

## Using Health Information Technology to Improve Delivery of HPV Vaccine

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<b>Organization:</b>	University of Rochester
<b>Mechanism:</b>	PAR: HS09-085: Mentored Clinical Scientist Research Career Development Award (K08)
<b>Grant Number:</b>	K08 HS 017951
<b>Project Period:</b>	September 2009 – September 2014
<b>AHRQ Funding Amount:</b>	\$745,995

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**Summary:** The three-dose vaccine to prevent human papillomavirus (HPV) infection is now recommended for all females ages 11 to 26. The vaccine is highly effective if all three doses are received prior to HPV exposure. Barriers to completion of the three-dose HPV vaccine regimen include health care provider factors (e.g., competing health care priorities during medical visits), and parent or adolescent factors (e.g., parental perception that vaccination increases sexual activity) that prevent patients from returning for booster doses.

This project will determine whether the use of electronic patient reminders can shorten intervals between HPV vaccine doses and increase overall rates of completion of the regimen in inner-city areas compared to practices without reminders. Two health information technology (IT) interventions were developed in the first phase of the project. The first and primary intervention is a reminder, delivered by telephone or text message, to patients for followup doses of vaccine. The second uses electronic medical record prompts for providers to reduce missed opportunities for immunization. Prompting effectiveness will be measured using a before-and-after study design.

Qualitative interviews with parents of adolescent girls and the girls themselves guided the intervention design. The study will perform a retrospective cross-sectional analysis of the intervention in four inner-city primary care practices. Post-intervention rates of missed opportunities for HPV vaccination, intervals between vaccine doses, overall rates of completed HPV vaccination courses, and health maintenance visits will be measured in several intervals at each practice. Dr. Rand and her project team will analyze data to assess the overall effectiveness of the prompting and patient reminder intervention in reducing missed opportunities and improving vaccination completion rates. The project will also assess rates of health maintenance visits and other vaccinations for adolescents in intervention and comparison practices. Outcomes will be measured at baseline, the electronic patient reminder will be implemented, and summary statistics will be generated 6, 12, and 18 months after the intervention begins.

### Specific Aims:

- Measure parent and adolescent preferences for methods of communication with the adolescent's provider. **(Achieved)**
- Measure baseline rates of missed opportunities for HPV vaccination, the intervals between HPV vaccine doses, and the proportion of patients who received one, two, or three vaccinations. **(Ongoing)**

- Develop and implement a health IT-based intervention to reduce missed opportunities, reduce intervals between doses, and increase completion of the HPV vaccination series in inner-city practices. **(Achieved)**
- Measure post-intervention rates and analyze data. **(Upcoming)**
- Complete educational objectives. **(Ongoing)**

In addition to the specific research project aims, as part of this Mentored Clinical Scientist Research Career Development Award, Dr. Rand will complete the following education objectives: 1) learn health informatics theory and be able to apply it to both clinical decision support for providers and self-management support for patients; 2) become expert in implementing and sustaining quality improvement (QI) projects based in health IT and teach these skills to other health care providers; 3) implement qualitative research methods and develop advanced skills in the application of quantitative statistical methods; 4) improve career skills by writing manuscripts and competitive grants; and 5) network with leaders in health IT, immunization delivery, QI, and adolescent preventive health.

**2012 Activities:** A new electronic health record that facilitated access to necessary data was implemented. Survey results that explored communication preferences of adolescents and parents were analyzed and two manuscripts were drafted. The project began recruitment of subjects and implementation of additional strategies to increase participation. Participation required both parent and teen consent, and the project team worked with a text messaging company to establish consent forms and processes. Almost 400 patients were recruited to get a phone or text message reminder. Two control groups, one for each the phone and the text, were established. Text messaging was turned on but provider reminders were not.

Dr. Rand is enrolling in her last credit for the IT certificate and is working on a review of the use of personal health records in pediatric practices.

**Preliminary Impact and Findings:** Project results indicate that 95 percent of urban and 99 percent of suburban parents own a cell phone. Ninety percent reported at least weekly use of the Internet and 81 percent reported weekly use of e-mail. Eighty-seven percent of urban and 95 percent of suburban parents use text messaging and most do not pay for that service. Overall, 52 percent of parents would accept text messaging reminders, with no difference in acceptability based on parent gender, insurance, or residence. Parents were more likely to accept text messaging reminders if they were younger and not charged for text messaging, with no difference based upon residence.

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**Target Population:** Adults, Inner City\*, Teenagers, Women\*

**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

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