**Table 1: The clinical course and treatment of C. difficile infections in pediatric oncology and HSCT patients**

| Clinical course and treatment of CDI episodes | Value |
|---------------------------------------------|-------|
| Abdominal pain, n (%)                        | 94 (32%) |
| Presence of colitis, n (%)                   | 48 (51%) |
| Location of CDI, n (%)                       | 63 (22%) |
| Hospital admission, n (%)                    | 161 (54%) |
| Outpatient                                  | 137 (46%) |
| C. difficile NOS classification for incident or recurrent episodes, n (%) | 233 (78%) |
| Incident                                    | 65 (22%) |
| Recurrent                                   | 168 (55%) |
| C. difficile NOS classification for CDI onset, n (%) | 97 (32%) |
| Community onset                             | 95 (32%) |
| Community-onset - Healthcare facility associated | 104 (36%) |
| Associated symptoms and signs, n (%)         | 143 (48%) |
| Fever                                       | 86 (29%) |
| Chills                                      | 41 (14%) |
| Diarrhea                                    | 278 (93%) |
| Vomiting                                    | 73 (24%) |
| Abdominal pain                              | 78 (26%) |
| Dehydration                                 | 15 (5%) |

Clinical appearance at presentation, n (%)  
- Well: 222 (75%)  
- Sick: 75 (39%)  
- Dead: 10 (3%)  
- Not available: 16 (5%)

Median (range) duration of diarrhea in days  
- 10 (1-77)

Treatment, n (%)  
- Metronidazole: 209 (71%)  
- Vancomycin PO: 46 (15%)  
- FEP: 22 (7%)  
- CTZ: 15 (5%)  
- Combination: 15 (5%)  
- No treatment: 6 (2%)

Co-infection, n (%)  
- 46 (15%)

Adverse events  
- Adedoxon: 21 (48%)  
- Noroxin: 15 (32%)  
- Rotavirus: 5 (10%)  
- Microlax: 1 (2%)

HSCT, hematopoietic stem cell transplant; NYS, National Healthcare Safety Network; CDI, Clostridioides difficile infection.

**Table 2: The outcomes of C. difficile infections in pediatric oncology and HSCT patients**

| Clinical outcomes | Value |
|-------------------|-------|
| Hospitalization due to CDI, n (%) | 30 (15%) |
| Median (range) length of hospitalization due to CDI in days | 3 (1-49) |
| Complications within 30 days of CDI, n (%) | 118 (39%) |
| Hospital readmission | 4 (1%) |
| Sepsis | 16 (5%) |
| Dehydration | 8 (3%) |
| Hypoalbuminemia | 12 (4%) |
| Respiratory distress | 23 (8%) |
| DIC | 1 (0.3%) |
| Renal failure | 8 (3%) |
| Chemotherapy during CDI, n (%) | 188 (61%) |
| Chemotherapy modified due to CDI, n (%) | 28 (10%) |
| Chemotherapy delayed due to CDI, n (%) | 11 (3%) |
| ICU admission due to CDI, n (%) | 0 |
| All-cause mortality | 4 (1.3%) |
| Attributable mortality to CDI within 30 days, n (%) | 0 |

HCT, hematopoietic stem cell transplant; CDI, Clostridioides difficile infections; CRC, disseminated intravascular coagulation.

**Table 3: Univariate analysis to assess potential risk factors for CDI recurrence**

| Description | Odds Ratio | 95% Confidence Limits | P-value |
|-------------|------------|-----------------------|---------|
| Age at diagnosis in years | | | |
| <1yr vs >1yr | 0.64 | [0.07, 5.59] | 0.68 |
| 1-5yr vs 6-10yr | 1.74 | [0.88, 3.53] | 0.12 |
| 5-10yr vs >10yr | 1.00 | [0.39, 2.55] | 1.00 |
| Male sex | 3.14 | [0.61, 1.52] | 0.67 |
| Race | | | |
| Black vs other | 1.22 | [0.30, 5.02] | 0.77 |
| White vs other | 1.29 | [0.41, 4.05] | 0.65 |
| Primary disease at diagnosis | | | |
| Leukemia / lymphoma vs. ID | 0.22 | [0.03, 1.65] | 0.14 |
| [Solid / Central nervous system] vs. ID | 0.24 | [0.04, 2.59] | 0.30 |
| Service at diagnosis | | | |
| HSCT vs. [Solid organ / brain tumor] | 0.70 | [0.32, 1.52] | 0.37 |
| Leukemia vs. [Solid organ / brain tumor] | 0.54 | [0.25, 1.13] | 0.10 |
| Neutropenia | 1.51 | [0.80, 2.85] | 0.19 |
| Inpatient location at time of diagnosis | 0.93 | [0.51, 1.74] | 0.82 |
| Chemotherapy prior 4 weeks | 0.81 | [0.35, 1.86] | 0.62 |
| Acid suppressors prior 4 weeks | 1.23 | [0.62, 2.46] | 0.54 |
| Leukemia vs. [Solid organ / brain tumor] | 0.54 | [0.25, 1.13] | 0.10 |
| Neutropenia | 1.51 | [0.80, 2.85] | 0.19 |
| Inpatient location at time of diagnosis | 0.93 | [0.51, 1.74] | 0.82 |
| Chemotherapy prior 4 weeks | 0.81 | [0.35, 1.86] | 0.62 |
| Acid suppressors prior 4 weeks | 1.23 | [0.62, 2.46] | 0.54 |
| Leukemia vs. [Solid organ / brain tumor] | 0.54 | [0.25, 1.13] | 0.10 |
| Neutropenia | 1.51 | [0.80, 2.85] | 0.19 |
| C. difficile classification per CDC | | | |
| HD vs. CO | 1.81 | [0.73, 4.52] | 0.33 |
| CONC/CA vs. CO | 1.55 | [0.70, 3.45] | 0.27 |
| CDI treatment | | | |
| Combination vs. Metronidazole | 0.85 | [0.33, 2.11] | 0.59 |
| Fidaxnomycin vs. Metronidazole | 0.46 | [0.10, 1.94] | 0.32 |
| Vancomycin vs. Metronidazole | 0.75 | [0.29, 1.96] | 0.56 |
| HSCT recipient | 1.39 | [0.70, 2.40] | 0.34 |
| Hospitalization due to CDI | 0.77 | [0.25, 2.40] | 0.65 |
| Combination vs. Metronidazole | 0.85 | [0.33, 2.11] | 0.59 |
| Fidaxnomycin vs. Metronidazole | 0.46 | [0.10, 1.94] | 0.32 |
| Vancomycin vs. Metronidazole | 0.75 | [0.29, 1.96] | 0.56 |

Disclosures: Randall Hayden, MD, Abbott Molecular; Advisory Board; Quidel; Advisory Board; Roche Diagnostics: Advisory Board.
In this study, we documented that implementing a standardized strategy of surveillance, diagnosis and adequate treatment, reduced mortality related to C. difficile infection, and in many hospitals, metronidazole is the most prescribed treatment. Unfortunately, in our country, there are no guidelines for the management of C. difficile infection, and in many hospitals, metronidazole is the most prescribed treatment. In this study, we documented that implementing a standardized strategy of surveillance, diagnosis and adequate treatment, reduced mortality related to C. difficile infection, and in many hospitals, metronidazole is the most prescribed treatment.

**Results.** In 15 month study period, 92 cases of C. difficile infection were documented. All cases were caused by strain NAP1 / B1 / 027. Twenty-three patients (25%) had mild disease, 28 (30.4%) moderate illness and 41 (44.56%) complicated illness. Thirty-four patients were evaluated with multimodal strategy and 58 according to the traditional treatment. Only 24 patients (41%) in the traditional treatment group received treatment with oral vancomycin. The clinical outcomes of patients in the multimodal strategy against patients with the traditional strategy were: clinical cure 85.3% vs 37.9% (P = 0.02), recurrence 2.9% vs 17.2% (p < 0.05) and death 11.8% vs 44.8%(p < 0.05), respectively.

**Conclusion.** Unfortunately, in our country, there are no guidelines for the management of C. difficile infection, and in many hospitals, metronidazole is the most prescribed treatment. In this study, we documented that implementing a standardized strategy of surveillance, diagnosis and adequate treatment, reduced mortality related to C. difficile infection, recurrence, and achieved greater clinical cure.

**Figure 1: Survival Analysis**

- Cases and deaths related to C. difficile infection before and after implementation of multimodal strategy.

- **Table 1: Demographics**

| Source                     | Unadjusted Odds Ratio | 95% CI     | Adjusted Odds Ratio | 95% CI     | P-value |
|----------------------------|-----------------------|------------|---------------------|------------|---------|
| Age                        | 1.01                  | 0.76-1.34  | 1.02                | 0.77-1.35  | 0.14    |
| Male                       | 1.02                  | 0.76-1.34  | 1.02                | 0.77-1.35  | 0.14    |
| Charlson Comorbidity Index | 1.10                  | 0.97-1.25  | 1.10                | 0.97-1.25  | 0.03    |
| Age                        | 1.01                  | 0.76-1.34  | 1.02                | 0.77-1.35  | 0.14    |

**Table 2: PTZ Multivariate Regression Model**

| Source                     | Unadjusted Odds Ratio | 95% CI     | Adjusted Odds Ratio | 95% CI     | P-value |
|----------------------------|-----------------------|------------|---------------------|------------|---------|
| High-Risk Antibiotic Therapy| 1.42                  | 0.88-2.35  | 1.42                | 0.88-2.35  | 0.007   |
| Appendectomy                | 1.42                  | 0.88-2.35  | 1.42                | 0.88-2.35  | 0.007   |
| Male                       | 1.42                  | 0.88-2.35  | 1.42                | 0.88-2.35  | 0.007   |
| Charlson Comorbidity Index | 1.10                  | 0.97-1.25  | 1.10                | 0.97-1.25  | 0.03    |
| Age                        | 1.01                  | 0.76-1.34  | 1.02                | 0.77-1.35  | 0.14    |

**Table 3: FEP/CTZ Multivariate Regression Model**

**Disclosures.** All authors: No reported disclosures.

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**2386. Mortality reduction with implementation of a standardized approach of surveillance, diagnosis and treatment of Clostridioides difficile infections.**

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**Session:** 251. HAI: C. difficile - Epidemiology

Saturday, October 5, 2019: 12:15 PM

**Background.** C. difficile (C. difficile) infection is the main cause of nosocomial diarrhea in the world. In our hospital, there was no standardized protocol for diagnosis and treatment of this infection. The aim of this study was to measure the impact of implementing a multimodal strategy of active surveillance, diagnosis and treatment in the clinical outcome of patients with C. difficile infection.

**Methods.** Observational, retrospective, and analytical study that compared a multimodal strategy for the treatment of C. difficile infection against a traditional strategy, which consisted of treatment with either metronidazole or vancomycin with variable duration of therapy depending on the physicians’ choice. The multimodal strategy consisted of active surveillance of cases of nosocomial diarrhea, timely diagnosis (<12 hours), and standard treatment with oral vancomycin for a minimum of 10 days (125 mg po qid in mild and moderate illness, and 250 mg qid in severe disease). Patients with a confirmed diagnosis of C. difficile infection (PCR - Gene Xpert Cepheid) and inflammatory diarrhea were included. The study was carried out in a third-level hospital, in the period between September 2017 and December 2018.

**Results.** In 15 month study period, 92 cases of C. difficile infection were documented. All cases were caused by strain NAP1 / B1 / 027. Twenty-three patients (25%) had mild disease, 28 (30.4%) moderate illness and 41 (44.56%) complicated illness. Thirty-four patients were evaluated with multimodal strategy and 58 according to the traditional treatment. Only 24 patients (41%) in the traditional treatment group received treatment with oral vancomycin. The clinical outcomes of patients in the multimodal strategy against patients with the traditional strategy were: clinical cure 85.3% vs 37.9% (P = 0.02), recurrence 2.9% vs 17.2% (p < 0.05) and death 11.8% vs 44.8%(p < 0.05), respectively.

**Conclusion.** Unfortunately, in our country, there are no guidelines for the management of C. difficile infection, and in many hospitals, metronidazole is the most prescribed treatment. In this study, we documented that implementing a standardized strategy of surveillance, diagnosis and adequate treatment, reduced mortality related to C. difficile infection, recurrence, and achieved greater clinical cure.

**2387. Learning the Influence of Individual Clostridioides difficile Infections**

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**Session:** 251. HAI: C. difficile - Epidemiology

Saturday, October 5, 2019: 12:15 PM

**Background.** Healthcare-associated C. difficile infection (CDI) imposes a substantial burden on the healthcare system. The impact of an individual C. difficile infection on onward transmission is not well understood. We developed a model of incident infections using self-exciting stochastic processes, known as Hawkes processes. These models can be used to improve our understanding of the factors that affect the likelihood of new infections to result in additional infections.

**Methods.** All patients admitted to a large urban hospital between January 2013 and June 2014 were included. We used Hawkes processes to model the influence of each new CDI case (index infection) on transmission to other patients resulting in additional CDI. We developed separate Hawkes processes for each unit in the hospital to understand the differential impact of a CDI case across units. Units included both semi- and private-room wards, intensive care units, an emergency department, and specialty units such as oncology.

**Results.** The magnitude of influence of an index infection on additional infections in the 2 days prior to a CDI test being sent varied across units. Results for an oncology unit, the emergency department, and an all private-room unit are provided (Table 1). An index infection in the emergency department demonstrated the greatest influence, leading to the largest number of additional infections, and increasing in the days leading up to the CDI test being sent. The impact 2 days prior to sample collection was similar across all unit types, and remained constant for oncology unit patients.

**Conclusion.** We used Hawkes processes to model the impact of an index C. difficile infection on onward transmission. We identified differential impacts associated with the unit where the index patient was located in the days leading up to diagnosis. These differences, which could relate to unit-specific factors such as cleaning practices, patient turnover rates, use of portable medical equipment, antibiotic use, and other factors that vary across units, suggest that interventions aimed at controlling CDI may need to consider unit-specific approaches.

**Disclosures.** All authors: No reported disclosures.

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**Table 1: Increase in expected number of infections per 1000 patient-days.**

| Unit       | Day of sample collection | Day prior to sample collection | Two days prior to sample collection |
|------------|--------------------------|-------------------------------|-----------------------------------|
| Emergency  | 1.86                     | 0.96                          | 2.75                              |
| Oncology   | 1.86                     | 0.96                          | 2.75                              |
| Private    | 1.86                     | 0.96                          | 2.75                              |

Notes: Each entry represents the contribution of the index infection to additional patient-days (PD), relative to day of sample collection and by patient unit location.

**Disclosures.** All authors: No reported disclosures.