Ambulatory antimicrobial stewardship: metrics development and improved use of antimicrobials in pediatric patients with acute respiratory tract infections

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Background

Outlier and inappropriate use of antimicrobials in the ambulatory setting may promote resistance and adverse events including C. difficile infection and significant side effects (e.g., diarrhea). Limited work has thus been done in office-based practices to enhance guideline-appropriate antimicrobial use, and there are no stated antimicrobial utilization measures for the ambulatory setting. We began an ambulatory antimicrobial stewardship program (ASP) in January 2014 to address optimal antimicrobial use in the ambulatory setting.

Aims

- To demonstrate improvement in guideline-appropriate use of antimicrobials for three acute respiratory tract infections (ARTIs) in the ambulatory setting: upper respiratory infection (URI), common cold, acute sinusitis (AS), and acute otitis media (AOM).
- To develop three measures of antimicrobial utilization to improve understanding of antimicrobial prescribing by ambulatory clinicians.

Method

- Patients were children evaluated in Novant Health pediatric (n=24) or family medicine (n=46) clinics in NC and VA.
- Metric specifications were built using Epic (Epic Systems, Verona, WI) documentation as follows (URI): National Quality Forum (NQF) measure = children 3 months -12 years of age not given an antibiotic for URI, AS, and AOM.
- Guidelines in references = children 3-18 years for AS and AOM (for given first-line treatment parenteral or oral, the education for AS and tramadol for AOM). 4 Guidelines for URI and AOM: allergies to penicillins, co-infections (e.g., sinusitis, pneumonia), AOM.
- Reduction in broad spectrum use in all pediatric clinics (56% to 51%) is accounted for by the 10 collaborative clinics.
- Residential performance scores were determined for January-June 2014 for all pediatric clinics, and the two clinics with scores < 60% for two of the three metrics were selected as an intervention collaborative.

- Using the IRM model for improvement, we conducted three FSA cycles: June 2014: Information provided, including metric definitions, appropriate coding and documentation, and ways to improve scores. September 2014: In-person visits for specific education with lead clinicians and practice managers including score review and 2014 information review, and request to review scores with all clinicians. December 2014: Announcement of 2015 non-probability financial incentive for all pediatric clinics for the URI metric (target ≥ 80%).

For the two collaborative clinics, monthly audit and clinical-specific feedback began in September. Comparisons were the remaining fourteen pediatric clinics and all other non-collaborative clinics. The comparisons received no education or clinician feedback. Beginning in January 2015, all pediatric clinics received clinical-specific feedback.

Three measures of antibiotic utilization were created and patterns of use were evaluated by clinician type, clinic specialty:

- Number of antibiotic prescribers/1,000 patient illness encounters (IEs)
- Percentage of antibiotic prescriptions/1,000 patient illness encounters (IEs)
- Reduction in broad spectrum use in all pediatric clinics (56% to 51%) is accounted for by the 10 collaborative clinics.

- To develop three measures of antimicrobial utilization to improve understanding of antimicrobial prescribing by ambulatory clinicians.

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Conclusions

- Of the several IES and SIMA recommendations for institutional ASPs, ambulatory programs can utilize education, prospective audit and feedback, and guidelines and clinical pathways.
- For antibiotic prescribing in office settings, the approaches described, taken together, can improve guideline-appropriate care for ARTIs and reduce broad-spectrum antibiotic use.
- Financial incentives may drive improved performance with URI.

- Pediatric physicians have primary care diagnosis. Highest rates of antibiotic prescriptions/1,000 illness encounters, highest rates of antibiotic prescribing/URI, and lowest percentage of broad-spectrum antibiotic use.

- The two measures of antibiotic utilization which appear to be most useful are:
  1. Number of antibiotic prescribers/1,000 patient illness encounters
  2. Broad-spectrum antibiotic percentage

References

5. Selby J, et al. Chronic Disease Summary of Advice and the National Health Service Steering Committee on Developing an Institutional Programmes on Antimicrobial Stewardship. Doi: Ott C. 2007;3;11-17