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Paper Poster Session
Clostridium difficile: epidemiology and risk factors

Recovery of C. difficile from the hospital environment – results depend on the media

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Background: *Clostridium difficile* is the leading cause of nosocomial infections resulting in substantial morbidity and mortality, as well as economic burden.The role of the hospital environment as an important source for ongoing *C. difficile* transmission in healthcare settings remains elusive and requires further investigation to provide an evidence base for infection control guidelines. Standardized protocols outlining the methodology for recovery of *C. difficile* from the environment are, however, lacking. The use of different media for culturing C. difficile from environmental swabs hampers comparability between and generalizability to other institutions. With the aim to inform future protocols serving as a reference for research and surveillance, we compared two different selective media regarding their yield of *C. difficile* from environmental samples.

Material/methods: From September 2015 to November 2015, environmental samples were taken from 7 rooms of consecutive patients diagnosed with *C. difficile* infection. Environmental samples of the immediate patient-surroundings were performed by swabbing surfaces with a liquid-based collection and transport system (ESwabTM, Copan, Brescia, Italy). The following 8 places were examined in each room: the bed grip, the patient's bell, the floor in front of the patient's bed, the side table, the door handle, the faucet knobs, the handle of the toilet flush (if patient wasn't assigned a close-stool), and the toilet seat. Swabs were taken from each spot and submitted to culture without any delay using two different commercially available culture media: cycloserine cefoxitin mannitol broth with taurocholate and lysozyme (CCMB-TAL, Anaerobe Systems, Morgan Hill, CA, USA) and selective cycloserine-cefoxitin-blood agar plates (CLO agar; bioMérieux, Marcy l'Etoile, France). Cultures were incubated in an anaerobic chamber for eight days and C. difficile was identified according to standard laboratory methods.

Results: Overall, 108 environmental swabs were taken from the eight predefined places in 7 patient rooms. *C. difficile* was recovered in 35.2% of all samples using CCMB-TAL for culture and in 20.4% of all samples plated onto CLO agar (p=0.086). Differences regarding the yield of *C. difficile* according to the different areas sampled are shown in the table.

Conclusions: Recovery of *C. difficile* was increased with the use of CCMB-TAL broth enrichment following plating to solid medium pointing to the important role of taurocholate to increase spore recovery by supporting germination.

When investigating environmental contamination with *C. difficile*, selective culture media used for recovery of vegetative *C. difficile* in routine diagnostics may not be as sensitive as selective culture media containing taurocholate.

	Anaerobic culture with CCMB-TAL			Anaerobic culture with CLO		
	Total (n)	*C. difficile* positive (n)	*C. difficile* positive (%)	Total (n)	*C. difficile* positive (n)	*C. difficile* positive (%)
Bed grip	7	2	28.6	7	0	0
Patient's bell	7	3	42.8	7	1	14.3
Floor in front of the patient's bed	7	4	57.1	7	3	42.8
Side table	7	2	28.6	7	1	14.3
Door handle	7	0	0	7	0	0
Faucet knobs	7	2	28.6	7	2	28.6
Handle of the toilet flush	5	2	40	5	1	20
Toilet seat	7	4	57.1	7	3	42.8