

A Mnemonic to Facilitate the Handover from the Operating Room to Intensive Care Unit: “I PUT PATIENTS FIRST”

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Abstract

Quality problem or issue: The clinical handover is a critical phase in patient care. Quality improvement efforts aimed towards encouraging effective communication during the handover process are crucial to improve the outcomes of particularly vulnerable patient populations, such as those transferred post-operatively from the operating room (OR) to the intensive care unit (ICU).

Initial assessment: The lack of standardization in the operating room to intensive care unit handover yields wide variability in the quality of handover reports between providers. Furthermore, this issue is exacerbated by the lack of a strong pedagogical tool through which resident physicians can become familiar with this process.

Choice of solution: The use of a simple mnemonic to act as a guide for the operating room to intensive care unit handover.

Implementation: We have developed a mnemonic guideline for use as both a cognitive aid and written reference by the sending and receiving care teams.

Evaluation: We believe that this mnemonic has value as a clinical guideline and educational tool to aid in the standardization of the operating room to intensive care unit handover.

Lessons learned: The use of a simple mnemonic guide can support clinical reasoning and standardize the handover of patients from the operating room to intensive care unit, improving the quality of care provided to this at-risk patient population.

Keywords: Operating room; Intensive care unit; Handover; Handoff; Mnemonic; Quality improvement

Introduction

As the practice of modern medicine has progressed, so have our expectations for safe, reliable patient outcomes, especially within the field of operative medicine. Developments within the field of anesthesia have provided for decidedly safer anesthetics and, consequently, a more predictable medical course following general anesthesia. In part due to these successes, the practice of anesthesia has become safer than ever; the American Society of Anesthesiologists estimates that the incidence of anesthetic-related deaths has decreased by a factor of forty within the past 25 years alone [1].

Acknowledging these successes, developments in perioperative medicine have improved success rates to the point where patient outcomes are no longer limited by the availability of efficacious anesthetic agents, but rather, the practices of individuals, teams, and institutions. Now, we are challenged with the reliability of medical care and patient outcomes as measured by metrics of quality assurance and continuous quality improvement. There is mounting evidence to support the notion that a significant portion of medical errors and adverse events are avoidable. Conservative calculations estimate

almost 15% of surgical complications can be prevented, though there is literature to assert that up to 50% of adverse surgical events can be attributed to a preventable cause [2,3].

Foundational Efforts

Quality improvement has recently risen to prominence as the practice of medicine has become safer, particularly within fields of special interest to the anesthesiologist such as perioperative and critical care medicine. As a solution to preventable error, whether it can be attributed to the individual or the institution, the practice of quality improvement seeks to provide the means to improve upon the current process. To achieve this goal, one of the most frequently used tools within the field is the checklist.

Having already found its place within the aviation and nuclear industries, the checklist has begun to prove its efficacy within the medical field. Though the use of the checklist within medicine is now becoming widespread, many of the early adopters were found in the surgical specialties where “time-outs” and safety checklists have become recognized as a standard of care, owing to the successes of the Universal Protocol, SURPASS, and the WHO Surgical Safety Checklist [4-6]. Adherence to the use of checklists has been correlated with better performance during simulated perioperative crises, suggesting

that such algorithms may even have a role in emergent scenarios [7,8]. Notable successes have also been made with the intensive care units, where checklists have found their role to reduce the incidence of catheter-related bloodstream infections as well as overall hospital mortality [9,10].

A Quality Effort

Although the use of a well-developed checklist can be considered ideal, the use of a simple mnemonic as a cognitive aid can provide a viable substitute. Like a checklist, the mnemonic achieves many of the same merits to support clinical reasoning and standardize clinical processes; however, it represents a widely accessible alternative, which may prove to be a superior pedagogical tool. The use of mnemonics has already been applied to patient care in the intensive care unit and clinical handovers for adult and pediatric patients [11-13]; however, to our knowledge, the operating room (OR) to intensive care unit (ICU) handover has not been specifically targeted.

Clinical handovers have already been identified as an area of demonstrable harm [14]. Furthermore, the compound effect of simple errors may be exacerbated in particularly vulnerable patient populations, such as surgical patients who are postoperatively transferred to the intensive care unit. For this reason, we chose to develop a mnemonic that we believe can serve as a guideline to improve the effectiveness of the handover from the operating room to the intensive care unit, primarily through increased standardization of the process, but also as an educational tool for physicians in training.

The Mnemonic: I PUT PATIENTS FIRST

Identify yourself and role and obtain nurse's name

By announcing your name and role, you clearly define your participation as part of the care team and have the opportunity to clarify your role to the receiving unit. Additionally, taking the opportunity to meet with the receiving nurse will facilitate future communication.

Patient's past medical history (medical, surgical, social)

The patient's pertinent past medical, surgical, and social history should be discussed with the receiving unit as it should relate a clear narrative of the patient's medical course.

Underlying diagnosis and procedure

The patient's underlying diagnosis should be discussed in the context of the intervention that was chosen. For example, a patient who was taken to the operating room emergently as an immediate life-saving maneuver may have experienced a very different decision making process than a patient who was undergoing an elective operation.

Technique (general anesthesia, neuraxial, regional)

A brief discussion of the anesthetic technique chosen may indicate special requirements to the nursing staff. For example, in the case of regional anesthesia, patients may have a limb that is immobile and additional assistance may be needed.

Peripheral IVs, arterial lines, central lines, drains

It is important for the ICU team to be aware of what venous access, arterial lines, and other drains/tubes that are present as these are the means by which therapeutics will be administered and certain invasive monitoring techniques are conducted.

Allergies

Allergies should be discussed and documented as they represent the most obvious of contraindications. Allergies to a drug may explain why another alternative drug was used intraoperatively.

Therapeutic interventions (pain medications, antibiotics)

A discussion of present, past, and future therapeutic interventions should occur to provide a general outline of the patient's planned medical course. For example, some cancer patients may be on moderate to high doses of opioid pain medications and may necessitate larger-than-standard doses of pain medications postoperatively.

Intubation (very difficult, moderately difficult, easy)

If there was any difficulty with intubation, the next care team should be alerted so that additional airway equipment can be prepared should the patient need to be reintubated at a later time.

Extubation likelihood (already extubated, very likely, unlikely, definitely no extubation planned)

If the patient will be kept intubated, the receiving unit can be prepared with a ventilator and respiratory therapist present, eliminating any potential delays.

Need for drips (epinephrine, vasopressin, norepinephrine, insulin, propofol, etc.)

The presence of any continuous infusions should be discussed so that there is a clear consensus of all drips and their rate of administration.

Treatment plan for postoperative care (blood pressure goals, ventilator settings)

Postoperative care can vary significantly depending on the patient's medical course and the surgical procedure that was performed. For example, if a carotid endarterectomy was performed, the receiving team should carefully monitor arterial pressure and acceptable parameters for blood pressure should be discussed with the surgical and anesthesia teams.

Signs (vital signs during case and most recent)

A patient's vital signs can provide an early warning of decompensation or future medical course. It should be noted that goal ranges vary in the context of disease. For example, patients with chronic hypertension may require a higher blood pressure to achieve adequate perfusion.

Fluids (In's and Outs's, blood product(s) administered)

The receiving unit should be made aware of all fluid and blood product administration. Fluid output, such as urine output and estimated blood loss, should also be communicated to the receiving team.

Intraoperative Events (if any)

Any major intraoperative events should be discussed, as well as any consequent interventions, especially if it differs significantly from the planned course of action.

Recent labs (Hemoglobin, glucose, etc.)

Recent laboratory results provide insight to the patient's condition and relay the efficacy of past interventions, such the administration of blood products.

Suggestions for immediate postop care (ex: special positioning, pain control, need for pumps, etc.)

Any special supplies, such as intrathecal catheters or infusion pumps, should be requested in advance of the patient's arrival to prevent any unnecessary delays. Special instructions for positioning, such as the requirement for a patient to lay flat for a number of hours following an endovascular procedure, should be discussed.

Timing/expected time of arrival to ICU

As accurately as possible, the estimated time of the patient's arrival to the intensive care unit should be approximated, such that the receiving unit can be adequately prepared.

Concluding Remarks

We sincerely hope that this mnemonic provides value as a clinical guideline and educational tool to aid the standardization of the operating room to intensive care unit handover. For best effect, we envision its use as both a cognitive aid and written reference, available for use by either, and ideally both, the sending and receiving care teams. Given the size of our hospital and the presence of multiple intensive care units, we find that the addition of the phone numbers and extensions for each individual intensive care unit proves particularly useful in facilitating contact.

As a potential limitation to the present study, we acknowledge that there is a lack of literature which explicitly appraises the efficacy of mnemonics; however, we believe that the use of a mnemonic will share many of the benefits provided by checklists, in that they provide a structured, predictable approach which we posit will support clinical reasoning and, ultimately, improve the overall quality of care. Moreover, many of the previous successes of checklists have been attributed to their effect upon communication and team performance, which we believe can be similarly emulated through the structured approach, which a mnemonic can provide [15].

Ideally, this guideline will be used alongside other quality improvement methods to improve the predictability and quality of the OR to ICU handover process. Previously, the use of bundled interventions has been shown to good effect [9,13,16,17]. Though a bundled approach presents the challenge of decidedly attributing a positive change to any single factor, the literature suggests that such

interventions frequently exert little effect on well-functioning aspects of the handover, whereas aspects of poor performance see a significant increase in quality, thus presenting a risk-benefit analysis which we believe to be heavily weighed towards improving the quality of care [18,19]. For that reason, we'd propose the inclusion of our mnemonic in a greater quality improvement effort, the design of which has been thoughtfully described in the literature [20]. Lastly, provided that the resources are available to the institution, integration of a mnemonic prompt into the electronic medical record would be ideal and could a more thorough audit of usage statistics, especially as they relate to demonstrable metrics, such as patient outcomes, medical errors, and adverse events.

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