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Australian Gonococcal Surveillance Programme

1 October to 31 December 2020

Monica M Lahra, Masoud Shoushtari, Tiffany R Hogan

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CDI is produced by the Office of Health Protection and Response, Australian Government Department of Health, GPO Box 9848, (MDP 6) CANBERRA ACT 2601

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Australian Gonococcal Surveillance Programme

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Introduction

The National Neisseria Network (NNN), Australia comprises reference laboratories in each state and territory that report data on *Neisseria gonorrhoeae* antimicrobial resistance to an agreed group of agents for the Australian Gonococcal Surveillance Programme (AGSP). The antibiotics—ceftriaxone, azithromycin, ciprofloxacin and penicillin—represent current or potential drugs 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 gonococcal susceptibility patterns in Australia, with certain remote regions of the Northern Territory and Western Australia having low antimicrobial resistance rates. In these regions, an oral treatment regimen comprising amoxicillin, 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 0.06–0.25 mg/L), and the proportions resistant to azithromycin (MIC \geq 1.0 mg/L), penicillin (MIC \geq 1.0 mg/L), and ciprofloxacin (MIC \geq 1.0 mg/L) for Quarter 4 2020, is shown in Table 1.

Ceftriaxone

In the fourth quarter of 2020, the proportion of isolates with ceftriaxone decreased suscepti-

bility in Australia was 0.81%, higher than the previous quarter, but lower than the proportion in first two quarters of 2020, and cumulatively lower than 2019, (1.3%) as shown in Table 2. The national trend data of isolates with ceftriaxone decreased susceptibility (MIC 0.06 and \geq 0.125 mg/L) since 2010 is shown in Table 2.

Azithromycin

In the fourth quarter of 2020, the proportion of *N. gonorrhoeae* isolates with resistance to azithromycin (MIC \geq 1.0 mg/L) in Australia was 4.5%, continuing the trend of a lower proportion of azithromycin resistance observed nationally in each quarter of 2020 compared to 2019, and to recent years as shown in Table 3. Whilst the proportion of isolates resistant to azithromycin nationally continues to decline, the current rate remains higher than that reported in Australia for 2013–2015 (2.1–2.6%).¹ Globally there have been increasing reports of azithromycin resistance in *N. gonorrhoeae*.² In quarter 4 2020, the eastern jurisdictions of New South Wales, Queensland and the Australian Capital Territory, as well as non-remote regions of Western Australia, reported isolates with resistance to azithromycin. No resistance to azithromycin in gonococcal isolates was reported from Tasmania, South Australia, Victoria and all regions of the Northern Territory. No isolates exhibited high-level resistance to azithromycin (MIC \geq 256 mg/L).

Table 1: Gonococcal isolates showing decreased susceptibility to ceftriaxone and resistance to ciprofloxacin, azithromycin and penicillin, Australia, 1 October to 31 December 2020, by state or territory

State or territory	Number of isolates tested Q4, 2020	Decreased susceptibility			Resistance					
		Ceftriaxone MIC 0.06–0.25 mg/L			Azithromycin MIC ≥ 1.0 mg/L		Penicillin ^a MIC ≥ 1.0 mg/L		Ciprofloxacin MIC ≥ 1.0 mg/L	
		n	%	%	n	%	n	%	n	%
Australian Capital Territory	28	0	0.0	14.3	6	21.4	13	46.4		
New South Wales	607	3	0.5	8.4	279	46.0	318	52.4		
Queensland	297	7	2.4	2.4	60	20.2	114	38.4		
South Australia	99	0	0.0	0.0	3	3.0	8	8.1		
Tasmania	4	0	0.0	0.0	0	0.0	0	0.0		
Victoria	250	2	0.8	0.0	81	32.4	94	37.6		
Northern Territory non remote	24	0	0.0	0.0	1	4.2	2	8.3		
Northern Territory remote	35	0	0.0	0.0	1	2.9	1	2.9		
Western Australia non remote	106	0	0.0	4.7	28	26.4	33	31.1		
Western Australia remote	29	0	0.0	0.0	0	0.0	0	0.0		
Australia	1,479	12	0.81	4.5	459	31.0	583	39.4		

^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 mg/L and ≥0.125 mg/L, Australia, 2010 to 2019, 1 January to 31 March 2020, 1 April to 30 June 2020, 1 July to 30 September, and 1 October to 31 December 2020

Ceftriaxone MIC mg/L	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 Q1	2020 Q2	2020 Q3	2020 Q4
0.06	4.80%	3.20%	4.10%	8.20%	4.80%	1.70%	1.65%	1.02%	1.67%	1.19%	1.25%	0.84%	0.48%	0.74%
≥0.125	0.10%	0.10%	0.30%	0.60%	0.60%	0.10%	0.05%	0.04%	0.06%	0.11%	0.12%	0.13%	0.00%	0.07%
Total	4.90%	3.30%	4.40%	8.80%	5.40%	1.80%	1.70%	1.06%	1.73%	1.30%	1.37%	0.97%	0.48%	0.81%

Table 3: Percentage of gonococcal isolates with resistance to azithromycin (MIC \geq 1.0 mg/L), Australia, 2012 to 2019, 1 January to 31 March 2020, 1 April to 30 June 2020, 1 July to 30 September 2020, and 1 October to 31 December 2020

Azithromycin resistance	2012	2013	2014	2015	2016	2017	2018	2019	2020 Q1	2020 Q2	2020 Q3	2020 Q4
MIC \geq 1.0 mg/L	1.3%	2.1%	2.5%	2.6%	5.0%	9.3%	6.2%	4.6%	4.2%	3.1%	4.2%	4.5%

Dual therapy using ceftriaxone plus azithromycin is the recommended treatment for gonorrhoea as a strategy to temper development of more widespread 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 important to inform therapeutic strategies, to identify incursion of resistant strains, and to detect instances of treatment failure.

Author details

Monica M Lahra¹
Masoud Shoushtari¹
Tiffany R Hogan¹

The World Health Organisation Collaborating Centre for STI and AMR and Neisseria Reference Laboratory, New South Wales Health Pathology, Microbiology The Prince of Wales Hospital, Randwick, NSW, 2031

Corresponding author

Professor Monica M Lahra

World Health Organization Collaborating Centre for STI and AMR, Sydney, and Neisseria Reference Laboratory, Microbiology Department, SEALS, The Prince of Wales Hospital, Randwick, NSW, 2031. School of Medical Sciences, Faculty of Medicine, the University of New South Wales, NSW 2050 Australia

Telephone: +61 2 9382 9054
Facsimile: +61 2 9382 9310
Email: monica.lahra@health.nsw.gov.au

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