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Original Contribution

Improving the quality of the operating room to intensive care unit handover at an urban teaching hospital through a bundled intervention☆,☆☆

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Abstract

Study objective: To evaluate the efficacy of a bundled intervention to improve the quality of the operating room to intensive care unit (ICU) clinical handover.

Design: Prospective, interventional study.

Setting: An urban, public teaching hospital with more than 1500 direct postoperative ICU admissions each year.

Interventions: A bundled intervention to include the addition of a direct anesthesia provider to ICU nurse telephone report, a mnemonic to standardize the handover process, and improved template for postoperative documentation by the anesthesia team.

Measurements: Preintervention (baseline) and postintervention survey data were solicited from key stakeholders, which included anesthesia providers and ICU nursing staff.

Main results: Anesthesia provider and ICU nursing staff satisfaction levels rose significantly following implementation of the bundled intervention. In addition, perceived effectiveness of the handover process and note increased significantly. The satisfaction level of the ICU nurses with respect to the phone report received before patient arrival in the ICU nearly doubled.

Conclusions: The implementation of a bundled handover intervention was associated with increased stakeholder satisfaction as well as a perception of increased efficacy and quality of the overall handover process and postoperative anesthesia documentation.

1. Introduction

Of the more than 5 million persons admitted to an intensive care unit (ICU) nationwide each year, patients who are transferred for postoperative management represent the second largest constituent as measured by diagnosis for admission [1].

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As a patient population, these individuals are among the most susceptible to medical errors and omissions, particularly those which are presented by the clinical handover. For that reason, we chose to target this group specifically for an anesthesia-initiated quality improvement effort at our institution.

1.1. A vulnerable patient population

Overall, the act of providing a predictable, consistent, and efficacious clinical handover from the operating room (OR) to ICU for postoperative management proves to be one of the current challenges for modern medicine. Patients destined for postoperative management in the ICU can achieve better outcomes through an effective transfer of care, even in the presence of the difficulties that a highly acute period of care presents.

For this patient population, such difficulties can be numerous. Often, the sending and receiving care teams may be concurrently tasked with other responsibilities during the transfer of care, such as managing hemodynamic instability and ensuring adequate ventilation. These measures necessitate the transport of numerous equipment, including ventilatory support, invasive monitoring, and drug delivery systems, which adds another layer of complexity that is generally not present in a care transfer on the regular medical floor. There is evidence that demonstrates that nearly half of all intrahospital transports of critically ill patients have been associated with adverse events relating to 2 factors, which include patient-related adverse events such as hemodynamic instability and oxygen desaturation and/or equipment-related incidents [2]. Moreover, as surgical patients, the process of moving though the perioperative period means that the medical course of this patient population has already been punctuated by frequent transitions in care even before the final handover to the ICU.

At Parkland Memorial Hospital, there are more than 1500 direct postoperative ICU admissions per year. The choice to support this patient population is a quality improvement effort that we find particularly meaningful. Thus, we have endeavored to improve the handover process at our affiliated hospitals over the past 5 years.

1.2. The transfer of care or "clinical handover"

The *transfer of care* has been previously defined as "the transfer of information and professional responsibility and accountability between individuals and teams" [3]. Transfers of care often occur within the same unit, such as when one resident physician takes over for another at the end of the shift; these transfers of care are frequently known as *sign outs*. In addition, transfers of care frequently occur between units, such as when a patient is transferred from the OR to the ICU for postoperative management.

Transfers of care pose a critical period in the provision of a patient's medical care and, if ineffective, represent a real risk to the quality of medical care a patient will receive [4–8]. As such, recent inquiry has provided us with a significant body of literature that supports the notion that ineffective handover processes have been correlated to worsened patient outcomes [9]. Worsened patient outcomes are thought to be the result of multiple factors—of which the single greatest contributing factor is communication. A number of studies have attempted to quantify the extent of information transfer, primarily through the development and validation of handover tools for that specific purpose [10]. Such efforts have arrived at a number of conclusions, namely, that nearly half of all essential information is lost during the handover process; that the receiving unit disagreed with the sending unit in the majority of instances that the most essential piece of information was effectively transferred; and, finally, that only in one-third of all clinical handovers was the transfer of all essential information achieved [10–13]. Moreover, when compared with clinical inadequacy, communication failures were associated with nearly twice as many adverse events [14].

These statistics support the claim that poor handover processes pose a major, systemic challenge to modern medicine. There is a consensus between these independent investigations and data from the Joint Commission, which asserts that human factors, leadership, and communication are the 3 most frequent root causes of sentinel events [15]. In addition to poor communication, another factor which may contribute to the poor quality of handover processes is the lack of standardization from an educational standpoint. Until recently, many medical schools did not include formal didactic sessions in which the handover process was taught in their curriculum; rather, training occurred informally on the wards as taught by more senior trainees [16]. Consequently, there has been a push to include clinical handovers as a targeted area of improvement in medical education by the Accreditation Council for Graduate Medical Education and the Association of American Medical Colleges [17,18]. For a repository of information related to efforts to improve the transfer of care process, the Joint Commission maintains a Transitions of Care Portal which can be used as a point of departure for further inquiries [19].

This study seeks to describe the efforts of one institution to assess and address the challenges that OR to ICU transfers of cares present. We hypothesized that the implementation of a comprehensive, bundled intervention to address the current handover process, informed by the areas of deficiency identified by providers, would lead to a significant increase in the perceived quality of the handover process as well as result in significantly improved provider satisfaction.

2. Materials and methods

2.1. Study design

The motivation to develop our present study arose from a desire to assess whether the OR to ICU handover process