BSAC Respiratory Resistance Surveillance Programme: First Results of the Winter 1999-2000 Collection

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Introduction

Community-acquired lower respiratory tract infections are a common reason for use of antimicrobial agents. Understanding the patterns of antimicrobial resistance in the causative organisms is important both in order to inform empirical therapy and to assess any interventions put in place to limit the emergence or spread of resistance. The British Society for Antimicrobial Chemotherapy (BSAC) Respiratory Resistance Surveillance Programme was set up to monitor antimicrobial susceptibility of respiratory pathogens over a long timescale.

Methods

Twenty laboratories, shown on the map, contributed consecutive isolates of *S. pneumoniae*, *H. influenzae* and *M. catarrhalis* from lower respiratory sources of patients with lower respiratory tract infections in the community or in hospital for less than 48 hours. The MICs of all isolates were measured centrally by GR Micro Ltd using the BSAC agar dilution method[1,2].
The percentage of fully-susceptible isolates was calculated using BSAC breakpoints[3].

MIC_{50}, MIC_{90} & breakpoint in mg/L
%S =% susceptible bp = breakpoint (S≤)
Amox-clav = 2:1 amoxicillin:clavulanate

S. pneumoniae, all centres, n = 661

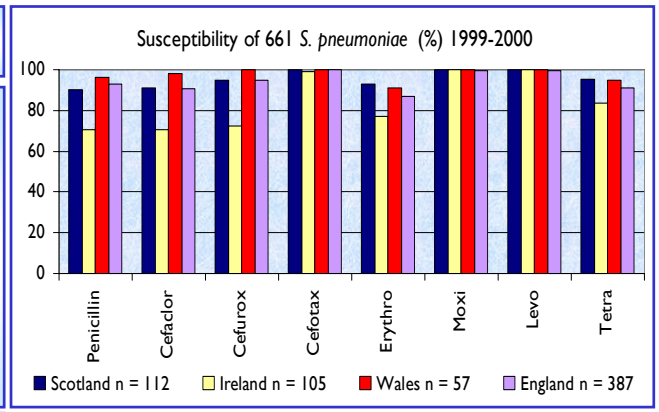
	MIC_{50}	MIC_{90}	%S	bp
Penicillin	0.015	0.125	89	0.06
Amoxicillin	0.015	0.125	n/a	-
Cefaclor	0.5	2	88	1
Cefuroxime	0.015	0.25	92	1
Cefotaxime	0.015	0.25	100	1
Erythromycin	0.125	16	87	0.5
Clindamycin	0.125	0.25	n/a	-
Ciprofloxacin	1	2	n/a	-
Moxifloxacin	0.125	0.25	100	1
Levofloxacin	1	1	100	2
Tetracycline	0.25	0.25	91	1
Trimethoprim	4	32	n/a	-

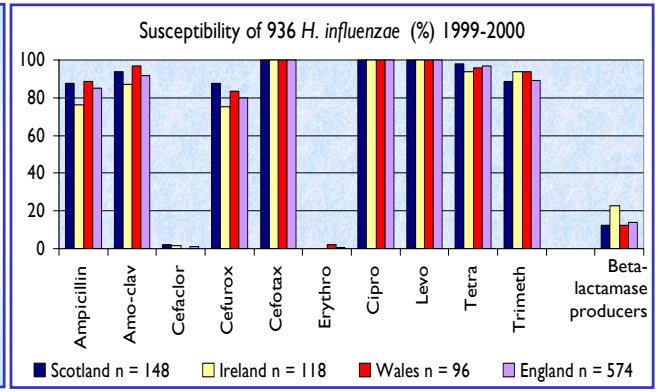
H. influenzae, all centres, n = 936
15% beta-lactamase producers

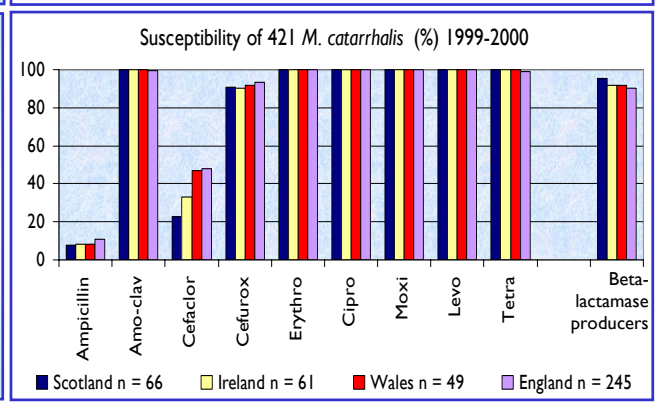
	MIC_{50}	MIC_{90}	%S	bp
Ampicillin	0.25	8	85	1
Amoxicillin	0.5	16	n/a	-
Amox-clav	0.5	1	92	1
Cefaclor	4	16	1	1
Cefuroxime	1	2	81	1
Cefotaxime	0.015	0.06	100	1
Erythromycin	4	8	1	0.5
Ciprofloxacin	0.015	0.03	100	1
Moxifloxacin	0.03	0.06	n/a	-
Levofloxacin	0.015	0.03	100	2
Tetracycline	0.5	0.5	96	1
Trimethoprim	0.25	0.5	90	0.5

M. catarrhalis, all centres, n = 421
91% beta-lactamase producers

	MIC_{50}	MIC_{90}	%S	bp
Ampicillin	16	≥32	10	1
Amoxicillin	2	4	n/a	-
Amox-clav	0.125	0.5	100	1
Cefaclor	2	4	42	1
Cefuroxime	1	1	92	1
Cefotaxime	0.25	0.5	n/a	-
Erythromycin	0.06	0.125	100	0.5
Ciprofloxacin	0.03	0.06	100	1
Moxifloxacin	0.06	0.06	100	1
Levofloxacin	0.03	0.06	100	2
Tetracycline	1	1	100	1
Trimethoprim	16	32	n/a	-







Results

661 *S. pneumoniae*, 936 *H. influenzae* and 421 *M. catarrhalis* were tested. The results are shown in the tables and bar charts.
In *S. pneumoniae*, overall >85% of isolates are susceptible to each antibiotic. The level of susceptibility is lower in Ireland than elsewhere for penicillin, cefaclor, cefuroxime, erythromycin and tetracycline.
In *H. influenzae*, overall >85% of isolates are susceptible to each antibiotic except cefaclor (1%), cefuroxime (81%) and erythromycin (1%). Irish isolates are more likely than others to be β-lactamase positive and to have reduced susceptibility to ampicillin, amoxicillin-clavulanic acid and cefuroxime.
In *M. catarrhalis*, overall >90% of isolates are susceptible to each antibiotic except ampicillin (10%) and cefaclor (42%). Susceptibility to cefaclor is lower in Scotland and Ireland.

Conclusion

Most community-acquired lower respiratory pathogens remain susceptible to most antimicrobial agents. However, regional differences exist and detailed surveillance is required to detect them.

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Collecting Laboratories: Royal Infirmary, Aberdeen; Western General Hospital, Edinburgh; Southern General Hospital, Glasgow; The Royal Hospitals, Belfast; Meath Adelaide and Children's Hospital, Dublin; University College Hospital, Galway; University Hospital of Wales, Cardiff; Wrexham Maelor Hospital, Wrexham; City Hospital, Birmingham; Southmead Hospital, Bristol; Addenbrooke's Hospital, Cambridge; St. James's University Hospital, Leeds; Royal Infirmary, Leicester; University of Liverpool; St. Bartholomew's and Royal London School of Medicine and Dentistry, London; University College Hospital, London, Royal Victoria Infirmary, Newcastle upon Tyne; Derriford Hospital, Plymouth; Hope Hospital, Salford; Southampton General Hospital, Southampton.

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References
1 Working Party on Antibiotic Sensitivity Testing of the BSAC: *A Guide to Sensitivity Testing*; June 1991, Journal of Antimicrobial Chemotherapy Suppl D, **27**, 22 – 31
2 Working Party on Antibiotic Sensitivity Testing of the BSAC: *Guidelines 1998*. BSAC newsletter Autumn 1998 and addendum Spring 1999.
3 BSAC Standardized Disc Testing Method Document, 24th July 2000, www.bsac.org.uk

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