

# OVERCROWDING PATIENT AND IMPROVING EMERGENCY PATIENT FLOW IN EMERGENCY DEPARTMENT: A LITERATURE REVIEW

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## ABSTRACT

Overcrowding discussion in emergency department (ED) has become a great issue over decade. The EDs plays a significant role as a frontline in hospital which performing good or bad quality of care. Identifying bottleneck relative to patient flow in the ED is one of important factor to determine the quality of care. The EDs can be considered as the heart of the hospital where increasing number of patient in the ED link to the increasing number of patients in the hospital. Therefore performing delivery of care in the ED particularly when its deal with overcrowding could represent the quality of care in hospital as a whole. The study aimed to explore factors related to overcrowding patient and improving emergency patient flow in emergency department. The study was about a literature review and the articles used in the literature review were full text. The literature review methods were collected and analyzed articles about overcrowding emergency department, emergency department patient flow, the quality of service in emergency room and emergency department performance towards waiting time and length of visit. Articles collected through electronic database, science direct with keywords overcrowding the ED, the ED patient flow, emergency quality services. There were three factors that affect overcrowding patient: prolonged waiting time, triaging, and shortage of doctors and nurses ratio in the ED room. When those three factors are combined, the overcrowding patient in the ED could be handled and it may probably result to improving patient flow. The prolonged waiting time have created delayed of care, patient leaving without being seen/treatment and dissatisfaction among patients. The same idea was presented that triaging somehow invent prolonged time especially for those patients in semi-urgent or non-urgent that need treatment between 61 minutes to 2 hours. Those patients are dominantly in the ED and if the patients do not understand triage system they become short-tempered and complaining. The last one was the number of emergency physician and nurses are being backbone of services, however, if it is still lack of number thus leading to troublesome which may significantly affect to effectiveness of care and patient safety. The findings from the above-cited studies suggested that assign fast track for semi-urgent and non-urgent patient should be treated and discharged promptly and properly. Also, expanding the number of physician and nurse staffs with the ratio 1 and 2 respectively as well as developing standardized job descriptions is mandatory. Moreover, extent inpatient bed capacity specifically to critical care unit and increase number of available room for emergency room admission.

**Keyword:** overcrowding ED, ED patient flow, emergency quality services.

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## INTRODUCTION

### Situation

Overcrowding discussion in emergency department (EDs) has become a great issue over decade (Solberg et al. 2003, Derlet& Richards. 2000). This condition create in term of increasing patient complain due to prolonged waiting time (Bernstein et al. 2009), decreasing productivity of EDs staff (Solberg et al. 2003, Wiler et al. 2010), and reducing quality of patient satisfaction as well as it can produces less healthcare outcomes (Solberg et al. 2003, Miro et al. 2002, Willer et al. 2010).

### Background

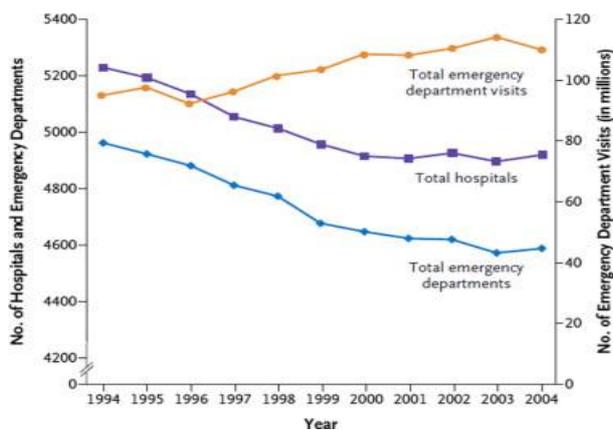
EDs plays a significant role of health services in the hospital (Nash et al. 2007), and so it makes EDs as a front line of the quality of health care. Thereby, performing either good or bad emergency care services could generate the quality of hospital care as a whole. Many researches had done trying to figure it out some bottlenecks that may jeopardize due to overload patient. Some concerns like prolonged patient to waiting time as well as length of visit are essential to measuring patient-centeredness, timeliness, efficiency and safety in emergency care (Gonzales et al. 1997, Horwitz et all. 2010, Bernstein et al. 2008). Similarly, Bernstein et al. (2008) reported that prolonged waiting time may result on delays of care, patient leaving without treatment and it may cause dissatisfaction among patients. Waiting time in the EDs is related to the patient acuity in which study showed that patient in highest priority had experience less of waiting time as comparedto low category which is usually take hours longer (Hu, S.1993, Fernandes& Christenson. 1995, Cook & Sinclair. 1997, Yen &Gorelick. 2007, Cochran & Roche. 2008). Another study done by Muntlin et al. (2006) had found similar results and it revealed that the patients who were placed in non-urgent area was lower satisfaction than those that in emergent and urgent room. The result from the above- cited is also supported by Bernstein et al. (2008) mentioned that the

various causes of overcrowding in the EDs especially waiting time is actually reflected the extent to which hospital overcrowding, limited number of bed which resulted to inadequately patient referral to general ward, number of inpatient beds and resources management as well. These conditions definitely may to result on increasingpatient complaining.

The overcrowding in the EDs also may create frustration among ED's personnel itself including physician and nurses who were directly provided emergency care/services(Solberg et al. 2003). Regarding of workload there is a certain time that was considered multitude comparedto the remaining shifts (Bernstein et al. 2008). As consequences the patient who sought of care at the peak of office hours would havepotential leaving without being seen as well as returning patients to the ED. That would probably occurred as the patientmay have less experience of treatment that rendered to ED, weaknesses due to medical condition, and inadequately of treatment as well as discharged premature (Bernstein et al. 2008). Another similar study showed that due to prolonged waiting time, patient somehow discovered less rational of treatment and care as well as are not being able to satisfy to any informations providing either physicians or nurses (Thompson et al. 1996, Mayer & Zimmermann. 1999 in Muntlin et al. 2006). Accordingly it may also have resulted in reducing productivity and efficiency both of physician and nurses as well (Derlet& Richards. 2000).

The EDs overcrowding happened once the demand of care outweigh the ability to meet emergency services which then causes both doctors and nurses performingun-promptly to serve better care and working under pressure in a sense of time. Those things may result in errors, exposed high risk to poor health outcome and jeopardize to malpractice (Derlet& Richards. 2000). Factors that may contribute to increasing patient volume such as population growth, improving number of uninsured patients and decreased accessibility

of physician due to managed care (Derlet& Richards. 2000). Similar finding showed that over decade patient visiting to EDs had increased significantly by 26% whereas unsurprisingly the number of EDs staffs have decreased by 9% which in the mean time over hundred thousand of beds capacity have been closed (Kellermann. 2006). Those condition lead to inevitable crowd in the ED's, moreover, all factors that mentioned above would probably create on reducing quality of satisfaction among patients due to insufficient ED resources including doctors and nurses.



**Figure 1.** Trends in Emergency Department Visits, Number of Hospitals, and Number of Emergency Departments in the United States, 1994–2004 (Adopted from Kellermann, 2006).

Identifying bottleneck related to patient flow in the EDs is being essential factor to determine the quality of care (Hu, S. 1993). High quality emergency care is defined by the decisions made on each and every patient encounter. The EDs can be considered the heart of the hospital where the number of increasing patient in the EDs exactly linked to the increasing number of patients in the hospital (Yen & Gorelick. 2007). Therefore, the quality of hospital can be measured through the ED's performing in term of delivery of care particularly when its deal with overcrowding due to prolonged waiting time as well as length of stay.

## Method

The articles used in the literature review were full text including sixteen references. The

literature review methods were collected and analyzed articles about overcrowding emergency department, emergency department patient flow, the quality of service in emergency room and emergency department performance towards waiting time and length of visit. Articles collected through electronic database, science direct with keywords overcrowding the ED, the ED patient flow, emergency quality services.

## DISCUSSION

The prolonged waiting time and patient length of stay have been investigated as factor that effect ED diversion. Factor that may contribute to these conditions are the availability of inpatient beds (Horwitz et al. 2010, Kolker. 2008, Yen & Gorelick. 2007). According to Derlet & Richards (2000) and Kellerman (2006) lacking bed for patients admitted to the hospital is a significant factor for EDs overloaded. This happened when the amount of critical care beds are insufficiently that resulted patient to be placed in hallways of emergency room until inpatient bed is available. Hu, S. (1993) in his study found another reason for workload in the EDs was that the types of illnesses, which are medical diseases for those seniors quite often time differ from that of surgical illnesses. The condition explained that for those patients looking for inpatient bed require certain time to hospitalizing. However, Miro et al. (2003) tried to oversee factor related to increasing patients which is time waiting for test result and time disposition. Because of advancing technology, patients admitted in the EDs requiring laboratory test, radiographs and some other tests, however, in some hospital these services particularly backward and this led to delayed patient flow (Derlet & Richards. 2000).

Other reasons which explained workload is about initial assessment or Triage. Triage is the first stage in the EDs, which is performed mostly by register nurses to establish priority of patients based on their acuity (Cook & Sinclair, 1997, Yen & Gorelick. 2007). Triage resulted

patient condition as immediate, emergent, urgent, semi-urgent and non-urgent (Horwitz et al. 2010). Based on those the immediate patient will have treatment in 0 minutes as its life-threatening conditions compared to those that patients in semi-urgent (treat in 61 minutes to 2 hours) or non-urgent (treat in 121 minutes to 24 hours) (Hu, S. 1993, Horwitz et al. 2010). Among those patients, semi-urgent and non-urgent are predominantly in the EDs and for those patients who do not understand the triage system will become short-tempered and complaining due to prolonged waiting time.

Due to increasing patient volume in the EDs, the experienced physician and nurses become a backbone of emergency services, however, if the number of those providers are less than the number of patient visit, will thus leading to troublesome which may significantly deteriorated in association with efficiently and safely patient care (Derlet & Richards. 2000, Miro et al. 2002). Also there is a certain pattern that relates to the peak of services in the EDs, which are 8 AM to noon and 8 PM to midnight. In addition, for those in critical or emergency cases are more complicated in term of time disposition (Hu, S. 1993). The findings from the above-cited studies suggest the need for hospitals to double ED's staff, otherwise the conditions create challenged for those and probably put them in a burden situation. Consequences they have attempted to oversee many patients that may decrease productivity and endanger patient care (Derlet & Richards. 2000).

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## Recommendation

To address improving patient flow in the EDs due to overcrowding patient, it is required to proposed some recommendations below. The recommendation should be started apply in the EDs and its effect on improving patient flow assessed after this period. Following this assessment as well as appropriate modification will be made if it is needed.

- Assign fast track program for semi-urgent and non-urgent patient who can be treated with less of investigation and timely discharged. This should be done immediately.
- Changes performing in emergency room layout in regard to improve patient flow. It should be done within three month later on.
- Immediately improved support from laboratory and radiology services and ensure the availability of staff while the specimen had been sent.
- Expand number of physician and nurse staff with ratio 1 and 2 respectively as well as develop standardized job description immediately.
- Extent inpatient bed capacity especially in critical care unit and increase the number of room available for emergency room admission. This should be done within three months ahead.
- The assessment of performance in the EDs should be evaluated by establishing questionnaires to the patient at the end of six month.

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