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Australian Gonococcal Surveillance Programme, 1 January to 31 March 2017

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the National Neisseria Network, Australia

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Quarterly report

Australian Gonococcal Surveillance Programme

1 January to 31 March 2017

Monica M Lahra and Rodney P Enriquez for the National Neisseria Network, Australia

Introduction

The National Neisseria Network (NNN), Australia comprises reference laboratories in each state and territory that report data on sensitivity to an agreed group of antimicrobial agents for the Australian Gonococcal Surveillance Programme (AGSP). The antibiotics are penicillin, ceftriaxone, azithromycin and ciprofloxacin. These are current or potential agents used for the treatment of gonorrhoea. Azithromycin combined with ceftriaxone is the recommended treatment regimen for gonorrhoea in the majority of Australia. However, there are substantial geographic differences in susceptibility patterns in Australia and in certain remote regions of the Northern Territory and Western Australia gonococcal antimicrobial resistance rates are low, and 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 to ceftriaxone, and the proportion resistant to azithromycin, penicillin, and ciprofloxacin for Quarter 1 2017, is shown in Table 1.

Ceftriaxone

In the first quarter of 2017, the proportion of isolates with ceftriaxone decreased susceptibility (DS) in Australia was 1.2%; this was lower than the annual proportion for 2016. Compared with the annual data for 2016,[1] in Quarter 1 2017, Victoria, South Australia and urban Western Australia reported a slight increase in the proportion of *Neisseria gonorrheae* (NG) isolates with DS to ceftriaxone; New South Wales, Queensland, Tasmania and the Australian Capital Territory reported a decrease in the proportion of NG isolates with DS to ceftriaxone; while the other states reported similar results.

The category of ceftriaxone DS as reported by the AGSP includes the minimum inhibitory concentration (MIC) values 0.06 and 0.125 mg/L. The national trend since 2010 is shown in Table 2.

A summary of ceftriaxone DS strains that were multiply drug resistant (MDR), or isolated from extragenital sites (rectal and pharyngeal) for Quarter 1, 2017 by state or territory, and by sex (male/female) is shown in Table 3.

Azithromycin

In the first quarter of 2017, the proportion of isolates with resistance to azithromycin in Australia was 10.3%, double the proportion reported nationally for 2016 (5.0%), and four times the level reported in Australia for 2013–2015 (2.1%-2.6%).[1] Initially, in 2016 the highest incidence of azithromycin resistance was reported from South Australia (19.5% in 2016, compared with 2.8% in 2015), where an outbreak of strains with low level azithromycin resistance was reported in 2016 with a subsequent change in treatment guidelines.[2] In 2016 increases in azithromycin

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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 2017, by state or territory

State or territory	Number of isolates tested	Decreased susceptibility		Resistance					
	Q1, 2017	Ceftriaxone MIC ≥ 0.06–0.125 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	33	0	0	0	0	3	9.1	4	12.1
New South Wales	801	9	1.1	76	9.5	259	32.3	228	28.5
Queensland	339	3	0.9	7	2.1	83	24.5	63	18.6
South Australia	104	2	1.9	21	20.2	39	37.5	30	28.8
Tasmania	23	0	0	5	21.7	10	43.5	10	43.5
Victoria	638	10	1.6	107	16.8	220	34.5	219	34.3
Northern Territory urban & rural	17	0	0	1	5.9	3	17.6	4	23.5
Northern Territory remote	38	0	0	0	0	0	0	0	0
Western Australia urban & rural	180	3	1.7	12	6.7	31	17.2	28	15.6
Western Australia remote	42	0	0	0	0	0	0	0	0
Australia	**2,215**	**27**	**1.2**	**229**	**10.3**	**648**	**29.3**	**586**	**26.5**

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

Table 2: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone MIC 0.06–0.125 mg/L, Australia, 2010 to 2016, and 1 January to 31 March 2017.

Ceftriaxone MIC mg/L	2010	2011	2012	2013	2014	2015	2016	2017 Q1
0.06	4.80%	3.20%	4.10%	8.20%	4.80%	1.70%	1.65%	1.20%
0.125	0.10%	0.10%	0.30%	0.60%	0.60%	0.10%	0.05%	0

Table 3: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone (MIC 0.06–0.125 mg/L) that showed multiple drug resistance (MDR), isolated from extragenital sites, and by sex, Australia, 1 January to 31 March 2017.

State or territory	Strains with ceftriaxone decreased susceptibility (CRO DS)								
	Total	Multi-drug resistant		Males		Females		Extragenital sites	
		n	%	n	%	n	%	n	%
Australian Capital Territory	0	0	0	0	0	0	0	0	0
New South Wales	9	1	11.1	7	78	2	22	2	22
Queensland	3	3	100	2	67	1	33	2	67
South Australia	2	0	0	1	50	1	50	0	0
Tasmania	0	0	0	0	0	0	0	0	0
Victoria	10	6	60	9	90	1	10	7	70
Northern Territory urban & rural	0	0	0	0	0	0	0	0	0
Northern Territory remote	0	0	0	0	0	0	0	0	0
Western Australia urban & rural	3	2	67	3	100	0	0	2	67
Western Australia remote	0	0	0	0	0	0	0	0	0
Australia	**27**	**12**	**44.4**	**22**	**81.5**	**5**	**18.5**	**13**	**48.1**

resistance rates were also reported from Victoria and urban Western Australia.[1] Globally there have been increasing reports of azithromycin resistance in *N. gonorrhoeae*.[3]

In quarter 1 2017, most states reported isolates with resistance to azithromycin, with the exception of the Australian Capital Territory, remote Northern Territory and remote Western Australia. The states that reported an increase in the proportion of NG isolates with resistance to azithromycin when compared with the annual data for 2016 were Victoria, New South Wales, Queensland and Tasmania. There was a decrease shown in the Australian Capital Territory, while the other states reported similar results from 2016 annually. Ongoing investigations including typing studies are underway in the jurisdictions.

Dual therapy of 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, are recommended to 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, remains important to inform therapeutic strategies; to identify incursion of resistant strains; and to detect instances of treatment failure.

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