Patient care handoffs are an obligatory component of modern hospital care. A 2006 study of internal medicine practices estimated that 15 physician-to-physician handoffs take place during a hospital stay of 5 days. Surgical patients require even more frequent (and complex) handoffs due in part to the requisite handoff between operating room and postoperative care providers. Thus, perioperative leaders emphasize the critical nature of patient handoffs supported by numerous publications in anesthesiology, surgery, and nursing literature. But despite numerous efforts to improve care transfers, errors and omissions continue to occur. A European study evaluating 100 operating room to postanesthesia care unit handoffs found a median of 8 information omissions and 3 task errors per handoff. Given the intensity and complexity of patients being admitted to the intensive care unit (ICU) after surgery, it is likely that handoff errors are even more common. For instance, a study evaluating 134 pediatric intensive care unit admissions found a prevalence of 100% in communication errors, with 94% of handoffs containing more than 1 error.

While there are a plethora of data describing omissions and errors occurring during care transitions, there is a paucity of data documenting their impact on patient outcomes. Even in a meta-analysis of 31 articles evaluating postoperative handoffs, very few linked the quality of handoff information with patient outcomes. Nonetheless, clinician intuition and experience often conclude that there is a relationship. In a 2006 survey of 161 medical and surgical residents, 59% of respondents reported that at least 1 patient had been harmed during their previous clinical rotation because of “problematic handoffs,” and 12% recalled that this adverse event produced “major harm.” Unfortunately, health care systems often respond only to extraordinary events to generate institutional responses such as instituting a mandatory checklist during transfers of care.

In this issue of Anesthesia & Analgesia, Hall et al present their findings regarding a standardized approach to ICU handoffs for postcardiac surgery patients as they evaluate its implementation effects on postoperative complications.
Meanwhile, many intensivists are likely to argue that some preventable complications will not be attenuated by improved information transfer. For instance, hypotension caused by a loose intravenous vasopressor connection might be preventable, but even the best communication handoff is unlikely to foresee or account for such complications. Thus, while we acknowledge the challenge in defining preventable complications, we also must concede that these labels are somewhat arbitrary and may not fall under the umbrella of preventable by a handoff protocol, a checklist, or a standardized algorithm.

Meanwhile, other clinicians are likely to opine that a reduction in all “serious complications” would be a more robust measure of improved quality of care. But the study limitations noted above become further amplified if examining all serious complications, and perhaps even less likely to be impacted by improved communication by care transfer protocols. This seems consistent with the authors’ inability to demonstrate a reduction in the overall complication rate (30.2% preintervention versus 34.3% postintervention, \( P = .154 \)).

Because of the study design challenges, the use of a composite outcome is helpful in limiting the number of participants needed to reach statistical significance. However, these composites should be used with caution, as confounding is common. In this study, for example, 2 of the 6 preventable complications, hypotension and cardiac arrest, which frequently occur together in cardiac surgical patients, represent 40% of the total complication rate and almost certainly contributed significantly to the positive finding of the study. Furthermore, variables included in a composite outcome should all be equally meaningful with regard to their clinical significance. Arguably, the individual components that make up the composite event in this study are not of equal severity.

Other limitations also apply. For instance, the study made little attempt to account for other key potential confounders (with the exception of age and sex and perhaps surgery type). Specifically, the authors did not collect key information about core patient data such as preoperative comorbidities or the surgical procedure to statistically compare baseline characteristics. Also, there are additional obvious covariates that influence things, like cardiac arrest and hypotension. It would also have been useful for the authors to independently verify the adherence to the care transfer process. Even the fundamental choice of a before and after study design leads to potential biases such as the inability to capture any ongoing changes in the baseline incidence of preventable events. Finally, and perhaps most important, we must once again remind ourselves that the findings by Hall et al can only claim an association between the implementation of their structured handoff and fewer preventable complications in the postoperative period. Specifically, even the totality of these data is insufficient to prove causation (i.e., that the observed reduction in preventable complications was directly caused by the change in the handoff process). But the fact that causation cannot be proved is essentially true of any noninterventional, nonrandomized study.

Despite the limitations, this study by Hall et al remains an important effectiveness research study of a care transfer protocol designed for cardiac patient caregivers. Clinicians and administrators should note key elements to improving team motivation and compliance. This and other studies confirm the critical nature of seeking multidisciplinary input in defining and implementing care transfer protocols. In addition, the authors emphasized the critical nature of training and practice sessions before implementation. Finally, implementation of new care processes is unlikely to be successful if providers view them as an inefficient use of time. Remarkably, the cardiac surgery teams here performed the new structured handoff algorithm while expending only an extra 2 minutes (17.8 vs 19.2 minutes). While the additional required time achieved statistical significance compared to baseline, the positive clinical and safety benefit proved a wise investment for perioperative teams and patients.

In summary, handoffs establish a “shared mental model” and remain a vital tenet of modern patient care. While the findings of Hall et al are insufficient to prove their effectiveness, few clinicians would advocate for diminishing or eliminating the patient handoff from routine medical care. That the study by Hall et al was unable to demonstrate a reduced overall complication rate between structured versus informal handoffs may represent several design limitations, or perhaps reflect the proficient baseline level of communication of the institution. But further validation of these findings and examination of the cost-effectiveness of such interventions are next steps to improving the implementation of such protocols. Even without statistical proof, protocols that encourage appropriate information transfer should be lauded for their contribution to patient care.

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Name: Megan J. Olejniczak, MD.
Contribution: This author helped with manuscript preparation and editing.
Name: Ioanna Apostolidou, MD, MS, PhD.
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Name: Richard C. Prielipp, MD, MBA, FCCM.
Contribution: This author helped with manuscript preparation and editing.

This manuscript was handled by: W. Scott Beattie, PhD, MD, FRCPC.
Acting EIC on final acceptance: Thomas R. Vetter, MD, MPH.

REFERENCES