Abstract Summary:
After a recent morbidity event in the PICU, related to communication failure and missed handoff information, an effort was made to mitigate any further likelihood of the same incident occurring. The Institute of Medicine’s 1999 report “To Err Is Human” estimated that medical errors cause 44,000 -98,000 deaths per year. Albeit the number of errors may be controversial, the goal remains the same; to improve safety by understanding the healthcare structure as well as processes at the systems level (administrators, supervisors, equipment designers) and individual performance factors at the point of care. Within the past 5 years there has been increasing evidence to show that standardized handoffs improve communication among the teams. This was first demonstrated in the post-operative cardiac population (Joy, et al, 2011). A more recent standardized handoff quality improvement (QI) initiative was implemented in a large multidisciplinary PICU similar to ours. The QI initiative utilized a standardized handoff with findings that concluded; there was increased provider attendance during handoff, improved communication quality, and data collected at the 12 month mark showed sustained reductions in analgesic timing, antibiotic delays and handover barriers (Breuer et al., 2015).

In an effort to put evidence into practice, our PICU designed, developed, implemented and evaluated a standardized OR to PICU handoff called the Perioperative Handoff Tool (PHT). The tool used scripting and patient safety principals obtained from the Armstrong Institute for Patient Safety as well as evidence based literature. Our methods included evaluation of current practice for deficiencies and assessing provider satisfaction both from the pediatric operating room and the PICU. Observations were completed by trained personnel in the PICU and a survey completed by all members of the care team. The observational results showed that there are deficits in the current process that leave gaps in communication. A new standardized process for the transfer of care was developed, simulated and implemented.

Purpose: To improve the quality of communication delivered during patient transfer of care from the Operating Room (OR) to the Pediatric Intensive Care Unit (PICU). This was done as a means to benefit patient safety, improve satisfaction among multidisciplinary staff and therefore create a culture change for the institution. Establishing a formalized OR to PICU handoff process and tool could improve provider satisfaction, improve their safety rating during this handoff, and subsequently reduce communication error and therefore, medical errors involving the patient. Based upon current evidenced based literature, a standardized handoff tool was created specifically for children arriving from the OR and going to the PICU. Intensive care units have long been known for their high acuity, high stakes, high stress environments thus being a high risk areas for error as well as omission of information which could gravely affect patient outcomes.

Methods: Members of the multidisciplinary team including; PICU nurses, PICU nurse practitioners as well as Attending and Fellow level Surgeons and Anesthesiologists were presented with the preliminary observational data and then given an initial satisfaction survey. An online learning module was designed and distributed to; Neurosurgery, General Pediatric Surgery, Otolaryngology, Orthopedics, Interventional Radiology, Anesthesiology as well as all PICU nurses, nurse practitioners and physicians. After completion of the learning module, which included a simulated handoff, the PHT was implemented. The PHT was utilized via paper form with the flow of the handoff on the reverse side as a prompt/remider to the multidisciplinary team to help with flow. This tool was used during the handoff process and remained at the patient’s bedside for reference. Prior to the introduction of the new process the standardized concept was presented at multidisciplinary grand rounds. One month after the standardized handoff was initiated observations were again conducted and the satisfaction survey was resent.

Open Ended Discussion Question: What are the most common barriers to an OR to PICU handoff and how will the next patient be harmed during this process?

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Standardized Perioperative Handoff in the Pediatric Intensive Care Unit

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Introduction

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Objectives

- To improve transfer of care communication of patients between the Pediatric OR and Surgery Teams to a multidisciplinary PICU
- Understand areas in which we can improve
- Improve nursing and provider satisfaction with information sharing during the hand-off process.
- Decrease likelihood of errors, near-misses or error and provide safer patient care.

Materials and Methods

Pre-Intervention:
- Over the time span of 1 month prior to implementation of the PHT a group of 15 observations were done across multiple surgical admission excluding cardiac surgery. The observations included 5 domains; Set Up for Handoff, Sharing the Basics, Priority Setting, Anticipatory Guidance and Summary of Handoff. Our observational data included; time it took to complete handoff, surgeon presence for handoff, disclosure of patient data (history, intraoperative medications, active problems, notification parameters, priority setting) as well as a summary of handoff. Observations also evaluated for interruptions, readiness of team to start handoff and if there was a clear start and stop of transfer.
- A pre-intervention satisfaction survey was sent to all PICU providers and nurses. The same survey was also sent to ENT, Orthopedics, General Pediatric Surgery, Neurosurgery, Interventional Radiology and Plastic Surgery to assess satisfaction of the current OR to PICU handoff process.

Post-Intervention:
- After the initial observations and surveys an online training module utilizing a simulation scenario was created, distributed and became required learning for all of the aforementioned groups.
- After completion of the module, the implementation phase began.

Results

Perceived Safety of the Anesthesia/Surgical to PICU Handoff

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Pre-Standardization</th>
<th>Post-Standardization</th>
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</thead>
<tbody>
<tr>
<td>Percentage of Time Handoff Completed</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Percentage of Time Handoff Time Complete</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Percentage of Time Handoff Handoff Evaluated</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Percentage of Time Handoff Patient Data</td>
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<td>100</td>
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<tr>
<td>Percentage of Time Handoff Anticipatory</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Percentage of Time Handoff Goal Setting</td>
<td>100</td>
<td>100</td>
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</tbody>
</table>

Percentage of Time

<table>
<thead>
<tr>
<th>Handoff Results</th>
<th>Pre-Standardization</th>
<th>Post-Standardization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to Complete Handoff</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Surgeon Present</td>
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<td>100</td>
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<td>Disclosure of Patient Data</td>
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<tr>
<td>Anticipatory Guidance</td>
<td>73</td>
<td>100</td>
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<tr>
<td>Goal Setting</td>
<td>91</td>
<td>100</td>
</tr>
</tbody>
</table>

Conclusion

- A standardized handoff and shared mental model among those transferring and accepting care of a Surgical PICU patient has shown both satisfaction among providers and comprehension of patient plan among the multidisciplinary teams and therefore decreasing the likelihood of an error occurring.
- Further investigation is needed to assess dissatisfaction among surgical colleagues.
- Ongoing work to assess and ensure sustainability would be beneficial.