

## Antimicrobial susceptibility of invasive *Neisseria meningitidis*, 2016

The antimicrobial susceptibility of all 54 viable meningococcal isolates received at ESR from cases of invasive disease in 2016 was tested. Ceftriaxone, ciprofloxacin, penicillin and rifampicin minimum inhibitory concentrations (MICs) were determined by Etest on Mueller-Hinton agar + 5% sheep blood. MICs were interpreted according to the Clinical and Laboratory Standards Institute's criteria except that a penicillin MIC of 0.5 mg/L was categorised as reduced susceptibility rather than resistant.<sup>1</sup>

53.7% (29/54) of isolates had reduced penicillin susceptibility (MIC  $\geq$ 0.12 mg/L):

- 87.5% (7/8) of group C isolates;
- 60.0% (3/5) of group W135 isolates;
- 57.1% (4/7) of group Y isolates; and
- 44.1% (15/34) of all group B isolates, including 17.6% (3/17) of the group B isolates belonging to the NZ B:P1.4 epidemic strain.

All isolates were susceptible to ceftriaxone, rifampicin and ciprofloxacin (see table below).

### *MIC range, MIC<sub>90</sub> and resistance among N. meningitidis isolates from invasive disease cases, 2016*

Antimicrobial	MIC range (mg/L)	MIC <sub>90</sub> (mg/L)	Percent reduced susceptibility/intermediate	Percent resistance
penicillin	0.03-0.5	0.25	53.7 <sup>1</sup>	0.0
ceftriaxone	<0.002-0.004	<0.002	- <sup>2</sup>	0.0
rifampicin	0.004-0.12	0.06	0.0	0.0
ciprofloxacin	<0.002-0.016	0.008	0.0	0.0

<sup>1</sup> penicillin MIC  $\geq$ 0.12 mg/L

<sup>2</sup> there is no reduced susceptibility or intermediate category for ceftriaxone

Over the last 10 years there has been a general trend of an increasing proportion of isolates with reduced penicillin susceptibility (see figure below). In 2016 there was a slight decrease in the proportion of isolates with reduced penicillin susceptibility although the proportion was higher than that found in 2014. Infections due to isolates with reduced susceptibility are still treatable with penicillin.

Rifampicin resistance is rare among meningococci from invasive disease in New Zealand. In total, seven rifampicin-resistant isolates have been identified: one group C (C:2a:P1.5-1,10-1) isolate in 2011, one group B (B:4:P1.19,15) isolate and one group C (C:2a:P1.5-1,10-8) isolate in 2009, one group B (B:4:P1.4) isolate in 2003, one group C

<sup>1</sup> Clinical and Laboratory Standards Institute. Performance standards for antimicrobial susceptibility testing; twenty-sixth informational supplement. Wayne, USA: CLSI; 2016. CLSI document M100-26.

(C:2b:P1.2) isolate in 1997, one group B (B:15:P1.7,16) isolate in 1992, and one group A isolate in 1986.

Ciprofloxacin resistance is also rare among meningococci from invasive disease in New Zealand, with just one ciprofloxacin-resistant isolate having been identified in 2010. This isolate was a group C meningococcus (C:ns:P1.20,23-7).

No resistance to ceftriaxone has been identified among meningococci isolated from cases of invasive disease in New Zealand.

*Reduced penicillin susceptibility among  
N. meningitidis from invasive disease, 2007-2016*

