

S116

2-hour Symposium

News from basic science for clinical application in *Clostridium difficile* infections

The significance of asymptomatic colonisation of *Clostridium difficile*

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Objectives

Clostridium difficile Infections (CDIs) are associated with increased morbidity and mortality, especially in elderly and otherwise fragile patients in internal medicine wards, admitted for antimicrobial treatments of various infections. Factors of importance for spread of *C. difficile* among hospitalized patients has shown CDI patients may only contribute to some of the new cases of CDI in the hospitals, and whether or not asymptomatic carriers of *C. difficile* contributes to nosocomial spread of the bacteria is still unknown. We aimed to determine the role of asymptomatic carriers for the risk of CDI in hospitalized patients.

Methods

A prospective cohort study including all patients admitted to medical departments at two university hospitals in Copenhagen, Denmark, in a four months period, October 2012 - February 2013. All admitted patients were intended screened for carriage of *C. difficile*, and all patients were followed daily in the hospitals during admission and whenever CDI in the study period. The *C. difficile* isolates were typed.

Results

Of 4508 hospitalized patients, 3605 (80%) were included. We found 6.1% of the patients admitted during the study period, and 11.9% of the already hospitalized at study start, to be asymptomatic carriers.

Patients admitted with CDI, patients asymptomatic carriers, patients not carrying *C. difficile*, and patients not included, were median age in year 82, 81, 75, and 64, respectively, had Charlson comorbidity index ≥ 3 in 38%, 40%, 26% and 17%, respectively; were admitted to hospitals within one year 87%, 80%, 57% and 53%, respectively; and were admitted mean 14, 10, 9 and 5 days respectively.

No differences were found between the two hospitals.

Odd ratios for CDI in asymptomatic carriers versus non-carriers was 4.64, for asymptomatic carriers versus not-included patients 9.23, both $p < 0.0001$, and non-carriers versus not included patients 1.99, $p = 0.03$. The risk per day in hospital of CDI for non-carriers in wards when asymptomatic carriers were present was 1.3×10^{-4} , and if CDI patients were present 2.7×10^{-4} .

Odd ratio for CDI in non-carriers were 2.09, $p = 0.55$, for being hospitalized in wards with asymptomatic carriers versus no known carriers. The asymptomatic patients experienced CDI were all found infected with their own carried strain.

Conclusion

Patients with CDI and asymptomatic *C. difficile* carriers were older, had more co-morbidity, more often hospitalized previously, and admitted longer than non-carriers and not included patients in this study. Being an asymptomatic carrier is a significant risk of experience CDI during hospitalization. We could not detect any statistically significant risk for CDI in non-carriers of *C. difficile* being admitted to wards with patients who were asymptomatic carriers in this large cohort of patients.