

2094. Acceptability of Antibiotic Substitutions for Fluoroquinolones and Third and Fourth-generation Cephalosporins: A Report from the VA-CDC Practice-Based Research Network (PBRN)

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Background. Studies suggest fluoroquinolones (FQ), and third (3C) and fourth (4C) generation cephalosporins, agents often used for empiric therapy, place patients at higher risk for *C. difficile* infection. Substituting alternative antibiotics for empiric therapy might reduce risk. We surveyed inpatient physician (MD) and pharmacist (PharmD) antimicrobial stewardship champions to evaluate their preferred FQ, 3C and 4C substitutions for empiric therapy.

Methods. Semi-structured interviews were conducted with the antimicrobial stewardship MD and the PharmD champion from each of the 15 VA-CDC Practice Based Research Network (PBRN) sites. Interviewees were asked what empiric antibiotics for pneumonia and urinary tract infections would be recommended in local guidelines if all 3C, 4C and FQ were restricted. Respondents could list multiple antibiotics. Templated data collection and analysis were used to assist in rapid analysis of interviews.

Results. Narrow β-lactams were identified as appropriate options for CAP by 8 MD and 9 PharmD (table). Piperacillin/tazobactam was the preferred choice by MDs and PharmDs for HCAP (7 and 12, respectively) and HAP (10 and 12, respectively). For community-onset urinary tract infections (cUTI), numerous alternatives to FQ, 3C and 4C were identified. For hospital-onset (hUTI), piperacillin/tazobactam was most frequently mentioned by MD and PharmDs (7 and 9, respectively). 4 of 5 MDs and 5 of 7 PharmDs who chose 3C for CAP indicated that 3C were preferred over all other choices for CAP, few stewards indicated that 3C were the sole preferred agents for other conditions.

Conclusion. Antimicrobial stewardship MD and PharmD champions were readily able to find FQ substitutions for all indications; 3C and 4C substitutions were found for all indications with a notable exception of treatment of CAP. These results suggest considerable opportunity to reduce use of these antibiotic classes. Future studies should examine the appropriateness and acceptability of the substitutions identified by stewardship champions to providers and the impact of restriction of FQ, 3C and 4C on clinical outcomes.

	Community-Acquired (CAP)		Healthcare Associated (HCAP)		Hospital Acquired (HAP)	
	MD	PharmD	MD	PharmD	MD	PharmD
	FQ	0	0	0	0	0
Narrow βlactam*	8	9	4	3	3	1
Ceftriaxone	5	7	4	1	0	0
Ceftazidime/cefepime	0	0	1	2	2	4
Piperacillin/tazobactam	1	1	7	12	10	12
Ertapenem/meropenem	0	0	1	1	1	1
Doxycycline	6	2	2	0	10	0
Macrolide	8	7	0	2	1	0

	Community acquired UTI (cUTI)		Hospital onset UTI (hUTI)	
	MD	PharmD	MD	PharmD
	FQ	0	1	0
Narrow βlactam*	6	6	1	3
Ceftriaxone	2	2	6	1
Ceftazidime/cefepime	0	0	1	2
Piperacillin/tazobactam	0	1	7	9
Ertapenem	1	0	1	1
Meropenem	0	0	0	0
TMP/SMX	6	7	0	4
Nitrofurantoin	10	6	0	0
Fosfomycin	1	0	0	0

The data in the table indicate the number of mentions of each antibiotic or antibiotic group by MDs or PharmDs for the specified indication. Respondents often mentioned more than one antibiotic – each response was given equal weight. Mentions of aminoglycosides and vancomycin were not included. Mentions of multiple narrow βlactams were collapsed as were mentions of ceftazidime or cefepime.

* Ampicillin, amoxicillin/clavulanate, ampicillin/sulbactam, amoxicillin/clavulanate, 1st or 2nd generation cephalosporin

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2095. Antimicrobial Stewardship (ASP) in Rural and Critical Access Hospitals (CAHs) Using TeleStewardship® Services

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Background. MDStewardship® is a physician-owned company that uses TeleStewardship® services, which consist of telephone and HIPAA-compliant teleconferencing and texting, to provide rural and critical access hospital (CAH) ASP services, ensuring facilities remain compliant with Joint Commission ASP requirements. MDStewardship® also provides monthly webinars to all participating hospital personnel for continuing education. Webinars are live, interactive, and contain topics based on IDSA guidelines. MDStewardship® personnel discuss antibiotics with the hospital staff using a HIPAA-compliant secure audio-video feed, phone conference, or secure-text. CAH pharmacists discuss the antibiotics currently being given in their institution and MDStewardship® personnel provide further ASP recommendations. ASP recommendations are provided by MDStewardship® clinically-trained infectious disease pharmacists and infectious disease physicians, and are communicated to on-site pharmacists or directly with providers.

Methods. MDStewardship® is active with many rural CAHs in Nebraska, and over 20 hospitals nationally. Here we report our ASP results for 10 CAHs in Nebraska from August 2018 to April 2019. A total of 401 ASP recommendations were given over that time.

Results. The top three most common infectious diseases diagnoses involving recommendations were UTI (16.7%), pneumonia (15.2%), and bacteremia (13.7%). Most common ASP interventions included alternative therapy (15.7%), additional therapy (13.7%), oral step-down therapy (12.7%), and further laboratory monitoring (12.5%). Additional daily antimicrobial stewardship assistance includes: development of hospital protocols, order-sets, antibiograms and guideline adherence. Total acceptance of ASP recommendations averages > 90%. Reimbursement is based on a contract over 12 months.

Conclusion. The use of TeleStewardship® services allow CAHs to have 24/7 infectious disease specialist and clinically trained antimicrobial stewardship pharmacist support with a high number of interventions and a high acceptance of recommendations. The goal of this program is to give the right antibiotic, right dose, for the right duration, for each patient.

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2096. System-Wide Multi-Pronged Approach Leads to Successful Reduction of Fluoroquinolone Use Across a Large Health System

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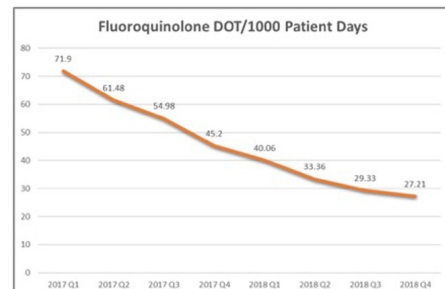
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Background. Overuse of fluoroquinolones has been associated with increased rates of *Clostridioides difficile* infections, MRSA, and resistant Gram-negative infections due to selective pressure on normal flora. In addition, the FDA has issued several safety alerts regarding systemic use of fluoroquinolone antibiotics due to concerns for serious adverse events and antimicrobial resistance. Considerable variability in the utilization of this antibiotic class across the system resulted in a system-wide initiative to reduce inappropriate prescribing.

Methods. A national initiative included the integration of system-wide approved adult criteria for use into electronic health record order sets and pharmacy clinical decision support systems. System-wide education on the initiative involved learning modules, education toolkits and webinars. Fluoroquinolone utilization rates were reported monthly to help facilities determine the success of initiatives to improve performance.

Results. The fluoroquinolone criteria for use were integrated into several disease-specific order sets system-wide to include: pneumonia, acute exacerbation of COPD, chronic bronchitis, sepsis, acute pyelonephritis, and skin and soft-tissue infection. The learning modules were assigned to all acute care pharmacists resulting in 1,783 completions. Education toolkits were utilized by antimicrobial stewardship teams for provider education. A significant reduction in fluoroquinolone utilization rates, defined by days of therapy (DOT) per 1000 patient-days, was seen across 94 facilities (Figure 1). This resulted in a 45.84% reduction in fluoroquinolone rates from 2017 (56.96, 95% CI 56.72, 57.21) to 2018 (30.85, 95% CI 30.66, 31.04).

Conclusion. Developing and implementing a multi-pronged approach to maximize the effective use of fluoroquinolones can result in significant reductions in utilization across a diverse health system.



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