

Impact of Boarding Pediatric Psychiatric Patients on a Medical Ward

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KEY WORDS

aggression, depression, psychiatry, suicide

ABBREVIATIONS

ED: emergency department

LOS: lengths of stay

LAC+USC: Los Angeles County + USC

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abstract

BACKGROUND AND OBJECTIVES: Psychiatric disorders account for an increasing number of pediatric hospitalizations. Due to lack of psychiatric beds, patients on involuntary psychiatric holds may be admitted to medical units. Our objectives were to evaluate the rate of admission of psychiatric patients to a medical unit, psychiatric care provided, and estimated cost of care.

METHODS: The study involved retrospective chart review of all patients on involuntary psychiatric holds presenting to 1 pediatric emergency department from July 2009 to December 2010. We determined the rate of admission to a medical unit, the rate of counseling or psychiatric medication administration, and the estimated cost of nonmedical admissions (boarding) of patients on the medical unit.

RESULTS: A total of 555 (50.1%) of 1108 patients on involuntary psychiatric holds were admitted to the pediatric medical unit. The majority (523 [94.2%]) were admitted for boarding because no psychiatric bed was available. Thirty-two (6.1%) patients admitted for isolated psychiatric reasons had counseling documented, and 105 (20.1%) received psychiatric medications. Patients admitted to an affiliated psychiatric hospital were significantly more likely to receive counseling and medications. Psychiatric patients were boarded in medical beds for 1169 days at an estimated cost of \$2232790 or \$4269 per patient over the 18-month period.

CONCLUSIONS: We found high admission rates of patients on involuntary psychiatric holds to a pediatric medical unit with little psychiatric treatment in 1 hospital. Further research in other centers is required to determine the extent of the issue. Future studies of longer term outcomes (including readmission rates and assessments of functioning) are needed.

Children and adolescents on involuntary psychiatric holds are a group of patients with needs distinct from patients admitted for medical indications. Hospitalization in an inpatient psychiatric unit allows psychiatrists to provide a safe environment, diagnose, counsel, and begin medications. Previous research suggests that within the first 3 days of an adolescent psychiatric hospitalization, neuroleptics are initiated in 52.9% of patients, antidepressants in 15.5%, and anxiolytics in 8%.¹ Although efficacy studies for inpatient psychiatric hospitalization in children are lacking, scores on the Global Assessment of Functioning Scale have been shown to improve significantly during psychiatric hospitalization in adults, with longer stays resulting in greater improvements.²

There are multiple obstacles to accessing psychiatric treatment, especially inpatient psychiatric hospitalization. Insurance benefits for inpatient and outpatient mental health treatment have historically been capped,³⁻⁵ limiting patients' access to care and providers' reimbursement for denied days of treatment. Available psychiatric beds have decreased substantially in the United States⁶ while psychiatric hospitalization rates have increased. Between 1997 and 2007, pediatric medical hospitalization rates remained unchanged, but psychiatric hospitalization rates increased from 155 to 283 per 100 000. For adolescents, the rate increased from 683 to 969 per 100 000, and total psychiatric hospital days increased from 5882 to 8247 per 100 000.⁶ In the United States, affective disorders are the fourth most common reason for non-newborn pediatric hospitalizations.⁷ Psychiatric patients who cannot be safely discharged must have a nonmedical admission to a medical unit or must be cared for in the emergency department (ED) ("boarded" on a medical unit or ED) when psychiatric beds are not available. Boarding of psychiatric patients, including pediatric and adolescent patients, in ED or non-psychiatric inpatient medical units due to lack of inpatient psychiatric beds is increasingly recognized as problematic.⁸⁻¹¹ The California Institute of Mental Health has recognized the shortage of psychiatric inpatient beds in the state, noting that the shortage is most severe for children and adolescents.¹²

Lack of psychiatric inpatient beds also prolongs ED lengths of stay (LOS). In 1 study, ED LOS averaged 11.5 hours for psychiatric patients, significantly longer than medical patient LOS.¹³ Psychiatric patients waited 11 hours for a bed at the same hospital and 12.9 to 15

hours for a transfer to an outlying psychiatric bed. One study in a pediatric hospital found that approximately one-third of patients requiring a psychiatric bed were instead admitted to a medical floor, with LOS from 1 to 51 days.⁹

To the best of our knowledge, few studies have investigated the impact of psychiatric admissions boarded on the inpatient medical ward. Our objectives were to assess the rate of admission to a pediatric medical unit for psychiatric boarding, the psychiatric care provided, and the estimated cost of boarding pediatric psychiatric patients.

METHODS

We performed a single-center retrospective chart review of a consecutive sample of patients aged <18 years seen in the ED between July 2009 and December 2010 who were evaluated for potential danger to self, danger to others, and/or grave disability. We determined the rate of admission to the inpatient pediatric medical unit. Estimated cost of boarding on the medical unit was determined by using the average daily cost (\$1910) for a noncritical care medical unit admission in the United States from 1 published national sample.¹⁴ We did not include physician or ED charges or cost of sitters or laboratory tests. We determined whether psychiatric care was provided for patients boarding on the medical unit on the basis of documentation of psychiatric counseling and administration of any psychiatric medication. We also collected data on a convenience sample of patients admitted to an affiliated psychiatric hospital, and we compared the rates of medication administration or documented counseling in the first 3 days of inpatient psychiatric hospitalization with the rates of psychiatric medication administration

or counseling in patients boarding on the pediatric inpatient medical unit. The institutional review board of the University of Southern California approved the study, and a court order was obtained to allow review of incarcerated juveniles' medical information.

The Los Angeles County + USC (LAC+USC) Medical Center is a urban county hospital with a dedicated pediatric ED that receives many patients placed on involuntary psychiatric holds by psychiatric emergency response teams and police. The ED only admits or transfers psychiatric patients deemed to require an involuntary psychiatric hold (72-hour hold) for danger to self or others or grave disability; others are referred for outpatient services. Eligible visits were identified by using *International Classification of Diseases, Ninth Revision, Clinical Modification*, ED discharge diagnosis codes (see Appendix), and charts were screened for mention of potential danger to self, danger to others, or grave disability. Physician and nurse charting, disposition and transfer paperwork, laboratory test results, and radiographs were reviewed by 2 attending pediatric emergency medicine physicians, a resident, and 2 medical students. Reviewers were trained by in-person instruction and given written guidelines to follow. The 2 attending physicians were available for questions arising during chart review, and they reviewed all information collected for accuracy. Patients were considered to have been admitted for boarding if the ED physician documented that the patient was "medically cleared" or if attempts to transfer the patient to an inpatient psychiatric facility were documented.

Data were entered into a standardized Excel spreadsheet at the time of chart

review and transferred into Stata version 12 (StataCorp, College Station, TX) for analysis. Descriptive statistics were performed. For statistical analysis, χ^2 and analysis of variance were used to compare demographic information of patients with and without medical indication for admission and patients transferred directly to psychiatric inpatient hospitals. The Mann-Whitney *U* test was used to compare median inpatient LOS.

RESULTS

Of 1640 visits initially identified, 360 were excluded (Fig 1) due to patient age >18 years, unavailability of medical records, or because the visit was not related to evaluation for potential danger to self or others or grave disability. Of the remaining 1280 visits, 172 did not meet criteria for involuntary psychiatric hospitalization and were discharged. Of the 1108 patients on an involuntary psychiatric hold at the end of their ED

stay, 555 (50.1%) were admitted to the pediatric medical unit and 553 were transferred directly to an inpatient psychiatric facility. Demographic information, psychiatric history, and information about the hospital stay of these patients are presented in Table 1. Of the patients admitted to the medical unit, 32 (5.8%) were admitted due to coexisting medical and psychiatric conditions (Table 2), and 523 (94.2%) were admitted for boarding due to lack of psychiatric inpatient bed availability. Of note, although 32 patients were considered to have a medical reason for admission, at least 5 could have been discharged from the hospital with close outpatient follow-up if they were not on an involuntary psychiatric hold.

Eighty-seven (16.6%) of 523 patients admitted for boarding had their involuntary psychiatric holds overturned during the pediatric medical unit hospitalization. Most patients

(75.5%) were transferred to inpatient psychiatric facilities from the pediatric inpatient medical unit. The remaining patients were discharged when their involuntary psychiatric holds expired. A minority of patients admitted to the medical unit (20.1%) received psychiatric medications, including acute behavior control medications, continuation of home medications, or new psychotropic medications; only 6.1% had any evidence of individual or family counseling documented in the chart (Table 3). No patient admitted only for boarding had an urgent or emergent medical condition that should have been recognized at the time of admission diagnosed or treated during the stay. Of note, 1 patient with chronic catatonia who initially had no medical indication for admission developed a decubitus ulcer in the hospital, resulting in gram-negative sepsis and disseminated intravascular coagulation. Patients transferred to a psychiatric inpatient bed were significantly more likely ($P < .001$) to receive psychiatric medications and counseling than patients boarding on the general pediatric inpatient medical unit.

The 523 patients admitted to the medical ward for boarding accounted for 15.2% of ED admissions to the hospital's pediatric medical unit for that time period. Mean \pm SD ED LOS for psychiatric patients admitted to the pediatrics medical unit was 7.0 \pm 4.1 hours. Median inpatient LOS in boarding patients was 2.0 days (range: 1–30 days) (Table 1). For comparison, patients admitted on holds with a medical reason for admission had a significantly longer median LOS of 3.5 days (range: 1–103 days). The cumulative inpatient LOS for the 523 patients admitted for boarding was 1169 days.

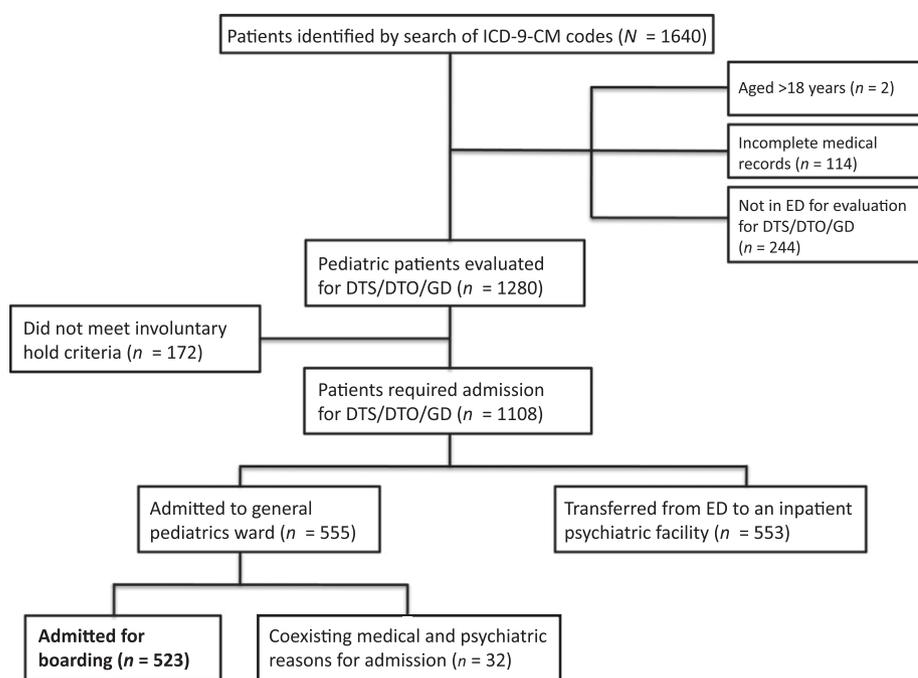


FIGURE 1 Flow chart. DTO, danger to others; DTS, danger to self; GD, grave disability; ICD-9-CM, *International Classification of Diseases, Ninth Revision, Clinical Modification*.

TABLE 1 Demographic Information, Psychiatric History, and Details of Inpatient Admission of Patients Requiring Medical Unit Admission for Danger to Self, Danger to Others, or Grave Disability (N = 1108).

Variable	Medical Reason for Admission (n = 32)	Admitted for Boarding (n = 523)	Transferred From ED to an Inpatient Psychiatric Facility (n = 553)	P ^a
Age, mean ± SD, y	15.9 ± 2.1	14.1 ± 3.0	15.6 ± 2.5	<.001
Male gender	56.3%	52.8%	49.5%	.485
Known psychiatric history	51.6%	68.1%	65.0%	.124
Previous psychiatric medication	46.9%	53.3%	49.7%	.466
Median (range) inpatient LOS on pediatric ward, d	3.5 (1–103)	2.0 (1–30)	NA	<.001
Transferred to a psychiatric inpatient facility from ward	20 (62.5%)	399 (76.3%)	NA	.078

NA, not applicable.

^a Statistical analysis performed by using Mann-Whitney U test, analysis of variance, and χ^2 test.

Estimated inpatient hospital cost for the 1169 days was \$2232790 or an average of \$4269 per boarded patient for the 18-month period.

DISCUSSION

Although boarding on the general pediatric inpatient medical unit of psychiatric patients without acute medical

problems was common practice in this center at a significant financial cost, little psychiatric care was documented. Patients transferred directly to a psychiatric inpatient unit were significantly more likely to receive psychiatric medications and counseling than patients boarding on a pediatric inpatient medical unit.

Psychiatric inpatient units are designed for the specific needs of psychiatric patients, and medical units are not designed with the same therapeutic milieu or attention to suicide and violence prevention. Medical units are not conducive to the counseling, group therapy, and observation performed in psychiatric units. Suicide

TABLE 2 Reasons for Admission Required for Patients With Coexisting Medical and Psychiatric Conditions

No. of Patients	Reason for Admission	Further Details
12	Ingestion	
4	Rule out organic cause of symptoms	No organic cause of symptoms identified for any patient (1) Baseline cognitive impairment and seizure disorder with new-onset psychiatric symptoms; admitted to rule out organic cause (2) Referred by pediatrician for MRI to rule out brain tumor due to behavioral changes and headaches (3) Complaints of leg pain and refusal to walk; symptoms resolved day after admission (4) Recent onset of seizures with behavior change
3	Foreign body ingestion	1 patient accounted for 2 of these visits
2	Self-inflicted major trauma	(1) Liver laceration from self-inflicted stab wound (2) Multisystem trauma after intentionally driving into a tree
2	Admitted for subspecialty consultation	(1) Admission for orthopedics consultation for possible fracture and ENT consultation for foreign body ^a (2) Admission for child abuse consultation in a developmentally delayed patient with self-injurious behavior who also reported physical abuse
1	Rhabdomyolysis	
1	On-call psychiatry requested admission for disorientation	Patient thought to be disoriented by consultant from psychiatry on evaluation. However, patient was oriented before sleeping and after awakening. Hold was lifted and patient discharged next day by child psychiatry
1	Poorly controlled diabetes ^a	Not in diabetic ketoacidosis
1	Pyelonephritis	Patient in ED for pyelonephritis; self-inflicted abrasions on wrists noted, and patient placed on hold
1	Pregnancy and psychosis ^a	Uncomplicated pregnancy but unable to be placed in a psychiatric facility due to pregnancy and admitted until birth of child (103-day stay)
1	Refusal to eat	
1	Mild alcohol withdrawal	
1	UTI in patient reporting HIV + status ^a	Patient admitted on oral antibiotics; HIV test results were negative
1	Rule out ectopic pregnancy ^a	Found to have early normal pregnancy.

ENT, ear, nose, and throat; UTI, urinary tract infection.

^a Would not normally require inpatient admission but given the coexisting medical condition, no psychiatric inpatient bed could be found.

TABLE 3 Comparison of Psychiatric Treatment of Patients Admitted to an Inpatient Psychiatric Facility With Patients Admitted to the Pediatric Ward for Boarding

Variable	Boarding on Pediatric Ward (n = 523)	Admitted to Inpatient Psychiatric Hospital (n = 38)	P
Any psychiatric medication administered	105 (20.1%)	17 (44.7%)	<.001
Any counseling documented	32 (6.1%)	34 (89.5%)	<.001

and interpersonal violence are significant concerns in psychiatric patients, and medical units may not be adequately equipped to deal with these challenges. The majority of acts of violence by psychiatric patients and the majority of suicides among hospitalized patients occur in the first week of hospitalization, a time frame relevant to patients boarding while awaiting placement.^{15,16} Depression and suicidal ideation are the most common reasons cited for involuntary holds, and suicide attempt before admission is the strongest predictor of inpatient suicide.^{17,18} Given the risks of violence and suicide in the first week of hospitalization, boarding patients in unlocked facilities with availability of sharps and other potentially dangerous items is a potentially risky practice.

In addition to safety issues, suboptimal treatment of the psychiatric condition is a major concern. The focus of the medical unit admitting team is often placement, not psychiatric treatment. Lack of psychiatric treatment in patients boarding on a medical unit is likely to result in a delay or loss of opportunity for intensive psychiatric treatment that could be provided on a psychiatric unit. As health care costs are increasingly scrutinized, it will be essential to document value of health care dollars spent. In our sample, we documented lower rates of counseling and psychiatric medication administration in patients boarding on a general pediatric medical unit compared with

patients transferred to an inpatient psychiatric facility. In some cases, patients' previously prescribed psychiatric medications were withheld (often awaiting parental consent for administration). Compliance with psychotropic medications is poor in children,¹⁹ and unnecessary cessations may confuse patients regarding the use or importance of these drugs. Although no documentation of withdrawal syndromes was found in our chart review, the potential does exist with rapid withdrawal of some of the psychotropic medications used commonly in children.²⁰

We found suboptimal psychiatric treatment despite the psychiatry residency program, child and adolescent psychiatry fellowship, and child crisis team at our facility. Pediatric mental health specialists are in short supply, and most facilities are less equipped to care for pediatric psychiatric patients.²¹ Only one-quarter of EDs providing pediatric care are located in hospitals with in-house mental health resources.²² Although this was a single-center trial, it is hard to imagine that medical hospitals with fewer resources provide more robust psychiatric care. Although involuntary psychiatric holds are, if required, extended beyond 72 hours, the standard period of observation and treatment of an involuntary psychiatric hold is 72 hours. For our patients, the median inpatient LOS on the medical unit was 2 days, meaning that two-thirds of the 72-hour hold period was

completed on a medical unit with little psychiatric treatment.

Inpatient hospitalization of pediatric psychiatric patients on a medical, rather than psychiatric, unit presents multiple potential hazards, as well as a level of psychiatric care inferior to what would be expected in an inpatient psychiatric facility. Improved access to psychiatric inpatient facilities, as well as improved outpatient services to minimize the number of patients who decompensate to the point of needing an involuntary psychiatric hold, is an expensive proposition. However, augmentation of these resources might be offset by savings from averted inpatient days in medical facilities²³ and would potentially result in improved patient care.

Our study is subject to the limitations of a retrospective chart review. At the time of this study, ED triage and disposition were documented in an electronic medical record, and all other documentation was handwritten and later scanned into the electronic medical record. Therefore, more patients were excluded for missing medical records than would likely be the case at a center with a more established electronic medical record system. One act of violence was noted, but we were not able to reliably determine the rate of violence during hospitalization. Reporting of acts of violence toward staff at our hospital is a closed process and usually not included in the patient chart. All notes by the primary team and consultants were reviewed, but it is possible that rates of counseling were underestimated if counseling occurred without being documented.

A major limitation of this study was that only a single center was studied.

Our center represents a unique practice setting, however. As a receiving center for mental health teams, a large proportion of patients are brought in on involuntary psychiatric holds. Therefore, the acuity and percentage of patients with psychiatric complaints may be higher than many centers. Although our hospital may not be representative of the country as a whole, we believe the study topic is important and requires further multicenter study. Finally, the calculation of cost is greatly subject to underestimation. For generalizability, we used an average noncritical care medical bed cost from 1 national sample instead of the average bed cost at LAC+USC because our state and system costs are higher than the national average. Our patient population is medically underserved; actual inpatient costs are likely elevated due to previously untreated, unrelated comorbidities, and our patient charges or costs would not be generalizable to other practice settings. Our physicians do not bill independent of the hospital charge; therefore, daily physician charges for pediatrics and psychiatry are not included. We also did not include sitter costs because we considered staffing costs to be included in the national medical bed cost. It is likely that we underestimated the true costs of caring for psychiatric patients on medical units. Furthermore, we focused on inpatient hospitalization, not including ED and transport costs, and our data are not intended to accurately represent the overall burden of emergency psychiatric care for children and adolescents.

CONCLUSIONS

We documented high rates of boarding of psychiatric patients on a pediatric medical unit with little psychiatric treatment during the admission. Many

regions face a shortage of psychiatric inpatient beds for pediatric patients, and patients are sometimes boarded on medical units. Our findings suggest that the current allocation of resources should be re-evaluated. Patients admitted to medical units are likely to experience a delay in receiving the intensive psychiatric treatment that could be provided in an inpatient psychiatric facility. As health care costs are increasingly scrutinized, boarding psychiatric patients on medical care units with little psychiatric care is increasingly problematic.

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APPENDIX SCREENING Criteria ICD-9-CM Discharge Diagnosis Codes

V70.1– V70.2	General psychiatric examination requested by the authority General psychiatric examination NOS
293.81–298.9	Other specified transient mental disorders due to conditions classified elsewhere Transient mental disorder NOS Persistent mental disorders due to conditions classified elsewhere: amnesia, dementia, mental disorders Schizophrenic disorders Episodic mood disorders Delusional disorders Other nonorganic psychoses
299.80–302.89	Other pervasive developmental disorders Unspecified pervasive developmental disorder Anxiety, dissociative and somatoform disorders Personality disorders Sexual and gender identity disorders
311–314.9	Depressive disorder, NOS Disturbance of conduct, NOS Disturbances of emotions specific to childhood and adolescence Hyperkinetic syndrome of childhood

ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification; NOS, not otherwise specified.

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