
Overcrowding: The Need for Taskforce in Hospital Emergency Departments

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Abstract

Emergency departments (ED) of hospitals are the most crucial wing especially in life threatening situations. Despite such significant role been played by ED's, it is faced with several challenges which include overcrowding. ED overcrowding refers to situation whereby patients spend more than an hour to receive emergency health care services which might have resulted from overcrowding, lack of facilities or even skilled manpower resources. The causes of ED overcrowding include input, throughput and output factors. Other factors considered in this paper are triage inefficiency and non-urgent patients. Overcrowding adversely affect the smooth running of ED and result to serious public health issues. Solutions to ED overcrowding include increasing resources, management of urgent referral and robust health administration. The paper concluded that overcrowding results from both internal and external factors in health care facilities such as insufficient human and material resources. It is recommended that ED capacity requirements be determined by flexible modeling

Keywords: *Emergency Department, Overcrowding, Taskforce.*

1.0 Introduction

Accidents and sudden acute illnesses happen at any time and people may require urgent health care. Many at times make first contact of health service through accessed to the emergency department (ED) of a distant or nearby hospital. Unfortunately, many EDs around the world are seemed to be overcrowded on a daily basis. EDs provide fast appropriate responses to disasters of any kind in life threatening situations and are available at any hour of the day, every day of the year (Trzeciak, 2003). In addition, ED helps ensure that basic health care is available to anyone regardless of their ability to pay. EDs strive to provide timely care to all patients in respect of why they are seeking care. Therefore, the role of the ED is crucial in public health issues. Any threat to the ED ability to provide quality emergency care constitutes a serious public health crisis. ED's most challenging issue is overcrowding amongst others. The issue of ED overcrowding is however a global phenomenon that has drawn international attention. This write up attempts to expose the threats associated with overcrowding in EDs and perhaps with it contribute greatly in providing urgent solution in EDs (Trzeciak, 2003).

1.1 Concept of Overcrowding

The lack of consensus for definitions of ED overcrowding has been a challenge among researchers, clinicians, administrators, and policy makers. There is no universally accepted definition of overcrowding. According to Trzeciak and Rivers (2003), ED overcrowding refers to an extreme excess of patients in the treatment areas. Overcrowding has been defined by the US national survey of ED directors as waiting more than 1 hour to see a physician, a wait considered likely to result in adverse outcomes (Lambe et-al, 2003). Canadian Triage and Acuity Scale viewed overcrowding as “Access to Emergency Care” which means is expected to provide access to appropriate assessment and treatment within time frames specified (Ottawa, 2005). Overcrowding is access block which signifies proportion of ED patients requiring admission whose total time within the ED exceeds 8 hours (Sprivulis, 2006). American College of Emergency Physicians (ACEP) Crowding Resources Taskforce (2002) defined Emergency overcrowding as when there are more patients requiring acute care than there are available staff or treatment beds; when wait times exceed a reasonable period; when patients are monitored in the hallways; and when patients are forced to wait for treatment space or inpatient beds (Banerjea & Carter, 2006). Therefore, overcrowding in emergency department viewed as waiting for more than 1 hour to access health care services which might have resulted due to influx of patients, lack of manpower and treatment spaces.

2.1 Causes of Overcrowding in Emergency Departments

ED overcrowding is a complex issue and no single factor can explain its occurrences. Multiple factors contribute to ED overcrowding and the relative contribution of each factor varies within ED of health care facilities. Overcrowding differs in urban and rural settings; as well as between country and private hospitals. Chinonyelum *et-al* (2017) found that severe cases managed in ED (76.7%), patients stay about 80% longer than expected in the ED, lack of space (76.7%), lack of ED equipment e.g. stretchers (73.3%), insufficient beds in the ED (66.7%), heavy patient inflow and the hospital policy of not rejecting patients, and patients' delay in accomplishing their laboratory investigations as triggers of ED overcrowding. Derlet RW & Richards (2000) viewed causes of ED overcrowding as: input factors, throughput factors, and output factors;

- i. Input factors reflect aspects of patient inflow which includes: patient volume, age, sex, acuity of illness, non-urgent cases versus high acuity cases, mode of arrival in the ED amongst others.
- ii. Throughput factor refers to problems occurring within EDs that contribute to overcrowding and include especially those influencing efficiency of assessment and treatment; such as triage, registration process, laboratory and x-ray investigations, shortage of doctors and nurses, presence or absence of fast track processes in low acuity cases etc.
- iii. Output factors reflect bottlenecks in other parts of the hospital that might affect the ED or refers to obstacles to flow through the ED. They include: inpatient boarding and hospital bed shortage resulting in critically ill and injured patients who require admission staying longer in the emergency department until hospital beds become available (Mohsin *et-al*, 2007). Other output factors include: hospital status and size of ED (static factor), sudden surges presentation in life threatening situations or natural disasters (dynamic factors) and time of the visit (contextual factors).

Other factors considered in causing overcrowding of emergency departments are further grouped as

2.1.1 Non-urgent patient in ED

Non-urgent patients not requiring emergency attention have been reported to cause

overcrowding in ED's. Schull, Kiss & Szalai (2007) studied the effect of low-complexity patients on ED waiting times, aimed to test the extent to which patients presenting to EDs with minor conditions contribute to delays in treatment of the higher-acuity patients. The study concluded that: low-complexity patients are associated with an increase in ED wait time for other patients with serious cases. However, reducing the number of low-complexity patients reduces wait time for other patient and lessens overcrowding.

2.1.2 Triage Inefficiency

Triage is the process of sorting patients into different priorities based on the severity of illness or injury. In this process, the sick patients receive treatment sooner than less sick patients, rather than using a first-come first-serve system (Gottschalk *et-al*, 2006). In Australia, the main tool used is the Australian Triage Score (ATS). It is a system based on a long list of patient conditions classified on a **scale of 1 to 5** (Gottschalk *et-al*, 2006). In Canada, the Canadian Triage and Acuity Scale (CTAS) with goals of time to physician initial assessment as follow: **CTAS I:** Resuscitation immediate; **CTAS II:** Emergent 15 minute; **CTAS III:** Urgent 30 minutes (time to physician assessment); **CTAS IV:** Less-Urgent 60 minutes, **CTAS V:** Non-Urgent 120 minute. Literature has shown that triage reduces the overall waiting time for all patients (Chan *et-al*, 2005).

3.1 Effects of ED Overcrowding

General effects of ED overcrowding are considered below:

3.1.1 Adverse Outcome: Patient Mortality

ED's overcrowding is associated with decrease in quality and effectiveness of health care services which results in significant increase in mortality rate. Richardson (2006) reported that presentation during high ED occupancy was associated with increased in-hospital mortality at 10 days. Sprivulis *et al.* (2006) examined the relationship between hospital and emergency department occupancy as indicators of hospital overcrowding and mortality after emergency admission. It was found that there is increased risk of mortality at day 2, 7 and 30 after hospital admission. It was concluded that Hospital and ED overcrowding is associated with increased mortality.

3.1.2 Treatment delays

ED overcrowding is associated with patient's treatment delay. Hwang *et al.* (2006) studied the effect of emergency department overcrowding on the management of pain in older adults with hip fracture. They found that high ED occupancy levels were associated with delayed pain assessment and lower likelihood of pain documentation among hip fracture patients (Hwang *et-al*, 2006). In addition, Chinonyelum *et-al* (2017) identified three most outstanding influence of overcrowding including increased nurse workload (RII=0.880; R=1), strain in nurse and patients' relations relationship (RII=0.75= 2.0) and long patient wait (RII=0.747; R=3.0).

3.1.3 Patient Elopement

ED overcrowding has been associated with patients leaving without being seen (Patient Elopement). Mohsin *et al.* (2007) described the population of EDs' patients who left without being seen by a medical officer to investigate the circumstances of their visit and to ascertain whether they subsequently receive alternative medical care. Results showed that young patients aged 0–29 years and those with longer waiting time for triage and triaged as “less urgent” were more likely to walk out than others. Prolonged waiting time was the most common reason for leaving emergency departments without being seen by a doctor (Mohsin

et-al, 2007). Rowe et al. (2006) determined the acuity level, reasons, and outcomes of leaving without being seen cases. It was found that the most common reason for leaving without being seen is impatience during peak ED periods. Complications occurred rarely however, high-risk patients who leave without being seen do experience adverse health outcomes (Rowe et al., 2006).

3.1.4 Patient Dissatisfaction

Patient satisfaction has been increasingly used as a measure of outcome for health care system performance. ED patient satisfaction is not a completely understood concept, as service providers may find themselves carrying out activities to enhance clients' satisfaction without fully knowing whether that activity does improve satisfaction (Toma, Triner & McNutt, 2009). When delivering services in ED, quality should not just be restricted to clinical aspects of care but should include the entire patient experience. It is true that in ED people cannot be pleased all the times but it is possible to investigate measures that will please more of the patients most of the time in ED (Taylor & Bengner, 2004). Sun *et al.*, (2000) in Boston, USA, conducted a study to identify emergency department process of care measures that are significantly associated with satisfaction and willingness to return. In their results, patient reported problems that were highly correlated with satisfaction to include: help not received when needed, poor explanation of causes of problem, not told about potential wait time, not told when to resume normal activities, poor explanation of test results, and not told when to return to the ED (Sun *et al*, 2000). Effects reported include: patient suffering, poor quality of care, contribution to infectious disease outbreaks, violence aimed at hospital staff and physicians, decreased physician and nursing productivity, deteriorating levels of the services, increased risk of medical error, negative work environments, negative effects on teaching and research (Thompson *et-al* 1996).

4.1 Solutions to overcrowding In ED

Several strategies have been employed in an attempt to provide lastly solutions to ED overcrowding such as increasing resources, demand management and overcrowding measures. Interventions can also be grouped into input, throughput and output. The strongest evidence comes from throughput solutions.

4.1.1 Increasing Resources

A permanent increase in the number of physician during busy shift can reduce the outpatient length of stay. An area which previously did not have an attending physician present during the night shift when empowered with such it is found that the presence of such attendant improves several throughput measures of ED overcrowding (Derlet & Richards, 2008). Similarly, activation of reserve health care personnel as needed during the viral epidemic season reduces the waiting time by 15 minutes and the rate of patients leaving without being seen by 37% (Shaw & Lavelle, 1998). Short stays units in emergency department have also been used as an increasing resource strategy. Hospital beds access have also been used as strategy to decrease overcrowding. Dunn (2003) reported that modest decreases in hospital occupancy resulted in highly significant reductions in ED waiting times (Dunn, 2003).

4.1.2 Demand Management: Especially Management of Non Urgent Referrals

Derlet et al., (1992) conducted a study to describe the characteristics of individuals who were referred to community based services, their condition after 72 hours, and their use of follow-up health care services. The study was motivated from observations that there were large numbers of patients seeking primary care for non-emergent conditions in emergency departments. In response, a system was implemented in which persons with non-emergent

medical conditions following a medical screening examination did not receive further ED assessment or treatment and instead were referred to community resources. When following up non-urgent patients who were triaged to receive care elsewhere they found that there were no major adverse outcomes and 42% of the patients received same day care elsewhere (Derlet et-al, 1992).

4.1.3 Overcrowding Measures

Multidimensional administrative interventions have been used as strategy to solve problem of ED overcrowding. Cameron, et al., (2002) suggested for management of access block a broad intervention consisting of actions that reduced ED length of stay and ambulance diversion in Melbourne (Cameron, Scown & Campbell, 2002). Derlet and Richards (2008) presented 10 putative solutions on actions in their institution to counter the problem. They are: expanding hospital capacity; stopping to regulate hospitals to the extreme; providing care only to patients with emergencies; providing alternatives for primary care of the uninsured; stopping to board admitted patients in the ED; using evidence-based guidelines to address imaging over utilization; change admitting patterns; expanding the role of ancillary ED staff and hallway care; calling the nurse first; preventing disease and injury (Derlet RW & Richards, 2000). In fact, most of the solutions for reducing patient's time in ED seemed to be beyond the emergency department. The primary problem is lack of acutely available beds. Queuing for bed is managed by bed allocation which tends to stratify patients by their nursing load with the least intensive cases generally having the shortest queues. Elementary queuing theory predicts the accumulation of patients but the daily variation in emergency medical activities cannot allow the emergency staff to predict what is going to happen (Cameron, Scown & Campbell, 2002).

Rauf et al., (2008) conducted a quality improvement (QI) cycle that reduced waiting times at Tshwane District Hospital Emergency Department in Pretoria. The QI cycles identified some problems causing prolonged waiting times in Tshwane District Hospital Emergency Department. The following aspects of the plan were carried out successfully: functional triage system, improved referral system, availability of reference books and speaker phone, easy availability of stock, reorganizing the duty roster and academic programme notification of waiting time and nurses carrying out minor procedures (Rauf, 2008).

4.2 Input Solutions

Reducing inputs into EDs is largely beyond the control of ED staff and managers. Once patients have arrived at an ED, they are entitled to an assessment by an ED clinician. It is inappropriate and unsafe to send patients away without an assessment. It is also inappropriate for non-clinical and non-ED staff to 'gate keep' access. EDs and acute hospitals have a responsibility to assist the ambulance service by ensuring that the turnaround time for ambulance patients is as short as possible. There is a period of time where responsibility for the care of the patient needs to be shared between the ambulance service and the clinical staff working in the ED. Higginson (2012) If a patient cannot be offloaded from an ambulance because the ED is crowded within an acceptable time frame usually 15 minutes then the patient should be registered with that ED and an incident form should be completed.

4.3 Throughput Solutions

Processes within EDs can be reviewed to reduce admissions and improve time to key decisions. The key principles of interventions here are two: front load of key investigations and early decision making by a senior doctor. Rapid Assessment and Treatment by a senior ED clinician is helpful to achieve this (Castille & Cooke, 2003). Streaming where patients are

treated in areas by clinicians allocated to that area improves throughput for ambulatory patients but does not help overcrowding (Castille & Cooke, 2003). Non-medical staff can facilitate early investigation, such as radiography and relevant blood investigations and this reduces time to make decision.

‘Chair-centric’ pathways where patients with low acuity conditions wait in the waiting room rather than in cubicles are recommended. Sending patients home to await investigation results which are expected to be normal is useful if the patient is easily able to return to the hospital. If a result is abnormal and there are procedures in place to ensure the results of investigations are reviewed if the patient has left the ED. Ambulatory care pathways for predetermined low acuity conditions. Increasing physical space alone in the emergency department is unhelpful unless this is supported by increased capacity within the hospital or more efficient processes in the ED (Derlet & Richards, 2003).

4.4 Anticipating Demand

Bed managers should ensure that there is adequate capacity to meet anticipated demand for non-elective admissions. The use of discharge lounges where discharged patients can wait for transport thereby freeing up an inpatient bed. The modal time of discharge from inpatient wards should be regularly monitored. The modal discharge time should match anticipated need for beds.

4.5 Boarding

Patients who are known to need admission but who do not have a bed are known as “boarders”. Sending patients towards where they will be admitted before a bed is available a practice known as ‘boarding’. Ideally, there should be a time limited policy to allow a hospital to organize its inpatient discharge process more effectively. Each additional patient that attends a crowded ED will cause an incremental decline in efficiency. Boarding all of the patients in one place means that the emergency department is having the maximal decline. This leads to a point where it generates significant risk or actual harm. The harm of having unassisted patients in ambulances is greater than the harm of boarding patients who have been assessed by a Doctor on their destination ward. Boarding should not be routine activity, but should be in response to exceptional pressures (Viccellio, 2009).

4.6 Escalation policy

- a. There should be a hospital wide escalation policy for when an ED becomes overcrowded.
- b. Criteria for escalation should be determined locally.
- c. An escalation policy should involve all specialties with responsibilities for acute care. This should involve calling in relevant staff, creating contingency areas and facilitating discharges.
- d. ED senior clinicians should have pre-agreed admitting rights to inpatient wards.

Conclusion

Overcrowding in ED has become a public a growing public health problems commonly around the world, as a result of both internal and external factors in health facilities, such as insufficient human and material resources. Overcrowding mostly lead to length of stay and patient dissatisfaction in ED this will increase morbidity and mortality in the society.

Recommendations

- i. Management is urged to separate casualty and outpatient department make to avoid

- unnecessary crowding of treatment area for those who really need urgent care.
- ii. Provide adequate number of nurses and doctors especially at peak hours and ensure enough clerks at registration desk during peak hours when greater number of patient is in the ED, mainly early morning at the beginning of shift,
- iii. Update courses and workshops on triage to be regularly offered.
- iv. A procedure room is needed. Literature has documented that minor procedures such as intravenous cannulation and minor suturing can be performed by trained nurses.
- v. Regular follow up is needed for all measures implemented to ensure their effectiveness in reducing waiting time in ED since waiting time in Emergency Department is dynamic.
- vi. It is recommended that ED capacity requirements be determined by flexible modeling.

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