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Australian Gonococcal Surveillance Programme, 1 July to 30 September 2021

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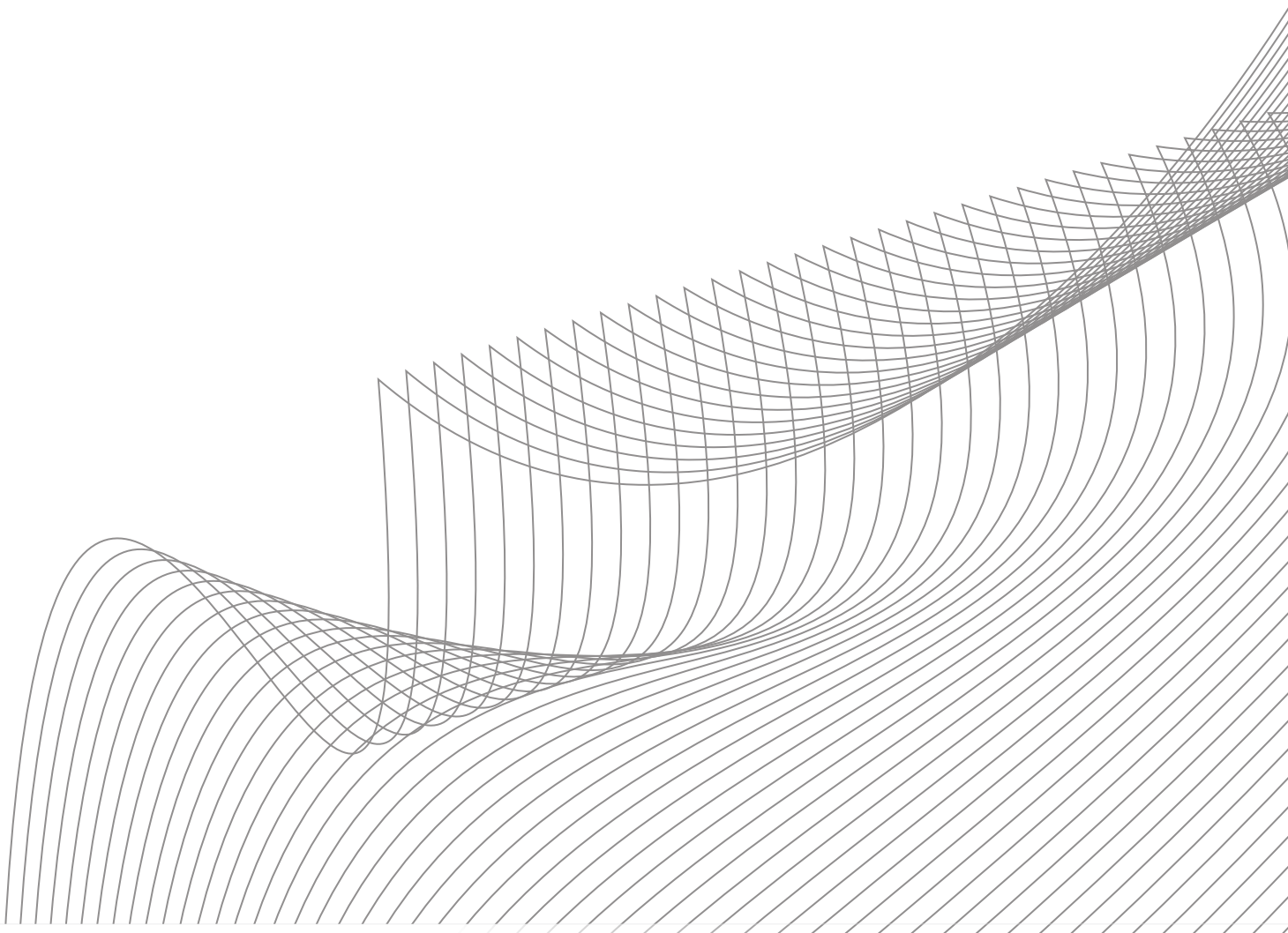

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Quarterly report

Australian Gonococcal Surveillance Programme, 1 July to 30 September 2021

Monica M Lahra, Masoud Shoushtari, Tiffany R Hogan

Introduction

The National Neisseria Network (NNN), Australia, comprises reference laboratories in each state and territory established in 1979. The NNN has reported data on susceptibility profiles for all *Neisseria gonorrhoeae* isolated from each jurisdiction for an agreed group of antimicrobial agents for the Australian Gonococcal Surveillance Programme (AGSP) since 1981. 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.

Results

A summary of the proportion of *Neisseria gonorrhoeae* isolates with decreased susceptibility (DS) to ceftriaxone (minimum inhibitory concentration, MIC ≥ 0.06 mg/L); and the proportions resistant to azithromycin (MIC ≥ 1.0 mg/L), penicillin (MIC ≥ 1.0 mg/L), and ciprofloxacin (MIC ≥ 1.0 mg/L) for Quarter 3 2021, is shown in Table 1.

Ceftriaxone

N. gonorrhoeae isolates with ceftriaxone MIC values ≥ 0.06 mg/L are categorised as Decreased Susceptible (DS) in the AGSP. For trend data, reporting is at MIC values of 0.06 mg/L and MIC ≥ 0.125 mg/L. In the third quarter of 2021, 0.65% of *N. gonorrhoeae* isolates tested had ceftriaxone DS. This proportion was lower than that reported in the first two quarters of 2021 and 2020 annually (0.94%), as shown in Table 2.[1] Noting, however, that the number of isolates tested was lower in 2021, coinciding with the public health measures in place during the COVID-19 pandemic.

Azithromycin

In the third quarter of 2021, the proportion of isolates resistant to azithromycin (MIC ≥ 1.0 mg/L) in Australia was 4.5% (Table 2), similar to the first two quarters of 2021. 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.[2] In the third quarter of 2021, all states reported isolates with resistance to azithromycin, with the exception of South Australia and remote regions of Western Australia. No azithromycin-resistant isolates were reported in the territories.

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.

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Table 1: Gonococcal isolates showing decreased susceptibility to ceftriaxone, and resistance to azithromycin, ciprofloxacin and penicillin, Australia, 1 July to 30 September 2021, by state or territory

State or territory	Number of isolates tested	Decreased susceptibility		Resistance					
	Q3, 2021	Ceftriaxone MIC ≥ 0.06 mg/L		Azithromycin MIC ≥ 1.0 mg/L		Ciprofloxacin MIC ≥ 1.0 mg/L		Penicillin[a] MIC ≥ 1.0 mg/L	
		n	%	n	%	n	%	n	%
Australian Capital Territory	37	1	2.7	0	0.0	16	43.2	9	24.3
New South Wales	388	2	0.5	25	6.4	284	73.2	156	40.2
Queensland	276	1	0.4	3	1.1	112	40.6	74	26.8
South Australia	68	0	0.0	0	0.0	14	20.6	28	41.2
Tasmania	26	0	0.0	1	3.8	5	19.2	5	19.2
Victoria	416	5	1.2	26	6.3	267	64.2	212	51.0
Northern Territory non-remote	11	0	0.0	0	0.0	6	54.5	0	0.0
Northern Territory remote	26	0	0.0	0	0.0	1	3.8	0	0.0
Western Australia non-remote	125	0	0.0	7	5.6	47	37.6	36	28.8
Western Australia remote	17	0	0.0	0	0.0	1	5.9	0	0.0
Australia	**1390**	**9**	**0.65**	**62**	**4.5**	**753**	**54.2**	**520**	**37.4**

a Penicillin resistance includes a MIC value of ≥ 1.0 mg/L or penicillinase production.

Table 2: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone (MIC 0.06 and ≥ 0.125 mg/L) and resistance to azithromycin (MIC ≥ 1mg/L), Australia, 2010 to 2020, and 1 January to 31 March 2021, 1 April to 30 June 2021 and 1 July to 30 September 2021

YEAR	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 Q1	2021 Q2	2021 Q3
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%	0.86%	0.90%	0.65%
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%	0.00%	0.00%	0.00%
Ceftriaxone DS Total	**4.90%**	**3.30%**	**4.40%**	**8.80%**	**5.40%**	**1.80%**	**1.70%**	**1.06%**	**1.73%**	**1.30%**	**0.94%**	**0.86%**	**0.90%**	**0.65%**
Azithromycin MIC ≥ 1mg/L	n/a	1.1%	1.3%	2.1%	2.5%	2.6%	5.0%	9.3%	6.2%	4.6%	3.9%	4.8%	4.2%	4.5%

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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