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Abstract (oral session)

Antimicrobial resistance and the use of selective decontamination of the digestive tract in intensive care units: an ecological study

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Introduction: Selective oropharyngeal decontamination (SOD) and selective decontamination of the digestive tract (SDD) are associated with improved patient outcome. However, possible disadvantages are their effects on the bacterial ecology in intensive care units (ICUs). In this study, we assessed rates of resistant isolates in ICUs with and without SOD or SDD, i.e., standard care (SC), and determined time trends in gram-negative bacteria using routine Dutch surveillance data. Methods: All isolates of Enterobacteriaceae spp., *P. aeruginosa* and *Acinetobacter* spp. of blood specimens and clinical lower respiratory tract specimens of ICU patients were selected from the Infectious Disease Surveillance Information System for Antibiotic Resistance (ISIS-AR), which collects antimicrobial susceptibility data of routinely cultured bacterial species from Dutch laboratories. To avoid multiple sampling we only selected the last isolate per species per patient per year (i.e., cumulative resistance) from 2008-2011. Information on SOD and SDD on ICU level were collected by a structured online questionnaire. Resistance rates per 100 bed to colistin, tobramycin, ciprofloxacin, ceftazidime and cefotaxime/ceftriaxone were calculated for all species combined and multilevel Poisson analyses, adjusted for ICU level and year, was used to determine differences in rates. Results: The study included 44 ICUs, 600 blood isolates and 6983 respiratory isolates. Overall, from 2008-2011, there were no differences in the rate of isolates resistant to any of the antimicrobials between the ICUs (figure), except for colistin (SOD versus SC, rate ratio [RR] 2.2; 95% confidence interval [95% CI] 1.4-3.5; SDD: RR 1.5; 95% CI 1.0-2.4). For all antimicrobial agents there was a decreasing time trend in the rate of resistant isolates in ICUs with SOD or SDD and in ICUs with SC, and when analyzing 2011 data only, there were no longer differences present in the rate of isolates resistant to colistin between ICUs with SOD or SDD and ICUs with SC. Conclusion: Based on our data, we showed no differences in rate of resistant isolates between ICUs with SOD, SDD or SC and there was no increase in resistance over time in ICUs with SOD or SDD. Although our study is limited by its ecological nature and the lack of background data on ICUs other than ICU level, it adds to the evidence that the effects of SOD and SDD are limited in countries with a low level of resistance.

Figure: Average rate per 100 bed per year for gram-negative bacteria, resistant to colistin, tobramycin, ciprofloxacin, ceftazidime and the combination of ceftriaxone and ceftolaxime for blood isolates (B) en respiratory isolates (R), 2008 – 2011.

