

# BSAC RESPIRATORY RESISTANCE SURVEILLANCE UPDATE: 2013-2016

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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- (CO-) and hospital-onset (HO-) lower respiratory tract infections (LRTI) since 1999/2000 and 2008/2009, respectively ([www.bsacsurv.org](http://www.bsacsurv.org)).

Species tested are:

- *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis* from CO-LRTI
- *Staphylococcus aureus*, *Pseudomonas* spp., *Acinetobacter* spp. and Enterobacteriaceae from clinically significant HO-LRTI

The latest three seasons of data (Oct 2013 - Sept 2016) are presented.

## METHODS

Consecutive isolates (n=6919, 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.

Minimum inhibitory concentrations were determined centrally by BSAC agar dilution.<sup>1</sup> EUCAST breakpoints (Version 7.1, March 2017)<sup>2</sup> were used and non-susceptibility was defined as an intermediate or resistant breakpoint.

## RESULTS

- Results are presented for agents/organisms when EUCAST breakpoints (bpts) and testing data for all three seasons are available.
- Rates of non-susceptibility in *S. pneumoniae* were: penicillin, 13.6% (all intermediate); tetracycline, 16.8%; erythromycin, 18.5%, and 8.5% were resistant to all three agents (Fig. 2). The most prevalent pneumococcal serotype was 15A (9.3%) (Fig. 2).
- Almost all *H. influenzae* (93%) and *M. catarrhalis* (99.5%) were susceptible to amoxicillin-clavulanate, tetracycline and ciprofloxacin.
- Rates of MRSA causing HO-LRTI continued to decrease compared with previous years (15.5% in 2015/16 vs. 25% 2012/13).
- ESBLs were identified in 11% *E. coli*; 8% *Klebsiella* spp., and 3.6% *Enterobacter* spp.. (Fig. 3).
- Colistin resistance was 10-fold more prevalent (7.5%) in *Acinetobacter* spp. (other than *A. baumannii*) than *Pseudomonas* spp. (0.7%); rates were 0-1% in *E. coli* and *Klebsiella* spp. but 6.7% in *E. cloacae* complex (Fig. 3). Resistance does not appear to be caused by *mcr-1*.
- Carbapenemases were common in *Acinetobacter* spp. (n=23, OXA-23; n=5, OXA-58) but rare in *Pseudomonas* spp. (n=4, VIM; n=1, NDM) and Enterobacteriaceae (*E. coli* (n=1, OXA-48), *E. cloacae* (n=2, OXA-48,) and *K. pneumoniae* (n=3, KPC, n=2, NDM; and n=1, OXA-48).

## CONCLUSIONS

- Rates of non-susceptibility in *S. pneumoniae* were similar to previous years, though 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 was most common in *Acinetobacter* spp. (other than *A. baumannii*) and isolates of *E. cloacae* complex.

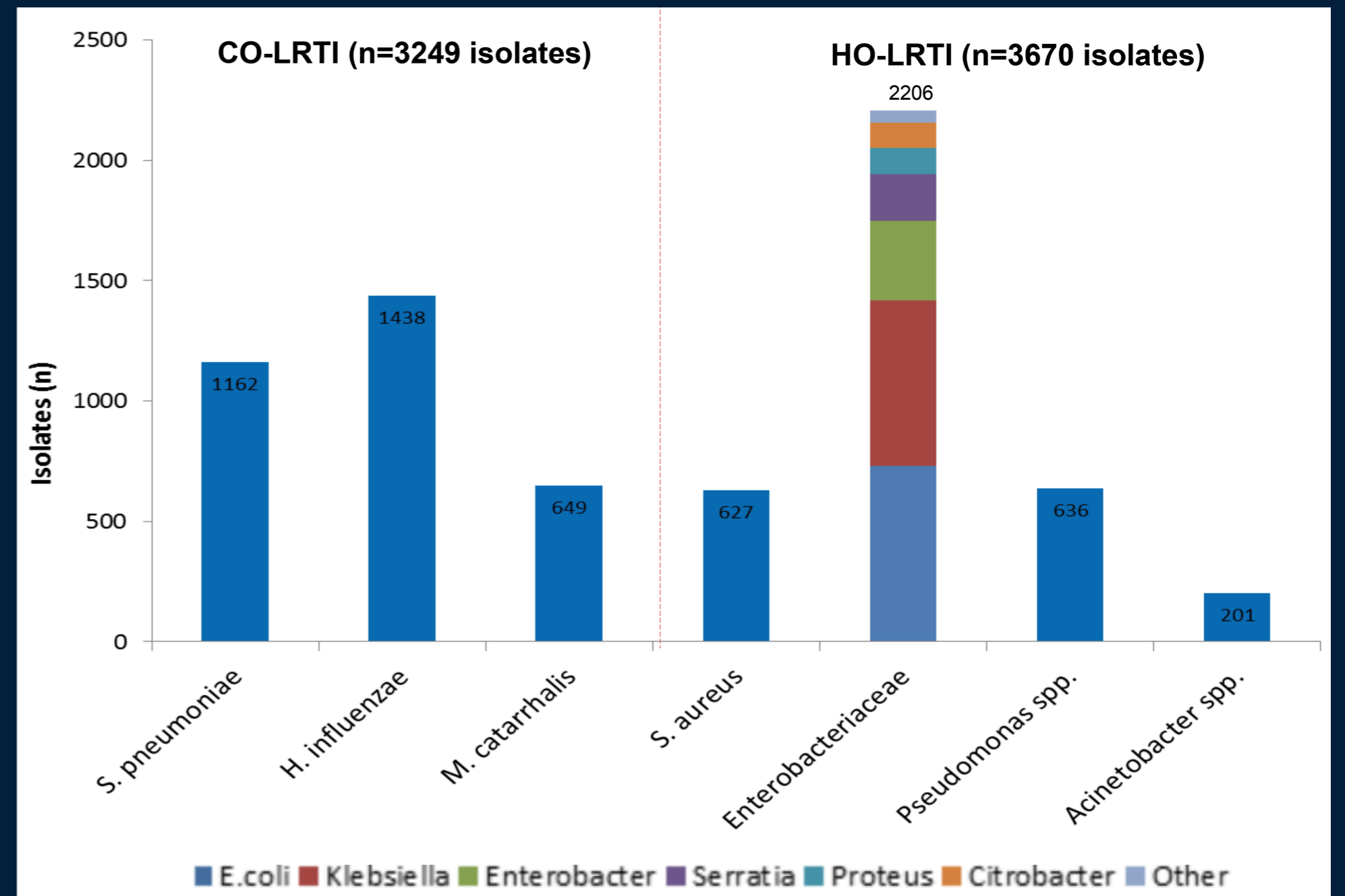
## ACKNOWLEDGEMENTS

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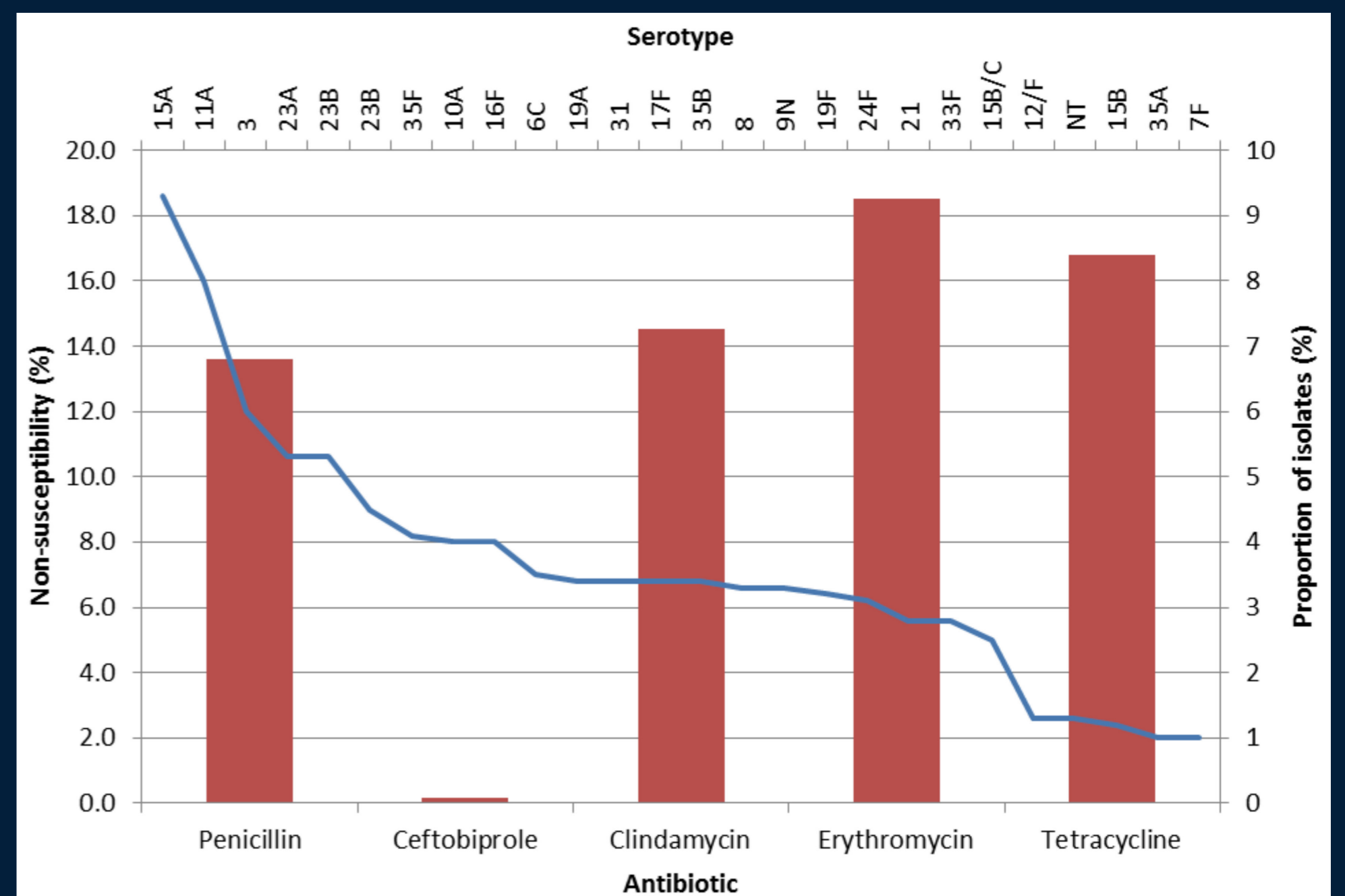
**BSAC Standing Committee on Resistance Surveillance:** Alasdair MacGowan (Chair), Derek Brown (formerly EUCAST), David Livermore (PHE), Alan Johnson (PHE), Sharon Peacock (London School of Hygiene and Tropical Medicine).

**Sponsor representatives:** Anne Santerre-Henriksen (Basilea), Chris Longshaw (formerly Basilea), Jeff Alder (Bayer), Adela Álvarez Buyla (MSD), Mike Allen (MSD), James Campling (Pfizer Vaccines), and Susanne Paukner (Nabriva).

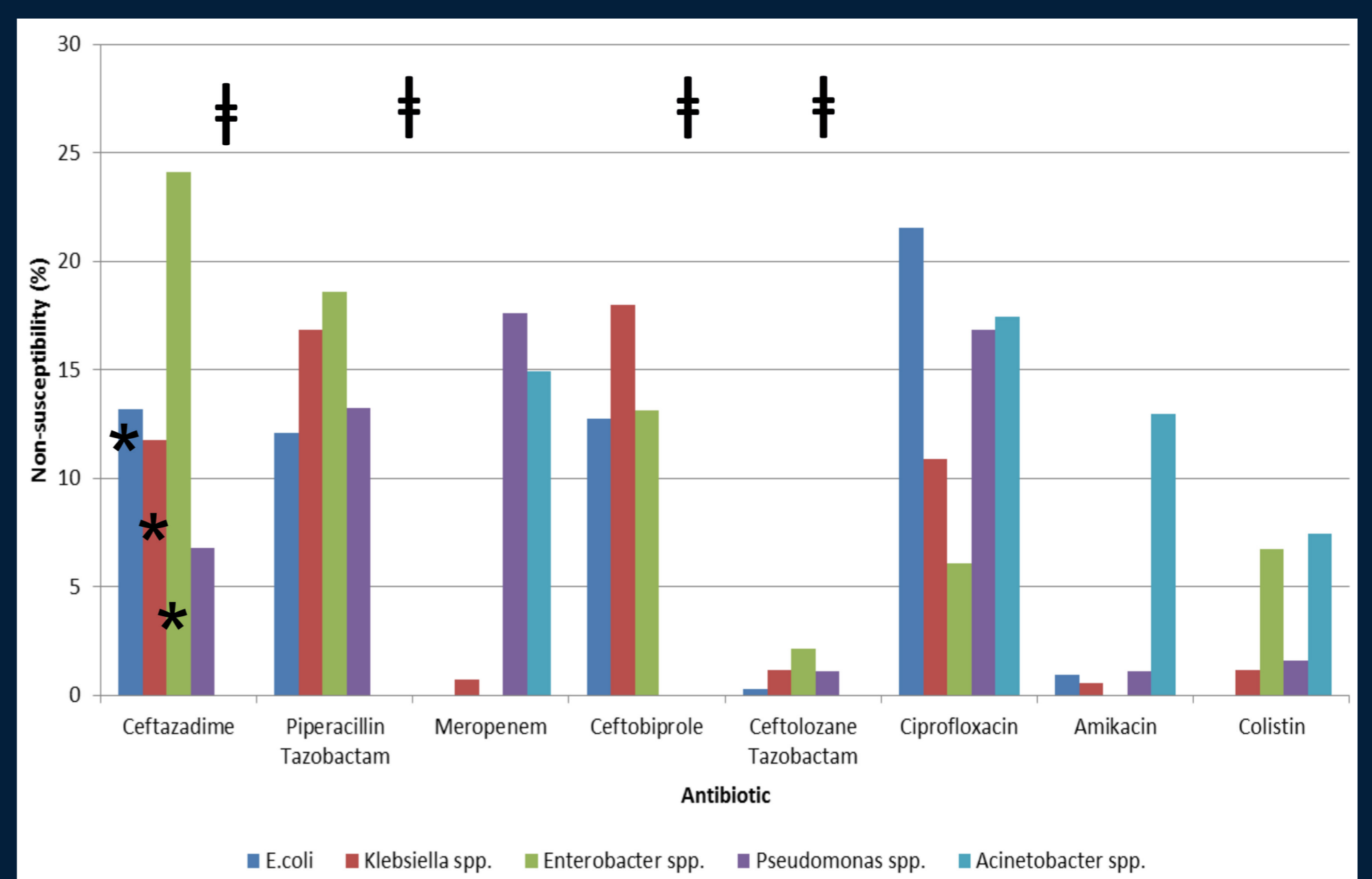
## RESULTS



**FIGURE 1.** Isolates tested from community-(CO-) and hospital-onset (HO-LRTI) lower respiratory tract infections (LRTI), Oct 2013 – Sept 2016.



**FIGURE 2.** Non-susceptibility & serotypes of *S. pneumoniae* isolates associated with CO-LRTI, Oct 2013 – Sept 2016 (NT: non-typeable).



**FIGURE 3.** Non-susceptibility of Gram-negative isolates collected from HO-LRTI, Oct 2013 – Sept 2016 (\*ESBL-producers, † lack of EUCAST bpts).

## REFERENCES

- 1) Anon. *Journal of Antimicrobial Chemotherapy* 2008. 62, suppl 2 ii15-1128.
- 2) [http://www.eucast.org/clinical\\_breakpoints/](http://www.eucast.org/clinical_breakpoints/)

## CONTACT DETAILS

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