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Quarterly report

Australian Gonococcal Surveillance Program, 1 April to 30 June 2025

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The National Neisseria Network (NNN), Australia, established in 1979, comprises reference laboratories in each state and territory. Since 1981, the NNN has reported data for the Australian Gonococcal Surveillance Programme (AGSP), on antimicrobial susceptibility profiles for *Neisseria gonorrhoeae* isolated from each jurisdiction for an agreed group of agents. The antibiotics reported represent current or potential agents used for the treatment of gonorrhoea, and include ceftriaxone, azithromycin, ciprofloxacin and penicillin. More recently, gentamicin and tetracycline are included in the AGSP Annual Report.

Ceftriaxone, combined with azithromycin, is the recommended treatment regimen for gonorrhoea in Australia. Historically, there were substantial geographic differences in susceptibility patterns across the country, with certain remote regions of the Northern Territory and Western Australia having low gonococcal antimicrobial resistance rates. In these regions, an oral treatment regimen comprising amoxycillin, probenecid, and azithromycin was recommended. However, since January 2023, increasing reports of penicillin-resistant *N. gonorrhoeae* in the Northern Territory have changed treatment recommendations to align with the majority of Australia.[1] Additional data on other antibiotics are reported in the AGSP Annual Report. The AGSP has a programme-specific quality assurance process.

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Results

Table 1 provides a summary of the proportion of *Neisseria gonorrhoeae* isolates resistant to azithromycin, ciprofloxacin and penicillin for Quarter 2, 2025.

Table 1: Gonococcal isolates resistant to azithromycin, ciprofloxacin, and penicillin, Australia, 1 April to 30 June 2025, by state or territory

	Resistance[a]								
	Number of isolates tested	Azithromycin		Number of isolates tested[b]	Ciprofloxacin		Number of isolates tested[b]	Penicillin	
Jurisdiction	Q2 2025	n	%	Q2 2025	n	%	Q2 2025	n	%
Australian Capital Territory	56	1	1.8	46	27	58.7	46	6	13.0
New South Wales	888	39	4.4	228	130	57.0	27	8	29.6
Queensland	398	72	18.1	374	231	61.8	374	93	24.9
South Australia	153	2	1.3	151	103	68.2	151	40	26.5
Tasmania	11	1	9.1	10	8	80.0	10	3	30.0
Victoria	760	64	8.4	21	5	23.8	16	1	6.3
Northern Territory non-remote	17	1	5.9	17	5	29.4	17	1	5.9
Northern Territory remote	13	0	0	13	1	7.7	12	2	16.7
Western Australia non-remote	238	40	16.8	238	144	60.5	238	39	16.4
Western Australia remote	19	0	0	19	4	21.1	19	1	5.3
Australia	**2,553**	**220**	**8.6**	**1,117**	**658**	**58.9**	**910**	**194**	**21.3**

a Resistance as defined by jurisdictional reporting criteria.

b Antimicrobial susceptibility testing was undertaken on a subset of *N. gonorrhoeae* isolates to ciprofloxacin (43.8%; 1,117/2,553) and penicillin (35.6%; 910/2,553).

Ceftriaxone

The AGSP has historically reported the category of ceftriaxone decreased susceptibility (DS) at minimum inhibitory concentration (MIC) values ≥ 0.064 mg/L, and has further differentiated those isolates with a MIC ≥ 0.125 mg/L in line with the 2012 World Health Organization criteria.[2] The proportion of *N. gonorrhoeae* in Australia with ceftriaxone MIC values ≥ 0.125 mg/L more than doubled in 2024 (0.51%) from 2023 (0.22%) (Table 2). In the first six months of 2025 year-to-date (ytd), these proportions reached 0.73% (38/5,204), increasing from 0.60% (16/2,651) in quarter one to 0.86% (22/2,553) in quarter two (Table 2). In quarter two of 2025, there were 22 isolates with ceftriaxone MIC values ranging from 0.125 to 0.50 mg/L, reported from New South Wales (11), Victoria (7), non-remote Western Australia (2), Queensland (1) and the non-remote Northern Territory (1). Most of these infections were from male patients and 50% of isolates (11/22) harboured the mosaic *penA* 60.001 allele, the key target associated with ceftriaxone resistance.[3]

In 2025 ytd, five *N. gonorrhoeae* isolates were detected in Australia with an extensively drug-resistant (XDR) phenotype (high-level resistance to azithromycin and decreased susceptibility to ceftriaxone). These XDR isolates were reported from New South Wales (2; quarter one), Victoria (2; quarters one and two) and the non-remote Northern Territory (1; quarter two). Where genomic data was available, 4/5 XDR isolates harboured the mosaic *penA* 60.001 allele and were classified as multi locus sequence type (MLST)-16406. There has been a spike in detection of XDR *N. gonorrhoeae* ST-16406 strains both in Australia and globally, most of which has been associated with travel to the Asia Pacific. Genomic analysis has shown limited diversity amongst the XDR isolates reported to date in Australia.[4]

The AGSP has traditionally monitored *N. gonorrhoeae* with ceftriaxone MIC values of 0.064 mg/L, with the proportion of these isolates peaking in 2022 (5.05%).[5,6] These have since decreased to consistent levels in 2024 (2.29%) and 2025 ytd (2.77%; 144/5,204) (Table 2).

Azithromycin

Dual therapy using ceftriaxone plus azithromycin has been the recommended treatment for gonorrhoea in Australia since 2014, as a strategy to temper development of more widespread ceftriaxone resistance. In 2025 ytd, the proportion of azithromycin resistant *N. gonorrhoeae* was 7.2% (Table 2), higher than the corresponding period in 2024 (4.5%) and for 2024 overall (4.6%).[7] The annual proportion of azithromycin resistance remained stable in the range 3.9-4.7% from 2019 to 2024 (Table 2). Globally, there have been reports of increased azithromycin resistance in *N. gonorrhoeae*, heightened since dual therapy was introduced.[8] The AGSP trend data for azithromycin resistance since 2010 are shown in Table 2.

Of concern, since 2022 there has been a rising number of *N. gonorrhoeae* isolates reported by the AGSP with high-level azithromycin resistance (MIC value ≥ 256 mg/L). In 2025, there were seven such isolates (0.13%) ytd, four in quarter two and three in quarter one. These were detected in a number of different jurisdictions: New South Wales (3); Victoria (3); and the non-remote Northern Territory (1). The number of *N. gonorrhoeae* in 2025 with high-level resistance to azithromycin is markedly reduced from the 46 reported annually in 2024, the highest ever reported by the AGSP.[9]

Patients with extragenital gonococcal infections, and those with infections with *N. gonorrhoeae* with raised MIC values to ceftriaxone, should have test of cure cultures collected following treatment.[10] Continued surveillance to monitor *N. gonorrhoeae* with elevated MIC values, coupled with sentinel site surveillance in high-risk populations, remain essential to inform therapeutic strategies, to identify incursion of resistant strains, and to detect instances of treatment failure.

Table 2: The national number of gonococcal isolates and proportion of *N. gonorrhoeae* with ceftriaxone MIC values 0.064 and ≥ 0.125 mg/L and resistance to azithromycin, Australia, 2010 to 2024, 1 January to 31 March 2025, 1 April to 30 June 2025 and ytd 2025[a]

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025 Q1	2025 Q2	2025 ytd[a]
Number of isolates tested nationally	4,100	4,230	4,718	4,897	4,804	5,411	6,378	7,835	9,006	9,668	7,222	6,254	8,199	10,105	10,702	2,651	2,553	5,204
Ceftriaxone MIC 0.064 mg/L	4.80%	3.20%	4.10%	8.20%	4.80%	1.70%	1.65%	1.02%	1.67%	1.19%	0.87%	0.83%	5.05%	3.29%	2.29%	2.53%	3.02%	2.77%
Ceftriaxone MIC ≥ 0.125 mg/L	0.10%	0.10%	0.30%	0.60%	0.60%	0.10%	0.05%	0.04%	0.06%	0.11%	0.07%	0.03%	0.51%	0.22%	0.51%	0.60%	0.86%	0.73%
Total proportion of isolates with ceftriaxone MIC values ≥ 0.064 mg/L	**4.90%**	**3.30%**	**4.40%**	**8.80%**	**5.40%**	**1.80%**	**1.70%**	**1.06%**	**1.73%**	**1.30%**	**0.94%**	**0.86%**	**5.56%**	**3.51%**	**2.80%**	**3.13%**	**3.88%**	**3.50%**
Azithromycin resistance	n/a	1.1%	1.3%	2.1%	2.5%	2.6%	5.0%	9.3%	6.2%	4.6%	3.9%	4.7%	3.9%	4.5%	4.6%	5.8%	8.6%	7.17%

a ytd: year-to-date, includes AGSP data collated from 1 January to 30 June 2025.

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