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### 1855. Antimicrobial Stewardship (AMS) and the Outpatient Parenteral Antimicrobial Therapy (OPAT) Setting

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***Background.*** Antimicrobial resistance is a major threat to human health. In the OPAT setting broad-spectrum once daily antimicrobials may be chosen in preference to other agents requiring multiple daily doses for reasons of convenience. The role and effectiveness of antimicrobial stewardship (AMS) in the Australian hospital-in-the-home (OPAT) setting have not previously been studied.

***Methods.*** The National Antimicrobial Prescribing Survey (NAPS) was developed in 2011 to provide an audit of antimicrobial prescribing in Australian hospitals and is conducted by The Australian National Centre for Antimicrobial Stewardship (NCAS). The Hospital NAPS was modified for the OPAT setting, trialed in 2016 in five health services and rolled out to all Australian OPAT services as a pilot in 2017.

***Results.*** Twenty-three OPAT services throughout Australia participated in the OPAT NAPS pilot. In total, 1,154 prescriptions for 722 patients (63% male) were included. Patients ranged in age from 1 month to 101 years; median age was 58 years.

The most common indications for parenteral antimicrobials were; cellulitis (30%), osteomyelitis (8%), pneumonia (7%), abscess (6%), Cystic Fibrosis exacerbation (5%), endocarditis (4%), septic arthritis (4%), prosthetic joint infection (4%), and exacerbation of bronchiectasis (2%). Piperacillin–tazobactam or ceftriaxone were prescribed in 20% of cases. The majority of prescriptions for antimicrobials to treat community-acquired pneumonia and exacerbations of chronic obstructive airways disease were not compliant with guidelines.The median duration of parenteral therapy for cellulitis was 4 days; however, duration ranged overall from 1 to 44 days for this indication. Prescriptions were compliant with guidelines in 43% of cases, and appropriateness of antimicrobial prescribing was assessed as optimal in 74%, adequate in 13%, suboptimal in 8.5% and inadequate in 3%. Antimicrobial therapy duration was incorrect in 9% of cases.

***Conclusion.*** Opportunities exist for improving AMS interventions in the OPAT setting, specifically in regards to the use of broad-spectrum antimicrobials and in the treatment of respiratory tract infection. Importantly, not all OPAT services have the same access to AMS.

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

### 1856. Comparison of Antibiotic Susceptibility in Hospitals vs. Hospital-Based Emergency Departments

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***Background.*** Antibiotic susceptibility varies by hospital location (inpatient vs. emergency department (ED)) and by geographic location. Despite these differences, hospitals often have one antibiogram to determine empiric guidelines. The purpose of this study was to evaluate a large health system's bacterial sensitivity for key organisms in the inpatient vs. the ED setting to determine whether ED-specific antibiograms are necessary based on region.

***Methods.*** A health-system, consisting of primarily large general community hospitals across 20 US states, evaluated 156 of their hospitals and hospital-based EDs. These hospitals and hospital-based EDs were divided into regions based on geographic area for assessment. Inpatient and ED susceptibilities were then compared and classified based on susceptibility differences (Minimal 0–4, Moderate 5–10, Considerable > 10). One year of susceptibility data for *E. coli*, *P. aeruginosa* and *S. pneumoniae* was evaluated for antibiotic sensitivity.

***Results.*** A total of 171,556 nonduplicative isolates were evaluated including 139,562 *E. coli* urine isolates (inpatient 41,612, ED 97,950), 28,685 *P. aeruginosa* (inpatient 19,983, ED 8,702) and 3,309 *S. pneumoniae* (inpatient 1,565, ED 1,474). The ED was expected to have less resistance than inpatients as ED patients primarily come from a community setting. For *E. coli* urinary isolates, minimal differences were found for sulfamethoxazole/trimethoprim, and moderate differences were seen in cefazolin and ceftriaxone for the California/Nevada and Texas San Antonio regions. Moderate or considerable differences were seen in nearly all regions for ciprofloxacin. Considerable differences in *S. pneuomoniae* susceptibilities were seen between the inpatient and ED for azithromycin and penicillin G, while one region also had a considerable difference for levofloxacin. *P. aeruginosa* had one region with a considerable difference, with the Colorado + Central Kansas regions showing less resistance inpatient than the ED.

***Conclusion.*** Differences in inpatient vs. ED bacterial sensitives warrant justification for-specific regions to monitor and develop inpatient and ED-specific antibiograms.

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

### 1857. Implementing Antibiotic Stewardship in Urgent Care Centers

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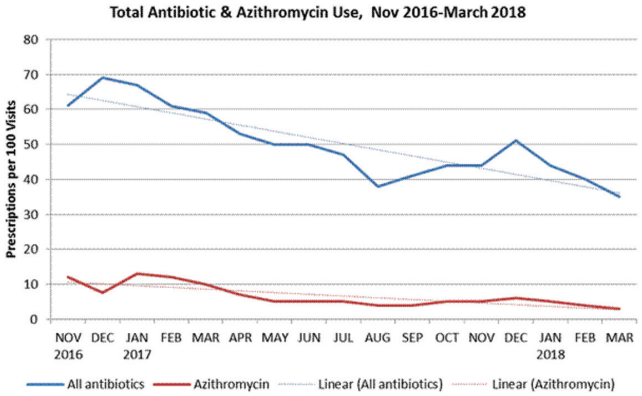
***Background.*** Antibiotic stewardship (AS) has historically focused on inpatient facilities and primary care clinics; many antibiotics (ABx) are prescribed in urgent care clinics (UCCs). However, few centers have described implementing AS in such settings. We sought to reduce total ABx use in our UCCs as well as specifically decrease azithromycin use.

***Methods.*** We conducted this study in four UCCs owned by a large community-based academic healthcare system in northern Delaware. The UCCs average >65,000 visits annually and include 38 providers (physicians, physician assistants and nurse practitioners). A new electronic health record was implemented in October 2016; ABx utilization data are not available prior to this time. Beginning in January 2017, all providers received in-person education on guideline-recommended management of common infectious diseases, including bronchitis, sinusitis, and pharyngitis. The lead physician performed chart audits and provided group and individual education and feedback via email and telephone. Individual ABx utilization rates were not provided, but documentation of rationale for ABx need was emphasized. Patient education included ABx links on the check-in website, posters in waiting and examination rooms, and patient education materials embedded within each discharge packet, with an emphasis on providing evidence-based care rather than "denying ABx." We calculated number of total ABx prescriptions (Rx) and of azithromycin Rx per 100 visits per month, and calculated rate ratios comparing January 2017 (pre-intervention) to January 2018 (post).

***Results.*** During the 16-month intervention period, total ABx use declined from 67 Rx per 100 visits to 44/100 visits (rate ratio, 0.55, 95% CI 0.37–0.80) and azithromycin use declined from 13 Rx/100 visits to 5/100 visits (RR 0.32, 95% CI 0.10–0.88). Seasonal variability was apparent (figure).

***Conclusion.*** A multifaceted educational approach positively impacted provider behaviors and patient expectations, and did not rely upon providing ABx utilization data (either clinic- or individual-level). Ensuring leadership support of providers if patients expressed dissatisfaction and standardized messaging and tools were critical for managing patient expectations.

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### 1858. Use and Perceptions of an Institution-Specific Antibiotic Prescribing "App" among Emergency Department and Urgent Care Clinicians

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***Background.*** We developed an application (app), accessible by mobile device or computer, to provide institution-specific antibiotic prescribing recommendations for common infections. The app was disseminated to emergency department (ED) and urgent care clinicians in August 2014. The purpose of this study was to assess current use of the app and its perceived impact on prescribing.

***Methods.*** We developed and administered an online survey. The survey instrument was pre-tested by a survey methodologist, two emergency medicine physicians, an infectious diseases (ID) physician, and an ID pharmacist and subsequently pilot-tested in a group of 70 providers. The final survey was administered to all clinicians in the Denver Health ED and two urgent care centers, including physicians, advanced practice providers, and Emergency Medicine residents. Respondents were eligible if they had worked at least one ED or urgent care shift within 90 days and either personally prescribe antibiotics or oversee other clinicians who prescribe antibiotics.

***Results.*** Of 156 clinicians, 99 responded, of whom 93 were eligible, for a response rate of 65%. Eligible respondents included 38 attending physicians, 18 advanced practice providers, and 37 residents. 91 (98%) had ever used the antibiotic app, and of those, 84 (93%) considered themselves to be regular users. 85% of users primarily accessed the app by smartphone. Mean (standard deviation [SD]) reported use was 3.0 (2.3) episodes per shift. 85% of users reported the app to be very useful (range: not at all useful to very useful). Among users of common prescribing resources including UpToDate™, Sanford Guide™, EMRA Guide to Antibiotics™, and the Johns Hopkins Guide to Antibiotics™, the institutional app had the highest reported usefulness. The mean (SD) perceived effect on accuracy of antibiotic choice, accuracy of dosing, consistency of prescribing, and effect on decreasing durations of therapy was 4.5 (0.5), 4.50 (0.6), 4.4 (0.7), and 3.5 (0.7), respectively (range: 1–5, with higher scores indicating greater effect).

***Conclusion.*** Among ED and urgent care clinicians, an institution-specific antibiotic app was widely utilized and perceived to be a useful clinical resource that impacted prescribing. Institution-specific apps may be effective tools to promote uptake of local prescribing guidance.

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

**1859. Prevalence of Antimicrobial Use in US Hospital Patients, 2011 vs. 2015**

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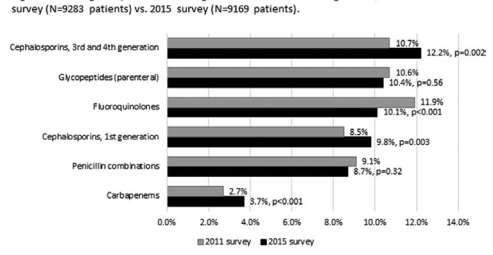
***Background.*** Antimicrobial stewardship (AS) is increasingly recognized as an essential component of patient safety programs. In a US hospital prevalence survey in 2011, 50% of patients received antimicrobial drugs (ADs). The survey was repeated in 2015 to describe changes in inpatient antimicrobial 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 (4,606/9,283, 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 (figure).

***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.

Figure. Percentages of patients receiving selected antimicrobial drug classes, 2011 survey (N=9283 patients) vs. 2015 survey (N=9169 patients).




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

**1860. Small State, Big Collaboration: Creation of First New Hampshire Statewide Antibiogram Guides Stewardship Efforts**

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***Background.*** Antibiotic-resistant infections have been identified as an urgent national health threat. In response, the New Hampshire Division of Public Health Services (DPHS) sought to develop a system for tracking antibiotic resistance statewide through use of hospital antibiograms to (1) proactively monitor resistance trends over time and geographic region, (2) promote antimicrobial stewardship in NH healthcare facilities, and (3) provide a tool for providers to help guide appropriate antibiotic prescribing.

***Methods.*** Through statutory legislative authority, DPHS requires hospital laboratories to report antibiogram data annually. DPHS formed an advisory group, consisting of infectious disease, medical and pharmacy subject matter experts to develop a standardized data collection tool. DPHS validated reported data to confirm accuracy, and clarify aberrant data by comparing the susceptibilities among all hospitals. Any questionable data were verified with the respective laboratory. The combined data were reviewed by the clinical advisory group and recommendations were created from the antibiogram data to highlight appropriate antibiotic prescribing and the need for coordinated stewardship. The antibiogram and clinical recommendations were disseminated widely throughout the state.

***Results.*** All 26 hospitals in New Hampshire submitted data. A total of 42,519 and 21,306 bacteria were cultured from urine and non-urine sources, respectively. The clinical advisory group's recommendations included interpretations and antibiotic therapy directives for common clinical syndromes. Dissemination was accomplished through a health alert, partnership with a state working group of stakeholders, widespread email communication and online publication.

***Conclusion.*** The small size of New Hampshire, centralized public health structure, and close working relationships with all hospitals allowed for efficient collection of these data. Our process may serve as a model for other states, and will inform more accurate, comprehensive antibiotic resistance surveillance. This antibiogram is the launch for a larger statewide public health antibiotic stewardship campaign and coincides with national efforts around antibiotic stewardship and resistance surveillance.

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**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 (AUR) Module is used to monitor antimicrobial use and AR threats. 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) Modules but not the AUR Module from 2011 through 2017. Early AU and 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 (≥100 hospitals), which was determined by reviewing online hospital composition information for large systems.

***Results.*** Each option accumulated ≥100 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%, $P < 0.01$) 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 antibiogram 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