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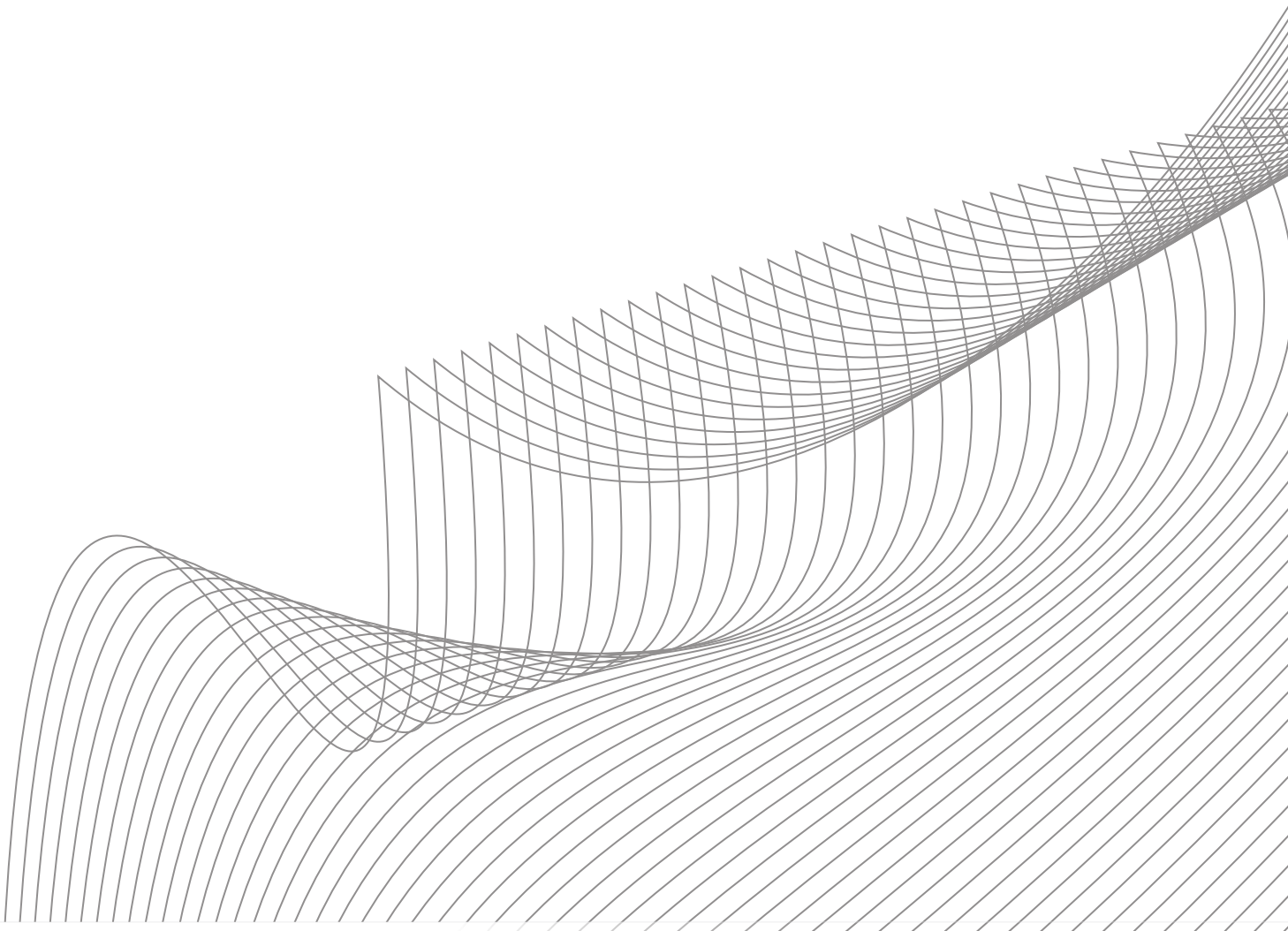
Australian Gonococcal Surveillance Programme, 1 January to 31 March 2022

Monica M Lahra, Sanghamitra Ray and Tiffany R Hogan



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Quarterly report

Australian Gonococcal Surveillance Programme, 1 January to 31 March 2022

Monica M Lahra, Sanghamitra Ray and Tiffany R Hogan

Introduction

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 susceptibilities are included in the AGSP Annual Report.

Ceftriaxone, combined with azithromycin, is the recommended treatment regimen for gonorrhoea in the majority of Australia. However, there are substantial geographic differences in susceptibility patterns in Australia, 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 is recommended for the treatment of gonorrhoea. Additional data on other antibiotics are reported in the AGSP Annual Report. The AGSP has 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 1 2022.

Ceftriaxone

The AGSP has historically reported the category of ceftriaxone decreased susceptibility (DS) at minimum inhibitory concentration (MIC) values ≥ 0.06 mg/L, and has further differentiated those isolates with a MIC ≥ 0.125 mg/L in line with the 2012 World Health Organization criteria.[1] In the first quarter of 2022, 4.3% of *N. gonorrhoeae* isolates had MIC values ≥ 0.06 mg/L, a sharp rise from the proportions reported in 2021 (0.86%) and 2020 (0.94%), as shown in Table 2.2 Of concern, is the increase in the proportion of *N. gonorrhoeae* with ceftriaxone MICs ≥ 0.125 mg/L, with six such isolates reported from New South Wales, Victoria, Queensland and South Australia. Investigations are ongoing.[2]

Azithromycin

In the first quarter of 2022, the proportion of isolates resistant to azithromycin in Australia was 2.2% (Table 2), which was lower than the annual proportions reported nationally in 2021 (4.7%) and 2020 (3.9%). It should be noted that there is variation in antimicrobial susceptibility testing methodology in the jurisdictions and so resistance is defined accordingly. The AGSP trend data for azithromycin resistance since 2010 is shown in Table 2. Globally, there have been reports of increased azithromycin resistance in *N. gonorrhoeae,* heightened since dual therapy was introduced.[3] Of note, two isolates from New South Wales exhibited high-level resistance to azithromycin, defined as MIC values ≥ 256 mg/L. In the first quarter of 2022, all jurisdictions reported isolates with resistance to azithromycin, except for the Australian

Table 1: Gonococcal isolates resistant to azithromycin, ciprofloxacin, and penicillin, Australia, 1 January to 31 March 2022, by state or territory

Jurisdiction	Number of isolates tested	Resistance[a]					
	Q1, 2022	Azithromycin		Ciprofloxacin		Penicillin	
		n	%	n	%	n	%
Australian Capital Territory	47	0	0.0	30	63.8	7	14.9
New South Wales	556	18	3.2	445	80.0	207	37.2
Queensland	323	2	0.6	145	44.9	122	37.8
South Australia	107	0	0.0	44	41.1	41	38.3
Tasmania	24	0	0.0	8	33.3	2	8.3
Victoria	594	15	2.5	434	73.1	292	49.2
Northern Territory non-remote	8	0	0.0	1	12.5	1	12.5
Northern Territory remote	34	0	0.0	0	0.0	0	0.0
Western Australia non-remote	101	4	4.0	31	30.7	45	44.6
Western Australia remote	18	0	0.0	2	11.1	4	22.2
Australia	**1,812**	**39**	**2.2**	**1,140**	**62.9**	**721**	**39.8**

a Resistance as defined by jurisdictional reporting criteria.

Table 2: Percentage of gonococcal isolates with ceftriaxone MIC values 0.06 and ≥ 0.125 mg/L and resistance to azithromycin, Australia, 2010 to 2021, and 1 January to 31 March 2022

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022 Q1
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	1,812
Ceftriaxone MIC 0.06 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%	3.97%
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%	0.33%
Total proportion of isolates with ceftriaxone MIC values ≥ 0.06 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%**	**4.30%**
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%	2.2%

Capital Territory, the Northern Territory, South Australia, Tasmania and remote regions of Western Australia.

Dual therapy using ceftriaxone plus azithromycin is the recommended treatment for gonorrhoea as a strategy to temper development of more widespread ceftriaxone resistance. Patients with infections in extragenital sites, where the isolate has decreased susceptibility to ceftriaxone, should have test of cure cultures collected. 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, identify incursion of resistant strains, and detect instances of treatment failure.

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