Defining Communication Improvement Needs in General Surgery: An Analysis of Pages, Communications, Patterns, and Content☆

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OBJECTIVE: To describe patterns of pages communication to general surgery (GS) residents, identify the need for and develop strategies to improve interprofessional communication.

DESIGN: Retrospective cohort study.

SETTING: General surgery (GS) service at a tertiary care academic institution, Sunnybrook Health Sciences Centre, in Toronto, Ontario, Canada.

PARTICIPANTS: All pages sent to GS residents over 4 weeks at an academic institution. Timing, training level of receiver and content of pages were captured.

RESULTS: Communication priority was assigned by 2 independent reviewers—low (121+ min), medium (31-120 min), high (6-30 min), and immediate (0-5 min) priority. Overall, 2 independent reviewers analyzed pages' content through an inductive process, and generated themes. Of 2025 pages retrieved, 963 (47.5%) contained exclusively a call back number. A median of 74 pages per day (range: 43-116) were received, with median page interval of 9.4 minutes (range: 0-640). Junior residents received 79.5% of pages. Timing of the pages was 43.9% weekday shift, 31.8% weeknight shift, and 24.3% weekend call. Communication priority was deemed low for 35.4% of pages, medium for 32.3%, high for 12.4%, and immediate for 0.7%. Content analysis of 1062 pages generated 5 major themes: nonurgent medical issue (54.0%), administrative (15.3%), communication (13.5%), emergencies (4.8%), and GS consultation requests (4.0%). Priority and content of pages varied according to training level and page timing.

CONCLUSIONS: Pages to GS residents were frequent and most often of low priority. They were seldom related to urgent medical matters. Education and new communication strategies are warranted to reduce low priority pages. (J Surg Ed 73:959-967. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: communication, page, education, residents

COMPETENCIES: Patient Care, Interpersonal and Communication Skills, Professionalism

INTRODUCTION

Effective communication is critical in delivering high-quality patient care. Inefficiencies in communication carry risks in compromising patient safety. Frequent pages result in interruption every 7 to 11 minutes, and disrupt direct patient care in up to 20% of cases.[1-3] Such disruptions in patient care have been associated with increased medical errors, compromised patient safety, and even in patient mortality.[4-6]

Interruptions and miscommunications can also affect trainees' educational experience. This is particularly

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relevant with the redesign of residents' duty hours and focus on addressing and managing fatigue.[7,8] A significant proportion of residents' time is occupied by activities without perceived educational value, including dealing with unnecessary pages. Improvement in paging communications has been outlined by residents as an opportunity to limit workflow interruption that contribute to errors, stress, and sleep deprivation.[5,9]

Pages in general surgery (GS) have been reported to occur as often as every 6 to 12 minutes, and to interrupt up to a quarter of patient interactions.[1,10-12] The organization of surgical services differs than that of other medical teams, because of different demands in terms of patient care, physician activity, and training. In particular, direct face-to-face interactions between nursing and surgical staff are limited by need for house staff to be present in the operating room and the emergency department, and to care for off-service inpatients. Therefore, communications in surgery traditionally rely heavily on paging systems. The effect of frequent pages on workflow, patient care, and residents' education present a unique challenge on GS services.

Both physicians and nurses have indicated dissatisfaction with the current communication models.[13-15] Efforts to improve the quantity and quality of paging communications are ongoing but are challenged by poor understanding of barriers to effective communications.[10,13] Thus, a more comprehensive understanding of the nature of communications appears needed to inform meaningful and effective solutions to communication issues.

As part of an ongoing initiative aimed at developing and implementing strategies to improve communications, this study sought to describe patterns of pages communication to GS house staff, to identify potential areas for improvement, the types of information conveyed through pages and the level of urgency of this information.[16]

METHODS

The detailed methodology for this research has been previously reported.[16] Sunnybrook Health Sciences Centre's (SHSC) Research Ethics Board approved the study.

Study Design

This study is part of an institutional-wide initiative to develop, implement, and evaluate a guideline and tailored strategy to enhance communications to optimize patient care delivery, based on the knowledge-to-action framework. Herein, we focus on the first of 5 phases, which consisted of a retrospective assessment of number, frequency and content of pages on a GS service (Fig. 1). This phase was aimed at identifying, characterizing, and quantifying current paging communications.

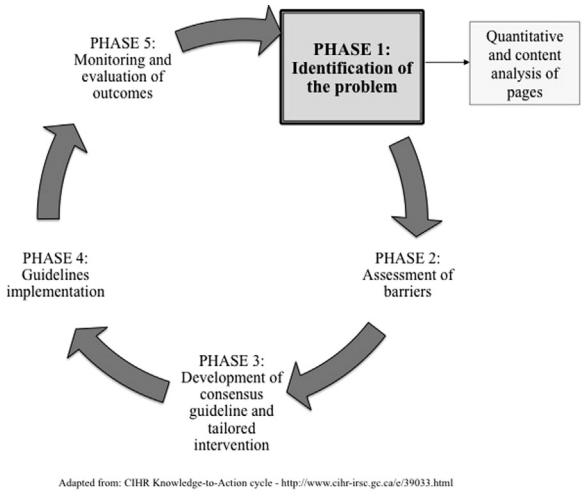

FIGURE 1. Schematic of an initiative to improve interprofessional communication in general surgery. This study focuses on phase 1.

Study Setting

This study was conducted at SHSC in Toronto, Ontario, Canada. SHSC is one of Canada's largest academic hospitals, including the largest level 1 trauma center in Canada and the sixth largest cancer center in North America. The institution provides all residents and clinical fellows covering the SHSC GS service with alphanumeric pagers, each associated with a unique messaging identification number. Pagers represent the primary mode of communication on the service. Alphanumeric pages (ANP) are created and delivered through a web-based tool available on the institution's intranet. The following fields are allowed on the page: call back number (mandatory numeric content) and text message (alphanumeric content to the discretion of the sender). During the study period, the GS house staff were responsible for acute care surgery, trauma, surgical oncology, and vascular surgery services; there was no advanced practice providers (e.g., physician assistant or nurse practitioner) working on the GS service. In-house on-call team included a junior resident, a senior resident, and a trauma team leader, on call for 24 consecutive hours.

Data Sources

A list of residents and clinical fellows covering the GS service was obtained from SHSC Medical Education Office. The unique messaging identification number of the residents and clinical fellows on the GS service were used to identify relevant pages. All paging data for each of these unique pager numbers were obtained from the Department of Telecommunication Services at SHSC, which captures all pages sent through the hospital system. Each page contains the following information: unique messaging identification number, date, time, call back number, and full alphanumeric message as entered by the sender. The level of training