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Letter to the Editor

Absence of *Clostridium difficile* in asymptomatic hospital staff

To the Editor:

Clostridium difficile is considered a leading cause of hospital-acquired diarrhea. To evaluate the prevalence of asymptomatic *C difficile* stool carriage among hospital staff, we tested stool samples from 112 volunteers for toxigenic *C difficile*.

Usually, there is no significant risk for healthy adults in acquiring a *C difficile* infection (CDI) because their mature colonic bacterial flora will resist colonization with *C difficile*.[1] CDI in humans is generally linked to procedures that alter the normal enteric flora (antibiotic treatment or antineoplastic chemotherapy). Several outbreaks via a contaminated hospital environment or the contaminated hands of hospital personnel have shown the risk of nosocomial acquistion of CDI.[2] We chose to study the prevalence of *C difficile* stool carriage in asymptomatic hospital staff in Austria to assess the risk of healthy hospital staff acquiring *C difficile*.

Probands were restricted to persons without a history of diarrhea or antibiotic usage for 3 months among hospital staff prior to testing (Table 1). Stool samples (n = 112) were gained from April to July 2010 at a 1,200 bed tertiary care university hospital. The male to female ratio was 1:5.3 (Table 2). The study was approved by the local ethics committee. Microbiological diagnostics were performed by direct plating onto *C difficile* selective agar (cycloserine/cefoxitin agar; bioMérieux, Marcy l'Etoile, France) plus broth enrichment as described elsewhere.[3]

One hundred twelve healthy and asymptomatic staff members from 9 departments and the medical school were screened for *C difficile*. All stool samples tested negative by primary inoculation of the selective plate. Enough material (≥1 g) to perform testing by broth enrichment technique was available for 45 of the 112 samples (40.2%).

Broth enrichment technique yielded negative results for all stool samples tested. Also, 67 stool samples provided by administrative staff of a major Austrian groceries chain proved negative when tested (parallel to our study) using both methods (data not shown).

In medical literature, it is widely supposed that *C difficile* stool carriage is frequently found in healthy adults, including hospital staff. Van Nood et al reported 13% of asymptomatic hospital staff (75% of these being physicians) in The Netherlands to show *C difficile* stool carriage.[4] Kato et al demonstrated that 4.3% of hospital personnel in Japan carried *C difficile*.[5] Our finding of absence of fecal carriage in Austrian hospital staff was surprising but in accordance with results reported by Carmeli et al, who showed absence of intestinal carriage of *C difficile* among 55 hospital staff in Israel.[6] In addition, our study has the limitation of a relatively low sample size, but it guarantees an upper confidence bound of 2.6% for zero findings (95% confidence level).

Table 1
Study group by affiliation

	Absolute number	% Of total
Gastroenterology	9	8.0
Hematology and oncology	19	16.9
Pediatrics	21	18.8
General surgery	19	16.9
Pediatric surgery	10	8.9
Vascular surgery	11	9.8
Medical school students	12	10.7
Anaesthesiology	7	6.3
Intensive care unit	1	0.9
Physical therapy	3	2.7
Total	112	100

Table 2
Study group by occupation

Study group			Age, yr		Sex
	Absolute number	% Of total	Median	Range	Female
Clerical staff	2	1.8	35	29-41	100%
Janitorial staff	3	2.7	53	51-56	100%
Physiotherapists	3	2.7	32	30-34	100%
Nurses	77	68.8	39	21-56	94%
Medical school Students	11	9.8	24	22-27	82%
Physicians	16	14.3	47	28-62	44%
Total	112	100	39	21-62	86%

Because specimens from symptomatic patients—tested for *C difficile* at the same time by the same method (direct plating)—yielded toxigenic *C difficile*, we abnegate the occurrence of false-negative results.[7] Similar discrepant findings have previously been reported for occurrence of *C difficile* in food (ground meat): whereas Rodriguez-Palacios et al in Canada found 20% of tested samples positive for *C difficile*,[8] Jöbstl et al reported a contamination rate of only 3% *C difficile* in ground meat in Austria.[9] This different contamination rate of ground meat might be just one of many factors explaining the discrepant results concerning *C difficile* carriage in healthy adults from different countries. In Austria, *C difficile* is the most frequently diagnosed bacterial pathogen in patients with community-acquired gastroenteritis, accounting for 18.7% of positive results, second only to norovirus (36.0%).[10] Our finding of absence of fecal carriage in healthy hospital staff and in healthy administrative staff of a food trade company underlines the diagnostic relevance of a positive stool result in patients with acute community acquired gastroenteritis. It also indicates that there is only low risk for healthy hospital staff for acquiring *C difficile*. Our findings also emphasize the diagnostic relevance of *C difficile* detection in symptomatic health care workers with diarrhea.

Conflicts of interest: None to report.

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