

Quarterly report

# Australian Gonococcal Surveillance Program, 1 July to 30 September 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 amoxicillin, 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.<sup>1</sup> Additional data on other antibiotics are reported in the AGSP Annual Report. The AGSP is supported by a programme-specific quality assurance process.

## Results

Table 1 provides a summary of the proportion of *Neisseria gonorrhoeae* isolates resistant to azithromycin, ciprofloxacin and penicillin for Quarter 3, 2025.

**Table 1: Gonococcal isolates resistant to azithromycin, ciprofloxacin, and penicillin, Australia, 1 July to 30 September 2025, by state or territory**

Jurisdiction	Resistance <sup>a</sup>								
	Number of isolates tested Q3 2025	Azithromycin		Number of isolates tested <sup>b</sup> Q3 2025	Ciprofloxacin		Number of isolates tested <sup>b</sup> Q3 2025	Penicillin	
		n	%		n	%		n	%
Australian Capital Territory	59	3	5.1	51	27	52.9	51	5	9.8
New South Wales	897	52	5.8	195	114	58.5	78	23	29.5
Queensland	359	14	3.9	327	202	61.8	327	88	26.9
South Australia	150	5	3.3	150	74	49.3	150	36	24.0
Tasmania	19	2	10.5	19	16	84.2	19	6	31.6
Victoria	680	42	6.2	308	215	69.8	306	105	34.3
Northern Territory non-remote	13	1	7.7	13	6	46.2	13	0	0
Northern Territory remote	17	0	0	17	1	5.9	17	2	11.8
Western Australia non-remote	303	39	12.9	302	163	54.0	302	57	18.9
Western Australia remote	20	2	10	20	5	25.0	20	1	5.0
<b>Australia</b>	<b>2,517</b>	<b>160</b>	<b>6.4</b>	<b>1,402</b>	<b>823</b>	<b>58.7</b>	<b>1,283</b>	<b>323</b>	<b>25.2</b>

a Resistance as defined by jurisdictional reporting criteria.

b. A subset of *N. gonorrhoeae* had antimicrobial susceptibility testing to ciprofloxacin (55.7%; 1,402/2,517) and penicillin (51.0%, 1,283/2,517).

## Ceftriaxone

The AGSP has historically reported the category of ceftriaxone decreased susceptibility (DS) at minimum inhibitory concentration (MIC) values  $\geq 0.064$  mg/L, and has further differentiated those isolates with a MIC  $\geq 0.125$  mg/L in line with the 2012 World Health Organization criteria.<sup>2</sup> The proportion of *N. gonorrhoeae* in Australia with ceftriaxone MIC values  $\geq 0.125$  mg/L more than doubled in 2024 (0.51%) from 2023 (0.22%) (Table 2). In the reporting period 1 January to 30 September 2025 (year-to-date, ytd), there were 49/7,721 (0.63%) isolates with ceftriaxone MIC values ranging from 0.125 to 1.0 mg/L (Table 2), largely reported from New South Wales (20) and Victoria (20), and in small numbers from non-remote Western Australia (4), the non-remote Northern Territory (2), Queensland (1), South Australia (1) and the Australian Capital Territory (1). Of these infections, 32/49 (65.3%) involved male patients and where determined, 56.3% of isolates (27/48) harboured the mosaic *penA* 60.001 allele, the key target associated with ceftriaxone resistance.<sup>3</sup>

From 1 January to 30 September 2025, there were seven *N. gonorrhoeae* isolates 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 Victoria (3; one notification in each of quarters one to three) New South Wales (2; quarter one), non-remote Western Australia (1; quarter three) and the non-remote Northern Territory (1; quarter two). Where genomic data was available, four of the seven 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.<sup>4</sup>

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%).<sup>5,6</sup> These have since declined to consistent levels in 2024 (2.29%) and 2025 ytd (2.64%; 204/7,721) (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 6.9% (533/7,721) (Table 2), increasing from the corresponding period in 2024 (4.5%) and for 2024 overall (4.6%).<sup>7</sup> The annual proportion of azithromycin resistance remained in a stable range of 3.9–4.7% from 2019 to 2024 (Table 2). Globally, there have been reports of increased azithromycin resistance in *N. gonorrhoeae*, heightened since the introduction of dual therapy.<sup>8</sup> 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  $\geq 256$  mg/L). In 2025 ytd, there were 15 such isolates reported (0.19%; 15/7,721), including those seven isolates with an XDR phenotype. These isolates with azithromycin high-level resistance were detected in several different jurisdictions: New South Wales (4, quarters one to three), Victoria (4, quarters one to three), non-remote Western Australia (4, quarter three), Queensland (2, quarter three) and the non-remote Northern Territory (1, quarter two). 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.<sup>9</sup>

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.<sup>10</sup> 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  $\geq 0.125$  mg/L and resistance to azithromycin, Australia, 2010 to 2024, 1 January to 31 March 2025, 1 April to 30 June 2025, 1 July to 30 September 2025 and 2025 ytd<sup>a</sup>**

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025 Q1	2025 Q2	2025 Q3	2025 Q1 to Q3 (ytd)
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	2,517	7,721
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%	2.38%	2.64%
Ceftriaxone MIC $\geq 0.125$ 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%	0.44%	0.63%
<b>Total proportion of isolates with ceftriaxone MIC values <math>\geq 0.064</math> mg/L</b>	<b>4.90%</b>	<b>3.30%</b>	<b>4.40%</b>	<b>8.80%</b>	<b>5.40%</b>	<b>1.80%</b>	<b>1.70%</b>	<b>1.06%</b>	<b>1.73%</b>	<b>1.30%</b>	<b>0.94%</b>	<b>0.86%</b>	<b>5.56%</b>	<b>3.51%</b>	<b>2.80%</b>	<b>3.13%</b>	<b>3.88%</b>	<b>2.82%</b>	<b>3.28%</b>
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%	6.4%	6.90%

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

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