"Left Seat, Right Seat": Transitions of Care Within Graduate Medical Education

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Introduction

Medical errors resulting in patient harm are a leading cause of death among Americans[1,2] and are a recognized result of miscommunication during transitions of care, also referred to as "handoffs" or "handovers."[3-10] This is particularly important to highlight for graduate medical education trainees, as restrictions to resident work hours and changes within academic health systems have caused patient handoffs to increase considerably.[11-13] A handoff is most traditionally defined as the transition of patient care from one clinician to another through the transfer of information, responsibility, and authority.[14] This transfer of information and responsibility may occur in a variety of circumstances or clinical care settings, and is directly impacted by the numerous systems within which it occurs. However, in this article we will be focusing our discussion on inpatient transitions of care between physician trainees with the goal of outlining educational considerations that program directors may utilize to educate and assess their graduate medical trainees.

Shift Handoffs (Temporary)

Significant literature exists on the adverse events associated with shift handoffs, where one resident hands over clinical care of a patient to another resident for a brief amount of time, such as with overnight coverage or other brief temporary periods of coverage.[5,7-10,15-18] Results of several seminal studies demonstrated the negative effects of miscommunication during care transition,[10,19] and, in 2014, a large, prospective trial demonstrated benefit with a structured handoff intervention aimed at improving shift handoff-related complications.[9] This trial showed that a structured shift-to-shift handoff bundle including a handoff tool (I-PASS mnemonic), a 2-hour workshop, simulation training, and 4 other bundle elements (total of 7 elements) may benefit patients by reducing preventable adverse events.[8,9] However, some elements have proven difficult to apply in practice, highlighted in a 2016 survey of internal medicine residency program directors that suggests recommended handoff techniques and educational strategies are implemented only 67% of the time.[20] In fact, few program directors used all recommended components, often excluding simulation training, interactive workshops, or faculty supervision.[9,20,21] Even when executed in full compliance, studies have demonstrated resident adherence primarily when directly supervised, with rapid drop-off in unsupervised settings, attributed to time constraints, low complexity patients, and redundancy.[22,23] These results still signify a move toward standardized handoffs as other randomized and nonrandomized trials similarly indicate that standardized handoff interventions have the ability to improve resident handoff process measures and utilization.[24,25]

While there is ample literature on the importance of handoffs in graduate medical education, multiple systematic reviews have been unable to identify a clear successful educational intervention for resident programs to implement for trainees, though this may be due to the innate variability among specialties and institutions.[26-28] This finding is not entirely surprising and is consistent with the Accreditation Council for Graduate Medical Education (ACGME) Common Program Requirements, which recognizes the importance and necessity of successful transfers of care for patient safety, but also defers the structure of handoffs to each individual program.[29] As such, experts have introduced the concept of *flexible standardization*, meaning the development of a core set of necessary components that can be adapted for specific institutions and/or specialties.[27] Interestingly, a recent single-institution survey of multispecialty trainees on patient handoffs identified several key themes, such as handoffs specifically highlighting the sickest patients, given verbally and concisely, demonstrating active listening, and learned informally from senior physicians.[30] In this study, residents reported that the best handoffs were those in which enough

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information was transferred to develop a shared mental model of the patient and those in which the residents clearly showed a professional duty to ensure effective communication took place. Lastly, in addition to the intrapersonal and interpersonal domains, which the authors recommended were key areas for training and development, there were many health system–related factors that were out of the control of the trainees yet severely impacted the ability to provide effective handoff communication. For program directors, these health systems factors should be given greater attention when attempting to standardize handoff education locally.

Residency programs should be allowed the opportunity to tailor program-specific education and assessment, such as contingency training via didactics and feedback rubrics for observation through role play, simulation center, and/or direct observation.[27,30,31] Feedback has been shown to be most effective longitudinally, to prevent the previously seen drop-offs in behaviors over time.[32,33] While studies have demonstrated the most success with external observers trained with standardized techniques, faculty assessment also works well for trainees to stick with taught practice. Peer assessments can also be used, though they are associated with increased leniency and potential workload impact.[34] Feedback to learners on handoffs did demonstrate improvement most significantly on inclusion of code status, along with medications, anticipatory guidance, and diagnostic tests or results.[27] As the goal is to improve patient outcomes and resident education, while at the same time balancing resource utilization and patient care efficiency, the current literature would support standardization of a trainee-informed institution-wide handoff curriculum, dedicated space to perform such handoff, and more faculty supervision.

Service or End-of-Rotation Handoffs (Permanent)

Although several interventions have been developed to improve communication during shift transitions,[8,9,14,35] recent data indicate that a more permanent transition, the *end-of-rotation* or *"service" transition of care*,[4,36,37] may be an underrecognized gap in patient care. During this transition, a resident is expected to communicate information for up to 20 patients to another resident who has previously never met the patients. Unlike shift handoffs, where the original physician resumes care, this transition is often permanent—the physician signing out has no further contact with these patients or their new care team. This type of transition in care has not been extensively studied. Early studies suggested these permanent handoffs were associated with increased lengths of stay and costs[38,39] while further qualitative work highlighted the challenges inherent to these permanent transitions and their effect on patient care.[36,37] More recently, a large single-center study found that patients exposed to service transitions of care experienced a 34% increase in the odds of death as compared to controls.[3] A follow-up multicenter study from 10 different Veterans Administration hospitals and internal medicine residency programs around the country again found a strong association between service transition and increased mortality.[4] Importantly, this study again highlighted the ambiguities surrounding methods of handoff at varying institutions. For example, among 10 study sites, 1 required rotating physicians to hand off in person, while 7 of 10 required only written communication, thereby omitting altogether the verbal component of communication that is recommended by both The Joint Commission and the Society of Hospital Medicine.[4,21] This variability in service handoff standards has created an unfilled gap for which communication formats are best to prevent errors from occurring. As a result, the ACGME continues to iteratively amend its Common Program Requirements for rotational care transitions, recommending standardization among residents rotating in specific clinical learning environments with the understanding that these may differ across different types of rotations.[29]

It stands to reason that the same mechanisms used to improve shift handoffs would also be implemented to standardize service handoffs. However, it is important to recognize a few caveats, one being that these transitions not only involve a patient information transfer (eg, protected health information, code status, etc), but also a systems care information transfer (eg, where supplies are, what support staff are available, daily rounding routines, etc) where the new clinician will be adapting to a new work environment as well as learning patient care details. Additionally, this handoff is permanent and, unlike shift handoffs where the original physician resumes care, the resident signing out has no further contact with their patients or their new care team after leaving the service or rotation. This dilemma begs the question, what more can be done to relay information and provide familiarity to oncoming residents starting a new rotation?

A few studies have attempted to remedy this issue by implementing a "warm handoff" strategy.[40-42] In these studies, residents were asked to transition the care of certain high-risk patients at the bedside, either in person or, in some instances, virtually over FaceTime. Similar to studies on other types of handoffs, both written and verbal communication were used, but in these instances visual communication was added to provide an element of familiarity with

both the patients and the work environment. Although in-person handoff has limitations, one being the time allotted to allow residents to perform these transitions, the perceptions about the interventions' effectiveness were favorable.[40,41] Interestingly, the strategy of meeting in-person to ensure continuity is not a foreign concept to the United States Armed Forces, who also recognized this potential pitfall and developed a process, called "Relief in Place," by which active duty military members transition when going in and out of service operations.[43,44] Known colloquially as "left seat, right seat," this transition of responsibility happens whenever one group takes over for another. "Left seat" refers to the outgoing units who are handing off operational details to the incoming units (ie, the driver), while the "right seat" refers to the oncoming team who are receiving operational information (ie, the passenger). The outgoing team is tasked with showing the incoming team how the daily operations are handled, thereby allowing time for familiarity to develop before ultimately allowing the new unit to take over. It should be noted that prior to leaving their posts, the 2 units ideally switch places between right and left seat to ensure comfort with daily operations. Given the success of this program within the military, program directors may want to consider this option to improve familiarity during any type of service (or permanent) handoff and provide a visual means of communication between residents transitioning care.

Lastly, diagnostic uncertainty (or certainty) has received increasing recognition within the medical education community.[45] Diagnostic uncertainty has been defined as a "subjective perception of an inability to provide an accurate explanation of the patient's health problem."[46] The concept that physicians-in-training need to neatly categorize and label every patient's diagnosis is an imperfect approach that carries significant potential for harm if not balanced appropriately with the inherent uncertainty that comes with clinical reasoning. As alluded to by Drs Simpkin and Schwartzstein,[45] the unintended consequences of suppressing and ignoring uncertainty can be severe, and there is arguably no greater moment to see the consequences of inaction than during a permanent transition of care. These types of care transition include the abovementioned end-of-rotation handoffs, but also involve any occurrence when a patient may change location (and as a result change clinician teams) within the hospital such as might occur when moving from the operating room to the intensive care unit (ICU)[47] or the ICU to a hospital ward.[48] These encounters involve a transfer of information and responsibility that is intuitively subject to the biases all trainees and physicians possess, whether intentional or not. Given the potential for anchoring and other types of bias that may inadvertently lead trainees down the wrong path when assuming care in a handoff, program directors should incorporate education about the concept of diagnostic uncertainty and its role in effective communication.[49] Recognition of this phenomenon ideally can empower residents to raise questions at the time of transfer when their intuition and clinical acumen signals concern.

Conclusions and Recommendations

Transitions of care in the hospital are frequent and unavoidable encounters that are increasingly prevalent in graduate medical education and academic health care systems. To allow graduate medical education trainees to continue on without specific training in this area would be a failure of our educational system, and as such, the ACGME continues to promote resources and education in this area in order to move the field forward. Although an evidence-based, pragmatic solution may not yet exist, program directors can use observation, assessment, and feedback in an attempt to standardize communication within clinical learning environments. Several educational tools have been studied utilizing verbal, written, and even visual communication, but how the academic health system factors interplay with each type of handoff remains a limitation. Focusing efforts on the most at-risk patients and considering diagnostic uncertainty offer advances to the existing educational mission. Program directors must ensure that sufficient education and oversight are provided, so that they can monitor competency progression. Future research in this area would ideally inform how to best assess the related ACGME Milestones to ensure education is "sufficient" and continue to explore the power of educational interventions to improve patient care outcomes.

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