Crowding, Boarding, and Throughput in the Emergency Department

Description

Crowding, boarding, and/patient throughput delays are daily problems in emergency departments (EDs) worldwide and are especially problematic when facing increasing needs of patients in the ED (Centers for Disease Control and Prevention [CDC], 2024; Savioli et al., 2022). ED crowding occurs when the need for services exceeds the department's available resources for timely patient care (American College of Emergency Physicians [ACEP], 2024; Canadian Association of Emergency Physicians [CAEP], 2024; Emergency Nurses Association [ENA], 2021; International Federation for Emergency Medicine [IFEM], 2022; Pearce et al., 2023;).

According to ACEP, boarding in the ED is a result of dangerous health system overload that puts patients in a holding pattern as they wait for an inpatient bed or transfer after their initial care (ACEP, 2024). Patient throughput refers to the resources, care, and decision-making involved in moving patients through a healthcare facility including admission via the ED (ACEP, 2024).

While definitions vary, especially for the term boarding, the Emergency Medical Treatment and Active Labor Act (EMTALA) law provides a relevant starting place for clarity in decision-to-admit and patient boarding definitions: ED's bear a responsibility to provide medical screening and to stabilize or transfer those patients with medical emergencies (EMTALA, 1986, n.d.; ACEP, 2024). Hence, boarding cannot begin until an ED has completed their responsibilities according to EMTALA. The definition of decision-to-admit is then based on the point after a patient has received all the following: (a) emergency stabilization, (b) completion and review of diagnostic studies, and (c) a provider-to-provider handoff has occurred or a transfer order has been placed (EDBA, 2017). EDs experience a large, sometimes overwhelming, demand for services. In the U.S., of nearly 140 million patient ED visits each year, over 40 million visits are injury related (including poising and adverse effects), and more than 18 million visits result in admission into the hospital setting (CDC, 2024).

Decision-to-admit time in an ED is crucial to ensure the patient receives necessary care, minimize delays in treatment and potential complications (Imhoff et al., 2022). Considering these rates of ED use, it is imperative that hospitals and EDs provide optimal care to all, improve efficiency, and support hospital-wide care guidelines to address the needs of patients as well as the staff providing their care (CDC, 2024, 2021; CMS, 2018; Mustafa et al., 2016).

It is important to note that solutions for decreasing boarding nearly always require improving patient flow throughout the hospital, rather than within an isolated unit. Such solutions necessitate a systems-level understanding of variations of capacity, demand, and the specific consequences of misalignment of these variables (Melton et al., 2016; Silver et al., 2016; Loke et al., 2023). Addressing ED overcrowding and reducing the need for boarding is essential for improving patient outcomes and enhancing the efficiency of healthcare systems. Rigorous and consistent metrics are fundamental to identify and address clinical process problems and evaluate process improvements (CAEP, 2023; ACEP, 2024). When problem areas are identified, solutions can be implemented. Decision-to-admit time in an ED is crucial metric that reflects the delivery of necessary care, delays in treatment, and potential complications (Imhoff et al, 2022).

Addressing ED overcrowding and reducing the need for boarding is essential for improving patient outcomes and enhancing the efficiency of healthcare systems. Emergency nurses can initiate and drive hospital-wide change to mitigate ED crowding and boarding. but commitment from hospital administrators to solve the problem is requisite (Silver et al., 2016). Strategies such as improving inpatient bed availability, expanding hospital capacity, and enhancing care coordination can help alleviate the negative consequences of boarding (Rader et al., 2024; CAEP, 2023; Pearce et al., 2023; IFEM, 2022; Sartini et al., 2022). Every ED, hospital, county, and region presents a different set of variables that contribute to ED crowding and boarding. There is no one-size-fits-all solution, and all solutions must be data-driven, problem-oriented, and unique to each hospital and hospital system to be successful.

ENA Position

It is the position of the Emergency Nurses Association (ENA) that:

1. Crowding, boarding, and patient throughput delays are associated with poor patient outcomes, negative impacts on emergency staff, and disruption of communities' overall emergency services.
2. It is essential that patients receive emergent stabilization, diagnostic studies are completed and reviewed, and an admission or transfer order is placed or a handoff from one provider to another has occurred.
3. Patient boarding be addressed as a collaborative effort across the healthcare system, inclusive of multidisciplinary stakeholders from the ED, and inpatient areas.
4. Consistent definitions, data and measurements using rigorous metrics are key to both understanding and conveying the factors that cause ED crowding, boarding, and/or throughput delay and are used as the basis for evaluating quality care.
5. Further research is required to identify industry best practices and benchmarks for calculating labor productivity and ED workload when crowding, boarding, and or throughput delays occur.

Background

Negative Outcomes from Boarding and Crowding

ED crowding is a global public healthcare crisis (Pearce et al., 2023; IFEM, 2022; Sartini et al., 2022). The ED is one of the most crowded units in the hospital with the most high-risk patients (Sartini et al., 2022). Crowding in the ED is associated with deleterious patient outcomes including increased morbidity and mortality; increased medical errors; delayed or missed provider orders; prolonged time to surgery, analgesia, imaging, and antibiotics; poorer outcomes for patients with cardiac conditions, stroke, and sepsis; decreased patient satisfaction; and increased rates of patients leaving without being seen (Pearce et al., 2023; IFEM, 2022; CAEP, 2023; Sartini et al., 2022; Rader et al., 2023).

Crowding has also been implicated in negative nursing outcomes, including increased nursing workload, burnout, and staff turnover (Pearce et al., 2023). Additionally, the impact of ED crowding extends to the Emergency Medical Services (EMS) system, increasing ambulance diversion and patient offload delay, which may occur when EDs are closed to ambulance traffic or when EMS personnel must wait to handoff care to ED personnel until ED beds are available (Musselwhite et al., 2024; Kuhner et al., 2024; Imhoff et al., 2022, Loke et al., 2023). Leaders are challenged to address ED staffing to provide safe care with the added complexity of crowding, patient boarding, and throughput delays. Furthermore, there has been little research on standardized methodologies that hospital leadership may use to account for these additional labor hours (ENA, 2021; Moretz & Chmielewski, 2019).

According to 2022 data from ACEP, the median boarding time across all EDs rose from 119 minutes to approximately 192 minutes in 2019 (Augustine, 2023). The delayed process of moving ED patients to inpatient units is crippling ED operations (Augustine, 2023). In 2020 the EDBA held their fourth summit to review, update, and clarify definitions to ensure shared language and add key definitions and metrics for ED operations (Yiadom et al., 2020).

According to Imhoff et al., 2022, their quality improvement project showed the length of stay for admitted patients exceeded the 2020 EDBA 50% benchmark by 72 min for similarly sized EDs (institution 473 min, EDBA benchmark 401 min.) Furthermore, boarding time exceeded the EDBA 50% benchmark by 44 min (institution 202 min, EDBA benchmark 158 min (Imhoff et al, 2022). Crowding has negative effects on patient care, patient satisfaction, and well-being of the healthcare teams (Imhoff et al., 2022).

Similar in Canada, the median boarding time has risen across many provinces, the Canadian Agency for Drugs and Technology (CADTH) report in November of 2023, median wait times in 2022–2023 for an inpatient bed for admitted patients in Alberta, Ontario, and Yukon were up from levels in 2010–2011, with greater increases in urban EDs (2022–2023: Alberta: 3.6 hours; Ontario: 7 hours; Yukon: 3.7 hours) than in rural or remote EDs (2022–2023: Alberta: 0.1 hours; Ontario: 1.9 hours; Yukon: 0.1 hours) (2024;

Canadian Institute of Health Information (CIHI), 2023). CADTH further reported there was a greater than 100% increase in the proportion of ED patients who were not seen or left the ED between 2020–2021 and 2022–2023 in Alberta (2020–2021: 3.95%; 2022–2023: 8.72%) and Ontario (2020–2021: 3.28%; 2022–2023: 6.64%). There was a 45% increase in Yukon (2020–2021: 3.76%; 2022–2023: 5.44%) (CADTH, 2023; CIHI, 2023).

Moving Toward Potential Solutions

The National Quality Forum (NQF) included in their definition the stipulation that the decision-to-admit must be initiated by a physician (2012). Because of boarding time and definition variations, as well as various benchmarks regarding decision-to-admit, boarding has not been sufficiently or consistently identified or tracked. In 2014, The Joint Commission's "Patient Flow Standard" suggested that patient boarding not exceed four hours from decision to admit (2014).

Foundational research by Asplin et al. (2003) developed a conceptual model known as Patient Throughput to illustrate: (a) the arrival of patients at an ED for care – input, (b) the care patients receive within the ED - throughput, and (c) patients leaving the ED to home or other care environments -– output. The Patient Throughput model remains relevant in research and is used to serve as both a description of sources of ED crowding as well as the course of treatment that patients take through the ED in receipt of their care (ENA, 2021; Khanna et al., 2017; Moretz & Chmielewski, 2019). This throughput model makes it possible to conceive how one source of ED crowding impacts another; how the consumption of ED personnel, geographic, and equipment resources are required to meet sources of crowding; and why resolutions for ED crowding require a hospital wide systems approach (ENA, 2021; Khanna et al., 2017; Moretz & Chmielewski, 2019; Loke et al., 2023). EDs have no control or influence over their hospital inpatient units' capability to accept patients, yet EDs accrue the burden when existing patient admissions are blocked (ENA, 2021; Moretz & Chmielewski, 2019).

According to the ACEP Summit on boarding, (2024) solutions could be a centralized, standardized resource tracking that included consideration of public-facing data. It is important that patient boarding be addressed as a collaborative effort inclusive of multidisciplinary stakeholders from the ED and inpatient areas (Moretz & Chmielewski, 2019; Loke et al., 2023). We also need to look at the community factors that are contributing to delay in discharging patients. Lack of primary care providers, social determinants of health, vulnerable populations require a systematic approach and diverse stakeholders.

Resources

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