

**P1032**

**Paper Poster Session**

**Surveillance and control of nosocomial pathogens and infection**

**Factors associated with transmission of carbapenemase producing Enterobacteriaceae around a known carrier**

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**Background:** Carbapenemase producing enterobacteriaceae (CPE) have become an important threat worldwide. To limit the spread of CPE, most guidelines recommend cohorting patients and healthcare workers (HCW). However, few is known about factor which limit the occurring of secondary cases and the most effective interventions in preventing cross transmission.

**Material/methods:** We investigated an ongoing CPE outbreak in a French teaching university hospital where cohorting was never applied. Our first objective was to identify the most effective interventions among those implemented. All the time period where, 1) CPE carriers were admitted in our hospital and 2) among which 80% of relatives contact were screened, were included.

For each period we retrospectively collected data regarding unit type, colonization pressure as defined in the literature, caregiver/patient ratio, hand hygiene compliance (HHC), hydro-alcoholic product (HAP) consumption, antibiotic consumption and infection control team (ICT) involvement through educational audit. Finally, we compared time period where secondary cases were acquired to time period without any new acquisition. Using a logistic regression we identified factors associated with secondary transmission. A p value < 0.05 was considered as significant.

**Results:** A total of 48 periods were identified. Among them 15 resulted in cross-transmission, while 33 did not. Fourteen different wards admitted CPE carriers during the study. Median colonization pressure was 4.9% (1.1 – 25.0). Results are summarized in table 1.

By univariate and multi variate analysis antibiotic consumption was the only factor significantly associated with increased cross-transmission.

Diffusion occurred more frequently when the colonization pressure was superior to the median (12.5% versus 50%) (not significant - NS). Cross transmission occurred less frequently when ICT has audited daily comparing to time period were auditing was less frequent (NS). Whereas cross-transmissions occurred in 36% of studied periods when hand hygiene compliance was below 80%, this rate dropped to 27.2% when HHC was above 80% (NS). However, these factors remained non-significant, probably due to lack of power. No effect was observed for caregiver/patient ratio or hydro-alcoholic product consumption.

**Conclusions:** In our study, colonization pressure (ie, antibiotic consumption) was the only factor significantly associated with CPE cross-transmission. Without cohorting the ICT involvement is mandatory to support HCW and to ensure a high compliance to hand hygiene. These results should be validated by a larger study.

Table 1 : Results for collected data regarding CPE cross-transmission.

	<b>Average</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Number of carriers in a single period</b>	1.9	1.0	1.0	7.0

<b>Patient/Caregiver ratio</b>	1.7	1.7	0.8	3.8
<b>Colonization pressure (%)</b>	7.7	4.9	1.1	25.0
<b>Hand hygiene compliance (%)</b>	64.8	72.0	39.0	100.0
<b>HAP consumption (% of the expected volume)</b>	126.0	130.0	56.0	390.0
<b>ICT involvement in points</b>	1.4	1.0	0.0	3
<b>Antibiotic consumption in DDD / 1000 patient days</b>	1 550,5	1 113,5	55.6	2 884.3