

Development of an Electronic Health Record Format for Children

Principal Investigator:	Finley, Scott, M.D., M.P.H.
Organization:	Westat
Contract Number:	290-2009-0023I03
Project Period:	March 2010 – November 2012
AHRQ Funding Amount:	\$4,749,214

Summary: Existing electronic health record (EHR) systems are typically designed, implemented, and used with an adult patient population in mind and therefore do not always support the provision of health care to children. Special medical and other considerations that arise in pediatric patient care are often missing or poorly supported.

Westat collaborated with several organizations to develop and disseminate a children's EHR format focused on children enrolled in Medicaid or the Children's Health Insurance Programs. The 'Format' refers to various requirements for data elements and standards, usability, functionality, and interoperability. The project team strived to understand how the Format's structure and content might be used to develop new or enhance existing EHR products to help providers optimize health care for children. The goals of this project were supported by a technical expert panel (TEP) to ensure broad stakeholder input at every stage of the project. Two Children's Health Insurance Program Reauthorization Act grantees are testing and evaluating the Format's impact on quality and cost of care.

This project helped identify which core elements of an EHR for children could be incorporated into vendor systems and provided user guidance about the ideal functionality of EHRs for children.

Project Objectives:

- Conduct an environmental scan and gap analysis. **(Achieved)**
- Develop a children's EHR format that can be used readily. **(Achieved)**
- Package the EHR format in a way that facilitates broad incorporation into EHR systems. **(Achieved)**

2012 Activities: The project focused on developing and incorporating additional enhancements into the Format; conducting a conformance assessment of the Format requirements relative to several selected vendor products; finalizing two prototypes; and developing a key stakeholder feedback process and validation approach. The project was completed in November 2012. Online access to both the full and abridged Format is available through the AHRQ Web site: <http://healthit.ahrq.gov/health-it-tools-and-resources/childrens-electronic-health-record-ehr-format>.

Impact and Findings: Overall, the results of the environmental scan and gap analysis suggest that efforts to develop health information technology for children are making progress but that existing EHR systems and products lack a number of functionalities, particularly for 22 topic areas related to the treatment of children, such as growth data, newborn screening, and medication management.

The TEP prioritized the topic areas to provide guidance on the direction and scope of the overall analysis.

Written summaries for each of the topics, including a topic description, details about the literature review, a description of findings, and information on relevant aspects of the Format, with particular attention to data elements, data standards, and functionality, were prepared.

The Medication Dose Rounding and the Annotated Growth Chart prototypes were developed based on the findings from the gap analysis and conformance testing. Development teams were composed of experienced software development professionals. Prototype development required research to elaborate on the requirements and specifications beyond what the Format provided. The Medication Dose Rounding prototype development team found that not having access to a clinician was an impediment to effective development of the module, suggesting that a vendor would benefit from access to clinical-content experts to facilitate the use of the Format requirements. This lesson refuted the initial assumption that the Format could be usable by programmers without additional analysis.

In addition, many requirements in the Format were estimated to have “moderate” or “low” achievability, often based on circumstances beyond the developer’s control, such as missing standards or cumbersome information exchange methods that make the feature difficult or impossible to implement. The Format exposes these gaps in a central place where they can be examined and prioritized and potentially serve as inspiration for parallel activities to improve the infrastructure for child-optimized EHRs.

In hindsight, several structural improvements could be developed for a future release of the Format, but they would require significant work across numerous requirements. Tools to help the Format’s efficiency for specific purposes, such as an online vendor self-assessment tool to enable developers to “score” their systems’ conformance, could be developed. Another powerful way to make EHRs become more effective for the care of children is to incorporate key pediatric needs into the meaningful use certification criteria, particularly since most EHR systems are marketed to health care environments that include pediatric patients. In its current state, the Format provides a strong foundation for the improvement of EHRs in the care of children.

Target Population: Medicaid, Pediatric*, Teenagers

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Business Goal: Knowledge Creation

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