



KEY POINT SUMMARY

OBJECTIVES

The aim of the study was to evaluate the effect of the built environment of an emergency department (ED) on the timeliness of physician assessment of chest pain patients. Specifically, the authors hypothesized that those patients located in treatment rooms with a solid door, or located farther from clinician work areas, would have longer times to their initial physician assessment.

Impact of Emergency Department Built Environment on Timeliness of Physician Assessment of Patients With Chest Pain

Hall, K. K., Kyriacou, D. N., Handler, J. A., Adams, J. G.

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Key Concepts/Context

With millions of chest-pain related visits to the emergency department (ED) each year, this demographic one of the most frequently studied in the emergency medicine (ED) literature. As the timeliness of care can lead to significant decreases in both morbidity and mortality, the authors suggest that elements of the architectural design of an ED, specifically the location of the treatment rooms (distance from physician work areas), should be considered when evaluating factors related to quality of care. The main outcome variable was time to initial physician assessment (in minutes), with independent variables including: presence of a solid door; distance of treatment room from work area; staffing team; day of week; and the patient's age; sex; and triage level.

Methods

A retrospective cohort study was conducted using a computerized departmental database originally created for ED performance evaluation. Chest pain Patients were randomly assigned to one of 19 standard treatment rooms, three of which had a solid door. (Two of the standard patient treatment rooms with doors rather than curtains were primarily for patients requiring pelvic examinations and the third was used as an airborne infection isolation room when needed.) The door hardware did not allow for the doors to be left open. All standard treatment rooms were approximately the same size and design, and similarly equipped. The ED was also spatially divided into three room groupings (A, B, C), which were staffed according by three similar teams.

The study population of 2,024 patients was selected from more than 200,000 visits between late 2001 and early 2004. Inclusion criteria were: the chief complaint was



DESIGN IMPLICATIONS

The design of inaccessible and non-transparent spaces in the ED may act as a barrier to care in certain populations with the highest need, so the balance between privacy and efficient care should be carefully evaluated. Visual proximity of treatment rooms in EDs should be considered. In EDs were the demographics and volume warrants, designation of specific areas for cardiac evaluation might be considered (as instituted within this facility) and located in closer proximity to clinical work areas.

non-traumatic, chest pain-related; (2) the patient's age was greater than 45 years; and complete time data were available. Following an initial selection of 3,468 visits, patients were selected based upon peak hours of arrival. The study period was restricted because of the opening of a dedicated "chest pain room" in 2004.

Time to assessment was coded into a This time was transformed into a dichotomous variable, with times being either 10 minutes or less, or greater than 10 minutes. Time was transformed into a dichotomous variable of more or less than 10 minutes, based on the externally defined standards of the American College of Cardiology/American Heart Association (ACC/AHA). Distance was also transformed into a dichotomous variable (more than/equal to 25 feet or less than 25 feet), based on the median distance between all of the treatment rooms and clinician work areas in the study environment.

Analysis in Stata Statistical Software evaluated differences in the baseline characteristics of the study population and multiple logistic regression modeling was used to estimate adjusted odds ratios and confidence intervals. Sensitivity analyses were also conducted.

Findings

There were no significant differences in the placement of the chest pain patients into near versus far treatment rooms or the initial physician assessment times based on patient's age, gender, triage level, or day of week (weekday versus weekend). The mean time of initial physician assessment for patient in rooms with doors was 22.2 minutes and for rooms without doors, 18.0 minutes. The mean time of initial physician assessment for patients in "far" treatment rooms (greater than or equal to 25 feet from the clinician work areas) was 18.9 minutes and for "near" treatment rooms (less than 25 feet from the clinician work areas), 17.7 minutes. More than half of chest pain patients placed in rooms with solid doors and 49% of chest pain patients placed in far rooms had times to assessment greater than 10 minutes. This compared to only 45% of those in rooms without doors, and 43% of those placed in near rooms. After multi-variate adjustment, the only predictors of time to initial assessment greater than 10 minutes were being placed in a room with a door and being placed in a room 25 feet or more from the main physician work area.

Limitations

Several limitations are defined by the authors:

1. Manual recording of data: times of initial emergency physician assessment were manually recorded by the physician and may have been affected by distractions associated with the far rooms (an inaccurate delayed recording of time).



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2. Retrospective data: When the physician did not indicate the time of their initial assessment, the time of placement into the treatment room was recorded as a proxy, however, sensitivity analysis indicated the effect estimate of this potential misclassification was minimal for the distance variable, although more significant for the presence of the door.
3. Staffing: Changes in resident physician staffing between the three teams could be a potential limitation of the study, but based on the statistical analysis conducted, the authors felt these changes would have little effect on the results.

Additional limitations not identified by the authors include the use of a dichotomous variable for distance, based on the median distance of the facility. While this analytical technique was specific to the setting of the study, the use of 25 feet as a guide for "near" or "far" cannot be generalized to all EDs settings.