

# A theoretical framework and competency-based approach to improving handoffs

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## ABSTRACT

**Background:** Once characterised by remarkable continuity of care by a familiar doctor, patient care today is delivered by multiple physicians with varying degrees of knowledge of the patient. Yet, few trainees learn the potential risks of these transitions and the strategies to improve patient care during handoffs. Little is known regarding the mechanisms by which handoffs affect patient care.

**Results:** Building on theoretical constructs from the social sciences and illustrated with a case study of the implementation of a night float service for the inpatient general medicine services at the University of Chicago, a conceptual framework is proposed to describe how handoffs affect both patients and physicians.

**Conclusion:** Using this conceptual framework, recommendations are made for formal education based on the core competencies of communication and professionalism. Opportunities to educate trainees in acquiring these skills are described in the context of handoffs of patient care.

## NEED TO IMPROVE HANDOFFS

Today's healthcare system is characterised by increasing fragmentation across multiple settings and providers. A recent poll supported by the Commonwealth Fund found that continuity of care was one of the top concerns of patients regarding hospital care.<sup>1</sup> These concerns are validated by recent accounts of information loss and communication failures between primary care physicians, hospital-based physicians, specialists, and others in routine patient care activities, highlighting the complexity of maintaining continuity of care across a specialised landscape of physician providers.<sup>2-5</sup> Ironically, changes in scheduling and staffing of health professionals designed to improve patient safety also result in increased discontinuity of care. For example, a push for 24-h physician coverage by consumer groups necessitates adoption of shift work systems.<sup>2</sup> In academic teaching hospitals, duty hour restrictions, intended to reduce resident sleep deprivation, were set forth by the Accreditation Council on Graduate Medical Education (ACGME). Although these reductions may alleviate the negative effects of sleep deprivation on physician health and patient safety, they have also resulted in increased handoffs and adoption of staffing systems that promote discontinuity, such as night float.<sup>4</sup> These transitions of care between one provider and another represent "gaps" that are considered especially vulnerable to error.<sup>5</sup> The few studies that have examined the effect of such transitions or handoffs on patient

care confirm potential risks for patients, including an increased risk of preventable adverse events when patients are cared for by "cross-covering" physicians, or those unfamiliar with their care.<sup>6</sup>

## Impact of handoffs on patient care: a theoretical framework

While it is generally posited that increased handoffs pose risks for patients, little is known regarding the mechanisms by which handoffs undermine care. Some studies have highlighted information management at the time of shift change as particularly vulnerable to error.<sup>7</sup> An unstudied, yet feared consequence of a change in providers is the erosion of professionalism occurring in settings of discontinuity, aptly named "shift-work mentality."<sup>8-12</sup> Interestingly, both of these explanations can be supported by theories grounded in social science literature, namely those centred on coordination costs and the agency theory. Table 1 shows a conceptual framework designed to improve the understanding of how discontinuity of care impairs patient care.

## Costs of coordination

A literature from economics regarding specialisation suggests that as processes become increasingly partitioned, the cost of coordination, including information management and communication, increases.<sup>13</sup> These "costs" refer to direct monetary costs but also to other types of costs (eg, time). For example, to effectively coordinate another physician (subspecialist), a primary care physician has to spend time (and therefore money) to make a phone call or send an email. The costs of coordinating specialists are described in a classic economic essay by Becker and Murphy with the following statement

The chances of a breakdown in production due to poor coordination of the tasks and functions performed by different members, or to communication of misleading information among members, tends to expand as the number of separate specialists grows. In addition, coordination costs depend on whether workers trust each other, whether contracts are enforced, and whether governments maintain stable and effective laws.

Building on this literature, Meltzer argued that coordination costs are a crucial determinant of the structure of medical specialisation, using the example of the hospitalist movement.<sup>14</sup> The growth of hospitalists is constrained by concerns of a communication breakdown with primary care

**Table 1** Theoretical framework to improve handoffs

Theoretical framework	Evidence from night float case study	ACGME core competencies	Educational opportunities: applications to handoffs
Costs of coordination	Communication failures; uncertainty during medical decision-making, "I did not know..."	Communication	Formal education in handoff communication with providers and patients, eg, SBAR
Agency problem	Shift-work mentality, lack of responsibility to cross-cover patients, "Not my patient"	Professionalism	Establish handoffs as a transfer of professional responsibility, "Every patient is your patient"

physicians. Not surprisingly, poor communication and coordination are evident in several studies, particularly during numerous other transition times between settings and specialists.<sup>15–17</sup> Inaccurate medical documentation and unrecorded clinical data are often cited as major problems during these transition points, which could result in uncertainty during medical decision-making. This uncertainty can then lead to additional work or re-work, such as ordering additional or repeat tests, or spending more time searching for or obtaining information from other healthcare providers or the patient in an effort to compensate for this uncertainty.<sup>18</sup> In some cases, this uncertainty can result in patient harm (eg, delay in therapy, incorrect therapy, etc). Therefore, coordination costs in this context refer not only to additional work or re-work to counteract ineffective communication but also to the potential for harm that results from these communication failures. Although information systems solutions will likely improve the availability of such information, individual healthcare providers will still need to assume responsibility for ensuring that information is accurate, updated and received.<sup>19</sup> Therefore, medical trainees must learn strategies to improve coordination, thereby minimising any information losses that occur during handoffs.

### Agency problem

In addition to learning problems with coordination, several educators are concerned that discontinuity undermines physician allegiance to patients, resulting in an erosion of physician professionalism.<sup>20–21</sup> One explanation for this erosion of professionalism stems from an agency problem, first described by Nobel Prize-winning economist, Kenneth Arrow.<sup>22</sup> Under this theory, physicians (agents) are entrusted to act in the best interest of their patients (principals). However, patients do not have access to the information with which to make an accurate judgement regarding if a physician is behaving in their best interest, giving rise to the "agency problem." In this context, with no checks on physician behaviour from the patient, the agency problem refers to the potential for physicians to shirk their professional responsibility by not acting in the best interest of their patients. One major counterargument to the agency problem is that physicians are taught to uphold high standards of professionalism including altruism and put the needs of patients above their own. However, it is important to note the protective effect of continuity of care in preventing the agency problem.<sup>23</sup> It is continuity, or repeated interaction with patients, which can improve the accountability of doctors for their patients. For example, patients who have known their physicians longer are more likely to trust their physician.<sup>24</sup> Not surprisingly, with increasing discontinuity, concerns regarding the agency problem are magnified. The agency problem, coupled with increasing coordination costs, can be best illustrated by the following case study of the implementation of a night float service at the University of Chicago to meet the ACGME duty hour requirements on the general medicine service in 2003.<sup>25</sup>

### Case study: the coordination costs and agency problem with the implementation of a night float service at the University of Chicago

In 2003, we implemented a night float service that resulted in an additional transition of care (between midnight and 7 am) during a 24 h period for hospitalised patients. To evaluate this service, we conducted structured interviews with interns designed to elicit their satisfaction with the service. Adding an additional provider, a night float physician, resulted in increased coordination costs and the agency problem.

Interns reported difficulty obtaining patient care information with the addition of the night float physician during the handoff process.<sup>18</sup> This handoff process, or "sign-out," refers to either the verbal or written communication of patient information, designed to familiarise oncoming or covering physicians with patients for whom they will be responsible. For example, one intern states:

There is no verbal communication from the on call intern to night float so you have no idea what happened when you come in [the morning]. You often get [during handoff from the night float], "this happened during the day [before night float coverage] so I don't know what happened," so you don't really know what was done.

In many cases, interns resorted to unnecessary or repeat work to retrieve information. In short, the addition of an extra provider, the night float physician, introduced difficulties in transmitting information, with the increased costs of coordination.

With the night float service, there was also evidence of the agency problem. The night float service offered interns an opportunity to provide care of their patients and for those patients they were covering ("cross-cover") so that the intern could obtain some rest while on duty. Interestingly, interns, even when given this opportunity to sleep, choose to retain care of their own patients over 80% of available opportunities. One intern summarises his decision by saying, "I keep my patients even though I could get more sleep if I signed out completely [to night float] because I want to know what happens to my patients." Many interns felt that care suffered with the night float service because night float physicians were not invested in the care of their patients. Although these interns felt a tremendous obligation to provide care for their own patients, they did not feel this same allegiance towards the "cross-cover" patients who they were covering for their fellow interns. Instead, calls regarding these patients were viewed as interfering with the care of the intern's "own" patients, not educational, and therefore, readily signed over to night float. One intern commented, "Cross-cover calls take longer because you don't know the patient. But, I do keep my own patients because I know it's easier for me to answer those questions." Another disclosed, "I worry that of course when it's not one of your own patients, you tend to be less aggressive." This diminished allegiance to "cross-cover" patients by interns is in fact similar

to intern concerns regarding use of covering night float physicians. These findings, consistent with the agency problem, suggest that the role of physician allegiance to patients in the setting of discontinuity needs to be further explored to ensure all patients receive equally high-quality, safe care.

### COMPETENCY-BASED APPROACH FOR IMPROVING HANDOFFS

The case study above highlights how handoffs result in both increased costs of coordination and the agency problem, both of which can independently undermine patient care. Given these threats to care in our increasingly fragmented delivery system, it is important to teach medical trainees how to safeguard against these problems. Medical trainees should be taught the knowledge, attitudes and skills that can help ameliorate the increased coordination costs and agency problems that arise during handoffs. Interestingly, these skills align directly to two of the core competencies put forth by the ACGME, communication and professionalism, which can help frame education and evaluation in this area (table 1). For example, improving communication can effectively lower the costs of coordination. In addition, focusing on “shared responsibility” defines a new standard for professionalism that can address the agency problem that emerges during handoffs (table 1).

### Communication during handoffs

Effective communication is critical to the coordination of healthcare providers and ensuring patient understanding of care processes during times of transition. Used in this way, these communication skills can lower the costs of coordination in the setting of discontinuity through improved information transfer. Unfortunately, this type of communication during handoffs, as suggested by our case study, is often variable in quality and characterised by communication failures.<sup>18</sup> Recognising these concerns, the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO) has made handoff communications the subject of a National Patient Safety Goal, requiring a “standard approach” to handoff communications with an emphasis on “required verbal communication.”<sup>27</sup> Despite the importance and vulnerability of the handoff process, few trainees receive formal training in handoff communications.<sup>27</sup>

Formal education on handoff communication can be facilitated through adapting some of the techniques already used in other high-risk industries around the setting of discontinuity. For example, one technique that holds promise in healthcare applications is the “SBAR” technique.<sup>28–29</sup> The SBAR process (Situation, Background, Assessment, and Recommendation) involves first clarifying the situation—for example identification of one’s self, unit, patient, room number. Then, pertinent background information related to the situation is communicated, which may include, but is not limited to, the admission diagnosis, list of current medications and most recent vital signs. This is followed by an assessment of the situation and a recommendation of what to do. In addition, other strategies to improve communication during discontinuity include use of face-to-face reports, use of interactive questioning, “read-back” technique, and emphasising the importance of keeping information up to date.<sup>30</sup>

### Professionalism during handoffs: a “shared responsibility”

Redefining professionalism, with a focus on “shared responsibility,” is important to address the agency problem with handoffs. Ironically, although medical students formally learn

of professionalism during their preclinical years in the context of the doctor–patient relationship, this relationship of one doctor to one patient often breaks down during times of discontinuity, which is often marked by unfamiliarity and lack of a priori knowledge of patients. Given the unique threats that discontinuity poses to physician professionalism, a new approach must be outlined that focuses on maintaining high standards of professionalism without longstanding relationships that continuity can provide. Although numerous medical organisations, such as the American Board of Internal Medicine, the National Board of Medical Examiners, the Association of American Medical Colleges and the Accreditation Council for Graduate Medical Education, have emphasised the importance of defining, measuring and evaluating physician professionalism, little is known about how to do this effectively in the context of discontinuity.<sup>31–33</sup> The recent limitations in ACGME duty hours have increased attention on defining professionalism in this context.

Once again, the handoff itself represents as a vehicle with which to teach and apply principles of professionalism in a setting of discontinuity. While the focus is on the communication of critical clinical content from one physician to another, a handoff also represents an official transfer of professional responsibility.<sup>34</sup> This responsibility includes the commitment to care for patients despite the lack of a longstanding relationship or a priori knowledge of a patient. Infusing this sense of responsibility in medical trainees is challenging, given the high value that medical education has placed on taking care of one’s “own” patients and the high value of the doctor–patient relationship. In addition, few programmes or literature currently exist to guide this education. Despite these challenges, evidence suggests that there is room for improvement on basic skills. One study, done in the setting of the emergency room, suggests that formal introductions of one’s self and one’s role on the team are not routinely practised when seeing new patients.<sup>35</sup> Emphasis on these basic skills in the context of discontinuity is simple but also may be helpful in establishing patient trust in an especially short time period.

Adopting techniques from the study of high-performance teams is one way to help cultivate this shared responsibility during handoff situations.<sup>36</sup> High-performance team members are expected to share a vision, or common goal. Although team members learn to allocate labour efficiently, according to individual members’ strengths and task demands, they are also taught to compensate for one another through “backup behaviours” when needed. In practice, these techniques can actually facilitate a proper handoff. For example, in a study of handoff processes in the PACU at the University of Chicago, anaesthesia residents reported that when they arrive with the patient from the OR to the PACU, they expect the nurses to be waiting to hook up the monitors. However, if there is a 30-second delay in nurse arrival, the resident will step in and hook up the monitors to the patient to avoid any further delay and call out for a nurse to come to the bedside. This type of “backup” behaviour facilitates safe transfer of the patient in this multidisciplinary fast-paced environment.

In addition, espousing a culture and structure that cultivates this allegiance to patients during handoffs is also necessary. In this way, leaders set the expectations that the team members, regardless of their relationship to patients, maintain professional responsibility for patients. The Medical Intensive Care Unit, where frequent coverage is provided to acutely ill intensive-care patients at the University of Chicago, is one example of this culture and structure. At the beginning of every



month-long rotation, ICU attendings frequently state on morning rounds at the beginning of the month that "Every patient is your patient." In other words, it is expected that all residents are learning and caring for all patients in the ICU, even if it is not a patient on their primary team. The structure of morning rounds also promotes this allegiance, since all team members, including primary teams for patients as well as residents who will be providing cross-coverage, are in attendance.

Another opportunity for teaching and learning the skills of professionalism during handoffs is fast becoming part of the practice agenda for hospitalists. This rapidly growing group of physicians are increasingly providing care for hospitalised patients who transition from and then to their primary care or subspecialty physician. The handoff from one patient care setting to another will become an increasingly common circumstance as the hospitalist movement grows.

### Handoff education and evaluation

Ensuring that medical trainees master these skills will require the creation of standard instructional materials, cultivation of faculty leaders and development of a robust assessment system to document competence in skills required to perform handoffs. Creation of standard instructional materials and cultivation of faculty leaders can be accomplished through a collaborative of dedicated educators with a focus on the creation of materials for dissemination using a "train the trainer" approach. While research in use of assessment tools to evaluate "handoffs" is still in its infancy, much literature exists to guide the creation and use of such tools during medical training. For example, existing methods to document clinical competence in the doctor-patient encounter can be modified to assess competence during "hand-offs." Possible options for assessment include the use of observed simulated clinical exercises, real-time direct observation, or retrospective faculty or peer evaluation. To drive the creation and dissemination of tools for education and assessment, we encourage educators and accreditation and certification bodies to invest in resources to sponsor initiatives designed to yield standardised educational programmes and a robust assessment system for these critical skills to ensure safe patient care during times of discontinuity.

### SUMMARY

As medical education evolves to meet the needs of the changing healthcare environment, we must acknowledge and prepare medical trainees to provide safe and effective care during handoffs. These handoffs give rise to the increasing costs of coordination and the emerging agency problems in the time-honoured individual doctor-patient model of care. Formal teaching to improve care during handoffs can occur with an emphasis on the core competencies of communication and professionalism. Through learning formal communication techniques, and cultivating a culture of shared responsibility, medical trainees can be educated on how to improve care during times of transition.

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