

My MediHealth: A Paradigm for Children-Centered Medication Management

Principal Investigator:	Johnson, Kevin B., M.D., M.S.
Organization:	Vanderbilt University
Mechanism:	PAR: HS08-270: Utilizing Health Information Technology to Improve Health Care Quality Grant (R18)
Grant Number:	R18 HS 018168
Project Period:	December 2009 – November 2012
AHRQ Funding Amount:	\$1,200,000
Summary Status as of:	December 2010

Target Population: Asthma, Chronic Care*, Medicaid, Pediatric*, Teenagers

Summary: Medication management of children with chronic conditions is complex because of the need to tailor dosages based on a child's age and development, and because of the potential for frequent handoffs between caregivers. To improve care of children with chronic disease, a team at Vanderbilt University Medical Center in Tennessee, led by Dr. Kevin Johnson, is working to address medication management in the pediatric population through further development of MyMediHealth, a mobile personal health application specifically for medication management which is built to interface and share information with a personal health record (PHR). The overarching goal of the MyMediHealth project is to investigate ways in which personal health records and supported applications can improve the safety and quality of medication delivery.

The study will evaluate the impact of use of MyMediHealth on medication adherence in children ages 12 to 18 with asthma in the Vanderbilt Primary Care Clinic. The control group will receive education about the personal health record (PHR) only, while the intervention group will receive education and training about the use of the PHR and MyMediHealth. MyMediHealth will provide medication information and reminders to children by cell phone or pager, with additional support from a Web-based patient portal (access controlled by parent). Patients will be able to create medication schedules, schedule alerts to mobile devices, and examine medication administration information. The patient portal will provide laboratory results, relevant medical literature, e-mail for direct communication with providers, and direct appointment scheduling.

The project will develop a knowledgebase of common pediatric asthma medications that will be incorporated into MyMediHealth to evaluate the impact of MyMediHealth on medication adherence. Study measures include medication adherence, effect on family dynamics, disease control, and impact on caregivers outside the home (i.e., school caregivers and health care providers). The results of this study will have important implications for understanding how to further patient-centered care and medication adherence in the pediatric population. Some findings may also be applicable to chronic disease management in the adult population.

Specific Aims:

- Develop an information and scheduling knowledgebase for common pediatric asthma medications

(including allergy medications). **(Achieved)**

- Adapt MyMediHealth in its current prototype form to patients diagnosed with asthma. **(Ongoing)**
- Integrate MyMediHealth into the Vanderbilt patient portal to support medication scheduling and the creation of medication reminders. **(Unlikely to achieve)**
- Evaluate the impact of MyMediHealth on medication adherence. **(Ongoing)**

2010 Activities: In 2010, the team completed the asthma medications knowledgebase, and nearly completed the adaptation of the MyMediHealth prototype. The remaining work on the prototype involves making small modifications and refinements. For example, the team is adding photos of medications to the database, as well as functionality for users to add photos of their own. In addition, they are adapting MyMediHealth for Spanish speakers and have continued to work on improving the user interface. On the technical side, they have been developing the natural language processing to enable an automatic categorization of text responses from patients. The project team also met with the senior management at Vanderbilt about the interface between MyMediHealth and the MyHealthAtVanderbilt PHR. Due to privacy and information-sharing concerns, the tool will not directly interface with MyHealthAtVanderbilt at this time; therefore the third project aim is unlikely to be achieved. However, it will interface with other Web-based PHRs such as Google Health.

MyMediHealth was shared with a patient advocacy group at one hospital, and the team has plans to share it with the children's hospital in spring 2011. MyMediHealth was also shared with the Teen-Medi group which includes teenagers, providers, and others (school nurses, teachers, etc.). The teenagers use the tool for two weeks before the meetings to gain firsthand knowledge. They then share the ways they used MyMediHealth and their thoughts about it as a tool to manage health. The initial anecdotal feedback so far has been positive.

The evaluation of MyMediHealth began in 2010, and the team was successful in reaching the goal of recruiting 50 participants for the Ecological Momentary Assessment (EMA) Tool. The EMA Tool consists of an oral interview and a Web-based survey that asks about daily behaviors, regular dosing time, why that time is chosen, and any variation in dosing time. The EMA assessment is paired with tracking medication adherence using the MyMediHealth tool. Participants use the tracking tool embedded within MyMediHealth to measure when they use their inhalers over a 30-day period and then take an exit online survey. The tracking tool both reminds patients to take their medication and tracks patient responses to these reminders.

Grantee's Most Recent Self-Reported Quarterly Status (as of December 2010): Project progress is mostly on track. The team is meeting about 80 to 99 percent of the milestones and activities are generally on time. Budget funds are somewhat underspent, mainly due to the fact the project had a later start date, thus spending is on target relative to activities completed at this time.

Preliminary Impact and Findings: The project does not have any findings to date.

Strategic Goal: Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

Business Goal: Knowledge Creation

* AHRQ Priority Population