Australian Gonococcal Surveillance Programme

1 July to 30 September 2017

Monica M Lahra and Rodney P Enriquez on behalf of 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 3 2017 are shown in Table 1.

In the third quarter of 2017 the proportion of isolates with ceftriaxone decreased susceptibility (DS) in Australia was 1.5%, slightly higher than the second quarter of 2017, but slightly lower than the annual proportion for 2016 (1.7%).1 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 DS as reported by the AGSP includes the MIC values 0.06 and ≥0.125 mg/L, and the national trend since 2011 is shown in Table 2.

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

## 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%).1 Globally there have been increasing reports of azithromycin resistance in N. gonorrhoeae.2

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 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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# References

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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.

| State or Territory | Number of isolates tested | Decreased Susceptibility | Resistance |
| --- | --- | --- | --- |
| Q3, 2017 | Ceftriaxone MIC ≥0.06 mg/L | Azithromycin MIC ≥1.0 mg/L | Penicillina MIC ≥1.0 mg/L | Ciprofloxacin MIC ≥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 |
| **Australia** | **1886** | **28** | **1.5** | **151** | **8.0** | **472** | **25.0** | **537** | **28.5** |

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 and ≥ 0.125 mg/L, Australia, 2011 to 2016, and 1 July to 30 September 2017.

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

Table 3: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone (MIC ≥ 0.06 mg/L) and that were penicillin (Pen) and ciprofloxacin (Cip) resistant (R), isolated from extragenital sites, and by sex, Australia, 1 July to 30 September 2017, by state or territory.

| Strains with ceftriaxone decreased susceptibility (CRO DS) |
| --- |
| State or Territory | Total | Pen R + Cip R | Males | Females | Extragenital 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 |
| **Australia** | **28** | **22** | **78.6** | **23** | **82.1** | **5** | **17.9** | **10** | **35.7** |

**Communicable Diseases Intelligence**

ISSN: 2209-6051 Online

**Communicable Diseases Intelligence (CDI) is a peer-reviewed scientific journal published by the Office of Health Protection, Department of Health. The journal aims to disseminate information on the epidemiology, surveillance, prevention and control of communicable diseases of relevance to Australia.**

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Health Protection Policy Branch, Office of Health Protection, Australian Government Department of Health
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