to be emailed to pharmacists involved with antimicrobial stewardship. It was theorized that this method would help transform outpatient antimicrobial stewardship from a predominately retrospective approach, to a prospective approach. Outpatient stewardship metrics were compared for pre- and post- CSS implementation to evaluate the impact of a CSS. The pre-implementation group (PreCSS) represented outpatient stewardship interventions which led to 469 fewer minutes of chart review per one intervention. See Figure 2 for a list of interventions. The PostCSS group received a significant increase in consults due to the direct approach to interventions compared with the PreCSS group (45 vs. 11).

Conclusion. The use of a clinical surveillance system has demonstrated an efficient way to transition outpatient antimicrobial stewardship to a prospective, interventional approach.

Figure 1. Alert | Purpose
- TAN II: outpatient antimicrobial stewardship pharmacist verifies mismatch between microbiology results and antibiotic therapy and identifies positive microbiology results without an antibiotic prescribed.
- Renal Antibiotics Butler: identifies patients with a ClCr < 30mL/min or <45mL/min that are prescribed an antibiotic that requires renal dose adjustment.
- Targeted Drug Dosing: identifies patients with a new prescription for dyclacine.

Figure 2. Overall | 2017 (PreCSS) | 2018 (PostCSS) | Change
| Number of charts/antibiotics reviewed | 4320 | 4971 | +1549
| Number of consultations | 11 | 45 | +34
| Total number of interventions | 49 | 87 | +38
| Number of interventions independent of a consult | 38 | 39 | +1
| Number of interventions due to a consult | 32 | 48 | +16
| Percentage of interventions accepted | 48% | 99% | +51%
| Number of charts reviewed per intervention | 28.88 | 3.07 | -25.83
| Number of charts reviewed per intervention independent of a consult | 36.95 | 5.69 | -31.26

Clinical Actions
- Adjust dose/Frequency
- Avoid or defer antimicrobial medication
- Drug Bug/Infection
- Drug Information
- Duration/Duration
- Laboratory monitoring
- Med Dx: not indicated
- Medication change to different antimicrobial
- Medication: culture with no antibiotic
- Medication: dose adjustment
- TOTAL

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2076. Comparison of Diagnosis and Prescribing Practices between Virtual Visits and Office Visits for Sinusitis within a Primary Care Network
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Background. The majority of antibiotics prescribed in the outpatient setting result from upper respiratory tract infections; however, these infections are often viral. Virtual visits (VV) have emerged as a popular alternative to office visits (OV) for sinusitis complaints and are an important area for stewardship programs to target for intervention.

Methods. A retrospective cohort study was conducted utilizing the outpatient electronic medical record for Mercy Health Physician Partners (MHP) and Zipnosis database for VV to compare diagnosis and prescribing between OV and VV for sinusitis. OV consisted of an online questionnaire for patients to complete, which was then sent to a provider to evaluate electronically without face-to-face interaction. Adult patients were included with a diagnosis code for sinusitis during the 6-month study period from January to June 2018. The primary objective was to compare rates of appropriate diagnosis of viral vs. bacterial sinusitis between OV and VV, based on national guideline recommendations. Secondary objectives were to compare the appropriateness of antibiotic prescribing and supportive therapy prescribing between OV and VV, as well as 24-hour, 7-day and 30-day re-visits.

Results. A total of 350 patients were included in the study (OV n = 175, VV n = 175). Appropriate diagnosis per national guidelines was 45.7% in OV compared with 69.1% in the VV group (P < 0.001). Additionally, patients that completed VV were less likely to receive antibiotic prescriptions (OV 94.3%, VV 68.6%, P < 0.001). Guideline-concordant antibiotic prescribing was similar between groups (OV 60.6%, VV 58.3%, P = 0.70) and both visit types had a median duration of treatment of 10 days (P = 0.88). Patients that completed VV were more likely to re-visit for sinusitis within 24 hours (OV 1.7%, VV 8%, P = 0.006) and within 30-days (OV 7.4%, VV 14.9%, P = 0.027). In multivariate logistic regression the only factor independently associated with 24-hour re-visit was patient self-request for antibiotics (OR 0.20, 95% CI 0.06–0.68).

Conclusion. Appropriate diagnosis of sinusitis was more likely in the VV group, which shows that VV provides a good platform to target outpatient antimicrobial prescribing. These findings support opportunities for antimicrobial stewardship intervention in both OV and VV.

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2077. Fluoroquinolone Usage Reduction in the Outpatient Setting
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Background. Fluoroquinolones (FQs) are the third most commonly prescribed outpatient antibiotic due to ease of dosing, broad spectrum of activity, and favorable pharmacokinetics. However, since 2016, the Food and Drug Administration (FDA) has released warnings about adverse effects, concluding that risks outweigh benefits especially for uncomplicated sinusitis, bronchitis, and cystitis. In fall 2016, our antimicrobial stewardship team began an initiative to decrease outpatient FQ usage involving provider education, addition of FDA warnings to oral FQ orders in Epic, and suppression of FQ susceptibilities. This evaluated the effectiveness of these initiatives in decreasing inappropriate outpatient FQ usage.

Methods. A retrospective chart review of FQ prescription was performed on all outpatient clinic, emergency department (ED), and urgent care emergency center (UCEC) visits during October 2016, 2017, and 2018. Inappropriate use was defined as an indication for cystitis, bronchitis, or sinusitis without a history of Pseudomonas aeruginosa or other multi-drug resistant organism, or drug allergies precluding the use of non-FQs.

Results. 1,033 outpatient FQ prescriptions were reviewed. Total FQ prescribing decreased 34% from 405 in October 2016 to 267 in October 2018, with the proportion of inappropriate FQ use decreasing from 53% to 34%. Over 90% of the inappropriate FQ use was for cystitis. Inappropriate prescribing for cystitis and sinusitis decreased by 58% and 33%, respectively, but increased for bronchitis by 25%. The outpatient clinics, ED, and UCEC saw declines in the percentage of inappropriate FQ use of 10%, 15% and 22%, respectively, from October 2016 to October 2018. Despite these decreases, rates of inappropriate FQ utilization for the outpatient clinics, ED, and UCEC were 64%, 25%, and 31%, respectively, at the end of the last study period.

Conclusion. A multi-modal FQ stewardship initiative effectively reduced the volume of outpatient FQ utilization and inappropriate FQ usage. Continued efforts to educate providers about the risks of FQ use and implement system-level initiatives are likely necessary to improve the rates of appropriate use and sustain the effects demonstrated in this study, especially for primary care providers in the outpatient setting.

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2078. Patterns, Indications, and Appropriateness of Antibiotics Prescribed at a Private Dental Practice
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Background. Although dentists prescribe 10% of all outpatient antibiotics in the United States (US), patterns and prescribing behavior of dentists in the United States are largely unknown especially in private practice. We aimed to describe the patterns and indications of antibiotics prescribed at a United States private dental practice and evaluate prescription appropriateness.

Methods. This was a retrospective cohort study of all patients who received an antibiotic at a private dental practice in Baytown, TX, between 2017 and 2019. A thorough guideline and literature search was conducted to define the indication-specific appropriate logistic regression. The prescribing dentist and an antimicrobial stewardship pharmacist reviewed each patient chart to verify diagnosis and antibiotic indication. Each prescription was categorized as appropriate (evidence supports use), inappropriate (evidence does not support use), indeterminate (insufficient evidence to determine if evidence supports use), or not enough information (inadequate patient-specific data to determine appropriateness).

Results. Of 3,700 patient encounters, an antibiotic was prescribed for 230 (6.2%) encounters. Antibiotics prescribed were amoxicillin (52.2%), amoxicillin/clavulanate (27.8%), penicillin VK (7.4%), azithromycin (4.8%), clindamycin (3.5%), cephalaxin (2.2%), and metronidazole (1.7%). Excluding antibiotics given as a single pre-operative dose (6% of antibiotics), the mean duration of antibiotics was 5 ± 0.6 days (mean ± SD).
Antibiotic indications were symptomatic apical periodontitis or localized acute apical abcess (51.3%), symptomatic irreversible pulpitis (17.8%), prevention of implant failure (11.7%), periocoronitis (4.3%), acute apical abscess with systemic involvement (3.9%), and others (11%). Of the 230 antibiotic prescriptions, 27.8% were appropriate, 3.9% inappropriate, 66.1% indeterminate, and 2.2% not enough information.

Conclusion. Commonly prescribed antibiotics in this study were amoxicillin or amoxicillin/clavulanate for a mean duration of 5 days. The most common indication was symptomatic apical periodontitis or localized acute apical abscess. Two-thirds of antibiotics were prescribed without sufficient evidence to support or not support use.

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2079. Outpatient Antimicrobial Stewardship Initiative to Reduce Unnecessary Use of Antibiotics in Patients with Upper Respiratory Infections: Findings Shared by a Metropolitan Community Hospital in NYC

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Background. Antibiotic-resistant infections are one of the greatest public health issues with more than 2 million infections and 23,000 deaths per year in the United States. Reducing inappropriate antibiotic use is essential to reduce both antibiotic resistance and adverse events. The most important modifiable risk factor for antibiotic resistance is inappropriate prescribing of antibiotics. At least 30% of outpatient antibiotic prescriptions in the United States are unnecessary. We aimed to pilot our outpatient antimicrobial stewardship initiative to track and reduce antibiotic prescriptions among adult patients presenting with common acute respiratory infections in our hospital's outpatient primary care settings.

Methods. A retrospective and prospective cohort study from October, 2017 to March, 2019. Implemented a robust outpatient antimicrobial stewardship initiative with a dedicated team and data analyst based on CDC core elements for outpatient antimicrobial stewardship and a prior UHF initiative. Data of common respiratory tract infections and the respective rates of antibiotic prescriptions from 3 adult primary care sites were collected from the EHR. Serials of educational interventions were performed between June, 2018 to September, 2018. We disseminated resources from the CDC and DOH like brochures, posters, viral prescription pads, pocket guidelines, grand rounds and electronic lectures for providers and periodic provider feedback reports.

Results. Our findings revealed that the physician compliance rate of antibiotics not prescribed for common respiratory tract infections remarkably improved from 72% to 85% after implementing our interventions (Figure 1). The chi-square test showed 40, and P value is 0.000034 which is less than 0.05. Thus, we are 95% confident that there is a significant association between our interventions and reduction of inappropriate antibiotic use (Figure 2).

Conclusion. Introduction of a robust and multifaceted Outpatient Antimicrobial Stewardship initiative with a dedicated team can substantially decrease outpatient antibiotic prescription rates for respiratory tract infections in metropolitan community hospital-based primary care settings.

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2080. Impact of an Emergency Department Post-discharge Blood Culture Follow-up Program

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Background. Blood cultures are the gold standard in the identification of laboratory-confirmed bloodstream infections (lcbi) but contamination can lead to unnecessary interventions. This study sought to assess the number of unwarranted admissions in patients with contaminated blood cultures post-discharge and at low risk for lcbi before and after the implementation of a multidisciplinary emergency department (ed) blood culture follow-up program.

Methods. This was a two-phase retrospective cohort study at a tertiary care, 1,550-bed, academic hospital and level i trauma center in southeastern florida. Phase 1 assessed interventions made on patients 18 years of age or older discharged from the ed or a hospital observation unit with a positive blood culture result post-discharge from march 2018 to july 2018. Phase 2 assessed interventions made from december 2018 to march 2019 post-implementation of the multidisciplinary follow-up program. The criteria for low risk of lcbi were lack of risk factors for infection and < 2 positive blood cultures with a commensal bacteria with no symptoms of fever or hypotension on the date of specimen collection and 3 days before or after such date.

Results. Among patients at low risk for lcbi (46% of 24 patients in phase 1 vs. 59% of 22 patients in phase 2), unwarranted admissions due to contaminated blood cultures occurred in 27.3% of patients in phase 1 vs. 0% of patients in phase 2 (p = 0.08). Phase 1 represented a period in which systematic reporting and evaluation of positive results and patient follow-up were not in place. Phase 2 consisted of daily pharmacist-led blood culture reviews with callback nurse follow-up and therapeutic care plan development with ed physicians. The number of contaminant isolates was relatively high (figures 1 and 2). Pharmacist-led interventions were diverse (figure 3). the program led to an estimated total cost avoidance of $16,410.80 in a median of 4.5 months due to unnecessary admissions.

Conclusion. Implementation of a multidisciplinary ed post-discharge blood culture follow-up program can be an effective strategy in improving patient care and avoiding unnecessary antibiotic therapy. Further interventions aimed at reducing blood culture contamination could have a direct impact on improving ed antimicrobial stewardship.

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