How Long can You Stay in Emergency Department (ED)?

Srinivas Samavedam

The emergency department (ED) is a distinct and definitive ecosystem in any hospital. It is the area with one of the highest throughputs of patients. Administrators would probably see an ED as the showroom of the hospital. While emergencies of different specialties have been defined medically, the need to present to an ED differs between patients. Emergency room physicians therefore end up attending to myriad presentations with multiple diagnostic possibilities. Prioritizing these possibilities, triaging their acuity, strategizing immediate plans, and disposing the patient off to appropriate destination become routine activities in the ED. Completing this complex exercise in a time-bound manner is viewed by many, including accreditation bodies, as a measure of quality.

Patients who present to the ED would follow any of three pathways: (i) get admitted to the same hospital, (ii) get transferred to another hospital, and (iii) get discharged from ED. The metrics of time taken for each of these pathways to be completed seem to be different.[1] The door to doctor time is probably the most crucial metric. While door to doctor time and door to decision to admit time reflect the efficiency of the first pathway, door to transfer and door to discharge reflect the efficiency in managing the latter two scenarios. Patients who leave the ED without being seen, owing to long waiting times, are not yet a major problem in Indian Health Care, but are nevertheless a quality metric. In general, the accepted duration of a patient in ED—emergency department length of stay (EDLOS)—is 6 hours.[2] The National Health System of the UK, however, pegs this at 4 hours. A 6 hours wait in ED might be acceptable for a patient being admitted to the wards, but not so for a critically ill patient. Both short-term and long-term survival as well as length of stay in intensive care unit (ICU) as well as the hospital could be influenced by EDLOS. It must, however, be clarified that the very fact that a patient stayed longer in the ED may not adversely affect the outcome. It is probably the attention to the presenting problems during ED stay, which is more likely to influence the final outcome. Most of these data have come from American, Australian, and Canadian healthcare systems where quality metrics are more fastidiously applied to ED processes. Berg et al.[3] assessed the impact of prolonged waiting time on the mortality of patients who were allocated lower triage scores. These patients were scored at 3 on the rapid emergency triage and treatment system[3] (RETTS) and did not warrant hospital admission. This score warrants that a patient who scores 3 has to be attended to within 60 minutes. The authors evaluated this group and attempted to assess their 10-day mortality. The database included more than 700,000 ED visits. This study identified a higher 10-day mortality for the group with a score of 3 (0.16% vs overall mortality of 0.09%), especially if the patients were older and stayed longer than 8 hours in the ED. Flabouris et al.[4] reported the association between EDLOS and outcome among an Australian cohort from Adelaide. They evaluated the outcome among patients admitted to the ward, high dependency, and ICUs.

Department of Critical Care, Virinchi Hospital, Hyderabad, Telangana, India

Corresponding Author: Srinivas Samavedam, Department of Critical Care, Virinchi Hospital, Hyderabad, Telangana, India, Phone: +91 8885543632, e-mail: srinivas3271@gmail.com

This was a retrospective analysis of more than 43,000 ED visits. They measured the hospital outcome as well as hospital and ICU LOS. The EDLOS was predictably shorter for those being considered as ICU patients with 5.2% staying in ED longer than 8 hours. At the end of 8 hours, 32.6% of patients needing ward admission were still in the ED. Those patients who were subsequently admitted to the ward had a higher mortality. The determinants of longer EDLOS among patients requiring ICU care were evaluated among a Canadian cohort by Rose et al.[5] This study used a cutoff of 6 hours and measured it against the 90-day mortality. They used the Canadian Triage and Acuity Scale for assessment in ED. In this analysis, more than 10% of patients needing ICU admission stayed in the ED for longer than 24 hours (vs mean EDLOS >24 hours rate of 2.4%). The intermediate severity group (CTAS 3) stayed longer in ED than the lower and higher severity groups. However, the 90-day mortality among those who stayed longer than 6 hours in ED was no different when compared to those who had shorter EDLOS. Mechanical ventilation, higher comorbidities, and presentation with respiratory and gastrointestinal issues seemed to be associated with longer EDLOS. From an Asian perspective, Kim et al.[6] assessed the risk of in-hospital cardiac arrest (IHCA) in relation to the EDLOS. This was a nationwide study evaluating more than 18 million ED visits. The median EDLOS was 2.5 hours, which is much less than what has been reported in the data quoted earlier. This study noted a higher incidence of IHCA among those who stayed in ED for 3 hours or longer. Similarly, EDLOS was longer among nonsurvivors of IHCA (10.1 vs 4.4 hours among survivors). While most of these studies focused on mortality both in the short term and in the long term, the impact of EDLOS on in-patient LOS (IPLOS) has also been evaluated. Liew et al.[7] examined the association between EDLOS and IPLOS. This retrospective analysis again from Melbourne stratified patients into four categories—EDLOS <4, 4–8, 8–12, and >12 hours. More than 17,000 visits were analyzed, and IPLOS was compared against the state recommended standard. The mean EDLOS was 7.96 hours, and IPLOS was 5.63 days. A "dose-dependent" correlation was identified between the different time categories of EDLOS and

their respective IPLOS. Patients who stay in the ED longer than 4 hours stay 20–50% longer in the hospital. While advanced age, female gender, and presentation to ED after normal working hours were also implicated, EDLOS appears to be the only modifiable determinant of longer IPLOS. The most recently published observational study from Sweden[8] also echoed the conclusions drawn so far. The focus thus far has been on major patient outcomes like survival and LOS. The other aspect to be considered is whether patients who stay longer in ED feel well looked after and are therefore more satisfied. Walsh et al.[9] attempted to determine the effect of EDLOS on patient satisfaction. Their focus was on the satisfaction of the patients with the environment of the ED, evaluated against the EDLOS. Patients who stayed longer in the ED tended to be more dissatisfied, especially if there was no access to natural light and to the family. Shishodia et al.[10] have attempted to compare the correlation between EDLOS and in-hospital mortality at a large private hospital in India. This retrospective study focused on those patients needing ICU admission. The Canadian System of Triage was followed. Close to 40% of the patients were high acuity patients with EDLOS of 0–4 hours for nearly half of them. A dose-dependent higher mortality was observed among those who stayed in ED longer. Advanced age and exit blocks were felt to be responsible for higher mortality.

From the above discussion, it does appear that older patients with higher acuity of illness fare badly when the EDLOS exceeds 8 hours. Lack of ICU beds may be one of the reasons for a longer EDLOS. Since this is not a modifiable factor, the extent of care that can be provided to high acuity ED patients has to be escalated. It may also be understood that patients with intermediate acuity are better off admitted if their EDLOS exceeds 4 hours. In summary, EDLOS is a prime determinant of subsequent course and outcome. The elderly moderate to severely ill patients need to be viewed as very high-risk patients and transferred quickly to appropriate locations preferably within 8 hours.

ORCID

Srinivas Samavedam https://orcid.org/0000-0001-6737-8663

REFERENCES

1. Welch S, Augustine J, Camargo CA Jr, Reese C. Emergency department performance measures and benchmarking summit. Acad Emerg Med 2006;13(10):1074–1080. DOI: 10.1197/j.aem.2006.05.026. PMID: 16946283.
2. Andersson J, Nordgren L, Cheng I, Nilsson U, Kurland L. Long emergency department length of stay: a concept analysis. Int Emerg Nurs 2020;53:100930. ISSN 1755-599X. DOI: 10.1016/j.ienj.2020.100930.
3. Berg LM, Ehrenberg A, Florin J, Östergren J, Discacciati A, Göransson KE. Associations between crowding and ten-day mortality among patients allocated lower triage acuity levels without need of acute hospital care on departure from the emergency department. Ann Emerg Med 2019;74(3):345–356. ISSN 0196-0644. DOI: 10.1016/j.annemergmed.2019.04.012.
4. Flabouris A, Jeyadoss J, Field J, Soulsby T. ED stay and outcome for ward, ICU and HDU patients. Emerg Med Austr 2013;25:46–54. DOI: 10.1111/1742-6723.12021.
5. Rose L, Scales DC, Atzem C, Burns KEA, Gray S, Doing C, et al. Emergency Department Length of Stay for Critical Care Admissions. A population-based study 2016. Ann Am Thorac Soc 2016;13(8):1324–1332. DOI: 10.1513/AnnalsATS.201511.
6. Kim JS, Seo DW, Kim YJ, Jeong J, Kang H, Han KS, et al. Prolonged length of stay in the emergency department and increased risk of in-hospital cardiac arrest: a nationwide population-based study in South Korea, 2016–2017. J Clin Med 2020;9(7):2284. DOI: 10.3390/jcm9072284. PMID: 32708363; PMCID: PMC7408893.
7. Liew D, Liew D, Kennedy MP. Emergency department length of stay independently predicts excess inpatient length of stay. Med J Aust 2003;179(10):524–526. DOI: 10.5694/j.1326-5377.2003.tb05676.x. PMID: 14609414.
8. Wessman T, Ärnlöv J, Carlsson AC, et al. The association between length of stay in the emergency department and short-term mortality. Intern Emerg Med 2021. DOI: 10.1007/s11739-021-02783-z.
9. Walsh M, Knott JC. Satisfaction with the emergency department environment decreases with length of stay. Emerg Med J 2010;27(11):821–828. DOI: 10.1136/emj.2009.079764.
10. Verma A, Shishodia S, Jaiswal S, Sheikh WR, Haldar M, Vishen A, et al. Increased Length of Stay of Critically Ill Patients in the Emergency Department Associated with Higher In-hospital Mortality. Indian J Crit Care Med 2021;25(11):1221–1225.