Appropriateness Guide for Intravenous Catheters (MAGIC) as a composite measure of (1) avoiding PICC use for durations ≤5 days; (2) using single-lumen instead of multilumen catheters; and (3) avoiding PICC use in patients with chronic kidney disease (eGFR<45 mL/min). The associations between ID approval of PICC use and odds of PICC-related complications (eg, deep vein thrombosis, central-line–associated bloodstream infection, and catheter occlusion) were also assessed. Multivariable models adjusting for patient severity of illness and hospital-level clustering were fit to both outcomes. Results were expressed as odds ratios (ORs) with corresponding 95% CIs. **Results:** Data from 36,594 patients who underwent PICC placement across 42 Michigan hospitals were included in the analysis. In total, 21,653 (55%) PICCs were placed for the indication of IV antibiotics; 14,935 (69%) of these had a documented ID consultation prior to placement, whereas 6,718 (31%) did not. Of the 14,935 PICCs with an ID consultation, 10,238 (69%) had ID approval documented prior to device placement (Fig. 1). Compared to no approval, PICCs approved by ID prior to insertion were more likely to be appropriate (OR, 3.51; 95% CI, 3.28–3.77; $P <$ .001). Specifically, approval was associated with higher single-lumen use (OR, 5.13; 95% CI, 4.72–5.58; $P <$ .001), less placement of PICCs with dwell times ≤ 5 days (OR, 0.29; 95% CI, 0.25–0.32; $P <$ .001), and less frequent use in patients with chronic kidney disease (OR, 0.80; 95% CI, 0.73–0.87; $P <$ .001). ID approval of PICCs prior to insertion was associated with a significantly lower odds of PICC-related complications (OR, 0.57; 95% CI, 0.51–0.64) (Table 1). **Conclusions:** ID approval of PICC use for IV antibiotic therapy in hospitalized patients was associated with greater appropriateness and fewer complications. Policies aimed at ensuring ID review prior to PICC use may help improve patient and device safety.

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Presentation Type:
Poster Presentation

Inpatient and Discharge Fluoroquinolone Prescribing in Veterans' Affairs Hospitals Between 2014 and 2017

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Background: Between 2007 and 2015, inpatient fluoroquinolone use declined in US Veterans' Affairs (VA) hospitals. Whether fluoroquinolone use at discharge has also declined, in particular since antibiotic stewardship programs became mandated at VA hospitals in 2014, is unknown. **Methods:** In this retrospective cohort study of hospitalizations with infection between January 1, 2014, and December 31, 2017, at 125 VA hospitals, we assessed inpatient and discharge fluoroquinolone (ciprofloxacin, levofloxacin, and moxifloxacin) use as (1) proportion of hospitalizations with a fluoroquinolone prescribed and (2) fluoroquinolone days per 1,000 hospitalizations. After adjusting for illness severity, comorbidities, and age, we used multilevel logit and negative binomial models to assess for hospital-level variation and longitudinal prescribing trends. **Results:** Of 560,219 hospitalizations meeting inclusion criteria as hospitalizations with infection (Fig. 1), 209,602 of 560,219 (37.4%) had a fluoroquinolone prescribed either during hospitalization (182,337 of 560,219, 32.5%) or at discharge (110,003 of 560,219, 19.6%) (Fig. 1). Hospitals varied appreciably in inpatient, discharge, and total fluoroquinolone use, with 71% of hospitals in the highest prescribing quartile located in the southern United States. Nearly all measures of fluoroquinolone use decreased between 2014 and 2017, with the largest decreases found in inpatient fluoroquinolone and ciprofloxacin use (Fig. 2). In contrast, there was minimal decline in fluoroquinolone use at discharge (Fig. 2), which accounted for 1,433 of 2,339 (61.3%) of

Table 1. Characteristics of Hospitalizations for Infection between 2014-2017, N=560 219

Patient Characteristics	
Age (years), Mean (SD)	68.6 (12.6)
Age ≥ 65, N (%)	370,243 (66.1)
Male Sex, N (%)	534,856 (95.5)
White Race, N (%)	414,059 (73.9)
Probability of 30-day Mortality, mean (SD)	0.07 (0.1)
Top Primary Diagnoses, N (%)	
Septicemia	60,072 (10.8)
Pneumonia	50 ,023 (9.0)
Skin and Subcutaneous Tissue Infection	37,427 (6.7)
Chronic Obstructive Pulmonary Disease or Bronchiectasis	33,784 (6.1)
Urinary Tract Infection	30,119 (5.4)
Weighted Elixhauser Comorbidity Index, Median (IQR)	7 (1, 14)
Length of Stay, Median (days) (IQR)	6 (4, 11)
Admission to Intensive Care, N (%)	133,765 (23.9)
Fluoroquinolone Prescriptions	
Prescribed a Fluoroquinolone, N (%)	209,602 (37.4)
Inpatient	182,337 (32.5)
At Discharge	110,003 (19.6)
Prescribed Ciprofloxacin, N (%)	90,502 (16.2)
Inpatient	76,450 (13.6)
At Discharge	45,189 (8.1)
Prescribed Levofloxacin, N (%)	112,676 (20.1)
Inpatient	99,387 (17.7)
At Discharge	56,654 (10.1)
Prescribed Moxifloxacin, N (%)	16,494 (2.9)
Inpatient	14,176 (2.5)
At Discharge	8,359 (1.5)
Total Duration of Fluoroquinolone Use in Patients Prescribed a Fluoroquinolone (N=209,602), Median (IQR)	6 (3, 9)
Inpatient Duration	2 (1, 4)
After Discharge Duration	2 (0, 7)
Duration of Fluoroquinolone Use in Patients Prescribed a Fluoroquinolone at Discharge (N=110,003), Median (IQR)	8 (6, 11)
Inpatient Duration	2 (1, 3)
After Discharge Duration	6 (4, 10)

Table 1

Fig. 1

hospitalization-related fluoroquinolone days by 2017. Between 2014 and 2017, fluoroquinolone use decreased in VA hospitals, largely driven by a decrease in inpatient fluoroquinolone (especially ciprofloxacin) use. Fluoroquinolone prescribing at discharge, and levofloxacin prescribing overall, remain prime targets for stewardship.

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Misdiagnosis of Urinary Tract Infection Linked to Misdiagnosis of Pneumonia: A Multihospital Cohort Study

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Background: Clinicians often diagnose bacterial infections such as urinary tract infection (UTI) and pneumonia in patients who are asymptomatic or have nonbacterial causes of their symptoms. Misdiagnosis of infection leads to unnecessary antibiotic use and potentially delays correct diagnoses. Interventions to improve diagnosis often focus on infections separately. However, if misdiagnosis is linked, broader interventions to improve diagnosis may be more effective. Thus, we assessed whether misdiagnosis of UTI and community-acquired pneumonia (CAP) was correlated. **Methods:** From July 2017 to July 2019, abstractors at 46 Michigan hospitals collected data on a sample of adult, non–intensive care, hospitalized patients with bacteriuria (positive urine culture) or who were treated for presumed CAP (discharge diagnosis plus antibiotics). Patients with concomitant bacterial infections were excluded. Using a previously described method,[1,2] patients were assessed for UTI or CAP based on symptoms, signs, and laboratory or radiology findings. Misdiagnosis of UTI was defined as patients with asymptomatic bacteriuria (ASB) treated with antibiotics number of patients with bacteriuria Misdiagnosis of CAP was defined as patients treated for presumed CAP who did not have CAP number of patients treated for presumed CAP. Hospital-level correlation was assessed using Pearson's correlation coefficient between misdiagnosis of UTI and CAP. For patients with prescriber data (N = 3,293), we also assessed emergency department (ED)-level correlation. **Results:** Of 11,914 patients with bacteriuria, 31.9% (N = 3,796) had ASB. Of those, 2,973 of 3,796 (78.3%) received antibiotics. Of 14,085 patients treated for CAP, 1,602 (11.4%) did not have CAP. Incidence of misdiagnosis varied by hospital: those with high rates of misdiagnosis of UTI were more likely to have high rates of misdiagnosis of CAP (Pearson's correlation coefficient, 0.58; $P \leq .001$) (Fig. 1). Of 2,137 patients misdiagnosed with UTI, 1,159 (54.2%) had antibiotic treatment started in the ED; of those, 942 (81.3%) remained on antibiotics on day 3 of hospitalization. Of 1,156 patients misdiagnosed with CAP, 871 (75.3%) had antibiotic therapy started in the ED, and 789 of these 871 patients (90.6%) were still on antibiotics on day 3 of hospitalization. Hospitals with high rates of UTI misdiagnosis in the ED were more likely to have high rates of CAP misdiagnosis in the ED (Pearson's correlation coefficient, 0.33; $P \leq .001$). **Conclusions:** Misdiagnosis of 2 unrelated infections was moderately correlated by hospital and weakly correlated by hospital ED. Potential causes include differences in organizational culture (eg, low tolerance for diagnostic uncertainty, emergency department culture), organizational initiatives (eg, sepsis, stewardship), or coordination between emergency and hospital medicine. Additionally, antibiotics initiated in the ED were typically continued following admission, potentially reflecting diagnosis momentum.