

P1514 **Quantifying the risk of nosocomial infection after rectal ESBL-  
Enterobacteriaceae colonization**

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**Background:** The number of patients rectally colonised with ESBL-positive *Enterobacteriaceae* (ESBL-E) is growing worldwide. However: How many patients subsequently develop an infection with their ESBL-E? Therefore, in this study we aimed to quantify the risk of nosocomial infection after rectal ESBL-E colonisation by multistate modelling.

**Materials/methods:** This study was conducted in a German university hospital from 2014 to 2015. All patients rectally colonised with ESBL-producing *Escherichia coli* (ESBL-EC) or *Klebsiella pneumoniae* (ESBL-KP) and length of stay (LOS)  $\geq 3$  days were included. Patients were examined for nosocomial infection by manual review of patient files. The detection of an extra-intestinal microbiological pathogen followed by adequate antimicrobial therapy indicated an infection. Presence of ESBL genes was tested by PCR. Genetic relationship of isolates from colonisation and infection was analysed by XbaI-macrorestriction and subsequent pulsed field gel electrophoresis (PFGE). To analyze the competing event data we used Cox regression models and calculated cause-specific hazards and subdistribution hazards.

**Results:** 2,971 patients were included. 83.8 % were colonised with ESBL-EC and 16.2 % with ESBL-KP. Infection incidence with rectal ESBL-E was 1.8 (CI95% 1.35 – 2.41) for patients colonised with ESBL-EC; and 7.6 (CI95% 3.5 – 7.56) for patients with ESBL-KP. The infection incidence due to any other bacteria was 5.4 (CI95% 4.6 – 6.4) among carriers of ESBL-EC and 8.5 (CI95% 6.3 – 11.4) among ESBL-KP carriers. Cox proportional hazard regression did not identify an increased risk of infection with rectal ESBL-E among patients colonised with ESBL-KP compared to ESBL-EC (HR = 1.42, 95%CI 0.94 – 2.14) after adjustment for age, sex and Charlson comorbidity index. The same was the case for infections with other bacteria (HR = 1.1, 95%CI 0.73 – 1.57).

**Conclusions:** Patients colonised with ESBL-E do have a similar risk of developing a nosocomial infection due to their rectal ESBL-E as of an infection due to any other bacterium. Thus, infection prevention strategies including hand hygiene should be strengthened.