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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.

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Presentation Type:
Poster Presentation

Outcomes of Patients With Hospital-Acquired Influenza

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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.

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Outcomes of Rapid Identification of Bacteremia in Combination with Antimicrobial Stewardship Intervention

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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

TABLE 1- Patient`s characteristics and outcome during the control and intervention periods.

	Control period (n=78)	Intervention period (n=93)	P-value
Mean age, years	66.53 (13.13)	67.41 (14.97)	1.00
Male	34 (43.50)	41 (44.00)	0.95
Charlson comorbidity index			
0	4 (5.12)	7 (3.90)	2.63e-05
1-2	26 (33.33)	29 (31.18)	0.11
3-4	29 (37.20)	32 (34.40)	0.23
≥5	19 (24.30)	25 (32.05)	0.036
ICU admission	35 (44.87)	34 (36.55)	0.27
Time to organism identification, hours	44.55 (17.51)	4.90 (3.83)	2.2e-16
Time to effective antimicrobial therapy, hours	10.61 (24.35)	3.27 (10.31)	0.0063
Length of hospitalization, days	13.15 (9.40)	10.02 (8.63)	0.0071
Length of intensive care unit stay, days	2.84 (4.69)	1.87 (4.64)	0.071
14-day mortality	4 (5.12)	4 (4.30)	0.80
30-day mortality	5 (6.41)	7 (7.52)	0.78

Categorial data are presented as a number (proportion %). Continuous data are presented as the means (standard deviation).

to be a contaminant, polymicrobial bacteremia, or hospice admission. Verigene was performed at a central laboratory from 6 A.M. to 11 P.M. Pharmacists notified physicians of results and assisted with antibiotic modifications. Patient demographics, time to organism identification, time to effective antimicrobial therapy, and other key clinical parameters were compared. The primary outcomes were in-hospital LOS, 14-day mortality, and 30-day mortality. Secondary outcomes included time to effective antibiotic therapy and intensive care unit (ICU) LOS. **Results:** Organism identification was achieved more quickly (4.9 hours vs 44.5 hours; $P < .001$) and effective antibiotic therapy was started earlier after Verigene implementation. The mean in-hospital LOS decreased from 13.15 days to 10.02 days ($P = .0071$) after the Verigene intervention, despite a higher mean Charlson comorbidity index among the cases. Mortality was similar between groups. **Conclusions:** Rapid identification of gram-positive and gram-negative bacteremia with an antimicrobial stewardship intervention can decrease time to effective antibiotic therapy and total LOS.

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Outpatient Fluoroquinolone Medication Use Evaluation at an Academic Veterans Affairs Medical Center

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Background: Fluoroquinolones (FQs) are one of the most commonly prescribed antibiotic classes in the United States. In recent years, their widespread use has come under heightened scrutiny due potential adverse drug reactions including risks of mental health side effects, serious blood sugar disturbances, and Food and Drug Administration (FDA) black-box warnings for tendinopathy, aortic aneurysm, and dissection. These warnings prompted the Department of Veterans Affairs Pharmacy Benefits Management Service to perform a nationwide FQ utilization review, which identified our facility for potential overuse of FQs in the outpatient setting: 82.2 prescriptions per 1,000 unique patients compared to an average of 48 prescriptions per 1,000 unique patients across all VHA facilities. We then embarked on a FQ medication use evaluation (MUE). **Objective:** To determine appropriateness of FQ prescribing practices in the outpatient setting. **Methods:** The study setting was a 399-bed tertiary-care Veterans Hospital with >250 affiliated outpatient clinics in Richmond, Virginia. A retrospective chart review was conducted on a convenience sample of consecutive patients prescribed an FQ from each quarter between April 1, 2018, and March 31, 2019. Chart review included patient demographics, location, FQ used, dose, indication, appropriateness, prescriber, and documentation of patient counseling on FDA black box warnings. Appropriate treatment was defined by national and local antimicrobial therapy guidelines. **Results:** In total, 265 patients were included the study. Among them, 233 patients (88%) were men and the mean age was 68 years. Overall, 127 patients (48%) were prescribed FQs inappropriately. Primary care clinics and the emergency department (ED) had the highest frequency of inappropriate

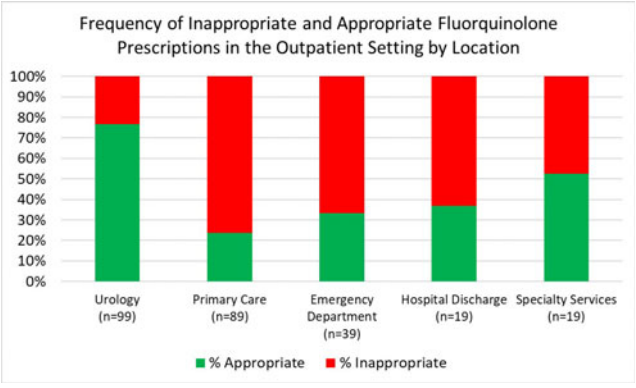

Fig. 1.

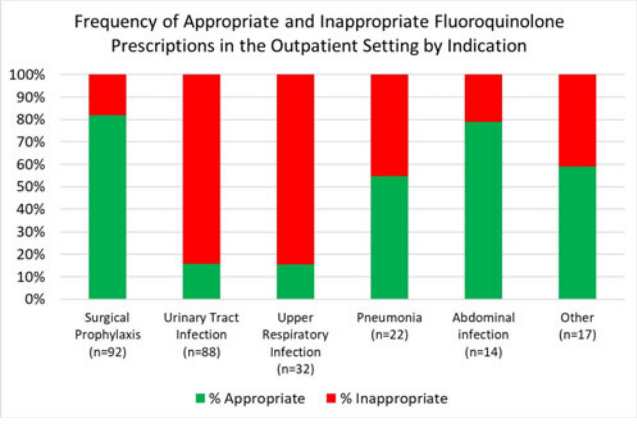

Fig. 2.