Australian Government
Department of Health and Aged Care

2022 · Volume 46

Communicable Diseases Intelligence

Australian Gonococcal Surveillance Programme, 1 October to 31 December 2021

Monica M Lahra, Masoud Shoushtari, Tiffany R Hogan

https://doi.org/10.33321/cdi.2022.46.43
Electronic publication date: 21/7/2022
http://health.gov.au/cdi

Communicable Diseases Intelligence
ISSN: 2209-6051 Online

This journal is indexed by Index Medicus and Medline.

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

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

Editor
Noel Lally

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
CDI is produced by the Office of Health Protection and Response, Australian Government Department of Health and Aged Care, GPO Box 9848, (MDP 6) CANBERRA ACT 2601

Email:
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.

Quarterly Report

Australian Gonococcal Surveillance Programme, 1 October to 31 December 2021

Monica M Lahra, Masoud Shoushtari, Tiffany R Hogan

Introduction

The National Neisseria Network (NNN), Australia, established in 1979, comprises reference laboratories in each state and territory. Since 1981, the NNN has reported data for the Australian Gonococcal Surveillance Programme (AGSP), on susceptibility profiles for *Neisseria gonorrhoeae* isolated from each jurisdiction for an agreed group of agents. The antibiotics reported represent current or potential agents used for the treatment of gonorrhoea, and include ceftriaxone; azithromycin; ciprofloxacin; and penicillin. More recently, gentamicin susceptibilities are included in the AGSP Annual Report.

Ceftriaxone, combined with azithromycin, is the recommended treatment regimen for gonorrhoea in the majority of Australia. However, there are substantial geographic differences in susceptibility patterns in Australia, with certain remote regions of the Northern Territory and Western Australia having low gonococcal antimicrobial resistance rates. In these regions, 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

Table 1 provides a summary of the proportion of *Neisseria gonorrhoeae* isolates with decreased susceptibility (DS) to ceftriaxone (minimum inhibitory concentration, MIC ≥ 0.06 mg/L); and 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 4 2021.

Ceftriaxone

For the AGSP, the category of ceftriaxone decreased susceptibility (DS) includes MIC values ≥ 0.06 mg/L, and is further differentiated by those isolates with a MIC of 0.06 mg/L, and those isolates with a MIC ≥ 0.125 mg/L. In the fourth quarter of 2021, 1.1% of *N. gonorrhoeae* isolates tested were ceftriaxone DS. This proportion was higher than that reported in the previous three quarters of 2021 and in 2020 annually (0.94%), as shown in Table 2.[1] It should be noted, however, that overall, the number of isolates tested was lower in 2021, coinciding with the public health measures in place during the COVID-19 pandemic.

Azithromycin

In the fourth quarter of 2021, the proportion of isolates resistant to azithromycin (MIC ≥ 1.0 mg/L) in Australia was 5.8% (Table 2), higher than in the previous three quarters of 2021. The AGSP trend data for azithromycin resistance since 2010 is shown in Table 2. Globally, there have been reports of increased azithromycin resistance in *N. gonorrhoeae,* heightened since dual therapy was introduced.[2] In the fourth quarter of 2021, all states reported isolates with resistance to azithromycin, with the exception of Queensland, Northern Territory and remote regions of Western Australia.

Dual therapy using ceftriaxone plus azithromycin is the recommended treatment for gonorrhoea as a strategy to temper development of more widespread ceftriaxone resistance. Patients with infections in extragenital sites, where the isolate has decreased susceptibility to ceftriaxone, should 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, remain essential to inform therapeutic strategies, identify incursion of resistant strains, and detect instances of treatment failure.

Author details

Monica M Lahra[1, 2]

Masoud Shoushtari[1]

Tiffany R Hogan[1]

1. The World Health Organization Collaborating Centre for STI and AMR, Sydney and Neisseria Reference Laboratory, NSW Health Pathology, Microbiology, The Prince of Wales Hospital, Randwick, NSW, 2031, Australia

2. School of Medical Sciences, Faculty of Medicine, the University of New South Wales, Kensington, NSW 2052 Australia.

Corresponding author

Professor Monica M Lahra

The World Health Organization Collaborating Centre for STI and AMR, Sydney and Neisseria Reference Laboratory, NSW Health Pathology Microbiology, The Prince of Wales Hospital, Randwick, NSW, 2031, Australia.

Telephone: +61 2 9382 9054
Facsimile: +61 2 9382 9098
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 2020. *Commun Dis Intell (2018)*. 2021;45. doi: https://doi.org/10.33321/cdi.2021.45.58

2. Unemo M. Current and future antimicrobial treatment of gonorrhoea – the rapidly evolving *Neisseria gonorrhoeae* continues to challenge. *BMC Infect Dis*. 2015;15:364. doi: https://doi.org/10.1186/s12879-015-1029-2.

Table 1: Gonococcal isolates showing decreased susceptibility to ceftriaxone, and resistance to azithromycin, ciprofloxacin and penicillin, Australia, 1 October to 31 December 2021, by state or territory

State or territory	Number of isolates tested	Decreased susceptibility		Resistance					
	Q4, 2021	Ceftriaxone MIC ≥ 0.06 mg/L		Azithromycin MIC ≥ 1.0 mg/L		Ciprofloxacin MIC ≥ 1.0 mg/L		Penicillin[a] MIC ≥ 1.0 mg/L	
		n	%	n	%	n	%	n	%
Australian Capital Territory	36	0	0.0	5	13.9	17	47.2	19	52.8
New South Wales	347	11	3.2	44	12.7	265	76.4	91	26.2
Queensland	271	0	0.0	0	0.0	124	45.8	90	33.2
South Australia	59	0	0.0	1	1.7	14	23.7	21	35.6
Tasmania	13	0	0.0	3	23.1	5	38.5	3	23.1
Victoria	432	2	0.5	23	5.3	316	73.1	248	57.4
Northern Territory non-remote	9	0	0.0	0	0.0	3	33.3	1	11.1
Northern Territory remote	38	0	0.0	0	0.0	0	0.0	0	0.0
Western Australia non-remote	117	1	0.9	2	1.7	33	28.2	35	29.9
Western Australia remote	16	0	0.0	0	0.0	0	0.0	0	0.0
Australia	**1,338**	**14**	**1.05**	**78**	**5.8**	**777**	**58.1**	**508**	**38.0**

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

Table 2: Percentage of gonococcal isolates with decreased susceptibility to ceftriaxone (MIC 0.06 and ≥ 0.125 mg/L) and resistance to azithromycin (MIC ≥ 1 mg/L), Australia, 2010 to 2020, and 1 January to 31 March 2021, 1 April to 30 June 2021, 1 July to 30 September 2021 and 1 October to 31 December 2021.

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021 Q1	2021 Q2	2021 Q3	2021 Q4
Ceftriaxone MIC 0.06 mg/L	4.80%	3.20%	4.10%	8.20%	4.80%	1.70%	1.65%	1.02%	1.67%	1.19%	0.87%	0.86%	0.90%	0.65%	0.90%
Ceftriaxone MIC ≥ 0.125 mg/L	0.10%	0.10%	0.30%	0.60%	0.60%	0.10%	0.05%	0.04%	0.06%	0.11%	0.07%	0.00%	0.00%	0.00%	0.15%
Ceftriaxone DS Total	**4.90%**	**3.30%**	**4.40%**	**8.80%**	**5.40%**	**1.80%**	**1.70%**	**1.06%**	**1.73%**	**1.30%**	**0.94%**	**0.86%**	**0.90%**	**0.65%**	**1.05%**
Azithromycin MIC ≥ 1 mg/L	n/a	1.1%	1.3%	2.1%	2.5%	2.6%	5.0%	9.3%	6.2%	4.6%	3.9%	4.8%	4.2%	4.5%	5.8%