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Session: 251. HAI: *C. difficile* - Epidemiology
Saturday, October 5, 2019: 12:15 PM

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 operator characteristic curve (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, performed poorly with minimal to no NRI improvement compared with IDSA. The continuous score models, Toro and ATLAS, performed better, but the AuROC varied by site by up to 17% (Table 3). The Gujja model varied the most: from most predictive in the University of Michigan 2010–2012 cohort to having no predictive value in the 2016 cohort (Table 3).

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.

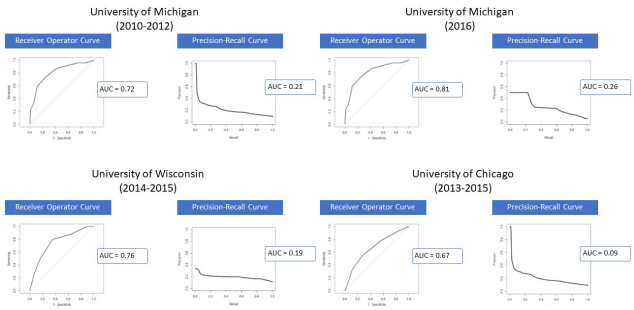

Figure 1: Area Under the Receiver Operator Curves and Precision Recall Curves for ATLAS Model

Table 1. Characteristics of the study population.

	University of Michigan (2010-2012)	University of Michigan (2016)	University of Wisconsin (2014-2015)	University of Chicago (2013-2015)
Total Patients	1144	646	515	1343
Age (years) [mean± SD]	57.3±18.0	57.7±18.2	59.3±16.1	58.7 ±18.5
Severe C Diff [n (%)]	90(7.9%)	29 (4.5%)	35 (6.8%)	64 (5.8%)
Male [n (%)]	519 (45.3%)	330 (47.6%)	251(48.7%)	639 (47.8%)
WBC (x10^{3}cells/μL) [mean ± SD]	13.4± 12.4	12.2±15.5	12.7±19.5	11.2 ±11.9
Baseline Creatinine (mg/dL) [mean± SD]	1.4± 1.7	1.2±1.3	N/A	1.6 ±2.2
Peak Creatinine (mg/dL) [mean± SD]	1.6±1.8	1.3±1.8	2.0±2.4	2.1±2.4
Outcomes				
30 Day Mortality [n (%)]	89 (7.8%)	41 (6.3%)	45 (8.7%)	117(8.7%)
ICU Transfer [n (%)]	114 (10.0%)	11 (1.7%)	61 (11.8%)	84(6.3%)
Colectomy [n (%)]	6 (0.5%)	3 (0.5%)	6 (1.2%)	21(1.6%)
Attributable Outcomes				
30 Day Mortality [n (%)]	49 (4.3%)	23 (3.6%)	17 (3.3%)	39(2.9%)
ICU Transfer [n (%)]	49 (4.3%)	5 (0.8%)	26 (5.0%)	18(1.3%)
Colectomy [n (%)]	4 (0.3%)	1 (0.2%)	5(1%)	16(1.2%)

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

Name	Description
IDSA	Binary: WBC >15000 cells/μL and/or 1.5-fold increase of serum creatinine from baseline
Zar	Binary: 2 or more points: Age >60 years, temperature >38.3°C, albumin level <2.5mg/dL, or peripheral WBC >15,000 cells/μL are worth 1 point. Admission to the ICU or pseudomembranes on endoscopy are each worth 2 points.
Gujja	Binary: An elevation of the WBC > 30,000 cells/μL and 1.5-fold increase of serum creatinine from baseline
Belmares	Binary: 1 point for each of the following: Temperature ≥ 38°C, Ileus, SBP<100mmHg. Point scale for WBC: <15,000cells/μL (0), ≥15,000cells/μL - <30,000cells/μL (1)≥30,000cells/μL. Point scale for CT findings: No findings (0), 1 Finding (1),≥2 Findings (20
Na	Binary:2 or more: Age>65years, Peak serum creatinine >2mg/dL, or WBC>20,000 cells/μL
Jardin	Binary: Any two of the following: intensive care unit admission, Age >60 years, Temperature >38.3°C, Albumin <2.5 mg/dL, WBC >15,000 cells/μL
Toro	Continuous: 1 point for each of the following: Altered mental status, abdominal pain or distention, WBC >20,000 cells/μL or <1500 cells/μL, Albumin <2.5 mg/dL, ascites or colitis on imaging, MAP<65mmHg, Temperature ≥ 101°F, Tachycardia >110bpm, Admission or ICU transfer
ATLAS	Continuous: Point scale: Age: < 60 years (0), 60 -79 years (1), >=80 years (2),Treatment with systemic antibiotics during CDI therapy (>1 day) No (0), Yes (1),Temperature: ≤37.5°C (0), 37.6°C - 38.5°C (1), ≥ 38.6°C (2), WBC: < 16,000cells/μL (0), 16,000 cells/μL-25,000 cells/μL (1), ≥ 25,000 cells/μL (2), Serum Albumin: > 35 g/L (0), 26 - 35 g/L (1), ≤25 g/L (2), Serum creatinine: ≤ 120 μmol/L (0), 121 - 179 μmol/L (1), ≥180 μmol/L (2)

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 Chicago (2013-2015)			
	Sen	Spec	AUC	NRI‡	Sen	Spec	AUC	NRI‡	Sen	Spec	AUC	NRI‡	Sen	Spec	AUC	NRI‡
IDSA	0.59	0.70	0.63	*	0.72	0.67	0.70	*	0.80	0.53	0.67	*	0.53	0.62	0.58	*
Zar	0.52	0.74	0.62	-0.01	0.68	0.73	0.62	0.03	0.77	0.72	0.75	0.16	0.42	0.81	0.62	0.07
Gujja	0.12	0.98	0.37	-0.01	0.00	1.00	-	-0.38	0.14	0.99	0.70	-0.20	0.03	0.99	0.50	-0.15
Belmares†	0.51	0.74	0.62	-0.03	0.5	0.88	0.69	0.02	0.34	0.93	0.64	-0.06	0.11	0.96	0.53	-0.10
Na	0.41	0.87	0.64	0.02	0.41	0.91	0.74	0.11	0.34	0.86	0.60	-0.13	0.34	0.81	0.57	-0.02
Jardin	0.52	0.71	0.67	-0.03	0.68	0.73	0.70	0.03	0.77	0.72	0.74	-0.27	0.42	0.82	0.62	0.07
Toro	0.23	0.94	0.66	0.01	0.21	0.97	0.83	0.07	0.21	0.97	0.81	0.20	0.07	0.98	0.69	0.13
ATLAS	0.16	0.95	0.72	0.07	0.15	0.98	0.81	0.17	0.14	0.98	0.76	-0.03	0.09	0.97	0.67	0.11

* Comparison model
ǂ NRI range from -2 to +2
‡ Score modified for Universities of Wisconsin and Chicago

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

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

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Background. *Clostridioides difficile* is an anaerobic 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* from the environment of a large Texas hospital.

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 cycloserine–cefoxitin fructose agar (CCFA). Suspected colonies were then genetically characterized using PCR (for *tcdA, tcdB, cdtA, cdtB* and *tpi* genes) 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 *C. difficile* by the presence of *tcdA, tcdB, cdtA* or *cdtB.* A total of 16 distinct ribotypes were identified from 41 *C. difficile* isolates tested using a fluorescent-ribotyping method. The predominant ribotypes isolated were F078–126 (8/41), F002 (5/41), F106 (4/41), F255 (4/41), and F014-020 (3/41).

Conclusion. 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 *C. difficile* infections.

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

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

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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