INTRODUCTION

- Community-acquired pneumonia (CAP) is a significant cause of morbidity, particularly in those aged >65 years.
- Common bacterial CAP pathogens are Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis.
- First-line empirical treatment is amoxicillin; doxycycline or clarithromycin are recommended for patients with a penicillin allergy.
- The 13-valent pneumococcal conjugate vaccine (PCV13) was introduced in the UK in 2010.
- The BSAC Respiratory Resistance Surveillance Programme has monitored antimicrobial susceptibility of S. pneumoniae, H. influenzae, and M. catarrhalis from community-onset lower respiratory tract infections (CO-LRTI) in the UK and Ireland since 1999/2000.
- We review data for 10 surveillance seasons (Oct 2008 – Sept 2018).

METHODS

- Participating laboratories (n=22-39) collected 14-20 consecutive isolates of S. pneumoniae and H. influenzae, and 7-10 isolates of M. catarrhalis causing CO-LRTI per season.
- MICs were determined centrally by BSAC agar dilution and EUCAST breakpoints were used.
- Cefotaxime breakpoints were available for S. pneumoniae and H. influenzae; cefotaxime and tetracycline were not tested from Sept 2014.
- Isolates of S. pneumoniae were serotyped from Oct 2013.

RESULTS

S. pneumoniae (n=3921) (Figure 1)
- 12% (n=477) isolates had a raised penicillin MIC (0.12-2 mg/L); 5 isolates had a MIC 4-8 mg/L.
- Rates of resistance to amoxicillin and to cefotaxime were low (c. 2%, no trend).
- Increasing rates of resistance were seen for clindamycin and tetracycline but not erythromycin.
- Serotyping was completed for isolates ≥3 years into the PCV13 era (n=1382) (Figure 2): 78 serotypes were represented, most common 15A (9%), 11A (8%), and 3 (7%).
- 17% (n=312) had a PCV13 serotype, most commonly 3 (42%), 19F (22%) and 19A (19%).
- 11% (n=410) 35 serotypes were resistant to β-lactams, erythromycin and tetracycline.
- Common multi-resistant serotypes were 15A (18%), 19F (9%) and 19A (5%).

H. influenzae (n=4738) (Figure 3)
- 20% (n=959) were β-lactamase-positive.
- Rates of resistance to aminopenicillins and amoxicillin-clavulanate increased from 2014.
- Rates of resistance to ceftazidime, ciprofloxacin, erythromycin and tetracycline were ≤2% without trend.

M. catarrhalis (n=2266)
- 97% (n=2188) were β-lactamase-positive.
- All isolates tested were susceptible to amoxicillin-clavulanate, cefotaxime and erythromycin.
- Resistances to ciprofloxacin (n=8), cefuroxime (n=4), and tetracycline (n=2) were rare.

Susceptibilities of cefotaxime and cefotaxime among three common CAP pathogens (Table 1).

CONCLUSIONS

- Among S. pneumoniae, rates of resistance to amoxicillin was low (c. 2%); rates of resistance to erythromycin and tetracycline were >10%.
- 11% S. pneumoniae were multi-resistant and associated with particular serotypes.
- Serotypes within PCV13 accounted for 17% isolates, 24% had a multi-resistant phenotype.
- An increase in the rate of resistance to first line β-lactams was identified in H. influenzae.
- M. catarrhalis remain largely susceptible to existing antimicrobials.
- Resistance to cefotaxime and cefotaxime was rare in all three pathogens.
- Continued surveillance is crucial for our understanding of antimicrobial resistance trends in the UK and Ireland, particularly those associated with multi-resistant S. pneumoniae and serotypes within PCV13.

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