P1231

21st ECCMID / 27th ICC
7-10 May 2011
Milan, Italy

ICU - always the hotbed of resistance?

R. Reynolds[1], K. Maher[2] , R. Hope[3] and The BSAC Extended Working Party on Respiratory Resistance Surveillance[1]

[1]British Society for Antimicrobial Chemotherapy, Birmingham, B1 2JS, [2]Quotient Bioresearch Limited, Fordham, CB7 5WW, [3]Health Protection Agency, London, NW9 5HT

rosy.reynolds@nbt.nhs.uk
Dept Medical Microbiology
Southmead Hospital
Bristol, BS10 5NB, UK

BACKGROUND

Intensive care units (ICU) are often considered to be a hotspot for development and dissemination of antibiotic resistance.

We compared non-susceptibility (NS) in hospital-acquired infections (patients in hospital >48 hrs) between ICU and other wards, and between blood and respiratory infections (RTI).

METHODS

BSAC Resistance Surveillance Project:†

- 32 clinical centres contributed clinically significant isolates.
- One central laboratory for RTI, one for blood.
- BSAC agar dilution MIC method with BSAC/EUCAST breakpoints; PCR for *mecA*.
- RTI 2008/09 & 2009/10; blood 2008 & 2009.
- Excluded: patients in hospital <48 hrs or missing data on treating speciality.

RESULTS

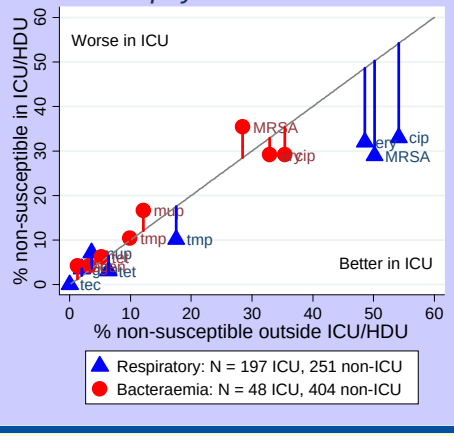
Graphs compare non-susceptibility in and out of ICU for RTI and blood infections. 3594 isolates were included in analysis, 2105 from RTI and 1489 from blood.

The proportion from ICU was much higher among RTI than blood isolates. (There may be some bias in selecting 'clinically significant' RTI isolates outside ICU.)

% from ICU	RTI	Blood
S. aureus	44	11
E. coli	45	8
Klebsiella	53	15
Enterobacter	52	16
P. aeruginosa	42	23

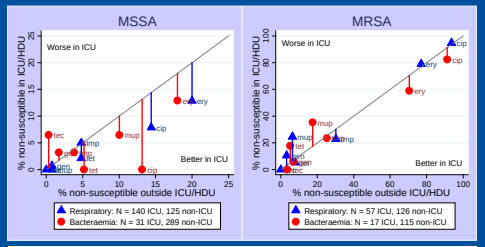
The distribution of patient age was very similar for RTI and blood infections. ICU included slightly more middle-aged patients and fewer very young or >75 years old.

Staphylococcus aureus

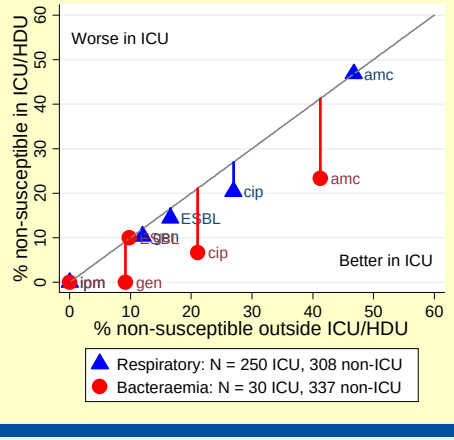


S. aureus

In RTI, but not blood, MRSA was much less prevalent in ICU (29 vs. 50%). %NS to CIP, ERY, MIN, TMP was also lower in ICU. NS in MSSA tended to be less in ICU (e.g. CIP), but TEC-NS was higher. MRSA had higher MUP-NS in ICU, with a mixed pattern for other agents.



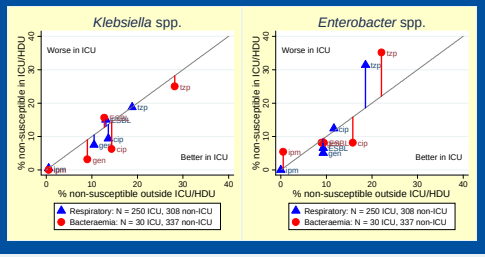
Escherichia coli



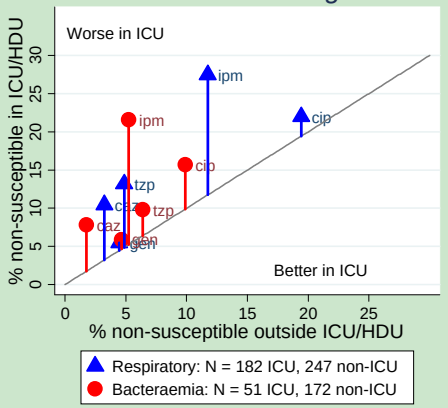
Enterobacteriaceae

E. coli and *Klebsiella* gave no clear examples of higher non-susceptibility in ICU. CIP-NS in particular appeared lower in ICU, though the differences were not statistically significant.

Enterobacter gave a more mixed picture, with TZP-NS clearly higher in ICU.



Pseudomonas aeruginosa



P. aeruginosa

Non-susceptibility appeared higher in ICU for all tested agents, significantly so for IPM and (in RTI) CAZ and TZP.

CONCLUSIONS

- **For hospital-acquired RTI and blood infections, non-susceptibility was not universally more prevalent in ICU than other settings.**
- RTI *S. aureus* from ICU were substantially less likely than others to be non-susceptible.
- Non-susceptibility in *Pseudomonas* was generally more common in ICU for both RTI and blood infections.

Antibiotic abbreviations AMC amoxicillin-clavulanate, CAZ ceftazidime, CIP ciprofloxacin, ERY erythromycin, GEN gentamicin, IPM imipenem, MUP mupirocin, PEN penicillin, TEC teicoplanin, TET tetracycline, TZP piperacillin-tazobactam. **Note**: treat results for blood infections in ICU with caution when numbers are small.

Working Party Members (April 2011): A. MacGowan[1] (Chair), M. Allen[2], D. Brown[3], H. Grundmann[4], M. Heginbothom[5], R. Hope[6], E. Lee[7], D. Livermore[5], K. Maher[8], I. Morrissey[8], J. Porter[9], R. Reynolds[1], A. Shah[10], J. Steenbergen[11], C. Thomson[11], A. White[12].

Organism ID and Susceptibility Testing: R. Hope[6] and K. Maher[8].

Collecting Laboratories: *See* www.bsacsurv.org *or* White 2008, JAC 62 (Suppl 2) ii3–ii14.

[1]North Bristol NHS Trust ; [2]Novartis; [3]EUCAST Scientific Secretary; [4]RIVM, Netherlands; [5]Public Health Wales; [6]Health Protection Agency, London; [7]Johnson&Johnson; [8]Quotient Bioresearch Ltd., Microbiology; [9]Pfizer; [10]Astellas; [11]Cubist; [12]Tony White Ltd.

Central Laboratories: Health Protection Agency, London; Quotient Bioresearch Ltd.

Sponsors 2008–2009: Astellas, AstraZeneca, Cerexa, Johnson&Johnson, Novartis, Pfizer, Wyeth.

Support: BSAC.

†Reynolds 2008, JAC 62 (Suppl 2) ii15–ii18.

QUOTIENT BIORESEARCH MICROBIOLOGY

Health Protection Agency

BSAC british society for antimicrobial chemotherapy

www.bsac.org.uk