Background. Annually in the US alone, *Clostridioides difficile* infection (CDI) afflicts nearly 500,000 patients causing 29,000 deaths. Since early and aggressive interventions could save lives but are not optimally deployed in all patients, numerous studies have published predictive models for adverse outcomes. These models are usually developed at a single institution, and largely are not externally validated. This aim of this study was to validate the predictability for severe CDI with previously published risk scores in a multicenter cohort of patients with CDI.

Methods. We conducted a retrospective study on four separate inpatient cohorts with CDI from three distinct sites: the Universities of Michigan (2010–2012 and 2016), Chicago (2012), and Wisconsin (2012). The primary composite outcome was admission to an intensive care unit, colectomy, and/or death attributed to CDI within 30 days of positive test. Structured query and manual chart review abstracted data from the medical record at each site. Published CDI severity scores were assessed and compared with each other and the IDSA guideline definition of severe CDI. Sensitivity, specificity, area under the receiver operating characteristic (AuROC), precision-recall curves, and net reclassification index (NRI) were calculated to compare models.

Results. We included 3,775 patients from the four cohorts (Table 1) and evaluated eight severity scores (Table 2). The IDSA (baseline comparator) model showed poor performance across cohorts (Table 3). Of the binary classification models, including those that were most predictive of the primary composite outcome, Jardin, Toro, and ATLAS performed better, but the AuROC varied per site by up to 17% (Table 3). Of the continuous score models, Toro and ATLAS, performed better, but the AuROC varied.

Conclusion. No published CDI severity score showed stable, acceptable predictive ability across multiple cohorts/institutions. To maximize performance and clinical utility, future efforts should focus on a multicenter-derived and validated scoring system, and/or incorporate novel biomarkers.

Table 1. Characteristics of the study population.

| University of Michigan (2010-2012) | University of Michigan (2016) | University of Wisconsin (2014-2015) | University of Wisconsin (2013-2015) |
|----------------------------------|-----------------------------|---------------------------------|---------------------------------|
| Total Patients                  | 1164                        | 646                             | 515                             |
| Age (years) [mean SD]           | 57.2±18.0                   | 57±18.2                         | 55±16.1                         | 57±18.5                          |
| Severe CDI [%]                  | 90±7.9%                     | 29±4.5%                         | 35±6.8%                         | 64±5.8%                          |
| Male [%]                        | 519±45.3%                   | 330±47.6%                       | 251±48.7%                       | 639±47.8%                        |
| WBC (x10^3/Cells/µL) [mean SD]  | 13.4±2.4                    | 12.2±1.5                        | 12.7±1.9                        | 11.2±1.9                         |
| Baseline Creatinine (mg/dL) [mean SD] | 1.4±1.7                  | 1.2±1.1                         | N/A                             | 1.6±2.2                          |
| Outcomes                        |                             |                                 |                                 |                                 |
| 30 Day Mortality [%]            | 89±7.8%                     | 41±6.3%                         | 45±8.7%                         | 117±7.8%                         |
| ICU Transfer [%]                | 114±10.0%                   | 11±1.7%                         | 61±11.8%                        | 84±6.3%                          |
| Colectomy [%]                   | 6±0.5%                      | 3±0.5%                          | 6±1.2%                          | 21±1.6%                          |
| Attributable Outcomes           |                             |                                 |                                 |                                 |
| 30 Day Mortality [%]            | 49±4.3%                     | 23±3.0%                         | 17±3.3%                         | 39±2.9%                          |
| ICU Transfer [%]                | 49±4.3%                     | 5±0.8%                          | 26±0.5%                         | 18±1.3%                          |
| Colectomy [%]                   | 4±0.3%                      | 1±0.2%                          | 5±1%                            | 16±1.2%                          |

Table 2. Published severe CDI scoring systems assessed in this study.

| Score Description | IDSA | Zer | Gujja | Belmares | Na | Jardin | Toro | ATLAS |
|-------------------|------|-----|-------|----------|----|--------|------|-------|
| Location          | WBC <15.000/µL & S/A or WBC <3.50 & S/A or WBC <15.000/µL & S/A | WBC <15.000/µL & S/A or WBC <3.50 & S/A or WBC <15.000/µL & S/A | WBC <3.50 & S/A or WBC <15.000/µL & S/A | WBC <3.50 & S/A or WBC <15.000/µL & S/A | WBC <3.50 & S/A or WBC <15.000/µL & S/A | WBC <3.50 & S/A or WBC <15.000/µL & S/A | WBC <3.50 & S/A or WBC <15.000/µL & S/A |
| Discrimination    | Binary | Binary | Binary | Binary | Binary | Binary | Binary | Binary |

Table 3. Performance measures of the CDI severity scoring systems across cohorts vs. the primary composite outcome (attributable 30-day ICU admission, colectomy, and/or death).

| University of Michigan (2010-2012) | University of Michigan (2016) | University of Wisconsin (2014-2015) | University of Wisconsin (2013-2015) |
|----------------------------------|-----------------------------|---------------------------------|---------------------------------|
| Sensitivity [%]                  | 0.69±0.03                   | 0.69±0.03                       | 0.69±0.03                       | 0.69±0.03                       |
| Specificity [%]                  | 0.42±0.02                   | 0.42±0.02                       | 0.42±0.02                       | 0.42±0.02                       |
| Area under the ROC curve (AUC)  | 0.72±0.03                   | 0.72±0.03                       | 0.72±0.03                       | 0.72±0.03                       |

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2410. Molecular Characteristics of Environmental *Clostridioides difficile* From a Large Texas Hospital

Khirushida Begem, PhD1; M Jahangir Alam, PhD2; Jacob McPherson, BS3; Gabriela Costa, BS2; Julie M. Lancaster, MS1; Kevin W. Garey, PharmD, MS, FASHP1; 1University of Houston College of Pharmacy, Houston, Texas; 2The University of Houston College of Pharmacy, Houston, Texas; 3The University of Houston College of Pharmacy, Houston, Texas; 4The University of Houston College of Pharmacy, Houston, Texas

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Background. *Clostridioides difficile* is an anerobic spore-forming, toxin-producing Gram-positive bacillus listed by the CDC as an “urgent threat” pathogen. Epidemiologic studies using whole-genome sequencing (WGS) have found that genetically distinct lineages infections occur in hospitalized patients, in addition to the fact that *C. difficile* spores persist on hospital surfaces after disinfection. The purposes of this study were to isolate and characterize *C. difficile* strain types in various hospital settings.

Methods. We collected 330 swab samples of hospital environmental surfaces using sterile cotton gauze. The samples were then anaerobically enriched in brain heart infusion broth for 48–72 hours and plated onto cycloheximide–cefsulodin fructose agar (CCFA). Suspected colonies were then genetically characterized using PCR (for tcdA, tcdB, cdtA, cdtB) and genotyped using fluorescent PCR ribotyping techniques.

Results. A total of 90/330 (27.3%) environmental samples were culture positive for *C. difficile*, of which 75/90 (82.1%) tested were toxigenic. The environmental isolates were then genetically characterized using PCR for tcdA, tcdB, cdtA, cdtB (and Spa genes) and genotyped using fluorescent PCR ribotyping techniques.

Conclusions. We found a diversity of *C. difficile* strain types in various hospital high-touch surface environment in addition to ribotype F027 and F078, suggesting the hospital environment a reservoir and significant source of *C. difficile* infections.

Disclosures. All authors: No reported disclosures.

2411. One Dose Vancomycin Prophylaxis for In-Hospital *Clostridioides difficile* - Associated Disease

Neven Panic, MD, PhD1; Lorna Stemberger Maric, MD, PhD1; Davorka Dusek, MD, MD2; Adrian Vence, MD, PhD1; 1University Hospital for Infectious Diseases Zagreb, Zagreb, Grad Zagreb, Croatia

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Background. *Clostridioides difficile* - associated disease (CDAD) is the most common cause of healthcare-associated diarrhea with increasing prevalence and mortality rates. Recent reports suggest that prophylactic administration of vancomycin or fidaxomicin might reduce in-hospital CDAD incidence. The aims of this study were to
24.13. Assessment of compliance with Clostridiose difficile prophylaxis. The study was to evaluate the compliance to this guideline and evaluate the efficacy of it preventing recurrent CDI.

Methods. This was an IRB approved retrospective study performed at a 607-bed community health system between 2014–2016. Patients were included if they were 218 years old and admitted for ≥24 hours on BSA with history of CDI in last 6 months. CDI prophylaxis was provided to high-risk patients. Patients were excluded if they had active CDI receiving metronidazole or treatment doses of oral vancomycin. Patients were compared in two cohorts: Study group which was patients in CDP group which were matched to control group. The primary objective of the study was to evaluate the compliance of CDP guidelines and incidence of hospital-onset CDI (HO-CDI) between CDP group and control group. The secondary objective focused on all-cause inpatient mortality and 30-day readmission between two groups.

Results. There were total of 72 patients reviewed and 47 patients met the inclusion criteria for CDP group which were matched with control group. Most common type of infection and BSA were pneumococca (26%) and broad-spectrum cephalosporins (31%), respectively. CDP guidelines compliance was measured at ≥5%. The incidence of HO-CDI/1000 patient-days during the admission was lower in CDP group compared with control group (2.02 vs 5.4 per 10,000 PD, P = 0.03). No differences were seen in all-cause inpatient mortality and 30-day readmission between two groups. Forty-five percent of patients suffered from CDI ≥3 months prior to admission. The most common dose of oral vancomycin was 125 mg PO BID.

Disclosures. All authors: No reported disclosures.