1305. External validation of predictive scores for mortality following *Clostridium difficile* infection

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Background. The burden of *Clostridium difficile* infection (CDI) has increased in the last decade, with more adverse outcomes and related mortality. Although many predictive scores were developed, few were validated and their performances were sub-optimal. We conducted an external validation study of predictive scores or models for mortality in CDI.

Methods. Published predictive tools were identified through a systematic review. We included those reporting at least an internal validation approach. A multicenter prospective cohort of 1380 adults with confirmed CDI enrolled in two Canadian provinces was used for external validation. Most cases were elderly (median age 71), had a healthcare facility-associated CDI (90%), and 52% were infected by NAP1/BI/027 strains. All-cause 30-day death occurred in 12% of patients. The performance of each scoring system was analyzed using individual primary outcomes.

Results. We identified two scores which performances (95% CI) are shown in the table. Both had low sensitivity and PPV, moderate specificity and NPV, and similar AUC/ROC (0.66 vs. 0.77 in the derivation cohort, and 0.69 vs. 0.75 respectively). One predictive model for 30 days all-cause mortality (Archbald-Pannone 2015, including Charlson score, WBC, BUN, diagnosis in ICU, and delirium*) was associated with only 5% increase in odds of death (crude OR = 1.05 (1.03–1.06)) with an AUC of 0.74 (0.7–0.8).

Study, outcome (%)	Predictors (assigned points)	Cutoff/ max score	Sen %	Spe %	PPV %	NPV %	LR +	Accuracy %
Kassam 2016 In hospital CDI-related mortality (18%)	Age (2–4) ICU admission (5) Acute renal failure* (3) Diabetes (-1) Cardiopulmonary disease* (1) Liver disease (2) IBD (2) Malignancy (2)	≥6 patients/19	44 (37–51)	79 (77–82)	31 (26–37)	87 (84–89)	2.1 (2–2.2)	73 (70-76)
Butt 2013 30-day all-cause mortality (12%)	Serum albumin ≤ 24.5 g/L (1) CRP > 228 mg/L (1) WBC > 12 and/ or respiratory rate > 17/ minute (1)	≥2 patients/3	56 (46–64)	77 (74–80)	25 (20–30)	93 (90–94)	2.4 (2.3–2.5)	74 (71–77)

*Modified to match available data in validation cohort.

Conclusion. The predictive models of CDI mortality evaluated in our study have limitations in their methods and showed moderate performances in a validation cohort consisting of a majority of CDI caused by NAP1 strains. An accurate predictive tool is needed to guide clinicians in the management of CDI to prevent adverse outcomes.

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1306. Risk factors for healthcare-associated *Clostridium difficile* infection in pediatric hematopoietic stem cell transplant recipients

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Background. Limited published literature exists to identify unique risk factors for *Clostridium difficile* infection (CDI) in pediatric hematopoietic stem cell transplantation (HSCT) recipients. Our objective was to describe the epidemiology of CDI in pediatric patients undergoing HSCT and to identify potential risk factors for CDI.

Methods. This IRB-waived, single-center retrospective review included Duke University Hospital (DUH) patients 12 months of age or older admitted to pediatrics between March 1, 2012 and August 23, 2016 undergoing initial HSCT during the index hospitalization. The primary endpoint (PCR-confirmed CDI within 100 days post-transplantation) was characterized using descriptive statistics. Transplant type, prior CDI history, days of total parenteral nutrition (TPN), and antibiotic use intensity scores were compared between occurrence groups using Pearson's chi-square, Wilcoxon rank-sum or Student's t tests as appropriate.

Results. 207 subjects (most Caucasian [55%] and male [61%]) were included, and 15 (7.2%) died. CDI occurred in 24 (12%) within a median (interquartile range) of 35 (9, 47) days since HSCT, and most (92%) were hospital-onset. All cases were healthcare-associated and mild-moderate in severity. None of the patients experienced CDI-related complications. CDI-positive and CDI-negative patients were similar with regards to demographics. Higher median (adjusted) days of TPN (80.6 vs. 29, $P < 0.0001$) and antibiotic use intensity scores (382.8 vs. 191.0, $P < 0.0001$), respectively, were associated with CDI. No significant differences between these groups were observed with regard to transplant type ($P = 0.28$) and prior CDI history ($P = 0.10$).

Conclusion. CDI occurred in 12% of pediatric patients within 100 days of undergoing initial HSCT. Onset of this mild-moderate, uncomplicated disease occurred within a median of 35 days and commonly during hospitalization. Patients with CDI were more likely to have increased use of TPN and a higher antibiotic use intensity score.

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1307. Derivation and Validation of a Clinical Prediction Rule for Complications of *Clostridium difficile* Infection Using a Multicenter Prospective Cohort

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Background. *Clostridium difficile*infection (CDI) outbreaks were associated with increase in unfavorable outcomes. Identifying and predicting risk of developing complications (cCDI) early in the course of illness could improve clinical decision-making. We developed and validated a prediction rule for cCDI.

Methods. Adult inpatients with confirmed CDI in 10 Canadian hospitals were enrolled and followed for 90 days. Data within 48h of CDI diagnosis were collected: demographics, underlying illnesses, past medical and drug history, clinical signs, blood tests, and strain ribotype. cCDI was defined as one or more of: colonic perforation, toxic megacolon, colectomy, need of vasopressors, ICU admission due to CDI, or if CDI contributed to 30-day death. Predictors' selection was supported by experts' opinion suggesting 17 clinical criteria. Cross-validation technique was used (2:1 ratio) and multivariable logistic regression for predictive modeling in the derivation subset. The optimal model was assessed by area under ROC curve (AUC) and prediction error (PE). A predictive score was built by assigning points proportional to adjusted risk estimates.

Results. Among 1380 patients enrolled, 1050 were used for predictive modeling (median age 70 years and one-third infected by ribotype 027 strains). Cases were split into training ($n = 700$) and validation sets ($n = 350$). A cCDI occured in 8% and 6.6% respectively. The optimal model with a PE of 5% and an AUC of 0.84 in the validation