	OR Failure	Confidence Interval	p-value
ESBL *E. coli* UTI	4.83	0.94, 24.92	0.060

Table 2. Univariate regression of odds of clinical improvement at 48–72 hours after empiric therapy with cephalosporin or penicillin-based empiric therapy of cases (ESBL *E. coli* UTI's).

	OR Hospitalization	Confidence Interval	p-value
ESBL *E. coli* UTI	2.09	0.995, 4.38	0.052
Underlying medical condition	5.70	2.67, 12.16	<0.005
Fever	3.46	1.50, 8.01	0.004
Age	0.47	0.30, 0.74	0.001

Table 3. Multivariate regression of odds of hospitalization of cases (ESBL *E. coli* UTI's), adjusted for the presence of an underlying medical condition, fever, and age.

	OR Recurrence	Confidence Interval	p-value
ESBL *E. coli* UTI	1.34	0.48, 3.78	0.581
Urogenital abnormalities	3.31	1.15, 9.51	<0.005

Table 4. Multivariate regression of odds of recurrence of bacteriuria of cases (ESBL *E. coli* UTI's), adjusted for the presence of an underlying urogenital abnormalities.

Fig. 2.

Table 1.

Characteristic[a]	Carbapenem	Non-Carbapenem	P-value[b,c]
No. of Patients	57	13	
Age, years (median, IQR)	74 (64 – 82)	67 (37 – 72)	0.070
Female, (%)	28 (49.1)	7 (53.9)	0.759
Charlson Comorbidity Index (median, IQR)	5 (3 – 8)	3 (2 – 7)	0.158
Urologic Disease	22 (38.6)	5 (38.5)	0.993
Immunosuppression	9 (15.8)	2 (15.4)	0.999
Nosocomial Infection	5 (8.8)	2 (15.4)	0.606
Pitt Bacteremia Score (median, IQR)	2 (1 – 3)	1 (1 – 3)	0.519
Historical Microbiology			
Prior ESBL in any culture	18 (31.6)	3 (23.1)	0.741
Prior gram-negative bacteremia	7 (12.3)	0 (0)	0.334
Antibiotic Treatment			
Empiric antibiotics ultimately effective against ESBL	17 (29.8)	3 (23.1)	0.774
If empiric antibiotics ineffective, number of days; median (IQR)	2 (0 – 3)	3 (1 – 3)	0.506
Total days of ESBL-active antibiotic therapy; median (IQR)	14 (12 – 15)	14 (10 – 15)	
Total days of all antibiotics	17 (15 – 18)	17 (14 – 18)	0.681
Infectious Disease Consult	31 (54.4)	6 (46.2)	0.592
Length of hospital stay, days; median (IQR)	11 (7 – 18)	6 (4 – 15)	0.055

IQR = Interquartile Range
[a] All statistics are expressed as n (%) unless otherwise stated.
[b] P values were obtained by Wilcoxon rank-sum testing.
[c] P value signifies overall χ^2 or Fisher's exact test

Table 2.

Outcome[a]	Carbapenem	Non-Carbapenem	P-value[b]
No. of Patients	57	13	
C. difficile within 90-days	2 (3.5)	2 (15.4)	0.154
30-day all-cause mortality	0 (0)	0 (0)	-----
Recurrence of ESBL bacteremia	7 (12.3)	1 (8.3)	0.999
90-day readmission	27 (47.4)	3 (23.1)	0.132
Intravenous line complication	1 (1.8)	2 (15.4)	0.086

[a] All statistics are expressed as n (%)
[b] P value signifies overall χ^2 or Fisher's exact test

Conclusions: At 48–72 hours, there was no significant difference in the odds of clinical failure for patients with ESBL *E. coli* UTI compared to patients with non-ESBL *E. coli* UTI receiving empiric noncarbapenem therapy. Although we detected a trend toward a higher odds of hospitalization among cases, this result was largely due to a higher clinical complexity among cases at baseline. Only 2 cases required admission for failure of outpatient therapy. There was no increased risk of UTI recurrence among cases. This study suggests that initial discordant antibiotic therapy may not increase the risk of a poor outcome in children with ESBL *E. coli* UTI.

Presentation Type:
Poster Presentation

Outcomes of Extended-Spectrum Beta-Lactamase Gram-Negative Bacteremia Cases Treated With Carbapenem Versus Noncarbapenem Antibiotics

Tara Chen, Rochester Regional Health, Department of Internal Medicine, Rochester, NY, USA; Dharmini Manogna, Rochester Regional Health, Department of Internal Medicine, Rochester, NY, USA; Jyotirmayee Lenka, Rochester Regional Health, Department of Internal Medicine, Rochester, NY, USA; John Hanna, Rochester Regional Health, Department of Internal Medicine, Rochester, NY, USA; Emil Lesho, Rochester Regional Health, Department of Internal Medicine, Rochester, NY, USA; Maryrose Laguio-Vila, Rochester General Hospital

Background: The rising prevalence of infections caused by extended-spectrum β-lactamase (ESBL)–producing bacteria increases reliance on carbapenems, which intensifies selection pressure for the emergence of carbapenem-resistant Enterobacteriaceae (CRE). Whether noncarbapenem (nC) antibiotics can be safely used in this setting remains incompletely understood. **Objective:** To examine the safety of carbapenem stewardship in this population, we compared outcomes of uncomplicated ESBL bacteremia treated with a carbapenem to those treated with a noncarbapenem regimen. **Methods:** A retrospective chart review of patients with ESBL bacteremia from 2014 to 2018 in a 5-hospital regional health system was conducted. Patients aged <18 years, with polymicrobial bacteremia, whose infections required a prolonged length of antibiotic therapy (LOT), or who died on antibiotic treatment or transitioned to hospice, were excluded. Groups were stratified based on the antibiotic regimen with the highest number of treatment days during the treatment course. Outcome measures included empiric and definitive length of therapy (LOT), 30-day all-cause mortality, 90-day readmission, recurrence of ESBL bacteremia, hospital length of stay (LOS), incidence of *Clostridioides difficile* infection (CDI) and adverse drug events, obtained by Wilcoxon rank-sum testing, χ^2 test, and Fisher exact test, as applicable. **Results:** In total, 112 unique patients had ESBL bacteremia; 42 were excluded, leaving 70 for analysis. Of these, 57 were treated with a carbapenem regimen and 13 patients were treated with a noncarbapenem regimen: 9 ciprofloxacin, 3 gentamicin, 1 TMP-SMX. Patient baseline and antibiotic regimen characteristics were similar (Table 1). The most common organism was *E. coli*, and the most common source was urinary. A similar proportion of each group received ESBL-active empiric antibiotics. There were no significant differences in total effective antibiotic LOT, 30-day all-cause mortality, 90-day readmission, or recurrence of ESBL bacteremia (Table 2). A nonsignificant trend in hospital LOS was observed in the noncarbapenem group (11 vs 6 days; $P = .055$). **Conclusions:** Although the sample size was small, these multicenter data suggest that noncarbapenem treatment of ESBL bacteremia may be safe and effective. Pending confirmatory studies, ESBL bacteremia may be an important target for carbapenem stewardship.

Presentation Type:
Poster Presentation

Outcomes of Neutropenic Patients with *Clostridium difficile* Infection

Roopali Sharma, Touro College of Pharmacy; Deepali Dixit, Ernest Mario School of Pharmacy, Rutgers, The State University of New Jersey; Sherin Pathickal, Wyckoff Heights Medical Center, Brooklyn, NY; Jenny Park, Allergan; Bernice Lee, Rutgers, The

State University of New Jersey; Siddharth Jain, Ernest Mario School of Pharmacy, Rutgers, The State University of New Jersey; Joelle Kairys, Touro College of Pharmacy; Nino Katchiuri, Touro College of Pharmacy; Tae Park, Bronxcare Health System; Navneeth Narayanan, Ernest Mario School of Pharmacy, Rutgers, The State University of New Jersey; Siddharth Swamy, Ernest Mario School of Pharmacy, Rutgers, The State University of New Jersey

Background: Data from *Clostridium difficile* infection (CDI) in neutropenic patients are still scarce. **Objective:** To assess outcomes of CDI in patients with and without neutropenia. **Methods:** The study included a retrospective cohort of adult patients at 3 academic hospitals between January 2013 and December 2017. The 2 study arms were neutropenic patients (neutrophil count $<500/mm^3$) and nonneutropenic patients with confirmed CDI episodes. The primary outcome evaluated the composite end point of all-cause in-hospital mortality, intensive care unit (ICU) admissions, and treatment failure at 7 days. The secondary outcome evaluated hospital length of stay. **Results:** Of 962 unique cases of CDI, 158 were neutropenic (59% men) and 804 were nonneutropenic (46% men). The median age was 57 years (IQR, 44–64) in the neutropenic group and 68 years (IQR, 56–79) in the nonneutropenic group. The median Charlson comorbidity score was 5 (IQR, 3–7.8) and 4 (IQR, 3–5) in the neutropenic and nonneutropenic groups, respectively. Regarding severity, 88.6% versus 48.9% were nonsevere, 8.2% versus 47% were severe, and 3.2% versus 4.1% were fulminant in the neutropenic and nonneutropenic groups, respectively. Also, 63% of patients (60.9% in nonneutropenic, 65.2% in neutropenic) were exposed to proton-pump inhibitors. A combination CDI treatment was required in 53.2% of neutropenic patients and 50.1% of nonneutropenic patients. The primary composite end point occurred in 27% of neutropenic patients versus 22% of nonneutropenic patients ($P = .257$), with an adjusted odds ratio of 1.30 (95% CI, 0.84–2.00). The median hospital length of stay after controlling for covariates was 21.3 days versus 14.2 days in the neutropenic and nonneutropenic groups, respectively ($P < .001$). Complications (defined as hypotension requiring vasopressors, ileus, or bowel perforation) were seen in 6.0% of the nonneutropenic group and 4.4% of the neutropenic group ($P = .574$), with an adjusted odds ratio of 0.61 (95% CI, 0.28–1.45). **Conclusions:** Neutropenic patients were younger and their cases were less severe; however, they had lower incidences of all-cause in-hospital mortality, ICU admissions, and treatment failure. Hospital length of stay was significantly shorter in the neutropenic group than in the nonneutropenic group.

Presentation Type:
Poster Presentation
Outcomes of Patients With Hospital-Acquired Influenza
Melissa Campbell, Yale School of Medicine; Amber James, Yale School of Public Health; Iyanna Fairweather, Yale New Haven Hospital; Jose Rivera-Vinas, Yale New Haven Hospital; Richard Kaslow, Yale School of Public Health; Marie-Louise Landry, Yale School of Medicine; David Peaper, Yale School of Medicine; Richard Martinello, Yale University

Background: Hospital-acquired influenza (HA flu) lacks a consensus definition. However, it is known to be associated with increased inpatient morbidity and mortality. **Objective:** To describe the clinical course of HA flu in a cohort population. **Methods:** A retrospective cohort study was conducted at a tertiary-care adult and pediatric teaching hospital. Patients with HA flu during 3 seasons, 2016 through 2019, were identified from medical record information based on timing of the onset of signs and symptoms and positive virologic testing >72 hours after admission. Influenza infection was confirmed by multiplex respiratory PCR, influenza A/B PCR, or direct fluorescent antibody tests. Chart review was performed to abstract patient demographics and comorbidities, length of stay, testing, and timing to antiviral administration as well as diagnosis of pneumonia, coinfections, and 30-day mortality. Escalation of care during hospitalization was defined as a new requirement of supplemental oxygen, invasive or noninvasive ventilation, and transfer to an intensive care unit. **Results:** During the 3 flu seasons, 132 patients were identified with HA flu; 76 (58%) were women, 6 (4.6%) were aged <18 years, and 126 (95.4%) were adults. Annually, HA-flu patients accounted for 5%–7.8% of all patients hospitalized with laboratory-proven influenza. The median duration between hospitalization and positive flu test was 15 days, and the median length of stay after influenza diagnosis was 6 days. Antiviral treatment was received by 96% of the patients. In total, 41 patients (31%) showed radiographic evidence for pneumonia. Coinfection with either a viral or bacterial pathogen was identified in 25% of the cases. In addition, 26% of the patients experienced an escalation of care, and 20 patients (15%) were transferred to the intensive care unit after HA flu diagnosis. Furthermore, 4 deaths (3%) were attributed to influenza during their hospitalization. **Conclusions:** HA flu was a frequent cause for escalation in care and was associated with a mortality rate substantially higher than is typically seen in community-based populations with influenza. Coinfection was mostly related to bacteremia and pneumonia, yet not all pneumonias had an associated microbiological diagnosis other than influenza, and there was no significant association between coinfection and mortality. Future work should explore more precise definitions for HA flu as well as its complications.

Presentation Type:
Poster Presentation
Outcomes of Rapid Identification of Bacteremia in Combination with Antimicrobial Stewardship Intervention
Marilia Bernardes, Memorial Sloan Kettering Cancer Center; Julieth Formosa, Mount Sinai Medical Center; Julia Bini Viotti, Miller School of Medicine University of Miami; Anthony Febres-Aldana, Mount Sinai Medical Center; Kenneth Ratzan, Mount Sinai Medical Center

Background: Rapid diagnostic tests designed to provide bacterial identification and detection of resistance genes directly from positive blood cultures can significantly reduce the time to definitive results, ensuring appropriate and timely antibiotic administration while simultaneously decreasing antibiotic overuse and development of antimicrobial resistance. However, their impact on in-hospital mortality and length of stay (LOS) is yet to be fully assessed. **Methods:** We retrospectively reviewed bacteremia cases in patients hospitalized over a 6-month period before (n = 78) and after (n = 93) the implementation of Verigene bacterial nanoparticle testing. Exclusion criteria included age >90 years, bacteremia thought