

Introduction

• Selection bias and quality are important questions affecting the acceptability of routinely-generated data for resistance surveillance.

Methods

- 23 UK and Irish laboratories contributed non-duplicate community-acquired lower respiratory tract isolates to the BSAC Respiratory Resistance Surveillance Programme¹ over two winters, 2002-2004.
- MICs determined centrally by the BSAC agar dilution method and interpreted by BSAC criteria were compared with the collecting centres' own local results for penicillin (PEN) and erythromycin (ERY) with *S. pneumoniae*, and ampicillin (AMP) with *H. influenzae*.
- Selection bias was sought by comparing centrally-determined resistance rates for isolates tested and not tested locally.

¹Reynolds, R., Shackcloth J., Felmingham, D. et al. (2004). Antimicrobial susceptibility of lower respiratory tract pathogens in Great Britain and Ireland 1999-2001 related to demographic and geographical factors: the BSAC Respiratory Resistance Surveillance Programme. *JAC* 52, 931-943.

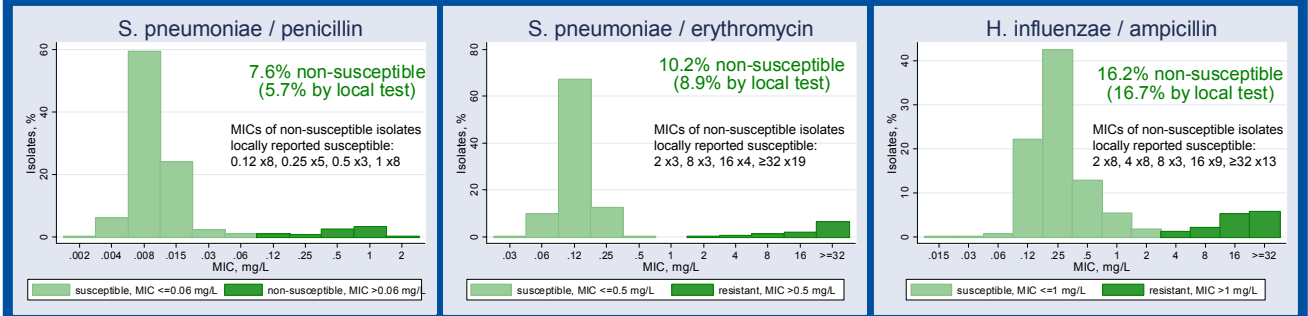
Results

- Although there was some evidence of selection bias for testing *S. pneumoniae* with PEN (p = 0.02), its impact was limited by the high proportion of isolates tested locally (>88%). There was no evidence of selection bias for the other two combinations.
- Overall agreement was high (>93%) because most isolates were susceptible and correctly classified as such by local tests.
- Local detection rates for non-susceptibility were low (<80%).
- Local BSAC, CLSI, and other methods performed similarly.
- Central use of a chromogenic β-lactamase test in place of AMP MIC to infer AMP non-susceptibility gave very similar results.
- Differences in breakpoints between CLSI and BSAC methods contributed little to the discrepancies.
- Resistant isolates locally classified as susceptible commonly had MICs well above the breakpoint.

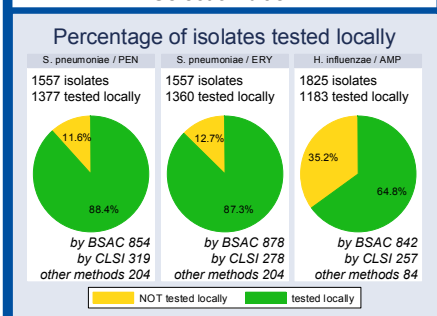
Conclusion

• Low sensitivity (<80%) of routine tests to detect non-susceptibility is of more concern than potential selection bias in the cases of *S. pneumoniae* with PEN and ERY and *H. influenzae* with AMP in the UK and Ireland.

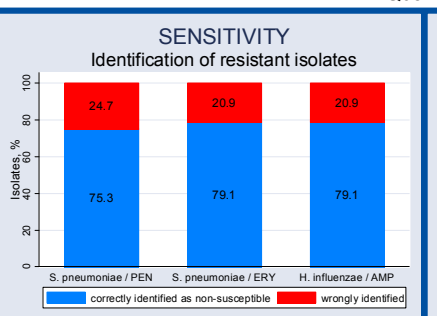
MIC distributions and percentage of non-susceptible isolates



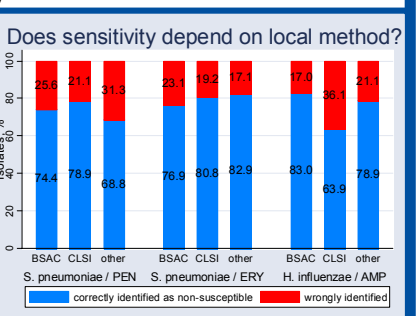
Selection bias?



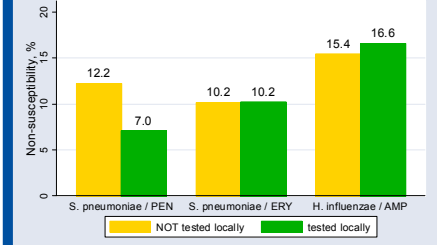
Quality?



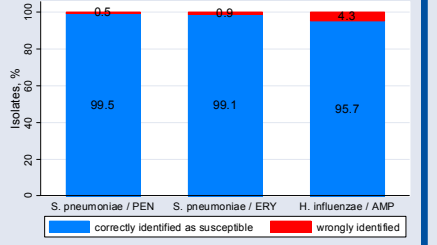
Does sensitivity depend on local method?



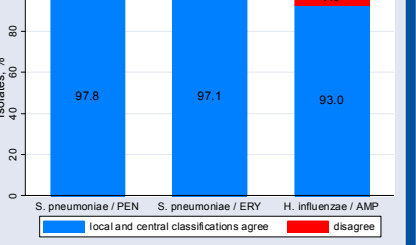
Centrally-measured resistance vs. selection for local testing



SPECIFICITY Identification of susceptible isolates



OVERALL AGREEMENT



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Organism ID and Susceptibility Testing J. Shackcloth⁵, A. Williams⁵, L. Williams⁵

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Central Laboratory: GR Micro Ltd, London

Collecting Laboratories: Royal Aberdeen; New Royal Edinburgh; SGH Glasgow; Glasgow Royal; Royal Belfast; Ulster Dundonald; Beaumont Dublin; St. Vincent's Dublin; UCH Galway; UHW Cardiff; Wrexham Maelor; City Birmingham; Southmead Bristol; Addenbrooke's Cambridge; QEHS Gateshead; St. James's Leeds; Royal Leicester; University of Liverpool; St. Bartholomew's and Royal London; UCH, London; Derriford Plymouth; Hope Salford; General Southampton.

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