

Antimicrobial susceptibility of invasive *Haemophilus influenzae*, 2013

The antimicrobial susceptibility of 55 invasive isolates of *H. influenzae* referred to ESR in 2013 was tested (see table). Ampicillin, co-amoxiclav, 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 (3.6%) of the 55 isolates were serotype b. Eight (14.6%) isolates produced β -lactamase. Thirteen (23.6%) 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, 2013

Antibiotic ¹	Number tested	Number resistant ²	Percent resistant
Ampicillin	55	21	38.2
Co-amoxiclav	55	15	27.3
Cefaclor	55	15	27.3
Cefuroxime	55	15	27.3
Cefotaxime	55	0	0
Ciprofloxacin	55	0	0
Clarithromycin	55	1	1.8
Co-trimoxazole	55	13	23.6
Rifampicin	55	0	0
Tetracycline	55	0	0

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, co-amoxiclav, 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. Over this period, generally about half the ampicillin-resistant isolates have been producers of β -lactamase, with the other half being BLNAR *H. influenzae*.

¹ Clinical and Laboratory Standards Institute. Performance standards for antimicrobial susceptibility testing; twenty-third informational supplement. Wayne, PA, USA: CLSI; 2013. CLSI document M100-S23

**Ampicillin resistance and β -lactamase production
among invasive *Haemophilus influenzae*, 2004-2013**

