



How Should Surgical Residents Be Educated About Patient Safety: A Pilot Randomized Controlled Trial

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INTRODUCTION: The Accreditation Council for Graduate Medical Education mandates patient safety education without specific curricular guidelines. We hypothesized that a dedicated, adjunctive resident safety workshop (SW) led by surgical faculty compared with an online curriculum (OC) for hospital personnel alone would improve residents' patient safety perceptions and behaviors.

MATERIALS AND METHODS: A pilot randomized controlled trial was performed from 2014 to 2015 within a university-based general surgery residency. Control and intervention groups, stratified by postgraduate year, participated in a hospital-based OC; the intervention group participated in an additional SW. Primary outcomes were perceptions of safety culture, teamwork, and speaking up as per the validated safety attitudes questionnaire (SAQ) at 6 and 12 months postintervention. Secondary outcomes included behavioral scores from blinded surgical faculty using the Oxford NonTechnical Skills scale.

RESULTS: A total of 51 residents were enrolled (control = 25, intervention = 26). SAQ response rates were 100%, 100%, and 76% at baseline, 6 months, and 12 months, respectively. SAQ scores were similar at baseline between

groups and did not change significantly at 6 or 12 months, independent of postgraduate year (PGY) level. Overall NonTechnical Skills scores were similar between groups, but senior residents (\geq PGY 4) in the OC + SW group scored significantly higher in teamwork, decision-making, and situation awareness (all $p < 0.05$).

CONCLUSION: An adjunctive, dedicated resident SW compared with a hospital-based OC alone did not significantly improve overall perceptions of patient safety. However, senior residents participating in the SW demonstrated improved patient safety perceptions and had significantly better intraoperative safety behaviors than senior residents in the OC group. Future curricular enhancements should include PGY-level specific education, iterative reviews, and increased faculty involvement. A larger randomized trial may be warranted. (J Surg Ed 73:660-667. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: patient safety, resident education, randomized trial, teamwork, speaking up, safety culture

COMPETENCIES: Practice-Based Learning and Improvement, Systems-Based Practice, Patient Care

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INTRODUCTION

With nearly half of preventable safety events reported to occur postoperatively,^{1,2} patient safety education for residents has become a priority for organizations such as the Accreditation Council for Graduate Medical Education

(ACGME) and the American College of Surgeons (ACS).³ To this end, the ACGME recently instituted the Clinical Learning Environment Review as part of its Next Accreditation System, which strongly encourages participating programs to formally integrate residents into educational activities focused on patient safety.⁴ Despite these organizational efforts and the recommendations of the Institute of Medicine to install broad-based, system-level approaches to address patient safety,⁵ currently there are no nationally accepted resident education curricula specifically for patient safety. Ultimately, residency programs are responsible for developing, implementing, and evaluating their own patient safety education programs.

Currently, our institution uses a hospital-based, online patient safety curriculum which all health care personnel, including residents, are required to take before working with patients.⁶ However, additional efforts to promote and maintain a culture of safety within the pediatric surgery perioperative environment have been instituted, which includes semiannual, physician-led safety workshops (SW) focused on safety culture, teamwork, and communication for all perioperative personnel except residents in addition to the online program. These domains have been identified as critical aspects for improving patient safety by the Joint Commission on Accreditation of Healthcare Organizations, the ACS, and the ACGME.^{3,7} These workshops have been demonstrated to improve perceptions of safety culture, teamwork, and communication among the perioperative personnel as determined by the validated safety attitudes questionnaire (SAQ).⁸

Given the success of the SWs with other perioperative personnel, we hypothesized that a dedicated, adjunctive resident SW compared with an online curriculum (OC) alone would improve surgical residents' operating room behaviors and perceptions of patient safety.

MATERIALS AND METHODS

We conducted a pilot, randomized controlled trial within a university-based, general surgery residency. The study was approved by our institutional review board (HSC-MS-14-0073) and registered on clinicaltrials.gov (NCT02401711) before participant enrollment. The Consolidated Standards of Reporting Trials guidelines were used to guide study reporting.⁹

Participants

All preliminary and categorical general surgical residents at the University of Texas Health Science Center at Houston in January 2014 were eligible for enrollment. Residents were approached for voluntary study participation using an opt-out format and standardized consent forms.¹⁰ Residents who were not available to provide consent because of away research sabbaticals were excluded from the study (Fig. 1).

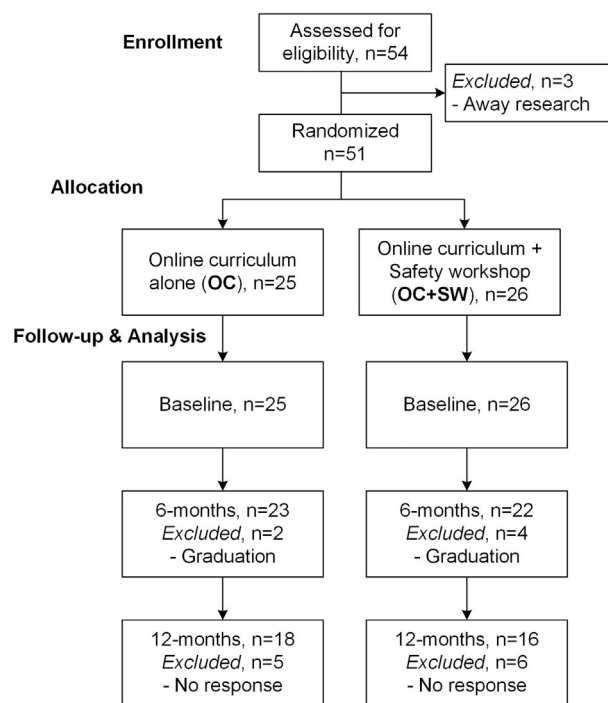


FIGURE 1. CONSORT (Consolidated Standards of Reporting Trials) flow diagram.

RANDOMIZATION AND ALLOCATION

Variable-block randomization was performed by a study coordinator who was not involved in study outcome assessment. The coordinator used an online program to generate individual units of randomization stratified by resident level of experience—residents who were postgraduate year (PGY) 1 to 3 were categorized as junior residents and PGY 4 to 5 were senior residents. This ensured an even distribution of junior and senior residents between the 2 arms of the study. Using a 1:1 allocation ratio, each resident was allocated to the control group (only OC) or the intervention group (OC and physician-led SW, OC + SW). Only those residents who were randomized to the intervention group were informed about the time and place of the SW; those in the control group were not given any supplementary information.

Interventions

As described previously, all general surgery residents in our institution participate in a hospital-based, online patient safety curriculum during the orientation process, before working with patients in the hospital.¹¹ The OC is called “breakthroughs in patient safety” and takes approximately 1 hour to complete. It covers topics such as error reduction, enhanced communication, and support for colleagues; however, it is not discipline specific nor does it focus on patient safety issues from a resident trainee perspective.

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