1859. Prevalence of Antimicrobial Use in US Hospital Patients, 2011 vs. 2015
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Background. Antimicrobial stewardship (AS) is increasingly recognized as an essential component of patient safety programs. In a US hospital prevalence survey in 2011, 50% of patients received antimicrobial drugs (ADs). The survey was repeated in 2015 to describe changes in inpatient antimicrobial use, approximately one year after CDC published the “Core Elements of Hospital Antibiotic Stewardship Programs.”

Methods. Emerging Infections Program (EIP) sites in 10 states recruited up to 25 hospitals each, seeking to re-engage hospitals that participated in the 2011 survey. Hospitals selected survey dates from May to September 2015 and completed AS questionnaires. Patients were randomly sampled from the hospital census on the survey date. EIP staff retrospectively reviewed medical records to collect AD data. Percentages of patients on ADs on the survey date or the day before were compared using chi-square tests (SAS 9.4, OpenEpi 3.01).

Results. In 2015, among 148 hospitals participating in both surveys, 29 (19.6%) reported having no AS team (AST); 63 (42.6%) had ASTs for <4 years, and 56 (37.8%) had ASTs for ≥4 years. Antimicrobial use prevalence in 2015 was approximately 50% in hospitals with and without ASTs. Percentages of patients on ADs was not different in 2015 (4,590;9,169, 50.1%) compared with 2011 (4,606;2,83, 49.6%, P = 0.55). Antimicrobial use prevalence in most hospital locations did not change, although the percentage of neonatal intensive and special care unit patients on ADs was lower in 2015 compared with 2011 (22.1% vs. 30.7%, P = 0.005). The percentage of patients on fluoroquinolones was lower in 2015, while percentages of patients on carbapenems or cephalosporins were higher in 2015 than in 2011.

Conclusion. Some observed differences between 2011 and 2015 provide evidence of stewardship impact. The decrease in antimicrobial use in selected neonatal locations may reflect implementation of tools to improve neonatal sepsis prescribing, while decreases in fluoroquinolone use may reflect efforts to prevent *Clostridium difficile* infections. However, our data also suggest that reductions in some ADs are offset by increases in others, supporting the need for ongoing work to identify the most effective AS strategies.

Disclosures. All authors: No reported disclosures.

1861. National Healthcare Safety Network’s Electronic Antimicrobial Use and Resistance Surveillance: First Cohort of Hospital Reporters, 2011–2017
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Background. The Centers for Disease Control and Prevention’s (CDC’s) National Healthcare Safety Network (NHSN) Antimicrobial Use and Resistance Module is used to monitor antimicrobial use and AR trends. Hospital participation in the module is voluntary. For hospitals to participate, data submission to the AU or AR reporting option(s) must be completed using standard electronic messages. To better understand how the mix of voluntary participation and electronic reporting requirements affects hospital uptake of the AUR Module, we characterized the first hospital cohorts of AU and AR data submitters.

Methods. We compared the first hospitals that submitted data to the NHSN’s AU and AR options with hospitals that reported to NHSN’s healthcare-associated infection (HAI) database but not the AUR Module from 2011 through 2015. We identified hospitals that had AR adopters are hospitals that reported to NHSN’s AUR Module by November of the year when the total number of reporters for each option reached 100. Hospitals’ characteristics were self-reported to NHSN, except for hospital membership in a large healthcare system (2100 hospitals), which was determined by reviewing public hospital composition information for large systems.

Results. Each option accumulated 2100 hospital adopters in the fifth year (AU, 2015) and fourth year (AR, 2017) of its availability. Compared with 5,382 HAI-only reporters, 119 early AU adopters were typically larger (median number of beds: 152 vs. 80, P < 0.001), teaching hospitals (71% vs. 41%, P < 0.001) and had a leadership supported antimicrobial stewardship program (ASP) (98% vs. 86%, P < 0.001). Compared with 5375 HAI-only reporters, 126 early AR adopters were more likely to be larger (median number of beds: 201 vs. 80, P < 0.001), teaching hospitals (71% vs. 41%, P < 0.001) and produced an antibiotic at least annually (99% vs. 91%, P < 0.001). A significant proportion of AU (42%) and AR (57%) early adopters belong to a large healthcare system.

Conclusion. The early hospital adopters in NHSN’s AUR Module were typically larger teaching hospitals at which some ASP elements were in use, and many of these...
initial adopters were part of large healthcare systems. These findings suggest that internal organizational factors contribute substantially to hospitals’ voluntary participation in AUR surveillance.

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

### 1862. The Role of Infection Preventionists in Antimicrobial Stewardship Programs in Acute Care Hospitals

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**Background.** Healthcare-associated infections due to multiply-resistant organisms cause significant morbidity and mortality in acute care settings. Antimicrobial stewardship programs (ASP) are one practice used to limit resistance and are especially crucial given the lack of new antimicrobials in development. The aim of this study was to describe the presence of ASP in a national sample of acute care hospitals and examine the engagement of Infection Preventionists (IPs) in antimicrobial stewardship activities.

**Methods.** In winter of 2018, we conducted an electronic survey of IPs working in acute care hospitals who are members of the Association of Professionals in Infection Control and Epidemiology (APIC). An initial invitation email was sent out directly by APIC and reminders were included in a weekly e-blast over a period of 6 weeks. Descriptive statistics were computed to describe the ASP in place, as well as IP engagement in these programs.

**Results.** Overall, 255 IPs participated in the survey. Of these, the majority (79%) reported the presence of an established ASP; another 13% reported that ASP activities are conducted without a formalized ASP. The presence of specific ASP policies and activities are presented in the Figure. The majority (88%) reported that an IP was a member of the core ASP team. Few IPs reported budgeted financial support and specific time commitment in the IP job description for ASP activities (14% and 9%, respectively). The majority of respondents agreed with the statement that ASP cannot be successful without a strong infection prevention and control (IPC) program (87%); however, only half agreed that the IP role in ASP is well defined (46%) and that IPs have adequate A5 knowledge to participate in ASP activities (59%). The most frequently reported barriers for IP participation in ASP included: time (41%), no allocated FTE (23%), no defined IP role or responsibility (29%), and lack of knowledge (18%).

**Conclusion.** This survey represents a current snapshot of the implementation of ASP policies in US acute care hospitals and identifies important barriers to IP engagement in ASP activities. Future work should focus how best to facilitate IP participation and engagement in ASP activities.

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

### 1863. Antibiotic Prescribing Before and After an FDA Boxed Warning on Fluoroquinolones in 2016

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**Background.** In July 2016, the FDA updated its boxed warning for fluoroquinolones (FQ) in light of ongoing safety concerns. Our objective was to examine trends in FQ and other antibiotic prescribing before and after the warning.

**Methods.** We analyzed electronic health records for inpatient, outpatient, and emergency department encounters during April 2014–August 2017 in the University of North Carolina Health Care System (N = 14,524,758 encounters). Patients under age 2 years were excluded. We estimated FQ prescribing rates per 1,000 encounters (henceforth, “/1,000”) using interrupted time series approach, we fit segmented linear regression models to assess trends before and after the FDA warning, accounting for seasonality and autocorrelated errors. We evaluated trends by gender, age, and point of care, and explored potential replacement of FQs by other antibiotics after the warning.

**Results.** The average FQ prescribing rate was 9.2/1,000 (95% CI 3.8, 14.7). Before the warning (April 2014–July 6), the FQ prescribing rate decreased by 0.61/1,000/year (95% CI 0.3, 0.9) (figure). At the time of the warning, the slope for the FQ prescribing rate steepened by 0.8/1,000/year (95% CI –0.1, 1.7); as a result, after the warning (July 6–August 2017), the rate decreased by 1.4/1,000/year (95% CI 0.7, 2.1). FQ prescribing was most common among adults age ≥265 (mean rate 12.2/1,000), but relative trends were similar across age and gender. Average FQ prescribing rates were highest in the inpatient setting (48.5/1,000) compared with emergency (18.3/1,000) and outpatient (6.2/1,000) encounters; relative trends were similar across settings. Rates for other common antibiotics did not increase after the warning, either overall (figure) or in any subgroup. Results were robust to sensitivity analysis for lagged effects. Additionally, the interpretation of results is anchored by trends for inhaled corticosteroids, which we analyzed as a negative control (figure).

**Conclusion.** The July 2016 FDA warning on FQs was associated with a decrease in FQ prescribing rates. There was no evidence of replacement by antibiotics with similar indications. We observed no evidence of heterogeneity across subgroups defined by gender, age, and point of care. Future research should assess the potential impact of the warning in clinically defined subgroups in various settings.

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

### 1864. Implementation of the National Healthcare Safety Network’s (NHSN) Antimicrobial Use Option in the US Veterans Affairs (VA) Medical Facilities

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**Background.** Inappropriate or unnecessary use of antibiotics exacerbates antimicrobial resistance and can lead to adverse clinical outcomes. To address this issue, NHSN created the Antimicrobial Use (AU) Option to report antimicrobial use within acute care facilities. A pilot program was started to implement AU reporting in VA in 2013.

**Methods.** With support from VA Antimicrobial Stewardship Task Force and NHSN, we deployed one team to focus on implementation and another on technical aspects. We used an iterative approach with four cohorts to date (Tiers), starting with highly engaged facilities with strong stewardship infrastructures. Our implementation approach (Figure 1) was based on the Promoting Action on Research Implementation (PARiHS) framework for successful implementation of evidence into clinical practice. We evaluated our implementation with focus groups conducted using Skype chat to collect feedback from participants about the implementation process. Group 1 contained six participants from Tiers 1 and 2. Group 2 had three participants from Tiers 3 and 4. Questions were constructed using the PARiHS framework (Table 1). An implementation team member conducted interviews, monitored the discussion, then coded major themes of responses.

**Results.** To date, there are over 90 facilities reporting AU to NHSN. Major themes to responses are summarized in Table 1. Overall, focus group participants were supportive of the program, but there were differences between early and later adopters.

**Conclusion.** A coordinated, centralized approach to facilitating implementation of NHSN AU reporting has been successful so far. Major themes from focus group responses did differ in some categories depending on tier in a way that are not consistent with the theory of diffusion of innovation, e.g., early tiers were enthusiastic despite a lack of institutional support while later tiers reported being motivated by regulatory requirements and had solid institutional support. More research would further inform how to efficiently implement complex programs in large systems.