1308. Are Patients with Prior *Clostridium difficile* Infection (CDI) a Potential Source of Transmission during Hospital Admissions? Melany Gonzalez-Orta, MD,1; Carlos Saldana, MD,1; Jennifer Cadnum, BS2; and Curtis J. Donskey, MD,2,3
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**Background.** Many patients with *Clostridium difficile* infection (CDI) continue to shed spores asymptomatically after completion of CDI therapy. However, the duration of shedding and the potential for transmission during subsequent healthcare exposures is unknown.

**Methods.** During a 6-month period, we collected perirectal, groin, and skin (chest/abdomen and hands) cultures for toxigenic *C. difficile* from patients with a prior history of CDI who were admitted to the hospital. We calculated the frequencies of perirectal and skin shedding of *C. difficile* at the time of admission, stratified by the time since the prior CDI diagnosis.

**Results.** Of 28 patients with a prior history of CDI enrolled in the study, 10 (36%) had positive perirectal cultures for toxigenic *C. difficile* upon admission, and 6 of 10 (60%) had positive skin cultures. The figure shows the percentages of CDI cases with positive perirectal, groin, or skin cultures, stratified by the time since the prior CDI diagnosis.

**Conclusion.** Patients with prior CDI often shed spores asymptomatically during hospital admissions. Further studies are needed to determine whether these carriers contribute significantly to transmission.

**Figure.** Percentages of CDI cases with positive perirectal, groin, or skin cultures, stratified by the time since the prior CDI diagnosis.

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

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1309. External validation of clinical scores to predict complications of *Clostridium difficile* infection Catherine Beauregard-Paultre, MD1; Claire Nour Abou Chakra, PhD2; Allison Meger, MD, MSC1; Annie-Claude Labbé, MD,1; Andrew E. Simon, MD, FRCP, FACG2; Wayne Gold, MD,1; Matthew P. Muller, MD, PhD, FRCP1,2; Jeff Powis, MD, MSC, FRCP1; Kevin Kate, MD, CM, MSC, FRCP1; Suzanne Cadarette, PhD3; Jacques Pépin, MD1; Julian R. Garneau, MSc1; and Louis Valiquette, MD, MSC, FRCP1,2,3
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**Conclusion.** The predictive tools included in our study showed moderate performance in a validation cohort with a low rate of cCDI and high proportion of NAP1 strains. Further research is needed to develop an accurate predictive tool to guide clinicians in the management of CDI.

**Disclosures.** J. Powis, Merck; Grant Investigator, Research grant; GSK: Grant Investigator, Research grant; Roche: Grant Investigator, Research grant; Synthetic Biologicals: Investigator, Research grant

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1310. Hospital Nursing Home Transfer Patterns and Influence on Nursing Home *Clostridium difficile* Infection Rates Lauren Campbell, MA1; Kristen Bush, MPH2 and Gihwa Dumyati, MD, FSHEA2
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Session: 150. HAI: C. difficile Risk Assessment and Prevention Friday, October 6, 2017: 12:30 PM

**Background.** *Clostridium difficile* infection (CDI) is the most common cause of nosocomial diarrhea. About one in 5 patients with CDI (median 18%) develop a complication (cCDI), including mortality. Many predictive scores have been published to identify patients at risk of cCDI but none is currently recommended for clinical use and few were validated. We conducted an external validation study of predictive tools for cCDI.

**Methods.** Predictive tools were identified through a systematic review. We included those reporting at least an internal validation process. We performed the external validation on a multicenter prospective cohort of 1380 Canadian adults with confirmed CDI. Most cases were elderly (median age 71), had a healthcare facility-associated CDI (90%), and cCDI occurred in 8%. NAP1 strain was found in 52%. The performance of each scoring system was analyzed using individual outcomes. Modifications in predictors were made to match available data in the validation cohort.

**Results.** We assessed 3 predictive scores and one predictive model. The performance (95% CI) of higher thresholds are shown in the Table. All scores had a low sensitivity and PPV, and moderate specificity and NPV. The model of Shivashankar 2013 (age, WBC> 15, narcotic use, antacids use, creatinine ratio > 1.5) predicted 25% probability of cCDI. All showed similar AUC (0.63–0.67).

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

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### Table: Performance of Predictive Tools for cCDI

| Predictor | Sensitivity | PPV (9–25) | NPV (95–99) |
|-----------|-------------|------------|-------------|
| Age >70   | 82–86       | 9–25       | 95–99       |
| WBC > 15  | 84          | 84         | 95–99       |
| NAP1      | 78–85       | 85–89      | 95–99       |
| ICU        | 80–95       | 9–25       | 95–99       |
| Age > 65  | 76–87       | 9–25       | 95–99       |
| Age > 70  | 76–87       | 9–25       | 95–99       |
| WBC > 15  | 78–85       | 9–25       | 95–99       |
| NAP1      | 80–95       | 9–25       | 95–99       |
| ICU        | 80–95       | 9–25       | 95–99       |

**Conclusion.** The predictive tools included in our study showed moderate performance in a validation cohort with a low rate of cCDI and high proportion of NAP1 strains. Further research is needed to develop an accurate predictive tool to guide clinicians in the management of CDI.
Background. Little is known as to how hospital C. difficile infection (CDI) may impact nursing home (NH) CDI, or how patient transfers may modify this relationship. This study aims to examine a possible association between hospital and NH CDI rates, and whether NH CDI rates are influenced by patient transfers from hospital to NH.

Methods. Patient transfers among the 5 hospitals and 34 NHs in Monroe County, NY were identified from the Minimum Data Set (MDS) 3.0 and MedisGroups Analysis and Review files for 2011–13, and aggregated to the NH level. NH and hospital CDI rates were obtained from Emerging Infections Program CDI population surveillance and National Healthcare Safety Network data, respectively. Multivariate negative binomial regression modeled the association between hospital CDI rate (weighted by hospital-to-NH transfers/overall transfers among hospitals and NHs) and NH CDI rate, controlling for NH covariates from NH Compare and the Online Survey, Certification, and Reporting file. Patient transfer networks between hospitals and NHs were constructed and basic network analysis of transfer patterns was conducted to confirm contributing factors to NH CDI rates from the multivariate model.

Results. When weighted hospital CDI rate increased by 1%, NH CDI rate increased by 18% (P = 0.016). Antibiotic and feeding tube prevalence were associated with a 4% and 8% increase in NH CDI rate, respectively (P<0.01). Network analysis confirmed multivariate results and detected hospital-NH pairs with high edge weights (number of transfers) where NHs receiving patients from hospitals with high CDI rates had higher CDI rates. Network clustering methods were used to identify 2 sub-networks within overall annual networks and clusters of hospital-NH pairs targeted for intervention.

Conclusion. Hospital CDI rate, adjusting for patient transfers, is associated with higher NH CDI rates in multivariate and network analyses, suggesting that NHs with a large influx of patients from hospitals may need to implement stricter infection prevention practices to reduce transmission among residents. By identifying regional sub-networks, network analysis can also be used to actively manage facility CDI and prevent spread to other healthcare facilities.

Disclosures. All authors: No reported disclosures.

1311. Risk factors for Clostridium difficile infection in C. difficile colonized ICU patients
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Background. C. difficile infection is a major cause of healthcare-associated infections leading to significant morbidity and mortality; however, data-driven interventions to decrease C. difficile infections (CDI) are lacking due to an incomplete understanding of disease transmission and risk factors. Asymptomatic C. difficile carriers may be an important source of nosocomial transmission and disease but few studies have examined colonized patients who later develop CDI. We describe risk factors for the development of CDI in a critical care population screened for C. difficile colonization.

Methods. All patients admitted to our medical or trauma ICU’s were screened for toxigenic C. difficile by PCR via rectal swab. Colonized patients were placed in contact enteric precautions for their entire hospitalization and monitored for signs and symptoms of CDI.

Results. 868 rectal swabs were collected from 4/01/16 to 10/31/16. 40 patients were colonized with C. difficile on ICU admission and 20 developed symptomatic CDI (Table 1). Risk factors for CDI in colonized patients include enteral feeding and exposure to antibiotics (Table 2).

Conclusion. 50% of C. difficile colonized ICU patients progressed to symptomatic CDI during their hospitalization. Antibiotic use was a significant risk factor for CDI. C. difficile carriers may be a particularly vulnerable population for CDI, warranting further investigation for early identification of colonized patients and strategies for infection prevention.

Table 1 – Patient Demographics

| Comorbidities     | CDI | No CDI | p-value |
|-------------------|-----|--------|---------|
| DM                | 7 (25) | 7 (25) | 1.00    |
| Immunocompromised | 3 (10) | 3 (10) | 1.00    |
| Immunosuppression | 3 (10) | 3 (10) | 1.00    |
| ERSD              | 2 (7)  | 2 (7)  | 1.00    |
| Pneumonia         | 1 (3)  | 1 (3)  | 1.00    |
| Other             | 1 (3)  | 1 (3)  | 1.00    |

Table 2 – CDI Risk Factors in C. difficile colonized ICU patients

| Risk Factor          | N = 20 | p-value |
|----------------------|--------|---------|
| Enteral Feeding      | 10 (50)| <0.01  |
| Abdominal Surgery    | 4 (20) | <0.01  |
| PPI/H2 Blocker       | 9 (45) | 0.75   |
| Antibiotics          | None   | <0.01  |
| 1 class              | 3 (15) | 0.45   |
| 2 classes            | 15 (75)| 0.25   |

Disclosures. F. C. Fang, BioFire: Collaborator; Consultant and Scientific Advisor, Consulting fee, Research support and Speaker honorarium; Cepheid: Collaborator, Consultant and Scientific Advisor, Consulting fee, Educational grant, Research support and Speaker honorarium.