# Community-acquired *Clostridioides difficile* infection: a prospective study in an unselected population.

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## Introduction and objectives

- *Clostridioides difficile* infection (CDI) is the most common cause of hospital acquire diarrhea in developed countries.
- However during the last decades, there has been noted an increment in CDI cases acquired in the community (CA-CDI).
- These patients supposedly have less known risk factors and are usually unrecognized or underdiagnosed.
- Prospectively evaluated CDI series without a restrictive criteria or selection bias are scarce.
- The objective of this study was to assess the epidemiology, clinical characteristics and outcome of CA-CDI in an unselected population.

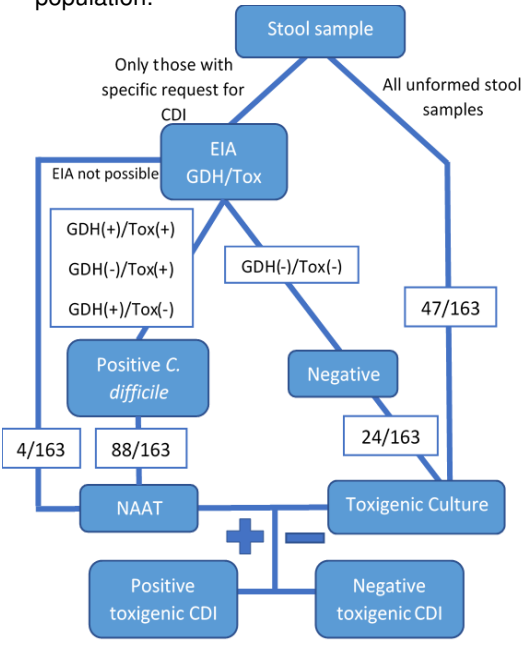


Fig 1: Diagnostic algorithm.

| Demographic data | |
|---|---|
| Age, median years (IQR) | 57.9 y (39.95-79.75) |
| Female | 57/163 (65 %) |
| **McCabe and Jackson** | |
| Non-fatal | 136/154 (88.3 %) |
| Ultimately fatal | 18/154 (17.7 %) |
| Rapidly fatal | 0/163 |
| **Underlying condition** | |
| None | 9/163 (5.5 %) |
| Gastrointestinal | 94/163 (57.7 %) |
| Cardiovascular | 80/163 (49.1 %) |
| Metabolic | 75/163 (46 %) |
| Charlson score, median (IQR) | 1.0 (0-3.0) |
| Previous CDI | 20/163 (12.3%) |
| Biologics | 20/163 (12.3%) |
| **CDI Risk factors in the previous month** | |
| Antibiotics | 102/163 (62.6 %) |
| Proton pump inhibitors | 102/163 (62.6 %) |
| Anti H2 | 8/163 (4.9 %) |
| Mechanical ventilation | 1/163 (0.6%) |
| Surgery | 11/163 (6.7 %) |
| Chemo/radiotherapy | 9/163 (5.5 %) |
| Dialisis | 3/163 (1.8 %) |
| **CDI Risk factors in the 12 previous weeks** | |
| Physician office visit | 106/159 (66.7 %) |
| Dentist visit | 27/90 (30 %) |
| Surgery or procedure | 17/162 (10.5 %) |
| Inpatient care without ONS | 67/159 (42.1 %) |
| Emergency department | 76/161 (47.2%) |
| Dialisis | 3/162 (1.9 %) |
| Chemo/radiotherapy | 9/162 (5.6%) |
| Healthcare worker | 9/144 (6.3 %) |
| **CDI initial episode** | |
| Community onset | 156/163 (95.7 %) |
| Clinical Suspicion | 117/163 (71.8 %) |
| Hospitalization CDI-related | 50/163 (30.7 %) |
| Days with diarrhoea (IQR) | 10.0 (7.0-17.00) |
| Fever | 37/163 (22.7 %) |
| Abdominal pain | 90/163 (55.2 %) |
| Abdominal distension | 21/163 (12.9 %) |
| Ileus | 1/163 (0.6 %) |
| Toxic Megacolon | 1/163 (0.6 %) |
| Pseudomembranous colitis | 1/163 (0.6%) |
| Treated patients | 135/163 (82.8 %) |
| **Severity** | |
| Mild-moderate | 122/163 (74.8 %) |
| Severe | 26/163 (16.6 %) |
| Severe-complicated | 13/163 (8 %) |
| **Outcome** | |
| ICU | 5/163 (3.1 %) |
| R-CDI | 24/163 (14.7 %) |
| TF-CDI | 3/135 (2.2 %) |
| Overall Mortality | 8/163 (4.9 %) |
| Mortality CDI | 1/163 (0.6 %) |
| POOR EVOLUTION | 32/163 (19.6 %) |

Table 1. Demographics and clinical characteristics of CA-CDI patients.

## Materials & Methods

- Our institution is a large teaching hospital with a number of beds of 1349.
- From July 2018 to March 2020 (ongoing study) every *C. difficile* positive sample (Fig 1) in our laboratory was prospectively analyzed and classified as CA-CDI attending to SHEA/IDSA criteria.
- Patients aged >18 years and only initial episodes were enrolled and monitored at least 2 months after their last episode.
- Recurrences (R-CDI) were considered during this 2 months period.
- Episodes occurring 2 months after initial CA-CDI were considered new episodes.

## Results

- 1122 samples were positive during the study period, corresponding to 788 patients and 840 episodes.
- 250 CA-CDI cases were identified, out of which 163 have fulfilled CDI criteria and completed the study follow-up. Median age was 57.9 years and 65% were female.
- 5.5% of patients had no underlying condition and median Charlson comorbidity index was 1.0 (IQR 0.0-3.0).
- Risk factors for CDI most present in the previous month were having reiceived antibiotics and proton pump inhibitors (62.6% each). Antibiotic usage during the initial diarrhoea episode was present in 27.6% of the patients.
- Other causes of diarrhoea were present in 73%, which includes inflamatory bowel disease (17.2%).
- Regarding severity, 74.8% of the episodes were mild to moderate, 16.6% severe and 8% severe-complicated.
- CDI antibiotic treatment is resumed in Table 2. FMT was given to 3 patients and bezlotoxumab to 2 patients.
- R-CDI ocurred in 14.7% of the patients and CDI-related mortality in 0.6%.

Table 2. Antibiotic treatment for CDI.

| CDI Treatment | | |
|---|---|---|
| Metronidazole | 48/135 (35,5 %) | Metro <48 h |
| Vancomycin, standard | 56/135 (41,5%) | 7/135 (5,2 %) |
| Fidaxomicin | 2/135 (1,5 %) | 1/135 (0,7 %) |
| Vancomycin tappering | 5/135 (3,7 %) | 2/135 (1,5 %) |
| Combined fidaxo+vanco | 1/135 (0,7 %) | 1/135 (0,7 %) |
| Combined metro+vanco | 12/135 (8,9 %) | |

## Conclusions

- One third of CA-CDI cases would have gone underdiagnosed due to lack of suspicion.
- Interestingly, about one third of the CA-CDI cases did not have recent antibiotic exposure.
- Most of the cases were mild to moderate, however nearly a third of the patients (30.7%) required CDI-related hospitalization.
- We found that a significant proportion of the patients developed R-CDI and CA-CDI related mortality was low.