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Inpatients Sign On: An Opportunity to Engage Hospitalized Patients and Caregivers Using Inpatient Portals

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Abstract

Background.—Inpatient portals are online patient portals linked to electronic health records that provide hospitalized patients and caregivers secure access to real-time clinical information and tools to enhance their inpatient experience and communication with hospital providers.

Objective.—To provide a perspective that inpatient portals are innovative tools poised to engage patients and caregivers during hospitalization and, thus, enhance patient-centered care.

Results.—Inpatient portals are desired by patients and caregivers and may contribute to improved recognition of their inpatient care team, knowledge of their treatment plan and overall inpatient experience. A sociotechnical systems approach is recommended to mitigate potential unintended consequences of inpatient portal use and support effective portal design, implementation and evaluation.

Conclusions.—This article highlights the potential of using inpatient portals to engage hospitalized patients and caregivers and proposes next steps to evaluate this emerging technology.

Keywords

Health Records; Personal; Patient Participation; Hospital Medicine; Consumer Health Informatics; Medical Informatics

Patient portals are online personal health records linked to electronic health records (EHRs) that are intended to engage patients and caregivers in their healthcare by providing access to personalized health information and a way to communicate with their providers.¹ By supporting patient engagement, the use of patient portals may lead to improvements in

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healthcare quality and patient safety.¹ For example, by giving patients online access to their medication lists, patient portals may improve patient adherence to medications and/or identification of medication errors.^{2,3}

Research and policy have focused primarily on the use of patient portals to provide patients with access to ambulatory health information; however, an emerging body of literature suggests that portals are also starting to play a role in the care of hospitalized patients.^{4–20} Coined “inpatient portals” or “acute care portals,” these online applications are intended to empower hospitalized patients and caregivers by providing them with real-time, secure access to clinical information from their inpatient EHR and inpatient-specific tools to enhance their hospital experience and facilitate communication with providers.^{16,18} While their use may have unintended consequences that should be carefully considered, we believe that inpatient portals are poised to engage patients and caregivers during particularly vulnerable periods of acute hospitalization and, thus, enhance patient-centered care.

Inpatient Portals Today

Currently available inpatient portal applications are provided to patients and/or their caregivers on hospital-owned tablet computers upon admission for use throughout their stay. While some hospitals use “home grown” applications, over 100 organizations have implemented a commercial application designed by Epic Systems, MyChart Bedside (A. Bluma, personal communication, August 28, 2017). Inpatient portals provide patients with discrete, real-time information from their inpatient EHR, such as vital signs, problem lists, medication information (name, dose, route, frequency, side effects), test results, names and photographs of hospital providers, and links to a medical glossary and/or personalized education about their diagnoses.¹⁸ These portals also provide additional tools to empower hospitalized patients, such as the ability to view their inpatient schedule, access entertainment, order meals, take notes, enter goals of care and communicate with inpatient providers.

To date, published studies evaluating inpatient portals are largely explorative and focus on the design, adoption, usability and/or feasibility of implementation at academic hospitals with English-speaking patients. Results suggest patient and caregiver participants are interested in and able to use inpatient portals, citing benefits such as improved ability to understand and remember their care plan, monitor their care and/or identify medication errors.^{4,5,7,12,15} Many patients desire access to even more information, such as radiology results and physician notes (even if they could not be fully understood),^{14,21} and the ability to more effectively communicate with their inpatient providers using secure-messaging.

Interventional studies evaluating the influence of inpatient portal use on process and outcome measures are beginning to emerge. In a non-randomized, controlled study by O’Leary, et al.,⁹ inpatients offered an inpatient portal with discrete clinical data, a schedule, and photos of providers, were better able to correctly name their providers when compared to those not offered the portal; however, they did not demonstrate increased activation or knowledge of planned tests, procedures, and medications. Dykes, et al.²² conducted a prospective study using a pre-post design to evaluate an intervention that included an

inpatient portal along with training and tools to further facilitate patient and caregiver engagement and team communication. After implementation, there was a significant reduction in adverse events and increase in patient and caregiver satisfaction, but no change in care plan concordance or resource utilization.

Poised to Support Engagement

By increasing the timeliness and transparency of health information during hospitalization, inpatient portals provide an innovative way to engage patients and caregivers and, thus, support patient- and family-centered care. By increasing patient access to health information, inpatient portals have the potential to enhance patient recognition of their providers and knowledge of their care plan, an area ripe for improvement.^{23,24} Information made available to patients through inpatient portals may also augment face-to-face communication with providers.⁶ For example, patient-provider shared decision-making during patient-centered rounds may be improved if test results were available to patients through inpatient portals beforehand.

More than a tool for providers to passively share information, inpatient portals may eventually provide a platform for inpatients to document their goals of care and track progress.⁶ The data and tools within inpatient portals may also encourage patients to play a more active role in inpatient care delivery and patient safety,²⁵ such as in reconciling medications, identifying and reporting errors, and providing real-time feedback about their hospital experience. Downstream effects could include improved readiness for discharge, length of stay, hospital to home transitions, readmission risk, treatment adherence and engagement in outpatient care.

Potential Pitfalls

To maximize these benefits, potential unintended negative consequences of inpatient portal use should be carefully considered. Vastly different from ambulatory settings, hospitals house high acuity, often medically complex patients undergoing multiple tests and procedures. Providers may be reluctant to introduce inpatient portals in the hospital setting, citing concerns that increased information transparency, such as releasing test results in real-time, may confuse patients and increase their anxiety.⁵ Study results suggest providers worry that this information will lead to increased patient question asking (either in person or through secure-messaging), thus having the potential to increase their workload.^{5,7,12,26} Other providers are concerned that sharing a patient's medication schedule or allowing patients to communicate through secure messaging with inpatient providers may establish unreasonable expectations in the hectic hospital setting.⁵ In theory, this could strain an already busy provider and divert time from other important tasks. Challenging these assumptions, results from studies that have examined inpatient portal implementation using a pre-post design have instead demonstrated significant reductions in provider concerns after implementation.^{7,26} The full extent to which these concerns translate to demonstrable problems after widespread inpatient portal implementation remain to be seen.

Essential Next Steps

Future efforts should focus on employing a user-centered design approach to determine the optimal content and design requirements for inpatient portals, establishing standards to ensure information privacy and security, incorporating clinical decision support, evaluating implementation and measuring outcomes.²⁷

Endorsed by the National Academy of Medicine,²⁸ a sociotechnical systems approach is recommended to ensure that both human and systems level factors are taken into account to design, implement and evaluate new health information technology (e.g., inpatient portals) to support processes and improve outcomes (e.g., patient engagement, provider work).^{27,29–31} While portal development and implementation should focus on “creating a single experience that includes a core set of novel features,”¹⁶ we believe that having the flexibility of personalizing content and design specifications for different patient populations is also desirable. For example, the optimal specifications of a portal for a caregiver of a complex, intensive care patient likely differ from a portal given to a patient admitted for elective surgery, parent of a newborn or a hospitalized adolescent. Similarly, the development of inpatient portal content for non-English speaking patients and caregivers is sorely needed. Evidence guiding the development of best practices for proactively managing data security, translating records into patient-friendly terminology, implementing secure messaging and designing portals access across the care continuum is evolving and will be essential.^{16,32}

To avoid the risk of implementation outstripping evidence, short-term research priorities should integrate rigorous, experimental designs to examine the benefits and negative consequences of inpatient portal use. The use of blended designs, such as effectiveness-implementation hybrid design³⁵ may be particularly useful. Type I Hybrid design takes on a dual role of assessing the effect of an intervention on clinical outcomes, but also gathering information about the implementation. Primary outcomes should include the influence of inpatient portal use on patient safety and health services use (e.g., medication reconciliation, adverse drug events, diagnostic errors, and readmissions). Other important measurement domains include: patient engagement and empowerment, inpatient, caregiver and provider experience, provider workload, hospital efficiency, and cost. At least two additional randomized controlled trials are already underway to test some of these constructs.^{33,34}

As inpatient portals become more accessible, their implementation and maintenance costs also need to be better quantified. Although there are health systems costs for hardware (e.g., tablets), software (e.g., licensing), and personnel (e.g., analysts, informaticists, healthcare team stakeholders), there may be reductions in costs if inpatient portals succeed in engaging patients. For example, providing patients and caregivers with more timely information may translate to cost savings if shared-decision making and adherence to treatment are improved.

Conclusion

Inpatient portals will inevitably lead to a health information shift in hospital care. Research to delineate the implications of their use has not kept pace with their rapid dissemination. At minimum, inpatient portals will increase the timeliness and availability of healthcare

information provided to hospitalized patients and caregivers. Key uncertainties include the magnitude of their use and influence on clinical outcomes, provider workload, health information security and healthcare costs. We believe that, if the challenges of inpatient portal implementation are proactively identified and addressed, patients, caregivers and healthcare systems will be better able to take advantage of the potential benefits while minimizing the negative consequences of this emerging technology.

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