Communication breakdown amongst health care providers has been identified as the root cause of two thirds of sentinel events reported to the Joint Commission. Miscommunication can occur during patient handoffs when care is transferred from one provider to the next. The Joint Commission has acknowledged the concern about handoffs and recommended that a standardized approach be followed for conducting handoffs. Among the various types of handoffs, postoperative handoffs from the operating room to the intensive care units and recovery room areas are especially challenging given their involvement of both information sharing and physical transfer of patient and equipment. Those handoffs involve patients who have just undergone surgery and are thus at high risk of clinical instability. Multiple team members from various disciplines are typically involved in those handoffs also increasing its complexity.

At the Johns Hopkins Hospital, we started to study perioperative handoffs in 2006. First, we conducted baseline surveys with frontline providers from Anesthesia, Surgery, and Nursing. The baseline survey results revealed high levels of dissatisfaction with how perioperative handoffs are conducted. Second, we investigated the handoff related “misses” and “near-misses” reported through our voluntary error reporting systems. These baseline data had led us to explore perioperative handoffs further and to develop a solution.

In order to create an appropriate systematic evaluation of patient handoff from OR to ICU, we first needed to define the handoff process. In March 2006, we began to assemble a process map. The process map of this specific type of patient transfer consisted of five major components: 1) Preparation for handoff by sending team, 2) physical transport of patient, 3) transfer of technology, 4) transfer of information, and 5) assumption of care by receiving team. Then, we queried frontline providers as to the status of OR-to-ICU handoffs in the institution to determine shortcomings and areas for improvement. We achieved this through direct interviews with
frontline providers and through use of exploratory surveys that we created. Specifically, we had utilized a version of exploratory survey for the OR sending team and another for the ICU receiving team. With the surveys, we allowed frontline providers to write about both quantitative and qualitative information, such as provider satisfaction, consistency, issues related to information transfer and technology transfer. The surveys showed that from the frontline providers’ perspective, the top 5 issues in OR-to-ICU handoff were 1) different communication styles of the report-givers, 2) the absence of key providers at the bedside, 3) the distraction of simultaneous tasks, 4) the ambiguous role responsibility for patient care during handoffs, and 5) a lack of a set time to ask clarification questions.

Armed with this information from our exploratory study, we created a multidisciplinary focus group to address the issues raised by the frontline providers. Our focus group included nurses (OR and ICU), NPs, PAs, intensivists, surgeons, and anesthesiologists. We discussed the following issues in the focus group: the desire for tools to guide anesthesia and surgery reports, the diffusion of patient care role responsibility during report, the ambiguous end to handoffs, the need for verbalized contingency planning, a distinct time for question clarification, and the need for certain providers at bedside throughout the handoff. These brainstorming sessions allowed us to start creating a new framework to guide OR-to-ICU handoffs.

**SOLUTION:**

Based on interviews, surveys, and brainstorming focus group sessions, we created a novel protocol for conducting OR-to-ICU handoffs. This protocol is centered around the use of two tools: a visual representation of the protocol and a checklist to guide the content of surgical and anesthesia reports.

The protocol was designed to achieve the following aims:
1. To establish the presence of a core handoff team at the patient bedside through the handoff process.
2. To create a series of ordered non-simultaneous steps to guide handoff.
3. To provide temporal separation of transfer of technology and transfer of information.
4. To utilize a reference checklist for the key elements of surgical and anesthesia report.
5. To focus on tangible contingency planning through the use of anticipatory guidance statements.
6. To remove role ambiguity for patient care responsibility during the handoff.
7. To delegate a distinct time for question clarification and an unmistakable spoken end to the handoff.

We piloted the new handoff process in the cardiac surgical intensive care unit (CSICU) at Johns Hopkins Hospital. This unit receives critical patients from three dedicated cardiac operating rooms. We conducted a pre–post study to evaluate intervention feasibility and impact on information sharing and team satisfaction. We conducted direct observation during handoffs and surveyed team members right after each handoff. In addition, we also tracked handoff-related adverse events via reports from healthcare providers.
Our project is an ongoing effort to identify systems defects and to improve teamwork and communication among caregivers. We piloted it first in the Cardiac intensive care unit with positive results, and we are currently in the implementation phase for our PACU recovery and the neurologic intensive care unit. We have built into the intervention the capability of customization of the handoff protocol and the checklist to enhance the universality of our project across different clinical settings based on the type of receiving unit. We plan to implement this intervention in all perioperative settings where patient transfers take place. Similar evaluation will be conducted in new units to ensure implementation success and assess impact on patient care delivery.

**OUTCOMES:**

The presence of handoff core team at bedside throughout handoffs increased from 0% at baseline to 68% post intervention. Overall, the handoff environment changed from a noisy environment with parallel conversations at baseline to an orderly exchange of information among all team members and audible clear reports post intervention. On average, the duration of handoff increased by 2 minutes (10 minutes at baseline; 12 minutes post intervention). Post intervention handoffs involved more information sharing (captured as mentioned information items per checklists). Satisfaction with handoffs, especially among nurses, improved significantly. Institution wide education on new perioperative handoffs is underway. This education is being embedded into education for incoming physician in training. Simulation is being utilized as an educational method and a means to capture examples of handoffs (good & bad) for additional education and widespread message dissemination.