

Antimicrobial susceptibility of invasive *Haemophilus influenzae*, 2015

The antimicrobial susceptibility of 65 invasive isolates of *H. influenzae* referred to ESR in 2015 was tested (see table). Ampicillin, amoxicillin-clavulanate, cefaclor and cefuroxime minimum inhibitory concentrations (MICs) were determined by Etest on *Haemophilus* test medium. Cefotaxime, ciprofloxacin, clarithromycin, co-trimoxazole, rifampicin and tetracycline susceptibilities were determined by disc diffusion on *Haemophilus* test medium. MICs and disc diffusion zone diameters were interpreted according to the Clinical and Laboratory Standards Institute's criteria.¹

Two (3.1%) of the 65 isolates were serotype b. Fourteen (21.5%) isolates produced β -lactamase. Seventeen (26.2%) isolates were ampicillin resistant, but not β -lactamase producing – so-called BLNAR (β -lactamase-negative, ampicillin-resistant) *H. influenzae*. Two of the β -lactamase-producing isolates appeared to also have the BLNAR mechanism of resistance, that is, an altered penicillin-binding protein (PBP).

Antimicrobial resistance among *Haemophilus influenzae* isolates from invasive disease, 2015

Antibiotic ¹	Number tested	Number resistant ²	Percent resistant
Ampicillin	65	31	47.7
Amoxicillin-clavulanate	65	19	29.2
Cefaclor	65	19	29.2
Cefuroxime	65	19	29.2
Cefotaxime	65	0	0.0
Ciprofloxacin	65	0	0.0
Clarithromycin	65	1	1.5
Co-trimoxazole	65	12	18.5
Rifampicin	65	1	1.5
Tetracycline	65	1	1.5

¹ Results for the full range of antibiotics tested are presented. Many are not appropriate for the treatment of invasive *H. influenzae* disease or the chemoprophylaxis of contacts.

² All β -lactamase-negative, ampicillin-resistant (BLNAR) *H. influenzae* have been categorised as resistant to ampicillin, amoxicillin-clavulanate, cefaclor and cefuroxime, in line with the Clinical and Laboratory Standards Institute's recommendations, although they often test as susceptible to these antibiotics in standard susceptibility tests.

Trends in ampicillin resistance and β -lactamase production among invasive *H. influenzae* over the last 10 years are shown in the figure below. In 2015, 45.2% (14/31) of ampicillin-resistant isolates were β -lactamase producers. This proportion is similar to that observed between 2006 and 2013, when approximately half the ampicillin-resistant isolates were β -lactamase producers, but higher than the proportion (23.5%) in 2014.

¹ Clinical and Laboratory Standards Institute. Performance standards for antimicrobial susceptibility testing; twenty-fifth informational supplement. Wayne, PA, USA: CLSI; 2015. CLSI document M100-S25.

**Ampicillin resistance and β -lactamase production
among invasive *Haemophilus influenzae*, 2006-2015**

