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A pilot intervention study on the effect of a liquid oxygen releaser sporocidal surface disinfectant compared with the usual disinfection procedure on the risk of nosocomial CDI in a university hospital, Austria, 2007-2011

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Background and Objective:

Clostridium difficile, an important nosocomial pathogen is the leading cause of hospital-acquired diarrhea associated with high risk of fatal outcome.

A conventional, sporocidal surface disinfection applied in response to the occurrence of CDI was compared with daily application of a new sporocidal agent at two wards of a university hospital with respect to the risk reduction of CDI.

Methods:

The routine CDI-surveillance data indicated a high endemic incidence of community-acquired (CA)-CDI and hospital-associated (HA)-CDI (n_{total}=118) at two wards (A, B) of an internal medicine department.
CDI patients were classified into CA-CDI and HA-CDI according to ECDC definitions.
Two intervention studies with a before-after design were performed at the wards A and B: ward A including four to six-bed-rooms and ward B single or two-bed-rooms.
At ward A the “pre-intervention phase”, in which the hospital policy based usual disinfection procedure (sporocidal surface disinfection in response to occurrence of nosocomial CDI only) was applied, took place from November 2007 to April 2009; the intervention phase, in which a new liquid oxygen releaser disinfectant with high sporocidal activity was daily used regardless of CDI occurrence, took place from May 2009 to July 2010. [Fig. 1]
At ward B the pre-intervention phase lasted from August 2009 to June 2010 and the intervention phase from July 2010 to May 2011. [Fig. 2]

Results:

A total of 67 cases of CDI (including 26 CA- and 41 HA-CDI cases) occurred at ward A and 51 cases (including 34 CA- and 17 HA-CDI cases) at ward B.

At ward A, the incidence rate difference of nosocomial CDI cases (0.4/1.000 hospital days) observed was insignificant.
At ward B, the incidence rate of nosocomial CDI at the end of the pre-intervention phase was 1.84/1.000 hospital days compared with an incidence rate of 0.77/1.000 at the end of the intervention phase, resulting in a rate difference of 1.07/1.000 hospital days at borderline significance (p=0.10). [Table 1]

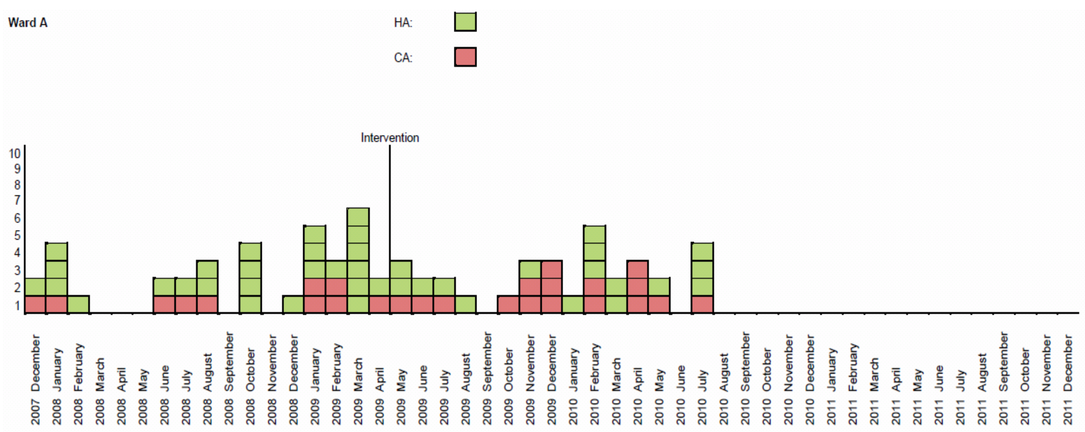

Fig. 1: Ward A; HA – Hospital Acquired Cases, CA – Community Acquired Cases

Fig. 2: Ward B; HA – Hospital Acquired Cases, CA – Community Acquired Cases

				*Per 1000 Person Time Units			*Two-Tailed
Ward B		**Nosocomial CDI cases**	**Beddays**	**Rate***	**Rate Ratio**	**Rate Difference**	**P-value**
Intervention	Y	5	6462	0,77	0.42 (0.15-1.19)	-1.07 (-2.31, 0.17)	0.10
	N	12	6512	1,84			
Ward A							
Intervention	Y	16	11030	1,45	0.78 (0.41-1.46)	-0.40 (-1.42, 0.61)	0.45
	N	25	13500	1,85			
Table 1:							

Conclusion:

We concluded that the daily use of a liquid oxygen releaser disinfectant with high sporocidal activity at a ward with single or two bed-rooms was superior in preventing occurrence of nosocomial CDI to the sporocidal surface disinfection, applied as needed.

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