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Background. *Clostridium difficile* infection (CDI) is the most common nosocomial infection, representing 12% of all hospital acquired infections. The risk for CDI is clearly linked to antibiotic (abx) exposure. Several studies, including one from our institution, indicate prophylaxis of patients who recently had CDI with oral vancomycin decreases the risk of a relapse when exposed to abx. In an effort to further analyze this, we examined all patients with CDI in our institution who received any abxafter the CDI and determined how that modified their risk of relapse.

Methods. All patients with a positive PCR for *C. difficile* at our institution between 2012 and 2014 were examined for receipt of abx within 3 months of a positive PCR. Patients who received metronidazole were excluded to remove the potential confounding effect. The relapse rate for all patients, patients who received abx, and patients who did not receive abx were calculated. Timing of the relapse from the last episode of CDI and from receipt of abx were determined.

Results. A total of 6,436 patients were identified, representing 8,000 episodes of CDI. The relapse rates and timing based on prior CDI episodes and receipt of additional abx prior to relapse are shown in Table 1.

Table 1: Relapse Rates and Timing of Relapses Within 3 Months of CDI Episode

Category	Relapse Rate	Days Since Last CDI	Days Since abx
All episodes	12.5%	38.4	N/A
Received abx prior to relapse	11.8%	46	7.3
Received high-risk abx prior to relapse	12.4%	46.5	7.2
Received no abx prior to relapse	12.6%	36.9	N/A

There were 1,375 episodes of CDI where abx were given within 3 months of the episode. Of these patients, 33 received prophylaxis with oral vancomycin, and none of those relapsed within 3 months.

Conclusion. While abx clearly are the major risk factor for CDI, the receipt of abx after an episode of CDI does not change the overall rate of CDI relapse. However, when the timing of the relapses after abx is examined, the relapses occur both later in those who received abx than relapses in patients who do not receive abx and shortly after abx. It is likely that abx trigger relapses in patients who otherwise would not have relapsed. Oral vancomycin prophylaxis appears to be effective in preventing relapses in patients given abx after CDI.

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

504. Change in *Clostridium difficile* Strain-Type Distribution After Implementation of Diagnostic Stewardship

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Background. The aim of this study was to evaluate the change in strain-type distribution after eliminating testing of formed and laxative induced diarrheal stool.

Methods. Beginning in July 2013, all *Clostridium difficile*-positive stool samples by Cepheid's GeneXpert were routinely typed using Multi-Locus Sequence Typing (MLST). MLST was performed as previously described (1). After implementation of rejection policy and re-education of staff, strain type (ST) distribution among tested samples were analyzed and compared with historic data.

Results. After evaluation of our historical typing data the 10 most frequent ST were identified. Diagnostic stewardship led to 40.0% reduction in testing volume, the positivity rate increased from 12.0% to 12.6%. The frequency distribution of threemost prevalent strain types (MLST-2, 8, and 42) declined by 38%, 60%, and 42%, respectively. The absolute number of epidemic strains, ST-1 and ST-11, remained unchanged and the frequency distribution increased from 9.6% to 14.0%. No clonal outbreaks were detected during this time.

Conclusion. Implementation of diagnostic stewardship led to a reduction in recovery of endemic strains without substantial impact on detection of hypervirulent or epidemic strains.

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

505. Bezlotoxumab Reduces Recurrence of *Clostridium difficile* Infection in Immunocompromised Patients: Early Experience at a Tertiary Care Center

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Background. Bezlotoxumab (BEZ) was approved in 2017 for prevention of recurrent *C. difficile* infection (CDI), with a number needed to treat (NNT) of 10 reported in the registration trials. Little information is available on its effectiveness in high-risk populations. BEZ was added to the institutional outpatient formulary in 2017 for use in patients with CDI at high-risk for recurrent CDI (rCDI), i.e., history of solid organ (SOT) or hematopoietic stem cell (HCT) transplantation, active malignancy, chronic steroid (prednisone equivalent 20 mg/day), and failed fecal microbiome transplant (FMT). Patients that met criteria were referred by the antimicrobial stewardship team to the infectious disease clinic for BEZ insurance approval and administration. The goal of this study was to evaluate the effectiveness and safety of BEZ in this high-risk population.

Methods. The cohort of patients referred for BEZ were compared by those who received BEZ vs. those who did not receive BEZ (standard of care, SOC). The primary endpoint was rCDI at ≤100 days of BEZ infusion or end-of-treatment (EOT). Secondary endpoints were time to rCDI and insurance status. Safety of BEZ was evaluated as infusion reaction ≤24 hours and death ≤100 days.

Results. Twenty-nine patients were referred for BEZ; 14 (48%) received BEZ. Patient characteristics are in Table 1. rCDI at 100 days occurred in 14.3% BEZ vs. 28.6% SOC ($P = 0.3654$) with an NNT of 7. Average time to rCDI was longer in the BEZ group vs. SOC (49 vs. 27 days). No infusion reactions or death were noted in the BEZ group. Insurance approval for BEZ was denied in 26.7%. Medicaid coverage was common in SOC (46.7% vs. 7.1%; $P = 0.0191$) and Medicare coverage was more common in BEZ group (71.4% vs. 33.3%; $P = 0.0438$).

Conclusion. Early experience with BEZ appears promising in a high-risk, predominantly immunocompromised population. The NNT to prevent rCDI was 7. Larger cost–benefit studies in immunocompromised and transplant populations are warranted.

Table 1: Characteristics of BEZ and SOC Patients

Variable	BEZ ($N = 14$)	SOC ($N = 15$)	*P*-value
Age ≥60	57.1%	26.7%	0.1027
≥1 prior CDI episodes	50%	26.7%	0.2042
Average no. of prior CDI episodes	2	2	
Immunocompromised	78.6%	86.7%	0.5704
SOT recipient	42.8%	33.3%	
HCT recipient	21.4%	13.3%	
Active cancer	28.6%	26.7%	
Failed FMT	7.1%	6.7%	0.9667

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

506. The Impact of Bowel Management System (BMS) on the Incidence of Hospital-Onset (HO) *Clostridium difficile* Infection Laboratory-ID Events Despite Diagnostic Stewardship

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Background. *Clostridium difficile* infection (CDI) Laboratory identified events are reportable to CMS through the CDC's NHSN. Diagnostic stewardship has been shown to decrease the incidence by decreasing false-positive incidence. Bowel management systems (BMS) have been associated with transient loss of tone of anal sphincter muscles that result in diarrhea. These episodes of diarrhea may be misdiagnosed as CDI due to a false-positive test result. The objective of this study was to determine whether the use of BMS has resulted in false-positive CDI Lab ID events.

Methods. We performed a retrospective review of all HO-CDI Lab ID events from October 1, 2016 to December, 31, 2017 in a 1,157-bed tertiary academic medical center. Since 2013, several interventions were implemented to decrease the incidence of CDI Lab ID events. These interventions have included: (i) enhanced environmental cleaning, (ii) CDI testing algorithm, (iii) use of hydrogen peroxide enhanced terminal cleaning of high-risk units, and (iv) computer-assisted decision support diagnostic stewardship. Poisson regression analysis was performed to compare incidence rates. A *P*-value of ≤0.05 was considered significant.

Results. A sustained low and decreasing HO-CDI incidence was observed from 2013 to 2017 (7.9, 6.0, 7.1, 6.5 and 5.2 CDI/10,000 patient days; $P = 0.01$). An incremental decrease was observed when comparing the annual incidence in 2016 to the YTD incidence in 2017 (6.5 vs. 5.2 CDI/10,000 patient days; $P < 0.001$). Comparing the five quarters before diagnostic stewardship was implemented to post implementation, the CDI incidence decreased from 6.7 to 5.2 CDI events/10,000 patient days ($P = 0.009$). Of the 180 HO-CDI Lab ID events that occurred post-implementation of the diagnostic stewardship, 31 (17%) were cases in which the computer-assisted alerts were overridden and may have been false positives. An additional 12 (6.7%) cases occurred in patients who had BMS in place within 48 hours and 22 (12%) had BMS in place within 1 week.

Conclusion. Diagnostic stewardship through computer-assisted decision support is an effective method of reducing false-positive CDI Lab ID events. We found that an additional 12% of the HO-CDI are potentially false positives as these were obtained from patients who had BMS in place immediately before the positive test results.

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

507. Degree of Concordance of *Clostridium difficile* Strains in Adults with Community-Associated *C. difficile* Infection and Infants With *C. difficile* Colonization

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Background. The number of adults afflicted with community-associated *Clostridium difficile* infection (CA-CDI) has increased dramatically over the past 10 years. Exposure to infants, a population known to be asymptomatically colonized by *C. difficile* (CD), has been identified as a risk factor for CA-CDI, implying that infants may be a reservoir for adult infection. In the present study, we determined the distribution of CD ribotypes isolated from adults with CA-CDI and compared them to the ribotypes of strains excreted asymptomatically among a cohort of healthy infants from the same geographical location.

Methods. Adult samples submitted to a referral university hospital microbiology laboratory as part of routine care were identified as CD+ by commercial PCR and stored at −80°; the subset of samples from patients meeting IDSA criteria for CA-CDI were selected for further analysis. A cohort of healthy infants attending a suburban, demographically diverse pediatric practice 6 miles from the hospital were enrolled at birth and prospectively followed at 2-, 6-, and 12-month well-visits. Stool collected at each infant visit was cultivated for CD using routine techniques. DNA from both sets of organisms was extracted and subjected to fluorescent PCR ribotyping. Amplicons were assigned to specific ribotypes through sequence analysis, using the nomenclature proposed previously (J Clin Microbiol 2015;53:1192).

Results. To date, 29 adult samples (collected between August 1, 2016 and January 31, 2018) and 32 infant samples (collected between July 1, 2016 and March 31, 2018) have been ribotyped. Eleven (18%) organisms could not be typed (3 adult; 8 infant). The most representative ribotype identified in the adult CA-CDI samples was F014-020 (54%), with small numbers scattered among six other ribotypes. The most prominent ribotypes in infants were F106 (33%), F010 (17%), and F012 (17%); two (8%) infants were colonized with ribotype F014-020. Except for F014-020, there was no concordance of ribotypes among adult CA-CDI and infant isolates.

Conclusion. In this population, a small proportion of asymptomatic infants were colonized by a prominent CA-CDI ribotype in adults, but other ribotypes were unique to each age group.

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

508. High Rates of Cure and Long-Term Symptom Resolution With Both Capsule and Lower Gastrointestinal Fecal Microbiota Transplantation for Recurrent *Clostridium difficile* Infection

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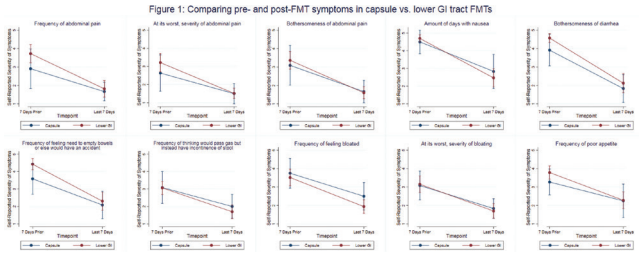
Background. Fecal microbiota transplantation (FMT) is the treatment of choice for recurrent *C. difficile* infection (CDI), but limited data exist on long-term real world outcomes of FMT and optimal routes of administration.

Methods. We performed a survey of patients who received FMT for CDI at UCLA Health. The online survey was adapted from the NIH PROMIS gastroenterology (GI) symptom scale to assess various GI symptoms in the week prior to FMT and the week prior to taking the survey (long-term follow-up). Additional questions addressed route of FMT, timing of improvement, and recurrence of symptoms or CDI. Chart review provided demographic information and time to follow-up. Changes (pre/post) were assessed using the Wilcoxon signed-rank test.

Results. Ninety-six FMTs were performed from December 2014 through September 2017. Forty-five of 88 alive patients completed the survey (response rate 51.1%). Ages ranged from 18 to 90 years old (average 61.2 years, SD 18.0). Time from FMT to survey completion ranged from 14 to 1,044 days (average 526 days, SD 253.9). Route of initial FMT included 14 capsule and 31 lower GI tract FMTs (28 colonoscopies, threeother). Five patients had a second FMT after initial failure (second FMTs: one capsule and four colonoscopy). In total, we included 50 FMTs (15 capsule [30%] and 35 lower [70%]). Overall success rate was 76% (38/50), with 10 failed FMTs (20%) and 2 of unclear outcome. There was a higher success rate of lower FMTs at 85.7% (30/35) compared with capsule at 66.7% (10/15), but this difference was not statistically significant ($P = 0.312$). Comparing GI symptoms pre- and post-FMT, there was a statistically significant decrease in days with diarrhea ($P < 0.001$), frequency and severity of abdominal pain (both $P < 0.001$), bloated feeling ($P < 0.001$), and improvement in appetite ($P < 0.001$) at long-term follow-up. Comparing capsule vs. lower FMTs, post-FMT symptoms appeared similar.

Conclusion. FMT led to a high rate of long-term cure, with significant improvement in multiple GI symptoms months to years after transplant. The route of FMT did not impact symptom relief, but there was a higher rate of failure with capsule FMT compared with lower FMTs. More studies are needed to understand the impact of routes of FMTs on long-term outcomes of patients with CDI.



Disclosures. **E. Martin**, Pfizer: Investigator, Salary.

509. Spatio-Temporal Clustering of CDI Cases at the University of Iowa Hospitals and Clinics

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Background. Understanding how *C. diffcile* infection (CDI) is acquired in healthcare settings is key to designing interventions to mitigate CDI. The goal of this research is apply statistical methods, typically used to investigate regional outbreaks, to study spatio-temporal clustering of in-hospital CDI incidence.

Methods. We analyzed 1,804 CDI cases (out of 241,248 in-patient visits) at the University of Iowa Hospitals and Clinics (UIHC) during January 2005–December 2011. Letting T and D be time and space parameters, we constructed an observed CDI cluster graph by connecting pairs of CDI cases whose positive CDI tests occur within T days and D distance units of each other. In Experiment 1, for each CDI case, we replaced its actual time stamp by one picked uniformly at random from the time interval [January 2005, December 2011] and constructed a random CDI cluster graph. We tested the UIHC CDI case counts for seasonality and observed none, but did observe that the CDI counts increased significantly (weekly mean: 4.12–>8.11) starting in December 2009, when the *C. diffcile* Toxin A&B test was replaced by the *C. diffcile* Toxin PCR. So, we performed an Experiment 2 in which we sampled time stamps from a mixture of two uniform distributions, representing the periods of the two tests.

Results. We report sizes of connected components in the table below, for 10,000 trials of Experiments 1 and 2, for $T = 14$ days and varying D, a one setting in which D is set to the unit in which the CDI case occurs. The plots show the distribution of the mean and maximum component size (blue curves) for Experiment 2, for D = 2.

D	Observed Mean Comp. Size	**Experiment 1** Expected Mean Comp. Size (*P*-value)	**Experiment 2** Expected Mean Comp. Size (*P*-value)	Observed Max. Comp. Size	**Experiment 1** Expected Max. Comp. Size (*P*-value)	**Experiment 2** Expected Max. Comp Size (*P*-value)
2	1.12	1.07 (0)	1.06 (0)	6	3.72 (0.01)	4.07 (0.05)
3	1.19	1.11 (0)	1.11 (0)	7	4.61 (0.03)	5.17 (0.1)
5	1.29	1.18 (0)	1.20 (0)	11	6.6 (0.01)	8.10 (0.1)
10	1.93	1.68 (0)	1.52 (0)	29	17.13 (0.02)	28.08 (0.4)
Unit	1.63	1.38 (0)	1.01 (0)	23	9.74 (0)	12.87 (0.01)