

AUSTRALIAN GONOCOCCAL SURVEILLANCE PROGRAMME, 1 JANUARY TO 31 MARCH 2013

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Introduction

The Australian National Neisseria Network reference laboratories in each state and territory report data on sensitivity to an agreed 'core' group of antimicrobial agents quarterly for the Australian Gonococcal Surveillance Programme (AGSP). The antibiotics routinely surveyed are penicillin, ceftriaxone, ciprofloxacin and spectinomycin, which are current or potential agents used for the treatment of gonorrhoea. Azithromycin testing is now performed by all states and territories as it has a role as part of a dual therapy regimen in the treatment of gonorrhoea. When *in vitro* resistance to a recommended agent is demonstrated in 5% or more of isolates from a general population, it is usual to remove that agent from the list of recommended treatments.¹ Additional data are also provided on other antibiotics from time to time. The AGSP has a program-specific quality assurance process. Because of the substantial geographic differences in susceptibility patterns in Australia, regional as well as aggregated data are presented. These data are presented quarterly in tabulated form, below, as well as in the AGSP annual report. For more information see *Commun Dis Intell* 2013;37(1):E61.

Results

Penicillin resistant *Neisseria gonorrhoeae* (NG) are defined as those isolates with a minimum

inhibitory concentration (MIC) to penicillin equal to or greater than 1.0 mg/L. Total penicillin resistance includes penicillinase producing NG (PPNG); and chromosomally mediated resistance to penicillin (CMRP). Quinolone resistant NG are defined as those isolates with an MIC to ciprofloxacin equal to or greater than 1.0 mg/L.

Azithromycin resistance is reported as a MIC to azithromycin equal to or greater than 1.0 mg/L. Of note in this quarter 2013, there were 2 isolates reported in Australia with high level resistance (HLR) with azithromycin resistance (MIC value >256 mg/L). There was 1 isolate reported from Victoria, acquired in China; and the other from Queensland where information regarding acquisition was not available. These are the first reports of HLR to azithromycin reported in Australia.

Ceftriaxone MIC values in the range 0.06–0.25 mg/L are reported as having decreased susceptibility (DS). To date there has not been an isolate reported in Australia with a ceftriaxone MIC value >0.125 mg/L. In this quarter 2013 there was a marked increase in the proportion of NG isolates with DS to ceftriaxone nationally, (8.5%), compared with 3.5% in 2012 and 2.7% in 2011, and 6.1% during the same quarter in 2010. This increase was predominantly from Victoria where the proportion of NG isolates with DS to ceftriaxone rose from 6.7% during the same quarter of 2012 to 15% in

Table: Gonococcal isolates showing decreased susceptibility to ceftriaxone and resistance to ciprofloxacin, azithromycin and penicillin, Australia, 1 January to 31 March 2013, by state or territory

State or territory	Number of isolates tested	Decreased susceptibility		Resistance					
		Ceftriaxone		Ciprofloxacin	Azithromycin		Penicillin		
		n	%	n	%	n	%	n	%
ACT	18	0	0.0	3	17.0	1	5.6	1	5.6
NSW	394	38	9.6	125	32.0	11	2.8	147	37.0
NT	103	1	0.97	10	9.7	0	0.0	10	9.7
Qld	154	3	1.9	40	26.0	6	3.9	56	36.0
SA	34	1	2.9	12	35.0	3	8.8	11	32.0
Tas.	9	0	0.0	4	44.0	0	0.0	2	22.0
Vic.	389	60	15.0	181	46.0	6	1.5	200	51.0
WA	141	3	2.1	27	19.0	0	0.0	36	25.0
Aust	1,242	106	8.5	402	32.0	27	2.1	463	37.0

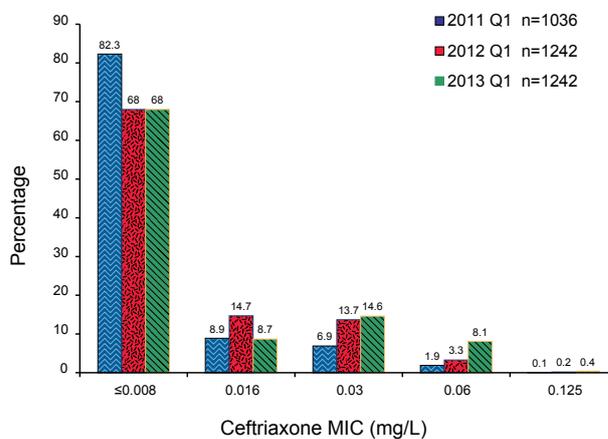
2013; and New South Wales where the increase was from 3.8% in the 1st quarter of 2012 to 10% in this quarter 2013. Of the 60 strains from Victoria with ceftriaxone DS there were 59 (98%) that were multi-drug resistant (resistant to penicillin and high level resistance to ciprofloxacin); all were from males; and 23/60 (38.3%) were isolated from extra genital sites (rectal and pharyngeal). From New South Wales, there were 38 strains with decreased susceptibility to ceftriaxone and of those, 29/38 (76%) were multi-drug resistant; 33/38 (87%) were from males and 16/38 were isolated from extra genital sites (rectal and pharyngeal). The majority of strains from Victoria and New South Wales that had decreased susceptibility to ceftriaxone had a multi-drug resistant phenotype suggesting clonal spread, although this would need to be confirmed by typing studies.

There are recent reports of ceftriaxone 500 mg treatment failure in Victoria and New South Wales. These patients had pharyngeal infections where the gonococcal strains had ceftriaxone MIC values in the range 0.03–0.06 mg/L.^{2,3} Patients with infections in extra genital sites, where the isolate has decreased susceptibility to ceftriaxone, are recommended to have a test to confirm a cure.

In South Australia, 2.9% of isolates were reported with DS in the first quarter 2013, compared with no isolates in the same quarter of 2012. In Western Australia and the Australian Capital Territory the proportion of strains with DS was lower than in the same quarter 2012; and in Queensland there was a small increase from 1.4% in this quarter in 2012 to 1.9% in this quarter 2013. The proportion of NG strains at each MIC value is shown in the Figure,

where it can be seen that the greatest increase was in the proportion of isolates with an MIC value of 0.06–0.125 mg/L.

Figure: Distribution of ceftriaxone MIC values in gonococcal isolates tested in the AGSP, 1 January to 31 March, 2011 to 2013



References

1. Management of Sexually Transmitted Diseases. World Health Organization 1997; Document WHO/GPA/TEM94.1 Rev.1 p 37.
2. Read PJ, Limnios EA, McNulty A, Whiley D, Lahra MM. One confirmed and one suspected case of pharyngeal gonorrhoea treatment failure following 500 mg ceftriaxone in Sydney, Australia. *Sex Health* 2013;10(5):460–462.
3. Chen M, Stevens K, Tideman R, Zaia A, Fairley CK, Lahra MM, Hogg G. Failure of 500 mg of ceftriaxone to eradicate pharyngeal gonorrhoea, Australia. *J Antimicrob Chemother* 2013;68(6):1445–1447.