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Transitions of Care: Complications and Solutions

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<http://dx.doi.org/10.5772/intechopen.69381>

Abstract

The delivery of medical care relies on effective, succinct, and ongoing communication between healthcare providers, called handoffs. Handoffs involve the transfer of professional responsibility and accountability for aspects of care for patients to another clinician or clinical team on a temporary or permanent basis. Handoffs have the potential for deleterious clinical impact if inadequately done. Only recently has data become available that demonstrate improvements in handoffs reduce the rate of subsequent clinical care error. This clinical vignette and subsequent discussion focuses on physician, particularly the resident physician in training, transfer of care: handoff complications, barriers to effective handoffs, regulatory agencies' input on handoff improvement, standardization of the handoff process, assessment of the quality of handoff, handoff error avoidance, and improving the quality of handoff.

Keywords: physician fatigue, resident duty hour restrictions, night float, physician burn out, resident education

1. Clinical vignette

An 84-year-old female presented to the emergency department (ED) for evaluation of left hip pain after a fall at her locked dementia unit. The patient could not ambulate and had a bruise over her left hip. Radiograph demonstrated a left hip fracture and orthopedic consultation was requested for evaluation of a hip fracture by the ED resident. The on-call orthopedic resident after discussion with the orthopedic attending recommended placement of a single compression hip screw for treatment of the hip fracture and requested the internal medicine hospitalist service admit the patient for medical management of the patient's dementia and diabetes prior to operative repair of the hip. The internal medicine hospitalist service admitted

the patient for preoperative clearance prior to repair of her hip fracture. When approached by the orthopedic surgery resident the next day for signed consent for operative hip repair, the patient signed consent for operative repair of her hip. On arrival in the preoperative area during surgical time out, the patient confirmed that the right hip would be operatively repaired. After operative repair of the right hip, the patient returned to the hospitalist service with a request for initiation of enoxaparin anticoagulation to prevent deep venous thrombosis. Postoperative X-ray demonstrated single compression hip screw in the right hip with a persistent left hip subcapsular fracture. Three days after the operation, the patient developed acute hypoxia, CT angiogram of the chest documented pulmonary embolism; the on-call hospitalist noted there had been no initiation of prophylactic enoxaparin postoperatively. On return to the floor prior to the initiation of anticoagulation for pulmonary embolism, the patient became severely dyspneic and hypoxic followed by pulseless electrical activity cardiac arrest; resuscitation efforts failed to return spontaneous circulation and the patient expired.

Allegation: The ED, orthopedic, hospitalist physicians, and staff were implicated in the wrong side operative repair of the left hip fracture and in the failure to initiate anticoagulation prophylaxis. The orthopedic and hospitalist physicians were implicated in the failure to initiate anticoagulation prophylaxis for deep venous thrombosis. At trial, attestation from the hospitalist and orthopedic physicians alleged that ED consultation for the right hip had been ordered.

Disposition: Pretrial mediation prior to the court case resulted in a large monetary settlement on behalf of the plaintiff's heirs.

2. Introduction

Healthcare organizations and providers struggle with the process of communicating crucial patient information from one caregiver to the next, or from one team of caregivers to another [1]. The delivery of medical care relies on effective, succinct, and ongoing communication between healthcare providers, called handoffs [2]. These clinical handoffs, also known as sign outs, shift reports, or handovers, take place throughout the healthcare system between multiple providers with various clinical responsibilities. Patient handoffs are complex, multifaceted events that occur at the beginning or end of clinical shifts [3]. Handoffs involve the transfer of professional responsibility and accountability for some or all aspects of care for the patient or groups of patients to another clinician or clinical team on a temporary or permanent basis [4]. Handoffs have the potential for deleterious clinical impact if inadequately done. Only recently has data become available that demonstrate improvements in handoffs reduce the rate of subsequent clinical care error [5].

This clinical vignette and subsequent discussion focuses on physician, particularly the resident physician in training, transfer of care: handoff complications, barriers to effective handoffs, regulatory agencies input on handoff improvement, standardization of the handoff process, assessment of the quality of handoff, handoff error avoidance, and improving the quality of handoff.

3. Transitions of care: handoff definition

The Joint Commission (TJC) defines handoff as: a means to provide accurate information about a patient's care, treatment, and services; current physical condition; and any recent or anticipated changes in clinical course. Accurate information communicated during handoff must be accurate in order to meet safety goals [6]. The goal of quality handover of care is to ensure continuity of care and high-quality, safe care decision making in a specific physical and cultural environment. More than merely the passive transfer of information, optimum handoffs necessitate the efficient communication of information among participants [3]. Expansion of duty hour restrictions for resident physician trainees in North America have increased handoff frequency, augmented the potential for ineffectual handoff-induced complications, and stimulated the need for new interventions to improve handover quality [7]. The shift from the traditional model of continuous inpatient medicine to a team-based model has further focused attention on patient handoffs [3]. Interunit handoffs, such as the transition from the ED to the inpatient setting, have special challenges, such as changes in personnel, provider specialty, and hospital location [8]. Over the last decade, considerable attention has been given on interventions to optimize the handoff process by enhancing patient safety in order to improve outcomes; adaptation of some enhancements were gleaned from industries such as nuclear power and space aviation in which transition errors also result in serious consequences [9, 10].

4. Insufficient handoffs induce complications

The Institute of Medicine attributes a substantial proportion of preventable adverse events to communication errors during handover [11]. The Agency for Healthcare Research and Quality identifies handoff communication miscues as implicated in surgical errors [12] and as a consequential cause of malpractice claims. TJC has correlated ineffective care transitions to higher rates of readmission [4]. Communication and handoff snafus are among the root causes of nearly two-thirds of potentially significant, preventable adverse clinical outcomes in hospitals [13, 14].

The consequences of substandard handoffs include: delays in therapy, inappropriate treatment, adverse events, care task omissions, increased hospital length of stay, avoidable readmissions, increased costs, and inefficiency from reevaluation [15]. Omissions of clinically important on-call issues by fatigued on-call residents when transferring care to the daytime team at the end of shifts are major contributors to miscommunications and can result in care implementation delays and adverse events [16]. Insufficient handoff communication result in incomplete, inaccurate, and omitted data and effectuate informational ambiguities between the departing and oncoming providers. Examples of information loss during handoffs are failure to communicate: drug allergy, critical comorbidity, relevant history, or current treatments. Distortion of patient history can result in: wrong medication dose, wrong surgical site, or incorrect diagnosis [10]. Cognitive load of handoff exceeding working memory capacity of the departing or oncoming physicians can further exacerbate information loss or distortion [9].

Omitted and undocumented issues introduce risk for delays in expeditious follow-up of clinically relevant overnight issues. Research by Devlin et al. demonstrated that only 14% of clinically important issues from the overnight clinical shifts had an accompanying progress note from the on-call trainee in the patient's medical record [16]. Discontinuity of care secondary to ineffectual handoffs has been correlated with longer hospital stays and increased costs [3]. The morning handover process is highly variable and unreliable and often occurs in a chaotic clinical care environment. On-call trainees fail to hand over numerous clinically important issues to the daytime team and frequently do not document their assessments and responses to the on-call issue in the medical records. These omissions have the potential to cause unnecessary delays and may result in a lack of follow-up for important patient issues [16].

5. Barriers to effective handoffs

Communication miscues and omissions, the most frequently numerated barrier to effective patient transition of care [17], correspond with the lack of consensus about the elements of effective handoff [2]. Substantial variability exists across, and sometimes within, institutions regarding preferred formats and processes for verbal and written handoffs. Research of residency training programs nationally indicate that handoff standardization has not been aggressively implemented and evaluated among residency training programs or implemented with variable compliance [2, 18].

Clinical staff often utilize handoffs as an avenue for socialization, education, and emotional support to facilitate integration and staff cohesion; while these activities have merit, they divert attention from effective patient communication [8]. Resident physicians participating in patient handoffs may not interact regularly with each other, may be located in different parts of the healthcare systems, may have different skill and experience levels, or may come from different clinical backgrounds [3]. Adherence to hierarchical norms between junior and senior residents or attendings can further exacerbate relational communication barriers reflecting differences across levels of training or between clinician types in the willingness to engage in interactive questioning strategies to assertively challenge erroneous assumptions and actions during a handover with peers [7, 17]. Entrenchment of handoff routines in departmental or hospital mores may require transformational change of an institution's culture in order to improve them [19].

6. Regulatory agencies' input to enhance handoff

In 2010, TJC incorporated the patient handoff into its health facility accreditation standards and has encouraged improving and standardizing transitions of care as a national safety goal via implementation of a standardized approach to handoff communications, including an opportunity to ask and respond to questions [3, 20]. TJC's National Patient Safety Goals document contains specific guidelines for the handoff process, many drawn from other high-risk

industries: interactive communications, “read-back” and “repeat-back” practices, verifying up-to-date and accurate information, limited interruptions, a process for verification, and an opportunity to review any relevant historical data. The Accreditation Council for Graduate Medical Education (ACGME) recently mandated that residency programs provide formal educational programs about patient care transitions and that faculty monitor ensure adequate handoff skills through direct observation [3, 19, 21]. TJC, the ACGME, and the Society of Hospital Medicine jointly encourage compliance with a structured format for verbally communicating information utilizing an ordered acronym mnemonic, SBAR: (1) Situation, (2) Background, (3) Assessment, and (4) Recommendation [7].

7. Standardization of patient handoff

House staff judge that strategies for handoff standardization most valuably improve quality of handoff and resident physician satisfaction with transition of care [16]. Most emergency medicine (EM) residency directors agree that standardized handoffs have the potential to reduce errors during transition of care, yet the majority of EM residency programs do not have a policy or a procedure regarding handoffs [17]. Didactic and interactive sessions teach key principles, and communication techniques of verbal and written handoffs utilizing mnemonics and checklists have shown to benefit in improving quality and standardization of handoff communications [19]. The SBAR mnemonic benefits handoff communication because of its simplicity, it provides a consistent framework for handoff scenarios, it can be utilized by different care providers, and it emphasizes on the clinician’s assessment and response [16, 22]. Checklists have been effective in several different clinical settings in terms of decreasing medical errors and morbidity; utilization of checklists have the potential to improve the transfer of care process as well [23, 22]. Just as documentation in the electronic medical record about clinically important issues while on-call facilitates communication, a structured, written clinical summary, such as a checklist, by the outgoing clinical team presented to the oncoming team facilitates understanding of critical issues regarding patient care during transition of care in a standardized way.

Starmer et al. objectively demonstrated improved outcomes via an educational intervention utilizing a structured resident handoff bundle to standardize inpatient handovers in care thereby decreasing medical error in multiple institutions [13]. The bundle included three major elements: team training by using focused TeamSTEPPS communication strategies, implementation of a standardized template for the written or printed computerized handoff document, and introduction of several evidence-based verbal handoff processes, specifically I-PASS, an acronym mnemonic [10]. TeamSTEPPS, a teamwork system developed jointly by the Department of Defense and the Agency for Healthcare Research and Quality, works to improve institutional collaboration and communication relating to patient safety [20]. Starmer et al. instituted an I-PASS mnemonic to provide a consistent, structured format for communicating handoff information: I—Illness severity, P—Patient summary, A—Action list, S—Situation awareness and contingency planning, S—Synthesis by receiver [10].

8. Assessing quality and competency of handoffs

The ACGME requires that residency programs assess the competency of trainees in handoff communication. Detecting discrepancies between levels of quality of handoff communication requires training and is made more complicated by the existence of few standardized methods for assessing the competency of sign-out communication [3, 10, 24]. Horwitz et al. developed an evaluation tool for direct observation of house staff and hospitalists during sign out that generates quantifiable data of handoff assessment and performs consistently across different institutions and among both trainees and attendings [24]. Horwitz et al. utilized peers to conduct handoff assessments, reasoning that peers familiarity with the handoff issues would recognize miscues that external evaluators might miss [24]. Starmer et al., as part of their standardized sign-out bundle, developed direct observation assessment tools for assessment of quality of the departing and oncoming clinicians' adherence to the components of their handoff protocol and verbal engagement with one another [19].

9. Simulation improves handoff experience

Simulation activities provide residents opportunities to practice handoff skills prior to clinical practice. Patient care simulation enhances skill acquisition and behavioral modification through practice and reflection. The incorporation of illustrative videos and role-play simulations into the handoff education curriculum can simulate both ideal and less-than-ideal handoff behaviors. Learners rotate the roles of giving, receiving, observing, and evaluating patient handoff [19]. Research has demonstrated that the most efficacious elements of patient handoff simulation include use of trigger videos reviewing particularly challenging handoff scenarios. The opportunity to practice giving and receiving handoffs utilizing new skills during simulation exercises enhances handoff performance in the clinical arena [19].

10. Increasing awareness of handoff culture

Communicating a vision of improved handoffs through institutionalizing an intervention to improve handoffs enhances awareness of this patient safety intervention. Understanding the complex social structures in which residents and attending physicians work, as well as the unwritten rules that govern the handoff of patient responsibilities, must be accounted for because interdisciplinary trust enables negotiating shared care plans and mitigates conflict to encourage a safer transition of patient care [8]. Training programs should introduce new or expand existing handover curricula to raise awareness about the distinct entity of transitions of care and to improve the communication process during this period [16]. Starmer et al. created a Campaign Subcommittee, which was charged with "branding" I-PASS, their acronym for their handoff improvement intervention, to support the communication, implementation,

and sustainability of their handoff curriculum. Recognizing the importance of local agents of change, Starmer et al. conducted focus groups with residents and other stakeholders from seven different institutions to develop “advertising” strategies to encourage adherence to their handoff protocol [19]. To remind clinicians about key handoff concepts, they created point-of-care references, including pocket reference cards and computer monitor frames with handoff mnemonic details. Recruiting teams of faculty champions, respected faculty members actively involved in patient care and resident education, encouraged rapid and early adoption of the handoff curriculum [19].

11. Active communication enhances handoffs

Active communication strategies by the oncoming clinician improve patient safety by detecting erroneous assessments and actions, thereby confronting diagnostic momentum and fixation bias [7]. Face-to-face group handoff, an active communication strategy, enriches the quality of handoffs more than a reliance on written or electronic notes [16]. Face-to-face verbal communication with interactive questioning and updates from oncoming and departing clinicians facilitate these discussions [25]. A vibrant, encouraging communications culture, characterized by openness to and willingness of clinicians, regardless of the level of training, to speak up, to ask questions, and to provide feedback, enhances quality of transfer of information and inculcates a culture of safety among both departing and oncoming clinical teams [4]. The oncoming clinician summarizing the handoff dialogue and restating key actions as part of a standardized handoff bundle has demonstrated benefit in patient outcomes [10]. These clinical team meetings during transition of care promote meaningful dialogue and engender an opportunity to identify and correct errors in real time [3]. Minimizing distractions, limiting interruptions such as nonurgent pages (e.g., ask nursing and allied health staff to defer nonurgent pages), and providing a dedicated space for handover will further supplement end-of-shift patient management discussions [16].

12. Culture of collaboration and professionalism to improve handoffs

Medical professionalism includes a commitment to collaboration to quality clinical decision making, prudent medical error surveillance, and the voluntary reporting of adverse events [3]. Proactive discussion of pitfalls during shift change can impact potential for medical miscues by the oncoming providers during shift changes. A collaborative culture facilitates handoff of responsibility between the departing and oncoming providers by requests for assistance, by voicing clinical concerns, and by clarifying issues through bidirectional conversations. This process creates a shared mental model of the patient’s clinical condition and plan of care [4]. Oncoming clinicians foster the assumption of clinical responsibility by personally reassessing the patient and informing the patient of his or her evaluation with updated results during walking rounds at the conclusion of patient handover [23].

13. Summary

Effective transitions of care facilitate teams of multiple clinicians to deliver secure and effective care without compromising the continuity of care [26]. At a minimum, departing clinicians should provide patient identification, diagnostic summary, the patient's current condition and trajectory, a plan of care, a prioritized to-do list, and a plan for anticipated events. The oncoming clinicians should be able to understand likely contingencies and changes in the patient's condition [3]. To ensure regulatory compliance and improve patient security, educating residents and medical students to effectively perform patient handoffs offers synergistic benefits, including patient safety, continuity of care, and professionalism through teamwork [3]. Best practices ensure communication of essential information including: structured face-to-face and written sign-out, interactive questioning, and checklists in distraction free settings [9]. A culture of professionalism can mitigate errors and procedural violations that arise primarily from aberrant mental processes such as forgetfulness, inattention, low motivation, carelessness, or negligence [8]. A shared common language utilizing a standardized regimen protocol for patient transitions of care communications across all provider types and practice settings will promote a culture of patient safety and enhance patient outcomes [22].

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