Patients Take a Bite of Prevention Apple with Web-based Interactive Personal Health Record

Americans receive only half of recommended preventive services, despite evidence that these services improve health. Free for patients, an easy-to-use Web-based, interactive personal healthcare record (IPHR) helped patients to better manage chronic disease, receive U.S. Preventive Services Task Force (USPSTF) recommendations for preventative services, and have a strengthened clinician-patient relationship. The IPHR worked by linking patients to their primary care physicians, providing preventive recommendations, delivering Web links to additional resources, and generating electronic patient and clinician reminders. Preventive recommendations were worded in lay language and personally tailored based on clinical information supplied by the patient and the electronic health record (EHR) of the clinician. The IPHR made the information patient-centered and actionable – explaining lab results; linking patients to reliable, evidence-based educational resources from Federal agencies and national organizations; providing decision aids for prostate, breast, and colon cancer screening; and directing patients to self-management tools and community resources for obesity, hypertension, hyperlipidemia, diabetes, and smoking cessation.

> ***"I love being able to see the same information my doctor sees!"***
>
> —PATIENT
>
> ***"Patients have been very responsive to it and think it's a great tool!"***
>
> —CLINICIAN

Rates of preventive services improved when the IPHR was used. Statistically significant results from this preliminary study underscore the value of providing patients an interactive, patient-centered system, by incorporating patient-provided information and information in the EHR maintained by the clinician.

- Sixty percent of the patients using the IPHR were called by their clinicians because the IPHR identified them as being overdue for a preventive service (e.g., cholesterol test or vaccine), having an uncontrolled chronic condition, or needing to improve a health behavior.
- Patients using the IPHR were, on average, 5 percent more up-to-date on all recommended preventive services than patients who did not use the IPHR.

Additional Value to Clinicians: The IPHR became a certified Physician Quality Reporting Measures (PQRM) registry, and its content was modified to perform a health risk assessment and generate a longitudinal personalized prevention plan for Medicare Annual Wellness Visits.

This study demonstrates that patient-centered IPHR improves the delivery of preventive care. To extend the health benefits of this IPHR to others, this research team is examining how to integrate the IPHR into the workflow of other primary care settings and to adapt the IPHR for use with other EHR systems.

A Handbook for Using Patient-Centered Personal Health Records To Promote Prevention is available at: ***www.healthit.ahrq.gov/KRIST-IPHR-Guide-0612.pdf***

Video tour explains to MyPreventiveCare's patient members how to use their IPHR at: ***www.MyPreventiveCare.org***.

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Final Report: ***http://healthit.ahrq.gov/R18HS17046-03Kristfinalreport2011***

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Personal Health Record Functions Engage and Activate Patients and Providers to Work as Teams

The IPHR has been developed and studied in a series of three AHRQ-funded projects. The studies progress from evaluating the efficacy to understanding how to broadly implement and disseminate patient-centered information systems throughout primary care:

1. *Efficacy study* – to create and test whether the IPHR increases the delivery of USPSTF-recommended preventive services (Grant R18HS017046).
2. *Adoption study* – to examine whether and how the IPHR is used by primary care practices with varying locations, patient populations, information systems, informatics experience, and organizational culture (Contract 290-07-10011-3).
3. *Implementation study* – to systematically assess how the IPHR can be integrated into busy primary care workflow (Grant R21HS018811).

Efficacy study (completed): The first study took place in eight primary care practices in the Virginia Ambulatory Care Outcomes Research Network. All of the practices used the Certified Commission for Health Information Technology (CCHIT)–certified Allscripts Touchworks EHR.

The IPHR a personalized, Web-based application enabling patients and clinicians to share information with one another about the patient's current care and treatment status.

Six functions include:

1. *Link to the patient's record:* : Extracts the patient's preventive data from their clinician's EHR and allows the patient to correct and update the information.
2. *Health risk assessment:* Asks patients questions to supplement necessary information not contained in the EHR.
3. *Recommendations:* Applies logic from 8 key guidelines to the patient's information to generate an individualized list of recommended preventive services.
4. *Self management resources:* Provides patients with links tailored to the patient's profile that:
   - Expand understanding of preventive health needs
   - Help prepare for difficult preventive care decisions
   - Learn about treatment options when they are at higher risk
   - Obtain needed services from their clinician and community resources
5. *Information for clinicians:* Sends a summary into the clinician's EHR with patient record updates, risk factor information, and preventive service alerts.
6. *Patient reminders:* Sends clinician EHR tasks and patient e-mail reminders encouraging healthy behaviors, preventive care, and other important information.

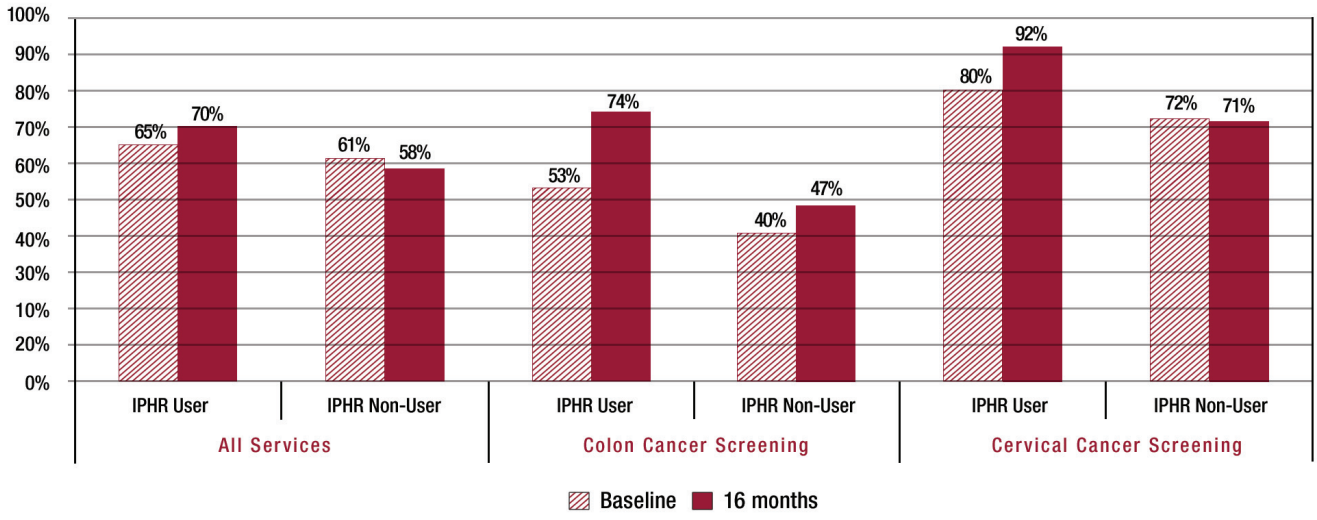
The IPHR was created by programming logic to generate actionable patient recommendations based on USPSTF guidelines. During the development process, the research team identified 148 patient variables needed to make personalized recommendations on the 18 preventive services. Some of these variables were not stored in the EHR in a meaningful, reliable, or adequately detailed manner. In response, the researchers chose to ask patients directly using a health risk assessment completed by patients when establishing an IPHR account. The final version of the IPHR was capable of generating 573 different patient recommendations, with detailed personalized messages for each of them. Patient comprehension and anticipated responses to content were evaluated in three phases of usability tests with 24 patients; content was modified in response to each phase of patient feedback.

Through a randomized, controlled trial, a sample of the practices' 82,000 patients received a request from their clinician to use the IPHR or receive "usual" preventive care. The project team examined the effects of the IPHR on clinical preventive services such as cancer screenings, shared decisionmaking, and patient-physician communication. This involved the analysis of data in the EHR, utilization data from the IPHR, focus groups with patients and providers, and data collected from patient and provider surveys. Results from this study

indicated that a patient-centered information system integrated into an EHR (like the IPHR) is feasible, valued by clinicians and practice staff, and improves the rate at which patients receive preventive services.

As shown in Chart 1, IPHR users had a greater increase in being up-to-date on all preventive services than non-users (4.7%, p=0.004). Despite only being powered to detect an increase in the overall delivery of preventive services, statistically significant net increases were observed for many individual preventive services (e.g. 12.3%, p=0.008, increase in colon cancer screening and 11.4%, p=0.04, increase in cervical cancer screening comparing 16 months to baseline for users versus non-users). Increases were not observed for other preventive services, such as health behavior change. While this may be due to insufficient power, it may also reflect a need to integrate more intensive counseling and health behavior change resources into the IPHR for patients with identified needs.

Chart 1: Rates of Preventive Screening by Integrated Personal Health Record (IPHR) Users and Non-Users



These findings have implications for the future research agenda of patient-centered health information technology. For technologies like the IPHR that appear effective, strategies to promote increased use by patients and primary care practices are important foci. In this study, the method to inform and direct patients to the IPHR (a mailed invitation) was not part of standard practice workflow in primary care. Greater use and utility of PHRs may be obtained by better integrating systems like the IPHR into daily clinical activities, such as targeting patients who are preparing for an office visit or having physicians and nurses direct patients to resources on the site to support self-management of health conditions. Additionally, the efficacy study sites' homogenous patient population, skewed toward highly literate and Internet-savvy patients, necessitates further evaluation of the IPHR and similar patient-centered systems among more diverse patient populations and a range of primary care settings. However, the advantage of such personalized patient-centered systems is that they could be tailored to a wide range of patients.

Adoption study (ongoing as of July 2011): The second study aims to evaluate whether the IPHR can be applied to different health care settings with different EHRs. The study is being conducted in six practices that use CCHIT-certified Epic or Professional EHRs. Through a series of learning collaboratives, practices are developing a plan to integrate the IPHR into their clinical workflow. The study team is using organizational change theory to guide the implementation process including securing leadership buy-in and support, creating a culture conducive to change, establishing a sense of priority, forming a guiding coalition, developing and communicating a shared vision, empowering members to act on the vision, planning for short-term wins, and consolidating improvements and institutionalizing success. Through a mixed methods analysis of learning collaborative transcripts and use and clinical outcomes data from the practices' EHR and the IPHR, successful strategies for primary care practices to adopt PHRs such as the IPHR will be systematically identified.

Implementation study (ongoing as of July 2011): This project is assessing whether and how the eight primary care practices from the Efficacy Study can extend the use of the IPHR to their total practice population of 82,000 patients, and whether similar benefits to the delivery of preventive services are seen when the system is implemented on a larger scale. The study team is assisting the practices to create a shared vision on how to integrate the IPHR into care delivery using practice champions, learning collaboratives, and patient-centered communications strategies. The practice's ability to integrate the IPHR into their workflow is being evaluated using the RE-AIM framework (*http://www.re-aim.org*), a systematic approach to evaluating health promotion interventions across five domains: reach, efficacy/effect, adoption, implementation, and maintenance.

Conclusion

These three projects build upon one another to show the development and effect of the IPHR tool on patient outcomes, the ability for it to be successfully adopted into multiple and varied EHRs and health care settings, and how it can be integrated into the primary care workflow for an entire practice's patient population. Tools that promote action for the delivery of preventive services and chronic care, automate workflow processes, share information between patients and clinicians, and engage and motivate patients to be more involved in their care is central to all three of these projects.

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Final Report: *http://healthit.ahrq.gov/R18HS17046-03Kristfinalreport2011*

Weblink: *www.MyPreventiveCare.org*

Dr. Krist's JAMA editorial: *http://jama.jamanetwork.com/data/Journals/JAMA/18269/jco05159_300_301.pdf*