RESISTANCE SURVEILLANCE PROGRAMME

BRITISH SOCIETY FOR ANTIMICROBIAL CHEMOTHERAPY

Public Health England

BSAC RESPIRATORY RESISTANCE SURVEILLANCE: A REVIEW OF NON-SUSCEPTIBILITY OVER FIVE SEASONS (2012-2017)

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INTRODUCTION

The British Society for Antimicrobial Chemotherapy (BSAC) Respiratory Resistance Surveillance Programme has monitored the antimicrobial susceptibility of isolates from community-onset (CO-) and hospital-onset (HO-) lower respiratory tract infections (LRTI) since 1999/2000 and 2008/2009, respectively (www.bsacsurv.org).

The latest 5 seasons of data (Oct 2012 - Sept 2017) are presented.

METHODS

Consecutive, non-duplicate isolates (n=11,363, Fig. 1) causing CO-LRTI (community or hospitalised ≤48 hours), or HO-LRTI (hospitalised >48 hours) were collected at 24-40 sites across the UK and Ireland. Each site was asked to collect a set quota (7-20) isolates/species/season.

Duplicates and isolates from patients with cystic fibrosis were excluded.

MICs were determined centrally by BSAC agar dilution.[1] EUCAST breakpoints (Version 8.1, 2018)[2] were used and non-susceptibility was defined as including an intermediate (I) or resistant (R) breakpoint.

RESULTS

- Results are presented for agents/organisms when EUCAST breakpoints (bpts) and testing data for all 5 seasons are available.
- Rates of non-susceptibility among ***S. pneumoniae*** are shown in Fig. 2. The most prevalent **pneumococcal serotype** was 15A (9%). Serotype 7C, previously uncommon, was prominent (n=16) in 2016/17, largely from one area of England. Three *S. pneumoniae* isolates, all **multi-drug resistant** from seasons 2012/13 and 2016/17, were resistant to penicillin, with MICs 4-8mg/L.
- Almost all ***H. influenzae*** (92%) and ***M. catarrhalis*** (99%) were susceptible to amoxicillin-clavulanate, tetracycline and ciprofloxacin.
- The proportion of **MRSA** among *S. aureus* causing HO-LRTI decreased steadily (24%, 2012/13 to 10%, 2016/17).
- **Non-susceptibility among Gram-negative isolates** is shown in Fig. 3.
- **ESBLs** were identified in 11% *E. coli*; 10% *Klebsiella*, and 4% *Enterobacter*. Two *P. aeruginosa* isolates had ESBLs (VEB, PER). **AmpC** β-lactamases were present in 3% *E. coli*; 0.3% *Klebsiella* spp., and 19% *Enterobacter*.
- **Colistin resistance** was more prevalent (7%) in *Acinetobacter* spp. (other than *A. baumannii*) than *Pseudomonas* spp. (0.8%); rates were 0-1% in *E. coli* and *Klebsiella* spp. but 7% in *E. cloacae complex* (Fig. 3). Resistance does not appear to be caused by the presence of *mcr*-1.
- **Carbapenemases** were common in *Acinetobacter* [OXA-23 (11%); OXA-58 (2%)] but rare in *Pseudomonas* [VIM (4); NDM (1)] and Enterobacteriaceae [*E. coli* (OXA-48 (1)], *E. cloacae* [OXA-48 (2)] and *K. pneumoniae* [KPC (4), NDM (2), OXA-48 (2)].

CONCLUSIONS

- Rates of non-susceptibility in *S. pneumoniae* were similar to previous years, though the predominant serotypes have changed.
- *H. influenzae* and *M. catarrhalis* remain largely susceptible to existing antimicrobials.
- MRSA continues to decrease in HO-LRTI.
- Carbapenemase-producing Enterobacteriaceae are rare; most are *K. pneumoniae*.
- Colistin resistance is common in *Acinetobacter* spp. (other than *A. baumannii*) and isolates of the *E. cloacae* complex.

ACKNOWLEDGEMENTS

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TO REQUEST ISOLATES FROM THE BSAC COLLECTION

Contact Dr Carolyne Horner. Email: rs@bsac.org.uk

RESULTS

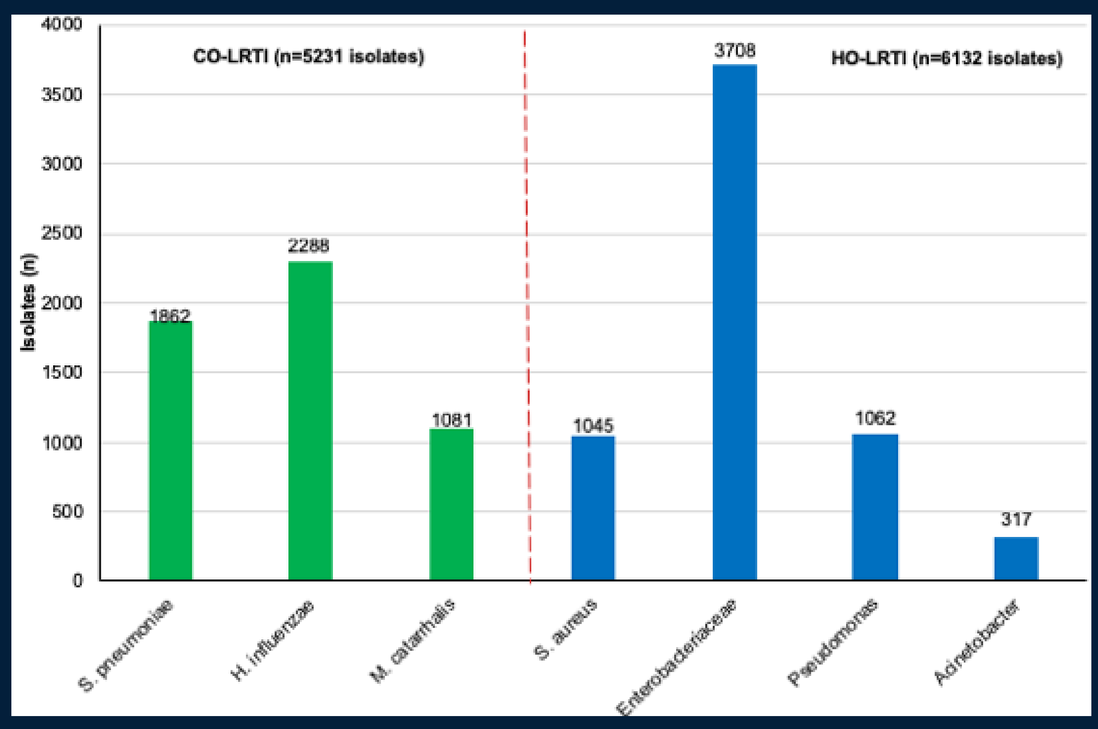

FIGURE 1. Isolates tested from community-onset (CO-) and hospital-onset (HO-) lower respiratory tract infections (LRTI), Oct 2012 – Sept 2017.

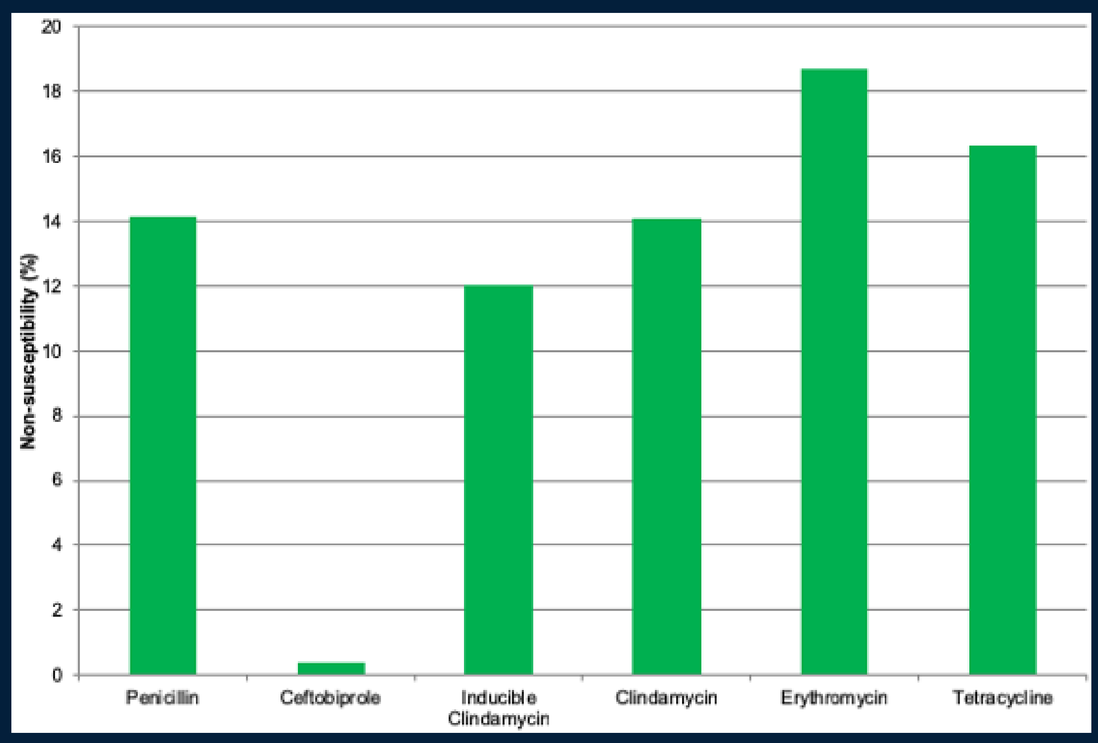

FIGURE 2. Non-susceptibility of *S. pneumoniae* isolates associated with CO-LRTI, Oct 2012 – Sept 2017.

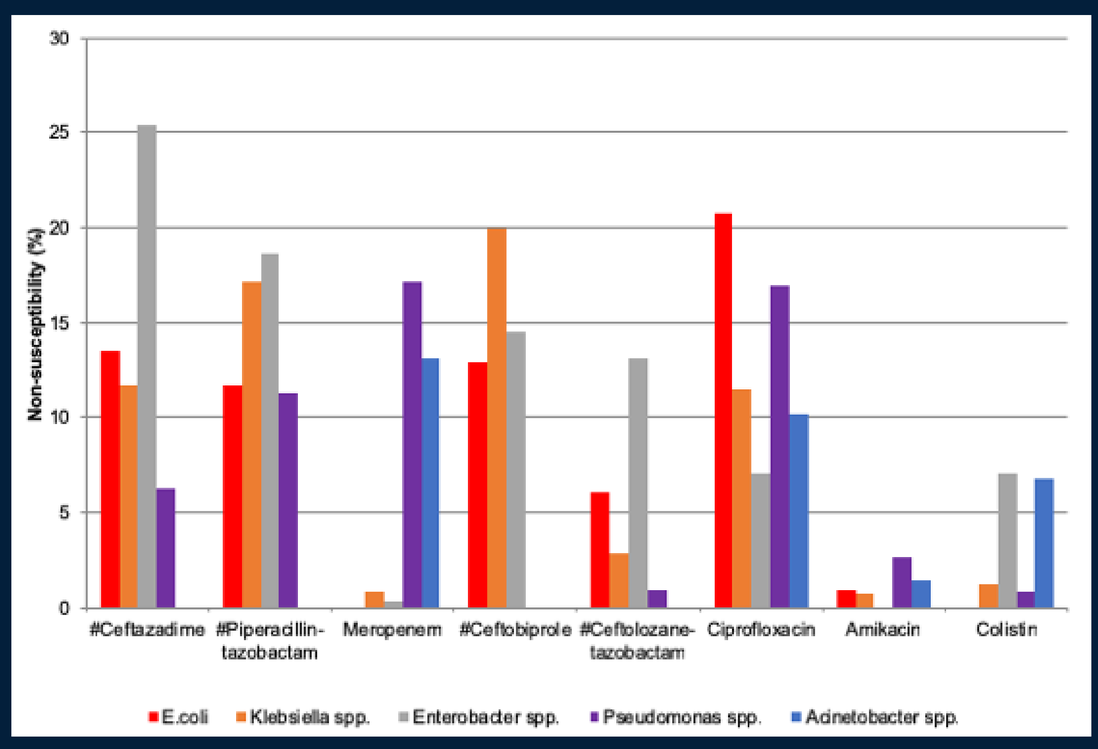

FIGURE 3. Non-susceptibility of Gram-negative isolates collected from HO-LRTI, Oct 2012 – Sept 2017. #lack of EUCAST bpts for *Pseudomonas* +/- *Acinetobacter*.

REFERENCES

1) Reynolds, *et al. J Antimicrob Chemother* 2008. 62, suppl 2 ii15-1128.
2) http://www.eucast.org/clinical_breakpoints/

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