

# Are Errors of Omission Falsely Inflating Hospital-Onset *Clostridioides difficile* Infection Numbers?



Jorge Paiva Parada MD MPH, Mohamed Yussif MD, Louise Lie MPH

Loyola University Medical Center, Maywood, IL

## Background

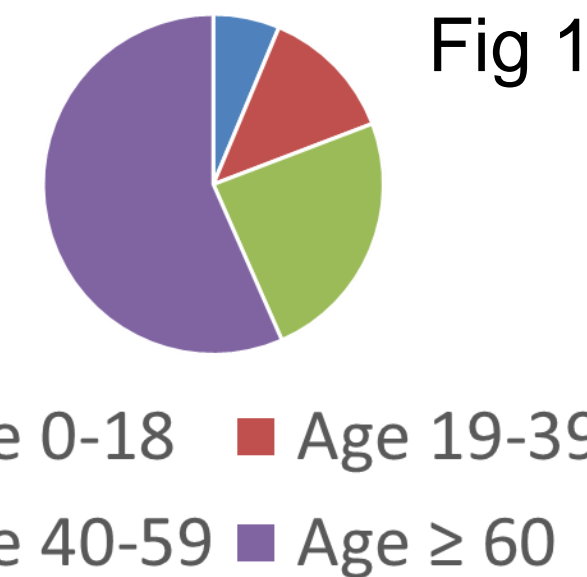
- Identification of *C. difficile* infection (CDI) as community onset (CO) versus hospital onset (HO) is based upon the timing of the laboratory testing (lab ID event).
- Any lab diagnosis made after day 3 of hospitalization is classified as HO-CDI, even if there is clinical evidence that the patient had clinically relevant *Clostridioides difficile* infection before lab testing was sent on day 4 or later.
- Capturing CDI infection early in hospitalization is not only essential to proper diagnosis and management of CDI, but also mitigates the likelihood that CDI present on admission must be reported as HO-CDI because of delayed recognition/diagnosis.

## Method

- This is a single center retrospective study of all HO-CDI cases identified from January 2018 through January 2022.
- All cases were reviewed to determine if patients had loose stools during days 1-3 which were not tested, as these may have been missed opportunities to diagnose CO-CDI.
- We used nursing flowsheet determine if the patient had soft, loose, watery, liquid or pasty stool bowel movements (BM) during those first three days of hospitalization.

## Results

- We identified 302 unique patients diagnosed with HO-CDI during the 4 year study period.
- 181 (60%) were men.
- The mean age 57 (range 3-98 years),
- We found increasing case numbers with increasing age groups (Fig 1):
  - Age 0-18 (19/6.3%),
  - Age 19-39 (39/12.9%),
  - Age 40-59 (73/24.2%),
  - Age  $\geq$  60 (171/56.6%).
- Mean time of HO-CDI diagnosis was 12.4 days (range 4-122 days).
- Overall, 119/302 (39.0%) of all patients classified as having HO-CDI were found to have had missed opportunities for testing stools during days 1-3 of hospitalization.
- We found a skew towards *early* onset HO-CDI diagnosis as 86/302 (28.5%) of all patients with HO-CDI tested positive on days hospital 4-6 (Fig 2).
- 38/86 (44.2%) of patients with HO-CDI diagnosed on days 4-6 had missed opportunities for testing (Fig 3).
- 40/302 (13.2%) patients expired during the index hospitalization.



## Figures 2 & 3

Early Onset HO-CDI

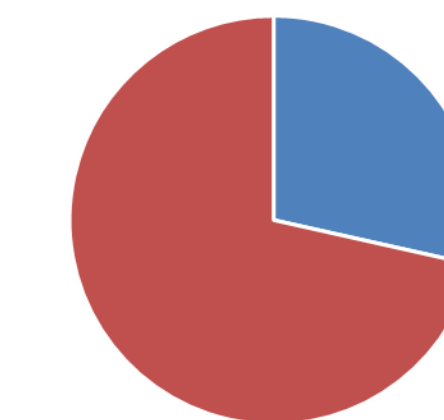


Fig 2

Stools Tested for CDI During Days1-3

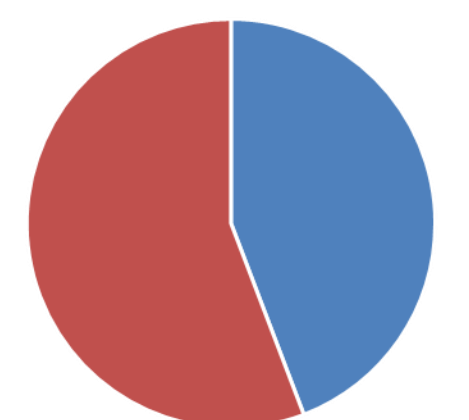


Fig 3

■ Diag day 4-6 ■ Diag day  $\geq$  7 ■ Missed Opportunity ■ No Opportunity

## Conclusion

- Establishing systems to better track patients' symptoms, number and consistency of BMs could improve earlier recognition of patients presenting with CO-CDI.
- In turn, this would offer the opportunity to:
  - To institute *earlier* isolation of patients with CDI
  - To start earlier treatment for these patients
  - To decrease HO-CDI resulting from late recognition of what was actually CO-CDI (e.g., to stop falsely inflating HO-CDI case numbers)
  - To help curtail secondary hospital transmission from delayed isolation of patients with CDI.
- Our findings likely represent a significant **under estimation** of the magnitude of the errors of omission of missing opportunities for early diagnosis of CDI since it based on review of nursing flowsheets which **often miss** the number and consistency of patients' BMs.

## Disclosures

None

