Improving Otitis Media Care with Electronic Health Record-Based Clinical Decision Support and Feedback

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**Organization:** Children’s Hospital of Philadelphia
**Mechanism:** RFA: HS07-006: Ambulatory and Safety Quality Program: Improving Quality Through Clinician Use of Health Information Technology (IQHIT)
**Grant Number:** R18 HS 017042
**Project Period:** September 2007 – February 2011
**AHRQ Funding Amount:** $877,011

**Summary:** Several problems in the treatment of otitis media (OM)—infection of the middle ear—in children arise from physicians’ lack of awareness of national guidelines on judicious use of antibiotics and the overuse of antibiotics in OM treatment. This issue can be mitigated through health information technology (IT). The purpose of this project was to develop, test, and disseminate a health IT intervention to improve the quality of OM care and reduce the amount of resources used in its treatment.

The intervention used the Children’s Hospital of Philadelphia’s (CHOP’s) electronic health record (EHR) to integrate care over time and to supply physicians with the knowledge they need at the point of care. The full intervention consisted of: 1) a method for linking all services a patient receives from any physician into clinically logical clusters called ‘episodes-of-care’; 2) clinical decision support (CDS) for medications and referrals to specialists based on the best available scientific evidence; 3) feedback on past performance of OM care provided by physicians; and 4) physician training on use of tools. The study randomly assigned 24 primary care practices into groups for usual care with feedback reports; usual care without feedback reports; full intervention without feedback reports; or full intervention with feedback reports.

The project was conducted in the CHOP Pediatric Research Consortium, which includes all primary care practices in the CHOP network. The CHOP network uses an ambulatory EHR that affords immediate, secure electronic access to clinical information, and communication at the point of care.

**Specific Aims:**

- Develop and pilot test the OM health IT intervention. *(Achieved)*
- Examine overall effect of health IT intervention and the independent contribution of physician feedback on quality of care (the primary outcome). *(Achieved)*
- Assess the effects of the intervention on the secondary outcomes of resource use and clinician adoption of the technology. *(Partially Achieved)*
- Work with members of their advisory board, including the American Board of Pediatrics, National Committee for Quality Assurance, and the Child Health Corporation of America to disseminate the work to child health professionals nationally. *(Achieved)*

**2011 Activities:** The research team used a 1-year no-cost extension to complete data analysis and develop several papers on different components of the research and results. The project was completed in
February 2011.

**Preliminary Impact and Findings:** Practices randomized to clinical decision support were significantly more likely to adhere to guidelines for management of OM than were control practices. There was marked variation in physician adoption of CDS. Across both followup periods (months 13 and 33), the average practice-level use of the CDS tool was 17.1 percent (range 4.8-45.1 percent across practices) of eligible visits. Prospectively assigning encounters to a treatment episode allows for decision support at the point-of-care to account for past treatment decisions; however, developing these methods is highly resource-intensive and requires analysis of both structured and unstructured (free text) data. Providing decision support at the point-of-care is an effective strategy for improving adherence to quality metrics where treatment is encouraged. Retrospective performance feedback significantly impacted only one quality metric, but did halt decreasing tool use. The availability of clinical decision support does not assure that clinicians will use it. Creating flexible decision support systems that provide needed knowledge at the point-of-care to improve quality requires substantial investments in clinical informatics.

**Target Population:** Otitis Media, Pediatric*

**Strategic Goal:** Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

**Business Goal:** Implementation and Use

*This target population is one of AHRQ’s priority populations.*