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Activity of ertapenem and tigecycline against recent isolates from community-acquired lower respiratory infections in the UK and Ireland

rreynolds@bsac.org.uk
Dept Medical Microbiology
Southmead Hospital
Bristol, BS10 5NB, UK

R. Reynolds[1], D. Felmingham[2] and The BSAC Extended Working Party on Respiratory Resistance Surveillance[1]

[1]British Society for Antimicrobial Chemotherapy, Birmingham, B1 2JS [2]GR Micro Limited, London, NW1 3ER

Objective

- The BSAC Respiratory Resistance Surveillance Programme[1] has monitored the prevalence of resistance in the agents of community-acquired lower respiratory infection in the UK and Ireland since 1999.
- Ertapenem and tigecycline were first tested in 2004-05, to assess the activity of these newer antimicrobial agents.

Methods

- 750 isolates of *Streptococcus pneumoniae*, 888 *Haemophilus influenzae* and 403 *Moraxella catarrhalis* were collected from 20 centres in the UK and Ireland between October 2004 and April 2005 and tested centrally by BSAC agar dilution methodology.

Results

- See table and charts.

Isolates, %	*S. pneumoniae* n = 750	*H. influenzae* n = 888	*M. catarrhalis* n = 403
β-lactamase+	N/A	11.6	92.6
penicillin-R (I)	0 (7.3)	N/A	N/A
tetracycline-R	8.8	0.9	0.5
erythromycin-R (I)	14.3	4.3 (93.7)	0
ciprofloxacin-R (I)	3.7 (96.3)	0.1	0.5
+ producer, R resistant, I intermediate			

Conclusions

- The prevalence of resistance among community-acquired lower respiratory *S. pneumoniae*, *H. influenzae*, and *M. catarrhalis* remains relatively low in the UK and Ireland.
- Ertapenem and tigecycline showed very good activity against most or all of these isolates.
- Ertapenem and penicillin susceptibility in *S. pneumoniae* were closely associated.

Acknowledgements

Working Party Members (Feb 2006): A.P. MacGowan[1] (Chair), M. Allen[2], D.F.J. Brown[3], N. Deaney[4], D. Felmingham[5], D. Lewis[6], D.M. Livermore[7], R. Reynolds[1], C. Thomson[8], A. White[9], L. Williams[5]

Organism ID and Susceptibility Testing , L. Williams[5], A. Colclough[5]
[1]Department of Medical Microbiology, North Bristol NHS Trust; [2]Wyeth, Maidenhead; [3]Addenbrookes Hospital, Cambridge; [4]Merck, Sharp & Dohme, Hoddesdon [5]GR Micro Ltd, London; [6]HPA South West, Gloucester; [7]Health Protection Agency, London; [8]IMS Health, London; [9]Consultant.

Collecting Laboratories: *England*: City Birmingham; Southmead Bristol, Addenbrookes's Cambridge; St. James's Leeds; Royal Leicester; University Liverpool; St. Bartholomew's & Royal London; UCH London; Hope Manchester; Derriford Plymouth, General Southampton; Royal Sunderland. *Ireland*: St Vincent's* & Beaumont* Dublin; UCH Galway. *N. Ireland*: Royal Hospitals‡ Belfast; Ulster‡ Dundonald. *Scotland*: Royal Aberdeen; New Royal Edinburgh. *Wales*: UHW Cardiff; Wrexham Maelor. (** and ‡‡: each pair contributes one quota jointly.)

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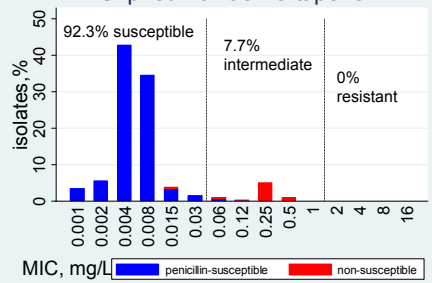
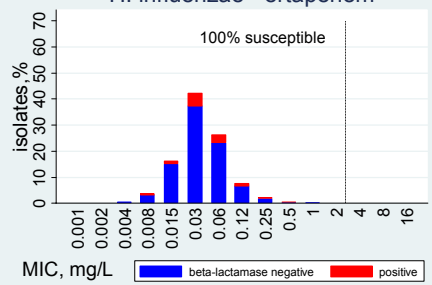
Ertapenem

S. pneumoniae - ertapenem



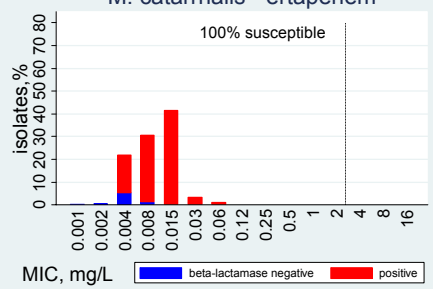
Penicillin and ertapenem susceptibilities were closely associated in *S. pneumoniae* : 6.9% of isolates showed intermediate susceptibility to both agents.

H. influenzae - ertapenem



H. influenzae isolates were all susceptible to ertapenem, and ertapenem MICs were unaffected by β-lactamase production.

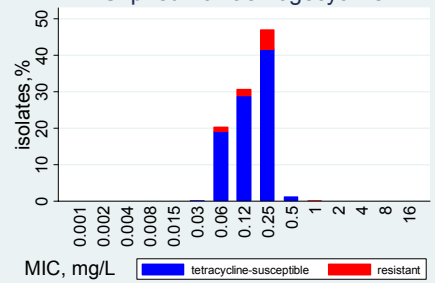
M. catarrhalis - ertapenem



β-lactamase-producing *M. catarrhalis* had slightly higher ertapenem MICs than non-producers, but all isolates were highly susceptible to ertapenem.

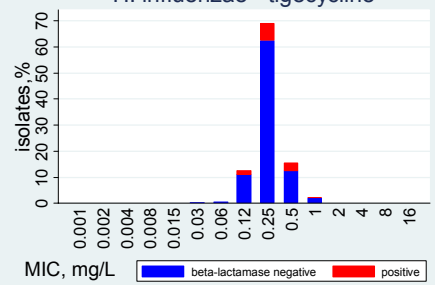
Tigecycline

S. pneumoniae - tigecycline



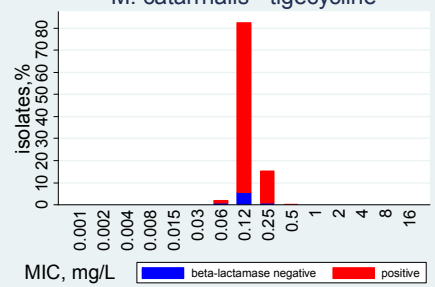
Tetracycline-resistance and penicillin non-susceptibility did not affect MICs for tigecycline in *S. pneumoniae*. Most were between 0.06 and 0.25 mg/L and none above 1 mg/L.

H. influenzae - tigecycline



Tigecycline MICs for *H. influenzae* were tightly clustered with a mode of 0.25 mg/L and maximum of 1 mg/L for both β-lactamase producers and non-producers.

M. catarrhalis - tigecycline



M. catarrhalis were inhibited by tigecycline in the range 0.06 - 0.5 mg/L, regardless of β-lactamase production.

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[1]Reynolds, 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.

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