

PSYCHIATRIC BOARDING INCIDENCE, DURATION, AND ASSOCIATED FACTORS IN UNITED STATES EMERGENCY DEPARTMENTS

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Introduction: Boarding, especially among psychiatric patients, has been characterized as a significant cause of ED crowding, but no quantitative analysis has described boarding nationally. This study determines the incidence, duration, and factors associated with ED boarding in the United States.

Methods: 2008 National Hospital Ambulatory Medical Care Survey ED data were stratified by visit type (psychiatric vs. non-psychiatric), boarding status, and patient and hospital characteristics. Boarding was defined as a visit with an ED length of stay >6 hours, and boarding time as ED length of stay minus 6 hours. Pearson's chi-square tests describe hospital and patient characteristics stratified by boarding status. Multilevel multivariable logistic and linear regressions determine associations with boarding and boarding time.

Results: While 11% of all ED patients boarded, 21.5% of all psychiatric ED patients boarded. Boarding was also more prolonged for psychiatric ED patients. Controlling for confounders, odds of boarding for psychiatric patients were 4.78 (2.63-8.66) times higher than non-psychiatric, and psychiatric patients boarded 2.78 (1.91-3.64) hours longer than non-psychiatric.

Discussion: US EDs experienced high proportions and durations of boarding with psychiatric patients disproportionately affected. Additional research concerning mental health care services and legislation may be required to address ED psychiatric patient boarding.

Key words: Boarding; Crowding; Patient flow; Emergency medical services; Mental health care

ED crowding continues to challenge the United States health care safety net.¹ While demand for ED care has increased, ED capacity and the number of inpatient hospital beds have decreased. Inpatient beds

declined from 3.7 beds per 1000 persons in 1990 to 2.6 beds in 2010.² From 1995 to 2005 the number of US emergency departments decreased from 4176 to 3795, while the number of visits per emergency department annually increased from 23,119 to 30,388.³ Likewise, the number of inpatient psychiatric beds declined sharply. From 1970 to 2003, inpatient psychiatric beds per capita decreased 62% overall and 89% in state and county psychiatric hospitals.⁴ Recent articles in the lay press have highlighted psychiatric bed shortages and warned of further planned cuts.⁵⁻⁷

The reduction in general inpatient and psychiatric beds has resulted in widespread boarding of patients in emergency departments. The decrease in psychiatric beds is a particular concern. A recent study concluded that 1 out of every 8 ED visits involved a psychiatric condition, with 41% resulting in hospitalization.⁸ Boarded psychiatric patients require more resource-intensive care, have longer boarding times than other patients, and often receive substandard care while in the emergency department.⁹⁻¹³

Boarded patients are associated with ED crowding.^{1,14} ED crowding is associated with poor outcomes, including increased morbidity and mortality,^{15,16} delays in care,^{17,18} decreased patient satisfaction,¹⁹ longer inpatient stays,²⁰ disparities in access to care for the poor and uninsured,²¹

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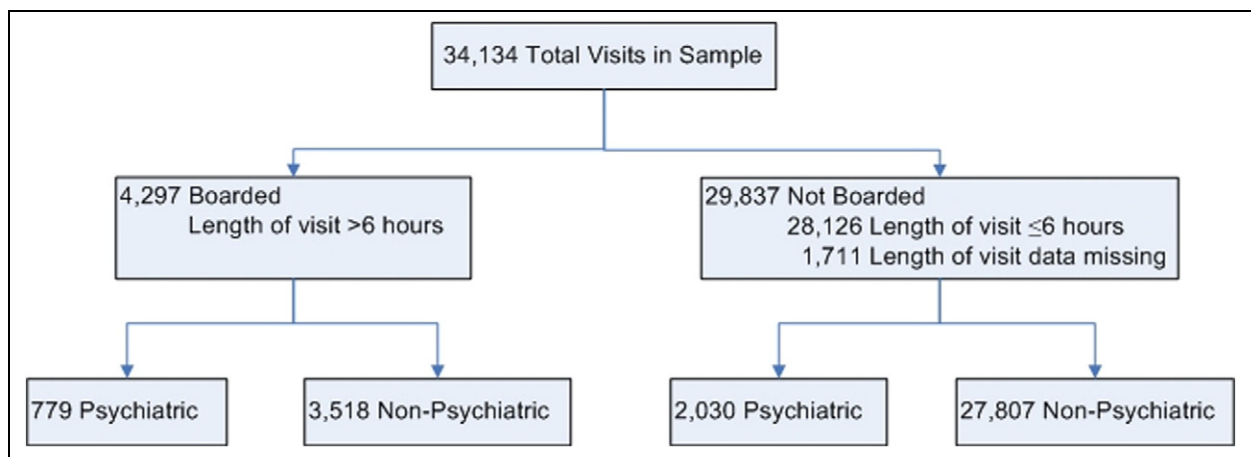
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FIGURE

Flow diagram of ED visits by boarding and psychiatric status, National Hospital Ambulatory Medical Care Survey, 2008 (unweighted data).

lost hospital revenue,²² and missed opportunities to see additional ED patients.²³ ED boarding has been described, but no quantitative analysis has addressed general inpatient or psychiatric boarding practices at the national level.^{1,10–13,24} The aim of this study is to inform stakeholders and policymakers about the incidence and duration of ED boarding, and its associated factors, in the population of US ED visits.

Methods

This study used data from the 2008 National Hospital Ambulatory Medical Care Survey (NHAMCS). Produced annually since 1992, the NHAMCS is a national probability sample of visits to emergency departments in noninstitutional general and short-stay hospitals conducted by the National Center for Health Statistics.²⁵ The 2008 NHAMCS includes 34,134 patient visit records; application of weights to the dataset leads to unbiased estimates for the approximately 124 million visits to US emergency departments in 2008. The NHAMCS is a public-use dataset containing no personally identifiable data and was the sole source of data for this study; therefore the institutional review board approved this study and exempted it from ethics review because it does not constitute human subject research.

The US lacks a standard definition for ED boarding.¹⁰ As a result, we had to define boarding within the construct of the data available within the NHAMCS dataset. Boarding describes ED patients whose evaluation is complete and for whom the decision has been made to either admit or transfer, but for whom there is no available bed. Capturing the time of this decision to admit or transfer is difficult, because emergency departments have differing practices, administrative systems, and documentation processes, and thus no boarding variable exists in the 2008

NHAMCS dataset. Internationally, boarding and boarding time have been defined using several different measures. In Australia, the standard definition for ED boarding (access block) is when a patient has been awaiting admission or transfer with a total time in the emergency department of more than 8 hours.²⁶ The Australian Government recently adopted a national target requiring that by 2015, 90% of all patients presenting to public hospital emergency departments be admitted, transferred, or discharged within 4 hours.²⁷ The United Kingdom currently uses a similar 4-hour policy but with a more stringent threshold of 95%.²⁸ In Canada, the Ministry of Health and Long-Term Care of Ontario set provincial targets for total time spent in the emergency department at less than 4 hours for low-acuity patients and 8 hours for high-acuity patients.²⁹

In the US, the Accreditation Council for Graduate Medical Education suggests maximum average ED throughput times of 4 hours for discharged patients and 8 hours for admitted patients.³⁰ US researchers have suggested 6 hours as a reasonable throughput time,³¹ whereas others have defined boarding time as the time from inpatient bed request to departure from the emergency department,¹⁹ or the time from the decision to admit until actual arrival in the admitting unit.¹⁵ After considering these various definitions, we chose to define a boarded patient as a patient whose visit record indicated an ED length of stay greater than 6 hours and boarding time as total ED length of stay minus 6 hours. These definitions seemed appropriate based on US standards and the authors' clinical experience. We chose to include all patients with ED lengths of stay greater than 6 hours in the boarded group, including those ultimately discharged from the emergency department, because it was impossible to

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