

EDITORIAL

Handoffs: A Story in Evolution

Christine D. Jones, MD, MS*, Jeffrey J. Glasheen, MD

Department of Medicine, Division of General Internal Medicine, University of Colorado, Denver, Colorado.

In this issue of the *Journal of Hospital Medicine*, the results of 2 inpatient handoff studies further shape our evolving understanding of in-hospital care transitions. Schouten and colleagues,¹ report no difference in adverse outcomes when admissions were handed off to the primary team using face-to-face compared to non-face-to-face interactions. Meanwhile, Hanson and colleagues² report that a written handoff tool is used infrequently by covering interns.

Schouten et al.'s study attempted to isolate the impact of the verbal portion of the handoff between admitting and accepting team by evaluating whether early adverse outcomes differed between patients whose teams performed a face-to-face handoffs compared to those who did not. Their study was a retrospective chart review, and no additional process changes, training, or instruction regarding handoffs were implemented or measured. Handoffs occurred primarily between advanced practice providers, hospitalists, and a small number of resident physicians, so generalizability of this study to other institutions may be limited. No difference in adverse events was noted between admissions with face-to-face compared to those without face-to-face handoffs (2.6% vs 3.2%). Unfortunately, this study was likely underpowered to detect significant changes in adverse events, with a sample size of 805 total patients with a 3% baseline rate of adverse events (by our estimate, over 5000 patients would be needed in each group—10,000 overall—to detect a 30% relative difference in event rates). Further, this study did not examine other outcomes that could be impacted by the handoff process such as provider efficiency or patient experience.

Face-to-face handoffs, the gold standard for handoffs between providers, was 1 of the sign-out approaches examined in a study by Graham and colleagues.³ This study, in contrast to the Schouten et al. study, prospectively evaluated adverse events before and after implementation of face-to-face handoffs, with structured written sign-out from the primary

team to nighttime covering physicians. Prior to implementation, handoffs consisted of a “double handoff” involving an intermediary physician and unstructured written sign-out. Although no statistically significant reduction in adverse events was found in the Graham et al. study, significant improvements were noted in physician satisfaction, documentation of key elements in handoffs, and reduced data omissions; importantly, a trend of fewer “near misses” was noted comparing the pre- and postintervention periods. Although the Schouten et al. and Graham et al. studies suggest questionable benefit of face-to-face handoffs, we would caution that limitations in sample size and methodological sensitivity to detect adverse events in both studies could explain the lack of association between face-to-face handoffs and reduced adverse events. Furthermore, the promising findings of fewer data omissions and near misses in the intervention group in the Graham et al. study suggest benefit from a multipronged approach to improving handoffs including both face-to-face interactions and a structured written component.

In this issue, Hanson and colleagues also evaluated the use of a handoff tool by cross-covering interns in a convenience sample of overnight clinical interactions. Despite finding that standard written documentation was considered beneficial by nearly all respondents (94.3%), the interns reported that the handoff tool was used in only 27.7% of encounters. This pales in comparison to the use of the nurse or chart in 94.4% of cross-coverage encounters. The authors speculate that a handoff tool, for many years the only timely source of information, may not be as useful when information can be easily accessed in an electronic health record. Yet, in a prior systematic review that included 6 studies of computerized handoff tools, Li and colleagues found that computerized handoff tools may improve physician efficiency, enhance the completeness of handoff information, and even potentially reduce adverse events.⁴

The Schouten et al. and Hanson et al. studies raise important questions for the fields of hospital medicine and patient safety. Is it time to do away with the written and verbal portions of the handoff process? Should the handoff of patients simply consist of transferring a list of patients to covering providers? We do not believe this is the correct course of action. Rather, we recommend a more evolutionary, not revolutionary, interpretation of these results, especially when considered as part of a broader story of in-hospital transitions of care.

*Address for correspondence and reprint requests: Christine Jones, MD, Department of Medicine, Division of General Internal Medicine, Hospital Medicine Section, University of Colorado, Mail Stop F782, 12401 East 17th Avenue, Aurora, CO 80045; Telephone 720-848-4289; Fax 720-848-4293; E-mail: christine.jones@ucdenver.edu

Additional Supporting Information may be found in the online version of this article.

Received: December 16, 2014; Revised: December 23, 2014;
Accepted: December 30, 2014

2015 Society of Hospital Medicine DOI 10.1002/jhm.2316

Published online in Wiley Online Library (Wileyonlinelibrary.com).

For example, a recently published evaluation of a resident handoff-improvement program in 9 hospitals and 10,740 patient admissions by Starmer and colleagues⁵ focused on a handoff bundle, I-PASS, which is a mnemonic for Illness severity, Patient summary, Action items, Situation awareness and contingency planning, Synthesis by receiver. The authors report a reduction in medical errors and preventable adverse events without significant increases in the duration of oral handoff per patient. The handoff in this study included both oral and written elements in the I-PASS format. Implementation was multipronged, and the I-PASS bundle included (1) use of the I-PASS mnemonic to standardize handoffs; (2) resident physician training in handoffs and communication through a 2-hour workshop, followed by a 1-hour role-playing and simulation session, and a computer module for practice; (3) faculty development and observation with use of direct-observation tools to provide structured feedback to residents; (4) active surveillance for errors (rather than relying on self-report); and (5) a sustainability campaign to promote continuation of culture change. The complexity and robust nature of the I-PASS handoff bundle suggests that having multiple structured components included in a handoff program with active, rather than retrospective, evaluation might increase the likelihood of improved, sustained outcomes. In addition, one might also conclude from the Starmer et al. study that it takes commitment from all levels, including residents, faculty, and administration, to improve handoffs between teams for inpatient care.

We commend Schouten et al. and Hanson et al. on their contributions to the literature, but believe that the story of the in-hospital handoff has yet to be fully written. Although results from these 2 articles may

cause speculation about the value of oral and written handoffs, we believe that the balance of evidence favors the use of a multipronged approach that involves both structured oral and written handoffs to improve the value and efficiency of handoffs. In addition, findings from the I-PASS study support dedicated handoff training for providers, evaluation of handoffs using structured tools, and active surveillance for medical errors. Future areas of work should include a systematic review of the inpatient handoff literature and further evaluation of precisely which specific intervention components (eg, structured content of handoffs, sensemaking content) or modes of delivery (eg, face-to-face vs other) are most likely to reduce medical errors and improve patient outcomes. As the hospital medicine movement continues to grow, handoffs will continue to be paramount. Establishing the safest method to complete handoffs to promote patient safety should be a common goal for hospitalists.

The handoff story is still in evolution; as hospitalists, we are poised to be its author.

References

1. Schouten WM, Burton MC, Jones LD, et al. Association of Face-to-Face Handoffs and Outcomes of Hospitalized Internal Medicine Patients. *J Hosp Med.* 2015;10(3):137–141.
2. Hanson JT, Leykum LK, Pugh JA, et al. Nighttime Clinical Encounters: How Residents Perceive and Respond to Calls at Night. *J Hosp Med.* 2015;10(3):142–146.
3. Graham KL, Marcantonio ER, Huang GC, Yang J, Davis RB, Smith CC. Effect of a systems intervention on the quality and safety of patient handoffs in an internal medicine residency program. *J Gen Intern Med.* 2013;28(8):986–993.
4. Li P, Ali S, Tang C, Ghali WA, Stelfox HT. Review of computerized physician handoff tools for improving the quality of patient care. *J Hosp Med.* 2013;8(8):456–463.
5. Starmer AJ, Spector ND, Srivastava R, et al. Changes in medical errors after implementation of a handoff program. *N Engl J Med.* 2014; 371(19):1803–1812.