Poster #933

Antibiotic Prescribing Changes in Adults During COVID-19 in Outpatient Patient Centered Medical Homes (PCMH) in Arkansas

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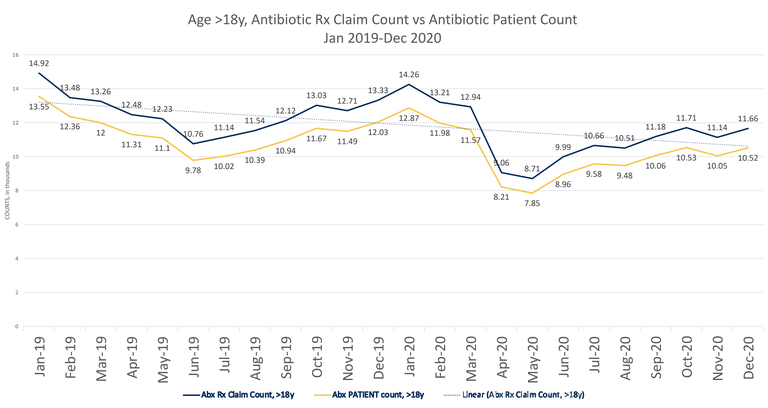
Background

Outpatient antibiotic (OP Abx) prescribing in adults in Arkansas (AR) was among the country's highest in 2019. AR Medicaid analyzed prescription (Rx) claims data and communicated the relative prescribing intensity as an informational metric to each patient-centered medical home (PCMH) beginning in 2020.



Objective

To describe the Abx prescribing patterns in calendar years 2019 and 2020, during the COVID-19 pandemic.

Methods

Data from AR Medicaid paid claims for OP Abx Rxs in adult patients attributed to a PCMH practice for ≥ 6 months were analyzed. Annual Abx Rx claims per 1000 patients were calculated for rural or urban status and by 2019 prescribing rate histories , defined as the low-, middle-, and high-rate prescribers based on 1st, 2nd - 3rd, & 4th quartiles, respectively. The five most common classes in 2019 and fluoroquinolones were explored. A paired t-test, Wilcoxon signed rank test, and one-way ANOVA with post hoc least significant difference test were used to determine statistical significance.

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Results

183 PCMHs qualified for analysis. There was a significant decrease in overall annual Abx claim rate, from 1034 to 910 (-12.0%, p< 0.0001). Claim rates decreased in rural (-10.9%, p< 0.0001) and urban areas (-13.3%, p< 0.0001) with no difference between groups (p=0.240). Low-rate prescribers did not change practice from 2019 to 2020, with claim rates of 666 to 665 (-0.2%, p=0.957), while middle- and high-rate prescribers decreased, from 1032 to 897 (-13.1%, p< 0.0001), and from 1404 to 1183 (-15.7%, p< 0.0001), respectively. Claim rates significantly decreased for penicillins (-16.0%, p< 0.0001), fluoroquinolones (-15.5%, p< 0.0001), sulfonamides (-13.1%, p< 0.0001), macrolides (-9.9%, p=0.0001), and tetracyclines (-6.3%, p=0.021). First-generation cephalosporins down trended (-7.9%, p=0.111).

Table 1. Adult Overall Antibiotic Utilization

Overall Antibiotics	N	Mean annual antibiotic claim per 1000 patients		Difference (% change)	*p*-value [a]	*p*-value [b]
		2019	2020			
Whole group	183	1033.72	910.17	-11.95	<0.0001	
Geographic areas subgroups						
Rural	94	1104.46	984.67	-10.85	<0.0001	0.2396
Urban	89	959.00	831.49	-13.3	<0.0001	
Pre-COVID-19 prescribing history subgroups						
Low	45	666.11	665.04	-0.16	0.9572	
Middle	93	1032.39	896.80	-13.13	<0.0001	<0.0001
High	45	1404.07	1182.96	-15.75	<0.0001	

[a] *p-Values calculated using paired t-test and Wilcoxon signed rank test.*
[b] *p-Values calculated using one-way ANOVA.*

Table 2. Adult-Specific Antibiotic Claims Among Low, Middle, & High Prescribers

Antibiotic Classes	N	Mean annual antibiotic claim per 1000 patients		Claim Rate Difference (% change)	*p*-value [a]	*p*-value [b]
		2019	2020			
Penicillins	183	287.07	241.04	-16.03	<0.0001	
Low	45	225.20	196.11	-12.92	0.0007	
Middle	93	283.49	239.00	-15.7	<0.0001	0.6772
High	45	356.33	290.20	-18.56	<0.0001	
Macrolides	183	179.31	161.61	-9.87	0.0001	
Low	45	99.67	105.53	5.89	0.9497	
Middle	93	174.76	153.59	-12.11	0.0002	0.0150
High	45	268.33	234.27	-12.7	0.0079	
Tetracyclines	183	112.58	105.53	-6.26	0.0209	
Low	45	71.80	73.29	2.07	0.5805	
Middle	93	112.51	110.45	-1.83	0.7471	0.0809
High	45	153.51	127.60	-16.88	<0.0001	
Absorbable Sulfonamide Antibacterial Agents	183	96.43	83.77	-13.13	<0.0001	
Low	45	63.89	68.67	7.48	0.8896	
Middle	93	97.78	80.49	-17.68	0.0001	0.2318
High	45	126.16	105.62	-16.28	<0.0001	
Cephalosporins - 1st Generation	183	94.15	86.77	-7.85	0.1113	
Low	45	62.38	63.80	2.28	0.7801	
Middle	93	93.23	87.86	-5.76	0.2887	0.2081
High	45	127.84	107.47	-15.94	0.0249	
Quinolones	183	78.91	66.67	-15.51	<0.0001	
Low	45	32.58	33.76	3.62	0.7817	
Middle	93	77.06	66.52	-13.69	0.0137	0.0540
High	45	129.04	99.89	-22.59	<0.0001	

[a] *p-Values calculated using paired t-test and Wilcoxon signed rank test.*
[b] *p-Values calculated using one-way ANOVA.*

Table 3. Adult-Antibiotic Claims Among Low, Middle, & High Prescribers with Significant One-Way ANOVA Test Statistics

Antibiotics	Between Group Comparisons		Difference Between the Mean Percent Change	*p*-value [c]
Overall Antibiotics	Low	Middle	13.47	<0.0001
	Low	High	16.24	<0.0001
	Middle	High	2.78	0.3496
Macrolides	Low	Middle	20.77	0.0040
	Low	High	16.24	0.0513
	Middle	High	-4.53	0.5262

[c] *p-Values calculated using Post hoc least significant difference (LSD) test.*

Limitations

We were unable to capture the number of prescriptions given per visit, thus, we were unable to calculate a prescription rate to discern whether these changes were due to reduced visits during COVID-19 or whether they were due to fewer prescriptions but with the usual visits per year.

Conclusions

OP Abx Rx claims significantly decreased from 2019 to 2020 in middle and high-rate prescribers. Low-rate prescribers maintained low Abx Rx claim rates throughout 2020. Future analyses are needed to highlight any rebound effect of Abx prescribing when the pandemic subsides, discerning the informational metric effect versus COVID-19, and informing the next steps for antimicrobial stewardship for PCMHs in AR.