Which Psychiatric Patients Board on the Medical Service?

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ABSTRACT. Objectives. Patients who require psychiatric hospitalization may be admitted to a medical service only because there are no available inpatient psychiatric beds. These patients are psychiatric “boarders.” The goals of this study were to describe the extent of the boarder problem and to compare the characteristics of patients who are placed successfully into psychiatric facilities from the emergency department (ED) with those who require admission to the medical service as a boarder.

Methods. A retrospective cohort study of a large pediatric ED was conducted. Included were patients who required inpatient psychiatric admission between July 1, 1999, and June 30, 2000. Patients were excluded when they needed inpatient medical treatment before psychiatric placement. The main outcome measured was placement into a psychiatric facility or boarding on medical service.

Results. Of the 315 patients who presented to the ED and required psychiatric admission, 103 (33%) were boarded on the medical service. Multivariate logistic regression demonstrated an increased odds of boarding for age 10 to 13 years (adjusted odds ratio [AOR]: 3.5; 95% confidence interval [CI]: 1.8–6.6), black race (AOR: 2.3; 95% CI: 1.1–4.8), presenting on a weekend or holiday (AOR: 3.8; 95% CI: 1.6–8.8), and presenting from October to June (October–December 1999 [AOR: 4.7; 95% CI: 1.7–13.4], January–March 2000 [AOR: 14.5; 95% CI: 4.9–42.6], and April–June 2000 [AOR: 10.4; 95% CI: 3.5–30.2]) but a decreased odds for 1 insurance company (AOR: 0.08; 95% CI: 0.02–0.4). There was a linear increase in odds of boarding as severity of homicidal ideation increased from none to mild (AOR: 1.5; 95% CI: 1.2–1.8) to moderate (AOR: 2.3; 95% CI: 2.0–2.6) to severe (AOR: 3.5; 95% CI: 3.2–3.8). Suicidal patients also had increased risk of boarding (AOR: 2.2; 95% CI: 1.2–4.3).

Conclusions. Boarders are a problem in pediatrics, and this study identifies multiple characteristics that were associated with increasing a youth’s odds of becoming a boarder at this institution. The suicidal and homicidal symptom results suggest a reverse triage system in which sicker patients are not necessarily given priority by psychiatric facilities. These data highlight mental health practices that need to be reassessed to ensure optimal care for youths with acute mental illness. Pediatrics 2003;111:e693–e698. URL: http://www.pediatrics.org/cgi/content/full/111/6/e693; psychiatric boarder, mental health services, suicide, homicide, health care disparities.

ABBREVIATIONS. ED, emergency department; HMO, health maintenance organization; HI, homicidal ideation; SI, suicidal ideation.

Approximately 1 in 5 children who are seen in pediatric practice has a mental health problem.1 In 1999, 19% of high school students reported that they had seriously considered or attempted suicide in the last year.2 Despite this high rate of psychiatric illness and the increases in clinician-identified psychosocial problems,3 access to mental health services has declined.4–6 It is estimated that up to 70% of children and adolescents with mental health problems do not receive appropriate mental health services.1,7–9

One significant change in mental health services for children and adolescents that is not frequently mentioned, however, is that pediatric hospitals have been transformed into a safety net for youths in need of inpatient psychiatric care. Because of the shortage of pediatric and adolescent mental health services, pediatric patients who require psychiatric hospitalization may be admitted instead to a medical service because there are no available inpatient psychiatric beds. These psychiatric patients on the medical service are termed psychiatric “boarders.”

Although the boarder problem has received attention in many states and in prominent newspapers,10–14 we are aware of only 1 study that has investigated this problem. This study, conducted in an urban hospital, found that from January to May 1999, 67 (34%) of 196 children who were younger than 18 years and presented to the pediatric emergency department (ED) with acute psychiatric needs were admitted to the inpatient pediatric service and not to a psychiatric facility.15 Given these data, we undertook a study to investigate the extent of the boarder problem in a large pediatric hospital over a 1-year period and compared the characteristics of patients who were placed successfully from the pediatric ED into psychiatric facilities with those patients who were admitted to the medical service as a boarder.

METHODS

Study Design/Population

We conducted a retrospective cohort study that consisted of all patients who presented to a pediatric ED at a freestanding children’s hospital and required inpatient psychiatric admission be-
between July 1, 1999, and June 30, 2000. Patients were excluded when they needed inpatient medical stabilization or treatment before psychiatric placement. The Children’s Hospital Boston Committee of Clinical Investigation (Institutional Review Board) approved this study.

Data Sources

We used 1 primary data source—Children’s Hospital Emergency Psychiatry database—and 3 secondary sources: 1) Children’s Hospital General Emergency Department database, 2) Children’s Hospital electronic medical record, and 3) Children’s Hospital Psychiatry Consultation Service database. The primary data source is the Children’s Hospital Emergency Psychiatry database. This database was developed in July 1999 and contains systematically collected information on every patient seen by the Department of Psychiatry in the ED. The information is based on a structured psychiatric clinical assessment form designed by the Department of Psychiatry. Each patient who was seen in the ED with a clinically relevant psychiatric concern was included in the analysis. These evaluations occur 7 days a week, and the services are not different over the weekend.

Although patients are evaluated 7 days a week, they are not seen 24 hours per day. The Emergency Psychiatry database did not include overnight patients who presented between the hours of 11 PM and 8 AM any day of the week. We used the General ED database to identify these overnight patients and then the electronic medical record to ascertain which overnight patients required admission to a psychiatric facility. The data collected for the General ED database since June 1992 included medical record numbers, times of presentation, presenting complaints, and discharge disposition. The electronic medical record contains a summary of the ED visit. After combining information from both of these databases, we found that the youths who presented overnight and required psychiatric admission represented 5% of the total patients in the primary database. These overnight patients were not included in the analysis, as they did not have a psychiatric consultation in the ED and therefore did not have the same mental health and psychosocial data collected.

Data from the primary data source were verified using not only the Children’s Hospital electronic medical record but also the Children’s Hospital Psychiatry Consultation Service database. The consultation database records demographic and referral requests on all patients who are referred for inpatient psychiatric consultation from medical or surgical services. Since January 1998, this database has also recorded demographic and length of stay data on all boarders on the medical floor.

Measures

The outcome in the analysis was whether a patient boarded on the medical floor or was placed into a psychiatric facility. A psychiatric facility was considered an inpatient psychiatric unit or acute residential treatment center. The outcome of every patient in the cohort was verified using the Inpatient Psychiatry database and the electronic medical record.

A social worker, psychologist, or psychiatrist in the ED initially determines the disposition or outcome of the patient being evaluated. If the evaluator is a trainee, then the entire evaluation and decision about disposition is reviewed first with a supervisor in the ED and subsequently with an attending psychiatrist.

We examined predictor variables in 4 categories: demographic, insurance, patient symptom, and timing of presentation. The demographic variables examined were gender, age, and race. The age categories of <10, 10 to 13, and >13 years were established after bivariate analyses demonstrated that these categories were breakpoints in the data with respect to boarding status. Race was defined as white, black, Asian, Hispanic, multiracial, and other. Because of small sample sizes, Asian and multiracial were combined with the other group.

Insurance providers were grouped on the basis of their mental health services. The vast majority of the patients were covered by 1 of 4 insurance plans, each of which uses a unique structure to manage access to mental health services. Massachusetts Medicaid “carves out,” or contracts, its mental health services to a private for-profit corporation for management. One of the common private insurance organizations (HMOs) uses a similar structure but contracts with a different corporation for mental health management. Another HMO manages its own mental health services in a system separate from its medical services, using a structure similar to the aforementioned for-profit “carve-outs.” The bivariate analyses demonstrated that all of the above mental health systems, other smaller HMOs, and Medicaid all functioned similarly without significant differences in boarding rates and, as a result, were grouped together in the final analyses. Massachusetts Medicaid was used as a limited proxy for low socioeconomic status.

The final prominent provider is a capitated plan that manages its mental health services differently. This company was analyzed separately and is subsequently identified as the capitated plan. The other mental health insurers are subsequently termed non-capitated. Capitated mental health plans function by paying a facility a certain dollar amount to take care of a given number of patients, regardless of service usage. If a patient in 1 of these plans needed to be admitted, then the designated facility must find a space in their own facility or locate and pay for a bed in a different facility. Other plans pay facilities a set amount per day of a hospital stay.

The important patient symptom variables were homicidal ideation (HI) and suicidal ideation (SI). The evaluating mental health clinician assigned a score for both HI and SI from 1 (none) to 7 (severe) on the basis of the Brief Psychiatric Rating Scale for Children.16 In an effort to balance having enough numbers in each level of severity and not losing information by oversimplifying, we collapsed HI into a 4-level variable: none (1), mild (2, 3), moderate (4, 5), and severe (6, 7). HI was tested as a 4-level and binary variable. In the final Hospital Emergency Psychiatry database analysis, it is presented as dichotomous and is defined as no SI (1) and yes SI (2–7). Both SI and HI are associated with boarding, but SI is analyzed as a binary variable because unlike HI, the severity of SI is not associated with boarding.

The time of presentation variables analyzed were day of the week and the quarter of presentation. A weekend was defined as presentation into the ED between 5:00 PM Friday to 8:00 AM Monday. A holiday was considered any federal or state holiday. The quarters (3-month blocks) used in the analyses were defined chronologically from the beginning of the study period: quarter 1, July/August/September; quarter 2, October/November/December; quarter 3, January/February/March; and quarter 4, April/May/June. Additional covariates examined in the analyses were primary language, caregiver’s relationship status, living arrangement, legal custody of patient, family history of mental illness, interpersonal relatedness, level of cooperation, previous mental health outpatient treatment or inpatient psychiatric treatment, significant medical illness, and Axis I diagnosis.

Statistical Analysis

χ², Fisher exact test, and Mann-Whitney U tests were conducted to examine the association between boarding and variables including demographic characteristics, insurance, patient symptoms, and timing of presentation. Nine percent of the patients had >1 visit to the ED during the study period. For these patients, only their initial visit was analyzed. Also, 15.5% of the sample had missing data; 14% were missing diagnosis and 1.5% were missing race. An excluded person’s analysis demonstrated that there were no significant differences in boarding status or any other covariate except that patients who presented on the weekend were more likely to have missing data. A separate analysis of the excluded small group of overnight patients demonstrated that there were significantly more female than male patients who presented overnight. There were, however, no significant differences in boarding status, other demographics, insurance, or patient symptoms.

The final multivariate logistic regression model was used to estimate the odds of being boarded associated with gender, age, race, insurance status, patient symptoms (HI, SI), and timing of evaluation (weekend/holiday, quarter). All analyses were performed using SPSS Version 10.1 except for the analysis of HI. Because of small cell size in the HI table, StatExact was used to calculate a Fisher exact value.

RESULTS

Study Population

A total of 315 patients presented to the ED and required psychiatric admission from July 1, 1999, to June 30, 2000. This was a multiethnic sample evenly
split between male and female patients. Almost all of the patients were between the ages of 4 and 19. Of the 315 patients, 212 (67%) were placed into a psychiatric facility (7, or 2.2%, to acute residential treatment) and 103 (33%) were boarded on the medical floor. The sum total number of boarding days for all boarded patients was 304 with a median of 2 days and a range of 1 to 51 days (Fig 1). The most common Axis I diagnoses were major depression (27%), depression not otherwise specified (11%), posttraumatic stress disorder (10%), bipolar disorder (10%), and attention-deficit/hyperactivity disorder (7%).

Subject demographics, mental health insurance, SI, HI, timing of presentation, and percentage boarding are shown in Table 1. More than 50% of the patients within certain subgroups became boarders on the medical service instead of being admitted to a psychiatric facility. These subgroups included 50% of 10- to 13-year-olds, 53% of patients with moderate HI, and 64% of patients with severe HI. The time when patients presented to the ED also influenced their placement outcome; 58% of patients who presented to the ED on a weekend or holiday and 51% of those patients who presented during quarter 3 (January–March) became boarders. It is interesting that in comparison with youths with HI, only 37% of patients with SI became boarders.

Additional examination of the patients who presented in each quarter demonstrates that a significantly higher number of suicidal patients presented to the ED during the academic year. During quarter 1, 29 suicidal patients presented to the ED; but during quarters 2, 3, and 4, the numbers of suicidal patients who presented to the ED increased to 51, 60, and 51, respectively ($P = .001$). In addition, the volume of patients who presented in each quarter of the academic year increased from 69 in quarter 1 to 88, 83, and 75 in quarters 2, 3, and 4, respectively.

Patients from 1 private insurance company, the capitated plan, had a lower odds of boarding. Only 8% of patients with this insurance plan became boarders compared with 35% for all of the other companies ($P = .006$). Of the 25 patients with this insurance, only 2 became boarders and 10 required a second evaluation at 1 of the company’s designated psychiatric facilities, despite the recommendation for psychiatric admission. Although none of the reevaluated youths became boarders (the designated facilities are psychiatric only), these 10 patients may have been either discharged from the hospital or admitted to 1 of these facilities. Because the ultimate destina-

![Fig 1](http://www.pediatrics.org/cgi/content/full/111/6/e693)
tion of these 10 youths is unknown, we performed the analyses again after deleting this group. This analysis demonstrated that all of the variables, including membership in the capitated plan, remained significant. As there were no significant differences in the models, all patients were included in the final analyses.

Multiple other covariates were examined in the analyses. Living situation may have an impact on a patient’s ability to be discharged from a psychiatric facility. On further analysis, black youths in the sample were more likely than the other races/ethnicities to be living with a foster family or in residential facilities \((P = .001)\). Youths with medical illness requiring daily medication administration or causing physical impairment or those with specific Axis I diagnoses may have more complex care. Neither medical illness nor Axis I diagnosis was associated with an increased odds of boarding. Last, youths with Massachusetts Medicaid were just as likely to board as those with the other aforementioned non-capitated insurance plans.

The final multivariate regression model estimating the odds of being boarded included the variables gender, age, race, insurance status, patient symptoms, and the timing of the evaluation (Table 2). Gender was not significantly associated with boarding, but age and race were associated with the likelihood of a patient’s becoming a boarder. Black patients were >2 times more likely to be boarded than white patients. Having the capitated insurance plan was associated with protection against boarding at our institution.

Suicidal and homicidal patients both had increased odds of boarding. In addition, there was a linear increase in the odds of boarding as severity of HI increased. Moderately homicidal youths were >2 times and severely homicidal were >3 times as likely to be boarded than youths who were not homicidal.

Timing of presentation to the ED also influenced risk of boarding as patients who presented on a weekend or holiday or during quarters 2, 3, or 4 all had increased odds of boarding. All other covariates tested in the model, including living situation, were not significant. In addition, interaction terms between black race and HI, SI, and living situation were not significant.

### DISCUSSION

In our study 33% of patients who needed psychiatric admission were boarded on the medical floor, which nearly matches the 34% boarding rate in a different urban hospital in the same state as described by Sharfstein et al. At our institution, most of these youths waited 1 day on a medical floor before placement, but many waited 2–10 days, and 1 child waited 51 days.

Unfortunately, the inpatient mental health services in this area were not able to provide care for all of the youths who had acute psychiatric complaints and needed hospitalization during the study period. We believe that during this time, the demand for psychiatric beds in this area outstripped the supply, which may partially have been attributable to the difficulty that facilities were having discharging psychiatrically stable children from their units. This supply-and-demand mismatch, however, may have forced admitting psychiatric facilities to be selective when admitting patients. The process of having to select certain individuals and reject others while trying to maintain the best possible therapeutic milieu in the facilities may have created the group of patients with specific demographics, symptoms, and times of presentation whom we have identified as more likely to become boarders.

In terms of demographic variables, gender was not a factor in boarding status. In our study, however, half of the children ages 10 to 13 years were boarded on the medical floor. The literature addressing disparities in health services across age groups is predominantly geriatric. Our data highlight a previously unidentified pediatric age group whose mental health services were compromised during the study period. The underlying mechanism of this finding is unclear. Most psychiatric units are age based and are divided into those that admit children younger than 13 years and those that admit adolescents older than 13. These age divisions may create situations in which the psychiatric staff believe that a 10- to 12-year-old may be too old to interact in an effective therapeutic manner with younger children in the under-13 facility and the 13-year-olds too young for the older adolescent facilities. Moreover, under-13 units may also be concerned that 10- to 12-year-olds

### TABLE 2. Multivariate Logistic Regression Results Estimating the Odds of Boarding on Medical Units for Youths Who Needed Psychiatric Admission From a Pediatric ED \((N = 315)\)

<table>
<thead>
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<th>Demographics</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>P Value</th>
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<td>10.4</td>
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OR indicates odds ratio.
are harder to control physically than younger, smaller children. Additional research is required to clarify this finding concerning the 10 to 13 age group.

In this study, black youths were more likely to become boarders in comparison with white youths. This result, independent of gender, age, insurance status, patient symptoms, timing of presentation, and living situation, adds to other evidence in the literature describing the racial disparities in medical care.\textsuperscript{21–23} Racial disparities are not limited to medical care as the psychiatric literature provides evidence that there is racial bias in psychiatric diagnosis.\textsuperscript{24} In our sample, black children were more likely than the other races/ethnicities to live in foster families or residential homes. Although these youths are at particular risk for developing worsening psychological and emotional problems while in foster care,\textsuperscript{25} living situation did not account for the racial disparities in boarding on the medical floor. Although we had a limited proxy for low socioeconomic status, the persistence of this finding after taking into account multiple covariates and investigating multiple interaction terms underscores the need for additional studies to identify factors in the health care system, including the race of the provider, that are resulting in racial disparities in mental health services.

Patients who were insured by 1 insurance company had a risk of boarding at our institution substantially lower than the others. This company is a private HMO and the only company in the group that is a capitated insurance plan. Because this plan has designated sites for psychiatric evaluations and admissions, patients may be required to be transferred to the designated facility for a second evaluation. Although the mental health services that this company provided protected patients from boarding, this study did not examine the quality of the overall mental health patient care. Requiring a second evaluation may have caused more stress for the patient and family and also may have increased the long-term utilization of mental health resources. In contrast, the second evaluation may create time for the acuity of a patient’s problems to subside, giving the family and providers time to make alternative safety plans and possibly alleviate the need for admission. Additional studies are needed to evaluate the quality of mental health service delivery for various mental health plans, including the impact on patients, the ultimate outcomes, and the utilization of resources.

Suicidal and homicidal patients were more likely to be boarded. These results and the linear increase in the odds of boarding as severity of HI increased is suggestive of a reverse triage system, in which sicker patients are not necessarily given priority by the admitting psychiatric facilities. We speculate that the accepting provider at a psychiatric facility may decide that homicidal and suicidal youths, who require a high level of care, will either interfere with their unit’s therapeutic milieu or raise the acuity of the unit to an unmanageable level. Alternatively, the accepting provider may disagree with the youth’s disposition, believing that other alternatives may better serve his or her specific needs. Although the therapeutic milieu and acuity concerns are legitimate for individual units, this type of triaging is in direct contrast to customary medical triaging. There are important differences between sick medical and psychiatric patients, and reconciling the disparity between how these patients are triaged is an upcoming challenge for the medical and mental health communities as well as insurers and state agencies. A more acute challenge and one that requires additional investigation is the impact that the psychiatric boarders have on the quality of care of the medical patients.

These data also reinforce how common SI and HI are in pediatric patients. The number of suicidal and homicidal children and adolescents who presented to this pediatric tertiary care ED was equivalent to 1 suicidal patient every 2 days and 1 homicidal patient every week. The numbers from this study, which represent only youths who required psychiatric admission, underscore the continued need for prevention strategies in pediatric mental health, especially for violence against oneself or others.\textsuperscript{26–28}

The timing of presentation to a hospital has been shown to affect health outcomes.\textsuperscript{29} Our data suggest that the day of the week and the quarter of the year in which psychiatric patients present to the ED influences their placement outcome. It is rare for patients to be discharged from a psychiatric facility over a weekend. Therefore, if units are full on a Friday, they most likely will not have bed availability until the following week, possibly creating placement difficulties for patients who present over a weekend. During quarters 2, 3, and 4, which correspond to the academic year, there was a significantly higher boarding rate compared with the summer months. Although additional studies are needed, higher volumes of patients and higher acuity during the school year may be 2 phenomena contributing to the higher boarding rate. During each of the 3 quarters of the academic year, the volume of patients was 10% to 20% higher and there were approximately 100% more suicidal patients than in the summer months. We also believe that the numbers of psychiatrically stable children and adolescents who were unable to be discharged from inpatient units increased during the academic year in parallel to the increased volume. The inability to discharge patients may have decreased the supply of available inpatient beds.

One of the limitations of this study is the exclusion of patients who were admitted for medical reasons (eg, toxic ingestion, eating disorder). These youths may become boarders as many require psychiatric admission after medical stabilization. In addition to these patients, the omission of the overnight patients and those with missing data may have underestimated the severity of the psychiatric boarder problem. Another limitation is the generalizability of the findings because the sample is from 1 large pediatric hospital. Although mental health service systems vary widely, this study is the first comprehensive study of boarders and as such identifies avenues for additional investigation and describes findings that may have an impact on other states. This study did
not measure the quality of care of psychiatric boarders and could not assess whether boarding increased the stress for the patients and their families or affected the psychiatric outcomes of these youths.

CONCLUSIONS
Pediatricians may encounter psychiatric boarders on the medical ward. These data document not only that psychiatric boarders were a substantial problem during the study period but also that children and adolescents with certain characteristics seemed to have compromised mental health services. In addition, a glaring health services issue highlighted by these data are the reverse triage system for psychiatric patients. The findings from this institution simultaneously challenge the mental health system and generate many questions that deserve additional investigation.

For other communities and states, these data provide a glimpse of the possible issues for youths when mental health services, especially inpatient psychiatric beds, are not adequate to meet demand. States should take into account these data when considering their mental health budgets and youth services, especially during the current economic recession. Recently, Massachusetts increased the number of inpatient psychiatric beds and additional research is needed to determine whether this measure is having the expected positive impact.

All children in psychological distress, no matter their age, race, symptoms, or time of presentation, should be able to receive timely psychiatric care. The data from this institution identify practices and policy areas that if modified might improve pediatric and adolescent mental health services.

ACKNOWLEDGMENTS
This study was supported in part by the Novack Family Foundation and the Leadership Education in Adolescent Health project 6T17MC00009-09 from the Maternal and Child Health Bureau, Department of Health and Human Services.

We thank David DeMaso, MD, Julie VanderFeen, MD, and Pamela Beasley, MD, for insights and access to data; Josh Sharfstein, MD, for help with study design and expertise in mental health policy; Jessica Lipkind for tireless efforts with data entry; and S. Jean Emans, MD, for review of the manuscript.

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