Academic Medical Center | Patient Safety Organization
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Patient Safety Alert

Critical Care Patients Boarding in the Emergency Department

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Case Study

A 48-year-old male with a high BMI, substance use disorder, HTN, asthma, smoking history, diabetes, chronic kidney disease, and coronary artery disease had a blood pressure of 230/160 while at a routine Urology appointment. He was taken by ambulance to the Emergency Department (ED), arriving at approximately noon.

At triage, his BP was 259/176; heart rate 97. Blood work revealed positive troponin and elevated creatinine. That morning, the patient had taken his regular medications including amlodipine nifedipine, clonidine, carvedilol, and chlorthalidone. He was administered additional clonidine and antihypertensives in the ED.

At 2:00 p.m., the patient was persistently hypertensive. A nitroglycerin drip was initiated, but his blood pressure remained high. At the 3:00 p.m. shift change, the MD who was going off shift requested an ICU bed for the patient.

At 7:00 p.m., the patient experienced a precipitous drop in blood pressure, losing vision in both eyes. The stroke team was activated and the patient was immediately transferred to the ICU.

Introduction

The Academic Medical Center Patient Safety Organization (AMC PSO) convened subject matter experts in Emergency Medicine (EM) and Critical Care, including physicians, physician assistants, and nurses from academic medical centers and community hospitals to review the care of critically ill patients who are boarded in the Emergency Department. Those experts analyzed patient safety risks associated with extended boarding of patients awaiting an intensive care unit (ICU) bed and recommended mitigation strategies to improve patient safety. They considered previously published guidance, as well as current initiatives shared by participants, to help inform the care offered by providers treating long-term boarders.

The impact of boarding patients awaiting ICU inpatient beds in the ED has received specific attention because of the associated poor clinical outcomes. A task force convened by the Society of Critical Care Medicine and the American College of Emergency Physicians reported that ED boarding is common, and that prolonged boarding has been associated with poorer outcomes, including longer duration of mechanical ventilation, longer ICU and hospital length of stay, and higher mortality.1

Goal and Scope of Review

The Task Force's primary focus was patient safety risks associated with the boarding of critical care patients in the ED. The American College of Emergency Physicians defines a boarded patient as a one "who remains in the Emergency Department after the patient has been admitted or placed into observation status at the facility, but has not been transferred to an inpatient unit."2 Without an established definition of long-term or extended ED boarding in the literature, the Task Force defined it as a period of greater than two hours following the decision to transfer a critically ill patient from the ED to an ICU. Based on that definition, the Task Force identified and analyzed known patient safety risks associated with extended critical care boarding and developed strategies to improve the safety of the patient prior to ICU transfer.

The Task Force also identified and set aside discussion of out-of-scope topics. These included financial and administrative issues, such as approaches to alleviate upstream hospital crowding and management of patient flow. Although there was agreement these factors were significant contributors to ED boarding, the complexity of these operational issues exceeded the capacity of the Task Force at this time.

Potential Risks and Risk Reduction Strategies for Extended Critical Care Boarders in the ED

The Task Force considered several patient care areas that may be affected by extended ED boarding. These include diagnosis-related issues for both the critical care boarder and other ED patients awaiting evaluation and treatment, critical care management issues, potential communication gaps and barriers to effective hand-offs, operational issues, staff burn-out, and the need to develop specific quality of care metrics to assess the impact upon patients boarded long-term in the ED.

The primary goal of ED care is the rapid assessment, stabilization, and transfer of the critically ill, while that of the critical care specialist is the longitudinal management of these patients. Critically ill patients require ongoing and continuous monitoring.

RISK	MITIGATION STRATEGY
Diagnostic Uncertainty	**Enhanced Collaboration**
Critical care patients may have one or more diagnoses that require continuous monitoring to assess and manage the uncertain trajectory of conditions that can evolve rapidly and may require clinicians to quickly adjust their clinical responses Distinguishing those patients who require transfer to the critical care unit from those who can be managed on a medical floor	Involve critical care providers in the ED to improve diagnostic clarity. This can include: • The creation of a critical care float team that can collaborate with the EM providers, regular rounding by critical care providers in the ED • Utilizing telemedicine technology to facilitate ICU consultation to the ED

When the critical care team is a consult team, it creates the potential for confusion as to who has the primary responsibility for managing the patient's care, which may result in lack of clarity about implementation of critical care orders.

RISK	MITIGATION STRATEGY
Critical Care Management in the ED	**Enhanced Education and Support**
Ongoing consultations by the critical care team can: • Create a potential for confusion about who has the primary responsibility for managing the patient's care • Require additional attention to the order entry processes by EM staff **Medication management practice challenges include:** • Increased risk of medication orders dropping off inadvertently as EM providers typically only enter one-time orders • Incomplete or missing medication reconciliation • Delayed or missed administration of timed or recurrent medications (e.g., insulin, intravenous antibiotics) • Complicated medication management for ICU patients who are boarding in the ED • Use of unfamiliar critical care equipment in the ED such as ventilators, arterial lines, dialysis, etc. • Limits on the availability of critical care key support personnel, such as pharmacists and respiratory therapists All these factors can create additional stress for the EM providers	Some institutions have created resuscitation care units within the ED, where critical care providers manage the boarded critical patient Provide ICU care via telemedicine[3]

Safe management of patients boarded long-term requires clear communication between EM and ICU providers, with an effective hand-off process during ED shift or personnel changes. These may involve MDs, RNs, and specialized support staff, such as the respiratory therapists and pharmacists.

RISK	MITIGATION STRATEGY
Incomplete Communication Between EM and Critical Care Providers	**Standardized Communication**
Communication between the EM and ICU providers during an ED shift or personnel changes can be challenging During nights and weekends, there may be increased vulnerability for communication lapses at shift changes	Utilization of a standardized hand-off tool within an institution, and across a health care network, can ensure complete and accurate transfer of patient information Development of a standard process for contacting the critical care team may reduce the burden of multiple identical requests made via many modalities, e.g., MD, RN, unit coordinator simultaneously contacting ICU staff via phone, text, and email; frequently interrupting the ICU provider[4]

Recording and reporting quality-of-care metrics is needed to understand the effect of extended ED boarding on critically ill patients. By doing so, risk trends can be identified, and interventions can be developed to improve patient care.

RISK	MITIGATION STRATEGY
Lack of Quality-of-Care Measurement for Critical Care Patients Boarded in the ED	**Quality and Safety Reporting**
Lack of recording and reporting quality-of-care metrics to understand the effect of extended ED boarding on critically ill patients A safety reporting system that lacks the specific fields, categories, or locations for near-miss and adverse events to necessary to identify patients boarded in the ED	Quality and patient safety teams can collaborate to adapt their reporting systems to capture factors that contribute to adverse or near-miss events involving critical care patients who are boarded in the ED while awaiting an ICU bed

Emerging Solutions

While extended ED boarding of critical patients has challenged organizations for years, it has dramatically worsened recently due to capacity constraints, staffing, etc. We heard from subject matter experts a desire to know more about innovative solutions and how their peers are addressing the risks associated with this issue. The Task Force reviewed three initiatives that address risks associated with long-stay critical care boarders in the ED.

ICU Ranger Model

The ICU Ranger Model was initiated at a community hospital. It employs a critical care physician responsible for rounding on identified higher risk patients boarded in the ED and those on inpatient units who may need ICU-level interventions. This model was developed during the pandemic, with the rangers rounding on COVID patients. This model was well received by staff in all departments and the intensivists were able to obtain funding to continue the program. While designated as the ranger, that physician is in a separate role with no admission responsibilities, no other teaching or day-to-day care responsibilities, and can see patients needing ICU care or on the cusp of needing ICU care anywhere outside of the ICU.

The reported benefits of this approach include additional support for the care of already ventilated patients, additional cognitive bandwidth for EM providers attempting to continue to assess and treat incoming patients while managing an ICU boarder, as well as, added help for procedural services. A nurse with responsibility for a whole-house view is charged with developing the list of patients who are most appropriate for the rangers. Consultative support from the critical care ranger can mitigate the risks of diagnostic uncertainly and provide needed expertise to care for these patients.

Critical Care/ED Nurse Float Pool

The Task Force learned of two well-established float pool programs at several community hospitals. Float pool participants can mitigate some of the risks for critical care ED patients by facilitating communication and relationships between the two areas, as well as filling a knowledge gap. Facilitators for each program included strong nurse educators for both critical care and ED who develop a teaching curriculum and ongoing support to staff it. Float pools were also noted to help nurses gain experience for future career positions that require both ICU and ED experience, e.g., med flight nurse and certified registered nurse anesthetist. Lessons learned through these established programs include ensuring nurse directors from both specialties interview candidates, and expectations that many will prefer one specialty over the other and want to stay there.

ICU Triage Huddle

This program being piloted at an AMC aims to address diagnostic uncertainty as a contributor to extended boarding of critical care patients in the ED. Recognizing that patients on the cusp of requiring ICU versus floor-level care may experience delayed departure from the ED, this initiative aims to bring relevant stakeholders to the bedside for a brief huddle during which existing clinical trajectory, expected course, and current barriers to ICU versus floor admission are addressed. Intended participants include the EM attending physician and responding clinician (i.e., resident or advanced practice provider), EM primary nurse and resource nurse, ICU attending, medicine triage resident (responsible for assessing ED patients for admission), and the hospital nursing supervisor. While still in the planning phase, a multidisciplinary workgroup including EM, medicine, and ICU providers has agreed upon the following guiding principles:

- Huddles occur at the bedside to ensure all members of the team have assessed a patient's current clinical status in real-time which decreases barriers to communication

- Huddles must take no longer than five minutes and all participants will prioritize timely attendance, avoiding additional delays in disposition

- If the outcome of the huddle discussion is a recommendation for additional intervention to occur in the ED prior to ICU transfer, it must be a specific and time-bound intervention with a plan for timely reassessment

This initiative does not require additional resources, but given the many stakeholders involved, current efforts include obtaining necessary buy-in and providing education to all impacted role groups.

Summary

Boarding of critically ill patients in the ED setting is associated with poor clinical outcomes[1]. A Task Force of clinical experts convened under the auspices of the AMC PSO to discuss challenges associated with care of the critically ill patient in the ED, as well as share approaches to address these challenges. The Task Force identified several categories of risk as well as potential mitigating opportunities. The group also shared novel strategies being implemented at their respective organizations.

While complex factors contribute to the boarding of critical care patients, the Task Force was able to identify and categorize risks and potential mitigation strategies. While not exhaustive of all concerns or strategies, the consensus of this group may help to validate concerns and aid in conversations and initiatives to improve safety for critically ill patients being boarded in the ED.

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