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# Who's Boarding in the Psychiatric Emergency Service?

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**Introduction:** When a psychiatric patient in the emergency department requires inpatient admission, but no bed is available, they may become a “boarder.” The psychiatric emergency service (PES) has been suggested as one means to reduce psychiatric boarding, but the frequency and characteristics of adult PES boarders have not been described.

**Methods:** We electronically extracted electronic medical records for adult patients presenting to the PES in an urban county safety-net hospital over 12 months. Correlative analyses included Student's t-tests and multivariate regression.

**Results:** 521 of 5363 patient encounters (9.7%) resulted in boarding. Compared to non-boarding encounters, boarding patient encounters were associated with diagnoses of a primary psychotic, anxiety, or personality disorder, or a bipolar manic/mixed episode. Boarders were also more likely to be referred by family, friends or providers than self-referred; arrive in restraints; experience restraint/seclusion in the PES; or be referred for involuntary hospitalization. Boarders were more likely to present to the PES on the weekend. Substance use was common, but only tobacco use was more likely associated with boarding status in multivariate analysis.

**Conclusion:** Boarding is common in the PES, and boarders have substantial psychiatric morbidity requiring treatment during extended PES stays. We question the appropriateness of PES boarding for seriously ill psychiatric patients. [West J Emerg Med. 2014;15(6):669-674]

## INTRODUCTION

When patients in the emergency department (ED) require psychiatric hospitalization, but inpatient beds are unavailable, they may be converted to inpatient status while remaining in the ED and awaiting transfer. This status is known as “boarding.” Boarding among medical patients is associated with adverse outcomes including increased mortality.<sup>1-4</sup> For psychiatric patients, boarding negatively impacts patient care, patient and staff safety, and health care expenditures.<sup>5-7</sup>

The increasing use of boarding for psychiatric patients reflects a number of factors – ED processes<sup>7,8</sup>; reduced inpatient psychiatric bed capacity and mental health financing; inefficient use of affordable community-based care; law enforcement processes; and legal standards for emergency

care.<sup>5,6,9</sup> Shrinking bed capacity is a national problem<sup>6,10,11</sup> and pronounced in our state of Washington, which has lost almost 16% of its inpatient beds since 2000, even as its population has grown by 14%.<sup>12,13</sup>

It has been suggested that specialized care through a psychiatric emergency service (PES) may speed patient flow,<sup>14</sup> and reduce hospitalization and boarding rates,<sup>6,9</sup> but the frequency of boarding in a PES remains unreported. And, adult PES boarders have not been described. Knowing who is boarding in the PES is essential for addressing the implications of psychiatric boarding, including care needs of patients with unexpectedly prolonged stays in the ED. We describe the extent of adult patient boarding in the PES of an urban, safety-net hospital and clinical characteristics of these patient encounters.

## METHODS

### Study Setting and Population

The study setting is an academically-affiliated urban safety-net hospital with a Level I Trauma Center. The ED sees approximately 60,000 annual patient encounters of which about 5,000 are seen in the PES. The PES is a physically separate space with 10 rooms and is staffed 24 hours a day by dedicated on-site attending and resident psychiatrists, mental health nurse practitioners, nurses, and social workers. Patients may be directed to the PES directly from triage or from the general medical ED. Patients transferred to the PES are presumed to be medically appropriate for potential admission to an inpatient psychiatry unit. Referrals are not excluded on the basis of age or diagnosis (eg, developmental disability). When PES patients require intensive medical evaluation or treatment, they are transferred to the general ED. The PES' treatment aims are acute stabilization and transfer to appropriate ongoing care.

In the PES, patients are placed on boarding status after the patient has been deemed to require admission and authorized for requisite funding (by private insurers or, for uninsured patients, the county), but no hospital bed is available in the community. Thus, only lack of disposition precipitates conversion to boarding status. Boarding does not presume a particular length of stay has been met. Boarders remain in the PES and are followed by PES providers while awaiting transfer.

### Study Design

We retrospectively reviewed electronic medical records for all consecutive patients 18 years or older seen over a 12 month period (June 1, 2011, through May 31, 2012). All data were collected as part of routine care. We analyzed data by encounter, which better reflects the frequency of boarding initiation and is consistent with prior literature.<sup>15,16</sup> The Institutional Review Board at the University of Washington approved this study.

### Study Measures and Data Analysis

Data were electronically extracted from our hospital's central medical record data repository (Amalga Unified Intelligence System SP3, Microsoft, 2011) using SQL Server Management Studio 10.50.2500 (Microsoft, 2008) and matched with patient encounter information from PES nursing logs stored in Excel (Microsoft, 2007). For each encounter, boarding status and physical restraint or seclusion use was obtained from nursing logs, the only available record for these data. Age, sex, and International Classification of Diseases (ICD)-9 billing codes for selected psychiatric diagnoses were obtained from the electronic medical record. The source that referred the patient to the PES was extracted from the clinician's medical record note or, if missing there, the nursing logs. Substance use was presumed negative unless there was a relevant ICD-9 code, positive toxicology screen, or note by

the clinical provider in the medical record. "High utilizers" were defined as patients with more than four visits over the preceding three month period.<sup>17</sup> In Washington State, county-designated health professionals (rather than PES clinicians) authorize involuntary hospitalization; we report on clinician-initiated requests for involuntary hospitalization, which are recorded in nursing logs and not necessarily granted. Race-ethnicity and insurance status were not available.

Clearly erroneous or missing data (e.g., nonsensical arrival dates, missing sex) were reviewed and corrected if possible through chart review by the first author. We conducted two-tailed Student's t tests to test for differences in characteristics between boarders and non-boarders. A multivariate regression, adjusted for random effects to account for patients making several encounters over the study period, was also conducted. We conducted analyses with Stata version 12 (StataCorp LP, 2011).

## RESULTS

We analyzed 5363 PES patient encounters (3681 unique patients) over one year after excluding 92 encounters with minors. Five hundred twenty-one patient encounters (9.7%, 466 unique patients) were converted to boarding status while in the PES. Boarding episodes lasted a median of 27.2 hours (range 0.3-143.0, IQR 34 hours). Data were complete except for 63 patient encounters (1.2%) missing source of referral and 154 non-boarder encounters (2.9%) missing ICD-9 diagnostic codes. There was no statistically significant difference between boarders and non-boarders in whether source of referral was missing ( $p=0.421$ ). We used 5,151 encounters (96%) without missing data in the multivariate regression model; no missing values were imputed.

The table describes characteristics of and differences between boarding and non-boarding encounters. In multivariate analysis, boarding encounters were associated with patients' referral to the PES by a party other than the patient; arrival on or just after the weekend; or arrival in restraints. Boarding encounters were more likely to involve physical restraint or seclusion in the PES or referral for involuntary hospitalization. Most boarding encounters (74%) involved a patient diagnosed with primary psychosis or bipolar manic/mixed episode. Boarder encounters were also more likely associated with primary anxiety disorders or personality disorders. Substance use was common among all patients – tobacco use was more common among boarding encounters and alcohol use less common.

## DISCUSSION

Nearly one in ten PES encounters resulted in boarding status. Many characteristics of psychiatric boarders were consistent with their need for hospitalization – including higher rates of psychotic disorders, personality disorders, and physical restraint and seclusion than among non-boarders. This substantial burden of illness among boarders

**Table.** Characteristics of psychiatric emergency services (PES) patient encounters by boarding status.

Characteristic	Boarder encounters n(%) <sup>a</sup>	Non-boarder encounters n(%) <sup>a</sup>	All encounters n(%) <sup>a</sup>	Test of difference <sup>b</sup>	All encounters	Multivariate regression OR (95% CI) <sup>c</sup>
Total	521(9.7) <sup>d</sup>	4842(90.3) <sup>d</sup>	5363(100) <sup>d</sup>		Encounters referred for involuntary hospitalization	
Age (mean, ±SD)	39.3(±12.7)	39.0 (±12.4)	39.1(±12.4)	p=0.667	1.01 (1.00-1.02)	1.00 (0.99-1.02)
Sex (male)	326(62.6)	3132(64.7)	3458(64.5)	p=0.338	0.93 (0.70-1.23)	0.97 (0.68-1.37)
Source of referral to PES <sup>e</sup>				p<0.001		
Self	119(23.2)	2370(49.5)	2489(47.0)		Ref	Ref
Police or jail	101(19.7)	413(8.6)	514(9.7)		1.39 (0.90-2.15)	1.02 (0.60-1.74)
Other	293(57.1)	2004(41.9)	2297(43.3)		1.53 (1.11-2.09)	1.05 (0.70-1.56)
Arrived to PES Sat/Sun/Mon	261(50.1)	1723(35.6)	1984(37.0)	p<0.001	2.15 (1.65-2.80)	3.75 (2.53-5.57)
High utilizer (≥4 visits/quarter)	8(1.5)	262(5.4)	270(5.0)	p<0.001	0.55 (0.20-1.50)	0.57 (0.17-1.91)
Arrived to PES in physical restraint	237(45.5)	1086(22.4)	1323(24.7)	p<0.001	1.55 (1.14-2.12)	1.17 (0.80-1.70)
Experienced physical restraint or seclusion in PES	223(42.8)	546(11.3)	769(14.3)	p<0.001	2.04 (1.48-2.82)	2.20 (1.48-3.27)
Referred for involuntary hospitalization	437(83.9)	757(15.6)	1194(22.3)	p<0.001	20.80 (14.61-29.62)	--
ICD-9 Diagnoses <sup>f</sup>						
Primary psychotic disorder	263(50.5)	1008(21.5)	1271(24.4)	p<0.001	3.93 (2.85-5.43)	3.07 (2.02-4.67)
Bipolar mania/mixed	120(23.0)	209(4.5)	329(6.3)	p<0.001	5.31 (3.49-8.08)	5.16 (2.94-9.06)
Primary depressive disorder	51(9.8)	731(15.6)	782(15.0)	p<0.001	0.95 (0.62-1.46)	0.97 (0.57-1.64)

Table. continued

	Boarder encounters n(%) <sup>a</sup>	Non-boarder encounters n(%) <sup>a</sup>	All encounters n(%) <sup>a</sup>	Test of difference <sup>b</sup>	All encounters	Multivariate regression OR (95% CI) <sup>c</sup>
Primary anxiety disorder	90(17.3)	580(12.4)	670(12.9)	p<0.001	1.81 (1.24-2.65)	1.91 (1.17-3.12)
Personality disorder	123(23.6)	510(10.9)	633(12.2)	p=0.002	2.13 (1.51-3.01)	2.19 (1.39-3.45)
Developmental delay	17(3.3)	43(0.9)	60(1.2)	p<0.001	1.94 (0.79-4.77)	3.14 (0.94-10.52)
Dementia	7(1.3)	33(0.7)	40(0.8)	p=0.113	3.28 (0.96-11.19)	2.44 (0.47-12.67)
Substance use						
Alcohol	92(17.7)	1507(31.1)	1599(29.8)	p<0.001	0.60 (0.43-0.84)	0.63 (0.42-0.97)
Cocaine/amphetamine	164(31.5)	1443(29.8)	1607(30.0)	p=0.427	1.06 (0.78-1.44)	1.04 (0.70-1.53)
Marijuana	140(26.9)	1094(22.6)	1234(23.0)	p=0.028	1.18 (0.86-1.62)	1.00 (0.67-1.49)
Opioid	44(8.5)	456(9.4)	500(9.3)	p=0.468	0.98 (0.60-1.59)	0.99 (0.53-1.84)
Phencyclidine	6(1.2)	38(0.8)	44(0.8)	p=0.378	1.30 (0.37-4.56)	0.79 (0.15-4.35)
Tobacco	155(29.8)	340(7.0)	495(9.2)	p<0.001	4.35 (3.06-6.19)	4.45 (2.72-7.29)
Any substance	301(57.8)	2978(61.5)	3280(61.2)	p=0.095	--	--

<sup>a</sup> Percent refers to share of all patients for whom applicable data were available.

<sup>b</sup> Two-tailed Student's t-test is reported for age as (t<sub>df</sub>), p.

<sup>c</sup> The multivariate regression model among all encounters used 5,151 encounters; the model among only those patients referred for involuntary hospitalization utilized 1162 encounters. Both were highly statistically significant (p < 0.01) and adjusted for random effects based on patients presenting multiple times. Referral source from police/jail or "other" were tested against self-referral by patient. Variables reaching statistical significance (p<0.05) are in bold.

<sup>d</sup> Percent refers to share of all PES encounters.

<sup>e</sup> 63 encounters (8 boarders and 55 non-boarders) were missing referral data. "Other" includes referrals from friends, family, or outpatient providers including physicians or case managers.

<sup>f</sup> 154 non-boarder encounters (3% of all encounters) were missing an ICD-9 diagnosis. Primary psychotic disorders include schizophreniaiform, schizophrenia, schizoaffective, and delusional disorders; primary depressive disorders include unipolar or bipolar depression; primary anxiety disorders include generalized anxiety, posttraumatic stress, obsessive compulsive, panic, somatoform, adjustment disorders, or anxiety not otherwise specified.

is challenging to treat in emergency settings, which lack the physical environment, therapeutic milieu, programming, and consistent provider teams of an inpatient unit.

That high PES use was less common among boarding encounters likely reflects our use of a definition suspected to identify "acutely sick" patients experiencing a discrete illness episode.<sup>17</sup> Upon hospitalization, these patients are no longer at risk for returning to the PES; remaining high utilizers likely present repeatedly without an indication for hospitalization.

These observed differences should not be interpreted as "predictors" of boarding, as prior studies have suggested among pediatric patients.<sup>16,18</sup> These differences reflect the indication for psychiatric hospitalization, and the placement of a patient on boarding status in this setting is most immediately consequent of the lack of inpatient bed availability when the decision is made to hospitalize. (Thus were boarders in this study more likely to arrive on or after the weekend when there are fewer discharges from inpatient psychiatry units.) Rather than for prediction, these results are valuable for alerting clinicians to the morbidity among psychiatric boarders.

Aside from its large sample with few missing data, there are several strengths to this study. The inclusion of all adult patients reduces the risk of sampling error or bias. We used multiple data sources to better describe this population. Finally, the use of electronic data abstraction minimizes error introduced by manual chart reviews.

## LIMITATIONS

This retrospective chart review is limited to data collected for clinical care. We could not compare our data sources to others as a check of validity, and there are no other reports to which to compare our conclusions. Information on clinical decision-making and patients' course of care in the PES was not available, including the use of laboratory or radiology testing or medication administration. We lacked data on race/ethnicity, housing, insurance status, or outpatient resources available to patients. This population may not generalize to other locales due to variations in practice and funding.

## CONCLUSION

Although it has been suggested that a PES may reduce psychiatric boarding, boarding remained common in this PES census. Serious psychiatric illness was frequent among adult PES boarders.

These findings can orient clinicians to psychiatric patients' needs while boarding – for instance, interventions for PES boarders might include intensified efforts to reduce restraint/seclusion, behavioral treatments for psychosis or impulse dysregulation, or assessment and treatment of nicotine withdrawal. These data also remind practitioners to evaluate for substance use in all patients referred for psychiatric evaluation. Future studies can help further clarify the role of a PES in reducing boarding.

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