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Australian Gonococcal Surveillance Programme

1 January to 31 March 2021

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Quarterly report

Australian Gonococcal Surveillance Programme

1 January to 31 March 2021

Monica M Lahra, Masoud Shoushtari, Tiffany R Hogan

Introduction

The National Neisseria Network (NNN), Australia, comprises reference laboratories in each state and territory that report data on susceptibility profiles for clinical *Neisseria gonorrhoeae* isolates from each jurisdiction for an agreed group of antimicrobial agents for the Australian Gonococcal Surveillance Programme (AGSP). The antibiotics—ceftriaxone; azithromycin; ciprofloxacin; and penicillin—represent current or potential agents used for the treatment of gonorrhoea. 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

A summary of the proportion of 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 1 2021, is shown in Table 1.

Ceftriaxone

For the AGSP, monitoring of ceftriaxone DS includes the MIC values ≥ 0.06 mg/L and is further differentiated by those isolates with MIC 0.06 mg/L, and those isolates with MIC ≥ 0.125 mg/L. In the first quarter of 2021, the proportion of isolates with ceftriaxone DS in Australia was 0.86%, lower than the annual proportion for 2020, as shown in Table 2.

The national trend of isolates with ceftriaxone decreased susceptibility (MIC 0.06 and ≥ 0.125 mg/L) since 2010 is shown in Table 2.

Azithromycin

In the first quarter of 2021, the proportion of isolates with resistance to azithromycin (MIC ≥ 1.0 mg/L) in Australia was 4.8%. This was higher than the proportion reported nationally in 2020 and higher also the proportion reported in Australia for 2013–2015 (2.1–2.6%), as shown in Table 3.[1] This will continue to be monitored over the quarters of 2021. Globally, there have been reports of increasing of azithromycin resistance in *N. gonorrhoeae*.[2] In the first quarter of 2021, all states and territories reported isolates with resistance to azithromycin, with the exceptions of Tasmania and of remote regions of the Northern Territory and 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.

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Table 1: Gonococcal isolates showing decreased susceptibility to ceftriaxone, and resistance to azithromycin, penicillin, and ciprofloxacin, Australia, 1 January to 31 March 2021, by state or territory

State or territory	Number of isolates tested	Decreased susceptibility		Resistance					
	Q1, 2021	Ceftriaxone		Azithromycin		Penicillin[a]		Ciprofloxacin	
		n	%	n	%	n	%	n	%
Australian Capital Territory	53	0	0.0	1	1.9	18	34.0	24	45.3
New South Wales	587	3	0.5	60	10.2	297	50.6	368	62.7
Queensland	294	2	0.7	10	3.4	94	32.0	119	40.5
South Australia	86	2	2.3	2	2.3	17	19.5	20	23.3
Tasmania	19	0	0.0	0	0.0	5	26.3	11	57.9
Victoria	493	8	1.6	6	1.2	174	35.3	221	44.8
Northern Territory non-remote	23	0	0.0	1	4.3	0	0.0	2	8.7
Northern Territory remote	32	0	0.0	0	0.0	1	3.1	1	3.1
Western Australia non-remote	120	0	0.0	3	2.5	29	24.2	43	35.8
Western Australia remote	28	0	0.0	0	0.0	1	3.6	1	3.6
Australia	**1,735**	**15**	**0.86**	**83**	**4.8**	**636**	**36.7**	**810**	**46.7**

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), Australia, 2010 to 2020, and 1 January to 31 March 2021

Ceftriaxone MIC mg/L	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 Q1
0.06	4.80%	3.20%	4.10%	8.20%	4.80%	1.70%	1.65%	1.02%	1.67%	1.19%	0.87%	0.86%
≥ 0.125	0.10%	0.10%	0.30%	0.60%	0.60%	0.10%	0.05%	0.04%	0.06%	0.11%	0.06%	0.00%
Total	**4.90%**	**3.30%**	**4.40%**	**8.80%**	**5.40%**	**1.80%**	**1.70%**	**1.06%**	**1.73%**	**1.30%**	**0.93%**	**0.86%**

Table 3: Percentage of gonococcal isolates with resistance to azithromycin (MIC ≥ 1.0 mg/L), Australia, 2012 to 2020, and 1 January to 31 March 2021

Azithromycin resistance	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 Q1
MIC ≥ 1.0 mg/L	1.3%	2.1%	2.5%	2.6%	5.0%	9.3%	6.2%	4.6%	3.9%	4.8%

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, to identify incursion of resistant strains, and to detect instances of treatment failure.

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