Comparison between respiratory and blood isolates of community-acquired Streptococcus pneumoniae from the UK and Ireland: resistance and serotypes

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R. Reynolds1, D. Felmingham2, R. Hope3 and The BSAC Working Parties on Resistance Surveillance1

1British Society for Antimicrobial Chemotherapy, Birmingham, B1 2JS 2GR Micro Limited, London, NW1 3ER 3Health Protection Agency, London, NW9 5HT

reynolds@bsac.org.uk

Objective

The distribution of serotypes from blood changed gradually over the 5 years, with serotype 1 increasing at the expense of other serotypes. The distribution of lower respiratory serotypes in 2005-06 was substantially different. Serotypes representing >5% of the total were, in order, 14, 1, 9V, 23F, 8, 4, 3 & 19F (total 63%) in blood and 19F, 23F, 6B, 3, 6A, 9V & 14 in respiratory isolates (total 51%).

Methods

Respiratory isolates were collected each winter from 1999/2000 to 2005/2006, blood isolates each year from 2001 to 2005. Fifty centres contributed (21 respiratory only, 19 blood only, 10 respiratory and blood), not all in every year. MICs were measured by BSAC methods in two central laboratories, one for each programme. Respiratory isolates from 2005/06 and all blood isolates were serotyped. Logistic and multinomial logit models used robust errors to account for clustering of effects by centre.

Results

Results are shown for 843 blood and 5065 respiratory isolates (843 and 749 with known serotype) taken from patients in the community or within 48 hours of hospital admission; 81% of blood and 60% of respiratory isolates were from hospitalised patients. Blood isolates were more likely than respiratory to be from very young or old patients – 10 vs. 6% were ≤4 and 22 vs. 11% were ≥80 years old. Male patients contributed 52% of blood and 59% of respiratory isolates.

Conclusions

- Penicillin non-susceptibility has been and remains uncommon in community-acquired S. pneumoniae in the UK.
- Serotype distributions differ between blood and respiratory isolates, and have shifted gradually in blood over the last 5 years.
- These results provide a baseline for comparison should serotype distributions and associated resistance change with future use of the 7-valent conjugate vaccine.

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Penicillin non-susceptibility has been less prevalent in blood than respiratory isolates throughout the period of the two studies. However, there was not enough information for a reliable and complete analysis of the (possibly interacting) effects of patient age, care setting, isolate source and serotype, as only 264 blood and 291 respiratory isolates with known serotypes were obtained from the same centres in overlapping time periods.


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Collecting Laboratories, Respiratory: England: Birmingham City; Bristol Southmead, Cambridge Addenbrookes; Gateshead Queen Elizabeth; Leeds General, St James's, Liverpool University; London St Bartholomew’s & Royal; UCH; Manchester Hope; Newcastle Royal Victoria, Freeman; Plymouth Dentford; Southampton General; Sunderland Royal; Watfalt Manor, Wolverhampton New Cross; Ireland: Dublin St Vincent’s; Beaumont; Meath Adelaide; Galway UCH. N. Ireland: Belfast Royal; 19Dinizulid Ustert, Scotland: Aberdeen Royal; Edinburgh New Royal, Western General; Glasgow Royal; Southern General. Wales: UWU Cardiff, Wrexham Maelor. (** ‡‡ contribute jointly.) Bacteraemia: England: Birmingham City; Bristol Southmead, Cambridge Addenbrookes; Chelmsford; Chester Countess; Coventry & Warwickshire; Leicester Royal; London St Mary’s, UCH; Manchester Wythenshawe; Newcastle Freeman; Norfolk & Norwich; Nottingham University; Sheffield Northern General; Shrewsbury Royal; Southampton General; Sunderland Royal; Truro Treliske. Ireland: Cork University; Dublin Beaumont. N. Ireland: Belfast City; Londonderry Altnagelvin. Scotland: Dundee Ninewells; Glasgow Royal; Kirkcaldy Victoria. Wales: Bangor Ysbyty Gwynedd; Cardiff UHW.