Results. A total of 2,170 adult encounters for the treatment of SSTIs were included; 1,588 with cellulitis, 413 with local infection and 169 with cutaneous abscess. The overall compliance rate for appropriate therapy, including drug selection and duration, was 64.9% (see Figure 1). Unnecessarily long duration of therapy resulted in an extra 1,657 days of antibiotic therapy. Compliance with drug selection occurred more frequently with physicians (40.3%) compared with residents (33.9%) and Advanced Practice Providers (APP) (25.1%).

Conclusion. Compliance with an institutional SSTI guideline for antibiotic selection and duration of therapy is suboptimal in outpatient clinics. Stewardship interventions for SSTI should target both drug selection and duration, and APPs as an important provider group in outpatient settings.

Figure 1. Compliance Stratified by Infection Type

| Infection type          | Overall Compliance | Compliance with Drug Selection | Compliance with Duration of Therapy |
|-------------------------|--------------------|---------------------------------|-------------------------------------|
| Cutaneous abscess       | 29%                | 55%                             | 57%                                 |
| Cellulitis              | 78%                | 82%                             | 60%                                 |
| Local infection of skin | 16%                | 85%                             | 60%                                 |

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1849. Identification of Antimicrobial Stewardship Targets in the Outpatient Setting

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Background. Outpatient prescriptions consist of 60% of all antibiotic use. Prior studies have shown antibiotic overuse in the outpatient setting which contributes to rising rates of resistance and unnecessary adverse drug events. This study aimed to prospectively identify antibiotic stewardship targets in outpatient settings including drug selection, dose, duration, and if guideline criteria was met to necessitate an antibiotic.

Methods. The patient population consisted of outpatient seen at the Veterans Affairs Western New York Healthcare System and its affiliated community-based outreach clinics. Patients were prospectively identified via a real-time alert received by the infectious disease pharmacist at the time when an oral antibiotic was prescribed from June to September 2017. Data were then collected via chart review and all infections were evaluated based on guidelines. Descriptive statistics and a multivariable logistic regression was used to identify stewardship targets.

Results. Of the 1,063 patients included, the most common infections treated included skin and skin structure infection (26.3%), urinary tract infection (18.1%), and sinusitis (11.9%). Azithromycin was the most commonly used antibiotic (27%), followed by cephalaxin (13%) and ciprofloxacin (12%). Overall, 40% of antibiotics prescribed were not indicated for use. The incorrect drug was chosen for indication in 40%, the improper dose was ordered in 22%, and the incorrect duration was used in 30%. ICD-10 codes were unreliable in capturing oral antibiotic use, as only 41% anti-infective medications were associated with an ICD-10 code relating to an infection. Per the multivariable logistic regression, when the antibiotic was indicated, patients were 2.9 times more likely to receive the correct drug (95% CI, 2.3–3.8) and two times more likely to receive the correct duration for the antibiotic (95% CI, 1.5–2.7). Emergency room patients were twice as likely to receive an antibiotic when indicated based on guidelines (95% CI, 1.5–2.7) compared with those seen in clinics.

Conclusion. Poor antibiotic prescribing practices was found throughout the outpatient setting. This study provides a guide to focus efforts during implementation an outpatient stewardship program.

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1850. Impact of Targeted Feedback on Ciprofloxacin Prescribing in Outpatient Clinic Areas

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Background. Fluoroquinolones (FQ) have the potential for serious side effects such as tendonitis and tendon rupture, QTc prolongation, severe neurotoxicity, Clostridium difficile infection, dysglycemia, and AKI in patients on ACE inhibitors or ARBs. Beginning in 2016, the University of Chicago Medicine (UCM) Antimicrobial Stewardship Program began to give targeted feedback and education to outpatient clinic areas regarding their FQ use to reduce the number of prescriptions.

Methods. Outpatient FQ prescribing data from July 2015 to June 2016 (pre-intervention) and December 2016 to December 2017 (post-intervention) was reviewed retrospectively to evaluate indications, durations and alternatives for FQ prescriptions. Education and targeted feedback specific to the clinical area on current FQ usage was given by peer-comparison or aggregate data with recommendations for improved prescribing practices. The number of ciprofloxacin prescriptions/1,000 patient days was evaluated in two outpatient clinics and number of ciprofloxacin prescriptions/1,000 patient days was evaluated in the emergency department pre and post intervention.

Results. Ciprofloxacin prescriptions/1,000 patient days was calculated for outpatient clinic and emergency department. A significant decrease in ciprofloxacin prescribing was seen in the PCG, 8.7/1,000 patient visits (PRE) vs. 5.2/1,000 patient visits (POST), P = 0.01; in SC, 16.2/1,000 patient visits (PRE) vs. 6.7/1,000 patient visits (POST), P = 0.01; and the ED, 13.37RX/1,000 patient days (PRE) vs. 9.8/1,000 patient days (POST) (P = 0.035). Peer comparison data were well received by PCG faculty. Decreases have been sustained in each clinical area 4 (ED) to 12 months (PCG and student care) following the intervention.

Conclusion. Feedback on both aggregate clinic and individual use of ciprofloxacin resulted in decrease use in three outpatient clinical areas at UCM and was well received by providers. Further work is up needed to assess the most effective methods to optimize antibiotic prescribing in the ambulatory clinics.

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1851. Impact of an Antimicrobial Stewardship Initiative on Fluoroquinolone Utilization in the Outpatient Setting at an Academic Medical Center

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Background. Fluoroquinolone (FQ) use is associated with the development of C. difficile colitis, emergence of multidrug-resistant pathogens and occurrence of multiple adverse effects. In light of these risks, the Food and Drug Administration (FDA) warns against the overuse of systemic FQs for certain infections. Utilization of clinical decision support systems or alert tools integrated within the computerized physician order entry (CPOE) have been implemented in the inpatient setting to reduce antibiotic use. However, there is limited data on the effectiveness of such strategies in the outpatient setting. The purpose of this study was to evaluate the impact of an antimicrobial stewardship initiative on FQ utilization in the outpatient setting.

Methods. This was a retrospective chart review of patients 21 years old who received a FQ upon discharge from the inpatient setting, emergency department or outpatient clinic at a large academic medical center. The intervention consisted of an automatic electronic alert that would appear upon prescribing of a FQ, suggesting use of an alternative antibiotic and requiring a diagnosis to be entered. The pre and post intervention periods spanned from November 16, 2016 to April 16, 2017 and from November 16, 2017 to April 16, 2018, respectively. The primary endpoint was the number of FQ prescriptions over the total number of visits in the pre- and post-intervention time periods. A secondary endpoint was the number of FQ days of therapy [RDTS] for each FQ.

Results. 1,668 patients received FQs upon discharge in the pre-intervention arm and 1,494 in the post-intervention arm. Compared with the pre-intervention group, fewer FQs were prescribed in the post intervention group (P = 0.002). Fewer patients were discharged on an FQ from the pre-intervention arm compared with the post-intervention arm (31 vs. 39%). However, this did not hold true when evaluating the number of FQ prescriptions written from the inpatient setting (52% in the post and 42% in the pre-intervention). DOT was lower in the post-intervention arm (10.751.5) compared with the pre-intervention period (11.981).

Conclusion. Implementation of a mandatory electronic alert tool in CPOE showed a statistically significant reduction in the overall number of FQ prescriptions between the pre and post intervention groups in the outpatient setting.

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1852. Rethinking Empirical Treatment for Urinary Tract Infections in the Outpatient Setting

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Background. Antibiotics can be useful for guiding empirical treatment. The Tufts Medical Center microbiology laboratory generates an antibiotic for the adult primary care (PC) clinic consisting of urinary isolates of E. coli to guide empirical treatment for UTI. Standard antibiograms arranged by organism are of limited utility for some UTIs which are caused by a wide array of bacteria. Furthermore, some
providers only send urine cultures from patients after clinical failure. This results in overestimation of resistance.

**Methods.** For 2 months, PC clinicians were instructed to alter practice by sending a UA with reflex to culture for all patients suspected of having UTI. A retrospective chart review collected antibiotic prescriptions, UA and culture results. We generated a combination UTI-specific antibiogram (CUSA) based on data from all urine cultures sent from this clinic. Using the CUSA we developed an empirical UTI treatment algorithm and evaluated prescribing trends before and after its implementation.

**Results.** The CUSA as compared with the E. coli urinary antibiogram for the PC clinic is shown in Table 1. Distribution of organisms is represented by Figure 1. Based on the CUSA, a treatment algorithm was developed that included preference for nitrofurantoin and TMP/SMX for patients with cystitis, and allowed for use of TMP/SMX even in pyelonephritis cases without risk factors for resistance. Cephalosporins were advised over fluoroquinolones. Of 304 patients in whom urine cultures were sent pre-implementation, 178 empirical antibiotic prescriptions were written, while 126 were written for 388 patients after implementation. Nitrofurantoin prescriptions increased (47% to 55%), TMP/SMX (19%) and cephalosporin use (4%) remained the same, and fluoroquinolone prescribing decreased (28% to 20%).

**Conclusion.** We used a CUSA to develop a treatment guideline more reflective of our causative pathogens and institutional resistance patterns. We saw a shift in usage from antibiotics with more to antibiotics with less collateral damage.

**Table 1: E. coli Urine Antibiogram vs. CUSA**

| PC Urine E. coli Antibiogram | CUSA (157) |
|-----------------------------|-----------|
| Amox/Clav                   | 54        |
| Cefepin                     | 62        |
| Cipro                       | 62        |
| TMP/SMX                     | 82        |
| Nitrofurantion              | 82        |

| PC Urine E. coli Antibiogram | CUSA (157) |
|-----------------------------|-----------|
| Amox/Clav                   | 77        |
| Cefepin                     | 98        |
| Cipro                       | 98        |
| TMP/SMX                     | 98        |
| Nitrofurantion              | 98        |

**Figure 1.**

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185.4. Effective Antimicrobial Stewardship for Outpatient Parenteral Antimicrobial Therapy (OPAT): Nationwide Experience in Infectious Disease Physician Infusion Centers

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**Background.** Antimicrobial stewardship (AS) is an important factor in combating antimicrobial resistance and optimizing clinical outcomes, especially in the outpatient setting. With no AS guidelines in the United States for OPAT, we developed an antimicrobial stewardship program (ASP) for OPAT in 2016, which was piloted and applied to Infectious Disease practices and infusion clinics. The program was expanded and assessed nationally in additional centers in 2017, adding appropriate-ness of empiric therapy (tx), supervision of first doses of antimicrobials, compliance with tx regimen, appropriate tx changes and staff education.

**Methods.** An assessment instrument was developed through literature review, expert opinion and validated with a logistic model. Patients receiving OPAT in 2017 were randomly selected and retrospectively reviewed based on annual patient volume from 14 OPAT practices. The table shows the ASP assessment tool consisting of 7 Core Elements (CE) scored at 10 points each and 6 Other Elements (OE) scored at 5 points each. Logistic regression was used to validate the relationship between the composite outcome elements and all other elements (aOR = 0.929, P = 0.0005, c = 0.704). Appropriateness of empiric tx and tx length was evaluated using evidence-based guidelines. Each patient OPAT course was assessed and scored for compliance to required elements with an achievable score per patient of 100 points (100%). IV to PO conversion was evaluated secondarily. Descriptive statistics were used.

**Results.** A total of 200 OPAT courses were scored for compliance to each ASP element as noted in the table. The overall compliance rate for CE and OE was 93.0% and 93.3%, respectively. All CEs were ≥90% compliant, except for duration of tx. This exceeded guidelines in 15% of patient courses due to severe disease presentation. For the OEs, all achieved ≥90% compliance except laboratories performed as ordered. Early conversion from IV to PO resulted in a reduction of 240 IV days for 1.2 days per patient.

**Conclusion.** We successfully developed an OPAT ASP with national expansion. Opportunities were identified for improvement in laboratory processes and enhanced evaluation regarding tx durations. This validated ASP provides a valuable tool for OPAT, incorporating key elements for stewardship success.