

A new approach to recognition of *Clostridium difficile* infections with community onset

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Bartsch *et al.* recently pointed out the importance of choosing the optimal strategy for diagnostic testing for *Clostridium difficile* regarding cost-effectiveness from a hospital perspective [1]. The economic aspect is also highly relevant when deciding which of the numerous faecal samples from non-hospitalized patients should be tested for *C. difficile*. Recently, Davies *et al.* [2] reported that variations in testing for hospital-acquired *C. difficile* result in undiagnosed inpatients with *C. difficile* infection (CDI). Here, we report our findings indicating that appropriate algorithms are useful for recognizing CDI with community onset.

In 2009, most hospitals in the Capital Region of Denmark suffered from a large outbreak of the hypervirulent *C. difficile* PCR ribotype 027 (CD027). Our laboratory supplies microbiological services for 750 000 inhabitants, approximately half of the population of the Capital Region. The introduction of a bundle approach comprising infection control reinforcements, antibiotic stewardship and rapid testing of samples from all hospitalized patients with diarrhoea resulted in a significant decrease in the incidence of CDI with hospital onset. The observation that patients quite often develop diarrhoea after discharge from the hospital prompted us to optimize diagnostics for CDI with community onset. Accordingly, we introduced a laboratory algorithm to test stool samples from all patients aged ≥ 60 years and from patients who had been hospitalized within the previous month. In addition, stools were always tested on request from physicians. Stools from patients aged < 2 years and from patients with known CDI within the previous 14 days were not tested. PCR was used to detect *C. difficile*-specific *tcdB*, *tcdC* deletion nucleotide 117, and *cdt* (Cepheid, Sunnyvale, California, USA); a positive reaction for all targets is indicative of CD027.

TABLE 1. Stool samples tested for *Clostridium difficile* in Herlev University Hospital from 2823 episodes of diarrhoea in non-hospitalized patients, 2013–2014

Predefined criteria	Positive rates (%)	Positive rates indicative for CD027 (%)
Recently hospitalized patients		
<60 years (n = 272)	7	<1
≥ 60 years (n = 434)	31	11
Patients not recently hospitalized		
<60 years, requested by general practitioner (n = 2)	0	0
≥ 60 years (n = 2115)	7	1

During the 1-year study period (August 2013 to July 2014), samples from 2823 non-hospitalized patients were tested (Table 1). The overall positivity rate for all 2823 samples was 10%. Of the 434 stools from recently hospitalized patients aged ≥ 60 years, 31% tested positive for *C. difficile*, 11% for CD027. Twenty-five per cent of the positive samples were positive for CD027. Of the 76 samples positive for CD027, 99% originated from patients aged ≥ 60 years. This observation indicates that CDI is an important community disease, as has recently been seen in Denmark [3] and in The Netherlands [4]. In addition, the high positivity rate of 31% among samples originating from recently hospitalized patients aged ≥ 60 years suggests that a considerable number of patients develop CDI after discharge from hospital. Supporting this suggestion, almost half (46%) of the recognized healthcare-associated infections with *C. difficile* in our part of the Capital Region had community onset in 2010–2015 (HAIBA—the Danish Hospital-Acquired Infections Database: www.haiba.dk). It could be argued that some patients were simply carriers of *C. difficile* rather than infected, and this is no doubt the case. We therefore urge general practitioners to contact our clinical microbiologist and discuss indications for treatment, taking symptoms into consideration. It is of note that five outpatient clinics in the Capital Region give free vancomycin on prescription for patients with community-onset CDI, when indicated.

We conclude that the introduction of a laboratory algorithm for CDI testing in patients attending a general practitioner was cost-effective and appropriate with regard to the two predefined criteria; however, more studies are needed to establish the optimal algorithm in relation to other risk factors, as well as the changing epidemiology over time.

Transparency declaration

The authors declare that they have no conflicts of interest.

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