

COMMENTARY

Health Information Technology Needs Help from Primary Care Researchers

Alex H. Krist, MD, MPH, Lee A. Green, MD, MPH, Robert L. Phillips, MD, MSPH, John W. Beasley, MD, Jennifer E. DeVoe, MD, DPhil, Michael S. Klinkman, MD, MS, John Hughes, MD, Jon Puro, MPA, HA, Chester H. Fox, MD, and Tim Burdick, MD, MS; for the NAPCRG Health Information Technology Working Group

While health information technology (HIT) efforts are beginning to yield measurable clinical benefits, more is needed to meet the needs of patients and clinicians. Primary care researchers are uniquely positioned to inform the evidence-based design and use of technology. Research strategies to ensure success include engaging patient and clinician stakeholders, working with existing practice-based research networks, and using established methods from other fields such as human factors engineering and implementation science. Policies are needed to help support primary care researchers in evaluating and implementing HIT into everyday practice, including expanded research funding, strengthened partnerships with vendors, open access to information systems, and support for the Primary Care Extension Program. Through these efforts, the goal of improved outcomes through HIT can be achieved. (J Am Board Fam Med 2015;28:306–310.)

The State of Health Information Technology in Primary Care

Health information technology (HIT) has forever changed how clinicians practice medicine and how patients experience care. Fueled by meaningful use incentives and the patient-centered medical home movement, primary care leads the way in adopting and implementing new technologies. More than

two thirds of primary care practices have an electronic health record (EHR), and 60% of primary care clinicians have participated in meaningful use.^{1–4}

While early systems mainly supported business operations such as coding and claims reporting (“business as usual”), the transformative goal of HIT is to improve care delivery and health outcomes.^{5,6} Successful first steps in support of this transformation have included defining core content to include in patients’ records, identifying basic clinical data classifications, creating mechanisms to exchange health information, and standardizing EHR functionality for use by all clinicians (eg, computerized provider order entry, medication reconciliation, secure messaging, and the provision of after-care summaries).^{7,8} As a result, EHRs have increased the availability of health data and improved some elements of documentation quality and consistency.⁹ Some health information exchanges reduce redundant testing and improve care coordination.^{9,10} Computerized order entry, prompts, and alerts are beginning to reduce preventable errors in some health systems.¹¹ When used, electronic communication improves access to

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From the Department of Family Medicine and Population Health, Virginia Commonwealth University, Richmond (AHK, RLP); the Department of Family Medicine, University of Alberta, Edmonton, Alberta, Canada (LAG); the American Board of Family Medicine, Washington, DC (RLP); the Departments of Family Medicine and Industrial and Systems Engineering, University of Wisconsin, Madison (JWB); OCHIN, Portland, OR (JED, JP, TB); the Departments of Family Medicine and Medical Informatics and Clinical Epidemiology, Oregon Health & Science University, Portland (JED, TB); the Department of Family Medicine, University of Michigan, Ann Arbor (MSK); the Department of Family Medicine, McGill University, Montreal, Quebec Canada (JH); and the Department of Family Medicine, University at Buffalo, Buffalo, NY (CHF).

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Corresponding author: Alex H Krist MD, MPH, PO Box 980251, Richmond VA 23298-0251 (E-mail: ahkrist@vcu.edu).

care and patient satisfaction.¹² Patient portals can personalize health recommendations, engage patients in care, and increase the delivery of recommended services.¹³⁻¹⁶ Mobile health is showing promise in promoting communication and health behavior change.^{17,18}

Despite these advances, much more is needed from HIT to be truly transformative.^{16,19} The early successes described above have been reported primarily in research settings and exemplar health systems, not typical community-based practices. Few clinicians believe that their EHR improves care delivery or outcomes, citing both limited functionality and extra work as clerical and data entry tasks are added to already overburdened workloads.¹⁹⁻²³ Patients worry about their medical records going digital, expressing fears about privacy and skepticism that HIT will result in better, more efficient care.^{24,25} The introduction of a computer in the examination room detracts from clinician-patient communication and relationship building.²⁶ While specific documentation elements may be improving, the importance of patient narrative is increasingly ignored.^{9,27}

Need for Primary Care Research to Inform HIT

Primary care cannot escape HIT. Information is the cornerstone of good clinical care—information for clinicians, care teams, and patients—and HIT is the means of organizing, documenting, accessing, and sharing information, as well as measuring outcomes. What primary care needs is a voice to inform the design and implementation of HIT. Research can give primary care its voice, and primary care researchers provide a unique set of skills, resources, and perspectives to inform HIT.

Practicing clinicians and patients have the clearest understanding of what they need from HIT and should be shaping the national HIT research agenda. In 2012 the HIT Working Group for the North American Primary Care Research Group, with support from the American Academy of Family Physicians, American Academy of Pediatrics, and American Board of Family Medicine, worked with national primary care leaders and 148 clinicians from 3 practice-based research networks (PBRNs) to identify specific ways in which HIT could better support the delivery of primary care.²⁸ High-priority items included the following:

1. Human factors design to ensure that technology supports users' needs
2. Enhanced extraction, interpretation, prioritization, and presentation of critical health information for individual patients at the point of care and for a clinician's patient panel
3. Advanced information exchange to coordinate care across clinicians and settings
4. Greater patient engagement tools and supports
5. Population management innovations, including predictive analytics, to proactively deliver care outside of traditional office visits
6. Reduced documentation burden
7. Integration of care across settings, particularly between the health care setting and community

These priorities overlap with research priorities recently published by the Agency for Healthcare Research and Quality (AHRQ) and a recent report outlining frustrations with how meaningful use has been implemented.^{29,30}

Primary care researchers have both the expertise and relationships to effectively engage clinicians, patients, and stakeholders in HIT research. The Patient Center Outcomes Research Institute is bringing national attention to patient and stakeholder engagement in all aspects of research, and a growing body of evidence is demonstrating how engagement enhances the science and success of research.³¹ The tasks of providing the full spectrum of primary care—acute care, chronic disease management, preventive services, and psychosocial services—are enormously complex. The workflow, information needs, and communication processes must be described and studied in partnership with clinicians and patients to understand how HIT can effectively support their needs. Similarly, the practice-level tasks of using data to optimize the care of whole panels of patients must also be studied in partnership with practices learning to redesign care to support population needs.

To effectively conduct real-world HIT research, infrastructure and robust community “laboratories” such as PBRNs are needed. PBRNs exist in every state and can connect researchers to clinicians and patients engaged in the day-to-day delivery of care. By design, PBRNs are grounded in, informed by, and intended to improve practice.³² Primary care research also has a culture of multidisciplinary research and partnerships with experts in other fields that are uniquely positioned to inform the

evidence-based design and use of technology.³³ Partnerships between clinicians, patients, communities, informaticists, systems engineers, and researchers are needed to develop, test, and inform the next generation of HIT. Blending the disciplines of health care, industrial systems, cognitive task analysis, and corporate change can further guide HIT research.^{34–37} These multidisciplinary approaches are exemplified by the Improving Care Through Industrial and Systems Engineering (I-PrACTISE) collaborative, which is identifying and developing system design solutions to common primary care problems, including HIT.³⁸

HIT needs high-quality dissemination and implementation research—another domain in which primary care researchers can excel.³⁹ To ensure use, HIT systems need to be simplified, both in terms of design and implementation, while still meeting users' documentation, information sharing, decision-making, and care delivery needs.

Policy Needs to Support Primary Care HIT Research

To conduct research necessary to improve HIT, primary care researchers will need help from policymakers, funders, and industry. Federal and state governments currently lack support for the field research that needs to occur in primary care. Although more than half of all visits made to any setting occur in primary care, most HIT research funding has been directed to hospitals.⁴⁰ The type of HIT research that primary care needs does not fit neatly into traditional National Institutes of Health funding mechanisms. Funding from the Office of the National Coordinator has focused largely on getting EHRs into the hands of clinicians, and while successful in that goal, it has done little to support research. The Patient Centered Outcomes Research Institute is an excellent source of funding for patient and stakeholder engagement research, although no requests for proposals currently focus on HIT. To date, AHRQ has been the main source of primary care HIT research support; while critically important, however, it is not sufficient.

Because HIT is evolving at a furious pace, rapid, relevant, and pragmatic funding mechanisms are needed to support primary care HIT research.⁴¹ This includes rapid market consolidation that often means primary care clinics have to jettison their

EHRs for those adopted by hospitals. One potential solution to support rapid, relevant, research is for HIT vendors to partner with and fund primary care research as well as to support open-source applications that can seamlessly integrate with their systems. This would benefit both researches and vendors. Another solution that would give primary care greater control over HIT is for clinicians and researchers to pursue advanced training in informatics.⁴²

The Primary Care Extension Program, authorized by the Affordable Care Act and currently expanding under AHRQ IMPaCT grants, can serve as a catalyst for promoting primary care HIT research and innovation.⁴³ The Primary Care Extension Program is modeled after the USDA Cooperative Extension and is partially being tested by HIT regional extension centers, with the intended goals of:

1. identifying innovators and highly functioning HIT systems;
2. facilitating in vivo evaluation of these systems for transferable lessons;
3. attempting to reproduce innovations in PBRNs; and
4. facilitating broad dissemination of innovations and training of clinicians.

Conclusion

Health care has been affected by an explosion of technology and data that must be harnessed quickly and effectively. The need for evidence to inform the development and effective use of innovative and useful HIT is greater than ever. The primary care community is uniquely poised to answer this call to action. By building on our effective PBRNs and developing robust primary care HIT research infrastructure, new knowledge can be generated to rapidly accelerate the use of technology and data to improve patient and population health, decrease costs, and improve the effectiveness and joy of care.

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