

# Australian Gonococcal Surveillance Programme,

1 July to 30 September 2017

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## **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 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 to ceftriaxone, and the proportion resistant to azithromycin, penicillin, and ciprofloxacin for Quarter 3 2017 are shown in **Table 1**.

**Table 1:**

State or Territory	Number of isolates tested Q3, 2017	Decreased Susceptibility		Resistance					
		Ceftriaxone MIC $\geq 0.06$ mg/L		Azithromycin MIC $\geq 1.0$ mg/L		Penicillin* MIC $\geq 1.0$ mg/L		Ciprofloxacin MIC $\geq 1.0$ mg/L	
		n	%	n	%	n	%	n	%
Australian Capital Territory	30	0	0	0	0	3	10.0	7	23.3
New South Wales	669	2	0.3	55	8.2	143	21.4	215	32.1
Queensland	303	2	0.7	8	2.6	95	31.4	61	20.1
South Australia	91	0	0	5	5.5	42	46.2	43	47.3
Tasmania	12	0	0	1	8.3	6	50.0	10	83.3
Victoria	559	23	4.1	73	13.1	152	27.2	166	29.7
Northern Territory Urban & Rural	7	0	0	0	0	0	0	0	0
Northern Territory Remote	43	0	0	0	0	1	2.3	2	4.7
Western Australia Urban & Rural	147	1	0.7	9	6.1	27	18.4	29	19.7
Western Australia Remote	25	0	0	0	0	3	12.0	4	16.0
<b>AUSTRALIA</b>	<b>1886</b>	<b>28</b>	<b>1.5</b>	<b>151</b>	<b>8.0</b>	<b>472</b>	<b>25.0</b>	<b>537</b>	<b>28.5</b>

**Table 1: Gonococcal isolates showing decreased susceptibility to ceftriaxone and resistance to azithromycin, penicillin, and ciprofloxacin, Australia, 1 July to 30 September 2017, by State or Territory**

\* Penicillin resistance includes MIC value of  $\geq 1.0$  mg/L, or penicillinase production.

In the third quarter of 2017 the proportion of isolates with ceftriaxone decreased susceptibility in Australia was 1.5%, slightly higher than the second quarter of 2017, but slightly lower than

the annual proportion for 2016 (1.7%). <sup>(1)</sup> There was one isolate, from New South Wales, with an MIC of 0.50 mg/L, the highest MIC determined since 2013.

The category of ceftriaxone decreased susceptibility as reported by the AGSP includes the MIC values 0.06 and  $\geq 0.125$  mg/L, and the national trend since 2011 is shown in **Table 2**.

Ceftriaxone MIC mg/L	2011	2012	2013	2014	2015	2016	2017 Q1	2017 Q2	2017 Q3
0.06	3.20%	4.10%	8.20%	4.80%	1.70%	1.65%	1.20%	1.20%	1.50%
$\geq 0.125$	0.10%	0.30%	0.60%	0.60%	0.10%	0.05%	0	0.10%	0.05%

**Table 2: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone MIC 0.06 and  $\geq 0.125$  mg/L, Australia, 2011 to 2016, and 1 July to 30 September 2017.**

A summary of strains with ceftriaxone decreased susceptibility and that were penicillin and ciprofloxacin resistant, or isolated from extra genital sites (rectal and pharyngeal) for Quarter 3, 2017 by state or territory, and by sex (male/female) are shown in **Table 3**.

Strains with ceftriaxone decreased susceptibility (CRO DS)									
State or Territory	Total	Pen R + Cip R		Males		Females		Extra genital sites	
		n	%	n	%	n	%	n	%
Australian Capital Territory	0	0	0	0	0	0	0	0	0
New South Wales	2	2	100	2	100	0	0	1	50
Queensland	2	1	50	1	50	1	50	0	0
South Australia	0	0	0	0	0	0	0	0	0
Tasmania	0	0	0	0	0	0	0	0	0
Victoria	23	18	78	19	83	4	17	9	39
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	1	1	100	1	100	0	0	0	0
Western Australia Remote	0	0	0	0	0	0	0	0	0
<b>AUSTRALIA</b>	<b>28</b>	<b>22</b>	<b>78.6</b>	<b>23</b>	<b>82.1</b>	<b>5</b>	<b>17.9</b>	<b>10</b>	<b>35.7</b>

**Table 3: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone (MIC  $\geq$ 0.06 mg/L) and that were penicillin (Pen) and ciprofloxacin (Cip) resistant (R), isolated from extra genital sites, and by sex, Australia, 1 July to 30 September 2017, by State or Territory.**

### **Azithromycin**

In the third quarter of 2017, the proportion of isolates with resistance to azithromycin in Australia was 8.0%, lower than in quarter 1 (10.3%) and quarter 2 (11.0%), but more than the proportion reported nationally for 2016 (5.0%), and almost four times the level reported in Australia for 2013-2015 (2.1%-2.6%).<sup>1</sup> Globally there have been increasing reports of azithromycin resistance in *N. gonorrhoeae*.<sup>2</sup>

In quarter 3 2017, most states reported isolates with resistance to azithromycin, with the exception of the Australian Capital Territory, Northern Territory and remote Western Australia. While a decrease, compared with quarters 1 and 2 2017, was seen in Victoria, New South Wales, South Australia, and Western Australia, the proportion of resistant isolates in those states remains high. 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 extra genital 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.

### *References*

1. Lahra MM, Enriquez RP. Australian Gonococcal Surveillance Programme Annual Report, 2016. Communicable Diseases Intelligence *In press*.
2. Unemo M. Current and future antimicrobial treatment of gonorrhoea - the rapidly evolving *Neisseria gonorrhoeae* continues to challenge. BMC infectious diseases. 2015;15:364