

# Reducing Emergency Department Crowding: Evidence Based Strategies

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**Abstract.** Emergency department (ED) crowding has become a major barrier to receiving timely care. King Faisal Specialist Hospital & Research Center, Saudi Arabia worked on identifying evidence based strategies for reducing the ED crowding by improving the intake. In addition to a review of literature, qualitative survey methods were used to identify strategies, which were classified into 10 suggested procedures categorized into three types of changes. Physical improvements include using physician cubicles, creating a team triage area and an internal waiting area for less acute patients instead of occupying beds. Technology improvements; include using informatics to update the electronic emergency record with information, using palmar scanning to instantly identify patients and using radio communication devices. Process improvements; include a scribe program to decrease clerical documentation tasks, switching between low flow and high flow processes, placing a physician in triage and using patient segmentation methods.

**Keywords.** Emergency Department, Reducing Crowding, Strategies, Hospitals.

## Introduction

Emergency department (ED) crowding has become a major barrier to receiving timely emergency care. Patients who present to EDs often face long waiting times to be treated and, for those who require admission, even longer wait for a hospital bed. One conceptual model partitions ED crowding into three interdependent components: input, throughput, and output [1]. Input factors reflect sources and aspects of patient inflow, throughput factors reflect bottlenecks and slow processes within the ED and output factors reflect bottlenecks in other parts of the health care system, such as availability of hospital inpatient beds [2]. Input factors are variable. Non-urgent visits, the frequent flyer patients and seasons of some infectious diseases might increase crowding [3]. The closure of other hospitals and ambulance diversion due to acute or complicated cases also can increase crowding. Recently discharged inpatients might not represent a huge percentage of ED visits but when they come to ED they usually have longer ED lengths of stay and more frequent hospital admissions than other patients [4]. Inadequate staffing and shortage of treatment areas are commonly studied throughput factors. Lower staffing levels of physicians and triage nurses predisposed patients to wait longer for care [5]. The training background of the attending physicians has been associated with patients leaving without being seen. The use and/or delays of the ancillary services, including lab, radiology and other procedures, usually prolong the

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ED length of stay [6]. Inpatient boarding and hospital bed shortage are critical output factors. The increasing hospital occupancy rates and bed shortage are strongly correlated with increased ED waiting time, ED occupancy level and ED patients' length of stay especially when the hospital occupancy levels exceeded 90% [7]. The effects of ED crowding can be classified into four main categories; adverse outcomes, reduced quality, impaired access, and provider losses [8].

## **1. Methodology**

At King Faisal Specialist Hospital and Research Center, Jeddah, Saudi Arabia, Medical and Clinical Affairs in cooperation with Emergency Department worked on identifying best evidence based strategies for reducing the ED crowding by improving the intake. A careful review of literature was conducted to identify the main areas of challenge, best strategies that helped other organizations reducing their ED crowding through improving and/or reducing patient intake. A qualitative survey method was also used over six months' duration, January to June 2015, to collect opinions, experiences and suggestions from both emergency and healthcare management professionals through an electronic website portal and semi-structured interviews.

## **2. Results**

The review of literature included classifying and sorting findings and interventions suggested in 58 published studies. The qualitative survey included interviewing 18 ER physicians and 2 hospital managers, whose suggestions were also classified and sorted into specific tasks. The results of the two approaches were combined, validated against each other and classified into 10 specific procedures categorized into physical, technology and process changes. Three categories of areas exist among the solutions of crowding; either to increase resources, to manage demand and/or to conduct operations research. Increased resources reflect the deployment of additional physical, personnel, and supporting resources, which can reduce waiting time in ED and decrease the rate of patients leaving without being seen. Adding a short-stay medical unit can reduce the length of stay. This is feasible only when hospitals have larger budgets and flexible recruitment policies. One study increased both space and staffing while another study reduced potential bottleneck of ancillary services by implementing point-of-care laboratory testing, which decreased the length of stay, this is more suitable for smaller or limited budget hospitals [9]. Demand management reflects methods to redistribute patients or encourage appropriate utilization. Some studies tested non urgent referrals: A survey found that 38% of ED patients would exchange their ED visit for an outpatient appointment within 72 hours. Other studies focused on common symptoms with low acuity levels and recommended that they could be deferred for next day primary care or sent to be treated elsewhere without condition worsening, these approaches can solve problems of highly crowded EDs and low acuity patients especially when accessibility to primary care is impaired[10]. Operations research do not describe direct solutions to ED crowding; however, they can improve business intelligence through better analysis and management of patient flow, which could be of value for research based healthcare organizations, such university hospitals [11].

### **3. Discussion and Conclusion**

#### *3.1. Physical Improvement*

Using physician cubicles is one inexpensive physical change that can allow ED patients to be seen early by a physician. A large percentage of patients should be discharged from these cubicles allowing more beds to become vacant and available in the ED which can significantly reduce crowding and decrease number of patients left without being seen, in addition to reducing the number of needed support nurses [12]. Creating a triage pod area by using simple room dividers, and using team triage and assessment of patients is an effective method that could speed up the intake process. The main objective is to move patients into their appropriate areas, waiting room, the main ED, or into a monitored higher acuity ED bed, in a shorter time. The rate of patients left without being seen should also decrease [13]. One of the very important strategies is to create an internal waiting area or a post-screening room, where less acute patients can wait and remain vertical, seated instead of occupying bed space, while awaiting test results. This change is suggested to decrease ED crowding, decrease patients' length of stay and rate of patients leaving without being seen [11].

#### *3.2. Technology Improvement*

Using technology, an informatics tool can be developed to immediately update the fields of the emergency electronic health record in the triage note. For example, medications, allergies, and past medical history should automatically be moved forward to the current emergency health record if a patient has ever been in the system before. This tool should shorten intake time and improve provider satisfaction [14]. Using palmar scanning can streamline the intake process by creating an instant biomedical identification of patients. This method should allow treatment to begin early and ensure that a patient is associated with the right medical record number. This method can also help identifying unconscious or altered mental status patients. Door to doctor time should be minimized [15]. The use of a radio communication device can improve processes at intake. Many hospitals use radios to call a physician to triage to assess patients and begin the work-up. Facilitated by inexpensive radio communication, the rate of patients leaving without being seen can be reduced [16].

#### *3.3. Process Improvement*

A suggested scribe program can help a lot in decreasing the load of clerical and documentation tasks on the healthcare team in the ED. This can also help throughput facilitating data collection and freeing up nurses and physicians for other tasks. Door to doctor time should be improved as well as patient and physician satisfaction rates [17]. The intake process of the ED should vary with the volume of arriving patients. When the ED is not crowded, we should follow immediate bedding of patients while the process, when the ED is approaching to the full capacity, should shift to a processing area with a team using protocol guided treatment plans to begin the work-up as early as possible [15, 18]. The most frequently experimented innovation in the ED is the placement of a physician at the front end of the ED visit; just in the triage area. A physician in triage can make an initial rapid medical assessment of each patient, a process that takes a few minutes but can have a major effect on the number and acuity

levels of patients who would go through the whole ED service. Many hospitals implemented a fast track for managing less acute cases, reducing door to physician time and improving bed utilization [12]. Patient streaming can be implemented through a quick look on patients followed by patient segmentation. Low acuity patients are not bedded, but rather treated in a clinic setting. High acuity patients are seen in a more detailed manner [19].

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