Utilizing Claims Data to Identify Stewardship Targets in Pediatrics

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Background
- Children account for a large proportion of antibiotic consumption and may be particularly vulnerable to the adverse effects of antibiotic overuse.
- Previous estimates of outpatient antibiotic prescribing patterns in the United States have relied on provider surveys or pharmacy data that either do not capture all clinical settings and provider types or are not linked to medical encounters.1,2
- In contrast, antibiotic prescription data available from insurance claims encompass all clinical settings and provider types and do not rely on surveys or estimates. However, claims data have not been widely used to identify antimicrobial stewardship targets.
- Claims data are available from Partners for Kids (PFK), an accountable care organization affiliated with Nationwide Children’s Hospital, Columbus, OH, that accepts financial responsibility for >300,000 pediatric Medicaid recipients in a 34-county region in Central & Southeast Ohio.

Objective
- To utilize claims data to evaluate for heterogeneity in outpatient antibiotic prescribing among children in PFK, both overall and specifically for infections of the upper respiratory tract, in order to identify targets for antimicrobial stewardship interventions.

Methods
- We assessed overall antibiotic prescriptions dispensed (APD), excluding topical antibiotics, by retail pharmacies in 2014 to PFK members aged 0-18 years. Data were evaluated by patient age, county of residence, and provider specialty.
- APD were linked to medical encounters that occurred within 3 days prior to the antibiotic dispense date. We defined an upper respiratory tract (URT) family of diagnoses, including both potential bacterial infections and presumed viral infections.

Results
- Overall APD in 2014: 254,835 (86% associated with medical encounter)
- Overall rate: 679 APD per 1000 PFK members
- Mean duration of therapy prescribed: 9.7 days

Methods, cont’d
- In a subset of uncomplicated URT family encounters (excluding patients with complex/chronic medical conditions, antibiotic exposure in prior 30 days, and encounter for URT diagnosis in prior 30 days), reasons for prescribing were inferred from the encounter diagnoses.
- Rates of APD and adherence to guideline-recommended first-line antibiotic choices were determined for diagnoses in the URT family.

Overall distribution of antibiotics prescribed

Distribution of APD by patient age

Overall rate of APD by patient county of residence

Overall distribution of APD by provider type

Discussion
- Insurance claims data identified disproportionate antibiotic prescriptions in younger children and in rural counties. Multiple provider types contributed to the antibiotic burden. Overall, our findings validate prior studies that utilized provider surveys and pharmacy data.1,3
- Our data showed county-level heterogeneity in antibiotic use for URT infections, particularly for sinusitis and viral infections. Inappropriate azithromycin use was most common for sinusitis and viral infections.
- In the future, claims data may also be useful to provide feedback to individual clinicians regarding frequency of prescribing for common conditions.