



# Detection and Infection Prevention Differs between Community Onset (CO) and Hospital Onset (HO) *Clostridium difficile* Cases

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## Summary

After recognizing a persistent issue with elevated *Clostridium difficile* infection (CDI) rates in our facility that was unrelated to the initiation of molecular testing, we performed a retrospective chart review of acute care inpatients to determine differences in identification and isolation precautions initiation between community onset (CO) and hospital onset (HO) CDI cases. We evaluated CDI cases between 2011 and 2015 and defined location according to CDC definitions. We selected two variables for evaluation: time-to-testing after onset of diarrhea and empiric isolation precaution initiation. Of 355 CDI patients identified, 146 (41.1%) were CO and 209 (58.9%) were HO. For time-to-testing, 58.2% CO cases vs. 41.1% HO cases were tested on the same day as diarrhea onset; 32.2% CO vs. 25.4% HO after 1 day; 8.2% CO vs. 13.4% HO after 2 days; and 1.4% CO vs. 20.1% HO after 3 days or more ( $p < .0001$ ). Patients were placed on isolation precautions when diarrhea was first discovered in 46.6% of CO cases and 17.7% of HO ( $p < .0001$ ). CO-CDI cases were more likely to be tested early and have empiric precautions initiated on the day of diarrhea onset than HO cases.

## Background

- The persistent problem of *Clostridium difficile* infection (CDI) may be classified as hospital onset (HO) or community onset (CO).
- CO cases have increased in recent years and contribute a substantial portion of the total CDI burden in the state of North Carolina (over 50%) and at our facility (34-35%).
- Since transmission in a hospital may be triggered by either HO or CO cases, we performed a retrospective chart review to determine differences in identifying CO or HO CDI cases and initiating precautions.

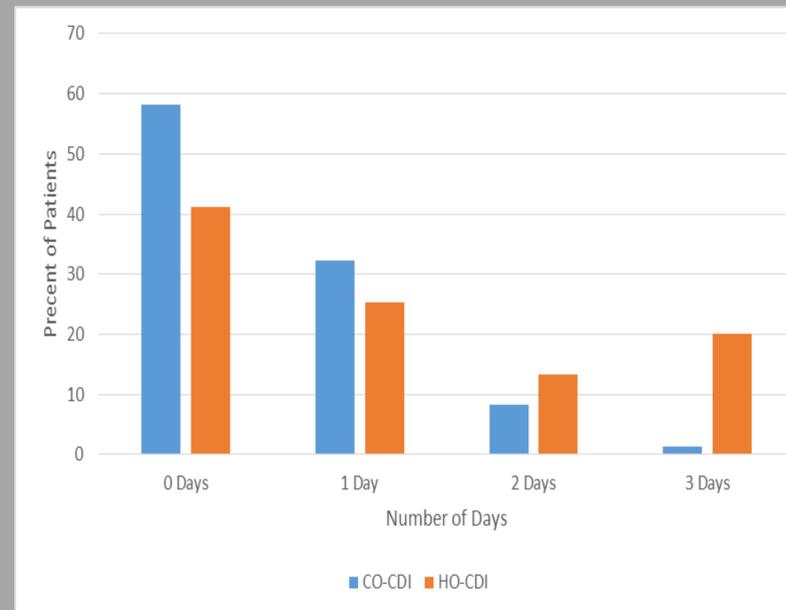
## Methods

- Prospective surveillance performed between Oct. 2011 and Sept 2015.
- CDI cases were defined as CO or HO based on CDC definitions.
- Analysis of two variables: 1) The number of days between onset of diarrhea and stool PCR test order and 2) whether empiric isolation precautions were initiated
- Statistical comparisons were made using the Fisher's exact test

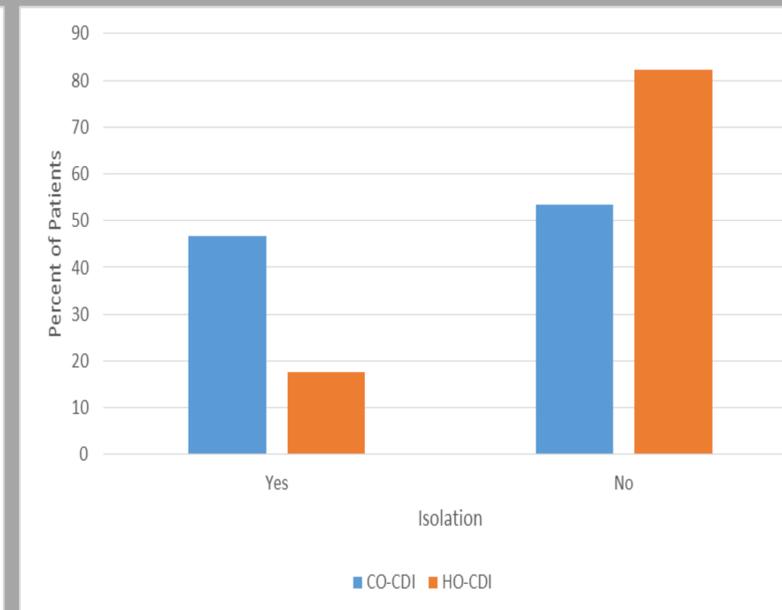
## Results

- 355 patients: 146 CO cases (41.1%), 209 HO cases (58.9%)

Figure 1: Time-to-Testing from Onset of Diarrhea      Figure 2: Empiric Precautions with Onset of Diarrhea



$P < 0.0001$



$P < 0.0001$

Table 1: Time-to-Testing (in Days)

Cases	0 d	1 d	2 d	≥3 d
HO	86 (41.1%)	53 (25.4%)	28 (13.4%)	42 (20.1%)
CO	85 (58.2%)	47 (32.2%)	12 (8.2%)	2 (1.4%)

Table 2: Empiric Precautions Initiated

Cases	Yes	No
HO	37 (17.7%)	172 (82.3%)
CO	68 (46.6%)	78 (53.4%)

## Discussion

- CO-CDI cases were more likely to be tested early and have empiric precautions initiated than HO cases.
- Delays in suspecting infectious diarrhea and difficulty with bed reassignment are potential reasons for this, as well as increased awareness of CDI in the community.
- Prompt identification and isolation is important in preventing transmission within in the hospital, for both CO and HO cases.

## References

- Kutty PF et al. Assessment of Clostridium difficile-associated disease surveillance definitions , North Carolina, 2005. Infect Control Hosp Epidemiol. 2008; 29 (3):197-202.
- Naggie S et al. Community-associated Clostridium difficile infection: experience of a veteran affairs medical center in southeastern USA. Infection. 2010; 38 (4):297-300.
- Shin B et al. Characterization of Cases of Clostridium difficile Infection (CDI) Presenting at an Emergency Room: Molecular and Clinical Features Differentiate Community-Onset Hospital-Associated and Community-Associated CDI in a Tertiary Care Hospital. Journal of Clinical Microbiology. 2011; 49 (6): 2161–2165.