

Cefdinir prescribing increased in low-income children in Kentucky from 2012-2016

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BACKGROUND

- Cefdinir is frequently prescribed to pediatric outpatients with respiratory infections despite a lack of first-line indications
- Cefdinir use should be limited due to:
 - Poor efficacy against *Streptococcus pneumoniae*
 - Suboptimal pharmacokinetic and pharmacodynamic parameters
 - High cost compared to guideline-preferred agents

METHODS

- Data Source: pharmacy and medical claims from Kentucky Medicaid recipients aged <20 years
- Study Period: Jan 2012 – Dec 2016
- National Drug Codes were used to identify cefdinir prescriptions
- Cost data were extracted from pharmacy claims
- Cefdinir prescriptions were linked to medical claims within 3 days prior to the prescription date
- Diagnoses were classified into groups by ICD9 and ICD10 codes: acute otitis media (AOM), sinusitis, pharyngitis, lower respiratory infections (LRI), urinary tract infections, presumed viral infections
 - Presumed viral infections included upper respiratory tract infections such as nasopharyngitis, bronchitis and cough
- Cochran-Armitage was used to test for trends across the study period

RESULTS

Cefdinir prescriptions: Table 1

- Cefdinir prescriptions significantly increased from 60,334 (8% of all antibiotic prescriptions) in 2012 to 99,053 (13%) in 2016 ($p < 0.001$)
- Cefdinir use in rate per 1000 children increased from 140 in 2012 to 209 in 2016
- Medicaid spending on cefdinir increased from \$2.3M (15% of all antibiotic spending) in 2012 to \$4.7M (27%) in 2016

Cefdinir Demographics: Table 2

- The majority of cefdinir prescriptions are in children age 0-4 years
- Number of prescriptions per patient and cost per prescription increased over the study period
- Number of prescriptions written by nurse practitioners increased

Cefdinir indications: Figure 1

- 88% of pharmacy claims for cefdinir had an associated medical claim within 3 days prior to the prescription
 - 28% of prescriptions had more than one associated indication
- Three groups accounted for the majority of cefdinir use: AOM, presumed viral infections, and pharyngitis
- AOM was consistently the most frequent indication, but there was a trend downward in proportion of total indications
- Pharyngitis indications increased from 16% to 22% of all indications
- Approximately 10% of all prescriptions were associated with only a viral indication

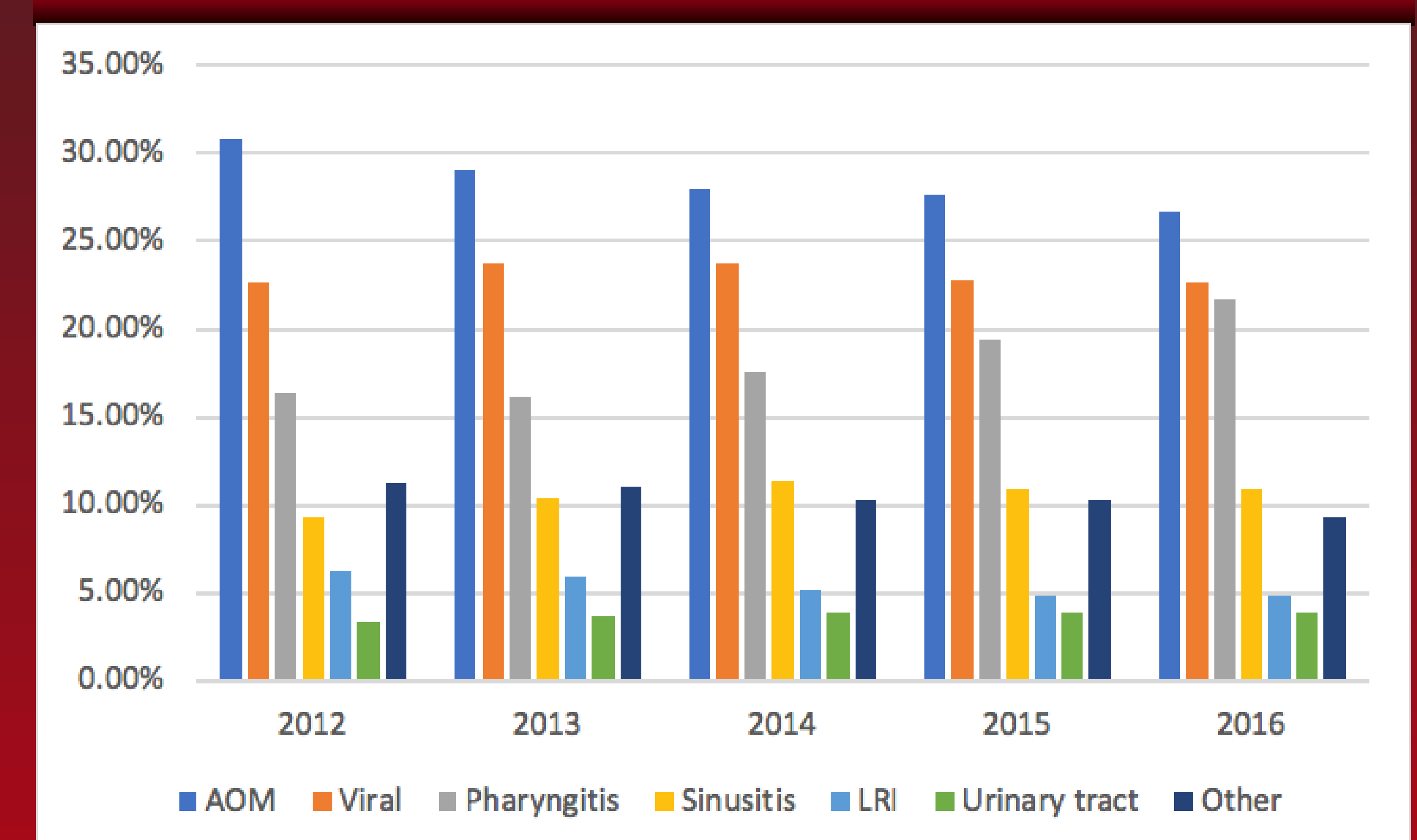
TABLE 1: Cefdinir Prescriptions, 2012-2016

	2012	2013	2014	2015	2016
All Antibiotic Prescriptions	758,690	694,033	681,888	735,219	777,723
Cefdinir Prescriptions	60,334	58,809	70,106	86,321	99,053
% of Total	8	8	10	12	13
All Antibiotic Spending	\$15,184,377	\$15,361,628	\$16,010,698	\$17,122,911	\$17,627,566
Cefdinir Spending	\$2,345,596	\$2,977,673	\$3,975,978	\$4,019,986	\$4,706,452
% of Total	15	19	25	23	27

TABLE 2: Cefdinir use in Kentucky Medicaid Children, 2012-2016

Demographic Group	2012	2013	2014	2015	2016	
Cefdinir Prescriptions	50,616	49,054	61,432	77,582	89,539	
Total Patients	39,274	38,295	46,998	58,274	66,137	
Average Cost per Prescription	\$38.61	\$50.15	\$56.58	\$46.58	\$47.62	
Age	0 - 4	25,519	22,961	27,522	34,948	38,726
	5 - 9	13,774	13,699	17,638	22,312	26,289
	10 - 14	6,190	6,597	8,567	11,050	13,559
	15 - 19	3,367	3,860	5,401	7,355	8,616
Sex	Female	24,445	23,592	30,591	39,628	46,097
	Male	24,669	23,781	29,416	37,504	43,010
Provider Type (%)	General/Family Nurse Practitioner	40	38	39	38	35
	Pediatrician	27	30	34	36	42
	Physician Assistant	18	15	13	13	11
	Other	7	8	8	8	9
	Other	8	7	6	5	4

FIGURE 1: Indications Associated with Cefdinir



CONCLUSIONS

- Outpatient cefdinir use in pediatric patients served by Kentucky Medicaid significantly increased over the study period
- Much of the cefdinir use was inappropriate
 - Presumed viral infections accounted for 10-23% of identified cefdinir use
 - When antibiotics are indicated for bacterial URI, agents with better pneumococcal coverage are preferred
- Kentucky Medicaid pediatric use is well over the national average
 - 188 cefdinir prescriptions per 1000 KY children in 2015
 - 113 prescriptions for all oral cephalosporins per 1000 US population in 2015
- Preventing overuse of this costly, broad-spectrum antibiotic is an important focus for antimicrobial stewardship efforts
 - Recommendation for prior authorization to KY Medicaid
 - Monitoring of cefdinir use is being recommended as a stewardship intervention to Kentucky providers

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