Opportunities and Challenges in Designing Interactive Systems for Patient-Provider Communication

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Abstract

While face-to-face communication remains crucial in medical practices, technologies have been increasingly used to provide additional channels for patients and healthcare providers to communicate with each other. These communication channels, such as SMS, email, online portals, and assessment tools, allow patients and healthcare providers to communicate beyond the traditional clinical encounters and thereby enable new forms of communicative behaviors. Although these technologies are intended to bring in more efficient and effective communication in patient care process and ultimately lead to improved healthcare quality, many critical issues have yet to be adequately addressed, such as how these systems should be designed to better serve both patients' and providers' needs and how to manage increased information flow generated from these new commutation channels. In this panel, we will discuss the current challenges of designing technologies for mediating and facilitating patient-provider communication from the perspectives of HCI, CSCW, Public Health, and medical practices. We will also identify opportunities to improve technologies designed to enable communication.

Introduction

Patient-provider communication plays an important role in facilitating healthcare delivery and improving the quality and safety of patient care [1]. Prior studies have indicated that the quality of communication is often associated with desirable health outcomes, including higher patient satisfaction, more harmonious patient-provider relationship, and keener patient engagement in decision making and learning to manage their illnesses.

While face-to-face communication remains crucial, medical visits are typically short and often do not adequately meet the communication needs of providers and patients to address all of their concerns. As such, a variety of technologies, such as SMS, email, patient portals, computerized healthcare tools, and mHealth applications, have been introduced to provide additional and alternative platforms for patients and providers to communicate outside of clinical encounters. These emerging channels are expected to have profound and positive impacts on healthcare quality by, for example, facilitating timely information exchange and problem solving as well as fostering positive health behavior change [2].

Nevertheless, the effectiveness of these technologies in promoting patient-provider communication remains controversial. Studies have shown that although patients often appreciate online communication, physicians prefer telephones due to the potentially overwhelming amount of messages from patients [3]. Yet, technology-mediated communication has been found to help decrease providers' workload from a long-term perspective [4]. Thus, these controversial results make the design of patient-provider communication systems an especially interesting, yet challenging, topic to discuss.

In this panel, we plan to share insights gained from our ongoing research investigations, and interact with the WISH audience to explore opportunities and challenges in designing technologies to facilitate patient-provider communications. Our specific goals include:

- Providing a platform for researchers and practitioners who are interested in improving patient-provider communication to interact with and learn from one another's experiences. Topics include but are not limited to the following: communication media and processes, communication behaviors, supporting structures for using new communication channels, archive and reuse of documented interactive messages for follow-up communications, and incorporation of communication technologies into organization workflows;
- Identifying possible barriers to the adoption of new technologies for communication between different stakeholders (e.g., patients, different clinical groups, small clinics vs. large health organizations) and in different settings (e.g., clinical settings and domestic environments);
- Assessing currently adopted patient-provider communication technologies and the impacts of these technologies on various stakeholders (e.g., patients, physicians, nurses, etc.) and social practices;

- Examining ongoing initiatives in this research agenda and brainstorming new ideas for improving the design of communication technologies in healthcare delivery.

Relevance to WISH

The panel will examine the complexity of patient-provider communication that is often interactive in nature, and explore how to design technologies to facilitate existing and new communication behaviors that ultimately help improve the quality of healthcare. This topic is expected to draw an audience from a number of research communities, including consumer health informatics, clinical informatics, and human-computer interaction, in addition to practitioners and vendors. The panelists will present their studies and engage with the audience to discuss both technical and social issues involved in technology-mediated patient-provider communication. Thus our focus is directly relevant to WISH's intention.

Moderator:

Dr. Zheng's research draws upon techniques from the fields of information systems research and human–computer interaction (HCI) to study the use of information, communication, interaction design, workflow and sociotechnical integration, and decision technologies in patient care delivery and management. Zheng is the recipient of the 2011 American Medical Informatics Association New Investigator Award that recognizes early-career achievements in health informatics and significant scholarly contributions.

Panelists:

Dr. Xiaomu Zhou's research interests lie in the intersection of Human Computer Interaction (HCI) and Health Informatics (HI). Dr. Zhou will present an ongoing study of a patient portal system to examine how increased patient information access help facilitate patient-provider communication and identify barriers to increasing the population of patients in adopting this communication technology. This study will also explore the issues regarding the integration of patient portal messages with other information systems, such as EHR.

Dr. Yunan Chen's research interests lie in the intersection of HCI and HI. In this panel, Dr. Chen will present her ongoing projects regarding "patient-provider handoff in illness trajectory," and "care coordination among caregivers." Her research thus far shows that 1) patients fully embrace the use of online PHR and develop better interpersonal relationship with their healthcare providers through the use of PHR, and 2) the lack of support on care-giving activities in current PHR design may lead to breakdowns in patient care processes and increase in physical and emotional burdens for caregivers. The talk will focus on challenges in the collaboration between healthcare consumers and providers, and point to specific insights that can be used to inform future PHR systems design.

Dr. Charlotte Tang's research focuses on HCI, CSCW, HI and Universal Usability. Dr. Tang will present (1) an ongoing multidisciplinary research program conducted by cognitive scientists, neurologists, and HCI researchers to develop an innovative online cognitive assessment tool that can be self-administered by older adults in their own home for prescreening early signs of dementia to achieve early triage and diagnosis, and (2) a collaborative project between a healthcare organization, a university, and industry partners to develop a web-based discharge communication tool to ensure that hospitalization information is consistently documented and instantly transmitted to primary care physicians. The presentation will highlight the benefits and barriers of multidisciplinary collaboration in addressing healthcare challenges.

Lauren Wilcox, MS, conducts research in HCI and HI. She will report on ongoing collaborative projects involving NewYork-Presbyterian Hospital (NYP) and the Departments of Biomedical Informatics and Computer Science at Columbia University. The projects leverage the myNYP.org PHR portal to introduce inpatient features that allow cardiology patients to more actively participate in their hospital care. These features include inpatient electronic communication tools, patient-centric clinical information views, and automated summaries of educational content. She will discuss lessons learned in designing health communication applications for inpatient use, and how these lessons apply to technology design for the transition from inpatient care to ongoing health management.

References

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