

Session: P023 Reducing MDR Gram-negatives - myths and facts

**Category: 8d. Nosocomial infection surveillance & epidemiology**

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### No increased risk of nosocomial infection for patients with rectal ESBL-E colonization

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**Background:** The number of patients colonized with ESBL-positive Enterobacteriaceae (ESBL-E) is growing world-wide. Subsequent infections with these organisms are associated with limited treatment options and elevated mortality and morbidity. With additional and costly prevention measures hospitals are trying to prevent these infections. But how often do these patients develop an infection with ESBL-Es compared to infections with other bacteria and what are the risk factors. Within a hospital setting we aimed to determine the incidence of these ESBL-E infections as well as the risk factors associated with these infections after rectal ESBL-E colonization.

**Material/methods:** The setting of this study was a German university hospital with over 3.200 beds. The study period was two years (2014 and 2015). We included all patients that were found rectally colonized with ESBL-positive *Escherichia (E.) coli* or *Klebsiella (K.) pneumoniae* and subsequently stayed at least 3 days in our hospital. The patients were prospectively tracked, looking for microbiological examination indicating a possible infection. Cases were manually reviewed by infection control professionals to identify a new infection with either the colonization organism or any other organism. In order to analyze risk factors for a bacterial infection we conducted a nested case-case-control study. Cases were either ESBL-E infections or infections with any other bacteria, controls were patients without bacterial infection with an onset between ESBL-E colonization and hospital discharge. Data were analyzed using univariate and multivariable regression models.

**Results:** Within the study period 3,036 patients fulfilled the inclusion criteria. The patients were found to be colonized with the following ESBL-Es: *E.coli* 78.2%, 19.0% with *K. pneumoniae* and 2.8% with both. Of these patients 3.8% (n=117) developed a bacterial infection with the colonization bacteria, 5,9% (n=180) with any other bacteria and 0.5% (n=14) with both. All cases (n=117+180) and 230 controls were included in the nested case case control study. Independent risk factors for a bacterial

infection after colonization were: Intestinal surgery (OR 2.6), steroid intake (OR 2.3), central venous catheter (OR 2.1), urinary catheter (OR 1.9). Carbapenem intake between colonization and discharge served as protective factor (OR 0.3). There was no significant difference in risk factors between ESBL-E infections and any other infection.

**Conclusions:** Patients colonized with ESBL-E do not have an increased risk for nosocomial ESBL-E infection compared to any other bacterial infection. Therefore, in the light of increasing colonization rates, it is even more important to establish an excellent standard hygiene culture in each hospital in order to prevent also ESBL-E infections.