Other mono or poly resistance not specified above	56	43	54	68	53	61	50	54	45	50	52	72	38
Percentage MDR-TB	2.3	4.1	5.1	7.0	5.7	6.0	5.2	5.2	4.2	4.6	4.8	6.5	4.0
Percentage pre-MDR-TB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Percentage XDR-TB	0.0	0.2	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.1	0.0	0.0
Percentage with other mono or poly resistance not specified above	5.8	4.1	5.1	7.0	5.7	6.0	5.2	5.2	4.2	4.6	4.8	6.5	4.0

MDR-TB = multidrug-resistant tuberculosis; mono-resistance = resistant to only the specified anti-TB agent and susceptible to all other anti-TB agents; NNDSS = National Notifiable Diseases Surveillance System; TB = tuberculosis; pre-XDR-TB = resistance to isoniazid, rifampicin and any of the fluoroquinolones (levofloxacin, moxifloxacin); XDR-TB = extremely drug-resistant tuberculosis

* Clinically diagnosed cases of tuberculosis are reported to the NNDSS.

Notes:

- Some numbers for 2009–2019 differ from those published in AURA 2019 because of additional data received.
- The 2021 updated WHO XDR definition changes (pre-XDR-TB and XDR-TB) have been applied across all years since 2009.

Source: NNDSS snapshot (22 February 2023)

Table S4.15: *Mycobacterium tuberculosis* notifications and resistance, by state and territory, 2020

State or territory	Total TB cases notified to NNDSS	Total isolates available	Percent resistant (number/total tested)								
			Isoniazid*	Rifampicin*	Ethambutol*	Pyrazinamide*	Fluoro-quinolones ^{†§}	Kanamycin [†]	Capreomycin [†]	Amikacin [†]	Ethionamide/prothionamide [†]
NSW	625	405	8.2 (33/401)	2.7 (11/404)	1.3 (5/400)	1.3 (5/400)	15.4 (4/26)	0.0 (0/2)	0.0 (0/21)	0.0 (0/20)	21.1 (4/19)
Vic	501	371	8.9 (33/370)	2.4 (9/371)	0.5 (2/370)	5.1 (19/370)	7.5 (4/53)	0.0 (0/52)	0.0 (0/52)	0.0 (0/51)	30.8 (16/52)
Qld	181	139	5.3 (7/133)	0.7 (1/139)	0.0 (0/133)	4.5 (6/134)	0.0 (0/4)	0.0 (0/4)	0.0 (0/4)	0.0 (0/6)	33.3 (1/3)
SA	87	87	nd	nd	nd	nd	nd	nd	nd	nd	nd
WA	138	107	13.1 (14/107)	1.9 (2/107)	0.9 (1/107)	0.9 (1/107)	0.0 (0/6)	0.0 (0/3)	0.0 (0/3)	0.0 (0/3)	0.0 (0/0)
Tas	24	23	4.3 (1/23)	0.0 (0/23)	0.0 (0/23)	0.0 (0/23)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)
NT	27	27	3.8 (1/26)	3.7 (1/27)	0.0 (0/25)	7.7 (2/26)	0.0 (0/0)	0.0 (0/1)	0.0 (0/1)	0.0 (0/1)	0.0 (0/0)
ACT	36	27	14.8 (4/27)	14.8 (4/27)	0.0 (0/27)	0.0 (0/27)	25.0 (1/4)	0.0 (0/0)	0.0 (0/3)	0.0 (0/3)	66.7 (2/3)
Australia	1,619	1,186	8.7 (95/1089)	8.7 (30/1100)	2.7 (8/1087)	3.1 (34/1089)	10.5 (10/95)	0.0 (0/63)	0.0 (0/85)	0.0 (0/84)	29.5 (23/78)

nd = no data (not available due to data transfer issues); NNDSS = National Notifiable Diseases Surveillance System; TB = tuberculosis

* Routinely tested agents

† Selectively tested agents

§ Fluoroquinolones include ciprofloxacin, ofloxacin, moxifloxacin and levofloxacin

Source: NNDSS snapshot (11 November 2022)

Table S4.16: *Mycobacterium tuberculosis* notifications and resistance, by state and territory, 2021

State or territory	Total TB cases notified to NNDSS	Total isolates available	Percent resistant (number/total tested)								
			Isoniazid*	Rifampicin*	Ethambutol*	Pyrazinamide*	Fluoro-quinolones†§	Kanamycin†	Capreomycin†	Amikacin†	Ethionamide/prothionamide†
NSW	558	355	10.2 (36/353)	1.7 (6/355)	1.1 (4/352)	2.0 (7/352)	0.0 (0/23)	0.0 (0/2)	0.0 (0/14)	0.0 (0/11)	20.0 (3/15)
Vic	472	327	9.5 (31/325)	1.5 (5/325)	1.5 (5/325)	6.2 (20/325)	2.2 (1/46)	0.0 (0/46)	0.0 (0/46)	0.0 (0/46)	21.7 (10/46)
Qld	162	134	6.7 (8/120)	3.9 (5/127)	0.0 (0/122)	2.4 (3/126)	11.1 (1/9)	0.0 (0/1)	0.0 (0/1)	0.0 (0/3)	50.0 (2/4)
SA	77	75	nd	nd	nd	nd	nd	nd	nd	nd	nd
WA	143	96	8.3 (8/96)	5.2 (5/96)	2.1 (2/95)	1.1 (1/95)	0.0 (0/8)	0.0 (0/4)	0.0 (0/3)	0.0 (0/3)	0.0 (0/0)
Tas	14	12	0.0 (0/10)	0.0 (0/12)	0.0 (0/10)	0.0 (0/10)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)
NT	29	28	0.0 (0/28)	0.0 (0/28)	0.0 (0/28)	11.1 (3/27)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)
ACT	18	11	0.0 (0/11)	0.0 (0/11)	0.0 (0/11)	0.0 (0/10)	0.0 (0/1)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)	0.0 (0/0)
Australia	1,473	1,038	9.1 (86/946)	8.7 (24/957)	4.8 (11/944)	3.6 (34/946)	3.3 (3/90)	0.0 (0/53)	0.0 (0/64)	0.0 (0/64)	23.1 (15/65)

nd = no data (not available due to data transfer issues); NNDSS = National Notifiable Diseases Surveillance System; TB = tuberculosis

* Routinely tested agents

† Selectively tested agents

§ Fluoroquinolones include ciprofloxacin, ofloxacin, moxifloxacin and levofloxacin

Source: NNDSS snapshot (11 November 2022)

Table S4.17: *Neisseria gonorrhoeae* decreased susceptibility and resistance, 2000–2021

Year	Isolates tested	Ceftriaxone, % decreased susceptibility* (n)	Ciprofloxacin, % resistant† (n)	Azithromycin, % resistant§ (n)	Penicillin, % resistant# (n)
2000	3,468	nd	17.8 (619)	nd	19.6 (679)
2001	3,641	nd	17.5 (638)	nd	22.9 (832)
2002	3,861	0.5 (21)	10.1 (389)	nd	18.0 (695)
2003	3,677	0.3 (10)	12.3 (452)	nd	17.4 (639)
2004	3,542	0.7 (24)	21.4 (757)	nd	21.7 (770)
2005	3,886	1.2 (48)	28.6 (1,113)	nd	29.5 (1,148)
2006	3,850	0.6 (23)	36.7 (1,413)	nd	33.9 (1,306)
2007	3,042	0.8 (25)	47.9 (1,456)	nd	38.2 (1,163)
2008	3,109	0.8 (25)	53.1 (1,651)	nd	44.0 (1,367)
2009	3,157	2.0 (64)	42.6 (1,346)	1.1 (25)**	36.2 (1,142)
2010	3,997	4.8 (192)	33.7 (1,348)	1.1 (35)**	29.0 (1,161)
2011	4,133	3.2 (134)	26.6 (1,099)	1.5 (49)**	25.4 (1,853)
2012	4,718	4.4 (207)	30.3 (1,428)	1.3 (63)	32.1 (1,513)
2013	4,897	8.8 (429)‡	34.1 (1,669)	2.1 (104)	34.7 (1,700)
2014	4,804	5.4 (258)	36.4 (1,750)	2.5 (119)	28.5 (1,370)
2015	5,411	1.8 (98)	27.2 (1,473)	2.6 (138)	22.5 (1,217)
2016	6,378	1.7 (109)	30.0 (1,912)	5.0 (318)	32.5 (2,076)
2017	7,835	1.1 (83)	27.5 (2,154)	9.3 (726)	26.1 (2,045)

continues

Table S4.17: *continued*

Year	Isolates tested	Ceftriaxone, % decreased susceptibility* (n)	Ciprofloxacin, % resistant† (n)	Azithromycin, % resistant§ (n)	Penicillin, % resistant# (n)
2018	9,006	1.7 (156)	25.6 (2,303)	6.2 (561)	21.1 (1,897)
2019	9,668	1.3 (126)	28.4 (2,743)	4.6 (448)	22.1 (2,136)
2020	7,222	0.9 (68)	36.3 (2,625)	3.9 (284)	26.6 (1,920)
2021	6,254	0.9 (54)	52.9 (3,309)	4.7 (296)	38.1 (2,381)

nd = no data available

* Decreased susceptibility to ceftriaxone: minimum inhibitory concentration (MIC) 0.06–0.125 mg/L

† Resistance to ciprofloxacin: MIC ≥1 mg/L

§ Resistance to azithromycin: MIC ≥1 mg/L

Resistance to penicillin: penicillinase-producing or chromosomal resistance (MIC ≥ 1 mg/L)

** Excluding Victoria, because azithromycin data are not available

† An additional isolate from the Northern Territory in 2013 had an MIC of 0.5 mg/L to ceftriaxone, the highest recorded in Australia (see Lahra et al. N Engl J Med 2014;371:1850–1)

Source: NNN (Australian Gonococcal Surveillance Programme annual reports)

Table S4.18: *Neisseria gonorrhoeae* decreased susceptibility and resistance, by state and territory, 2017–2021

State or territory	Year	Isolates tested	Ceftriaxone, % decreased susceptibility* (n)	Ciprofloxacin, % resistant† (n)	Azithromycin, % resistant§ (n)	Penicillin, % resistant# (n)
NSW	2017	2,806	0.5 (13)	30.5 (857)	9.3 (261)	25.3 (709)
	2018	3,535	0.8 (30)	28.9 (1,023)	6.5 (230)	23.3 (823)
	2019	3,610	1.2 (44)	32.0 (1,156)	6.0 (215)	26.8 (967)
	2020	2,585	1.2 (30)	44.0 (1,138)	7.0 (181)	35.2 (909)
	2021	1,921	0.9 (18)	68.6 (1,318)	9.9 (191)	42.6 (819)
Vic	2017	2,258	2.1 (48)	30.6 (691)	13.5 (304)	29.6 (668)
	2018	2,619	3.2 (83)	23.3 (610)	8.3 (217)	20.2 (529)
	2019	2,616	1.6 (42)	29.8 (780)	6.2 (161)	20.0 (522)
	2020	1,665	1.1 (18)	38.9 (648)	1.7 (29)	25.6 (427)
	2021	1,899	1.3 (25)	59.2 (1,125)	3.1 (59)	45.8 (869)
Qld	2017	1,249	0.9 (11)	21.2 (265)	4.9 (61)	26.0 (325)
	2018	1,375	1.3 (18)	27.6 (379)	4.9 (68)	20.7 (284)
	2019	1,677	1.0 (16)	23.1 (388)	1.9 (32)	20.5 (344)
	2020	1,504	1.1 (17)	32.0 (482)	2.9 (43)	21.7 (327)
	2021	1,128	0.4 (4)	43.2 (487)	1.2 (14)	32.5 (367)

continues

Table S4.18: *continued*

State or territory	Year	Isolates tested	Ceftriaxone, % decreased susceptibility* (n)	Ciprofloxacin, % resistant† (n)	Azithromycin, % resistant§ (n)	Penicillin, % resistant# (n)
SA	2017	359	0.6 (2)	37.9 (136)	12.8 (46)	41.5 (149)
	2018	231	1.3 (3)	24.7 (57)	3.0 (7)	22.5 (52)
	2019	554	1.6 (9)	26.7 (148)	2.0 (11)	13.5 (75)
	2020	334	0.0 (0)	17.1 (57)	0.3 (1)	6.9 (23)
	2021	295	1.4 (4)	27.8 (82)	1.0 (3)	31.5 (93)
WA: total	2017	743	1.2 (9)	5.9 (44)	17.9 (133)	16.3 (121)
	2018	760	1.8 (14)	2.2 (17)	21.3 (162)	23.4 (178)
	2019	838	1.6 (13)	1.6 (13)	21.5 (180)	25.2 (211)
	2020	797	0.4 (3)	28.0 (223)	2.4 (19)	25.5 (203)
	2021	569	0.2 (1)	31.6 (180)	3.2 (18)	26.5 (151)
WA: non-remote	2017	624	1.4 (9)	18.4 (115)	6.4 (40)	20.0 (125)
	2018	652	2.1 (14)	26.5 (173)	2.5 (16)	23.8 (155)
	2019	753	1.5 (11)	27.1 (204)	1.6 (12)	23.1 (174)
	2020	nd	nd	nd	nd	nd
	2021	nd	nd	nd	nd	nd
WA: remote	2017	119	0.0 (0)	5.0 (6)	3.4 (4)	6.7 (8)
	2018	108	0.0 (0)	4.6 (5)	0.9 (1)	6.5 (7)
	2019	85	2.4 (2)	8.2 (7)	1.2 (1)	7.1 (6)
	2020	nd	nd	nd	nd	nd
	2021	nd	nd	nd	nd	nd

continues

Table S4.18: *continued*

State or territory	Year	Isolates tested	Ceftriaxone, % decreased susceptibility* (n)	Ciprofloxacin, % resistant[†] (n)	Azithromycin, % resistant[§] (n)	Penicillin, % resistant[#] (n)
Tas	2017	59	0.0 (0)	61.0 (36)	8.5 (5)	44.1 (26)
	2018	55	7.3 (4)	36.4 (20)	5.5 (3)	25.5 (14)
	2019	49	2.0 (1)	14.3 (7)	2.0 (1)	38.8 (19)
	2020	38	0.0 (0)	23.7 (9)	0.0 (0)	10.5 (4)
	2021	69	1.4 (1)	39.1 (27)	5.8 (4)	23.2 (16)
NT: non-remote	2017	58	0.0 (0)	17.2 (10)	1.7 (1)	10.3 (6)
	2018	68	0.0 (0)	10.3 (7)	1.5 (1)	8.8 (6)
	2019	198	0.5 (1)	22.2 (44)	7.1 (14)	9.6 (19)
	2020	148	0.0 (0)	39.9 (59)	6.1 (9)	16.9 (25)
	2021	186	0.5 (1)	40.9 (76)	3.2 (6)	34.9 (65)
NT: remote	2017	158	0.0 (0)	1.3 (2)	0.6 (1)	2.5 (4)
	2018	157	0.0 (0)	1.9 (3)	0.0 (0)	1.9 (3)
	2019	55	0.0 (0)	16.4 (9)	1.8 (1)	18.2 (10)
	2020	51	0.0 (0)	15.7 (8)	3.9 (2)	3.9 (2)
	2021	57	0.0 (0)	21.1 (12)	1.8 (1)	0.0 (0)

continues

Table S4.18: *continued*

State or territory	Year	Isolates tested	Ceftriaxone, % decreased susceptibility* (n)	Ciprofloxacin, % resistant[†] (n)	Azithromycin, % resistant[§] (n)	Penicillin, % resistant[#] (n)
ACT	2017	145	0.0 (0)	24.8 (36)	2.1 (3)	17.2 (25)
	2018	206	1.9 (4)	12.6 (26)	8.7 (18)	11.7 (24)
	2019	71	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
	2020	100	0.0 (0)	1.0 (1)	0.0 (0)	0.0 (0)
	2021	130	0.0 (0)	1.5 (2)	0.0 (0)	0.8 (1)
Australia	2017	7,835	1.1 (83)	27.5 (2,154)	9.3 (726)	26.1 (2,045)
	2018	9,006	1.7 (156)	25.6 (2,303)	6.2 (561)	21.1 (1,897)
	2019	9,668	1.3 (126)	28.4 (2,743)	4.6 (448)	22.1 (2,136)
	2020	7,222	0.9 (68)	36.3 (2,625)	3.9 (284)	26.6 (1,920)
	2021	6,254	0.9 (54)	52.9 (3,309)	4.7 (296)	38.1 (2,381)

nd = no data available

* Decreased susceptibility to ceftriaxone: minimum inhibitory concentration (MIC) 0.06–0.125 mg/L

† Resistance to ciprofloxacin: MIC ≥1 mg/L

§ Resistance to azithromycin: MIC ≥1 mg/L

Resistance to penicillin: penicillinase-producing or chromosomal resistance (MIC ≥1 mg/L)

Source: NNN (Australian Gonococcal Surveillance Programme annual reports)

Table S4.19: *Neisseria gonorrhoeae* decreased susceptibility to ceftriaxone (MIC 0.06–0.125 mg/L), by state and territory, 2010–2021

State or territory	2010, % of all isolates (n)	2011, % of all isolates (n)	2012, % of all isolates (n)	2013, % of all isolates (n)	2014, % of all isolates (n)	2015, % of all isolates (n)	2016, % of all isolates (n)	2017, % of all isolates (n)	2018, % of all isolates (n)	2019, % of all isolates (n)	2020, % of all isolates (n)	2021, % of all isolates (n)
NSW	5.6 (74)	4.4 (58)	4.5 (76)	11.8 (183)	7.1 (119)	2.7 (52)	2.0 (45)	0.5 (13)	0.8 (30)	1.2 (44)	1.2 (30)	0.9 (18)
Vic	5.7 (52)	5.3 (50)	8.4 (105)	11.8 (181)	6.6 (95)	1.5 (25)	1.1 (19)	2.1 (48)	3.2 (83)	1.6 (42)	1.1 (18)	1.3 (25)
Qld	3.2 (26)	2.3 (18)	2.4 (17)	4.9 (33)	3.2 (21)	1.0 (7)	3.7 (32)	0.9 (11)	1.3 (18)	1.0 (16)	1.1 (17)	0.4 (4)
SA	11.6 (19)	0.7 (1)	0.7 (1)	1.9 (4)	1.0 (2)	3.6 (9)	0.6 (2)	0.6 (2)	1.3 (3)	1.6 (9)	0.0 (0)	1.4 (4)
WA: total	5.2 (17)	0.7 (3)	1.2 (6)	2.7 (13)	-	-	-	-	-	-	0.4 (3)	0.2 (1)
WA: non-remote	nd	nd	nd	nd	3.6 (14)	1.3 (5)	1.3 (9)	1.4 (9)	2.1 (14)	1.5 (11)	nd	nd
WA: remote	nd	nd	nd	nd	0.9 (1)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	2.4 (2)	nd	nd
Tas	0.0 (0)	0.0 (0)	0.0 (0)	24.4 (11)	0.0 (0)	0.0 (0)	3.6 (1)	0.0 (0)	7.3 (4)	2.0 (1)	0.0 (0)	1.4 (1)
NT: non-remote	0.2 (1)	0.4 (2)	0.0 (0)	1.9 (2)	3.0 (3)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
NT: remote	0.0 (0)	0.0 (0)	0.0 (0)	0.8 (2)	0.8 (1)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
ACT	6.7 (2)	3.1 (2)	3.6 (2)	0.0 (0)	2.7 (2)	0.0 (0)	0.9 (1)	0.0 (0)	1.9 (4)	0.5 (1)	0.0 (0)	0.5 (1)
Australia	4.8 (191)	3.2 (134)	4.4 (207)	8.8 (429)	5.4 (258)	1.8 (98)	1.7 (109)	1.1 (83)	1.7 (156)	1.3 (126)	0.9 (68)	0.9 (54)

- = total for state or territory separated into urban and rural, and remote; MIC = minimum inhibitory concentration; nd = no data available

Note: An additional isolate from the Northern Territory in 2013 had an MIC of 0.5 mg/L to ceftriaxone, the highest recorded in Australia (see Lahra et al. N Engl J Med 2014;371:1850–1).

Source: NNN (Australian Gonococcal Surveillance Programme annual reports)

Table S4.20: Percentage of *Neisseria gonorrhoeae* isolates with decreased susceptibility to ceftriaxone (MIC 0.06–0.125 mg/L), 2010–2021

Ceftriaxone MIC (mg/L)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
0.06	4.80	3.20	4.10	8.20	4.80	1.70	1.65	1.02	1.67	1.19	0.87	0.83
0.125	0.10	0.10	0.30	0.60	0.60	0.10	0.05	0.04	0.06	0.11	0.07	0.03

MIC = minimum inhibitory concentration

Note: An additional isolate from the Northern Territory in 2013 had an MIC of 0.5 mg/L to ceftriaxone, the highest recorded in Australia (see Lahra et al. N Engl J Med 2014;371:1850–1).

Source: NNN (Australian Gonococcal Surveillance Programme annual reports)

Table S4.21: *Neisseria gonorrhoeae* resistance to ciprofloxacin (MIC ≥1 mg/L), by state and territory, 2010–2021

State or territory	2010, % of all isolates (n)	2011, % of all isolates (n)	2012, % of all isolates (n)	2013, % of all isolates (n)	2014, % of all isolates (n)	2015, % of all isolates (n)	2016, % of all isolates (n)	2017, % of all isolates (n)	2018, % of all isolates (n)	2019, % of all isolates (n)	2020, % of all isolates (n)	2021, % of all isolates (n)
NSW	40.0 (522)	33.0 (431)	31.7 (539)	35.0 (553)	43.0 (726)	35.9 (684)	32.5 (738)	30.5 (857)	28.9 (1,023)	32.0 (1,156)	44.0 (1,138)	68.6 (1,318)
Vic	42.0 (377)	40.0 (374)	45.8 (572)	44.0 (683)	39.0 (559)	23.0 (383)	37.0 (641)	30.6 (691)	23.3 (610)	29.8 (780)	38.9 (648)	59.2 (1,125)
Qld	27.0 (223)	15.0 (114)	16.9 (120)	29.0 (194)	28.0 (184)	25.5 (186)	25.0 (216)	21.2 (265)	27.6 (379)	23.1 (388)	32.0 (482)	43.2 (487)
SA	59.0 (59)	23.0 (35)	32.7 (49)	26.0 (56)	42.0 (86)	41.0 (103)	36.4 (127)	37.9 (136)	48.3 (57)	26.7 (148)	17.1 (57)	27.8 (82)
WA: total	39.0 (128)	21.0 (88)	23.8 (123)	25.0 (123)	-	-	-	-	-	-	28.0 (223)	31.6 (180)
WA: urban and rural	nd	nd	nd	nd	30.0 (117)	20.8 (82)	20.5 (138)	18.4 (115)	26.5 (173)	27.1 (204)	nd	nd
WA: remote	nd	nd	nd	nd	5.6 (6)	3.4 (3)	4.5 (6)	5.0 (6)	4.6 (5)	8.2 (7)	nd	nd
Tas	64.0 (7)	40.0 (2)	35.7 (5)	49.0 (22)	27.0 (8)	0.0 (0)	28.6 (8)	61.0 (36)	36.4 (20)	14.3 (7)	23.7 (9)	39.1 (27)
NT: total	3.6 (15)	3.5 (16)	2.8 (9)	-	-	-	-	-	-	-	-	-
NT: urban and rural	nd	nd	nd	23.0 (24)	27.0 (27)	10.5 (8)	28.3 (15)	17.2 (10)	10.3 (7)	22.2 (44)	15.7 (8)	21.1 (12)
NT: remote	nd	nd	nd	2.1 (5)	3.1 (4)	3.3 (6)	3.0 (5)	1.3 (2)	1.9 (3)	16.4 (9)	1.0 (1)	1.5 (2)
ACT	57.0 (17)	14.0 (9)	33.9 (19)	20.0 (9)	44.0 (33)	26.1 (18)	16.1 (18)	24.8 (36)	12.6 (26)	0.0 (0)	40.7 (59)	40.9 (76)
Australia	34.0 (1,348)	26.0 (1,069)	30.3 (1,436)	34.0 (1,669)	36.0 (1,750)	27.2 (1,473)	30.0 (1,912)	27.5 (2,154)	25.6 (2,303)	28.4 (2,743)	36.4 (2,625)	52.9 (3,309)

- = total for state or territory separated into urban and rural, and remote; MIC = minimum inhibitory concentration; nd = no data available

Source: NNN (Australian Gonococcal Surveillance Programme annual reports)

Table S4.22: *Neisseria gonorrhoeae* resistance to azithromycin (MIC ≥1 mg/L), by state and territory, 2010–2021

State or territory	2010, % of all isolates (n)	2011, % of all isolates (n)	2012, % of all isolates (n)	2013, % of all isolates (n)	2014, % of all isolates (n)	2015, % of all isolates (n)	2016, % of all isolates (n)	2017, % of all isolates (n)	2018, % of all isolates (n)	2019, % of all isolates (n)	2020, % of all isolates (n)	2021, % of all isolates (n)
NSW	0.7 (9)	0.3 (4)	0.5 (9)	0.9 (14)	2.0 (33)	2.3 (43)	3.6 (82)	9.3 (261)	6.5 (230)	6.0 (215)	7.0 (181)	9.9 (191)
Vic	nd	nd	2.7 (34)	2.3 (35)	2.3 (33)	1.8 (30)	5.4 (93)	13.5 (304)	8.3 (217)	6.2 (161)	1.7 (29)	3.1 (59)
Qld	1.5 (12)	2.7 (21)	2.1 (15)	5.7 (38)	3.5 (23)	5.8 (42)	1.2 (10)	4.9 (61)	4.9 (68)	1.9 (32)	2.9 (43)	1.2 (14)
SA	7.3 (12)	11.0 (16)	0.7 (1)	2.8 (6)	0.5 (1)	2.8 (7)	19.5 (68)	12.8 (46)	3.0 (7)	2.0 (11)	0.3 (1)	1.0 (3)
WA: total	0.6 (2)	0.7 (3)	0.6 (3)	1.9 (9)	-	-	-	-	-	-	2.4 (19)	3.2 (18)
WA: non-remote	nd	nd	nd	nd	5.3 (21)	3.8 (15)	7.6 (51)	6.4 (40)	2.5 (16)	1.6 (12)	nd	nd
WA: remote	nd	nd	nd	nd	0.0 (0)	0.0 (0)	0.8 (1)	3.4 (4)	0.9 (1)	1.2 (1)	nd	nd
Tas	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	3.3 (1)	4.3 (1)	14.3 (4)	9.0 (5)	6.0 (3)	2.0 (1)	0.0 (0)	5.8 (4)
NT: total	0.0 (0)	0.2 (1)	0.3 (1)	-	-	-	-	-	-	-	-	-
NT: non-remote	nd	nd	nd	1.0 (1)	0.0 (0)	0.0 (0)	1.9 (1)	1.7 (1)	1.5 (1)	1.8 (1)	3.9 (2)	1.8 (1)
NT: remote	nd	nd	nd	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.6 (1)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
ACT	0.0 (0)	6.3 (4)	0.0 (0)	2.2 (1)	9.3 (7)	0.0 (0)	7.1 (8)	2.1 (3)	8.7 (18)	7.1 (14)	6.1 (9)	3.2 (6)
Australia	1.1 (35)	1.5 (49)	1.3 (63)	2.1 (104)	2.5 (119)	2.6 (138)	5.0 (318)	9.3 (726)	6.2 (561)	4.6 (448)	3.9 (284)	4.7 (296)

- = total for state or territory separated into urban and rural, and remote; MIC = minimum inhibitory concentration; nd = no data available

Source: NNN (Australian Gonococcal Surveillance Programme annual reports)

Table S4.23: *Neisseria gonorrhoeae* resistance to penicillin (MIC ≥1 mg/L; or penicillinase-producing *N. gonorrhoeae*), by state and territory, 2010–2021

State or territory	2010, % of all isolates (n)	2011, % of all isolates (n)	2012, % of all isolates (n)	2013, % of all isolates (n)	2014, % of all isolates (n)	2015, % of all isolates (n)	2016, % of all isolates (n)	2017, % of all isolates (n)	2018, % of all isolates (n)	2019, % of all isolates (n)	2020, % of all isolates (n)	2021, % of all isolates (n)
NSW	31.0 (408)	28.0 (371)	28.3 (482)	38.0 (593)	43.0 (725)	30.9 (588)	41.8 (949)	25.3 (709)	23.3 (823)	26.8 (967)	35.2 (909)	42.6 (819)
Vic	42.0 (382)	44.0 (410)	53.3 (666)	44.0 (678)	22.0 (322)	15.2 (257)	34.5 (598)	29.6 (668)	20.2 (529)	20.0 (522)	25.6 (427)	45.8 (869)
Qld	23.0 (185)	19.0 (144)	25.8 (183)	31.0 (209)	24.0 (153)	27.6 (201)	28.1 (243)	26.0 (325)	20.7 (284)	20.5 (344)	21.7 (327)	32.5 (367)
SA	34.0 (56)	17.0 (26)	35.3 (53)	18.0 (39)	11.0 (22)	20.7 (52)	38.7 (135)	41.5 (149)	44.1 (52)	13.5 (75)	6.9 (23)	31.5 (93)
WA: total	32.0 (104)	18.0 (73)	20.5 (106)	27.0 (133)	-	-	-	-	-	-	25.5 (203)	26.5 (151)
WA: non-remote	nd	nd	nd	nd	26.0 (104)	19.5 (77)	16.7 (112)	20.0 (125)	23.8 (155)	23.1 (174)	nd	nd
WA: remote	nd	nd	nd	nd	4.6 (5)	2.3 (2)	5.3 (7)	6.7 (8)	6.5 (7)	7.1 (6)	nd	nd
Tas	36.0 (4)	60.0 (3)	35.7 (5)	38.0 (17)	23.0 (7)	8.7 (2)	28.6 (8)	44.1 (26)	25.5 (14)	38.8 (19)	10.5 (4)	23.2 (16)
NT: total	3.6 (15)	4.1 (19)	3.1 (10)	-	-	-	-	-	-	-	-	-
NT: non-remote	nd	nd	nd	20.0 (21)	21.0 (21)	14.5 (11)	13.2 (7)	10.3 (6)	8.8 (6)	18.2 (10)	3.9 (2)	0.0 (0)
NT: remote	nd	nd	nd	1.3 (3)	1.5 (2)	2.2 (4)	3.0 (5)	2.5 (4)	1.9 (3)	0.0 (0)	0.0 (0)	0.8 (1)
ACT	23.0 (7)	11.0 (7)	14.3 (8)	16.0 (7)	12.0 (9)	33.3 (23)	10.7 (12)	17.2 (25)	11.7 (24)	9.6 (19)	17.2 (25)	34.9 (65)
Australia	29.0 (1,161)	26.0 (1,053)	32.1 (1,513)	35.0 (1,700)	29.0 (1,370)	22.5 (1,217)	32.5 (2,076)	26.1 (2,045)	21.1 (1,897)	22.1 (2,136)	26.6 (1,920)	38.1 (2,381)

- = total for state or territory separated into urban and rural, and remote; MIC = minimum inhibitory concentration; nd = no data available

Source: NNN (Australian Gonococcal Surveillance Programme annual reports)

Table S4.24: *Neisseria meningitidis* decreased susceptibility and resistance, 2000–2021

Year	Isolates tested	Penicillin, % decreased susceptibility* (n)	Penicillin, % resistant† (n)	Ceftriaxone, % decreased susceptibility§ (n)	Ciprofloxacin, % resistant# (n)	Rifampicin, % resistant** (n)
2000	369	68.0 (251)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
2001	338	67.0 (226)	0.0 (0)	0.0 (0)	0.0 (0)	1.2 (4)
2002	391	67.0 (262)	0.5 (2)	0.0 (0)	0.0 (0)	0.0 (0)
2003	300	67.0 (200)	0.3 (1)	0.0 (0)	0.0 (0)	1.0 (3)
2004	238	62.0 (147)	0.4 (1)	0.0 (0)	0.0 (0)	0.0 (0)
2005	206	68.0 (140)	0.5 (1)	0.0 (0)	0.0 (0)	0.5 (1)
2006	164	67.0 (109)	0.0 (0)	0.0 (0)	0.0 (0)	0.6 (1)
2007	151	77.0 (116)	0.0 (0)	0.0 (0)	0.0 (0)	2.0 (3)
2008	150	73.0 (109)	0.0 (0)	0.0 (0)	0.0 (0)	0.7 (1)
2009	137	72.0 (98)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
2010	122	83.0 (101)	0.8 (1)	0.0 (0)	0.0 (0)	0.0 (0)
2011	125	86.0 (108)	0.8 (1)	0.0 (0)	0.0 (0)	0.0 (0)
2012	115	83.0 (95)	0.9 (1)	0.0 (0)	0.0 (0)	0.0 (0)
2013	93	79.0 (73)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
2014	95	88.0 (84)	0.0 (0)	0.0 (0)	0.0 (0)	2.1 (2)
2015	117	86.0 (101)	3.4 (4)	0.0 (0)	0.0 (0)	0.9 (1)
2016	189	90.0 (170)	5.8 (11)	0.5 (1)	0.0 (0)	0.0 (0)
2017	274	89.8 (246)	5.1 (14)	0.0 (0)	0.7 (2)	0.4 (1)
2018	212	93.9 (199)	1.4 (3)	0.0 (0)	0.5 (1)	0.0 (0)

continues

Table S4.24: *continued*

Year	Isolates tested	Penicillin, % decreased susceptibility* (n)	Penicillin, % resistant† (n)	Ceftriaxone, % decreased susceptibility§ (n)	Ciprofloxacin, % resistant# (n)	Rifampicin, % resistant** (n)
2019	167	92.2 (154)	0.6 (1)	0.0 (0)	0.0 (0)	0.6 (1)
2020	61	91.8 (56)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)
2021	46	89.1 (41)	0.0 (0)	0.0 (0)	2.2 (1)	0.0 (0)

* Decreased susceptibility to penicillin: minimum inhibitory concentration (MIC) >0.03 mg/L

† Resistance to penicillin: penicillinase-producing or chromosomal resistance (MIC ≥ 1 mg/L)

§ Decreased susceptibility to ceftriaxone: MIC ≥ 0.06 mg/L. One isolate in 2016 with decreased susceptibility (MIC 0.125 mg/L)

Two isolates in 2017 were less susceptible to ciprofloxacin: MIC = 0.25 mg/L

** Resistance to rifampicin: MIC ≥ 1 mg/L

Source: NNN (Australian Meningococcal Surveillance Programme annual reports)

Table S4.25: Number of *Neisseria meningitidis* isolates at each penicillin MIC value, 2006–2021

Year	Isolates tested	≤0.008 mg/L	0.016 mg/L	0.03 mg/L	0.06 mg/L	0.125 mg/L	0.25 mg/L	0.5 mg/L	1.0 mg/L	≥2.0 mg/L
2006	164	2	8	45	57	25	21	6	0	0
2007	151	0	2	33	63	18	25	10	0	0
2008	150	0	2	39	58	24	20	7	0	0
2009	137	0	8	31	41	23	25	9	0	0
2010	122	3	1	16	40	20	26	15	1	0
2011	125	0	3	13	33	22	40	13	1	0
2012	115	0	1	18	36	17	22	20	1	0
2013	93	1	2	17	30	14	21	8	0	0
2014	95	0	1	10	28	15	26	15	0	0
2015	117	0	0	12	37	14	24	26	4	0
2016	189	0	2	6	36	26	35	73	11	0
2017	274	0	1	13	46	35	56	109	14	0
2018	212	0	0	10	41	30	56	72	3	0
2019	167	0	0	12	35	25	60	34	1	0
2020	61	0	0	5	16	11	21	8	0	0
2021	46	0	0	5	8	8	19	6	0	0

MIC = minimum inhibitory concentration

Source: NNN (Australian Meningococcal Surveillance Programme annual reports)

Table S4.26: *Neisseria meningitidis* decreased susceptibility to penicillin (MIC 0.06–0.5 mg/L), by state and territory, 2010–2021

State or territory	2010, % (n)	2011, % (n)	2012, % (n)	2013, % (n)	2014, % (n)	2015, % (n)	2016, % (n)	2017, % (n)	2018, % (n)	2019, % (n)	2020, % (n)	2021*, % (n)
NSW	93 (40)	93 (25)	86 (30)	49 (24)	89 (23)	84 (26)	93 (51)	88 (61)	95 (54)	89 (41)	100 (12)	73 (8)
Vic	93 (26)	89 (25)	96 (21)	86 (12)	100 (21)	90 (37)	87 (56)	90 (63)	97 (38)	96 (26)	92 (12)	71 (5)
Qld	68 (17)	88 (30)	79 (22)	85 (17)	91 (21)	91 (19)	88 (30)	87 (41)	89 (39)	88 (35)	95 (19)	25 (3)
SA	57 (4)	85 (11)	75 (9)	67 (6)	100 (6)	100 (10)	75 (9)	100 (12)	90 (19)	90 (18)	33 (1)	67 (4)
WA	71 (10)	77 (10)	67 (8)	82 (9)	67 (10)	64 (7)	100 (17)	89 (32)	100 (35)	100 (23)	100 (10)	75 (6)
Tas	0 (0)	67 (4)	75 (3)	50 (1)	100 (2)	100 (1)	100 (5)	87 (13)	88 (7)	100 (5)	0 (0)	50 (1)
NT	100 (3)	0 (0)	100 (2)	100 (2)	50 (1)	0 (0)	100 (2)	96 (22)	100 (7)	100 (5)	100 (1)	0 (0)
ACT	100 (1)	100 (3)	0 (0)	100 (2)	0 (0)	100 (1)	0 (0)	100 (2)	100 (2)	100 (1)	100 (1)	0 (0)
Australia	83 (101)	86 (108)	83 (95)	79 (73)	88 (84)	86 (101)	90 (170)	90 (246)	94 (201)	92 (154)	92 (56)	59 (27)

MIC = minimum inhibitory concentration

* Intermediate susceptibility

Note: In 2021 there was a change in susceptibility test reporting to CLSI interpretative guidelines. Intermediate susceptibility to penicillin is defined as MIC values 0.125 – 0.5 mg/L.

Source: NNN (Australian Meningococcal Surveillance Programme annual reports)

Table S4.27: *Neisseria meningitidis* resistance to penicillin (MIC ≥ 1 mg/L), by state and territory, 2002–2021

Year	Isolates tested	State or territory of isolation
2002	2	NSW and NT
2003	1	ACT
2004	1	NT
2005	1	NSW
2006	0	n/a
2007	0	n/a
2008	0	n/a
2009	0	n/a
2010	1	Vic
2011	1	Vic
2012	1	NSW
2013	0	n/a
2014	0	n/a
2015	4	NSW (n = 1), Vic (n = 2), Qld (n = 1)
2016	11	NSW (n = 2), Vic (n = 6), Qld (n = 3)
2017	14	NSW (n = 2), Vic (n = 7), Qld (n = 4), NT (n = 1)
2018	3	Qld
2019	1	Vic
2020	0	n/a
2021	0	n/a

MIC = minimum inhibitory concentration; n/a = not applicable

Note: All isolates had an MIC = 1 mg/L.

Source: NNN (Australian Meningococcal Surveillance Programme annual reports)

Table S4.28: *Neisseria meningitidis* resistance to rifampicin (MIC ≥ 1 mg/L), by state and territory, 2001–2021

Year	Isolates tested	State or territory of isolation
2001	4	Qld (3 with MIC = 1 mg/L; 1 with MIC = 128 mg/L)
2002	0	n/a
2003	3	Qld (MIC = 1 mg/L), SA (MIC = 32 mg/L), WA (MIC = 100 mg/L)
2004	0	n/a
2005	1	Qld (MIC = 1 mg/L)
2006	1	Qld (MIC = 1 mg/L)
2007	3	Qld (all with MIC = 1 mg/L)
2008	1	Qld (MIC = 1 mg/L)
2009	0	n/a
2010	0	n/a
2011	0	n/a
2012	0	n/a
2013	0	n/a
2014	2	WA (1 with MIC = 4 mg/L; 1 with MIC = 16 mg/L)
2015	1	Qld (MIC = 1 mg/L)
2016	0	n/a
2017	1	Qld (MIC = 1 mg/L)
2018	0	n/a
2019	1	Vic (MIC ≥ 32 mg/L)
2020	0	n/a
2021	0	n/a

MIC = minimum inhibitory concentration; n/a = not applicable

Source: NNN (Australian Meningococcal Surveillance Programme annual reports)

Table S4.29: *Pseudomonas aeruginosa* resistance (all specimen sources), 2017-2021

Antimicrobial	2017, % resistant (n)	2018, % resistant (n)	2019, % resistant (n)	2020, % resistant (n)	2021, % resistant (n)
Ceftazidime	5.5 (54,046)	5.6 (52,084)	5.4 (53,150)	5.1 (53,486)	4.5 (55,924)
Ciprofloxacin/norfloxacin	6.9 (53,028)	7.6 (50,725)	7.5 (51,102)	7.2 (48,376)	6.7 (50,297)
Gentamicin	5.8 (58,883)	5.6 (56,073)	5.1 (56,682)	4.7 (55,242)	3.7 (55,661)
Meropenem	4.1 (49,324)	4.0 (49,068)	3.8 (48,869)	3.1 (48,804)	2.8 (51,044)
Piperacillin-tazobactam	6.8 (57,576)	7.1 (53,546)	6.8 (55,273)	7.1 (54,469)	6.5 (56,847)
Tobramycin	1.8 (47,571)	1.9 (45,841)	1.7 (47,156)	1.4 (47,741)	1.2 (51,496)

Note: *Pseudomonas aeruginosa* is considered intrinsically resistant to ampicillin, cefazolin and trimethoprim-sulfamethoxazole.

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.30: *Pseudomonas aeruginosa* resistance, by clinical setting, 2017–2021

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant (n)
Ceftazidime	2017	5.6 (3,475)	7.0 (26,197)	5.4 (299)	4.0 (1,436)	3.9 (22,374)
	2018	5.8 (3,285)	7.1 (26,227)	4.5 (288)	3.4 (1,177)	3.9 (20,802)
	2019	5.2 (3,601)	6.8 (27,447)	2.4 (288)	3.2 (1,045)	3.6 (20,427)
	2020	5.1 (3,396)	6.1 (28,200)	2.2 (267)	3.4 (1,089)	3.8 (20,043)
	2021	4.5 (3,521)	5.4 (29,497)	4.0 (321)	4.1 (1,038)	3.1 (20,720)
Ciprofloxacin/ norfloxacin	2017	5.2 (2,846)	8.1 (28,720)	7.0 (374)	5.4 (242)	5.6 (20,572)
	2018	6.9 (2,714)	8.6 (27,855)	7.4 (326)	4.2 (166)	6.2 (19,327)
	2019	7.6 (2,952)	8.5 (28,703)	6.1 (410)	2.2 (137)	6.1 (18,512)
	2020	8.2 (736)	8.2 (28,176)	7.3 (398)	6.6 (121)	5.8 (18,423)
	2021	7.8 (772)	7.7 (29,318)	6.5 (384)	9.3 (97)	5.1 (18,880)
Gentamicin	2017	4.2 (3,557)	7.0 (29,732)	4.2 (427)	5.3 (1,464)	4.6 (23,422)
	2018	3.0 (3,375)	7.4 (28,932)	3.8 (391)	3.5 (1,203)	3.8 (21,833)
	2019	3.3 (3,648)	6.3 (29,826)	3.0 (438)	3.3 (1,056)	3.8 (21,321)
	2020	2.9 (3,405)	5.5 (29,077)	3.0 (401)	2.4 (1,097)	3.9 (20,739)
	2021	3.0 (3,490)	4.4 (28,622)	2.6 (386)	2.5 (1,035)	3.0 (21,288)

continues

Table S4.30: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant (n)
Meropenem	2017	2.6 (762)	5.2 (27,894)	4.9 (223)	0.5 (212)	2.6 (19,970)
	2018	1.8 (2,698)	5.3 (27,209)	4.1 (241)	0.0 (144)	2.4 (18,471)
	2019	2.9 (797)	4.6 (28,901)	2.4 (290)	0.8 (129)	2.8 (18,404)
	2020	1.8 (733)	3.9 (28,911)	2.5 (283)	3.4 (119)	1.9 (18,262)
	2021	2.5 (767)	3.5 (30,186)	2.0 (342)	0.0 (96)	1.8 (18,821)
Piperacillin-tazobactam	2017	7.0 (3,529)	7.6 (28,587)	6.1 (427)	4.7 (1,456)	6.1 (23,297)
	2018	8.3 (3,162)	8.2 (27,117)	3.6 (387)	4.7 (1,180)	5.6 (21,384)
	2019	8.1 (3,600)	7.8 (28,595)	4.1 (441)	5.0 (1,045)	5.5 (21,203)
	2020	6.9 (3,420)	7.9 (28,443)	7.5 (401)	5.6 (1,081)	5.9 (20,602)
	2021	7.0 (3,567)	7.1 (29,796)	4.7 (386)	5.3 (1,037)	5.5 (21,218)
Tobramycin	2017	0.8 (3,305)	2.9 (21,479)	1.4 (222)	1.1 (1,334)	0.9 (20,972)
	2018	0.9 (3,275)	2.9 (21,123)	0.0 (233)	0.7 (1,155)	1.0 (19,777)
	2019	0.6 (3,541)	2.6 (22,223)	0.4 (224)	1.0 (1,045)	1.0 (19,789)
	2020	0.7 (3,364)	1.8 (23,164)	0.4 (224)	0.6 (1,080)	1.1 (19,430)
	2021	0.7 (3,345)	1.6 (26,355)	0.0 (317)	0.5 (971)	0.9 (19,695)

Note: *Pseudomonas aeruginosa* is considered intrinsically resistant to ampicillin, cefazolin and trimethoprim-sulfamethoxazole.

Sources: AGAR, APAS and HOTspots (public hospitals); AGAR, APAS (Qld, SA) and SNP (private hospitals); APAS, HOTspots and SNP (community); APAS and SNP (aged care homes); APAS (multi-purpose services)

Table S4.31: *Salmonella* species (non-typhoidal) resistance, by specimen source, 2017–2021

Antimicrobial	Year	Blood, % resistant (n)	Faeces, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Amoxicillin-clavulanic acid	2017	2.4 (252)	1.4 (2,728)	4.5 (199)	1.7 (3,179)
	2018	1.2 (243)	1.4 (2,242)	2.2 (179)	1.5 (2,664)
	2019	1.8 (282)	1.5 (2,413)	1.8 (164)	1.5 (2,859)
	2020	0.4 (269)	0.8 (2,783)	1.6 (183)	0.8 (3,235)
	2021	0.3 (288)	1.2 (2,592)	2.0 (244)	1.2 (3,124)
Ampicillin/amoxicillin	2017	6.3 (272)	7.5 (4,059)	8.2 (233)	7.4 (4,564)
	2018	4.1 (294)	8.6 (3,169)	6.4 (187)	8.1 (3,650)
	2019	5.5 (325)	6.6 (3,573)	6.4 (172)	6.5 (4,070)
	2020	3.0 (297)	4.3 (4,134)	7.0 (187)	4.3 (4,618)
	2021	0.6 (309)	3.8 (3,838)	6.3 (252)	3.8 (4,399)
Ceftazidime	2017	2.6 (230)	0.6 (2,484)	1.4 (142)	0.8 (2,856)
	2018	0.0 (225)	0.6 (2,027)	1.9 (108)	0.6 (2,360)
	2019	0.8 (257)	0.6 (2,170)	1.2 (86)	0.6 (2,513)
	2020	1.6 (254)	0.6 (2,504)	1.9 (103)	0.7 (2,861)
	2021	0.4 (264)	0.5 (2,328)	2.9 (172)	0.7 (2,764)

continues

Table S4.31: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Faeces, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Ceftriaxone	2017	2.2 (272)	0.8 (2,752)	1.2 (171)	0.9 (3,195)
	2018	0.0 (294)	0.8 (2,278)	1.6 (125)	0.7 (2,697)
	2019	1.2 (324)	0.7 (2,414)	1.7 (116)	0.8 (2,854)
	2020	1.3 (298)	0.6 (2,818)	0.8 (131)	0.6 (3,247)
	2021	0.3 (309)	0.7 (2,615)	2.2 (180)	0.7 (3,104)
Ciprofloxacin	2017	2.7 (260)	0.9 (2,819)	1.9 (215)	1.1 (3,294)
	2018	5.9 (273)	2.0 (2,234)	3.9 (179)	2.5 (2,686)
	2019	2.5 (285)	2.0 (2,451)	4.8 (147)	2.2 (2,883)
	2020	1.3 (302)	0.6 (2,857)	0.6 (179)	0.7 (3,338)
	2021	0.3 (312)	0.3 (2,723)	2.2 (178)	0.4 (3,213)
Meropenem	2017	0.0 (246)	0.0 (2,719)	0.0 (156)	0.0 (3,121)
	2018	0.0 (235)	0.0 (2,234)	0.0 (118)	0.0 (2,587)
	2019	0.0 (287)	0.0 (2,407)	0.0 (113)	0.0 (2,807)
	2020	0.0 (274)	0.0 (2,781)	0.0 (128)	0.0 (3,183)
	2021	0.0 (284)	0.0 (2,592)	0.0 (179)	0.0 (3,055)
Norfloxacin	2017	n/a	1.2 (2,525)	2.9 (206)	1.3 (2,731)
	2018	n/a	2.5 (1,579)	3.0 (168)	2.6 (1,747)
	2019	n/a	1.8 (1,713)	4.0 (126)	1.9 (1,839)
	2020	n/a	1.0 (2,080)	0.6 (161)	0.9 (2,241)
	2021	n/a	0.5 (2,140)	2.4 (168)	0.6 (2,308)

continues

Table S4.31: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Faeces, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Piperacillin-tazobactam	2017	0.8 (244)	0.7 (2,691)	5.1 (156)	0.9 (3,091)
	2018	1.1 (265)	0.9 (2,229)	3.4 (118)	1.0 (2,612)
	2019	1.0 (288)	0.9 (2,379)	0.0 (111)	0.9 (2,778)
	2020	0.0 (272)	0.3 (2,762)	0.0 (125)	0.3 (3,159)
	2021	0.0 (289)	0.8 (2,591)	2.2 (179)	0.8 (3,059)
Trimethoprim	2017	2.0 (245)	2.0 (2,483)	4.3 (211)	2.2 (2,939)
	2018	2.0 (255)	2.5 (2,023)	2.8 (179)	2.4 (2,457)
	2019	2.5 (282)	1.8 (2,186)	1.9 (157)	1.9 (2,625)
	2020	1.2 (252)	1.2 (2,513)	1.7 (180)	1.2 (2,945)
	2021	0.0 (264)	1.2 (2,319)	2.1 (239)	1.1 (2,822)
Trimethoprim-sulfamethoxazole	2017	2.3 (265)	2.1 (4,062)	3.6 (167)	2.2 (4,494)
	2018	1.4 (286)	2.0 (3,170)	3.3 (121)	2.0 (3,577)
	2019	1.6 (318)	1.9 (3,566)	0.9 (112)	1.8 (3,996)
	2020	0.7 (294)	0.8 (4,102)	2.3 (129)	0.8 (4,525)
	2021	0.0 (305)	0.7 (3,811)	2.8 (180)	0.7 (4,296)

n/a = not applicable

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); SNP (Qld, northern NSW)

Table S4.32: *Salmonella* species (non-typhoidal) resistance, by clinical setting, 2017–2021

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Community, % resistant (n)
Amoxicillin-clavulanic acid	2017	0.0 (18)	1.9 (2,106)	1.5 (65)	1.3 (980)
	2018	0.0 (13)	1.5 (1,745)	0.0 (52)	1.5 (826)
	2019	5.9 (34)	1.5 (2,006)	2.2 (45)	1.4 (763)
	2020	0.0 (24)	0.9 (2,107)	0.0 (62)	0.6 (1,016)
	2021	0.0 (10)	0.6 (2,081)	0.0 (49)	2.3 (971)
Ampicillin/amoxicillin	2017	11.8 (102)	7.5 (2,170)	4.5 (66)	7.3 (2,206)
	2018	13.9 (79)	7.1 (1,829)	3.8 (52)	9.2 (1,658)
	2019	5.6 (161)	6.9 (2,035)	4.4 (45)	6.1 (1,813)
	2020	1.9 (154)	5.6 (2,168)	3.2 (62)	3.1 (2,208)
	2021	2.5 (163)	3.8 (2,129)	2.0 (49)	3.8 (2,038)
Ceftazidime	2017	0.0 (15)	0.9 (1,834)	0.0 (63)	0.6 (934)
	2018	0.0 (12)	0.6 (1,499)	0.0 (52)	0.6 (771)
	2019	5.7 (35)	0.7 (1,723)	0.0 (45)	0.3 (699)
	2020	6.3 (16)	0.9 (1,800)	0.0 (62)	0.4 (958)
	2021	0.0 (11)	0.5 (1,798)	0.0 (49)	0.9 (894)
Ceftriaxone/cefotaxime	2017	0.0 (24)	1.0 (2,156)	0.0 (66)	0.9 (938)
	2018	0.0 (20)	0.8 (1,823)	0.0 (52)	0.6 (775)
	2019	5.6 (54)	0.9 (2,028)	0.0 (45)	0.3 (716)
	2020	3.7 (27)	0.7 (2,161)	0.0 (62)	0.4 (972)
	2021	0.0 (21)	0.6 (2,111)	0.0 (49)	1.1 (911)

continues

Table S4.32: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Community, % resistant (n)
Ciprofloxacin	2017	3.6 (84)	1.2 (2,136)	0.0 (64)	0.8 (990)
	2018	2.9 (69)	2.9 (1,750)	2.0 (50)	1.6 (790)
	2019	4.4 (137)	2.4 (1,964)	0.0 (42)	1.5 (727)
	2020	2.8 (142)	0.7 (2,119)	0.0 (59)	0.3 (992)
	2021	0.0 (126)	0.5 (2,119)	0.0 (49)	0.4 (900)
Meropenem	2017	0.0 (18)	0.0 (2,096)	0.0 (65)	0.0 (932)
	2018	0.0 (12)	0.0 (1,724)	0.0 (52)	0.0 (772)
	2019	0.0 (36)	0.0 (2,005)	0.0 (42)	0.0 (713)
	2020	0.0 (17)	0.0 (2,109)	0.0 (62)	0.0 (970)
	2021	0.0 (11)	0.0 (2,081)	0.0 (49)	0.0 (902)
Norfloxacin	2017	2.5 (79)	1.8 (1,828)	0.0 (65)	0.9 (969)
	2018	4.6 (65)	3.3 (1,108)	0.0 (49)	2.6 (727)
	2019	5.0 (120)	2.2 (1,294)	0.0 (36)	1.5 (598)
	2020	2.4 (127)	1.3 (1,412)	0.0 (46)	0.1 (878)
	2021	0.0 (117)	0.4 (1,537)	0.0 (39)	1.0 (837)
Piperacillin-tazobactam	2017	0.0 (18)	1.1 (2,076)	0.0 (64)	0.7 (923)
	2018	0.0 (12)	1.2 (1,752)	0.0 (52)	0.7 (769)
	2019	5.7 (35)	1.2 (1,999)	0.0 (42)	0.0 (691)
	2020	0.0 (17)	0.3 (2,094)	0.0 (62)	0.1 (961)
	2021	0.0 (11)	0.3 (2,080)	0.0 (49)	2.2 (907)

continues

Table S4.32: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Community, % resistant (n)
Trimethoprim	2017	13.3 (15)	2.5 (1,866)	0.0 (65)	1.4 (980)
	2018	0.0 (13)	2.5 (1,536)	0.0 (52)	2.5 (828)
	2019	5.9 (34)	2.2 (1,777)	0.0 (45)	0.9 (758)
	2020	0.0 (25)	1.7 (1,816)	0.0 (62)	0.6 (1,016)
	2021	0.0 (11)	0.8 (1,779)	0.0 (49)	1.8 (970)
Trimethoprim-sulfamethoxazole	2017	3.2 (95)	2.5 (2,164)	0.0 (66)	1.8 (2,153)
	2018	2.6 (78)	2.0 (1,816)	0.0 (52)	1.9 (1,600)
	2019	0.6 (156)	2.2 (2,019)	0.0 (42)	1.4 (1,763)
	2020	0.0 (143)	1.0 (2,132)	0.0 (62)	0.7 (2,163)
	2021	0.6 (156)	0.7 (2,096)	0.0 (49)	0.8 (1,976)

Sources: AGAR and APAS (public hospitals); AGAR, APAS (Qld, SA) and SNP (private hospitals); APAS and SNP (community); APAS (multi-purpose services)

Table S4.33: *Salmonella* species (typhoidal) resistance (blood culture isolates), 2017–2021

Antimicrobial	2017, % resistant (n)	2018, % resistant (n)	2019, % resistant (n)	2020, % resistant (n)	2021, % resistant (n)
Amikacin	0.0 (12)	0.0 (13)	0.0 (20)	n/a (9)	n/a (0)
Amoxicillin-clavulanic acid	0.9 (115)	2.0 (102)	0.8 (133)	2.3 (44)	n/a (4)
Ampicillin/amoxicillin	10.7 (121)	7.6 (118)	7.8 (154)	15.9 (63)	n/a (4)
Azithromycin	19.2 (26)	9.1 (11)	26.7 (15)	n/a (8)	n/a (2)
Ceftazidime	0.0 (111)	2.2 (91)	3.0 (134)	4.0 (50)	n/a (4)
Ceftriaxone/cefotaxime	0.0 (121)	1.7 (117)	3.2 (154)	7.4 (68)	n/a (4)
Ciprofloxacin	46.4 (110)	70.7 (99)	79.6 (152)	74.3 (70)	n/a (4)
Meropenem	0.0 (112)	0.0 (91)	0.0 (142)	0.0 (50)	n/a (4)
Nitrofurantoin	6.9 (58)	8.6 (35)	3.2 (31)	15.4 (13)	n/a (1)
Piperacillin-tazobactam	0.0 (114)	2.0 (99)	3.1 (129)	0.0 (49)	n/a (4)
Trimethoprim	8.8 (114)	8.8 (102)	6.7 (134)	10.0 (50)	n/a (4)
Trimethoprim-sulfamethoxazole	10.2 (118)	7.7 (104)	6.8 (148)	10.9 (55)	n/a (4)

n/a = not applicable (insufficient numbers to calculate)

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); SNP (Qld, northern NSW)

Table S4.34: *Shigella* species resistance (faecal isolates), 2017–2021

Species	Antimicrobial	2017, % resistant (n)	2018, % resistant (n)	2019, % resistant (n)	2020, % resistant (n)	2021, % resistant (n)
<i>S. flexneri</i>	Amoxicillin-clavulanic acid	85.1 (188)	90.9 (253)	86.2 (232)	91.4 (151)	94.9 (39)
	Ampicillin/amoxicillin	93.3 (210)	97.5 (318)	94.1 (286)	96.2 (182)	96.0 (50)
	Ceftazidime	0.0 (164)	2.3 (175)	23.6 (203)	10.8 (130)	2.8 (36)
	Ceftriaxone/cefotaxime	4.1 (194)	0.6 (312)	5.3 (263)	1.3 (158)	2.3 (43)
	Ciprofloxacin	13.2 (204)	1.9 (262)	7.2 (265)	1.4 (144)	4.5 (44)
	Gentamicin	39.4 (198)	40.1 (312)	42.2 (180)	25.0 (76)	26.7 (15)
	Meropenem	0.0 (188)	0.0 (252)	0.0 (232)	0.0 (153)	0.0 (39)
	Nitrofurantoin	0.0 (70)	0.0 (130)	1.1 (94)	0.0 (75)	0.0 (25)
	Norfloxacin	10.4 (144)	2.3 (215)	8.0 (200)	2.1 (142)	0.0 (37)
	Piperacillin-tazobactam	0.0 (148)	0.0 (241)	0.0 (227)	0.0 (140)	2.6 (39)
	Trimethoprim	93.6 (173)	94.1 (236)	95.4 (216)	96.6 (147)	94.4 (36)
	Trimethoprim-sulfamethoxazole	22.6 (212)	17.6 (318)	26.9 (286)	20.2 (183)	24.0 (50)

continues

Table S4.34: *continued*

Species	Antimicrobial	2017, % resistant (n)	2018, % resistant (n)	2019, % resistant (n)	2020, % resistant (n)	2021, % resistant (n)
<i>S. sonnei</i>	Amoxicillin-clavulanic acid	8.1 (273)	7.3 (205)	20.3 (143)	19.1 (131)	25.0 (68)
	Ampicillin/amoxicillin	29.0 (314)	31.1 (254)	62.2 (209)	56.0 (191)	32.9 (70)
	Ceftazidime	0.0 (260)	0.6 (175)	10.9 (119)	7.8 (103)	0.0 (64)
	Ceftriaxone/cefotaxime	0.4 (262)	3.2 (217)	13.0 (161)	23.8 (160)	5.7 (70)
	Ciprofloxacin	10.5 (305)	23.6 (250)	52.9 (208)	36.8 (190)	10.0 (70)
	Gentamicin	27.7 (278)	51.2 (205)	40.3 (144)	52.9 (119)	12.1 (33)
	Meropenem	0.0 (272)	0.0 (204)	0.0 (143)	0.0 (131)	0.0 (68)
	Nitrofurantoin	0.0 (58)	0.0 (18)	0.0 (26)	0.0 (33)	0.0 (37)
	Norfloxacin	16.6 (290)	29.2 (216)	61.1 (167)	40.9 (132)	10.0 (60)
	Piperacillin-tazobactam	0.4 (247)	2.0 (196)	2.2 (136)	5.9 (101)	3.0 (67)
	Trimethoprim	77.6 (263)	93.2 (177)	85.7 (119)	42.7 (103)	31.3 (64)
	Trimethoprim-sulfamethoxazole	77.5 (316)	87.2 (257)	87.7 (211)	61.8 (191)	34.3 (70)

Sources: APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); SNP (Qld, northern NSW)

Table S4.35: *Shigella* species resistance, by clinical setting, 2017–2021

Antimicrobial	Year	Hospitals (public and private), % resistant (n)	Multi-purpose services, % resistant (n)	Community, % resistant (n)
Amoxicillin-clavulanic acid	2017	29.7 (266)	n/a (9)	53.3 (180)
	2018	42.9 (226)	92.3 (13)	61.3 (212)
	2019	56.9 (188)	90.9 (11)	63.2 (174)
	2020	60.9 (138)	76.0 (25)	51.7 (116)
	2021	52.3 (44)	n/a (7)	42.3 (52)
Ampicillin/amoxicillin	2017	48.6 (278)	45.5 (11)	62.4 (229)
	2018	65.0 (243)	93.8 (16)	68.6 (306)
	2019	84.9 (205)	90.9 (11)	76.9 (277)
	2020	84.7 (163)	76.0 (25)	68.7 (182)
	2021	63.8 (47)	n/a (7)	50.0 (62)
Ceftazidime	2017	0.0 (235)	n/a (9)	0.0 (174)
	2018	2.2 (180)	n/a (5)	0.0 (158)
	2019	17.3 (150)	18.2 (11)	20.8 (159)
	2020	7.6 (105)	18.2 (22)	9.7 (103)
	2021	0.0 (37)	n/a (7)	0.0 (52)
Ceftriaxone/cefotaxime	2017	0.4 (270)	n/a (10)	4.7 (170)
	2018	2.1 (241)	6.3 (16)	1.1 (265)
	2019	4.4 (204)	9.1 (11)	12.1 (207)
	2020	20.5 (156)	0.0 (25)	6.0 (134)
	2021	10.9 (46)	n/a (7)	0.0 (56)

continues

Table S4.35: *continued*

Antimicrobial	Year	Hospitals (public and private), % resistant (<i>n</i>)	Multi-purpose services, % resistant (<i>n</i>)	Community, % resistant (<i>n</i>)
Ciprofloxacin	2017	9.6 (272)	0.0 (11)	14.5 (220)
	2018	12.9 (241)	n/a (8)	12.1 (256)
	2019	36.5 (203)	0.0 (11)	21.4 (257)
	2020	17.5 (160)	0.0 (22)	28.9 (149)
	2021	14.9 (47)	n/a (7)	1.8 (56)
Gentamicin	2017	30.5 (272)	18.2 (11)	37.4 (187)
	2018	33.3 (234)	43.8 (16)	55.4 (260)
	2019	28.2 (149)	n/a (7)	54.8 (168)
	2020	28.7 (94)	27.8 (18)	60.5 (81)
	2021	n/a (9)	n/a (5)	12.1 (33)
Meropenem	2017	0.0 (265)	n/a (9)	0.0 (180)
	2018	0.0 (224)	0.0 (13)	0.0 (212)
	2019	0.0 (188)	0.0 (11)	0.0 (174)
	2020	0.0 (139)	0.0 (25)	0.0 (117)
	2021	0.0 (44)	n/a (7)	0.0 (52)
Nitrofurantoin	2017	0.0 (83)	n/a (0)	0.0 (39)
	2018	0.0 (75)	n/a (3)	0.0 (63)
	2019	0.0 (76)	n/a (1)	2.4 (41)
	2020	0.0 (55)	n/a (7)	0.0 (45)
	2021	0.0 (34)	n/a (2)	0.0 (23)

continues

Table S4.35: *continued*

Antimicrobial	Year	Hospitals (public and private), % resistant (n)	Multi-purpose services, % resistant (n)	Community, % resistant (n)
Norfloxacin	2017	9.6 (240)	n/a (9)	21.8 (179)
	2018	16.0 (169)	8.3 (12)	16.0 (243)
	2019	37.7 (122)	n/a (8)	30.6 (235)
	2020	16.8 (107)	0.0 (24)	27.1 (140)
	2021	10.5 (38)	n/a (7)	2.1 (48)
Piperacillin-tazobactam	2017	0.4 (227)	n/a (7)	0.0 (155)
	2018	1.4 (213)	0.0 (12)	0.5 (206)
	2019	1.7 (180)	n/a (8)	0.0 (173)
	2020	4.9 (103)	0.0 (25)	0.9 (110)
	2021	7.0 (43)	n/a (7)	0.0 (52)
Trimethoprim	2017	82.1 (240)	n/a (9)	87.3 (181)
	2018	92.4 (185)	92.3 (13)	94.7 (208)
	2019	94.0 (151)	81.8 (11)	90.6 (171)
	2020	84.1 (107)	76.0 (25)	65.2 (115)
	2021	62.2 (37)	n/a (7)	40.4 (52)
Trimethoprim-sulfamethoxazole	2017	65.6 (279)	45.5 (11)	44.8 (232)
	2018	60.5 (243)	18.8 (16)	41.7 (309)
	2019	59.5 (205)	9.1 (11)	49.8 (279)
	2020	48.1 (162)	0.0 (25)	40.8 (184)
	2021	42.6 (47)	n/a (7)	24.2 (62)

n/a = not applicable (insufficient numbers to calculate)

Sources: AGAR and APAS (public hospitals); AGAR, APAS (Qld, SA) and SNP (private hospitals); APAS and SNP (community); APAS (multi-purpose services)

Table S4.36: *Staphylococcus aureus* resistance, by specimen source, 2017–2021

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Benzylpenicillin	2017	83.2 (6,494)	87.4 (143,647)	87.2 (150,141)
	2018	82.5 (6,578)	87.3 (138,465)	87.1 (145,043)
	2019	83.0 (7,397)	86.7 (142,566)	86.5 (149,963)
	2020	82.6 (7,196)	86.5 (139,784)	86.4 (146,980)
	2021	81.7 (7,751)	85.3 (144,984)	85.1 (152,735)
Ciprofloxacin/norfloxacin	2017	8.5 (5,666)	6.0 (108,557)	6.1 (114,223)
	2018	7.5 (5,804)	6.2 (109,208)	6.2 (115,012)
	2019	8.3 (6,549)	5.9 (110,817)	6.0 (117,366)
	2020	7.5 (5,826)	5.3 (112,192)	5.5 (118,018)
	2021	6.9 (6,071)	5.0 (112,685)	5.1 (118,756)
Clindamycin	2017	13.4 (6,018)	14.4 (175,925)	14.4 (181,943)
	2018	13.6 (6,109)	14.8 (171,377)	14.8 (177,486)
	2019	14.9 (6,830)	14.8 (176,974)	14.8 (183,804)
	2020	14.1 (6,798)	14.8 (174,825)	14.7 (181,623)
	2021	13.0 (7,294)	14.8 (181,340)	14.7 (188,634)
Daptomycin	2017	0.3 (4,580)	0.2 (121,007)	0.2 (125,587)
	2018	0.1 (4,955)	0.3 (123,840)	0.3 (128,795)
	2019	0.1 (5,425)	0.2 (121,974)	0.2 (127,399)
	2020	0.3 (5,506)	0.3 (128,833)	0.3 (134,339)
	2021	0.1 (5,910)	0.4 (138,324)	0.4 (144,234)

continues

Table S4.36: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Erythromycin	2017	15.7 (6,604)	16.1 (189,729)	16.1 (196,333)
	2018	15.2 (6,672)	16.0 (184,885)	15.9 (191,557)
	2019	16.7 (7,520)	16.3 (189,180)	16.4 (196,700)
	2020	15.0 (7,360)	15.9 (183,553)	15.9 (190,913)
	2021	15.2 (7,906)	16.2 (190,476)	16.1 (198,382)
Fusidic acid	2017	4.4 (5,567)	6.6 (107,618)	6.5 (113,185)
	2018	4.5 (5,712)	7.0 (105,272)	6.9 (110,984)
	2019	4.7 (6,457)	7.1 (106,277)	6.9 (112,734)
	2020	4.3 (6,421)	6.7 (113,394)	6.6 (119,815)
	2021	3.6 (6,860)	6.9 (116,870)	6.7 (123,730)
Gentamicin	2017	2.9 (5,363)	1.9 (111,469)	1.9 (116,832)
	2018	2.4 (5,667)	2.1 (111,226)	2.2 (116,893)
	2019	3.4 (6,416)	2.3 (110,147)	2.3 (116,563)
	2020	3.1 (6,390)	2.3 (115,282)	2.3 (121,672)
	2021	3.5 (6,824)	2.5 (120,071)	2.5 (126,895)
Linezolid	2017	0.0 (4,690)	0.1 (126,201)	0.1 (130,891)
	2018	0.0 (4,990)	0.1 (125,678)	0.1 (130,668)
	2019	0.1 (5,425)	0.0 (121,894)	0.0 (127,319)
	2020	0.1 (5,493)	0.0 (129,545)	0.0 (135,038)
	2021	0.1 (5,869)	0.0 (139,181)	0.0 (145,050)

continues

Table S4.36: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Oxacillin/methicillin	2017	17.2 (6,606)	20.3 (186,353)	20.2 (192,959)
	2018	16.4 (6,677)	19.6 (180,452)	19.5 (187,129)
	2019	17.4 (7,525)	19.8 (186,093)	19.7 (193,618)
	2020	16.0 (7,364)	19.7 (181,791)	19.6 (189,155)
	2021	15.3 (7,902)	18.5 (189,286)	18.4 (197,188)
Rifampicin	2017	0.5 (5,550)	0.2 (101,039)	0.2 (106,589)
	2018	0.3 (6,000)	0.2 (104,399)	0.2 (110,399)
	2019	0.3 (6,474)	0.2 (106,314)	0.2 (112,788)
	2020	0.3 (6,385)	0.2 (112,718)	0.2 (119,103)
	2021	0.3 (6,865)	0.2 (116,884)	0.3 (123,749)
Tetracycline/doxycycline	2017	4.3 (6,485)	3.6 (173,275)	3.6 (179,760)
	2018	4.3 (6,514)	3.9 (169,003)	3.9 (175,517)
	2019	4.9 (7,351)	3.7 (179,490)	3.8 (186,841)
	2020	4.2 (7,239)	3.4 (176,671)	3.5 (183,910)
	2021	4.1 (7,753)	3.3 (183,151)	3.4 (190,904)
Trimethoprim-sulfamethoxazole	2017	3.3 (6,519)	3.1 (188,454)	3.1 (194,973)
	2018	2.3 (6,633)	2.6 (184,742)	2.6 (191,375)
	2019	2.4 (7,500)	2.9 (189,905)	2.9 (197,405)
	2020	2.6 (7,365)	3.0 (184,532)	3.0 (191,897)
	2021	2.1 (7,902)	3.0 (190,822)	2.9 (198,724)

continues

Table S4.36: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Vancomycin	2017	0.0 (5,835)	0.0 (105,160)	0.0 (110,995)
	2018	0.0 (5,955)	0.0 (102,399)	0.0 (108,354)
	2019	0.0 (6,752)	0.0 (104,623)	0.0 (111,375)
	2020	0.0 (6,775)	0.0 (114,728)	0.0 (121,503)
	2021	0.0 (7,214)	0.0 (118,852)	0.0 (126,066)

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.37: *Staphylococcus aureus* resistance, by clinical setting, 2017–2021

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant, (n)	Other*, % resistant (n)
Benzylpenicillin	2017	82.0 (4,809)	87.0 (89,495)	89.1 (2,072)	90.7 (729)	87.8 (49,976)	91.6 (1,898)
	2018	81.2 (4,533)	86.6 (88,093)	88.2 (1,860)	86.7 (420)	88.4 (46,881)	90.1 (2,003)
	2019	82.1 (4,735)	85.9 (92,553)	89.0 (2,183)	88.1 (337)	87.7 (46,812)	90.3 (2,016)
	2020	81.9 (4,624)	85.4 (92,243)	88.0 (2,306)	87.5 (265)	88.2 (43,424)	90.3 (2,011)
	2021	80.8 (4,876)	84.3 (97,019)	86.9 (2,702)	83.3 (210)	86.6 (43,081)	87.9 (2,048)
Ciprofloxacin/ norfloxacin	2017	5.5 (915)	7.5 (73,534)	1.5 (1,437)	16.5 (448)	3.7 (36,016)	1.0 (1,664)
	2018	7.1 (813)	7.4 (77,527)	1.6 (1,430)	15.0 (247)	3.7 (33,294)	1.7 (1,494)
	2019	7.6 (896)	7.5 (76,588)	1.7 (1,745)	19.9 (261)	3.1 (35,942)	1.8 (1,542)
	2020	7.4 (1,510)	6.9 (74,271)	1.5 (1,963)	15.9 (246)	2.5 (37,335)	1.3 (1,563)
	2021	6.3 (1,512)	6.5 (75,322)	1.2 (2,288)	15.5 (187)	2.3 (36,137)	2.1 (1,605)
Clindamycin	2017	15.7 (4,605)	14.4 (82,052)	9.8 (1,887)	22.0 (2,437)	14.2 (88,978)	14.1 (1,781)
	2018	15.2 (4,382)	15.0 (81,083)	9.1 (1,669)	20.7 (1,944)	14.6 (86,320)	11.8 (1,889)
	2019	15.1 (4,661)	15.4 (86,423)	9.4 (2,032)	19.3 (1,745)	14.4 (86,645)	14.0 (1,898)
	2020	15.6 (5,290)	15.1 (87,611)	10.0 (2,159)	18.5 (1,752)	14.4 (81,664)	14.3 (1,989)
	2021	15.8 (5,594)	15.1 (92,323)	9.3 (2,525)	15.9 (1,682)	14.3 (82,724)	16.8 (2,036)
Daptomycin	2017	0.3 (4,043)	0.2 (55,375)	0.1 (897)	0.8 (1,936)	0.2 (61,732)	0.0 (1,395)
	2018	0.4 (3,656)	0.2 (59,552)	0.4 (1,107)	0.9 (1,687)	0.3 (61,313)	0.0 (1,273)
	2019	0.4 (3,838)	0.2 (57,047)	0.1 (1,357)	0.6 (1,538)	0.2 (61,960)	0.1 (1,250)
	2020	0.4 (4,012)	0.3 (55,967)	0.2 (1,434)	0.9 (1,604)	0.2 (68,856)	0.2 (1,287)
	2021	0.4 (4,403)	0.4 (58,940)	0.3 (2,170)	0.9 (1,588)	0.4 (73,850)	0.1 (1,509)

continues

Table S4.37: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant, (n)	Other*, % resistant (n)
Erythromycin	2017	17.2 (5,450)	16.7 (93,003)	11.1 (2,032)	23.1 (2,526)	15.3 (91,220)	14.9 (1,893)
	2018	16.4 (5,152)	16.2 (91,857)	10.4 (1,839)	22.9 (2,037)	15.6 (88,466)	12.7 (1,999)
	2019	17.0 (5,456)	16.9 (96,192)	11.9 (2,146)	20.7 (1,813)	15.8 (88,692)	15.2 (1,987)
	2020	16.8 (5,367)	16.1 (95,649)	11.5 (2,290)	19.8 (1,764)	15.7 (82,662)	14.7 (1,999)
	2021	17.0 (5,700)	16.4 (101,192)	10.5 (2,698)	16.4 (1,694)	15.9 (83,284)	17.9 (2,033)
Fusidic acid	2017	5.3 (913)	6.3 (73,716)	10.0 (1,374)	2.9 (446)	6.8 (34,871)	6.9 (1,656)
	2018	5.8 (813)	6.6 (74,028)	11.1 (1,418)	4.9 (247)	7.3 (32,785)	6.9 (1,486)
	2019	3.2 (880)	6.7 (73,172)	7.3 (1,726)	2.7 (260)	7.7 (34,748)	7.3 (1,539)
	2020	3.4 (1,516)	6.6 (73,943)	8.2 (1,950)	2.4 (245)	6.8 (39,315)	5.8 (1,665)
	2021	4.6 (1,535)	6.6 (77,231)	7.7 (2,281)	2.1 (191)	7.2 (38,999)	6.1 (1,715)
Gentamicin	2017	1.9 (908)	2.5 (71,727)	0.6 (1,156)	5.9 (444)	0.9 (40,778)	0.7 (1,610)
	2018	3.7 (808)	2.7 (75,337)	0.5 (1,207)	3.3 (240)	1.1 (37,642)	0.3 (1,452)
	2019	2.2 (875)	2.9 (76,270)	0.7 (1,471)	5.4 (261)	1.2 (35,866)	1.1 (1,412)
	2020	2.4 (1,505)	2.9 (77,335)	0.8 (1,704)	5.7 (244)	1.3 (38,236)	2.0 (1,467)
	2021	3.1 (1,529)	2.9 (80,343)	0.7 (2,299)	6.8 (191)	1.7 (39,044)	3.2 (1,711)
Linezolid	2017	0.1 (4,053)	0.1 (55,474)	0.1 (891)	0.1 (2,078)	0.1 (66,738)	0.1 (1,448)
	2018	0.1 (3,663)	0.0 (59,556)	0.0 (1,103)	0.1 (1,698)	0.1 (63,163)	0.0 (1,278)
	2019	0.1 (3,841)	0.0 (56,957)	0.0 (1,336)	0.1 (1,539)	0.1 (61,874)	0.0 (1,366)
	2020	0.0 (4,676)	0.0 (55,846)	0.1 (1,425)	0.1 (1,607)	0.0 (68,882)	0.0 (1,426)
	2021	0.0 (5,049)	0.1 (59,032)	0.0 (2,157)	0.0 (1,588)	0.0 (73,819)	0.0 (1,632)

continues

Table S4.37: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant, (n)	Other*, % resistant (n)
Oxacillin/methicillin	2017	13.8 (5,553)	22.7 (91,945)	23.9 (1,560)	29.3 (2,645)	17.4 (89,234)	39.2 (1,813)
	2018	13.9 (5,261)	22.0 (90,895)	21.7 (1,557)	29.5 (2,136)	16.5 (85,366)	35.1 (1,707)
	2019	13.0 (5,573)	22.2 (95,643)	25.4 (1,655)	27.2 (1,906)	16.9 (86,703)	34.3 (1,722)
	2020	13.3 (5,494)	21.9 (95,395)	25.4 (1,969)	25.5 (1,878)	16.7 (81,455)	36.0 (1,784)
	2021	12.3 (5,834)	20.3 (100,313)	25.1 (2,632)	26.1 (1,785)	15.7 (82,836)	37.1 (2,007)
Rifampicin	2017	0.0 (201)	0.3 (69,948)	0.3 (1,409)	0.7 (147)	0.1 (33,041)	0.2 (1,634)
	2018	0.0 (184)	0.2 (74,808)	0.3 (1,449)	0.0 (35)	0.2 (32,246)	0.0 (1,470)
	2019	0.1 (883)	0.3 (73,212)	0.1 (1,726)	0.0 (260)	0.2 (34,759)	0.1 (1,539)
	2020	0.2 (1,515)	0.3 (73,245)	0.1 (1,948)	0.0 (245)	0.1 (39,305)	0.1 (1,665)
	2021	0.3 (1,536)	0.3 (77,253)	0.0 (2,279)	1.0 (191)	0.2 (38,996)	0.0 (1,715)
Tetracycline/ doxycycline	2017	4.7 (5,285)	4.4 (90,022)	2.3 (1,834)	5.8 (2,517)	2.7 (78,153)	1.2 (1,740)
	2018	4.8 (4,963)	4.4 (89,090)	2.5 (1,779)	7.3 (2,039)	3.2 (75,863)	1.2 (1,576)
	2019	3.7 (5,272)	4.5 (93,786)	2.0 (2,116)	6.3 (1,815)	2.9 (81,823)	2.3 (1,620)
	2020	4.2 (5,165)	4.1 (93,892)	2.2 (2,238)	5.6 (1,769)	2.7 (77,838)	1.3 (1,827)
	2021	3.5 (5,476)	3.9 (99,057)	1.7 (2,625)	5.4 (1,698)	2.6 (78,378)	1.5 (1,891)
Trimethoprim- sulfamethoxazole	2017	2.4 (5,394)	3.6 (92,301)	2.5 (2,049)	4.0 (2,520)	2.7 (90,610)	2.6 (1,890)
	2018	2.6 (5,142)	2.9 (92,002)	1.0 (1,852)	3.4 (2,015)	2.3 (88,152)	1.4 (2,005)
	2019	2.4 (5,456)	3.0 (96,751)	1.8 (2,188)	3.9 (1,814)	2.7 (88,766)	1.6 (2,017)
	2020	2.0 (5,376)	3.1 (96,585)	1.6 (2,300)	3.6 (1,770)	2.9 (82,666)	1.3 (2,020)
	2021	1.7 (5,695)	3.0 (101,547)	2.6 (2,700)	2.9 (1,686)	3.0 (83,267)	2.0 (2,049)

continues

Table S4.37: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant, (n)	Other*, % resistant (n)
Vancomycin	2017	0.0 (1,109)	0.0 (73,146)	0.0 (961)	0.0 (449)	0.0 (33,511)	0.0 (1,610)
	2018	0.0 (1,025)	0.0 (73,009)	0.0 (1,145)	0.0 (241)	0.0 (31,275)	0.0 (1,452)
	2019	0.0 (1,144)	0.0 (73,074)	0.0 (1,260)	0.0 (262)	0.0 (33,773)	0.0 (1,451)
	2020	0.0 (1,750)	0.0 (77,300)	0.0 (1,640)	0.0 (245)	0.0 (37,922)	0.0 (1,464)
	2021	0.0 (1,789)	0.0 (80,328)	0.1 (2,207)	0.0 (192)	0.0 (38,089)	0.0 (1,681)

* Refers predominantly to corrections health services

Sources: AGAR, APAS and HOTspots (public hospitals); AGAR, APAS (Qld, SA) and SNP (private hospitals); APAS, HOTspots and SNP (community); APAS and SNP (aged care homes); APAS (multi-purpose services); APAS (other)

Table S4.38: *Staphylococcus aureus* resistance (blood culture isolates), by state and territory, 2017–2021

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Benzylpenicillin	2017	83.8	84.7	83.5	86.8	85.6	75.8	92.9	74.7	84.1 (2,512)
	2018	83.2	83.8	82.2	90.2	80.5	78.2	93.5	66.7	82.6 (2,668)
	2019	83.7	83.5	79.7	80.3	80.5	83.7	96.9	82.6	82.3 (3,148)
	2020	82.6	81.5	83.3	85.4	83.6	78.4	90.2	75.3	82.7 (2,720)
	2021	83.5	82.2	88.2	83.9	80.9	75.7	86.0	71.6	82.9 (2,894)
Ciprofloxacin	2017	16.7	11.8	4.7	13.3	6.5	8.8	4.0	6.3	10.0 (2,505)
	2018	13.9	10.4	4.2	6.7	6.8	8.2	3.9	6.3	8.5 (2,668)
	2019	13.9	12.3	5.3	8.9	5.1	6.7	0.0	14.0	9.5 (3,151)
	2020	11.7	8.9	6.3	2.5	6.3	3.9	6.1	9.3	8.0 (2,731)
	2021	13.4	9.8	4.7	10.0	5.1	2.6	5.8	10.8	8.7 (2,942)
Clindamycin	2017	14.5	14.0	9.8	10.2	15.9	11.0	29.3	7.4	13.6 (2,509)
	2018	13.0	10.0	11.4	7.5	15.4	10.9	23.4	7.2	12.1 (2,667)
	2019	14.9	15.8	14.1	7.6	16.4	14.8	19.0	15.7	14.7 (3,129)
	2020	13.9	14.1	16.1	5.9	14.1	6.3	26.8	17.5	13.8 (2,729)
	2021	14.3	11.7	15.0	7.5	13.3	8.8	17.4	14.7	13.1 (2,940)
Daptomycin	2017	0.6	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.2 (2,514)
	2018	0.2	0.2	0.0	0.4	0.2	1.8	0.0	0.0	0.2 (2,671)
	2019	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0 (3,155)
	2020	0.1	0.4	0.4	0.0	0.4	0.0	0.0	0.0	0.3 (2,730)
	2021	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0 (2,945)

continues

Table S4.38: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Erythromycin	2017	19.2	16.4	11.6	21.1	16.6	11.0	30.3	7.4	16.4 (2,511)
	2018	19.2	10.7	12.8	19.7	17.2	10.9	23.4	9.1	15.5 (2,599)
	2019	19.4	16.8	15.6	19.0	17.6	15.6	20.6	17.4	17.6 (3,142)
	2020	18.3	15.2	19.2	10.9	15.0	6.3	28.0	17.5	16.4 (2,731)
	2021	19.8	13.7	17.1	17.5	13.9	11.4	17.4	15.7	16.3 (2,941)
Fusidic acid	2017	3.4	1.6	6.3	2.4	1.3	1.1	6.1	3.2	3.3 (2,511)
	2018	2.2	2.4	5.3	4.7	2.5	4.5	3.9	5.4	3.4 (2,668)
	2019	2.8	5.7	5.1	1.7	2.8	1.5	3.2	4.1	3.7 (3,131)
	2020	4.1	2.4	4.0	4.2	1.3	2.4	6.1	2.1	3.3 (2,730)
	2021	2.5	2.6	3.7	3.1	2.1	1.8	4.7	0.0	2.7 (2,942)
Gentamicin	2017	8.7	3.0	2.0	2.4	1.1	1.1	8.1	3.2	4.1 (2,511)
	2018	8.2	2.7	2.5	3.9	0.8	0.0	6.5	2.7	3.7 (2,668)
	2019	6.9	4.4	3.1	2.1	1.0	0.7	7.9	2.5	4.0 (3,128)
	2020	7.5	3.0	3.2	1.7	1.3	0.8	8.5	6.2	4.1 (2,731)
	2021	8.6	3.7	2.7	5.7	2.7	0.9	10.5	7.8	5.0 (2,942)
Linezolid	2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,515)
	2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,672)
	2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (3,154)
	2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,732)
	2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,946)

continues

Table S4.38: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Oxacillin	2017	20.5	17.5	15.2	20.4	20.4	11.0	45.5	9.5	19.1 (2,515)
	2018	20.4	14.3	14.0	15.6	21.4	8.2	40.3	9.9	17.4 (2,673)
	2019	19.4	16.7	15.8	15.1	21.2	11.9	56.3	16.5	18.5 (3,157)
	2020	19.5	15.0	15.9	10.9	22.1	5.5	48.8	8.2	17.6 (2,734)
	2021	19.7	12.7	13.0	18.1	19.1	7.8	43.0	13.7	16.9 (2,947)
Rifampicin	2017	0.6	1.4	1.3	0.6	0.0	0.0	1.0	0.0	0.7 (2,464)
	2018	0.9	0.2	0.5	0.0	0.4	2.8	0.0	0.0	0.6 (2,666)
	2019	0.6	0.2	0.9	0.0	0.6	0.0	0.0	1.7	0.5 (3,129)
	2020	0.1	0.2	0.4	0.0	0.7	0.0	0.0	0.0	0.3 (2,729)
	2021	0.4	0.2	0.4	0.4	0.4	0.0	0.0	1.0	0.3 (2,939)
Teicoplanin	2017	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.1 (2,514)
	2018	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,671)
	2019	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (3,153)
	2020	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.1 (2,731)
	2021	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.1 (2,931)
Tetracycline/ doxycycline	2017	10.6	4.7	2.9	5.4	3.9	3.3	3.0	3.2	5.6 (2,505)
	2018	8.0	4.8	4.2	2.4	3.5	0.9	3.9	7.2	4.9 (2,668)
	2019	8.6	5.5	4.0	4.2	3.8	5.9	1.6	5.1	5.7 (3,145)
	2020	5.8	5.2	3.2	2.1	4.7	1.6	2.4	5.2	4.4 (2,730)
	2021	7.5	5.0	3.5	2.6	2.5	2.6	0.0	3.9	4.5 (2,942)

continues

Table S4.38: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Trimethoprim-sulfamethoxazole	2017	3.7	1.7	2.7	3.0	2.2	1.1	3.0	2.1	2.7 (2,505)
	2018	2.0	1.2	1.2	0.8	0.0	0.0	1.3	0.0	1.1 (2,664)
	2019	1.2	1.1	1.4	1.3	0.0	0.0	0.0	2.5	1.0 (3,124)
	2020	0.7	0.2	1.5	0.4	0.2	0.0	7.4	0.0	0.8 (2,724)
	2021	1.2	0.2	0.0	0.9	0.4	0.0	4.7	1.0	0.6 (2,924)
Vancomycin	2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,515)
	2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,672)
	2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (3,154)
	2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,732)
	2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (2,946)

nd = no data (either not tested or tested against an inadequate number of isolates)

Note: The numbers of isolates for each state and territory are in the following table.

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2017	679	365	553	167	466	91	99	95	2,515
2018	647	414	571	256	487	110	77	111	2,673
2019	907	546	647	238	499	135	64	121	3,157
2020	807	461	473	239	448	127	82	97	2,734
2021	770	615	514	232	513	115	86	102	2,947

Source: AGAR (national)

Table S4.39: Methicillin-resistant *Staphylococcus aureus* resistance, by specimen source, 2017–2021

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Ciprofloxacin	2017	37.3 (820)	17.8 (27,471)	18.3 (28,291)
	2018	32.2 (782)	17.2 (25,836)	17.6 (26,618)
	2019	31.7 (976)	17.0 (26,392)	17.5 (27,368)
	2020	29.0 (823)	15.2 (24,664)	15.7 (25,487)
	2021	24.6 (894)	13.6 (26,632)	13.9 (27,526)
Clindamycin	2017	31.5 (785)	19.0 (25,658)	19.3 (26,443)
	2018	28.9 (768)	19.3 (24,424)	19.6 (25,192)
	2019	28.3 (913)	19.4 (25,723)	19.7 (26,636)
	2020	28.7 (907)	19.2 (27,240)	19.5 (28,147)
	2021	23.0 (982)	18.7 (29,797)	18.8 (30,779)
Daptomycin	2017	0.0 (477)	0.4 (14,636)	0.4 (15,113)
	2018	0.2 (538)	0.4 (15,975)	0.4 (16,513)
	2019	0.0 (612)	0.3 (16,641)	0.3 (17,253)
	2020	0.6 (623)	0.4 (19,021)	0.4 (19,644)
	2021	0.7 (698)	0.5 (20,638)	0.5 (21,336)
Erythromycin	2017	36.4 (840)	22.8 (27,798)	23.2 (28,638)
	2018	31.9 (790)	21.8 (26,128)	22.0 (26,918)
	2019	31.8 (982)	21.9 (27,336)	22.3 (28,318)
	2020	29.1 (923)	20.6 (28,218)	20.9 (29,141)
	2021	26.4 (1,038)	19.9 (30,603)	20.1 (31,641)

continues

Table S4.39: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Fusidic acid	2017	3.1 (802)	2.7 (26,785)	2.7 (27,587)
	2018	3.3 (757)	3.2 (25,110)	3.2 (25,867)
	2019	3.9 (939)	3.0 (25,244)	3.0 (26,183)
	2020	3.9 (875)	2.8 (26,277)	2.8 (27,152)
	2021	4.4 (978)	2.8 (27,733)	2.8 (28,711)
Gentamicin	2017	14.5 (807)	6.0 (25,963)	6.2 (26,770)
	2018	10.6 (758)	6.5 (25,361)	6.6 (26,119)
	2019	14.0 (961)	6.7 (26,024)	7.0 (26,985)
	2020	11.6 (897)	6.0 (26,983)	6.2 (27,880)
	2021	10.8 (1,002)	5.3 (28,133)	5.5 (29,135)
Linezolid	2017	0.1 (700)	0.0 (17,336)	0.0 (18,036)
	2018	0.2 (544)	0.1 (16,909)	0.1 (17,453)
	2019	0.0 (618)	0.1 (16,701)	0.1 (17,319)
	2020	0.0 (620)	0.1 (19,095)	0.1 (19,715)
	2021	0.0 (675)	0.0 (20,728)	0.0 (21,403)
Rifampicin	2017	1.9 (783)	0.5 (26,091)	0.6 (26,874)
	2018	0.7 (756)	0.4 (24,863)	0.5 (25,619)
	2019	0.7 (946)	0.5 (25,243)	0.5 (26,189)
	2020	0.8 (872)	0.6 (26,155)	0.6 (27,027)
	2021	0.7 (978)	0.7 (27,738)	0.7 (28,716)

continues

Table S4.39: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	Total, % resistant (n)
Teicoplanin	2017	0.0 (627)	0.0 (17,845)	0.0 (18,472)
	2018	0.0 (682)	0.0 (16,825)	0.0 (17,507)
	2019	0.0 (661)	0.0 (18,002)	0.0 (18,663)
	2020	0.0 (675)	0.0 (19,875)	0.0 (20,550)
	2021	0.0 (751)	0.0 (22,729)	0.0 (23,480)
Tetracycline/doxycycline	2017	16.1 (836)	7.7 (27,640)	7.9 (28,476)
	2018	12.2 (776)	7.7 (25,995)	7.8 (26,771)
	2019	14.5 (961)	7.9 (27,201)	8.1 (28,162)
	2020	14.1 (915)	6.6 (28,052)	6.8 (28,967)
	2021	10.4 (1,017)	6.5 (30,617)	6.6 (31,634)
Trimethoprim-sulfamethoxazole	2017	10.8 (846)	6.9 (28,358)	7.0 (29,204)
	2018	8.4 (798)	6.5 (26,630)	6.5 (27,428)
	2019	10.2 (990)	7.1 (27,868)	7.2 (28,858)
	2020	9.9 (931)	7.5 (28,765)	7.6 (29,696)
	2021	7.6 (1,039)	7.9 (31,185)	7.9 (32,224)
Vancomycin	2017	0.0 (809)	0.0 (26,943)	0.0 (27,752)
	2018	0.0 (771)	0.0 (25,309)	0.0 (26,080)
	2019	0.0 (949)	0.0 (25,275)	0.0 (26,224)
	2020	0.0 (924)	0.0 (26,826)	0.0 (27,750)
	2021	0.0 (1,033)	0.0 (28,187)	0.0 (29,220)

Sources: AGAR (national); APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.40: Methicillin-resistant *Staphylococcus aureus* resistance, by clinical setting, 2017–2021

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant (n)
Ciprofloxacin	2017	30.7 (241)	23.9 (17,201)	5.1 (353)	44.1 (227)	8.9 (9,786)
	2018	31.2 (221)	22.9 (16,542)	7.0 (298)	42.5 (113)	8.3 (8,973)
	2019	31.3 (227)	22.5 (17,610)	4.5 (404)	50.5 (103)	7.9 (8,550)
	2020	31.1 (206)	21.1 (16,195)	3.0 (501)	35.2 (71)	5.7 (7,973)
	2021	28.5 (207)	19.4 (17,098)	1.6 (619)	32.8 (64)	4.5 (8,869)
Clindamycin	2017	32.3 (124)	23.2 (15,767)	7.7 (339)	41.8 (201)	13.2 (9,570)
	2018	26.5 (113)	23.3 (15,393)	11.4 (280)	24.1 (83)	13.7 (8,873)
	2019	25.8 (124)	23.4 (16,428)	6.5 (397)	40.5 (84)	13.8 (9,129)
	2020	29.8 (225)	21.7 (17,774)	11.4 (499)	40.0 (70)	15.7 (8,936)
	2021	33.0 (218)	20.9 (19,272)	11.0 (661)	23.4 (64)	15.2 (9,800)
Daptomycin	2017	0.0 (100)	0.3 (10,067)	0.0 (248)	1.1 (88)	0.6 (4,267)
	2018	0.0 (102)	0.4 (10,966)	0.9 (230)	0.0 (59)	0.3 (4,793)
	2019	0.0 (97)	0.3 (11,275)	0.0 (351)	0.0 (81)	0.2 (5,044)
	2020	0.0 (183)	0.5 (11,949)	0.2 (443)	0.0 (58)	0.3 (6,513)
	2021	0.5 (196)	0.3 (12,076)	0.3 (594)	0.0 (62)	0.7 (7,823)
Erythromycin	2017	35.2 (264)	28.0 (17,413)	9.2 (359)	42.4 (236)	15.0 (9,879)
	2018	30.7 (231)	25.9 (16,680)	12.9 (303)	37.0 (119)	15.4 (9,101)
	2019	30.6 (245)	25.9 (17,796)	9.0 (409)	48.1 (104)	15.9 (9,257)
	2020	29.7 (236)	23.2 (18,725)	12.1 (512)	37.3 (67)	16.8 (8,951)
	2021	33.9 (233)	22.1 (20,219)	9.9 (667)	22.2 (63)	16.6 (9,750)

continues

Table S4.40: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant (n)
Fusidic acid	2017	5.7 (245)	2.8 (16,484)	1.7 (362)	3.9 (230)	2.5 (9,782)
	2018	3.6 (221)	3.2 (15,799)	2.3 (303)	10.7 (121)	3.1 (8,950)
	2019	4.0 (227)	3.3 (16,447)	0.7 (403)	4.9 (103)	2.6 (8,528)
	2020	2.4 (206)	3.1 (17,384)	0.6 (503)	5.6 (71)	2.4 (8,382)
	2021	4.7 (213)	2.9 (17,775)	0.6 (651)	1.6 (63)	2.8 (9,294)
Gentamicin	2017	7.6 (238)	8.9 (15,937)	1.5 (325)	6.9 (218)	2.2 (9,584)
	2018	12.3 (212)	9.1 (16,350)	2.6 (266)	5.3 (114)	2.3 (8,712)
	2019	9.0 (211)	9.4 (17,330)	1.0 (386)	11.8 (102)	2.6 (8,490)
	2020	9.4 (202)	8.4 (18,155)	1.5 (464)	7.0 (71)	2.0 (8,395)
	2021	13.1 (206)	7.6 (18,260)	0.6 (636)	6.3 (64)	1.9 (9,258)
Linezolid	2017	0.0 (106)	0.0 (11,689)	0.0 (270)	0.0 (182)	0.0 (5,394)
	2018	0.0 (104)	0.1 (11,322)	0.0 (244)	0.0 (74)	0.1 (5,316)
	2019	0.0 (106)	0.0 (11,335)	0.0 (346)	1.2 (82)	0.2 (5,017)
	2020	0.0 (200)	0.1 (11,928)	0.0 (439)	0.0 (58)	0.1 (6,594)
	2021	0.0 (205)	0.1 (12,054)	0.0 (588)	0.0 (63)	0.0 (7,911)
Rifampicin	2017	0.0 (156)	0.7 (16,176)	0.6 (360)	0.7 (143)	0.4 (9,558)
	2018	0.0 (133)	0.5 (15,763)	0.3 (303)	1.6 (63)	0.4 (8,884)
	2019	1.8 (226)	0.6 (16,450)	0.0 (403)	0.0 (103)	0.3 (8,531)
	2020	0.0 (207)	0.7 (17,254)	0.4 (503)	0.0 (71)	0.4 (8,387)
	2021	1.9 (213)	0.7 (17,780)	0.2 (651)	3.2 (63)	0.7 (9,294)

continues

Table S4.40: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant (n)
Teicoplanin	2017	0.0 (113)	0.0 (9,397)	0.0 (280)	0.0 (93)	0.0 (8,245)
	2018	0.0 (102)	0.0 (9,225)	0.0 (244)	0.0 (59)	0.0 (7,544)
	2019	0.0 (120)	0.0 (9,410)	0.0 (373)	0.0 (71)	0.0 (8,319)
	2020	0.0 (85)	0.0 (11,497)	0.0 (487)	0.0 (50)	0.0 (7,951)
	2021	0.0 (102)	0.0 (13,180)	0.0 (616)	0.0 (46)	0.0 (8,927)
Tetracycline/doxycycline	2017	12.4 (241)	10.8 (17,398)	2.8 (360)	8.0 (238)	3.1 (9,794)
	2018	8.8 (215)	10.4 (16,661)	4.2 (306)	21.6 (125)	3.2 (9,021)
	2019	10.4 (231)	10.7 (17,810)	1.0 (418)	23.8 (105)	3.4 (9,127)
	2020	7.5 (212)	9.0 (18,841)	4.1 (515)	13.7 (73)	2.7 (8,718)
	2021	10.7 (225)	8.3 (20,279)	1.6 (670)	18.5 (65)	3.7 (9,671)
Trimethoprim- sulfamethoxazole	2017	4.9 (267)	7.2 (17,969)	6.4 (362)	13.0 (238)	6.8 (9,881)
	2018	4.3 (233)	7.0 (17,175)	3.2 (308)	6.3 (126)	6.0 (9,099)
	2019	5.7 (244)	6.7 (18,331)	4.3 (417)	13.3 (105)	8.4 (9,254)
	2020	3.0 (234)	7.2 (19,277)	4.7 (516)	11.0 (73)	9.1 (8,941)
	2021	5.1 (234)	6.9 (20,681)	6.7 (671)	10.8 (65)	10.3 (9,804)

continues

Table S4.40: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant (n)
Vancomycin	2017	0.0 (247)	0.0 (16,616)	0.0 (348)	0.0 (232)	0.0 (9,823)
	2018	0.0 (225)	0.0 (15,917)	0.0 (298)	0.0 (125)	0.0 (9,030)
	2019	0.0 (230)	0.0 (16,499)	0.0 (391)	0.0 (104)	0.0 (8,526)
	2020	0.0 (223)	0.0 (18,281)	0.0 (471)	0.0 (73)	0.0 (8,117)
	2021	0.0 (228)	0.0 (19,189)	0.0 (623)	0.0 (65)	0.0 (8,423)

Sources: AGAR, APAS and HOTspots (public hospitals); AGAR, APAS (Qld, SA) and SNP (private hospitals); APAS, HOTspots and SNP (community); APAS and SNP (aged care homes); APAS (multi-purpose services)

Table S4.41: Methicillin-resistant *Staphylococcus aureus* resistance (blood culture isolates), by state and territory, 2017–2021

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Ciprofloxacin	2017	67.9	56.3	21.4	55.9	18.9	60.0	8.9	44.4	41.4 (478)
	2018	58.3	49.2	18.8	30.0	18.3	66.7	6.5	54.5	35.6 (466)
	2019	56.3	52.7	21.6	37.1	12.4	43.8	0.0	55.0	36.7 (580)
	2020	46.5	42.0	29.3	7.7	18.2	57.1	10.0	87.5	33.1 (481)
	2021	53.9	55.1	10.4	36.6	14.3	22.2	10.8	64.3	35.5 (496)
Clindamycin	2017	39.4	34.9	19.0	35.3	29.5	60.0	42.2	22.2	33.3 (477)
	2018	34.8	30.5	26.3	17.5	28.8	55.6	38.7	36.4	30.7 (466)
	2019	34.7	42.0	21.6	17.1	29.5	56.3	22.9	45.0	31.7 (577)
	2020	31.2	37.7	24.3	7.7	21.2	28.6	35.0	62.5	28.5 (480)
	2021	28.3	17.9	22.4	17.1	19.4	55.6	21.6	35.7	23.4 (496)
Daptomycin	2017	0.7	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.4 (480)
	2018	0.8	1.7	0.0	0.0	1.0	22.2	0.0	0.0	1.1 (464)
	2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (582)
	2020	0.6	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.4 (481)
	2021	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.2 (496)
Erythromycin	2017	49.3	43.8	27.4	61.8	31.6	60.0	44.4	22.2	41.3 (479)
	2018	50.5	30.5	31.3	47.5	32.7	55.6	38.7	45.5	38.7 (429)
	2019	37.1	44.0	27.5	42.9	29.5	62.5	25.7	45.0	35.8 (579)
	2020	40.8	39.1	33.3	19.2	23.2	28.6	37.5	62.5	34.5 (481)
	2021	37.5	21.8	32.8	39.0	19.4	55.6	21.6	35.7	30.0 (496)

continues

Table S4.41: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Fusidic acid	2017	3.6	4.7	7.1	0.0	2.1	0.0	8.9	0.0	4.2 (479)
	2018	2.3	5.1	2.5	5.0	3.8	33.3	9.7	9.1	4.5 (466)
	2019	5.1	13.6	6.9	5.7	2.9	0.0	5.7	15.0	6.6 (577)
	2020	6.4	4.3	4.0	7.7	0.0	0.0	7.5	0.0	4.4 (481)
	2021	7.2	3.8	4.5	9.8	2.0	11.1	8.1	0.0	5.4 (496)
Gentamicin	2017	33.3	14.1	9.5	11.8	3.2	10.0	13.3	22.2	16.5 (479)
	2018	33.3	11.9	12.5	12.5	1.0	0.0	6.5	27.3	15.5 (466)
	2019	29.0	10.2	10.8	11.8	1.9	6.3	0.0	15.8	14.1 (575)
	2020	28.7	8.7	9.3	3.8	1.0	0.0	10.0	37.5	13.9 (481)
	2021	32.2	6.4	7.5	19.5	4.1	0.0	10.8	50.0	16.5 (496)
Linezolid	2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (480)
	2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (466)
	2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (582)
	2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (481)
	2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (497)

continues

Table S4.41: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Rifampicin	2017	0.7	4.7	3.6	2.9	0.0	0.0	2.2	0.0	1.9 (476)
	2018	2.3	0.0	2.5	0.0	0.0	33.3	0.0	0.0	1.7 (466)
	2019	1.1	1.1	3.9	0.0	0.0	0.0	0.0	0.0	1.2 (576)
	2020	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.2 (480)
	2021	1.3	0.0	1.5	0.0	1.0	0.0	0.0	0.0	0.8 (496)
Teicoplanin	2017	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.2 (479)
	2018	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2 (464)
	2019	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2 (582)
	2020	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.2 (480)
	2021	0.7	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.4 (497)
Tetracycline/ doxycycline	2017	30.7	15.6	10.7	14.7	3.2	10.0	6.7	11.1	15.5 (478)
	2018	26.5	20.3	10.0	5.0	6.7	0.0	9.7	27.3	15.0 (466)
	2019	25.0	15.4	10.8	17.1	1.0	12.5	0.0	15.8	14.0 (579)
	2020	22.3	20.3	9.3	3.8	5.1	0.0	2.5	25.0	13.5 (481)
	2021	28.9	16.7	9.0	7.3	3.1	11.1	0.0	21.4	14.7 (496)

continues

Table S4.41: *continued*

Antimicrobial	Year	NSW, % resistant	Vic, % resistant	Qld, % resistant	SA, % resistant	WA, % resistant	Tas, % resistant	NT, % resistant	ACT, % resistant	Australia, % resistant (n)
Trimethoprim-sulfamethoxazole	2017	10.9	1.6	4.9	9.1	1.1	10.0	6.7	0.0	5.9 (472)
	2018	6.8	3.4	7.7	5.0	0.0	0.0	3.2	0.0	4.3 (464)
	2019	4.0	3.4	7.9	8.6	0.0	0.0	0.0	10.0	4.0 (574)
	2020	3.2	1.4	9.3	0.0	0.0	0.0	13.2	0.0	3.8 (475)
	2021	4.0	0.0	0.0	2.6	2.0	0.0	8.6	7.1	2.7 (489)
Vancomycin	2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (480)
	2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (466)
	2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (581)
	2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (481)
	2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (497)

Note: The numbers of isolates for each state and territory are in the following table.

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2017	139	64	84	34	95	10	45	9	480
2018	132	59	80	40	104	9	31	11	466
2019	176	91	102	36	106	16	36	20	583
2020	157	69	75	26	99	7	40	8	481
2021	152	78	67	42	98	9	37	14	497

Source: AGAR (national)

Table S4.42: Methicillin-resistant *Staphylococcus aureus* resistance (blood culture isolates), by community-associated and healthcare-associated clones, 2017–2021

Antimicrobial	Year	Community-associated, % resistant (n)	Healthcare-associated, % resistant (n)	Total, % resistant (n)
Ciprofloxacin/norfloxacin	2017	23.3 (344)	94.0 (116)	41.1 (460)
	2018	18.4 (348)	92.3 (104)	35.4 (452)
	2019	22.6 (430)	97.3 (110)	37.8 (540)
	2020	22.5 (387)	97.1 (69)	33.8 (456)
	2021	25.5 (400)	95.8 (71)	36.1 (471)
Clindamycin	2017	29.4 (344)	44.0 (116)	33.0 (460)
	2018	26.7 (348)	43.3 (104)	30.5 (452)
	2019	27.9 (427)	48.2 (110)	32.0 (537)
	2020	26.9 (387)	44.1 (68)	29.5 (455)
	2021	21.0 (400)	33.8 (71)	22.9 (471)
Daptomycin	2017	0.3 (345)	0.9 (117)	0.4 (462)
	2018	0.3 (348)	3.8 (104)	1.1 (452)
	2019	0.0 (432)	0.0 (110)	0.0 (542)
	2020	0.3 (387)	1.4 (69)	0.4 (456)
	2021	0.2 (401)	0.0 (71)	0.2 (472)

continues

Table S4.42: *continued*

Antimicrobial	Year	Community-associated, % resistant (<i>n</i>)	Healthcare-associated, % resistant (<i>n</i>)	Total, % resistant (<i>n</i>)
Erythromycin	2017	35.2 (344)	57.3 (117)	40.8 (461)
	2018	33.1 (341)	63.5 (74)	38.6 (415)
	2019	31.2 (429)	57.3 (110)	36.5 (539)
	2020	33.1 (387)	49.3 (69)	35.5 (456)
	2021	27.8 (400)	42.3 (71)	29.9 (471)
Fusidic acid	2017	4.7 (344)	1.7 (117)	3.9 (461)
	2018	4.9 (348)	3.8 (104)	4.6 (452)
	2019	7.3 (427)	1.8 (110)	6.1 (537)
	2020	4.9 (387)	0.0 (69)	4.2 (456)
	2021	6.3 (400)	1.4 (71)	5.5 (471)
Gentamicin	2017	13.7 (344)	22.2 (117)	15.8 (461)
	2018	14.1 (348)	20.2 (104)	15.5 (452)
	2019	13.4 (425)	17.3 (110)	14.2 (535)
	2020	14.2 (387)	15.9 (69)	14.5 (456)
	2021	17.8 (400)	11.3 (71)	16.8 (471)
Linezolid	2017	0.0 (345)	0.0 (117)	0.0 (462)
	2018	0.0 (348)	0.0 (104)	0.0 (452)
	2019	0.0 (432)	0.0 (110)	0.0 (542)
	2020	0.0 (387)	0.0 (69)	0.0 (456)
	2021	0.0 (401)	0.0 (71)	0.0 (472)

continues

Table S4.42: *continued*

Antimicrobial	Year	Community-associated, % resistant (<i>n</i>)	Healthcare-associated, % resistant (<i>n</i>)	Total, % resistant (<i>n</i>)
Rifampicin	2017	1.5 (342)	2.6 (116)	1.7 (458)
	2018	0.6 (348)	5.8 (104)	1.8 (452)
	2019	1.2 (426)	1.8 (110)	1.3 (536)
	2020	0.3 (387)	0.0 (68)	0.2 (455)
	2021	0.5 (400)	0.0 (71)	0.4 (471)
Teicoplanin	2017	0.3 (345)	0.0 (117)	0.2 (462)
	2018	0.3 (348)	0.0 (104)	0.2 (452)
	2019	0.2 (432)	0.0 (110)	0.2 (542)
	2020	0.3 (387)	0.0 (69)	0.2 (456)
	2021	0.2 (401)	1.4 (71)	0.4 (472)
Tetracycline/doxycycline	2017	12.8 (344)	23.3 (116)	15.4 (460)
	2018	12.6 (348)	23.1 (104)	15.0 (452)
	2019	11.9 (429)	20.9 (110)	13.7 (539)
	2020	13.7 (387)	14.5 (69)	13.8 (456)
	2021	15.8 (400)	12.7 (71)	15.3 (471)
Trimethoprim-sulfamethoxazole	2017	0.9 (343)	21.4 (117)	6.1 (460)
	2018	0.9 (348)	16.3 (104)	4.4 (452)
	2019	1.4 (427)	15.5 (110)	4.3 (537)
	2020	2.6 (387)	11.6 (69)	3.9 (456)
	2021	1.8 (396)	8.5 (71)	2.8 (467)

continues

Table S4.42: *continued*

Antimicrobial	Year	Community-associated, % resistant (<i>n</i>)	Healthcare-associated, % resistant (<i>n</i>)	Total, % resistant (<i>n</i>)
Vancomycin	2017	0.0 (345)	0.0 (117)	0.0 (462)
	2018	0.0 (348)	0.0 (104)	0.0 (452)
	2019	0.0 (432)	0.0 (110)	0.0 (542)
	2020	0.0 (387)	0.0 (69)	0.0 (456)
	2021	0.0 (401)	0.0 (71)	0.0 (472)

Source: AGAR (national)

Table S4.43: Methicillin-resistant *Staphylococcus aureus* community-associated and healthcare-associated clones (blood culture isolates), by state and territory, 2017–2021

State or territory	Year	Isolates tested	MRSA, %	Typed, n*	Community-associated,	Healthcare-associated,
					% of total (n)	% of total (n)
NSW	2017	679	20.5	132	10.8 (73)	8.7 (59)
	2018	647	20.4	128	12.7 (82)	7.1 (46)
	2019	907	19.4	165	13.6 (123)	4.6 (42)
	2020	807	19.5	147	15.0 (121)	3.2 (26)
	2021	770	19.7	144	14.9 (115)	3.8 (29)
Vic	2017	365	17.5	61	13.2 (48)	3.6 (13)
	2018	414	14.3	57	9.7 (40)	4.1 (17)
	2019	546	16.7	84	11.5 (63)	3.8 (21)
	2020	461	15.0	68	11.7 (54)	3.0 (14)
	2021	615	12.7	72	8.9 (55)	2.8 (17)
Qld	2017	553	15.2	80	13.0 (72)	1.4 (8)
	2018	571	14.0	76	11.4 (65)	1.9 (11)
	2019	647	15.8	95	12.2 (79)	2.5 (16)
	2020	473	15.9	68	12.1 (57)	2.3 (11)
	2021	514	13.0	61	11.5 (59)	0.4 (2)
SA	2017	167	20.4	34	10.2 (17)	10.2 (17)
	2018	256	15.6	38	11.3 (29)	3.5 (9)
	2019	238	15.1	31	10.1 (24)	2.9 (7)
	2020	239	10.9	24	10.0 (24)	0.0 (0)
	2021	232	18.1	40	14.7 (34)	2.6 (6)

continues

Table S4.43: *continued*

State or territory	Year	Isolates tested	MRSA, %	Typed, n*	Community-associated, % of total (n)	Healthcare-associated, % of total (n)
WA	2017	466	20.4	95	18.5 (86)	1.9 (9)
	2018	487	21.4	103	19.3 (94)	1.8 (9)
	2019	499	21.2	100	18.0 (90)	2.0 (10)
	2020	448	22.1	96	19.4 (87)	2.0 (9)
	2021	513	19.1	97	17.0 (87)	1.9 (10)
Tas	2017	91	11.0	9	3.3 (3)	6.6 (6)
	2018	110	8.2	9	2.7 (3)	5.5 (6)
	2019	135	11.9	13	5.2 (7)	4.4 (6)
	2020	127	5.5	7	2.4 (3)	3.1 (4)
	2021	115	7.8	9	6.1 (7)	1.7 (2)
NT	2017	99	45.5	42	39.4 (39)	3.0 (3)
	2018	77	40.3	30	36.4 (28)	2.6 (2)
	2019	64	56.3	36	56.3 (36)	0.0 (0)
	2020	82	48.8	38	43.9 (36)	2.4 (2)
	2021	86	43.0	35	38.4 (33)	2.3 (2)
ACT	2017	95	9.5	9	7.4 (7)	2.1 (2)
	2018	111	9.9	11	6.3 (7)	3.6 (4)
	2019	121	16.5	18	8.3 (10)	6.6 (8)
	2020	97	8.2	8	5.2 (5)	3.1 (3)
	2021	102	13.7	14	10.8 (11)	2.9 (3)

continues

Table S4.43: *continued*

State or territory	Year	Isolates tested	MRSA, %	Typed, n*	Community-associated, % of total (n)	Healthcare-associated, % of total (n)
Australia	2017	2,515	19.1	462	13.7 (345)	4.7 (117)
	2018	2,673	17.4	452	13.0 (348)	3.9 (104)
	2019	3,157	18.5	542	13.7 (432)	3.5 (110)
	2020	2,734	17.6	456	14.2 (387)	2.5 (69)
	2021	2,947	16.9	472	13.6 (401)	2.4 (71)

MRSA = methicillin-resistant *Staphylococcus aureus*

* 96% (2017), 97% (2018), 93% (2019), 95% (2020), and 95% (2021) of MRSA were available for typing to determine sequence type. Based on sequence type, MRSA were classified as either healthcare-associated or community-associated clones

Source: AGAR (national)

Table S4.44: *Streptococcus agalactiae* resistance (all specimen sources), 2017–2021

Antimicrobial	2017, % resistant (n)	2018, % resistant (n)	2019, % resistant (n)	2020, % resistant (n)	2021, % resistant (n)
Benzylpenicillin	0.1 (13,693)	0.1 (12,716)	0.1 (12,927)	0.1 (13,086)	0.1 (13,545)
Clindamycin	30.2 (7,562)	30.6 (7,225)	33.6 (6,134)	34.6 (6,131)	35.4 (6,775)
Erythromycin	30.6 (8,089)	32.3 (8,321)	33.9 (8,285)	34.3 (8,333)	35.5 (9,087)
Tetracycline/doxycycline	76.5 (5,163)	74.1 (4,954)	75.6 (4,897)	71.9 (2,986)	74.6 (3,177)
Trimethoprim	8.8 (1,364)	8.0 (1,196)	11.7 (1,183)	10.3 (1,155)	10.0 (1,076)
Trimethoprim-sulfamethoxazole	0.5 (925)	0.0 (350)	0.4 (513)	1.0 (836)	0.4 (841)

Sources: APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); SNP (Qld, northern NSW)

Table S4.45: *Streptococcus agalactiae* resistance, by clinical setting, 2017–2021

Antimicrobial	Year	Public hospitals, % resistant (n)	Private hospitals, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant (n)
Benzylpenicillin	2017	0.0 (600)	0.0 (8,966)	0.0 (132)	0.1 (3,863)
	2018	0.0 (663)	0.1 (8,525)	0.0 (106)	0.1 (3,295)
	2019	0.0 (637)	0.1 (8,952)	0.0 (85)	0.1 (3,119)
	2020	0.0 (633)	0.1 (9,199)	0.0 (81)	0.0 (2,935)
	2021	0.0 (698)	0.1 (9,705)	0.0 (57)	0.0 (2,815)
Clindamycin	2017	34.2 (222)	30.5 (6,311)	33.3 (36)	26.8 (930)
	2018	27.9 (258)	30.4 (6,037)	nd	33.3 (818)
	2019	28.5 (414)	33.0 (5,074)	nd	43.2 (525)
	2020	31.4 (306)	33.2 (5,205)	nd	55.3 (425)
	2021	30.0 (466)	34.9 (5,638)	nd	48.5 (425)
Erythromycin	2017	30.8 (386)	30.7 (6,197)	36.6 (41)	30.2 (1,371)
	2018	32.2 (422)	31.8 (6,558)	37.5 (32)	35.1 (1,220)
	2019	30.0 (424)	33.6 (6,668)	nd	36.6 (1,082)
	2020	38.0 (308)	33.1 (6,797)	nd	42.0 (1,007)
	2021	30.2 (470)	34.9 (7,401)	nd	43.7 (948)
Tetracycline/doxycycline	2017	76.1 (201)	77.8 (3,052)	82.8 (64)	74.3 (1,757)
	2018	nd	75.2 (3,427)	nd	72.0 (1,419)
	2019	nd	76.6 (3,461)	nd	72.7 (1,306)
	2020	nd	72.5 (2,312)	nd	70.3 (495)
	2021	nd	75.6 (2,457)	nd	71.0 (466)

continues

Table S4.45: *continued*

Antimicrobial	Year	Public hospitals, % resistant (n)	Private hospitals, % resistant (n)	Aged care homes, % resistant (n)	Community, % resistant (n)
Trimethoprim	2017	nd	nd	13.8 (65)	8.5 (1,299)
	2018	nd	nd	11.8 (68)	7.8 (1,128)
	2019	nd	nd	12.3 (57)	11.6 (1,126)
	2020	nd	nd	9.2 (65)	10.4 (1,090)
	2021	nd	nd	15.9 (44)	9.8 (1,032)
Trimethoprim-sulfamethoxazole	2017	0.6 (171)	0.9 (214)	2.8 (36)	0.2 (495)
	2018	nd	0.0 (263)	nd	0.0 (58)
	2019	nd	0.2 (403)	nd	0.0 (54)
	2020	nd	0.8 (614)	nd	2.9 (103)
	2021	nd	0.2 (474)	nd	0.0 (167)

nd = no data (either not tested or tested against an inadequate number of isolates)

Sources: APAS (public hospitals); APAS (Qld, SA) and SNP (private hospitals); APAS and SNP (community and aged care homes)

Table S4.46: *Streptococcus pneumoniae* resistance, by specimen source, 2017–2021

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	All sources, % resistant (n)
Penicillin/amoxicillin	2017	2.0 (1,125)	2.3 (7,015)	2.3 (8,140)
	2018	1.0 (1,090)	2.0 (7,074)	1.8 (8,164)
	2019	1.0 (1,266)	1.4 (7,330)	1.4 (8,596)
	2020	0.4 (749)	1.4 (4,085)	1.2 (4,834)
	2021	1.4 (856)	1.8 (4,283)	1.7 (5,139)
Ceftriaxone/cefotaxime	2017	0.5 (197)	0.8 (131)	0.6 (328)
	2018	1.1 (272)	0.7 (148)	1.0 (420)
	2019	0.3 (337)	0.6 (166)	0.4 (503)
	2020	0.0 (176)	3.2 (95)	1.1 (271)
	2021	1.9 (211)	2.5 (160)	2.2 (371)
Clindamycin	2017	20.0 (30)	19.3 (2,271)	19.3 (2,301)
	2018	13.9 (101)	19.0 (2,385)	18.8 (2,486)
	2019	6.5 (124)	19.1 (2,573)	18.5 (2,697)
	2020	8.3 (36)	19.5 (1,395)	19.2 (1,431)
	2021	6.1 (66)	15.1 (1,256)	14.7 (1,322)
Erythromycin	2017	16.7 (923)	24.3 (7,485)	23.4 (8,408)
	2018	14.1 (956)	23.5 (7,112)	22.3 (8,068)
	2019	13.1 (1,033)	23.4 (7,474)	22.1 (8,507)
	2020	8.8 (565)	25.1 (4,169)	23.2 (4,734)
	2021	15.9 (694)	21.4 (4,523)	20.6 (5,217)

continues

Table S4.46: *continued*

Antimicrobial	Year	Blood, % resistant (n)	Other, % resistant (n)	All sources, % resistant (n)
Moxifloxacin/levofloxacin	2017	0.0 (23)	0.6 (492)	0.6 (515)
	2018	0.7 (137)	0.0 (776)	0.1 (913)
	2019	0.0 (205)	0.2 (586)	0.1 (791)
	2020	0.0 (61)	0.4 (459)	0.4 (520)
	2021	1.4 (70)	0.4 (566)	0.5 (636)
Tetracycline/doxycycline	2017	14.8 (479)	18.0 (3,422)	17.6 (3,901)
	2018	13.8 (609)	17.0 (3,658)	16.5 (4,267)
	2019	11.6 (783)	17.5 (3,727)	16.5 (4,510)
	2020	13.2 (409)	20.7 (2,361)	19.6 (2,770)
	2021	11.5 (494)	17.6 (1,882)	16.3 (2,376)
Trimethoprim-sulfamethoxazole	2017	22.4 (219)	23.4 (3,963)	23.4 (4,182)
	2018	21.5 (177)	19.5 (3,972)	19.6 (4,149)
	2019	11.1 (351)	19.3 (4,706)	18.7 (5,057)
	2020	18.4 (136)	18.4 (2,533)	18.4 (2,669)
	2021	16.3 (172)	20.2 (2,418)	20.0 (2,590)
Vancomycin	2017	0.0 (331)	0.0 (2,639)	0.0 (2,970)
	2018	1.1 (380)	0.0 (2,527)	0.2 (2,907)
	2019	0.0 (452)	0.2 (2,579)	0.2 (3,031)
	2020	0.0 (243)	0.0 (1,366)	0.0 (1,609)
	2021	0.0 (277)	0.1 (1,609)	0.1 (1,886)

Sources: APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.47: *Streptococcus pneumoniae* resistance, by clinical setting, 2017–2021

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Community, % resistant (n)
Benzylpenicillin/amoxicillin	2017	4.5 (201)	2.0 (4,612)	2.4 (3,205)
	2018	2.9 (174)	1.9 (4,581)	1.7 (3,307)
	2019	3.5 (201)	1.5 (4,755)	1.1 (3,485)
	2020	2.3 (86)	1.6 (2,763)	0.6 (1,864)
	2021	1.7 (117)	2.2 (2,991)	0.7 (1,900)
Ceftriaxone/cefotaxime	2017	0.0 (48)	0.9 (230)	0.0 (41)
	2018	0.0 (56)	1.3 (303)	0.0 (44)
	2019	1.7 (60)	0.3 (312)	0.0 (87)
	2020	nd	1.2 (164)	0.0 (45)
	2021	3.1 (32)	0.9 (219)	7.4 (54)
Clindamycin	2017	28.0 (143)	17.0 (657)	19.5 (1,455)
	2018	25.8 (155)	16.6 (676)	19.1 (1,620)
	2019	22.0 (159)	18.3 (693)	18.4 (1,800)
	2020	25.8 (66)	19.0 (395)	19.0 (928)
	2021	22.1 (104)	11.8 (195)	14.2 (969)
Erythromycin	2017	30.2 (212)	22.6 (4,725)	24.2 (3,336)
	2018	30.0 (217)	21.8 (4,459)	22.7 (3,293)
	2019	24.4 (209)	21.8 (4,738)	22.7 (3,430)
	2020	30.7 (88)	22.0 (2,626)	24.8 (1,898)
	2021	27.7 (130)	20.5 (2,908)	20.4 (2,054)

continues

Table S4.47: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Community, % resistant (n)
Moxifloxacin/levofloxacin	2017	2.7 (37)	0.5 (443)	nd
	2018	nd	0.1 (738)	0.0 (126)
	2019	0.0 (35)	0.2 (603)	0.0 (113)
	2020	nd	0.3 (395)	0.0 (70)
	2021	nd	0.6 (467)	0.0 (67)
Tetracycline/doxycycline	2017	26.1 (203)	17.2 (2,279)	17.4 (1,316)
	2018	30.1 (206)	16.9 (2,672)	13.8 (1,315)
	2019	22.4 (196)	18.4 (2,866)	11.8 (1,329)
	2020	27.9 (86)	19.8 (1,936)	17.7 (657)
	2021	25.7 (109)	16.7 (1,553)	13.1 (609)
Trimethoprim-sulfamethoxazole	2017	22.8 (149)	21.5 (1,898)	25.4 (2,057)
	2018	32.9 (161)	15.5 (1,629)	21.6 (2,297)
	2019	24.7 (158)	17.3 (2,269)	19.9 (2,563)
	2020	32.4 (68)	16.9 (1,172)	19.2 (1,361)
	2021	29.4 (109)	20.3 (1,147)	18.9 (1,260)
Vancomycin	2017	0.0 (32)	0.1 (1,532)	0.0 (1,360)
	2018	nd	0.0 (1,471)	0.4 (1,346)
	2019	0.0 (34)	0.0 (1,521)	0.4 (1,401)
	2020	nd	0.0 (672)	0.0 (857)
	2021	nd	0.2 (865)	0.0 (920)

nd = no data (either not tested or tested against an inadequate number of isolates)

Sources: APAS (public hospitals); APAS and SNP (private hospitals); APAS, HOTspots and SNP (community)

Table S4.48: *Streptococcus pyogenes* resistance (all specimen sources), 2017–2021

Antimicrobial	2017, % resistant (n)	2018, % resistant (n)	2019, % resistant (n)	2020, % resistant (n)	2021, % resistant (n)
Benzylpenicillin	0.0 (38,319)	0.0 (34,962)	0.0 (34,208)	0.0 (27,606)	0.0 (28,760)
Clindamycin	4.0 (18,005)	5.2 (17,144)	7.3 (16,450)	7.7 (12,172)	11.1 (12,421)
Erythromycin	4.5 (38,059)	6.0 (33,072)	8.8 (31,827)	10.1 (26,624)	9.3 (28,746)
Tetracycline/doxycycline	14.2 (18,005)	17.0 (19,761)	18.1 (19,349)	22.7 (17,004)	29.5 (17,426)
Trimethoprim-sulfamethoxazole	0.9 (12,759)	1.3 (10,226)	0.9 (12,196)	1.4 (9,271)	2.0 (10,124)

Sources: APAS (NSW, Vic, Qld, SA, WA, Tas, ACT); HOTspots (NT); SNP (Qld, northern NSW)

Table S4.49: *Streptococcus pyogenes* resistance, by clinical setting, 2017–2021

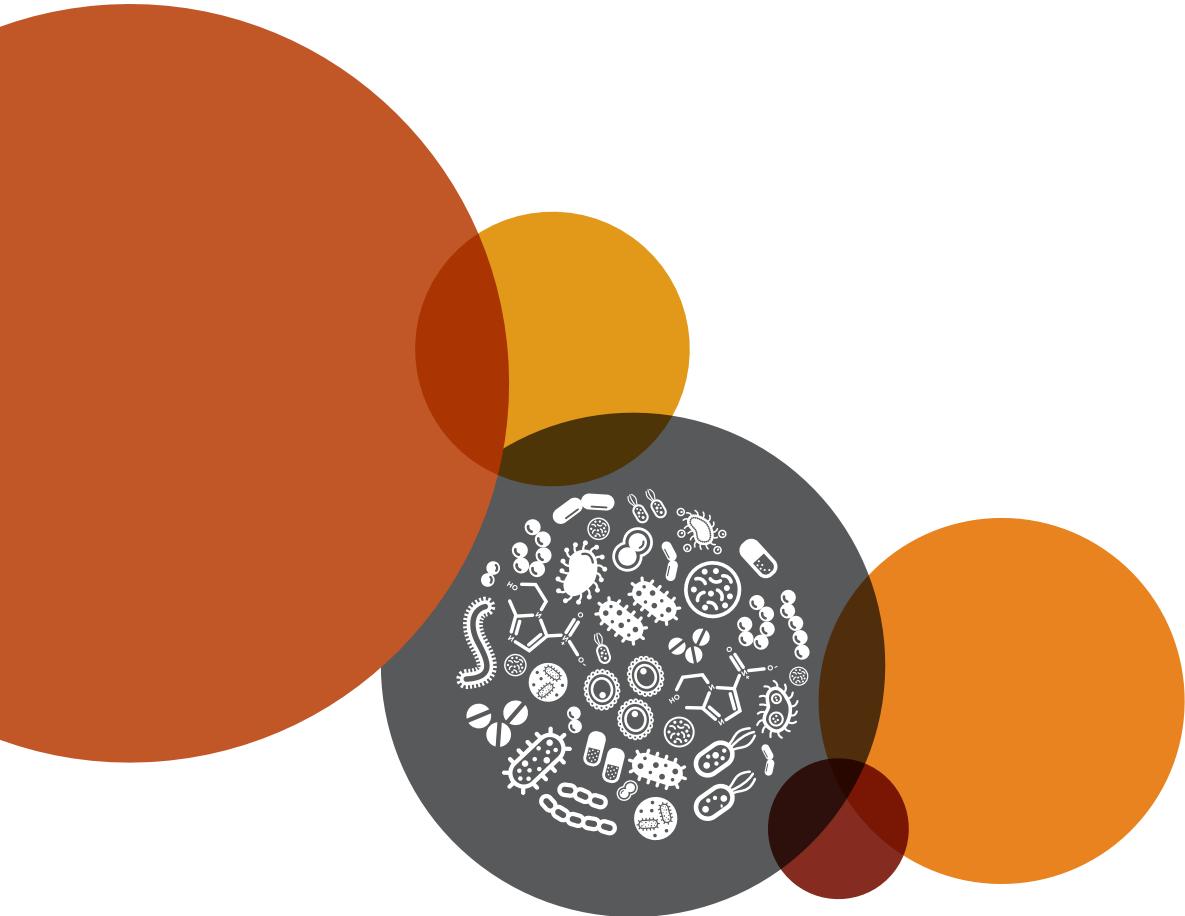
Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Community, % resistant (n)
Benzylpenicillin	2017	0.0 (292)	0.0 (14,391)	0.0 (527)	0.0 (22,730)
	2018	0.0 (246)	0.0 (12,681)	0.0 (480)	0.0 (21,208)
	2019	0.0 (264)	0.0 (12,768)	0.1 (693)	0.0 (20,035)
	2020	0.0 (180)	0.0 (10,920)	0.0 (764)	0.0 (15,371)
	2021	0.0 (189)	0.0 (11,262)	0.0 (798)	0.0 (16,191)
Clindamycin	2017	5.6 (197)	3.7 (4,148)	0.0 (224)	4.3 (13,149)
	2018	7.8 (206)	5.4 (5,193)	1.5 (200)	5.2 (11,300)
	2019	7.7 (183)	7.9 (5,133)	2.2 (224)	7.2 (10,587)
	2020	17.4 (121)	9.2 (4,130)	2.9 (274)	7.0 (7,382)
	2021	13.7 (153)	13.1 (4,333)	4.5 (199)	10.0 (7,505)
Erythromycin	2017	7.3 (287)	5.1 (14,268)	1.9 (524)	4.1 (22,601)
	2018	8.7 (242)	6.1 (11,782)	2.9 (380)	6.0 (20,434)
	2019	8.6 (256)	9.0 (11,843)	4.3 (560)	9.0 (18,834)
	2020	17.2 (180)	9.7 (10,254)	5.9 (597)	10.5 (15,240)
	2021	18.0 (189)	10.2 (11,120)	3.7 (794)	8.9 (16,322)
Tetracycline/doxycycline	2017	10.4 (211)	18.4 (6,223)	15.9 (321)	11.6 (10,943)
	2018	19.2 (167)	17.3 (7,378)	17.6 (403)	16.6 (11,576)
	2019	22.5 (191)	21.7 (7,401)	19.8 (445)	15.6 (11,058)
	2020	23.4 (145)	24.3 (7,838)	18.1 (504)	21.4 (8,229)
	2021	32.6 (144)	31.6 (8,005)	34.2 (503)	27.1 (8,490)

continues

Table S4.49: *continued*

Antimicrobial	Year	Private hospitals, % resistant (n)	Public hospitals, % resistant (n)	Multi-purpose services, % resistant (n)	Community, % resistant (n)
Trimethoprim-sulfamethoxazole	2017	0.0 (133)	1.9 (1,689)	0.0 (61)	0.7 (10,819)
	2018	0.0 (143)	3.7 (1,169)	3.8 (53)	1.0 (8,823)
	2019	0.8 (130)	1.8 (1,643)	2.1 (235)	0.7 (10,084)
	2020	0.0 (90)	2.5 (1,361)	0.8 (236)	1.2 (7,479)
	2021	0.0 (130)	2.8 (1,489)	6.1 (262)	1.8 (8,149)

Sources: APAS (public hospitals); APAS (Qld, SA) and SNP (private hospitals); APAS, HOTspots and SNP (community); APAS (multi-purpose services)



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