

O200

Oral Session

Healthcare - associated infections - from analysis to interventions

THE EFFECTS OF DECONTAMINATION OF THE OROPHARYNX AND INTESTINAL TRACT ON ANTIBIOTIC RESISTANCE IN ICUS: A CLUSTER-RANDOMIZED CROSS-OVER TRIAL

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Objectives: Selective Digestive tract Decontamination (SDD) and Selective Oropharyngeal Decontamination (SOD) are prophylactic antibiotic regimens used in Intensive Care Units (ICU) that have been associated with improved patient outcome. Controversy still exists on the relative effects of both measures on patient outcome and antibiotic resistance. We compared the effects of SDD and SOD, applied as unit-wide interventions, on antibiotic resistance and patient outcome.

Methods: We conducted a pragmatic, cluster-randomized cross-over trial comparing 12 months of SOD to 12 months of SDD in 16 Dutch ICUs. Patients with an expected length of ICU-stay >48hours were eligible to receive SDD/SOD. Monthly one-day point prevalence surveys of respiratory and perianal samples were performed in all patients in the ICU to determine trends in carriage with antibiotic resistant gram-negative bacteria (ARGNB). The clinical outcome analysis included all patients that had received ≥ 1 dosage of SDD or SOD or that stayed >48hours in ICU.

Results: In all, 5,881 patients and 6,116 patients were included in the clinical outcome analysis for SOD and SDD, respectively. In point-prevalence surveys the prevalence of ARGNB was lower during SDD for all marker antibiotics in perianal swabs as compared to SOD, most pronounced for aminoglycosides, 5.6% (95% CI 4.6%-6.7%) and 11.8% (95% confidence interval (CI) 10.3%-13.2%) during SDD and SOD, respectively, ($p < 0.01$). During both interventions the prevalence of rectal carriage with aminoglycoside resistant GNB increased (0.07 during SDD ($p = 0.017$) and 0.04 during SOD ($p = 0.046$), $p < 0.05$ for difference between SDD and SOD). Colistin resistance was rare; in the intestinal tract 1.1% of the patients during SDD and 0.7% during SOD were colonized with GNB not intrinsically resistant for colistin, in the respiratory tract 0.6% and 0.3% of the patients respectively. Day 28-mortality was 25.4% and 24.1% during SOD and SDD respectively (adjusted OR 0.963 (95%CI 0.877-1.057) $p > 0.05$). , and there were no statistically significant differences in other outcome parameters. ICU-acquired bacteremia occurred in 5.9% and 4.6% of the patients during SDD and SOD, respectively (Odds ratio 0.77 (95% CI 0.65-0.91), and was most pronounced for Enterobacteriaceae (OR 0.42 (95% CI 0.29-0.60)), including aminoglycoside resistant gram-negatives (OR 0.54 (95% CI 0.31 – 0.97)).

Conclusion: Unit-wide application of SDD and SOD was associated with low levels of antibiotic resistance and no differences in mortality and length of stay. SDD was, as compared to SOD, associated with lower rectal carriage of ARGNB and ICU-acquired bacteremia, and a more pronounced gradual increase in aminoglycoside resistant GNB.