Utilizing technology to improve intraoperative family communication

Minna M. Wieck, MD, Blue Blake, Chanda Sellick, Daniel Kenron, Daniel DeVries, Susan Terry, Sanjay Krishnaswami, MD [*]

Division of Pediatric Surgery, Doernbecher Children's Hospital, Oregon Health Science University, Portland, OR, USA

A B S T R A C T

Purpose: To create and assess satisfaction with an electronic-medical-record (EMR) integrated communication system designed to optimize perioperative communication with families.
Methods: We built a tool in the EMR's intraoperative nursing navigation screen for sending customized or standardized text pages to families in English or Spanish. Preoperatively, families were given text pagers with instructions and a hospital map to facilitate leaving the waiting area. After 6 months, Press-Ganey™ data and internal surveys from randomly selected families, and all nurses and surgeons were analyzed for satisfaction and effectiveness.
Results: Press-Ganey™ data demonstrated 30% improvement in patient satisfaction ($p < 0.05$). Among families, > 90% indicated pagers were easy to use and provided the desired information during surgery. Of nurses, >90% found the system easy to use and believed it improved families' experience. All surgeons reported improved intraoperative communication and ease of finding families postoperatively.
Conclusion: Perioperative family communication via EMR-integrated text improves efficiency and family, nurse, and surgeon satisfaction.

© 2017 Elsevier Inc. All rights reserved.

1. Introduction

In the ongoing push to provide better patient-centered care, patient satisfaction has becoming an increasingly important metric for hospital and physician performance, and a key component of reimbursement.[1] For surgical patients, perioperative communication and attentiveness to the patient and family perioperatively are two of the most important determinants of patient satisfaction and surgeon ratings.[2—4] Furthermore, multiple studies have shown that good perioperative communication decreases family anxiety and improves their overall experience.[4—7]

Nevertheless, many barriers to optimal perioperative communication remain. Surgery waiting rooms are crowded and public. Patient often feel like they are stuck in a "cattle call" so they leave

the area, making them unavailable for updates. When perioperative staff are unable to keep consistent track of families, operating room nurses must then try to directly call families with updates, relying on variable cellular phone reception. These efforts often require nurses to physically leave the operating room and their intraoperative workflow, which makes the nurses unavailable for circulating duties. Postoperatively, surgeons are often unable to find patients' families for counseling and to communicate results of the procedure. In total, this results in communication of variable frequency and quality.

The ideal communication system should facilitate clear, complete, and reliable messaging in a timely and standardized manner.[8] Furthermore, it should allow patients' families to wander while keeping nurses within the same intraoperative physical workspace and electronic workflow. Reported methods include paddle pagers, digital text pagers, and RN liasons,[5,6,9,10] but there are few reports utilizing the modern capabilities of electronic medical record (EMR) systems. The goal of this study was to leverage existing technology to create a customizable, reliable, and inexpensive system for intraoperative communication with families. Thus, we first built a paging feature that could be accessed, controlled, and recorded within the EMR. We hypothesized that creation of such an

* Corresponding author. Oregon Health Science University, Division of Pediatric Surgery, 3181 SW Sam Jackson Park Rd., Mail Code: CDW 7, Portland, OR, 97239, USA.
E-mail addresses: wieck@ohsu.edu (M.M. Wieck), blakeb@ohsu.edu (B. Blake), sellick@ohsu.edu (C. Sellick), kenron@ohsu.edu (D. Kenron), devries@ohsu.edu (D. DeVries), terrys@ohsu.edu (S. Terry), krishnas@ohsu.edu (S. Krishnaswami).

EMR-integrated system would improve patient, nurse, and surgeon satisfaction.

2. Material and methods

2.1. Location and materials

Doernbecher Children's Hospital in Portland, Oregon is a tertiary facility that is part of a larger medical center complex (Oregon Health and Science University) on a single, sprawling campus. The children's hospital has its own operating rooms and surgical waiting area. However, amenities such as cafes and gift shop are located within the main hospital and easily accessible from the children's hospital.

Families receive updates on the same standard text pagers used by hospital staff. These pagers can receive messages in alpha-numeric characters and specialized characters for non-Western languages. Pagers are provided by the paging company for free and charge $6/pager/month for service. A pool of 50 pagers is available for use by families perioperatively.

At pre-operative check-in, families receive a pager with attached instructions on how to use the device, directions to hospital cafes and points of interest within the hospital campus, and when and where to return pagers at the end of their child's surgery (Fig. 1). Families are reminded that the pagers receive messages anywhere on campus and they are encouraged to leave the waiting area.

When families leave the PACU postoperatively, signs are posted on all doors to remind families to return pagers at the front desk. When the first phase of PACU recovery is completed, Epic™ also automatically sends a reminder to the family to return the pager.

2.2. EMR-based paging feature

Our hospital's utilizes Epic™ as its EMR system. In order to streamline family communications from the operating room, a new paging feature was built into Epic™ for family updates directly from within Epic (Fig. 2). This was created by on site Epic™ support staff as directed by clinical faculty at no additional cost.

During pre-op check in, the assigned pager number is entered into the patient's electronic chart during the pre-op assessment so that intraoperative pages are sent to the correct pager without having to enter in a pager number with each communication.

After opening the patient's chart for the surgical encounter, the circulating nurse clicks on the "Intraop Navigator" activity that is used for documenting all required surgical details such as positioning, prep, and supplies. Within this activity is a "Family Paging" section that opens a window for entering the text message. Nurses can select one of the four standard messages: "Everything is going well and we have just started the procedure", "The doctors are still working and everything is going well", "Please return to the Maple Leaf and check in at the desk", and "The procedure is ending, please come to the Maple Leaf desk to meet the doctor". These messages are available in both English and Spanish and additional languages can be added subsequently as needed. Alternatively, a text box is provided for typing in a customized message if the circulator chooses. To keep messages concise, text is limited to 80 characters. The circulator then uses the "Page Family" button on the toolbar to send the page.

By default, the first and last standardized text messages are automatically coupled to changes in phases of care. When the circulator clicks the "procedure start" button within the Intraop Navigator activity, the message "Everything is going well and we have just started the procedure" is automatically sent. Similarly, when the circulator clicks the "start close" button, the message "The procedure is ending, please come to the Maple Leaf desk to meet the doctor" is automatically sent. To minimize the risk of inappropriate updates, these automated updates are sent only if the circulator clicks the linked phase of care. For example, if any adverse events occur during anesthesia induction that preclude actually starting the case, the circulator would not click "procedure start" and the status update would not be sent, thus preventing an inaccurate update. This automated feature can be disabled at the circulator's discretion. During the case, update reminders appear every hour at which point the nurse can select an appropriate standardized or customized message. This ensures that these crucial updates are sent, even if the circulator is busy with other tasks.

These updates are chronicled in a separate history tab to improve transparency and continuity of care. Recording and time-stamping each message helps circulators and other intraoperative staff keep track of what messages have been sent, thereby reducing
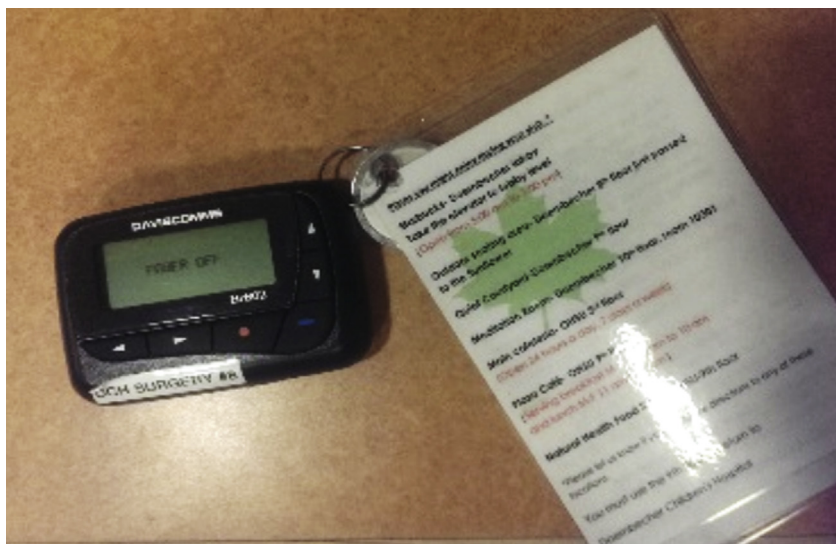

Fig. 1. Standard text pager with attached instructions.