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 Strepococcus 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 prescribers: 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 rate per 1000 children increased from 140 in 2012 to 188 in 2016 (p < 0.001)
- Medicaid spending on cefdinir increased from $2,345,596 (15% of all antibiotic prescriptions) in 2012 to $4,706,452 (27%) in 2016 (p < 0.001)
- Cefdinir use increased over the study period

Cefdinir Demographics: Table 2
- Age:
  - 0 - 4 years: increased from 25,191 (21%) in 2012 to 34,948 (29%) in 2016 (p < 0.001)
  - 5 - 9 years: increased from 13,774 (12%) in 2012 to 22,312 (19%) in 2016 (p < 0.001)
  - 10 - 14 years: increased from 6,190 (5%) in 2012 to 11,050 (9%) in 2016 (p < 0.001)
  - 15 - 19 years: increased from 3,367 (3%) in 2012 to 7,355 (6%) in 2016 (p < 0.001)
- Sex:
  - Female: increased from 11% in 2012 to 13% in 2016 (p < 0.001)
- Provider Type (%):
  - General/Family: increased from 2% in 2012 to 3% in 2016 (p < 0.001)
  - Nurse Practitioner: increased from 1% in 2012 to 2% in 2016 (p < 0.001)
  - Pediatrician: increased from 1% in 2012 to 1% in 2016 (p < 0.001)
  - Physician Assistant: increased from 0% in 2012 to 0% in 2016 (p < 0.001)
  - Other: increased from 1% in 2012 to 1% in 2016 (p < 0.001)

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 narrow spectrums 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