

## DIGITAL TECHNOLOGY Improving transparency in hospitals: perspectives on implementing an inpatient portal

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### Introduction

Engaging patients and caregivers in their healthcare is an essential component to improving care quality and patient safety.<sup>1</sup> Patient portals, personal health records tethered to electronic health records (EHRs), are intended to promote engagement by giving patients and caregivers online access to their clinical data and the ability to communicate with their providers through secure messaging.<sup>2</sup> Until recently, patient portals have almost exclusively been used as a mechanism to share healthcare information with patients from clinical visits in the ambulatory setting. This was due, in part, to hardware and software limitations in the inpatient setting, but also provider reluctance to share real-time clinical information during hospitalisation.

A growing body of literature suggests that patient portals are beginning to play an important role in engaging patients during their acute hospital stay.<sup>3</sup> These 'inpatient portals' or 'acute care portals' have been redesigned to provide inpatients and/or their caregiver proxies with secure access to personalised health information and tools to enhance their engagement at the bedside. These patient-facing, web-based applications are typically offered to admitted patients on hospital-owned tablet computers for use throughout their inpatient stay. They provide patients with access to real-time information directly from the hospital EHR, such as their daily clinical schedule, problem list, medication information, test results and a way to recognise and communicate with their inpatient providers.

Published research findings suggest that inpatient portals are desired by both patients and their caregivers.<sup>4,5</sup> By accessing their clinical information within these portals, hospitalised patients report improved understanding of their health conditions and feeling more in control of their care.<sup>6</sup> Importantly, patients using inpatient portals have also identified medical errors.<sup>7</sup> Thus, their use may play a role in enhancing our ability to partner with patients and caregivers to improve the safety of inpatient care.

Despite these potential benefits, the implementation of inpatient portals can be challenging and requires a thoughtful, systems-level approach to facilitate successful organisational change.<sup>8</sup> Providers remain concerned that increasing information transparency through patient portals may lead to more confusion and worry for patients and caregivers and, subsequently, more time spent answering their questions.<sup>6,9</sup> The logistics of providing bedside tablets, privacy and proxy access considerations (particularly in the paediatric setting), timing of test result release, strategies for secure messaging, and monitoring portal use and its effect can also be daunting for healthcare organisations.

### Local approach and experience

Herein, we summarise our approach and experience as the first children's hospital to implement an inpatient portal, MyChart Bedside (Epic Systems, Verona, USA). We then offer strategies to guide other hospitals that are considering implementation. We used MyChart Bedside, which is an application typically downloaded on hospital-owned tablets and provided to patients at the bedside. It allows a hospitalised patient and their caregivers to view their inpatient vital signs, problem and medication lists, laboratory results, daily schedule, and team member roles and photos. It also allows patients or caregivers to order meals and message their inpatient care team.

Our 1-year implementation process included stakeholder engagement and decision-making activities, healthcare team training, and pilot testing. During our 6-month pilot study, almost 300 parents logged into the portal, representing 90% of those offered a tablet.<sup>5</sup> Parents' favourite features included the ability to view their child's vital signs, list of medications, hospital schedule and pictures of inpatient providers. Survey findings from our pilot unit indicated that parents were very positive about using the inpatient portal, reporting that the portal was easy to use (98%) and the information on it helped them monitor, understand and make decisions about their child's care.<sup>5</sup> Overall, 94% of parents agreed that it improved the quality of their child's care, 89% perceived that use reduced errors and 8% reported finding a medication error using the portal. In qualitative interviews, parents reported that the information in the portal helped them monitor their child's progress, aid their memory, rely less on staff, communicate and make decisions with their child's clinician, and ensure information accuracy. Parents recommended that the hospital continues to offer the portal and expand it to allow parents to answer admission questions, provide feedback and access doctors' daily notes.

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While our staff all anticipated challenges to sharing information with families using the portal (eg increased questions, and lost or stolen tablets), 6 months after implementation, all challenges perceived by staff were significantly reduced.<sup>9</sup> We had very few calls to our help desk and no tablets were broken, lost or stolen. Based on these results, we now offer all adolescents and parents of children at our hospital access to their healthcare information via the portal throughout their hospital stay.

### Suggested strategies to support inpatient portal implementation

Here we present five practical strategies to support inpatient portal implementation (Fig 1) based on our experience over the last 7 years using MyChart Bedside. More detail about our entire implementation process, data collection tools and publications can be found in this free, publicly-available inpatient portal implementation toolkit ([www.hipxchange.org/InpatientPortal](http://www.hipxchange.org/InpatientPortal)).<sup>10</sup>

#### Engage stakeholders early and often

Although the term ‘go live’ is typically used to describe health information technology implementation, introducing an inpatient portal into the complex hospital system and culture required more than flipping a switch. At our organisation, successful implementation entailed early and ongoing leadership commitment and engagement of key stakeholders. Hospital leaders considered costs, including the purchase of hardware and software, and the time required for planning and implementation by hospital staff and information systems (IS) personnel. Stakeholders included those representing patients, caregivers, patient-facing staff, hospital administration, project management, IS, security, the legal department and the ambulatory patient portal team. These stakeholders were responsible for developing the most effective implementation strategy and providing necessary resources for ongoing support.

#### Start with a small pilot population

Once a leadership commitment was made, we chose a pilot unit to test the technology and its implementation. The purpose of the pilot was to obtain feedback from patients, caregivers and staff, and also to troubleshoot issues that may arise on a smaller scale.

This allowed our organisation to proactively identify and manage potential issues that might arise prior to large scale implementation, such as how to optimally clean and charge tablets.

#### Integrate ongoing evaluation up front

The information obtained from the pilot also prepared us for successful hospital-wide rollout. We developed measures up front to evaluate portal usage and experiences on the pilot unit; for example, table metadata were used to quantify which features were used most frequently by patients and caregivers, and the types and content of communication sent through the portal. The number of help desk calls and lost, broken or stolen tablets was used to track IS and hardware resource utilisation. Surveys and interviews were used to understand the experiences of patients, caregivers and staff, and any potential safety events that were mitigated (eg medication errors).

As part of the hospital-wide rollout strategy, we created a dashboard with the proportion of patients offered a tablet, those that logged in to the portal and any reasons why a tablet was not provided. We shared this dashboard with nurse managers on a regular basis to promote tablet provision and portal use. These data proved to be a key factor in optimising our rollout.

#### Allow sufficient time to work through key decisions and paediatric considerations

There were multiple decisions that we considered during the planning and implementation process, including those related to proxy-access for paediatric patients (Table 1).

#### Flip the script

The tablet with the inpatient portal application was ultimately presented as the standard of care, ie instead of initially asking whether a patient or caregiver was interested, tablets were provided as a part of the routine admission process. This required strong, upfront nursing engagement for the incorporation of the technology into their workflow and physician engagement to support increased information transparency. Other key elements for success included preparing unit nurse managers; providing hands-on training to nurses and unit secretaries, and informational sessions for other staff; committing to early on-site technical support; and developing a continuous data collection and quality improvement process.

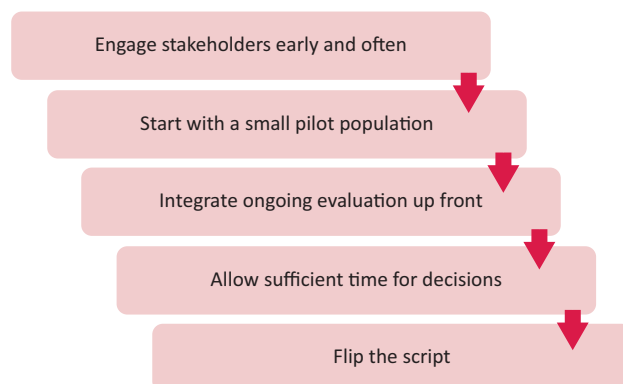


Fig 1. Five strategies to support inpatient portal implementation.

### Conclusion

A rapidly growing number of organisations are implementing inpatient portals, which are shifting the balance of health information in the hospital setting. At a minimum, hospitalised patients and caregivers will have more timely access to information and, ultimately, may act as true partners in recognising medical error and mitigating harm. Recognising and addressing implementation challenges up front will allow patients, caregivers and healthcare organisations to take advantage of the benefits of this innovative technology. Herein, we present our suggested strategies to support inpatient portal implementation based on our experience at our children’s hospital. We recommend engaging stakeholders throughout, starting with a pilot population, making time for key decisions, integrating evaluation

**Table 1. Key questions and decisions for planning and implementation of an inpatient portal**

Key questions	Our decisions
What hardware, security and infection control measures are needed?	A tablet was purchased for every hospital bed. A device management software secures tablets and their contents, and allows for updating. The tablets have a protective cover and are stored in a charging dock at the nursing station on each unit when not allocated to a patient. A nurse collects the tablet upon discharge. The unit secretary wipes each tablet with a disinfectant wipe and clears the tablet's data.
Which patients should be offered a tablet and how will proxy access be managed?	For children <12 years old, the tablet is offered to the legal guardian. For adolescents and adults, the tablet is offered to the patient. Patients with altered mental status, eating disorders or with concerns of abuse or neglect are excluded.
Who is responsible for providing and orienting the patient or caregiver to the inpatient portal application?	Unit secretaries scan and link a tablet to the patient's EHR on admission. Nurses then offer the tablet to the patient or caregiver, log it in with them, and review the portal and response time expectations. A self-guided orientation and frequently asked questions tab are also included.
Is staff information going to be shared?	Photos are included of the staff that are taking care of the patient. Staff can have their full name or just first name and last initial displayed.
What test results will be released and at what frequency?	Inpatient laboratory results are released every 30 minutes from 7am–11pm. Links to reference ranges and education are provided. Pregnancy, sexually transmitted infection, culture, pathology, tumour marker and radiology results are not released.
Will patients be allowed to send messages or requests? If so, what are response expectations?	The unit secretary triages all requests and messages. Response times are 15–30 minutes for requests and 60 minutes for messages. Messages are typically addressed during the nursing bedside hourly rounding.
What will be included in the patients' schedule?	Approximate times for medication administration, laboratory collection, therapies, radiology and procedures are included.
What educational materials will be available and where will they come from?	We include basic admission and safety education for all patients. Links are also available for more information on diagnoses, laboratory results and medication information.
Will patients be allowed to audio- or video-record staff?	As per hospital policy, patients or caregivers are allowed to audio- or video-record staff with their permission. Videos and notes are sent to the patient's ambulatory patient portal upon discharge.
What other apps be included on the tablet?	A few apps that are free of charge, do not collect identifying information and are appropriate for all ages are included.
How will staff be trained?	An online, didactic learning module and in-person, hands-on training was required for nurses and unit secretaries. Training included a description of the inpatient portal, rationale for using it (including feedback from patients and staff on the pilot unit), staff expectations, and time to practise using it, ask questions and give feedback. Standardised job description instructions were also developed. Brief, informational sessions were given to inform physicians and other staff.

EHR = electronic health record.

up front, and flipping the script to support implementation. While these strategies are from the experience of a single paediatric centre, they both validate and build upon recommendations made by stakeholders at other centres implementing portals for adult inpatients.<sup>11</sup> Future studies are needed to test the effectiveness of these and other implementation strategies on outcomes important to patients, their families and the inpatient care team. ■

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