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## **Australian Gonococcal Surveillance Programme, 1 April to 30 June 2017**

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the National Neisseria Network, Australia

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# Australian Gonococcal Surveillance Programme

1 April to 30 June 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 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 2 2017, is shown in Table 1.

### Ceftriaxone

In the second quarter of 2017 the proportion of isolates with ceftriaxone decreased susceptibility (DS) in Australia was 1.3%, similar to the first quarter of 2017, and lower than the annual proportion for 2016 (1.7%).<sup>1</sup> There was one isolate, from South Australia, with a minimum inhibitory concentration (MIC) of 0.25 mg/L, the highest MIC determined since 2013.

The category of ceftriaxone DS as reported by the AGSP includes the 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 2, 2017 by state or territory, and by sex (male/female), is shown in Table 3.

### Azithromycin

In the second quarter of 2017, the proportion of isolates with resistance to azithromycin in Australia was 11.0%, slightly higher than in Quarter 1 2017 (10.3%), more than double the proportion reported nationally for 2016 (5.0%), and more than four times the level reported in Australia for 2013–2015 (2.1%–2.6%).<sup>1</sup> 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.<sup>2</sup> In 2016 increases in azithromycin resistance rates were also reported from Victoria and urban Western Australia.<sup>1</sup> Globally there have been increasing reports of azithromycin resistance in *Neisseria gonorrhoeae* (NG).<sup>3</sup>

Table 1: Gonococcal isolates showing decreased susceptibility to ceftriaxone and resistance to azithromycin, penicillin, and ciprofloxacin, Australia, 1 April to 30 June 2017, by state or territory

| State or territory               | Number of isolates tested | Decreased susceptibility               |            | Resistance                       |             |   |             |                                   |             |
|----------------------------------|---------------------------|--|------------|----------------------------------|-------------|---|-------------|-----------------------------------|-------------|
|                                  |                           | Ceftriaxone MIC $\geq 0.06-0.125$ mg/L |            | Azithromycin MIC $\geq 1.0$ mg/L |             | Penicillin <sup>a</sup> MIC $\geq 1.0$ mg/L |             | Ciprofloxacin MIC $\geq 1.0$ mg/L |             |
|                                  |                           | n                                      | %          | n                                | %           | n   | %           | n                                 | %           |
| Australian Capital Territory     | 24                        | 0                                      | 0          | 0                                | 0           | 4   | 16.7        | 3                                 | 12.5        |
| New South Wales                  | 656                       | 13                                     | 2.0        | 64                               | 9.8         | 143   | 21.8        | 217                               | 33.1        |
| Queensland                       | 333                       | 4                                      | 1.2        | 23                               | 6.9         | 82  | 24.6        | 77                                | 23.1        |
| South Australia                  | 85                        | 2                                      | 2.4        | 13                               | 15.3        | 34  | 40.0        | 31                                | 36.5        |
| Tasmania                         | 11                        | 0                                      | 0          | 0                                | 0           | 4   | 36.4        | 8                                 | 72.7        |
| Victoria                         | 595                       | 5                                      | 0.8        | 95                               | 16.0        | 197   | 33.1        | 196                               | 32.9        |
| Northern Territory urban & rural | 13                        | 0                                      | 0          | 0                                | 0           | 2   | 15.4        | 2                                 | 15.4        |
| Northern Territory remote        | 26                        | 0                                      | 0          | 0                                | 0           | 0   | 0           | 0                                 | 0           |
| Western Australia urban & rural  | 174                       | 2                                      | 1.1        | 16                               | 9.2         | 38  | 21.8        | 23                                | 13.2        |
| Western Australia remote         | 29                        | 0                                      | 0          | 3                                | 10.3        | 3   | 10.3        | 0                                 | 0           |
| <b>Australia</b>                 | <b>1,946</b>              | <b>26</b>                              | <b>1.3</b> | <b>214</b>                       | <b>11.0</b> | <b>507</b>                                  | <b>26.1</b> | <b>557</b>                        | <b>28.6</b> |

a Penicillin resistance includes MIC value of  $\geq 1.0$  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 April to 30 June 2017.**

| Ceftriaxone MIC mg/L | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017 Q1 | 2017 Q2 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|---------|---------|
| 0.06                 | 4.80% | 3.20% | 4.10% | 8.20% | 4.80% | 1.70% | 1.65% | 1.20%   | 1.20%   |
| 0.125                | 0.10% | 0.10% | 0.30% | 0.60% | 0.60% | 0.10% | 0.05% | 0       | 0.10%   |

**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 extra genital sites, and by sex, Australia, 1 April to 31 June 2017, by state or territory.**

| Strains with ceftriaxone decreased susceptibility (CRO DS) |           |                      |             |           |             |          |             |                    |             |
|--|-----------|----------------------|-------------|-----------|-------------|----------|-------------|--------------------|-------------|
| State or territory   | 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  | 13        | 1                    | 7.7         | 9         | 69          | 4        | 31          | 3                  | 23          |
| Queensland   | 4         | 3                    | 75          | 2         | 50          | 1        | 25          | 1                  | 25          |
| South Australia  | 2         | 2                    | 100         | 2         | 100         | 0        | 0           | 1                  | 50          |
| Tasmania   | 0         | 0                    | 0           | 0         | 0           | 0        | 0           | 0                  | 0           |
| Victoria   | 5         | 2                    | 40          | 3         | 60          | 2        | 40          | 1                  | 20          |
| 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                            | 2         | 1                    | 50          | 1         | 50          | 1        | 50          | 0                  | 0           |
| Western Australia remote                                   | 0         | 0                    | 0           | 0         | 0           | 0        | 0           | 0                  | 0           |
| <b>Australia</b>   | <b>26</b> | <b>9</b>             | <b>34.6</b> | <b>17</b> | <b>65.4</b> | <b>8</b> | <b>30.8</b> | <b>6</b>           | <b>23.1</b> |

In quarter 2 2017, most states reported isolates with resistance to azithromycin, with the exception of the Australian Capital Territory, Tasmania, and urban and remote Northern Territory. The states that reported an increase in the proportion of NG isolates with resistance to azithromycin when compared with Quarter 1 2017 were Queensland, New South Wales, and urban and rural Western Australia. Of concern is the detection of isolates resistant to azithromycin in remote Western Australia. While a decrease, compared with Quarter 1 2017, was seen in Victoria and South 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 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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