Implementing an Institutional Objective Simulated Handoff Evaluation (OSHE) for Assessing Resident Handoff Skill

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Abstract

Introduction: In order to properly educate residents about the communication components involved in effective handoff delivery, interventions that promote demonstration of skill with real-time feedback are essential. Our institution developed a focused intervention for all residency programs to improve handoff education by implementing standardized written and verbal templates throughout all specialties. We decided upon a common framework for education and evaluation of resident handoff competency: the objective simulated handoff evaluation (OSHE) originally developed by Farnan et al. Handoffs are critically important for patient quality of care and safety.

Methods: Residents completed the objective simulated handoff evaluation in pairs where the junior resident completed a verbal and written handoff using a simulated case to a senior resident in the same specialty. The senior residents provided feedback on the verbal handoff and faculty scored the written templates. The junior residents were surveyed pre-and-post to assess resident handoff education prior to the exercise and to gather feedback.

Results: Residents rated their ability to pick up a new service significantly higher after the objective simulated handoff evaluation, (Mdn=4), U=308, p=0.005, r=0.34, in contrast to their initial rating (Mdn=3). Additionally, residents reported higher confidence in making contingency plans, (Mdn=4), U=311, p=0.005, r=0.35, compared to baseline (Mdn=3). Performing a read back showed improvement, (Mdn=4), U=321, p=0.01, r=0.31, when compared to the pre-survey (Mdn=3). Finally, when to perform a read-back also improved post-objective simulated handoff evaluation, (Mdn=4), U=323, p=0.01, r=0.32, when compared to the baseline (Mdn=3).

Conclusion: Our institution-wide focus on standardization demonstrated that residency programs can collaborate productively despite their specialty-specific differences in transfers of care. Handoff education is essential in positively affecting patient care.

Keywords: OSHE; Handoff skills; Resident handoff education; Transitions of care education; Simulation education; Resident communication skills; Graduate medical education

Introduction

Resident training and education on handoffs and transitions of care (TOC) have been a focus of concern since the duty hour restrictions from the Accreditation Council for Graduate Medical Education (ACGME) were instituted in 2003. As a result of duty hour restrictions, there has been an increase in the number of times physicians transfer patient health care information to a receiving physician, commonly known as a handoff. Communication failures are the most frequently cited type of handoff problem that can negatively affect patient care [1]. In fact, communication is one of the top three root causes of sentinel events reported by the Joint Commission annually [2]. Handoffs are vulnerable to a myriad of environmental influences that can lead to communication breakdown, such as background noise, missing or incorrect information, and too much information that detracts from the most important aspects of a case [3].

Analyses of resident malpractice claims isolate communication failures connected to handoffs ranged of 19-43%, depending on the setting [4]. Still, residents struggle with handoff skill development and are prone to cognitive biases that are difficult to surmount [5]. Other contributing factors emanate from medical student education; handoff education is not a widespread component of undergraduate medical education; in fact, fewer than 9% of U.S. medical schools include handoff education as part of the curriculum, though residents need to be able to care for patients when they start residency [6]. Many residency programs struggle to develop methods for effectively teaching handoff skills and assessing resident handoff ability [7-11]. It is not surprising that residents do not feel adequately prepared to deliver a handoff coupled with carrying substantial doubt about their handoff skills [12,13].
In response to the acknowledged gap in residency education concerning handoffs, the ACGME, Institute of Medicine (IOM), and the Agency for Healthcare Research and Quality (AHRQ) have declared handoff education as key in improving patient safety and encourage focused interventions. The ACGME urges residency programs to design resident handoff education curricula that emphasize the demonstrable impact of efficient communication of vital information and provide training of a standardized handoff method [14]. Some teaching hospitals have shown that implementing handoff education programs can significantly reduce medical errors without increasing the time previously used to transfer care [15]. A major challenge is the lack of a validated tool for assessing TOC [16]. There is also no consensus regarding the use of handoff mnemonics [17,18].

The main objective of this project is to assess the application of TOC knowledge that would invite multi-source feedback. The project was initiated by Wayne State University (WSU)'s Graduate Medical Education department in southeast Michigan, which provides oversight and assists with developing curricular innovations for eight residency programs with over 150 residents, partnering with five major hospital sites.

In 2012, an institution-wide TOC Task Force was established to implement protocol and standards within the WSU’s Graduate Medical Education programs. All residency programs elected a resident and a faculty member to the Task Force, to join a quality engineer, a GME educator, and the DIO. The Task Force was to evaluate current practices across the institution, identify gaps, and ultimately ensure the quality and safety of patient care when transfer of responsibility occurs. An evaluation that mapped out the TOC process across programs identified the need for standardization. Task Force members developed a written handoff template with elements relevant to all specialties and adopted the Summary, Active issues, If-then contingency planning, Interactive questioning, and Read-back (SAIF-IR) mnemonic to organize the verbal handoff per institutional policy [20]. The next step was to implement an active learning exercise to test resident application of TOC knowledge that would invite multi-source feedback.

A cohort of 82 residents from all programs participated in the activity from September through November 2013 (Table 1).

### Methods

An educational intervention was used to test the effectiveness of the Objective Simulated Handoff Experience, which was originally piloted by Farnan and colleagues, with a cohort of residents across the institution for the 2013-2014 academic year [19]. Residents conducted a verbal and written handoff to another resident using a simulated history for a patient in their specialty along with a short event video that could impact the course of care. Data were collected pre-and-post to measure self-reported improvements in perceived handoff skill, along with faculty scoring of the written templates.

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A cohort of 82 residents from all programs participated in the activity from September through November 2013 (Table 1).

### Table 1: OSHE participants by program and junior status.

<table>
<thead>
<tr>
<th>Program</th>
<th>Overall N</th>
<th>N Junior Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermatology</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

The OSHE consisted of a didactic session on handoffs to provide a basic foundation for the importance of handoffs and to relay effective communication strategies that was paired with a direct-observation exercise. The Chair of the Task Force developed and delivered the sessions to all programs personally. Specifically, the didactic session focused on the role of handoffs in reducing medical errors, how standardized handoffs lead to improved patient outcomes, reviewing the institutional policy on verbal and written handoffs, and communication skills relevant to handoffs. A set of instructions for the logistics of OSHE completed the didactic portion. For a process map of the OSHE (Figure 1).

**Figure 1: OSHE process map.**

After the didactic portion, residents were scheduled to complete a written and verbal handoff exercise. To maintain relevancy for each specialty, all programs were asked to design materials for their program participants that were evaluated by the Task Force for...
Each program identified a faculty champion who produced a case for their specialty, scored the written template, and provided feedback to the resident. Case content consisted of patient history information for medical and surgical procedures, medications, admitting diagnosis, healthcare team information, pending tests for follow up, along with extraneous information that was not relevant to a handoff. A corresponding two minute video for each case was created by each program and it included information on the patient that could impact the course of care for the patient, which served as a challenge for the residents.

The written portion was completed using a standardized template that was produced approved by the Task Force (Figure 2).

![Figure 2: Standardized written template.](image1)

Scored by the program’s faculty champion using the same criteria outlined by Farnan and others. A total of twenty points could be earned for the proper inclusion and identification of patient identifying information, a concise summary and active problem list, medication list, listing what should be done for the patient, and a contingency plan. The verbal portion was scored by senior resident in each pair, using the validated Handoff CEX (Figure 3).

![Figure 3: Handoff CEX Tool.](image2)

Used by Farnan and colleagues, the Handoff CEX allows the receiving senior physician to score the setting, organization level, communication skills, content, clinical judgment, and humanistic qualities. Both the verbal handoff and feedback from the senior resident were recorded and the videos were released to program directors and faculty champions. After the OSHE, a short debriefing session, led by the GME educator, allowed participants to reflect and provide verbal feedback on the experience.

To assess the impact of the handoff intervention, junior residents, who perform the simulated handoff, completed a brief survey on handoff education and self-reported handoff practices (Table 2).

<table>
<thead>
<tr>
<th>Description</th>
<th>Score (Mean ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handoffs</td>
<td>1.83 ± 0.82</td>
</tr>
<tr>
<td>Standardized handoffs</td>
<td>3.64 ± 0.91</td>
</tr>
<tr>
<td>Handoffs supervised by attendings</td>
<td>2.44 ± 0.77</td>
</tr>
<tr>
<td>How efficient are your handoffs currently? b</td>
<td>2.16 ± 1.18</td>
</tr>
<tr>
<td>How comfortable are you with cross-covering? b</td>
<td>2.36 ± 0.91</td>
</tr>
<tr>
<td>What is the quality of your patient-related communication skills? b</td>
<td>2.24 ± 0.72</td>
</tr>
<tr>
<td>How well were handoffs taught in medical school? b</td>
<td>3.24 ± 1.09</td>
</tr>
<tr>
<td>How well have handoffs been taught/reviewed in residency thus far? b</td>
<td>2.48 ± 0.96</td>
</tr>
</tbody>
</table>

Table 2: Means and standard deviations for survey items on resident handoff education pre-OSHE.

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre</th>
<th>Post</th>
<th>Mann-Whitney Test (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A handoff</td>
<td>3.46 ± 0.67</td>
<td>3.28 ± 0.74</td>
<td>U=388 (p=0.10)</td>
</tr>
<tr>
<td>Pick up a new service of patients</td>
<td>3.50 ± 0.63</td>
<td>3.97 ± 0.68</td>
<td>U=308 (p&lt;0.05)</td>
</tr>
<tr>
<td>Make a contingency plan</td>
<td>3.71 ± 0.74</td>
<td>3.95 ± 0.82</td>
<td>U=311 (p&lt;0.05)</td>
</tr>
<tr>
<td>A read-back</td>
<td>3.60 ± 0.74</td>
<td>4.05 ± 0.70</td>
<td>U=321 (p&lt;0.05)</td>
</tr>
<tr>
<td>When to perform a read-back</td>
<td>3.68 ± 0.86</td>
<td>4.18 ± 0.70</td>
<td>U=323 (&lt;p&lt;.05)</td>
</tr>
<tr>
<td>Extract information from patient charts</td>
<td>4.03 ± 0.76</td>
<td>4.23 ± 0.73</td>
<td>U=480 (p=0.77)</td>
</tr>
</tbody>
</table>

* Scale: (1) Outstanding, Very well, Average, Poor, (5) Extremely Poor

Table 3: Self-report comparisons on resident handoff survey items pre-and-post OSHE.

Residents rated their ability to pick up a new service significantly higher after the OSHE, (Mdn=4), U=308, p=0.005, r=0.34, in contrast to their initial rating (Mdn=3). Additionally, residents reported higher confidence in making contingency plans, (Mdn=4), U=311, p=0.005, r=0.35, compared to baseline (Mdn=3). Performing a read back showed improvement, (Mdn=4), U=321, p=0.01, r=0.31, when compared to the pre-survey (Mdn=3). Finally, when to perform a read-back also improved post-OSHE, (Mdn=4), U=323, p=0.01, r=0.32, when compared to the baseline (Mdn=3).

Regarding resident feedback on the utility of the OSHE experience, 23 (58%) regarded the handoff didactic session as helpful preparation.
for the OSHE and 25 (63%) residents responded that their understanding of the critical importance of handoffs improved (Table 4).

<table>
<thead>
<tr>
<th>Table 4: Survey items released post-OSHE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>The preceding lecture provided prior to the OSHE prepared me for the OSHE.</td>
</tr>
<tr>
<td>I have a better understanding of the critical importance of effective handoffs.</td>
</tr>
<tr>
<td>The OSHE helped me identify aspects of handoffs I need to improve.</td>
</tr>
<tr>
<td>The feedback from the PGY2 matched my self-assessment.</td>
</tr>
<tr>
<td>The feedback from the PGY2 was useful.</td>
</tr>
<tr>
<td>The written template was intuitively designed.</td>
</tr>
<tr>
<td>The written handoff prepared me for the verbal handoff.</td>
</tr>
<tr>
<td>Both the written and verbal handoff contained the same information.</td>
</tr>
<tr>
<td>My handoffs will improve as a result of the OSHE.</td>
</tr>
<tr>
<td>The GME module on handoffs helped prepare me for today.</td>
</tr>
<tr>
<td>My patient care will improve after today.</td>
</tr>
</tbody>
</table>

Discussion

The Task Force reviewed the faculty and resident data produced by OSHE in a debriefing session to discuss the outcomes of the exercise and to make recommendations for the coming academic year. Residents mentioned that the experience raised their awareness about handoff communication. They also felt familiar with the OSCE concept, as they all participate in simulated patient cases as they enter their programs [21]. Faculty valued that individual cases were designed for each program while the handoff itself was standardized. The participating faculty who scored the written templates identified that resident education on anticipatory guidance and "if/then" statements needed to be more emphasized in resident handoff education. While faculty raised the concern about anticipatory guidance, it is possible that the lack of familiarity with the standardized patient case could have contributed to the low scores in this area [22]. Faculty noted there was limited variability in resident scores on the Handoff CEX. This limited variability may be partially explained by senior residents wanting more instruction on how to give feedback to the junior resident. We decided that training on delivering feedback to senior residents using the Handoff CEX was to be added to the didactic component.

We supported the hypothesis that implementing a standardized approach to handoff training would be well-accepted by faculty and resident and would increase resident knowledge and understanding of the importance of TOC. The effect sizes are small, but resident knowledge in specific areas of handoff did improve after the OSHE (Table 3). Repeated comparisons are needed to gauge whether OSHE would have a stronger impact on handoff skill. Another limitation was that comparisons were only made on the resident delivering the handoff; in the future, gathering perceptions from the senior residents could broaden our understanding of resident handoff education needs. Faculty expressed caution surrounding the general impact of the OSHE. While it is positive that there were specific improvements in handoff education pre-and-post OSHE, it must be remembered that these improvements were self-reported by the participants, and subject to bias. Furthermore, it is acknowledged that a self-reported improvement is not indicative of an actual improvement. Ideally, programs could expand this educational experience to direct observation of actual handoffs in the clinical learning environment, which is an achievable goal [23]. This direction requires careful assessment, as previous studies have noted that standardization does not ubiquitously result in improved patient outcomes [24]. However, other programs have demonstrated in improvement in using the Handoff CEX post-OSHE implementation and continued improvement in resident handoff efficiency over time [25]. Our written template the scoring system and surveys have not been validated in the same way the Handoff CEX has [26]. Though, we did have similar observations to those in the Farnan et al. article and the tools proved useful across our different specialties. Notably, our endeavor is the only known institution-wide handoff education intervention to date.

Institutional educational interventions such as the one we described accomplish several objectives simultaneously. Implementing the institution-wide OSHE provided a powerful method that not only to educate the incoming cohort of residents on high quality of handoff practices, but also to educate senior residents and faculty on the same processes. OSHE is a form of deliberate practice that permits rehearsal of important skills while building resident comfort-level at the same time [27]. OSHE is a demonstration of GME and program
engagement, permits policy monitoring that does not detract from its educational focus. The exercise served as a baseline evaluation tool and as a widespread educational intervention that is now used annually at our institution. OSHE is a simple, but effective exercise for sampling how faculty and residents deliver handoffs and provide an ongoing opportunity to refine handoff education, ultimately affecting the quality and safety of patient care [26].

Conclusion

The success of the OSHE was facilitated by the well-functioning Task Force, which met monthly and had membership that spanned all programs. All sessions were made as a group, and this assured that specialty needs were incorporated into the written and verbal templates so that we could adopt a standardized approach that was relevant for all specialties.

One challenge is universal buy-in to the OSHE experience across the institution. For example, Dermatology residents have previously reported that their transfers of care has less importance to their specialty as they do not frequently engage in acute care activities. Although, residents were able to apply some of the general principles of transfers of consultation service care, which occurs monthly in Dermatology: The Task Force recommended that programs include an open discussion and address resident concerns from each specialty with their faculty champion, who can incorporate resident feedback into their OSHE case for future resident cohorts.

Based on the improvements noted post-OSHE, the Task Force decided to include the OSHE for all junior residents the beginning of the academic year in the schedule of our regular OSCEs that take place in July and August. In addition, it was decided that all programs would host their own didactic session with GME support. Doing so will support a proper orientation of new residents and produce ongoing conversation of handoffs that are important to GME as we review and update our policy. The next steps are to assure that monitoring of the Transitions of Care policy happens on a continuous basis at the program level and both the written and verbal templates are utilized consistently by the residents and faculty. Annually, GME requests that programs indicate how the Transitions of Care policy is monitored in the Annual Program Evaluation submitted to the GMEC. We want to ensure that residents maintain the skillset acquired through the OSHE and we have encouraged programs to link the educational experience to patient outcomes. Our institution-wide focus on standardization demonstrated that residency programs can collaborate productively despite their specialty-specific differences in transfers of care.

References