Standardizing the Culture of Trauma Rotation Handoffs

Cathleen Khandelwal, MD, Jason Mizell, MD, Matthew Steliga, MD, Katherine Berry, EdD, Mary Katherine Kimbrough, MD, Frederick Bentley, MD, and James Clardy, MD

Department of Surgery, University of Arkansas for Medical Sciences, Little Rock, Arkansas

OBJECTIVE: One of the General Surgery milestones focuses on effective handoffs between residents as they change shifts. Although the content of handoffs is crucial, we recognized that the culture of handoffs was equally important. After the reorganization of the trauma service at our institution, there were difficulties in maintaining the standardized handoff culture. We analyzed the culture of handoffs on the trauma service to create an environment more conducive to effective handoffs.

DESIGN: All trauma activations from 2012 to 2013 were evaluated from our institution's trauma data registry. Data on timing of activations and disposition of the patient were analyzed to understand service work flow. A survey was developed and administered to the residents to assess the culture of trauma handoffs.

SETTING: This work occurred at an academic, state-designated level 1 trauma center.

PARTICIPANTS: All current residents in the general surgery residency who rotated on the trauma service in the last 5 years.

RESULTS: There were 1654 admissions to the trauma service from June 2012 to July 2013. The single busiest hour for trauma admissions (7% of admissions) was the same time the residents were designated to handoff. Interruptions occurred often; 83% of residents indicated that a handoff interruption occurred daily, and 73% indicated a new activation interrupted handoffs weekly. A large majority, 61%, felt patient care was frequently compromised by an ineffective handoff. Similarly, as a direct result of inadequate handoffs, 50% felt uncomfortable answering nurses' pages at night.

CONCLUSIONS: The unique situation of the trauma service impaired the handoff culture for residents. Assessment of our trauma activation flow indicates the timing of handoffs was adversely affecting our resident's ability to handoff effectively, requiring interventions to improve the efficacy and safety of handoffs. (J Surg 71:601-605. © 2014 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: transitions of care, milestones, trauma surgery education

COMPETENCIES: Patient Care, Interpersonal and Communication Skills, Medical Knowledge

BACKGROUND

The Joint Commission and the Accreditation Council for Graduate Medical Education through Institutional Requirements III.B.3., Common Program Requirements VI.B., the Clinical Learning Environment Review, and General Surgery Milestones (Interpersonal and Communication Skills level 2 [ICS2]) require effective, structured/standardized transitions of care that include processes facilitating continuity of care and patient safety.[1-5] Standardization of handoffs requires analysis of both process (who, when, where, and how) and content (what and why).[6] Understandably, contemporary surgical education literature often focuses on the content aspect of standardization, mostly on matters of communication—the "what."[7-11] One comprehensive curriculum blueprint for resident education to improve continuity of care outlines 22 content-oriented learning activities programs can implement to customize handoff education specific to local program needs.[12] In contrast to handoff content, which is highly variable based on human communication differences, residents have also identified process concerns related to time, location, method, and expectations.[13,14] These process concerns, the environment, and *culture* in which handoffs occur deserve further attention.

The culture issues of our trauma rotation handoffs became particularly clear owing to the reorganization of our trauma service at our institution. Residents reported unexpected interruptions and difficulties in maintaining the standardized handoff culture. We sought to identify deficiencies in the

Correspondence: Inquiries to Katherine Berry, EdD, Department of Surgery, University of Arkansas for Medical Sciences, 4301 West Markham Street, Slot #595, Little Rock, AR 72205; e-mail: KSBerry@uams.edu

  1931-7204/$30.00 *http://dx.doi.org/10.1016/j.jsurg.2014.01.002*

culture of trauma service handoffs to create an environment more conducive to effective and safe handoffs.

METHODS

All trauma cases from July 1, 2012 through June 30, 2013 were reviewed using the National Trauma Registry System for our university hospital. Registry data were sorted by case type (patient sent to operating room [OR], patient sent to intensive care unit [ICU], patient admitted to floor, and patient discharged) to better understand trauma service work flow during a 24-hour period. The case reports were further stratified based on what time the case was admitted to the trauma service. Patient admissions for each case type were ranked based on hourly time blocks with the highest number of admits per hour receiving the rank of 1. Ranks were aggregated across services to determine the time of day with the most urgent patient care needs for residents on the trauma service.

To assess factors beyond timing of handoffs, faculty reviewed medical literature for evidence-based and best practices in handoffs. After receiving an Institutional Review Board Letter of Determination for the project, the trauma rotation survey was developed by a group of 3 surgical educators (including the program director), a nonsurgical physician educator (the DIO), and a non-MD educator. The survey assessed current resident perception of the effectiveness of the handoff culture, faculty involvement in handoffs, and identified the current trauma handoff culture at our institution.

Content validity and clarity were confirmed by 2 general surgery residents and a surgical educator who did not contribute to the survey development. Items were amended based on their suggestions. To reduce the effect of recall bias, survey developers asked very specific, factual questions about only the residents' most recent trauma service rotation. The 19-item survey included multiple-choice selections, Likert scales, and demographic questions. The survey was delivered electronically with an e-mail introduction to all General Surgery categorical residents at University of Arkansas for Medical Sciences (n = 23). The response rate was 83%. Results were tabulated, data analyzed, and implications inferred.

RESULTS

Multiple handoff culture issues were identified after reviewing the data from our survey. First, and foremost, was the issue of timing. A total of 1654 admissions to the trauma service occurred during the specified time period. The highest hour for trauma activations and admissions in a 24-hour period was at 6 PM, with a total of 7% of all trauma admissions occurring during this hour. Among the top 10 busiest hours for trauma admissions were 5 PM and 7 PM. Likewise, the busiest hour for blunt trauma admissions was 6 PM to 7 PM, and the second busiest hour for traumas going straight to the OR from the emergency room (ER) was 5 PM to 6 PM. Within our hospital, the most common time to handoff (6 PM), was also the most likely time to have a new trauma activation, a blunt trauma admission, and the second most likely time to have an operative intervention on that trauma. Because of this timing, service duties, patient care, quality of the handoff, and opportunities for education were all compromised.[15] Although the timing of the handoff itself was a problem, the protection of the time for the handoff proved to be an equally daunting problem. Interruptions during handoffs were numerous; 83% of residents indicated that a handoff interruption occurred at least once a day, and 73% of residents indicated that a new trauma activation interrupted handoffs at least once a week. The most common reason for an interruption was pages from nurses (70%), followed by: trauma activation (65%), emergent patient issues (25%), and rounding with a chief or attending physician (10%), respectively.

Secondly, we identified issues with the personnel involved in the handoff. Handoffs frequently (88%) took place between residents at the same level (chief to chief, intern to intern). No one (0%) reported full teams handing off to other teams. Likewise, faculty supervision of handoffs rarely took place with 83% of residents articulating that an attending physician was *never* present at *any* handoff. Residents passively learned how to handoff; 61% of residents learned to handoff by watching other residents. No one (0%) consulted evidence-based literature, attended a formal class, or was taught by an attending physician.

Even when the personnel were adequate, the environment surrounding the handoff was difficult to maintain. Trauma handoffs took place in 4 different locations. Most handoffs (72%) occurred on a hospital floor, but residents (56%) preferred them to occur in the resident's lounge on another floor. Because of acute patient care needs, nearly 30% of handoffs occurred in the ICU or in the ER. Resident feedback showed unclear expectations about handoffs. Data showed 72% of handoffs occur face to face; e-mail was a distant second at 17%. All (100%) handoffs occurred in less than 30 minutes, with 61% taking less than 15 minutes. Half of our residents hand off 10 to 20 patients daily, thereby spending less than 1 minute per patient in sign-out.

Finally, resident confidence after these short, interrupted handoffs was clearly lacking. A large resident majority, 61%, felt patient care was always or most of the time compromised by an ineffective handoff. Similarly, as a direct result of inadequate handoffs, 39% felt uncomfortable answering nurses' pages at night.

DISCUSSION

This article describes a data-driven quality improvement project that directly addresses the Clinical Learning