

Reducing Oral Fluoroquinolone Prescribing in the Ambulatory Setting: Impact on the NM BCBSIL HMO Population

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Successfully decreased fluoroquinolone prescribing from 0.78% to 0.36% of total Rx claims → Reducing patient exposure and potential harms. This was accomplished by increasing prescriber awareness and implementing a system Ambulatory Antimicrobial Stewardship Subcommittee.

BACKGROUND

The Northwestern Medicine (NM) Physician Network (NMPN) Accountable Care Organization (ACO) includes >3,100 employed and aligned private practice (independent) physicians with approximately 400,000 managed care lives.

Purpose: Fluoroquinolone antibiotics have been widely prescribed for 30+ years including for patients in the NMPN ACO Blue Cross Blue Shield (BCBS) Illinois HMO member population.

A growing body of evidence demonstrates exposure to fluoroquinolones may result in patient harms including permanent side effects - even after a single dose.

The goals of the project included educating prescribers on the potential risks of prescribing fluoroquinolones and to prescribe non-quinolone options as first-line options, where clinically appropriate.

Methods: In July 2016, the United States (U.S.) Food and Drug Administration (FDA) released enhanced warnings about the association of fluoroquinolones with disabling and potentially permanent side effects involving tendons, muscles, joints, nerves and the central nervous system. Following this release, the NMPN Pharmacy Team partnered with the NM Antimicrobial Stewardship Quality Committee to develop educational materials. The primary message was to avoid fluoroquinolone antibiotics as first-line therapy for common infections and to use non-quinolone therapeutic alternatives, where clinically appropriate.

The support of chief medical officers, senior quality leadership, senior administrative leadership, and practicing physicians was obtained. The NM Ambulatory Antimicrobial Stewardship Subcommittee became a part of the NM System Antimicrobial Stewardship Quality Committee in August 2018 and includes representation from the two large employed provider groups: the Northwestern Medical Group (NMG) and the Regional Medical Group (RMG) and independent physician practices.

Data from other ambulatory antibiotic prescribing initiatives indicated the top medical specialties prescribing fluoroquinolone based upon prescription claims volume were Internal Medicine, Family Medicine, Immediate Care, and Emergency Medicine.

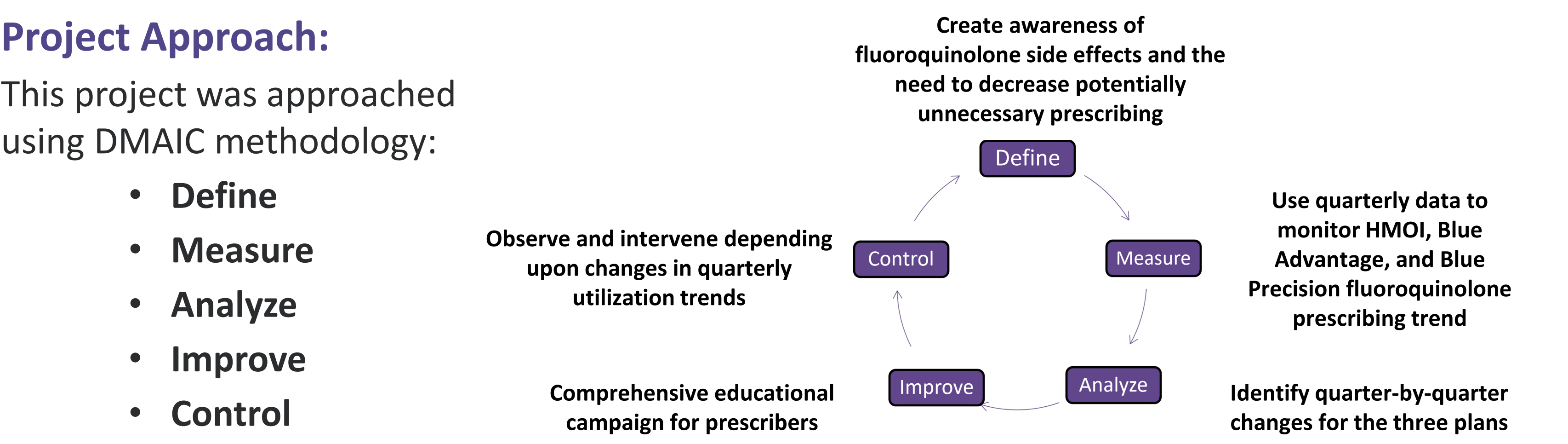
METHODS

Methods: - continued
A multimodal approach was used to communicate the potential risks of prescribing fluoroquinolone antibiotics to prescribers including presentations at various NMG and RMG provider meetings and academic detailing by pharmacists and others to employed and independent practices.

Quarterly BCBSIL prescription claims data for Commercial Plans [HMOI and Blue Advantage (BA) and Exchange [Blue Precision (BP)] plans were monitored over time. The HMOI and BA plans include approximately 18,000 plan participants. The BA plan includes approximately 14,000 plan participants. These plans were selected because the claims data for this payer were the “cleanest” and easiest to track over time.

Quarterly utilization was measured based upon the number of individual ciprofloxacin, levofloxacin, moxifloxacin prescription claims as a percentage of total prescription claims. Quarterly utilization of the sum of individual ciprofloxacin, levofloxacin, moxifloxacin prescription claims was also measured as a percentage of total prescription claims. This accounted for growth in plan membership over time.

Trends in the utilization of other antibiotic classes were not followed due to reporting limitations.



Improvement Efforts and Work Plan:

Timeline	Action/Approach
Q3 2016 onward	NMPN physician monthly-bimonthly newsletter article
Q3 2016 onward	Inserts in quarterly physician mailings
Q3 2016 onward	NMPN Practice Manager quarterly meetings
Q3 2016 onward	NMPN Physician Town Hall and quarterly meetings
Q3 2016 onward	NMPN Quality and Utilization Management Committee meetings
October 2016 onward	NMPN Pharmacy & Therapeutics Subcommittee quarterly meetings
	Antimicrobial Stewardship Subcommittee monthly meetings
	<ul style="list-style-type: none"> Representatives from NMG, RMG, and NMPN Interface with system Antimicrobial Stewardship Quality Committee work
August 2018 onward	Key Focus Areas 2020: <ul style="list-style-type: none"> Performance in 4 “appropriate antibiotic prescribing” measures Avoidance of fluoroquinolones where possible Specify nature of allergy in medical record - side effect or a true allergy (angioedema, hives, rash)

Impact:

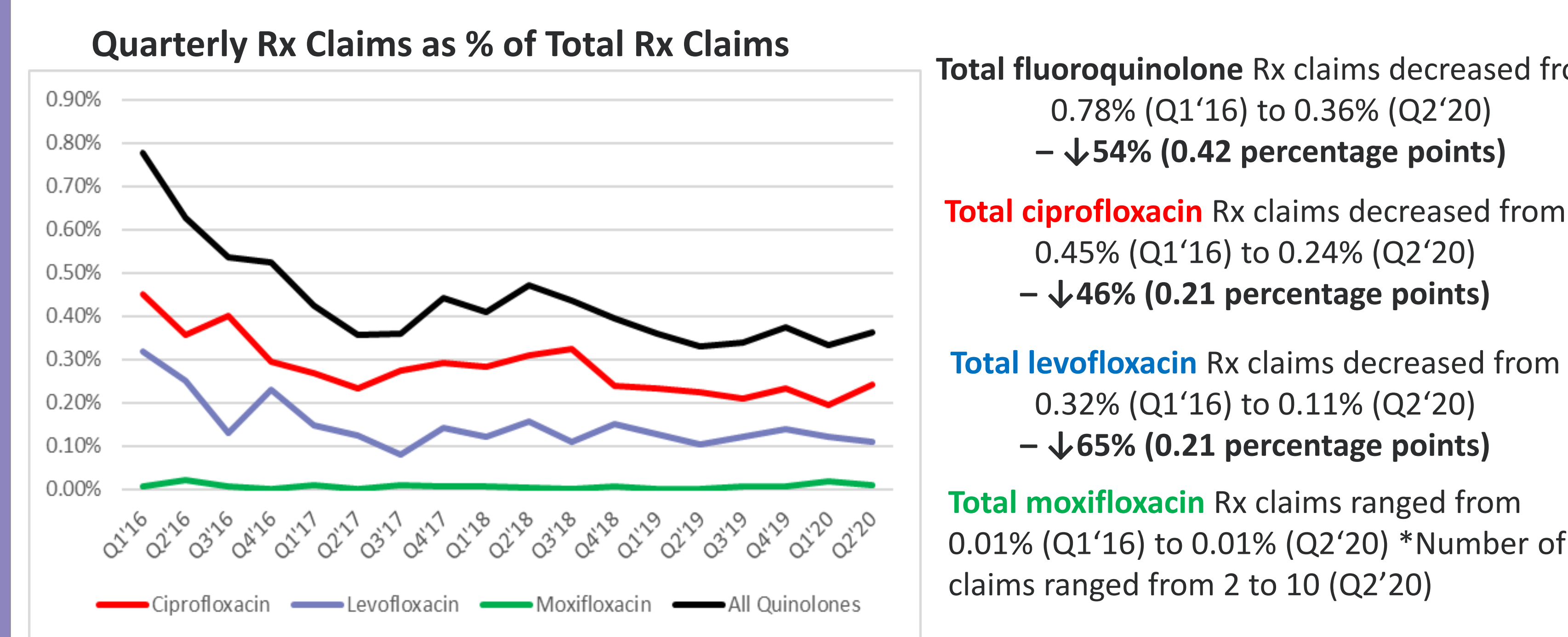
Medication	Q1'16	Q2'16	Q3'16	Q4'16	Q1'17	Q2'17	Q3'17	Q4'17	Q1'18	Q2'18	Q3'18	Q4'18	Q1'19	Q2'19	Q3'19	Q4'19	Q1'20	Q2'20
ciprofloxacin	128	115	137	87	133	76	128	164	132	146	154	119	118	119	112	128	108	113
levofloxacin	90	81	44	68	73	41	37	80	57	74	52	76	64	54	65	76	68	52
moxifloxacin	2	7	2	0	4	0	4	3	2	0	3	1	1	3	3	10	5	
Total	28,313	32,305	34,131	29,491	49,331	32,672	46,905	56,277	46,708	47,227	47,288	50,056	50,807	52,790	53,289	55,118	55,637	46,955

RESULTS

Impact: Through the DMAIC process, a decrease in quarterly fluoroquinolone Rx claims as a percentage of total Rx claims was observed.

Quarterly Rx Claims as % of Total Rx Claims

	Q1'16	Q2'16	Q3'16	Q4'16	Q1'17	Q2'17	Q3'17	Q4'17	Q1'18	Q2'18	Q3'18	Q4'18	Q1'19	Q2'19	Q3'19	Q4'19	Q1'20	Q2'20
Ciprofloxacin	0.45%	0.36%	0.40%	0.30%	0.27%	0.23%	0.27%	0.29%	0.28%	0.31%	0.33%	0.24%	0.23%	0.21%	0.23%	0.19%	0.24%	
Levofloxacin	0.32%	0.25%	0.13%	0.23%	0.15%	0.13%	0.08%	0.14%	0.12%	0.16%	0.11%	0.15%	0.13%	0.10%	0.12%	0.14%	0.12%	0.11%
Moxifloxacin	0.01%	0.02%	0.01%	0.00%	0.01%	0.00%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.00%	0.01%	0.01%	0.02%	0.01%	
All Quinolones	0.78%	0.63%	0.54%	0.53%	0.43%	0.36%	0.36%	0.44%	0.41%	0.47%	0.44%	0.40%	0.36%	0.33%	0.34%	0.38%	0.33%	0.36%



Control Plan

Metric	Goal	Review Process	Frequency	Process Owner	Threshold for Action	Recommended Action Steps
Quarterly fluoroquinolone Rx Claims Data (% Total Rx Claims)	Lower is better	Data pulled and summarized Presented to various NM and NMPN committees and communicated through multiple channels	Quarterly	Mark Greg	Increasing use of fluoroquinolones	Ongoing prescriber awareness and education

CONCLUSIONS

- The program was effective in reducing fluoroquinolone prescribing in the BCBSIL HMO, BA, and BP populations.
- Non-fluoroquinolone antibiotic alternatives were likely chosen in place of fluoroquinolones when antibiotic therapy was indicated.
- It is likely a similar decrease in fluoroquinolone prescription claims for other payer plans in the NM Health System would be observed if data were available.

REFERENCE

- <https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-updates-warnings-oral-and-injectable-fluoroquinolone-antibiotics>
- <https://www.fda.gov/news-events/press-announcements/fda-updates-warnings-fluoroquinolone-antibiotics-risks-mental-health-and-low-blood-sugar-adverse>
- <https://www.fda.gov/drugs/drug-safety-and-availability/fda-warns-about-increased-risk-ruptures-or-tears-aorta-blood-vessel-fluoroquinolone-antibiotics>

