

EDITORIAL

The Practice of Emergency Medicine

The emergency department waiting room: A barometer of hospital throughput and capacity?

In a retrospective analysis of more than 1 million visits to 18 emergency departments (EDs) in a large, integrated US-based healthcare system, Smalley and colleagues highlight the impact of boarding on the ED waiting room.¹ The authors report that for every additional patient boarded per hour, the number of patients waiting per hour in the waiting room increased by 8%.¹ Additionally, the number of patients waiting for a room per hour was 2.28 times higher for middle acuity triage level patients than for high acuity patients.¹

The results presented by Smalley and colleagues are noteworthy and add to the existing literature on ED boarding, crowding, and throughput in several novel dimensions. First, the study is unique in quantifying the impact of throughput challenges on patients in the ED waiting room. Second, the study was conducted in a large health system with heterogeneity of type and volume of the EDs, making the results more generalizable. Finally, the authors noted the impact of wait times on middle acuity patients, a particularly important group whose disposition from the ED is less likely to be clear at the time of triage.

Prior literature has focused extensively on the adverse outcomes associated with ED boarding and crowding including increased morbidity and mortality. Multiple strategies have been proposed and studied in three domains to improve ED throughput and minimize wait times: decrease input, improve throughput, and increase output.² Many EDs, hospitals, and health systems have implemented one or more specific interventions in these domains including providers in triage, split flow processes, optimizing lab and radiology turnaround times, active hospital bed management, and the prioritization of early hospital discharges. These initiatives underscore the necessity of a comprehensive, enterprise approach to throughput that includes the ED, the hospital, and outpatient clinics and services.

The impact of boarding on the ED waiting room is particularly important as a measure of capacity optimization, particularly in multiple hospital health systems such as the one in this study. Delays in disposition for any group of patients in the continuum appear to delay disposition for other patients, including those being discharged from the ED.³ The results presented by Smalley and colleagues suggest that these same delays could affect the ED waiting room as well. Patients in the ED waiting room disproportionately leave without a completed evaluation, usually because of extended wait times.^{4,5} Patients in the ED who leave

before the completion of evaluation and treatment might not receive timely care for injuries and illness and are a group of patients who represent lost revenues when they seek care elsewhere. Patients in the ED waiting room at risk for leaving without completion of evaluation provide an opportunity for operational improvements and potentially provide insights into the inpatient capacity of hospital or health system.⁶ As such, discerning how to reduce ED waiting room times in the context of boarding has the potential to tangibly and simultaneously enhance patient care and system efficiency.

Constructively addressing ED boarding and crowding requires a focus on hospital capacity and throughput across the continuum of patient care during a hospitalization, from entry in the ED waiting room through discharge from a hospital ward to integration of appropriate outpatient care. ED boarding and wait times, including time spent in the ED waiting room, are inextricably connected to hospital throughput and capacity. The optimization of discharge planning, including early identification of barriers to hospital discharge, prioritizing discharges early in the day, strategies to “smooth” surgical scheduling to account for postoperative hospital bed needs and anticipated ED and hospital volumes, are all necessary to minimize ED waiting room times.

An unexplained finding in the study was, seemingly paradoxically, that as inpatient capacity increased, the number of patients in the waiting room decreased slightly. The authors do not speculate on possible explanations for this phenomenon. Because the study design included multiple EDs in a large healthcare system, hospital capacity and ED waiting room times and volumes might not correlate in a 1:1 fashion. Additionally, it is possible that up to a certain threshold, with available inpatient capacity, the ED including the ED waiting room, can be decanted. Beyond that threshold, and perhaps not revealed in the study, inpatient capacity and the input of hospitalized patients from the ED are mismatched resulting in patients waiting in the ED waiting room.

The results presented by Smalley et al could inform future approaches to throughput at the local (ie, hospital) level and more broadly in systems of care. One practical application would be to use the absolute number of patients waiting in an ED waiting room and the overall ED waiting room times as a measure of the hospital’s overall capacity and throughput. Currently, “door to doctor” times and other

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similar metrics provide approximate measures of ED throughput. What these types of ED throughput metrics tell us about hospital capacity and throughput are less clear. Using Smalley et al's findings, hospitals might use ED waiting rooms as a barometer of overall hospital throughput and capacity, although the other factors affecting ED waiting room times (eg, surges in ED patient arrivals and ED volumes) would need to be considered. Further, ED waiting room times and volumes might be used to create predictive models of hospital capacity more generally.

Further research on this topic should quantify and evaluate the association between excess hospital days (and even hours) on inpatient services and ED waiting room volumes and times. Such data could inform broader hospital capacity strategies to reduce variability in hospital capacity, such as smoothing surgical scheduling to match hospital capacity and traditional ED volume curves (eg, Monday and Tuesday volumes in EDs). Additionally, the ED waiting room volume, rather than volume and times of patients boarded in the ED, could become a surrogate for operational efficiency operations across hospitals and health systems.

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