Australian Gonococcal Surveillance Programme

1 July to 30 September 2020

Monica M Lahra, Masoud Shoushtari, Tiffany R Hogan for the National Neisseria Network, Australia

# Introduction

The National Neisseria Network, Australia (NNN) comprises reference laboratories in each state and territory that report data on susceptibilities for an agreed group of antimicrobial agents for the Australian Gonococcal Surveillance Programme (AGSP). The antibiotics are ceftriaxone, azithromycin, ciprofloxacin and penicillin; they represent current or potential agents 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 program-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 of the proportions resistant to azithromycin (MIC ≥ 1.0 mg/L), penicillin (MIC ≥ 1.0 mg/L), and ciprofloxacin (MIC ≥ 1.0 mg/L) for Quarter 3 2020, is shown in Table 1**.**

****Table 1: Gonococcal isolates showing decreased susceptibility to ceftriaxone and resistance to ciprofloxacin, azithromycin and penicillin, Australia, 1 July to 30 September 2020, by state or territory****

| State or territory | Number of isolates tested Q3, 2020 | Decreased susceptibility | | Resistance | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ceftriaxone MIC 0.06–0.25 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 | 1 | 3.3 | 7 | 23.3 | 6 | 20.0 |
| New South Wales | 636 | 1 | 0.2 | 51 | 8.0 | 216 | 34.0 | 290 | 45.6 |
| Queensland | 379 | 3 | 0.8 | 12 | 3.2 | 78 | 20.6 | 151 | 39.8 |
| South Australia | 53 | 0 | 0.0 | 0 | 0.0 | 1 | 1.9 | 6 | 11.3 |
| Tasmania | 9 | 0 | 0.0 | 0 | 0.0 | 1 | 11.1 | 0 | 0.0 |
| Victoria | 318 | 4 | 1.3 | 2 | 0.6 | 66 | 20.8 | 115 | 36.2 |
| Northern Territory non remote | 13 | 0 | 0.0 | 1 | 7.7 | 0 | 0.0 | 3 | 23.1 |
| Northern Territory remote | 33 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| Western Australia non remote | 149 | 0 | 0.0 | 2 | 1.3 | 40 | 26.7 | 46 | 30.7 |
| Western Australia remote | 30 | 0 | 0.0 | 0 | 0.0 | 2 | 6.7 | 3 | 10.0 |
| **Australia** | **1,650** | **8** | **0.48** | **69** | **4.2** | **411** | **24.9** | **620** | **37.6** |

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

## Ceftriaxone

In the third quarter of 2020, the proportion of isolates with ceftriaxone decreased susceptibility in Australia was 0.48%, 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 since 2010, of isolates with ceftriaxone decreased susceptibility (MIC 0.06 and ≥ 0.125 mg/L), is shown in Table 2.

****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, and 1 July to 30 September 2020****

| Ceftriaxone MIC mg/L | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 Q1 | 2020 Q2 | 2020 Q3 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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% |
| ≥ 0.125 | 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% |
| **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%** |

## Azithromycin

In the third quarter of 2020, the proportion of Neisseria gonorrhoeae isolates with resistance to azithromycin (MIC ≥ 1.0 mg/L) in Australia was 4.2%, continuing the trend of a lower proportion of azithromycin resistance observed nationally over the first three quarters of 2020, and in 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

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

| Azithromycin resistance | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 Q1 | 2020 Q2 | 2020 Q3 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| MIC ≥ 1mg/L | 1.3% | 2.1% | 2.5% | 2.6% | 5.0% | 9.3% | 6.2% | 4.6% | 4.2% | 3.1% | 4.2% |

In quarter 3 2020, the eastern jurisdictions of New South Wales, Queensland, Victoria, 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, and remote regions of the Northern Territory. No isolates exhibited high-level resistance to azithromycin (MIC ≥ 256 mg/L).

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 extra-genital sites, where the isolate has decreased susceptibility to ceftriaxone, should have cultures collected for a test of cure. 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.

# Author details

Monica M Lahra1

Masoud Shoushtari 1

Tiffany R Hogan1

1. 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 9210. Email: monica.lahra@health.nsw.gov.au

# References

1. Lahra MM, Shoushtari M, George CRR, Armstrong BH, Hogan TR. Australian Gonococcal Surveillance Programme Annual Report 2019. Commun Dis Intell (2018). 2020;44. doi: https://doi.org/10.33321/cdi.2020.44.58.
2. Unemo M. Current and future antimicrobial treatment of gonorrhoea – the rapidly evolving Neisseria gonorrhoeae continues to challenge. BMC Infect Dis. 2015;15:364.

**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.**

**Editor:** Tanja Farmer

**Deputy Editor:** Simon Petrie

**Design and Production:** Kasra Yousefi

**Editorial Advisory Board:** David Durrheim, Mark Ferson, John Kaldor, Martyn Kirk and Linda Selvey

**Website**: <http://www.health.gov.au/cdi>

**Contacts**Communicable Diseases Intelligence is produced by:   
Health Protection Policy Branch, Office of Health Protection, Australian Government Department of Health  
GPO Box 9848, (MDP 6) CANBERRA ACT 2601

**Email:** [cdi.editor@health.gov.au](mailto:cdi.editor@health.gov.au)

**Submit an Article**You are invited to submit your next communicable disease related article to the Communicable Diseases Intelligence (CDI) for consideration. More information regarding CDI can be found at: <http://health.gov.au/cdi>.

Further enquiries should be directed to: [cdi.editor@health.gov.au](mailto:cdi.editor@health.gov.au).

This journal is indexed by Index Medicus and Medline.

Creative Commons Licence - Attribution-NonCommercial-NoDerivatives CC BY-NC-ND

© 2020 Commonwealth of Australia as represented by the Department of Health

This publication is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International Licence from <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode> (Licence). You must read and understand the Licence before using any material from this publication.

**Restrictions**The Licence does not cover, and there is no permission given for, use of any of the following material found in this publication (if any):

* the Commonwealth Coat of Arms (by way of information, the terms under which the Coat of Arms may be used can be found at [www.itsanhonour.gov.au](http://www.itsanhonour.gov.au/));
* any logos (including the Department of Health’s logo) and trademarks;
* any photographs and images;
* any signatures; and
* any material belonging to third parties.

**Disclaimer**Opinions expressed in Communicable Diseases Intelligence are those of the authors and not necessarily those of the Australian Government Department of Health or the Communicable Diseases Network Australia. Data may be subject to revision.

**Enquiries**Enquiries regarding any other use of this publication should be addressed to the Communication Branch, Department of Health, GPO Box 9848, Canberra ACT 2601, or via e-mail to: [copyright@health.gov.au](mailto:copyright@health.gov.au)

**Communicable Diseases Network Australia**Communicable Diseases Intelligence contributes to the work of the Communicable Diseases Network Australia.  
<http://www.health.gov.au/cdna>