Reducing Fluoroquinolone Use in the Inpatient and Emergency Department

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Introduction

Fluoroquinolone antibacterial drugs (FQs) are associated with disabling and potentially permanent side effects of the tendons, muscles, joints, nerves, and central nervous system that can occur together in the same patient. Risks outweigh benefits in acute bacterial sinusitis and uncomplicated urinary tract infections. There is a high correlation between FQs and development of *C. difficile* infections (CDIs). The Days of Therapy (DOT)/1000 patient days for FQs at Sutter Lakeside Hospital were 253.5 and 180.6 in 2015 and 2016 respectively. The goal is to reduce FQ use by an additional 20% within one year. To achieve goal, PCN allergies are addressed, FQ therapy duration are assessed as well as the appropriate use of FQs. Due to the fact that the project has not completed a full term, there will be a comparison of the same time frame of prior years/quarters to the time frame since the start date. This eliminates the possibility of any confounding factors and allows for consistency. The Go-Live date for the initiative was in Quarter 4 (October 2017) and results consist of the end of Quarter 2 (June 2018).

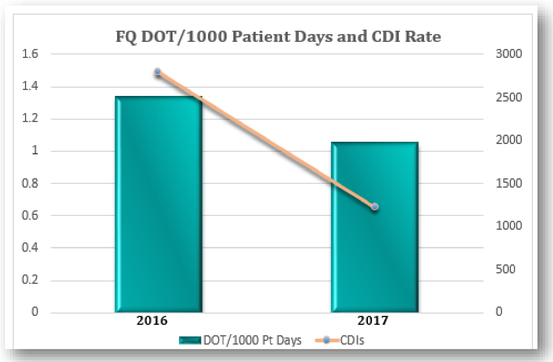

Figure 1

Methods and Materials

A root-cause analysis identified three main criteria that lead to FQ usage: healthcare personnel, resources and software.

Analysis: Healthcare Personnel	Analysis: Resources and Software
Physicians: ◆ Limited awareness ◆ Conflicting resources ◆ Travelers ◆ Limited alternatives ◆ Penicillin (PCN) allergy alerts **Nurses:** ◆ Improper documentation of PCN allergies **Pharmacists:** ◆ Limited awareness ◆ Non profiled ED	**System Initiative: Reduce FQ use** **EPIC Order sets: Suggest FQ use** **SLH 2017 Antibiogram; Reduce FQ use** **IDSA guidelines: Suggest FQ use**

Figure 2

Current guidelines and clinical pathways suggest the use of FQs which adds challenges to provider decision making in choosing the most appropriate therapy

Process Phases:

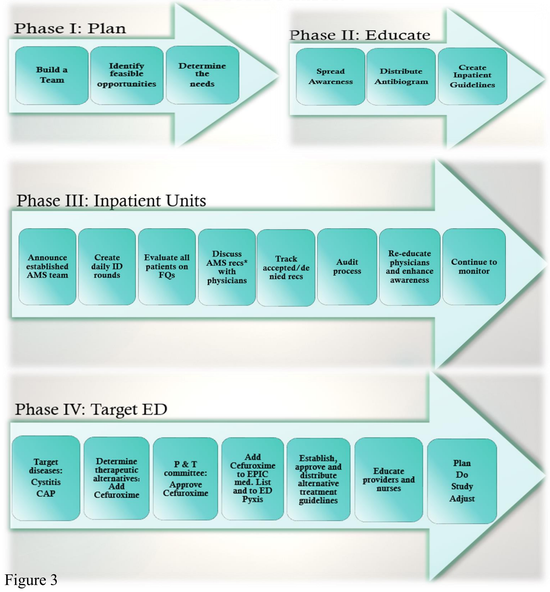

Figure 3

Results

Inpatient Units:

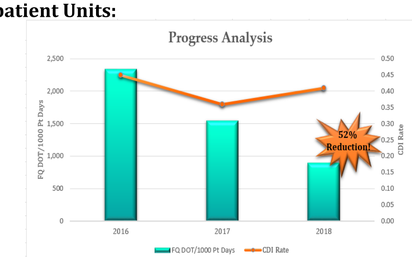

Figure 4

ED Units:

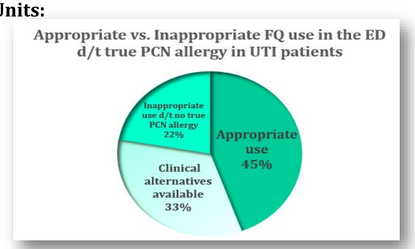

Figure 5

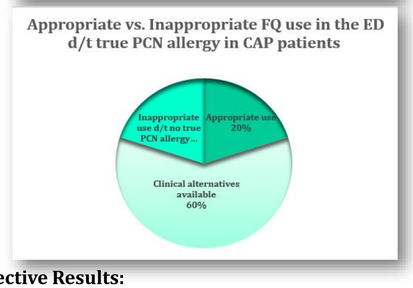

Figure 6

Collective Results:

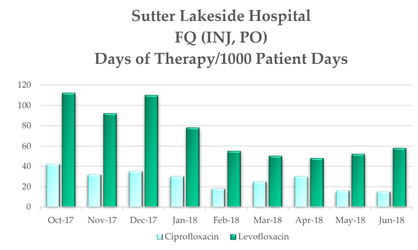

Figure 7

Discussion

The primary focus of this project was to lower fluoroquinolone (FQ) use in a critical access hospital. The goal was to have beneficial secondary outcomes such as fewer adverse effects and C. difficile infections (CDIs). A multi-pronged approach was taken in which the initiative was implemented first in the hospital inpatient setting and then in the Emergency Department (ED). This allowed optimal time for the initiative to take effect in each department separately. In Phase I of the initiative, a team was built consisting of a Lead Clinical Pharmacist, Infectious Disease Physician, ED and Pharmacy Champion. Phase II focused on education. System driven techniques were used to influence decision making in FQ use such as utilizing guidelines and local antibiograms. Phase III focused on Inpatient Units: Med-Surg, Intensive Care Unit, Surgery and Outpatient Care. The Go-Live for the initiative was October 2017. During this phase, daily stewardship rounds were initiated, involving pharmacy and an Infectious Disease (ID) physician who participated remotely. Every inpatient FQ prescription was evaluated and feedback was provided to the physicians. The accepted/denied recommendations were tracked and process was continuously monitored. The results in the inpatient setting indicate a significant reduction in FQ use as well as a reduction in the rate of CDIs. When comparing the outcomes of the same window (Q4 2016-Q4 2017), a 42% reduction in FQ use can be seen. During Phase IV focus was shifted to the ED and the Go-Live" date was in March 2018. Collaboration with ED physicians focused on restricting the use of FQ. In order to effectively lower FQ use, guidelines were used to highlight the appropriateness of FQ therapy. Upon performing drug use evaluation, urinary tract infections (UTI) and community acquired pneumonia (CAP) were the high likely reasons for FQ administration. Thus, targeted efforts focused on those two disease states. PCN allergies were focused on and hospital staff were educated in verifying patient allergies during visits. Nursing staff was educated on documenting and recognizing high risk penicillin allergies vs. intolerances. Therapeutic alternatives for FQs were added to the hospital formulary, such as cefuroxime. A 52% reduction in FQ use since 2016 was seen as well as reduced CDI rates where the initial goal was 20%.

Conclusions

Critical access hospitals are able to lead significant improvements in AMS. The use of a remote Infectious Disease Specialist with a dedicated clinical pharmacist is invaluable. A collaborative effort was necessary amongst all hospital caregivers in order to reach and exceed clinical goals.

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