

## Review Article

# Providing Care in Emergency Department Hallways: Demands, Dangers, and Deaths

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Emergency departments (ED) worldwide have experienced dramatic increases in crowding over the past 20 years that now have reached critical levels. One consequence of ED crowding has been the routine use of ED hallways for patient care. This includes ED patients who are awaiting care but are considered unstable to remain in the waiting room, patients who are undergoing active medical and trauma treatment, and patients who have been stabilized but await transfer to an inpatient bed (boarding) or another institution. Compared with licensed hospital or standard ED beds, care in ED hallways results in increased patient morbidity and mortality, as well as patient and staff dissatisfaction. Complications experienced by hallway patients include unrecognized sudden respiratory arrest or unstable cardiac arrhythmias, delay in time-sensitive procedures and laboratory testing, delay in receiving important medications, excessive or unrelieved pain, overall increased length of stay, increased disability, and exposure to traumatic psychological events. While much has been published on the general problems of ED crowding, only recently have studies focused exclusively on the issues of providing care in ED hallways. This review summarizes the current issues, challenges, and solutions for hallway care.

## 1. Introduction

Prior to the 1990s providing care in emergency department (ED) hallways was uncommon, occurring only periodically for short segments of time [1, 2]. Influx of patients generally matched a corresponding outflow, either by discharge home or admission to inpatient units. In some EDs, empty beds were reserved to ensure adequate surge capacity for a sudden influx of patients. In the 1990s, crowding first became a concern in inner city and teaching hospital EDs [3, 4]. Over the next decade the majority of suburban and rural EDs would also experience crowded conditions [5, 6].

As crowding increased, the inflow of patients exceeded outflow for extended hours each day, resulting in the need to place patients somewhere [7]. For a growing number of EDs the solution was to move both stable and semistable patients from licensed ED beds into adjacent ED hallways, thus freeing up the official ED bed for another patient [8]. In these

circumstances ED physicians face a difficult challenge. They must provide care to patients in the hallway with suboptimal nursing support and lack of privacy, which precludes a full history and physical examination. Patients may not be able to be fully monitored. Returning new patients back to the waiting room until a licensed ED bed becomes available poses a similar risk, as there is no way to directly observe or monitor patients. Patient care in ED hallways is fraught with delays and difficulties in laboratory testing, providing medication, supervising intravenous (IV) lines, recording vital signs, monitoring cardiac activity, or responding to deterioration in patient condition. The problem is further compounded when the ED physician has to simultaneously provide care to an excess number of patients in the hallway as well as in licensed ED bed spaces. Additional physicians and nurses are often not available to share the burden. In addition to risk of poor patient outcome, treating physicians are placed at increased risk for malpractice liability, medical

board censure, or poor patient satisfaction survey results, which may adversely impact a physician's career [9].

## 2. Who Gets Placed in ED Hallways and Why?

The type of patient that is placed on a gurney in the ED hallway varies by institution and may vary within the same institution depending on who is in charge during times of crowding. Groups placed in hallways include (1) patients awaiting care but considered too unstable or ill to remain in the waiting room, (2) patients undergoing active medical and trauma care, but no vacant ED bed is available, (3) patients who are being "boarded" while awaiting transfer to an inpatient bed or transfer to another institution, (4) patients who arrive by ambulance but do not require immediate emergency care, and (5) patients awaiting transfer to a psychiatric facility [5, 8, 9]. Some states and nations have laws or rules regulating patient care in the ED, requiring care in a licensed bed [10, 11]. Other regulations forbid patient care out of sight and hearing of nurses and physicians, which is nearly impossible in crowded hallways [12]. We contend that routine care in ED hallways is illegal, unless the local authority licenses the beds, and mandated nursing, physician, and ancillary staffing are provided.

Emergency department hallway care may violate fire department codes [13]. Exceptions can be made only if hospital administration declares a disaster, which is a rare event. Disasters fall into two categories: external and internal. External disasters include airline crashes, shootings, and bombings, as well as chemical, radiation, and industrial accidents. Internal disasters result from situations at which hospital infrastructure is at risk, such as earthquakes, flooding, toxic material leak, loss of power, or hospital crowding (either the ED or inpatient wards). In theory, calling a disaster would provide additional resources so that patients could be moved out of crowded ED hallways. However, most hospitals are not equipped to be in frequent disaster mode, whereas many EDs have crowded hallways every day. Despite this, internal disasters are rarely called for this reason. The authors are personally aware of cases where ED physicians have been discouraged from calling internal disasters during periods of dangerous crowding and have been disciplined for doing so. In some states, the law establishes a standard patient to nurse ratio in the ED to enhance patient safety and prevent work overload to nursing staff [14]. However, these ratios can be circumvented by the use of selective patient designation and hallway care. For example, if 24 patients are in a hallway with only two nurses assigned to the hallway, only 8 might officially be counted as actual ED patients. The remaining 16 could be counted as waiting room patients, for whom the sole provider of nursing care may be the ED physician.

A progressive rise in patients treated in the hallways over years has resulted in the development of *ad hoc* labeling, with letters or numbers on the wall where gurneys are parked [7, 8]. Recently, placement of patients needing transfer to inpatient psychiatric units in other hospitals has become a problem [15]. These patients may lie on gurneys in ED hallways for many days without privacy, readily accessible bathroom facilities, showers or baths, scheduled medications,

and meals. It is difficult to believe this is legal in the modern era. It may appear that government officials, hospital administrators, and licensing agencies are not fully addressing the legal implications of ED boarding. The authors are personally aware of a recent Joint Commission inspection of an ED in the USA. Rather than citing the hospital after walking down hallways crowded with patients in acute discomfort, the inspectors only cited the hospital because an ED refrigerator was set at the wrong temperature. The Joint Commission has recognized the problem of hallway care only recently and in 2014 created a standard that limits boarding of inpatients to no longer than 4 hours [12].

## 3. Does Hallway Care Occur Worldwide?

Care in ED hallways is an international problem. The problem of increasing patient flow into an overburdened system has been described in Asia, the Middle East, Canada, Australia, New Zealand, South America, and Europe [16–23]. The primary reasons for the use of hallways for patients are similar to the United States: (1) work-up of new patients and (2) boarding of patients admitted to inpatient units. Crowded public and teaching hospitals are most severely impacted, whereas use of hallways for ED care is less common in private hospitals. Unlike the USA, where the Emergency Medical Treatment & Labor Act (EMTALA) requires that nearly all hospitals stabilize patients with emergency conditions, most other countries do not have laws mandating ED care be given in private hospitals if patients have no means of paying for their care. Therefore private hospitals may not experience hallway crowding, whereas their public counterparts may be required to evaluate every person who presents to the ED. Public hospitals in parts of Asia and South American have reported that patients may lay on hallway gurneys, unattended for over 24 hours. Some countries have adapted policies in an attempt to limit hallway crowding. For example, in England, a new policy was introduced in the early 2000s mandating patient admission or discharge home within 4 hours of patient presentation to the ED [24].

## 4. Poor Outcomes from Hallway Care

The growing list of published studies unanimously concludes that the quality of ED care decreases as crowding increases, in part from hallway care. Medical malpractice actions have occurred as a result of patients receiving care in hallways [9]. There are several studies on the outcome of boarding admitted inpatients in EDs [25–32]. While ED boarding is not synonymous with hallway care, boarded patients in many hospitals spend a significant portion of their total time residing in hallways. Negative effects include death, preventable disability, prolonged hospital stays, discomfort, and dissatisfaction by both patients and staff [33–36]. The reasons are multifactorial. As noted above, absence of consistent monitoring is an important etiology. Patients who suddenly become unstable may be not recognized until it is too late. Patients have been found apneic, unconscious, or in shock laying unmonitored on hallway gurneys [37].

Nursing care is fragmented and inconsistent. In fact patients may linger in hallways without an assigned nurse to monitor and provide care [38–40]. Intravenous lines run dry or may become disconnected, risking air embolus. Delays or errors may occur in delivery of medications [41–44]. Pain is inadequately treated [45, 46]. Patient “mix-ups” may occur when nursing and transportation staff is unfamiliar with the mapping of the hallway gurney spaces. Family members may not be able to visit patients due to space constraints. Coordination of care and communication is difficult in an ED hallway between ED physicians, physician assistants and nurse practitioners, admitting and consulting physicians, nurses, social workers, and family members. Patients awaiting placement in inpatient psychiatric facilities may have their problems compounded by exposure, lack of privacy, food, and bathroom facilities for days before being removed from hallway gurneys [47]. The electronic medical record (EMR) may make matters worse for hallway patients, as they may appear in separate, hidden screens and may be moved to different locations frequently. The authors are personally aware of cases where these patients have been erroneously discharged, reported as “left without being seen,” or “eloped” from the EMR. Delays in initiating admission treatment orders may result from software systems that do not recognize that patients are boarded in the hallway.

Morbidity and mortality as a result of hallway care may be underreported. Although these events are reviewed by ED continuous quality and performance improvement committees, physicians may be discouraged from publishing the data because it will reflect negatively on the institution. This is especially true in nonuniversity hospitals, where academic freedom is not guaranteed. Delays resulting from ED hallway care leading to patient death have been reported [25–32]. The lay press periodically publishes anecdotes of deaths that occur in ED areas not designated for actual patient care [48, 49]. The authors believe that the public is not fully aware of the morbidity and mortality that result from hallway care.

## 5. Solutions to Hallway Care

The obvious solution to reducing and eventually ending the practice of hallway care is to solve the overall ED crowding problem. Several professional societies including Society of Academic Emergency Medicine (SAEM), American College of Emergency Physicians (ACEP), American Academy of Emergency Physicians (AAEM), Emergency Nurses Association (ENA), College of Emergency Medicine (CEM), Australasian College of Emergency Medicine (ACEM), Canadian Association of Emergency Physicians (CAEP), and the Institute of Medicine (IOM) have published proposals to reduce or end ED crowding [50–57]. The prospect of reducing ED crowding in the near future may be elusive, as many EDs have made major attempts for the past two decades with minimal or no improvement [58, 59]. Simply building a larger ED to increase capacitance may not solve the problem, as the chief reason for overcrowding is “exit block,” or the impaired ability to move patients out of the ED [60, 61]. However, a focused approach to solve hallway crowding has been adapted by leading hospitals [62, 63]. Emergency and

inpatient physicians at the Stony Brook University Hospital in New York collaborated and developed a program whereby admitted hallway patients are transferred out of the ED to inpatient hallways [64]. Patients receive more attention in a quieter and more private environment. This transfer of patient care has been shown to be safe, and patients prefer being boarded in inpatient hallways [65–67]. Nurses prefer it as well. In a survey of both ED and inpatient nurses on the concept, inpatient nurses stated their preference that patients remained in the ED, but when asked if they themselves were the patient, they indicated the preference to be boarded in an inpatient hallway [68]. Emergency department nurses preferred inpatient hallway boarding for patients and themselves if they were patients.

Other approaches to reducing the hallway problem have been more problematic. A common practice in some EDs has been to assign two patients into a single licensed ED bed space or exam room. These patients are then more immediately visible to ED staff and hence better monitored. But this is not a long-term solution, as “doubled up” patients still face privacy issues, physical crowding, infection cross-contamination, and compromises in care from understaffing. Additional solutions include adding more nursing and ancillary staff, streamlining the triage process, transferring patients to flexible areas of the hospital such as annexes, postanesthesia recovery units, or closed wards, or developing a limited “internal disaster” protocol [69, 70]. The University of Southern California Medical Center in Los Angeles provides an example of a hospital that has developed a limited disaster protocol and surge plan [71]. Other solutions include posting waiting times for EDs online, allowing patients to check in online and wait at home for a telephone call or text message when an ED space is available, or to alert patients that hospital beds are filled and that boarding will be likely at the hospital, thus allowing them to choose to be seen elsewhere [72, 73].

Hospital leadership administrators have the system-wide power to make the changes necessary to decrease the clinical use of ED hallways. However, the response by hospital administration to ED hallway care varies widely by institution. Lack of available inpatient beds is the most common cause of ED crowding and patient boarding. Efficient and timely discharge of inpatients through the use of dedicated discharge suites, rapid postdischarge room cleaning, and cooperation of inpatient nurses to receive a new patient from the ED can only be achieved by hospital leadership mandate. Unfortunately many non-ED staff within the hospital believes the problem should remain in the ED. Some hospital administrators insist that care in ED hallways be provided but fail to provide logistical support needed to accomplish this task. Some ED staffing groups also incentivize ED physicians to evaluate patients in unlicensed areas by emphasizing metrics such as patients seen per hour. Physicians working for such groups may be censured or terminated for voicing opposition. These staffing groups must be educated to understand that better care for patients is also better for the group and institution.

There are several publications regarding loss of hospital revenue from ED crowding [74–78]. Further studies are needed to show hospital leadership that revenue declines with ED hallway care and boarding because patient throughput

is adversely impacted, liability and malpractice exposure increases, and cases of preventable patient deaths rise. Dissatisfied patients may seek treatment at another hospital in the future and may share their negative experience with others, often through social media. The deleterious impact of ED hallway care on hospital revenue and patient safety may be the key factors to ultimately change the current philosophy, as there currently appears to be insufficient incentive to change. When a problem becomes “personal” and affects those in government, the press, or hospital administration, this incentive may accelerate in urgency [79]. Past examples of this are the development of Advanced Trauma Life Support (ATLS) and standardized trauma care and restrictions on resident working hours from the Libby Zion case [80, 81]. Proposed solutions which have been previously published can be summarized as follows.

*Specific Solutions for Emergency Department (ED) Crowding, Patient Boarding, and Hallway Care*

*Emergency Department*

- (i) Improved triage efficiency and speed.
- (ii) Bedside registration.
- (iii) Increased nursing and technician staff during high-volume periods.
- (iv) Increased physician coverage during high-volume periods.
- (v) Expansion of ED space and number of beds.
- (vi) Expansion of fast track, mid-track, and urgent care services.
- (vii) Use of chairs instead of beds for patients who can sit to maximize space.
- (viii) Observation unit for short-stay ED patients.
- (ix) Physician-in-triage for rapid disposition.
- (x) Selective imaging and laboratory testing performed in waiting room.
- (xi) Triage of patients to nearby clinic after medical screening exam.
- (xii) ED flow coordinator.
- (xiii) Faster radiology and laboratory services, point-of-care testing.
- (xiv) Faster consultant response time, admission orders.
- (xv) More efficient and faster discharge process of ED patients.
- (xvi) “Holding orders” written by emergency physicians when inpatient bed is available.
- (xvii) Noncritical imaging and laboratory testing deferred to inpatient or clinic setting.
- (xviii) Ambulance diversion during times of ED crowding if possible.
- (xix) Online scheduling of ambulatory ED visits.

- (xx) Real-time status of ED waiting times broadcast in waiting room.
- (xxi) “Internal disaster” or similar *ad hoc* temporary crowding protocols.
- (xxii) Telemedicine consults for potential ED-to-ED transfers.
- (xxiii) Transfer of boarded patients to another hospital with available inpatient beds.

*Inpatient*

- (i) Streamlined discharge process of inpatients.
- (ii) Creation of a “discharge suite” for inpatients awaiting discharge.
- (iii) Faster postdischarge inpatient room cleaning.
- (iv) Inpatient hallway boarding.
- (v) Use of ancillary space (recovery rooms, storage space, etc.) for inpatients.
- (vi) Increased inpatient nursing staff during periods of ED crowding.
- (vii) Cancellation of elective, nonurgent surgeries when hospital is full.
- (viii) Inpatient flow coordinator.
- (ix) Inpatient full capacity protocols.

*Nationwide*

- (i) Improved access to primary care.
- (ii) Increased number of primary care practitioners and clinics.
- (iii) Extended hours and weekend availability for primary care clinics.
- (iv) Increased reimbursement and salaries for primary care practitioners.
- (v) Tuition assistance and loan forgiveness for students entering primary care.
- (vi) Improved access to mental health facilities.
- (vii) Increased number of mental health facilities and practitioners.
- (viii) Increased reimbursement for mental health care.
- (ix) Increased paramedic on-scene triage responsibility to prevent unnecessary transport.

## 6. Conclusion

Patients should not be routinely evaluated and treated in ED hallways where care is inferior. Hallway care has resulted in ED patient deaths and other poor outcomes. Options exist to eliminate ED hallway care and boarding but require initiative and support from hospital leadership to work collaboratively with nurses, physicians, and other healthcare providers. Such options should be aggressively pursued at all levels of the hospital.

## Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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