Assessment of The Quality of Post Operative Handoffs

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Background: Effective, accurate and complete peri-operative handoffs are paramount in the safety and quality of patient care as they return from surgical procedures. We undertook an initiative to assess the current post-operative handoff process, identify areas for improvement, and implemented a new work flow to ensure more accurate and timely handoffs.

Methods: The methods included an assessment period in which handoff checklists were filled out by PICU fellows and nurses on post-operative patients as they arrived to the PICU. These sheets collected data on surgical service, timing and method of anesthesia and surgical handoff, components of handoff that were included as well as information omitted, whether or not appropriate respiratory equipment was present at arrival, and those in attendance. We then used a generalized linear mixed effects model to determine statistically significant predictors of successful handoffs.

Results: Anesthesia did not provide a handoff for 13.2% of cases admitted to the PICU and the involved surgical service did not provide a handoff for 23.4% of the cases. When divided by surgical service, those with the highest percentage of missed handoffs were Neurosurgery with 57.1% missed handoffs, general surgery 41.7%, and ENT 28% missed handoffs. Despite cardiothoracic surgery having the most explicit handoff process, 12.9% of these patient still had inadequate handoff based on our criteria. Interventional cardiology had a perfect record with 0% missed handoffs. The most common information omitted in surgical handoffs was significant past medical history. This held true for cardiothoracic surgeons, however in post operative heart catheterization patients the information most often omitted was estimated blood loss followed by patient identification and then pertinent past medical history. When assessed by origin of transfer it became clear that most missed handoffs occurred for patient admitted from the PACU. For example, surgical handoffs were not provided for 5.7% of cases admitted from the OR and 44.6% of cases admitted from the PACU. Similarly anesthesia missed 0% of handoffs from the OR and 31.5% of handoffs from the PACU. In addition it was noted that over 80% of Neurosurgery patients were admitted from the PACU, the service with the most missed handoffs. Furthermore, in an analysis evaluating whether OR/PACU predicts surgical handoff after adjusting for the surgical service type using a generalized linear mixed effects model there is strong indication that a patient being admitted fro the OR is a predictor for successful surgical handoff (Surgical Handoff Rate: OR: 0.94 (95% CI: 0.89-0.97), PACU: 0.55 (95% CI: 0.33-0.76), Odds Ratio for OR vs. PACU: 13.3 (95% CI: 4.1-42.8), $p<0.001$).

Conclusion: The strongest predictor of complete and accurate handoff was direct admission to the PICU from the OR versus admission via the PACU. In our institution nearly all cardiothoracic and interventional cardiology patients come directly from the OR and they had the most frequent and most complete handoffs given by anesthesia and surgery at bedside. These services also most frequently used a standardized handoff tool during the handoff process. Therefore, efforts to improve handoffs utilized this process as a template. The first objective was to increase the percent of patients directly admitted to the PICU from the OR. This resulted in increased direct, bedside handoff from an anesthesiologist and surgeon. In addition, workflow for admissions coming from the PACU to the PICU was changed. A hard stop was created prior to transfer requiring a direct handoff from both anesthesia and the surgical service to the PICU fellow, which could be in person or by phone Finally, a specific handoff checklist tool was developed to facilitate consistent transfer of information during handoff and is provided to both the team giving and receiving a handoff. This process promoted a dramatic improvement in both the frequency and quality of post operative handoffs to the PICU. Post intervention data revealed 0% missed handoffs with improvement in completeness demonstrated by 100% adequate handoffs, including all components. Ongoing data collection using the original handoff assessment occurs on a regular basis and specific patient populations are being evaluated for direct admission to the PICU. We hypothesize that no tool or structure for handoff can replace direct in-person communication between teams at the time of handoff.