

Enabling patient-centered communication and care through health information technology

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Abstract

Advances in communication science and developments in health information technology coupled with recent health reform initiatives have created unique opportunities for progressing toward a patient-centered healthcare system in the US. We propose a conceptual framework to describe ways in which patient-centered communication may serve as a critical link in translating health information technology functionality into delivery of patient-centered care. In this context, health information technology may provide the infrastructure for patient-centered communication to enable delivery of patient-centered care. Key aspects of patient-centered communication and health information technology are reviewed and patient-centered care is described as emerging through health information technology-enabled patient-centered communication.

Keywords: Communication, Health information technology, Patient-centered care, Patient-centered communication

Introduction

Adoption of health information technology (HIT) has generally increased since the Health Information Technology for Economic and Clinical Health act of 2009 was established to prioritize and improve the delivery of patient-centered care by providing assistance, infrastructural support, and \$30 billion for HIT.¹⁻⁴ However, results from research assessing the effectiveness of HIT have been mixed, and only marginal improvements in healthcare quality and efficiency have been

observed.^{3,5,6} Fulfilling the promise of HIT will require careful efforts to ensure that HIT supports patient-centered communication and care processes.

We propose that patient-centered communication is at the heart of delivering patient-centered care and that HIT applications that support patient-centered communication are the most likely to result in improved outcomes for patients, caregivers, and healthcare providers. Specifically, we present a conceptual framework that identifies key functionalities of HIT to support the mechanisms of patient-centered communication, which in turn, enable patient-centered care delivery and related outcomes. The framework, and our discussion of the components thereof, considers the role of HIT-enabled patient-centered communication for patients, caregivers, and healthcare providers.

Implementation and use of HIT to support patient-centered communication and care delivery has great potential to enable health promotion and disease management in a manner consistent with patients' needs, preferences, and resources. A recent comprehensive review of randomized-controlled trials of HIT interventions with patient-centered components documented positive effects on a variety of outcomes including clinical outcomes, healthcare processes, patient needs and preferences, access to information, shared decision making, and communication between clinicians and patients.⁷

Increasing evidence links delivery of high-quality, patient-centered care with effective patient-provider communication.⁸ Patient-centered communication elicits and validates a patient's perspective, recognizes the psychological and social context of the patient, produces a shared understanding of the patient's health needs, and ensures shared decision-making

power.⁹ Patient-centered communication influences the quality of patient care through fostering healing relationships, exchanging information, responding to emotions, managing uncertainty, sharing in decision making, and enabling patient self-management.^{9,10}

Conceptual framework

Patients, caregivers, and healthcare providers share an interest in improved outcomes for patients. Our conceptual framework identifies these shared interests as patient-centered care outcomes including improvements in health behaviors, symptom management, healthcare processes, and disease-specific outcomes; increased health knowledge; reduction in cost, time, and medical errors, and increased access to care. We propose, and explicate below, that patient-centered communication mechanisms, appropriately facilitated by HIT applications with patient-centered functionality, can support patients, caregivers, and healthcare providers in their pursuit of these shared aims (Fig. 1).

Patient-centered communication, HIT, and care outcomes

Effective health communication has been shown to contribute to disease prevention and health promotion by: facilitating the patient-physician relationship, improving health knowledge, encouraging adherence to clinical recommendations and regimens, and providing consumer education.¹¹⁻²¹ Across multiple levels, health communication

raises awareness of health risks (e.g. education on sexually transmitted diseases), influences certain health behavior (e.g. media use to promote tobacco-free environment policy), and increases self-efficacy (e.g. health information networks can empower individuals).²²

Patient-centered care is defined by the Institute of Medicine as ‘providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions’.¹⁵ Patient-centered communication is crucial to provide patient-centered care. Patient-centered communication has been described as inter-communication between provider and patient that incorporates the perspective, psychosocial context, and decision power of the patient in clinical care.²³

As depicted in our conceptual framework, one way in which patient-centered communication may be systematically facilitated is through HIT. Developments in technology allow for shared knowledge and increased systematic dissemination of standardized health information. Ideally, when HIT is appropriately designed and implemented, it can support patient-centered communication to enable delivery of patient-centered care. Previous research has documented improvements in health-care outcomes associated with patient-centered communication across a variety of domains including patient knowledge, health behaviors, emotional health, symptom management, physiologic measures, and pain management.^{9,24-27}

HIT User	Key HIT Functionality	Patient-Centered Communication Mechanisms	Patient-Centered Care Outcomes
Patient	<ul style="list-style-type: none"> • Access to health records and reports • Information exchange • Prevention modalities and wellness strategies • Evidence-based data on risks/benefits of treatments • Self-management • eVisit 	<ul style="list-style-type: none"> • Facilitation of patient-physician interactions • Increased opportunities for communication • Educated patients have increased decision control • Increased patient engagement • Opportunity to discuss psychological and social context 	<ul style="list-style-type: none"> • Patient health behaviors • Symptom management • Health care process outcomes
Caregiver	<ul style="list-style-type: none"> • Continuity of care • Access to patient records and reports • Caregiver resources • Partnership with provider 	<ul style="list-style-type: none"> • Caregiver involvement reinforces patient-provider interactions • Patient advocate provides insight on patient perspective • Assists in translating health information to patient • Caregiver support in decision making • Partnership fosters relationships 	<ul style="list-style-type: none"> • Disease specific outcomes • Health knowledge • Reduced medical cost and time
Healthcare Provider	<ul style="list-style-type: none"> • Coordinated and comprehensive care • Collaboration between providers • Electronic Medical Record access • Standardized reporting • Pharmaceutical dosing systems • Intervention management 	<ul style="list-style-type: none"> • Improved and efficient communication between providers and patient • Behavioral management and support outside of clinic context • Improved communication on decision making with other providers and patients 	<ul style="list-style-type: none"> • Reduced medical error • Access to care

Figure 1 Using health information technology (HIT) to impact patient-centered care through patient-centered communication.

HIT-enabled communication

The development of HIT to support patient-centered communication holds promise for improving patient experiences and outcomes. Electronic sources of health information are already changing how people engage in health management. With 85% of adults using the Internet in the US, novel opportunities exist for web-based health promotion and health interventions.²⁸ In 2012, it was reported that 59% of US adults looked for health information online in the past year.²⁹ The use of health technology in patient care has great potential to empower people through information sharing among patients, families, and care teams, and data sharing.^{30,31} Existing and emerging HIT may enable more frequent and less costly patient–clinician interactions. Applications of HIT in clinical settings, such as electronic medical records, clinical decision aids, disease management systems, telemonitoring systems, and telemedicine, have been documented to improve the delivery of patient-centered care when said technologies are developed to promote aspects of patient-centered communication and care including patient engagement in care, health promotion, and disease prevention, and integration of care across settings and care teams.

Communication at the patient level

Provision of convenient access to information for patients and their families is a critical capability of patient-centered HIT.³⁰ Examples of patient-centered HIT applications include patient portals, web services, and health behavior assessment tools linked to interactive education applications. Types of patient level engagement using these HIT applications include access to personal clinical data, prevention and wellness tools, data-driven information on the risks and benefits of treatment options, and expanded opportunities for communication with healthcare providers.³² Access to clinical data allows patients to become informed about their illness and treatment options to enable greater engagement in their care. Prevention and wellness tools might be tailored to encourage a patient to become more assertive in self-management. Access to prognostic tools or risk calculators may help patients to make informed decisions about treatment. Increasing opportunities for communicating with care providers may create greater continuity of care and use of preventive services.

There are several mechanisms through which HIT may influence patient-centered communication. Specifically, within a portal application a patient can view results from lab tests as soon as they are available, reducing potential anxiety a patient

might experience in waiting for a provider to call. They would also be able to better prepare for a conversation with their physician. In addition to viewing health records and lab reports, HIT platforms should support direct communication with a primary care provider via secure messaging,³³ or even participation in an ‘eVisit’. An eVisit offers a novel solution to patients who have limited time, concerns about exposure to infectious illness, and limited resources. Some portals have been developed wherein a patient may interact live with a nurse practitioner to discuss concerning symptoms, to determine whether a trip to the emergency room or clinic is necessary. During an eVisit, a patient could upload photos to convey visual information about their symptoms. A virtual interaction is also beneficial if a patient struggles with anxiety about a condition or about an actual face-to-face visit. Patient-centered HIT applications might also enable self-care and health management with support from care teams. Functionality in this domain may include self-management tools, communication tools, and goal-tracking applications.

Communication with families and care teams

Coordination of care through communication with families and those involved in the care of the patient is an important capability of patient-centered HIT. Family caregivers play a critical role in the continuity of care for patients with chronic conditions, yet often they face challenges and difficulties navigating a complex healthcare system and in obtaining the information they need.³⁴ The California HealthCare Foundation reports that 63% of caregivers desire more information regarding their role and responsibilities as caregiver.³² Linking caregivers to community resources, patient information, disease management strategies, and support groups via HIT may reduce these challenges, and reduce communication gaps that may arise in patient care. For example, a caregiver may not always be present during a patient’s clinical visit, and thus, is dependent on the patient to recall and provide information regarding their care. Given that the majority of patients are interested in sharing their patient portals with their caregivers, it is important to remove barriers to caregiver access.³⁵ A caregiver who is given access to health records and HIT-enabled healthcare resources will be able to directly obtain accurate information, and may be able to communicate directly with a physician or care team member. For example, a caregiver could discuss medication adjustments or medical conditions not requiring an office visit with a health provider through secure messaging. A

caregiver may also have access to online groups that provide support in effective care management.

Communication across multiple healthcare providers

A patient's health needs are usually met by a number of healthcare providers, and care collaboration requires coordination of individual actions, cooperation in planning and working together, and sharing of goals, planning, problem solving, decision making, and responsibility.³⁶ A pervasive challenge in managing the continuity needs of a patient is that much of the current healthcare system is fragmented and disjointed; common patient complaints include frustration with the lack of coordinated care.³⁷ The lack of coordination among primary care providers, specialists, the emergency department, as well as lab, diagnostic, and discharge departments results in not only patient frustration, but medical error and poor patient outcomes.³⁷ HIT offers solutions to assist providers to adhere to evidence-based practice guidelines, streamline documentation, and facilitate collaborative approaches to clinical decision making.³⁸

Conclusions

Challenges and opportunities

Patient-centered technologies must be designed to improve the patient experience, enhance the patient-clinician relationship, encourage vital communication, improve patient understanding, and facilitate patient engagement.³⁹ Obstacles to implementing effective HIT need to be addressed. Studies have reported barriers including: poor interface usability; problems associated with use and access for older populations, those with low income, low education and cognitive impairments; low computer literacy in both patients and clinicians; and insufficient training for use of HIT. Many of these obstacles may be addressed by engaging both patients and healthcare providers in the developmental stages and assessment of HIT platforms, and to review their applicability and effectiveness in different settings.⁷ Evaluation methods such as usability testing, surveys and questionnaires, focus groups, key informant interviews, and assessment of literacy and readability demands would be key tools to improving HIT platforms.⁴⁰⁻⁴⁴ Prior studies have effectively developed and assessed HIT platforms through these approaches.⁴⁵

Aligning progress in technology, communication science, and clinical care will require coordination and leadership to ensure that movement in these domains is toward the common goal of delivering patient-centered care. Concerns around patient

privacy and information security also pose unique technical, political, and ethical challenges to implementation of patient-centered HIT.⁴⁶⁻⁵¹ Other barriers may include resistance to adoption of patient-centered technology and practices due to financial concerns or other disincentives.⁴⁸⁻⁵¹ Barriers to change stemming from resistance to disruption of existing clinical processes will require thoughtful change in management approaches and attention to pragmatic details such as clinicians' computer literacy, placement of exam room computers to preserve interpersonal connections, and technical support required to attain interoperability with other providers/systems.

While access to online resources is increasing, not everyone is benefitting equally, as low SES populations, senior citizens, rural populations, and minorities report lower access.^{28,29} Disparities in access to and use of communication technologies parallel and likely contribute to health disparities.⁵² Profound inequalities in use of emerging communication technologies by class, race, and geography have been documented and observed to be related to health-related knowledge and behavior.⁵² New technologies may play a role in promoting health, but policy makers and health providers must pay careful attention so that disproportionate access not exacerbate health disparities. Strategies for reducing disparities in access may include investing in human and technological capital to implement, maintain, and effectively use HIT in disadvantaged communities and regions and involving organizations that serve the underserved in development and deployment of HIT to better meet the needs of disadvantaged groups.

Research priorities

While evidence from prior research suggests that HIT applications that include components of care can improve care processes and outcomes, and improve patients' experience of care, greater research is needed to guide healthcare practices and systems in specific implementation and use of technologies to promote health, safety, and equity. Measurement and reporting on care processes, patient experiences, care outcomes, and population trends is critical to providing evidence-based patient-centered care. Automation of quality measurement and integration of public health data into patient care enables greater tracking of preventive services and clinical outcomes, and identification of disparities in care and outcomes. Population registries, clinical dashboards, outcome databases, and EHRs are examples of HIT applications that support evaluation of care processes.³⁰ More broadly, HIT allows for innovative and

collaborative research that will inform public health and medical interventions, ultimately directed at improving population health.

In particular, more research is needed to directly assess the impact of HIT applications on components of patient-centered communication and patient-centered care to evaluate the extent to which such technologies can support informed decision making, information sharing, information access, patient engagement, caregiver involvement, and behavioral change. Ongoing research to evaluate the extent to which HIT-enabled communications are informative, include interpersonal sensitivity, and involve relationship building are encouraged.⁸

Studies are needed across a diversity of populations, including traditionally disadvantaged or understudied populations to understand and track the impact of HIT on disparities in healthcare processes and outcomes. Specifically, research is needed to evaluate the impact of psychosocial and demographic characteristics on the reach and effectiveness of HIT applications to, at a minimum, ensure that such technologies do not exacerbate disparities, and, more ideally, identify technologies and approaches that reduce disparities.

With increasing focus on population health and community-based care delivery, research to understand how HIT can support health and healthcare delivery in populations and communities is encouraged. Specifically, there appears to be significant potential for HIT to enable ongoing management of chronic illness, improve coordination of care across providers, and provide continuous support for lifestyle modifications while reducing the burden on patients. Research is needed to explore the impact of HIT applications on use and cost of care and patient outcomes.

Closing remarks

Patient-centered communication is fundamental to delivery of patient-centered care. Recently developed and emerging HIT applications can be leveraged to support patient-centered communication and care processes if functionality is aligned with patient-centered communication mechanisms. Challenges to realizing the full potential of HIT-enabled patient-centered communication warrant continued consideration and further research is needed to evaluate the impact of HIT on patient-centered communication, care processes, and outcomes.

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