Reliability of Routinely-Generated Data for Surveillance of Resistance in Streptococcus pneumoniae and Haemophilus influenzae in the UK and Ireland

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

Methods
- 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.

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 BASC, 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.


Organism ID and Susceptibility Testing

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Collecting Laboratories: Royal Aberdeen; New Royal Edinburgh; SGH Glasgow; Glasgow Royal; Royal Belfast; Ulster Dundonald; Beaumont Dublin; St. Vincent's Dublin; UCH Galway; UW.cardiff@wrexham.ac.uk; City Birmingham; Southmead Bristol; Addenbrooke’s Cambridge; GEH Gateshead; St. James’s Leeds; Royal Leicester; University of Liverpool; St. Bartholomew’s and Royal London; UCH, London; Demdirc Plymouth; Hope Saltford; General Southamptpn.

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