

# Analysis of Emergency Department Length of Stay for Mental Health Patients at Ten Massachusetts Emergency Departments

Mark D. Pearlmutter, MD\*; Kristin H. Dwyer, MD; Laura G. Burke, MD; Niels Rathlev, MD; Louise Maranda, PhD; Greg Volturo, MD

\*Corresponding Author. E-mail: [mark.pearlmutter.md@steward.org](mailto:mark.pearlmutter.md@steward.org).

**Study objective:** Prolonged boarding times in the emergency department (ED) disproportionately affect mental health patients, resulting in patient and provider dissatisfaction and increased patient morbidity and mortality. Our objective is to quantify the burden of mental health boarding and to elucidate the effect of insurance together with demographic, social, and comorbid factors on length of stay.

**Methods:** We conducted a cross-sectional observational study of 871 consecutive patients requiring an ED mental health evaluation at one of 10 unaffiliated Massachusetts hospitals. Demographics; insurance; length of stay; medical, psychiatric, and social history; and disposition data were collected. We evaluated the effect of these characteristics on boarding time.

**Results:** ED median length of stay varied greatly by disposition, driven primarily by ED boarding time. Admitted and transferred patients had longer delays than discharged patients (5.63, 9.32, and 1.23 hours, respectively). Medical clearance time (1.40 hours) composed only 10.5% of total ED length of stay and varied little by insurance. In our multivariate analyses, patients with Medicaid and the uninsured had significantly longer total lengths of stay and were more than twice as likely to remain in the ED for 24 hours or greater compared with privately insured patients.

**Conclusion:** Mental health patients in Massachusetts have lengthy ED visits, particularly those requiring inpatient admission. Boarding time accounts for the majority of total ED length of stay and varies by insurance, even when other factors known to affect ED length of stay are controlled. Efforts to improve timeliness of care for mental health emergencies should focus on reducing ED boarding and eliminating disparities in care by insurance status. [Ann Emerg Med. 2016;■:1-10.]

Please see page XX for the Editor's Capsule Summary of this article.

0196-0644/\$-see front matter

Copyright © 2016 by the American College of Emergency Physicians.

<http://dx.doi.org/10.1016/j.annemergmed.2016.10.005>

## INTRODUCTION

### Background

Emergency department (ED) boarding, the practice of prolonged waiting in the ED for an inpatient hospital bed or transfer to another inpatient facility, is a pervasive public health problem.<sup>1</sup> Boarding has been shown to lead to ED crowding, poor patient experience and lower quality of care,<sup>2,3</sup> delays in treatment, with increased morbidity and mortality,<sup>4</sup> and lost revenue.<sup>5</sup> Although overall boarding is a common problem nationwide, patients with mental health emergencies are disproportionately affected.<sup>5-7</sup> Mental health patients wait more than 3 times longer for an inpatient bed than nonmental health admissions.<sup>5</sup> Mental health boarding consumes scarce ED resources and worsens crowding so that other patients with undifferentiated, potentially life-threatening conditions wait longer to be seen and treated.<sup>8</sup> One study demonstrated that every

mental health admission prevented 2.2 bed turnovers and cost the ED on average \$2,264.<sup>5</sup> This is exacerbated by the fact that mental health patients are more than 2.5 times more likely to require admission (41%) than patients with other conditions<sup>9</sup> and are routinely held in EDs for days or even weeks without access to definitive psychiatric care.<sup>10</sup> Prolonged boarding times for mental health patients can lead to increased medication errors and adverse outcomes.<sup>11,12</sup> Additionally, mental health boarding has a negative effect on nursing and physician job satisfaction.<sup>13</sup>

### Importance

Mental health emergencies represent a growing proportion of ED visits nationally, increasing from 5.4% in 2000 to approximately 12.5% as recently as 2007.<sup>9</sup> Mental health boarding has been the subject of ongoing policy discussions in Massachusetts, involving multiple

**Editor's Capsule Summary***What is already known on this topic*

Patients with psychiatric emergencies have longer emergency department (ED) length of stay than other patients.

*What question this study addressed*

This cross-sectional study examined potential patient- and administrative-level correlates of ED length of stay among 885 consecutive patients requiring mental health evaluation at a nonrandom but diverse sample of 10 Massachusetts EDs.

*What this study adds to our knowledge*

Patients requiring psychiatric admission or transfer had significantly longer length of stay than those discharged. Most of this difference was due to wait for a bed, not due to evaluation time; this wait was significantly longer for Medicaid and uninsured patients.

*How this is relevant to clinical practice*

This study provides further evidence that the wait for inpatient psychiatric beds, particularly for Medicaid or uninsured patients in Massachusetts, is the primary driver of ED psychiatric boarding.

governmental, regulatory, provider, and consumer stakeholders. There has been significant discussion about the factors that lead to prolonged ED stays for mental health patients, including which portion of the visit leads to the greatest delays (eg, medical clearance versus boarding time). In Massachusetts, the Department of Mental Health and the Division of Insurance<sup>14</sup> have questioned whether medical clearance is a significant contributor to prolonged length of stay. However, clinician experience and existing literature suggest that boarding time is a greater contributor to prolonged ED length of stay for mental health patients.<sup>15</sup> Furthermore, there has been a perception among emergency care providers that demographics, social factors, and insurance status may explain some of the differences in boarding times for ED patients. A 2012 study of 5 hospitals within a single health system in Massachusetts found prolonged total ED length of stay for uninsured relative to commercially insured patients, but no difference in boarding times after a disposition decision was made for admitted or transferred patients.<sup>16</sup> The study also found that public insurance was associated with an ED stay of greater than 24 hours.<sup>17</sup>

**Goals of This Investigation**

The objective of this study was to quantify the burden of mental health boarding in EDs across Massachusetts and to assess for variation in ED length of stay for mental health patients by insurance type. We sought to specifically assess the effect of health insurance status on the various components of ED length of stay (medical clearance, mental health response time, mental health evaluation, and boarding times) while taking into account other demographic variables and comorbidities that are believed to affect boarding times. Finally, we investigated which factors are specifically associated with prolonged ED boarding times greater than 24 hours in a diverse group of Massachusetts hospitals.

**MATERIALS AND METHODS****Study Design**

We performed a cross-sectional observational study of all patients requiring a mental health consultation in the ED who were treated during a 2-week period at one of 10 nonaffiliated preselected Massachusetts study hospitals.

Data abstraction forms were completed for the 885 consecutively enrolled patients; 14 patients were excluded because of incomplete interval data. Recorded data elements included demographic information, insurance carrier, length of stay, medical treatment and assessment, medical history, psychiatric diagnosis, and treatment and disposition (Appendix E1, available online at <http://www.annemergmed.com>). Additionally, data were collected on ED total length of stay and its component intervals: patient arrival to mental health evaluation request (medical clearance), mental health request to consultant arrival (mental health response time), arrival to completion of mental health evaluation (mental health evaluation), and completion of mental health evaluation to patient departure from the ED (boarding time). One individual from each site was trained and performed the chart abstraction, using a data abstraction manual (Appendix E2, available online at <http://www.annemergmed.com>). Time logs were kept on each patient, and when necessary, data were also collected from or verified by chart review. The same individual abstractor also completed the aggregate abstraction form, using the aggregate abstraction manual (Appendixes E3 and E4, available online at <http://www.annemergmed.com>).

**Study Setting**

All hospitals in Massachusetts were offered the chance to participate in the study, and the hospitals selected were those that expressed interest and were collectively reflective of the various ED treatment settings throughout the state, with the

intent of maximizing external validity. Subjects were enrolled from 10 nonaffiliated hospitals, 2 in each of the 5 state-defined emergency medical services (EMS) geographic regions. The study sites were composed of 7 community hospitals and 3 academic medical centers EDs. Six hospitals provide inpatient psychiatric care (Table 1), which reflects both the state's proportional availability of mental health beds in acute care hospital settings and academic ED volume compared with nonacademic ED volume. Annual ED volume ranged between 30,000 and 112,000 visits per year at the selected sites. Total ED volumes in the aggregate for these hospitals accounted for approximately 22% of ED visits in Massachusetts during this study period.<sup>18</sup>

### Selection of Participants

All consecutive patients, regardless of age, presenting to a participating ED during the study period (January 25 through February 7, 2012) who received a mental health evaluation were enrolled in the study.

### Data Collection and Processing

A standardized case report form (Appendix E1, available online at <http://www.annemergmed.com>) was developed, along with a detailed instruction and training manual for each site's data abstractors (Appendix E2, available online at <http://www.annemergmed.com>). Data abstraction was completed by detailed review of both electronic and paper medical records and customized time sheets. Case report forms were completed at each site and then manually entered into a REDCap (version 6.7; Vanderbilt, Nashville, TN) database for analysis.<sup>19</sup> Data integrity was verified through quality assurance at the individual site level and by the project research coordinator once entries were made into the database. Staff and clinicians evaluating patients were instructed to keep accurate time logs of patient arrival, mental health evaluation request, mental health consultant

arrival, completion of mental health evaluation, and patient departure to calculate the 4 individual time components of ED length of stay. Intervals that were incomplete or appeared inaccurate were referred to the site for completion and verification by the research coordinator. After this process, patients with inaccurate or incomplete data were excluded from the study. Each site and subject was provided with an individual study identifier so that protected health information entered into the case report form was deidentified. The case report form captured primary and secondary psychiatric diagnoses, as well as corresponding *International Classification of Diseases, Ninth Revision* codes. Patients were further categorized into 7 insurance groups for analysis: private, Medicare, Medicaid, dual Medicaid and Medicare coverage, State Commonwealth insurance (a publicly subsidized insurance created by Massachusetts health reform in 2006), uninsured or self-pay, and other.

### Outcome Measures

We used ED length of stay and its component intervals (medical clearance, mental health response, mental health evaluation, and boarding time) as a measure of throughput for patients because this metric has been used in multiple other mental health studies<sup>5,16,20</sup> and is also what is reported as a quality metric for emergency care by the Centers for Medicare & Medicaid Services Hospital Compare Web site (<https://medicare.gov/hospitalcompare/about/timely-effective-care.html>). The primary outcome in this study was mental health boarding time, which was analyzed according to disposition (discharged, admitted, or transferred to an outside acute care facility).

### Primary Data Analysis

All analyses were performed with SPSS (version 22; IBM, Armonk, NY). The code for data analysis is in Appendix E5,

**Table 1.** Hospital site summary data.

Hospital Site	N	Type	Inpatient MH Beds	Annual Total ED Volume	Annual MH Volume	Annual Med Surg LOS, Admitted, Hours:Minutes*	Annual Med Surg LOS, Transfer, Hours:Minutes*
1	117	Academic	28	112,713	13,664	7:36	6:20
2	86	Academic	25	56,787	1,749	5:28	N/A
3	116	Community	22	61,932	6,396	5:38	N/A
4	54	Community	20	36,123	1,944	3:41	4:23
5	84	Community	N/A	74,834	4,364	5:38	5:53
6	123	Community	N/A	51,973	1,238	5:06	3:02
7	63	Community	N/A	55,187	3,567	5:35	5:00
8	60	Community	32	37,192	2,754	4:56	3:38
9	85	Community	N/A	49,291	2,331	5:05	4:18
10	83	Academic	56	97,032	5,117	11:20	12:12

MH, Mental health; LOS, length of stay; med surg, medical surgical.

\*Mean medical surgical LOSs for admitted and transferred patients were collected from sites in aggregate. These are average LOSs for the year in which our study was conducted.

available on line at <http://www.annemergmed.com>. Summary statistics were generated for demographic variables by site (Table 2). For continuous variables, the median and interquartile ranges were calculated, and for categorical variables, proportions were calculated and compared with Pearson's  $\chi^2$  test. The total ED length-of-stay time components were expressed as medians, with their associated 95% confidence intervals (CIs).

We analyzed the influence of insurance on the total ED length of stay and each time component by using a univariate Kaplan-Meier survival analysis detecting significant differences in median time with the log-rank test. However, our primary analysis was a multivariate Cox regression model evaluating ED boarding times by disposition (discharge, transfer, or admission) across insurance type. We identified a number of factors we believe impact mental health boarding times to evaluate as potential confounders: age, race, sex, alcohol and substance abuse, medical problems, history of aggressive behavior, recent mental health admission, prisoner status, homelessness, prearranged bed, hospital site, and day of admission. We evaluated the effect of hospital site, hospital type (community versus academic), hospital size (small, medium, and large), and hospital access to inpatient psychiatric beds in our Cox regression analysis. Testing was performed to evaluate the significance of these potential confounders by identifying variables that modified the crude hazard ratio estimates by a factor of 10% or more. The assumption of constant hazard ratios across time was tested by ascertaining that none of the log-log survival curves for each of the 7 insurance categories crossed one

another. The association between the type of insurance and the time of occurrence for each step of the ED stay is expressed as an adjusted hazard ratio.

Finally, an additional logistic regression analysis was carried out to quantify the association between long length of stay (more than 24 hours) and risk factors of interest. We used median as our measure of central tendency, given the skewed nature of mental health boarding data, as is convention for nonparametric data. The 24-hour threshold was not selected a priori; however, the Massachusetts Department of Public Health has required hospitals to report boarding greater than 12 and 24 hours, and previous literature has also used a 24-hour cutoff to define extended length of stay for mental health patients.<sup>17</sup> In our first modeling step, we calculated crude associations between "insurance status" (our exposure) and "length of stay greater than 24 hours" (our outcome), using a threshold for significance of 0.20. A saturated logistic model that included our exposure (type of insurance) and the identified significant covariates was constructed, including those variables that modified the calculated odds ratio estimates by a factor of 10% or more, and forcing the variable "prearranged admission" into the model. The resulting association between the probability of an extended length of stay (>24 hours) and the type of insurance is expressed as an adjusted odds ratio.

## RESULTS

Hospital and ED structural characteristics, as well as aggregate mean boarding time for medical and surgical

**Table 2.** Patient summary data.\*

Hospital Site	1	2	3	4	5	6	7	8	9	10
Age, y	28 (16, 43)	39 (23, 52)	31 (20, 46)	40 (29, 48)	32 (20, 46)	29 (18, 45)	26 (19, 47)	46 (30, 52)	27 (17, 47)	39 (25, 47)
Men	53.8	55.8	56	57.4	57	51.2	42.9	56.7	62.4	50.6
White	51.3	60.5	67.5	94.4	57	75.6	93.7	80	84.7	66.3
<b>MH diagnosis</b>										
Mood	58.1	59.3	72.6	74.1	67.9	58	50.8	83.3	61.1	78
Adjustment	12.8	2.3	0.9	1.9	7.4	3.4	6.3	0	8.2	2.4
Psychoses	9.4	18.6	12.8	14.8	8.6	16.8	12.7	13.3	8.2	15.9
Substance	7.7	14	12	5.6	8.6	18.5	20.6	0	18.8	2.4
Anxiety	12	5.8	1.7	3.7	7.4	3.4	9.5	3.3	3.5	1.2
Prearranged bed	8.5	7	1.7	0	1.2	9.8	7.9	11.7	4.7	3.6
Active ETOH use	29.9	30.2	25.6	20.4	23.5	23.6	22.2	20	25.9	28.9
Active drug use	29.1	41.9	43.6	40.7	37.2	28.5	12.7	21.7	38.8	33.7
Active medical problem	17.9	20.9	17.2	7.5	30.6	13.8	20.6	25	20	18.1
Aggressive behavior	4.3	5.8	17.1	7.4	4.7	8.9	12.7	6.7	9.4	7.2
Recent MH admission	13.7	4.7	15.4	7.4	5.8	6.5	4.8	3.3	14.1	7.2
Prisoner	3.4	1.2	6.8	9.3	3.5	4.9	0	0	0	2.4
Homelessness	5.1	9.3	9.4	7.4	9.3	8.9	1.6	5	4.7	12
Weekday admission	59	68.6	64.7	64.8	64	65.9	74.6	55	62.4	65.1

ETOH, Alcohol.

\*All categorical variables presented as percentage, and all continuous variables are median (IQR), unless otherwise stated.



patients, are presented in Table 1. Subjects enrolled at these 10 sites were mostly comparable (Table 2), except for the variable age, in which site 1 had the youngest median age (28 years; interquartile range [IQR] 16, 43) and site 8 had the oldest median age (46 years; IQR 30, 52). Other differences were found in the percentages of social comorbidities (alcohol and drug use, aggression, previous psychiatric consultation, and previous incarceration).

In our study, the mean length of stay for medical or surgical admissions and transfers during the same 2-week period was 4.2 hours and 3.9 hours, respectively, compared with the mental health mean length of stay of 16.5 hours and 21.5 hours, respectively.

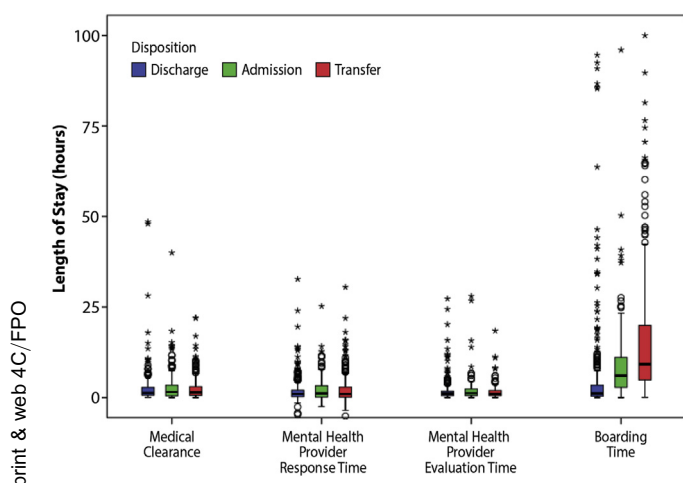
The aggregated median length of stay for all patients in our sample stratified by disposition is presented in Figure 1. The time components that occurred before a disposition decision (medical clearance, mental health provider response time, and mental health provider evaluation time) did not differ by patient disposition. However, after a disposition decision was made, the majority of discharged patients left the ED relatively quickly (1.3 hours; 95% CI 1.1 to 1.5 hours). However, admitted patients boarded in the ED for a median of 6.0 hours (95% CI 5.6 to 6.9 hours), and transferred patients boarded for 9.2 hours (95% CI 7.7 to 11.5 hours).

The overall total median length of stay for mental health patients was 10.92 hours. Patients with State Commonwealth insurance (8.32 hours; 95% CI 5.59 to 11.04 hours) and private insurance (8.83 hours; 95% CI 7.40 to 10.27 hours) experienced the shortest overall length of stay, with self-pay or uninsured patients (13.88 hours; 95% CI 8.70 to 20.07 hours) having the longest total

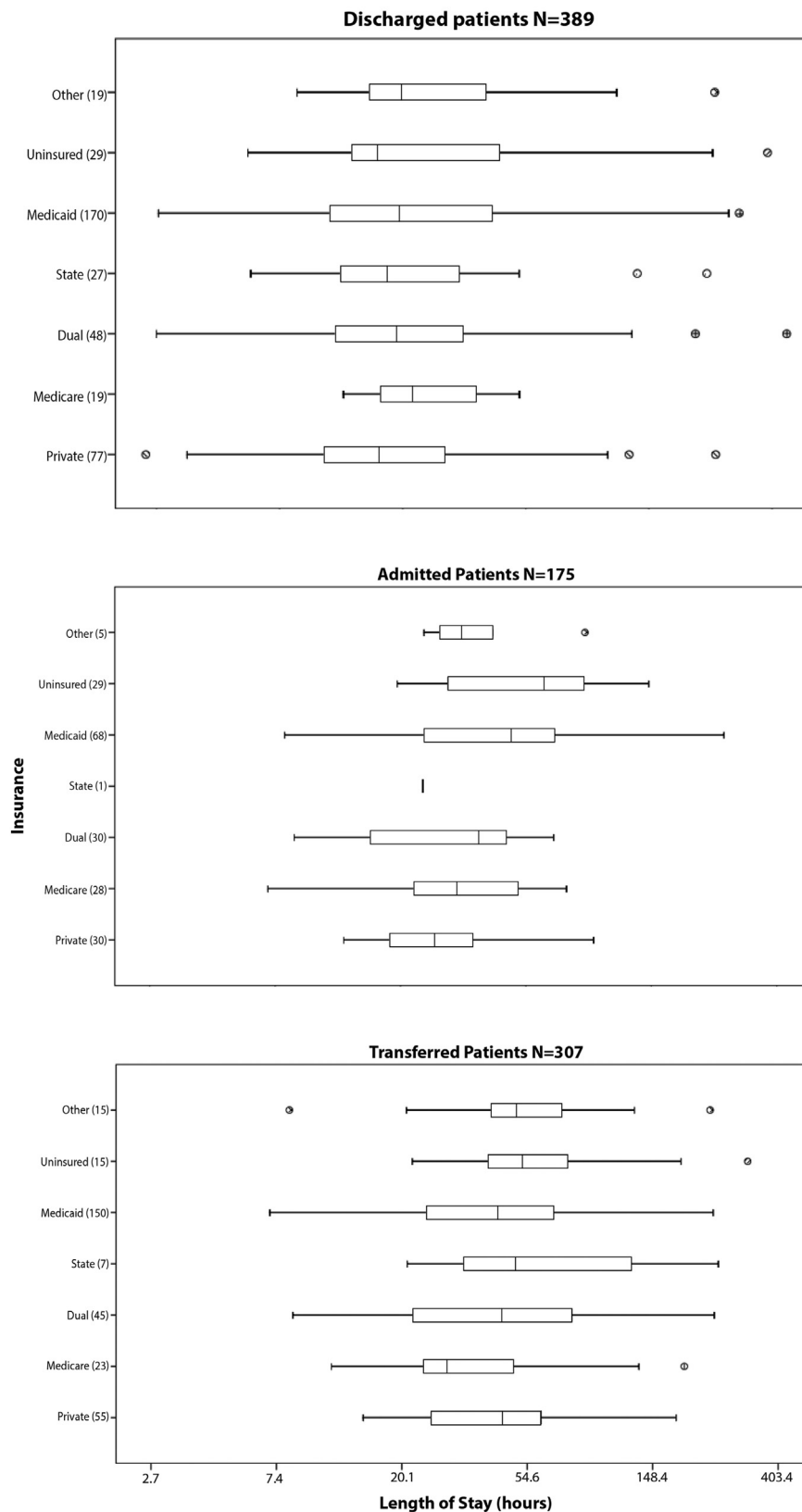
length of stay. However, a much larger percent of State Commonwealth patients compared with all other insurance types were discharged from the ED (77% versus 51%), and discharged patients had a shorter ED length of stay on average compared with admitted or transferred patients. Using a Mantel-Cox analysis, we identified a significant difference between self-pay or uninsured patients in comparison with patients with Medicaid or “other” insurance. Additionally, there was a significant difference in overall ED length of stay for uninsured patients relative to those with Medicare.

The median time for medical clearance was similar for all patients, regardless of insurance type (1.40 hours; 95% CI 1.26 to 1.55 hours). Insurance type was associated with a difference in mental health response times (1.1 hours; 95% CI 1.0 to 1.3 hours) and mental health evaluation times (1.1 hours; 95% CI 1.0 to 1.2 hours). However, the magnitude of the difference was small for both time components. As shown in Figure 2, there was a marked difference in median time to leave the ED after a disposition decision was made (boarding time), depending on whether the patient was admitted (5.6 hours; 95% CI 4.2 to 7.0 hours), transferred (9.3 hours; 95% CI 7.8 to 11.0 hours), or discharged (1.2 hours; 95% CI 1.0 to 1.5 hours). However, when we stratified by disposition category, we found a varying association between boarding time and insurance status. For discharged patients, boarding time varied little by insurance type. Transferred patients, by contrast, experienced median boarding times ranging from 7.1 hours (95% CI 6.4 to 7.9 hours) for patients with Medicare to 13.4 hours (95% CI 9.0 to 17.8 hours) for patients with “other” insurance type. For patients admitted to the same hospital, State Commonwealth (2.8 hours; n=1) and Medicare patients (3.9 hours; 95% CI 2.3 to 5.5 hours) had the shortest boarding times, whereas uninsured patients had the longest (9.9 hours; 95% CI 2.4 to 17.4 hours). We present the logarithmic boarding time by disposition type (admitted, discharged, or transferred) and stratified by insurance type to better illustrate the shorter time intervals.

We performed a multivariate survival analysis to evaluate boarding time by insurance adjusting for multiple other variables of interest (Table 3). Independent Cox proportional hazards models were fitted for each period. The hazard ratio in this survival analysis represents the ED boarding time (or the “risk” of departing the ED) for admitted, transferred, and discharged patients by insurance type, using private insurance as the reference group. Privately insured, Medicare, and dual Medicare and Medicaid patients who are admitted appeared to have similar boarding times. Uninsured and self-pay patients



**Figure 1.** Median length of stay by time component for mental health patients in the ED. (To improve the scale of the Y-axis, 2 patients with length-of-stay values of 129 and 162 are depicted here at 100 hours)



**Figure 2.** Boarding time by disposition and insurance.

**Table 3.** Adjusted hazard ratios for boarding time by disposition.

Insurance	Boarding					
	n	Admitted Patients (CI)	n	Transferred Patients (CI)	n	Discharged Patients (CI)
Private	25	[Reference]	43	[Reference]	64	[Reference]
Medicare	20	1.02 (0.55–1.86)	19	0.72 (0.42–1.25)	18	1.10 (0.63–1.90)
Dual	17	0.87 (0.46 to 1.63)	35	0.69 (0.44–1.08)	45	0.88 (0.59–1.31)
State	1	N/A	7	0.32 (0.13–0.74)	27	1.01 (0.65–1.59)
Medicaid	55	0.65 (0.39–1.07)	111	0.71 (0.50–1.02)	147	0.81 (0.60–1.10)
Uninsured	9	0.36 (0.16–0.82)	14	0.47 (0.25–0.89)	25	0.75 (0.47–1.19)
Other	5	0.61 (0.21–1.73)	12	0.64 (0.34–1.22)	13	0.74 (0.41–1.34)
Significant confounders	Day of admission and aggressive behavior		Day of admission and homelessness		Age	

experienced a significantly longer boarding time (hazard ratio 0.36; 95% CI 0.16 to 0.82) relative to privately insured patients. These comparisons take into account the day of admission and the display of aggressive behavior, the identified confounders in the analysis. Although hospital site was investigated as a covariate in the analysis, it was not significant and therefore was not included in the final model.

For patients transferred to another facility for inpatient psychiatric treatment, the boarding time is significantly longer for those with State Commonwealth insurance (hazard ratio 0.32; 95% CI 0.13 to 0.74) and for the uninsured and self-pay group (hazard ratio 0.47; CI 0.25 to 0.89). These comparisons take into account the day of admission and homelessness. For patients deemed safe to be discharged from the ED, the time from disposition decision to departure varied little among insurance types, and the only significant covariate identified was age.

Adjusted associations for the relationship between insurance type and the probability of spending 24 hours or more in the ED can be found in Table 4. Of all the possible confounders, we retained age, mode of arrival to the ED, arrival during the weekend, prearranged admission, homelessness, and aggressive behavior. All others (sex, race, presence of comorbidities, alcohol or substance abuse, recent psychiatric admission, and history of incarceration) were not found to be significant. We found that uninsured

**Table 4.** The odds ratio of ED stay greater than 24 hours by insurance.

Insurance	N	Adjusted Odds Ratio*	95% CI
Private insurance	161		
Medicare	70	0.72	0.28–1.89
Dual Medicare/Medicaid	120	1.53	0.75–3.11
State/Commonwealth	35	1.33	0.45–3.96
Medicaid	382	2.04	1.15–3.61
Uninsured/self-pay	57	2.81	1.27–6.22
Other	38	1.86	0.69–4.98

\*Adjusted for age, mode of arrival, weekend arrival, aggression, homeless, and prearranged bed.

patients were 2.8 times more likely to have an ED stay greater than 24 hours (adjusted odds ratio 2.8; 95% CI 1.27 to 6.22), whereas patients with Medicaid were twice as likely to remain in the ED for greater than 24 hours compared with privately insured patients (adjusted odds ratio 2.04; 95% CI 1.15 to 3.61).

## LIMITATIONS

There were notable limitations to this observational cross-sectional study. Because there was only 1 data abstractor per site who was not blinded to the study hypothesis, there was no interrater reliability testing performed. Data abstraction forms were completed at the individual hospital sites, and some subjects initially had missing demographic or interval data.

We experienced some loss of data during the transitions between the individual time components of the total length of stay. Fourteen subjects (1.6%) were eventually dropped from the study base as a result despite vigorous attempts to locate missing data from the sites. Although we were able to enroll subjects at 10 nonaffiliated hospitals, they were all in Massachusetts, which limits generalizability to other states. However, we do not have reason to believe that mental health boarding times and demographic differences differ substantially between Massachusetts and other states across the United States, and we included a diverse group of hospitals in terms of size, region, and academic status. Nor can we exclude the possibility of unmeasured bias or confounding; however, we accounted for many demographic features—insurance status, disposition, aggression, necessity of restraints, etc—in an effort to control for prominent confounders. A generalized estimating equations analysis was not conducted to evaluate for the influence of site, although site was investigated as a covariate in the regression analysis. Last, the time-series analysis may be limited by an autocorrelation effect, whereby during times of overall system overload the mental health provider response times and boarding times for

admissions or transfers are likely to be prolonged, which could affect the overall length of stay.

## DISCUSSION

In our study of 10 diverse and unaffiliated EDs in Massachusetts, we again found a prolonged ED length of stay for mental health patients. Overall length of stay was significantly greater for patients requiring admission or transfer, and this varied substantially by insurance type. Medical clearance, in contrast, represented a relatively small fraction of total ED length of stay and varied neither by disposition nor insurance status. Consistent with clinical experience, patients with public or no insurance experienced longer waits to definitive care. In a multivariate survival analysis, we found that uninsured admitted and transferred patients tended to board in the ED for a significantly longer period than those with private insurance. The uninsured and Medicaid beneficiaries were also more likely to spend 24 hours or more in the ED. This was true even when other comorbidities were controlled for, such as a history of aggression, incarceration, substance abuse, and homelessness, factors traditionally associated with difficulty in obtaining inpatient psychiatric placement.

Prolonged ED boarding of mental health patients has received attention in the medical literature and popular press.<sup>2,21-24</sup> Although ED boarding for patients overall continues to be problematic, those presenting with mental health emergencies tend to have some of the longest waits for definitive care.<sup>5</sup> This suggests that although the notion of mental health parity has received greater attention in recent years, the inequity in care for this particularly vulnerable group of patients persists. Front-line providers have also suspected that insurance may mediate prolonged boarding times for psychiatric patients in a way that is not generally observed for medical or surgical patients. Although we did not investigate the effect of insurance status on medical or surgical boarding times, the mean length of stay for mental health patients during our 2-week study period was nearly 4 times greater for admitted and 5 times greater for transferred mental health patients relative to admitted and transferred medical and surgical patients during the same period. Although the method of data collection for each of these length-of-stay measures does not lend itself to a formal statistical comparison, it does suggest a disparity in timeliness of care for mental health care relative to other conditions.

Additionally, there has been debate about how to address this problem of prolonged ED length of stay for mental health patients, with some suggesting a focus on

expedited medical clearance as a key strategy to reduce total ED length of stay.<sup>14</sup> Our data suggest that medical clearance times are relatively uniform across all insurance types and disposition, representing a small fraction of the overall ED length of stay. These findings suggest that policies to address prolonged ED length of stay will have the greatest influence if focused on the long waits to definitive treatment (boarding) rather than the comparably short medical clearance evaluation.

Other studies have demonstrated significant variation in ED length of stay by disposition, with admitted patients having longer total treatment times than discharged patients, and transferred patients having the longest times.<sup>17</sup> Our results are consistent with these previous studies of mental health boarding, as well as with the large body of general emergency medicine literature indicating that the wait for inpatient treatment is the largest driver of delays and crowding for ED patients.<sup>5,13,15,17,20,25</sup> This issue is particularly true for the uninsured and underinsured. We found that uninsured patients spent approximately 4 hours longer in the ED relative to those with private insurance. Although total ED length of stay was not significantly different for patients with public insurance, the interval from disposition decision to leaving the ED was significantly greater for Medicaid patients relative to privately insured individuals.<sup>17</sup>

Our study augments this previous literature several ways. First, it was designed to enhance the generalizability of our findings to reflect the diverse landscape of ED mental health care. In particular, we obtained data from nonaffiliated EDs across Massachusetts, including small community hospitals and large academic medical centers with and without inpatient mental health beds. Moreover, the mental health evaluation was performed by a variety of licensed mental health clinicians, including physicians, residents, social workers, and psychologists, who were either on-site employees or part of geographically assigned mobile screening teams who service multiple EDs.

There has been extensive debate and proposed solutions, including a 7-point plan to mitigate mental health boarding.<sup>3</sup> And although the causes are multifactorial, the lack of access to community mental health services is frequently beyond the control of individual hospitals and EDs. Many have argued that solutions for mental health boarding and crowding may need to be legislated.<sup>26</sup> Although myriad solutions have been proposed, there is a critical need for intervention-based trials to reduce mental health boarding to best evaluate which solutions are most effective. A recent publication demonstrated that community EDs with an associated regional emergency psychiatric service had substantially shorter boarding times



and inpatient admission rates.<sup>27</sup> Support for such community-based initiatives is urgently needed. In addition, the Patient Protection and Affordable Care Act has created opportunities to break down fragmented mental health care and explore alternative payment modeling studies seeking to better coordinate and integrate mental and physical health care. Moreover, recent case reports of successful community-based paramedicine programs support the need for future exploratory studies investigating the effect of mental health boarding resulting from averting ED visits with mobile integrated health.<sup>28,29</sup> Emergency physicians are well positioned to lead multidisciplinary collaborative efforts to improve community-based access and overall quality of care for this vulnerable patient population at both state and federal levels, using legislative and regulatory means.

In summary, across a broad spectrum of nonaffiliated institutions, our study found that the burden of prolonged length of stay for mental health patients is due primarily to boarding in the ED for patients awaiting admission or transfer. Efforts aimed solely at expediting medical clearance are unlikely to substantially improve the throughput for these patients. We also found that the uninsured and those with Medicaid had greater delays to definite care and were more likely to remain in the ED for more than 24 hours. Policies to address delays in care for mental health patients should focus on reducing boarding times and addressing the mechanisms for lack of parity by insurance type.

*The authors acknowledge the following sites and individuals for contributing to data collection: Halping Li, MD, at Baystate Medical Center; Gloria Vignone, RN, at Sturdy Hospital; Lisa Harrington, RN, at Brockton Hospital; Patrick Curran, MD, at Lawrence General Hospital; Robert Dart, MD, at Quincy Hospital; Jeffrey B. Hopkins, MD, at Milford Regional Medical Center; Raymond Conway, MD, at Cooley Dickinson Hospital; Edwin Boudreaux, PhD, at the University of Massachusetts Memorial Medical Center; and Kathy Albert, RN, at Lowell General Hospital.*

Supervising editor: Megan L. Ranney, MD, MPH

*Author affiliations:* From the Department of Emergency Medicine, Steward St Elizabeth's Medical Center, Tufts University School of Medicine, Boston, MA (Pearlmutter); the Department of Emergency Medicine, Rhode Island Hospital, Brown Medical School, Providence, RI (Dwyer); the Department of Emergency Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA (Burke); the Department of Emergency Medicine, Baystate Medical Center, Tufts University School of Medicine (Rathlev); the Department of Quantitative Health Sciences, University of Massachusetts Medical School (Maranda); and the

Department of Emergency Medicine, University Mass Memorial Medical Center (Volturo).

*Author contributions:* MDP conceived the study, designed the trial, obtained research funding, supervised the conduct of the trial, oversaw recruitment of participating centers and site investigators, and supervised data collection. MDP and KHD managed the data, including quality control. LM provided statistical advice on study design and analyzed the data. All authors drafted portions of the article. MDP, KHD, and LB contributed substantially to its revision. MDP takes responsibility for the paper as a whole.

All authors attest to meeting the four ICMJE.org authorship criteria: (1) Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND (2) Drafting the work or revising it critically for important intellectual content; AND (3) Final approval of the version to be published; AND (4) Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

*Funding and support:* By *Annals* policy, all authors are required to disclose any and all commercial, financial, and other relationships in any way related to the subject of this article as per ICMJE conflict of interest guidelines (see [www.icmje.org](http://www.icmje.org)). The authors have stated that no such relationships exist. Supported by an ACEP Chapter Grant.

*Publication dates:* Received for publication October 29, 2015. Revisions received April 18, 2016, and July 19, 2016. Accepted for publication October 4, 2016.

Presented at the Center for Health Information Analysis (CHIA) Massachusetts College of Emergency Physicians annual meeting, Waltham, MA, May 7, 2014; and the Massachusetts Department of Public Health Diversion and Boarding Task Force, Waltham, MA, Spring 2014.

## REFERENCES

1. Pitts SR, Vaughns FL, Gautreau MA, et al. A cross-sectional study of emergency department boarding practices in the United States. *Acad Emerg Med*. 2014;21:497-503.
2. Bender D, Pande N, Ludwig M. *Psychiatric Boarding Interviews*. Washington, DC: US Dept of Health & Human Services, Office of the Assistant Secretary for Planning & Evaluation; 2009.
3. Alakeson V, Pande N, Ludwig M. A plan to reduce emergency room "boarding" of psychiatric patients. *Health Aff (Millwood)*. 2010;29:1637-1642.
4. Bernstein SL, Aronsky D, Duseja R, et al. The effect of emergency department crowding on clinically oriented outcomes. *Acad Emerg Med*. 2009;16:1-10.
5. Nicks BA, Manthey DM. The impact of psychiatric patient boarding in emergency departments. *Emerg Med Int*. 2012;2012:360308.
6. Slade EP, Dixon LB, Semmel S. Trends in the duration of emergency department visits, 2001-2006. *Psychiatr Serv*. 2010;61:878-884.
7. Ding R, McCarthy ML, Desmond JS, et al. Characterizing waiting room time, treatment time, and boarding time in the emergency department using quantile regression. *Acad Emerg Med*. 2010;17:813-823.
8. Abid Z, Meltzer A, Lazar D, et al. Psychiatric boarding in the US EDs: a multifactorial problem that requires multidisciplinary solutions. Policy brief. *Urgent Matters*. 2014;1:1-6.

9. Owens PL, Mutter R, Stocks C. Mental Health and Substance Abuse–Related Emergency Department Visits Among Adults, 2007: Statistical Brief #92. 2010. Available at <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb92.pdf>. Accessed November 28, 2016.
10. Kutscher B. Bedding, not boarding. Psychiatric patients boarded in hospital EDs create crisis for patient care and hospital finances. *Mod Healthc*. 2013;43:15-17.
11. Liu SW, Thomas SH, Gordon JA, et al. A pilot study examining undesirable events among emergency department–boarded patients awaiting inpatient beds. *Ann Emerg Med*. 2009;54:381-385.
12. Bakhsh HT, Perona SJ, Shields WA, et al. Medication errors in psychiatric patients boarded in the emergency department. *Int J Risk Saf Med*. 2014;26:191-198.
13. Misek RK, DeBarba AE, Brill A. Predictors of psychiatric boarding in the emergency department. *West J Emerg Med*. 2015;16:71-75.
14. Murphy JG. Report Summarizing the Study of Differences Between Behavioral Health and Non-Behavioral Health Treatment Records for Massachusetts Health Insurance Carriers When Referring Patients from Hospital Emergency Departments. 2014. Available at: <http://www.mass.gov/ocabr/docs/doi/examination-of-carriers-compliance.pdf>. Accessed November 13, 2016.
15. Stone A, Rogers D, Kruckenberg S, et al. Impact of the mental health delivery system in California emergency departments. *West J Emerg Med*. 2012;13:51-56.
16. Chang G, Weiss AP, Orav EJ, et al. Hospital variability in emergency department length of stay for admitted patients receiving psychiatric consultation: a prospective study. *Ann Emerg Med*. 2012;58:127-136.
17. Chang G, Weiss A, Kosowsky JM, et al. Characteristics of adult psychiatric patients with stays of 24 hours or more in the emergency department. *Psychiatr Serv*. 2012;63:283-286.
18. Centers for Health Information and Analysis. Acute hospital utilization trends in Massachusetts FY2009-FY2013. Available at: <http://chiamass.gov/utilization-analysis/>. Accessed October 16, 2015.
19. Harris P, Taylor R, Thielke R, et al. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42:377-381.
20. Weiss AP, Chang G, Rauch SL, et al. Patient- and practice-related determinants of emergency department length of stay for patients with psychiatric illness. *Ann Emerg Med*. 2012;60:162-171.
21. Bender D, Pande N, Ludwig M. A Literature Review: Psychiatric Boarding. Washington, DC: US Dept of Health & Human Services, Office of the Assistant Secretary for Planning & Evaluation. 2008. Available at: <http://aspe.hhs.gov/daltcp/reports/2008/PsyBdLR.pdf>. Accessed September 16, 2016.
22. Baraff LJ, Janowicz N, Asarnow JK. Survey of California emergency departments about practices for management of suicidal patients and resources available for their care. *Ann Emerg Med*. 2006;48:452-458.
23. American College of Emergency Physicians (ACEP) psychiatric and substance abuse survey 2008. Fact sheet. Available at: [http://www.acep.org/uploadedFiles/ACEP/Advocacy/federal\\_issues/PsychiatricBoardingSummary.pdf](http://www.acep.org/uploadedFiles/ACEP/Advocacy/federal_issues/PsychiatricBoardingSummary.pdf). Accessed October 20, 2015.
24. Gold J. Mentally ill languish in hospital emergency rooms. 2011. Available at: <http://www.npr.org/2011/04/13/135351760/mentally-ill-languish-in-hospital-emergency-rooms>. Accessed October 30, 2016.
25. Stephens RJ, White SE. Selected topics: psychiatric emergencies, factors associated with longer length of stay for mental health emergency department patients. *J Emerg Med*. 2014;47:412-419.
26. Rabin E, Kocher K, McClelland M, et al. Solutions to emergency department “boarding” and crowding are underused and may need to be legislated. *Health Aff (Millwood)*. 2012;31:1757-1766.
27. Zeller S, Calma N, Stone A. Effects of a dedicated regional psychiatric emergency service on boarding of psychiatric patients in area emergency departments. *West J Emerg Med*. 2014;15:1-6.
28. Ross DW, Schullek, Homan MB. EMS triage and transport of intoxicated individuals to a detoxification facility instead of an emergency department. *Ann Emerg Med*. 2013;61:175-184.
29. Kizer K, Shore K, Moulin A. Community paramedicine: a promising model for integrating emergency and primary care. 2013. Available at: [http://www.ucdmc.ucdavis.edu/iphil/publications/reports/resources/IPHI\\_CommunityParamedicineReport\\_Final%20070913.pdf](http://www.ucdmc.ucdavis.edu/iphil/publications/reports/resources/IPHI_CommunityParamedicineReport_Final%20070913.pdf). Accessed November 10, 2016.

## APPENDIX E1

## Mental health boarder study

Data Abstraction Form

(Site Specific)

Reviewer's Initials \_\_\_ \_\_\_ \_\_\_

## Section 1. Basic Information

1.	Site: XXX				
2.	Subject number: (XXX)				
3.	Age: (XXX y)				
4.	Sex:	<input type="radio"/> Male		<input type="radio"/> Female	
5.	Race/ethnicity:	<input type="radio"/> White	<input type="radio"/> Black	<input type="radio"/> Hispanic	<input type="radio"/> Asian
		<input type="radio"/> Other:	<input type="radio"/> American Indian	<input type="radio"/> Not documented	
6.	Mode of arrival:	<input type="radio"/> Walk in/automobile		<input type="radio"/> Police	<input type="radio"/> No record
		<input type="radio"/> EMS			
7.	Insurance: (all that apply)	<input type="radio"/> Medicaid	<input type="radio"/> Medicare	<input type="radio"/> HMO/commercial	<input type="radio"/> None/self-pay
		<input type="radio"/> Mass Health	<input type="radio"/> Other, specify: _____		
8.	Date/time of triage: ___/___/12 ___:___ military time				<input type="radio"/> No record
9.	Date/time med clearance completed: (ie, mental health consultation placed): ___/___/12 ___:___ military time				<input type="radio"/> No record
10.	Date/time of arrival mental health: ___/___/12 ___:___ military time				<input type="radio"/> No record
11.	Date/time of bed request: (mental health consultation completed) ___/___/12 ___:___ military time				<input type="radio"/> No record
12.	Date/time of ED departure: ___/___/12 ___:___ military time				<input type="radio"/> No record

## Section 2. Medical Assessment and Treatment

13.	Laboratory tests?	<input type="radio"/> Yes	<input type="radio"/> No	
14.	If yes, check all that apply →	<input type="radio"/> CBC	<input type="radio"/> BAC	<input type="radio"/> Urinalysis
		<input type="radio"/> BMP	<input type="radio"/> LFTs	<input type="radio"/> Cardiac panel
		<input type="radio"/> Toxic screen	<input type="radio"/> Pregnancy test	<input type="radio"/> Other: _____
15.	Other diagnostic tests?	<input type="radio"/> Yes	<input type="radio"/> No	
16.	If yes, check all that apply →	<input type="radio"/> Radiograph	<input type="radio"/> ECG	<input type="radio"/> Other (specify): _____
		<input type="radio"/> CT		
17.	Active alcohol abuse?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not documented
18.	Active substance abuse?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Not documented
19.	Active medical problem?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Specify: _____

## Section 3. Psychiatric Diagnostic Impression

20.	Final psychiatric diagnosis? Check all that apply:	<input type="radio"/> Depression	<input type="radio"/> Suicidality	<input type="radio"/> Bipolar/manic
		<input type="radio"/> Schizoaffective	<input type="radio"/> Adjustment Disorder	<input type="radio"/> Agitation/aggression
		<input type="radio"/> Psychoses	<input type="radio"/> Borderline Personality	<input type="radio"/> Other: _____
		<input type="radio"/> Not documented		
21.	ICD-9 code	Primary: _____	Secondary: _____	

ICD-9, International Classification of Diseases, Ninth Revision.

## Section 4. Psychiatric and Behavioral Treatment

22.	Was close observation required?	<input type="radio"/> Yes	<input type="radio"/> Not specified
22a.	Did patient require physical restraints?	<input type="radio"/> Yes	<input type="radio"/> No

**Section 5. Disposition**

23. Was patient placed into observation status while in the ED?	<input type="radio"/> Yes	<input type="radio"/> No
24. Was patient transferred to outside psychiatric facility?	<input type="radio"/> Yes	<input type="radio"/> No
25. If yes, name of psychiatric facility →		
26. Location of psychiatric facility →		
27. Type of facility?	<input type="radio"/> Adult <input type="radio"/> Adolescent <input type="radio"/> Geriatric	
Type of admission?	<input type="radio"/> Inpatient <input type="radio"/> Observation <input type="radio"/> CSU <input type="radio"/> Day care	
	<input type="radio"/> Other _____	
28. Admitted to your hospital's psychiatric adult unit as inpatient or observation?	<input type="radio"/> Yes	<input type="radio"/> No
(a) If yes, type of admission:	<input type="radio"/> Inpatient <input type="radio"/> Observation	
29. Admitted to your hospital's geriatric/psychiatric unit?	<input type="radio"/> Yes	<input type="radio"/> No
(a) If yes, type of admission:	<input type="radio"/> Inpatient <input type="radio"/> Observation	
30. Admitted to substance abuse facility?	<input type="radio"/> Yes	<input type="radio"/> No
31. Discharged?	<input type="radio"/> Yes	<input type="radio"/> No
32. Discharge disposition?	<input type="radio"/> Home	<input type="radio"/> Residential setting
	<input type="radio"/> Nursing home/assisted living	<input type="radio"/> Safe house
		<input type="radio"/> Other (specify): _____

**Section 6. Miscellaneous**

33. Primary mental health evaluator?	<input type="radio"/> In-house resident psychiatrist	<input type="radio"/> In-house attending psychiatrist	<input type="radio"/> In-house clinical psychologist
	<input type="radio"/> In-house psychiatric social worker or nurse	<input type="radio"/> State mobile screening team (ESP)	<input type="radio"/> Outside contracted mental health clinician (nonstate ESP)
			<input type="radio"/> Other: _____
34. Secondary mental health evaluator if applicable?	<input type="radio"/> Yes	<input type="radio"/> No/no record	
35. If yes, check all that apply →	<input type="radio"/> Resident psychiatrist	<input type="radio"/> Attending psychiatrist	<input type="radio"/> Clinical psychologist
	<input type="radio"/> Psychiatric social worker/nurse	<input type="radio"/> State's mobile screening team (ESP)	<input type="radio"/> Outside contracted mental health clinician (nonstate ESP)
			<input type="radio"/> Other: _____

**Section 7. Medical History**

36. Medical history?	<input type="radio"/> COPD	<input type="radio"/> HTN	<input type="radio"/> Diabetes
	<input type="radio"/> Currently pregnant	<input type="radio"/> Cardiac	<input type="radio"/> Other (specify): _____
	<input type="radio"/> HIV/AIDS	<input type="radio"/> None	
37. Previous/current social history?	<input type="radio"/> Aggression/violence	<input type="radio"/> Incarceration	<input type="radio"/> Sexual offender
	<input type="radio"/> Recent psychiatric admission (within 1 mo) or 3/y	<input type="radio"/> Homeless	
		<input type="radio"/> Developmentally disabled	
		<input type="radio"/> Insurmountable language barrier	
38. Did patient have a previously arranged bed at a receiving facility?	<input type="radio"/> Yes	<input type="radio"/> No	

**APPENDIX E2****Boarder retrospective chart review manual****General Instructions**

All charts of patients who receive a mental health consultation (either internal or external resource) should be abstracted with this chart review manual.

This includes patients who are admitted to an inpatient or observation status, transferred to another psychiatric facility, or discharged.

In addition, all ICD-9 codes 290.0 through 319 (mental health and substance abuse codes) shall be collected on patients who meet the above abstraction criteria.

The study period will commence on January 24 at midnight (ie, Tuesday) and end on February 7 at 11:59 PM. Do

not include mental health patients who are boarding in your ED at the commencement of the study (ie, arrived in your ED before January 24 at midnight). Conversely, please include patients who remain in your ED after the 2-wk study period who initially arrived during that time. For example, a patient who arrives on February and boards in your ED through February 9 should be included in the data abstraction.

Documentation that may be considered:

Reviewers may use any documentation that occurred while the patient was in the ED to include hospital demographic information page, nursing/physician ED medical record, discharge sheet, tracking board information, consultations, EMTALA transfer form or other documentation tools/instruments by mental health clinicians.

**Decision rules for conflicting results:**

In cases in which there is conflicting documentation, the reviewer should prioritize certain providers' documentation according to the following rules:

Attending MD's documentation should be used over a resident MD's documentation.

Resident MD over a physician assistant (PA) or nurse practitioner (NP)

PA or NP over a nurse

Nurse over a medical student

Dates: All date fields should be abstracted as MM/DD. Use a leading zero if necessary (eg, enter October 25 as 10/25).

Times: Time notations should be made according to the 24-h clock. Valid times should be recorded as 00:00 to 23:59 (24:00 is not valid).

Qualifiers: Qualifiers indicate some uncertainty about whether a condition really exists. In general, qualifiers such as *probable*, *consistent with*, *presumed*, *compatible with*, *consider*, or *diagnostic of* should be abstracted as positive findings. Qualifiers such as *rule out*, *r/o*, *possible*, *risk of*, and *questionable* should be abstracted as negative findings unless a later documentation of a positive finding is noted.

Symbols: Symbols that may be considered include:

+ = positive, Ø = negative, ↑ = elevated or high or increased, ↓ = decreased or low

**Special Instructions for Online Data Entry With REDCap****Pop-up Questions From Branching Logic**

This online form is programmed with branching logic, so some questions will appear on the screen only when

certain questions are answered in a way that make them "pop up." In other words, some questions on the hard-copy form are "hidden" on the online version until they are prompted.

**Variable Validation**

Some questions have been programmed so that answers are accepted only after they have been validated. In the event that an invalid answer is typed into a response, a pop-up screen will appear with an error message, and a new response must be entered.

**"Other" Response**

Whenever the "other" response is selected, a pop-up text box will appear that allows one to enter text to specify the response.

**Required Responses**

Every question that appears or "pops up" on the screen requires a response. The answers to the questions have been organized so that "other" and "not documented" are always possible options, so no questions should ever be skipped. When you save the document, a pop-up screen will inform you if you have skipped any questions.

**Saving Data**

When you save each form, it must be categorized as "complete," "incomplete," or "unverified" as follows:

Click "complete" if all fields have responses.

Click "incomplete" if any fields are pending responses.

Click "unverified" if no information is found for a required field.

Remember to click the "Save" or "Save and continue" button when you are done regardless of whether the form is complete, incomplete, or unverified.

Reviewer's initials

Enter the initials of the reviewer completing the form.

If the abstractor does not have a middle name, use X for the middle initial.

Examples:

Jane A. Jones: J A J

Reviewer's Initials \_\_\_\_ \_

**Section 1. basic information**

Site XXX	Enter the first 3 digits of the particular site code assigned to your hospital. Include leading zeros when necessary. This will be provided to you before study.
2. Subject number (XXX)	The subject number is the second set of 3 digits, which should represent the number of the subject assigned. Prepopulated abstraction tools with subject numbers will be provided. Include leading zeros when necessary. Example: (right): 0 2 3 0 1 5 (wrong): _ 2 3 or 2 3 1 5
3. Age (XXX y)	Enter the patient's age on the date of his or her ED visit. If age is not documented or not legible, enter 999. Include leading zeros when necessary. Example: (right): 0 6 5 (wrong): _ 6 5



**Section 1.** Continued.

- 
4. Sex Enter the patient's sex (male or female) as documented on the admission/registration face sheet. If the patient's sex is not documented on the admission/registration face sheet, you may also consider: clinician notes (eg, this 56-y-old woman presents with...) abbreviations (eg, WDW=well-developed white male patient) pronouns (eg, his, her, he, she) Enter "not documented" if you are unable to determine the patient's sex from one of these sources.
5. Race/ethnicity If the patient's race/ethnicity is not documented on the admission/registration face sheet, you may also consider: Clinician notes (eg, Hispanic woman presents with...) Abbreviations (eg, ill-appearing AA man=African American=black). Enter "other" for any ethnicity documented but not present as a discrete check-off box. Enter "not documented" if you are unable to determine the patient's race or ethnicity from any source. Please refer to the following definitions:  
American Indian: A person having origins in any of the original peoples of North, Central, or South America and who maintains tribal affiliation or community attachment.  
Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam. (Note: Individuals from the Philippine Islands have been recorded as Pacific Islanders in previous data-collection strategies.)  
Black or African American: A person having origins in any of the black racial groups of Africa. Terms such as "Haitian," "Caribbean," "West Indian," "African," or "Ethiopian" can be used in addition to "Black or African-American."  
*Hispanic* refers to peoples having origins in Mexico, Puerto Rico, Cuba, Central America, South America, or any other Spanish-American culture or origin, regardless of race.  
White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
6. Mode of arrival Enter the documented mode of arrival as documented on the admission/registration face sheet. If it is not indicated on the admission/registration face sheet, you may also consider the ED nursing or physician documentation. Search for EMS sheet when appropriate. If no record of mode of arrival, enter "no record."
7. Insurance Medicare  
Medicaid  
NHP  
Commercial  
BCBS  
Tufts  
Fallon  
Harvard  
Ma Health  
Other (specify)
8. ED date and time of triage Enter the date (MM/DD) the patient presented to ED triage. If the ED triage date is not documented or not legible, enter "not documented."  
Enter the time (24-h clock) the patient presented to the ED. If triage time is not documented, enter the first (earliest) documented time on the chart. If a greeting or registration time is not documented, you can select "not documented."
9. Date/time medical clearance complete Enter time documented that medical clearance is complete. If not specifically documented, then enter time mental health consultation obtained. If not documented, then select "no record."
10. Date/time mental health arrival Enter date/time of initial mental health evaluation arrival. If not specifically identified, indicate initial documentation of evaluation in progress by mental health clinician. If not documented, then select "no record."
11. Date/time of bed request This includes patients who are ultimately admitted to inpatient or observation or crisis stabilization unit, as well as patients who are ultimately discharged home. Enter date/time the initial mental health consultation was completed. If not specifically documented, indicate initial documentation that bed search was in progress. If unable to be extracted, indicate "no record."  
If mental health evaluation occurred before ED arrival and a bed search was initiated before arrival, then indicate date and time of ED arrival.  
If a mental health evaluation occurred before ED arrival and another mental health evaluation occurred in the ED to initiate a bed request, then indicate the date and time the hospital-based mental health consultation was completed.
12. Date/time of ED departure For same hospital psychiatric admissions:  
Enter date/time documented by clinician when patient left or departed from ED. If not specifically documented, indicate date/time of arrival of transport. If transport arrival time not documented, then indicate date/time patient arrived on inpatient floor.  
For transfers to another psychiatric facility:  
Enter date/time documented by clinician when patient left ED. If not specifically documented, indicate date/time of departure or arrival of EMS vehicle.  
For discharge home:  
Enter date/time documented by clinician when patient left ED.
-

**Section 2.** medical assessment and treatment

13. Laboratory test requested	If no orders found indicating lab tests ordered, then search physician and nursing documentation for any lab results. If none found, then indicate "no."
14. Type of lab test	CBC: check box if any 1 of following or all test documented: Hgb, Hct, WBC BMP: check box if any one of following tests are documented: sodium, potassium, BUN, creatinine, glucose BAC: check box if blood alcohol level or other assessment of quantitative alcohol level documented (including breathalyzer) LFTs: check box if any 1 of the following tests are documented: SGPT/AST, SGOT/ALT, bilirubin, alkaline phosphatase, CPK, or LDH Pregnancy test: check box for serum or urine HCG Urinalysis: check box for any urinalysis dipstick results Cardiac panel: check box for CK-MB or troponin (TnT, TnI)
15. Other diagnostic tests conducted	If no orders found indicating diagnostic tests ordered, then search physician and nursing documentation for any diagnostic test results. If none found then indicate "no."
16. If yes, check all that apply	Self-explanatory
17. Active alcohol abuse	Enter "yes" if the patient is currently intoxicated or if there is evidence of current alcohol abuse (any positive ETOH in blood or urine or stated history of current use). Enter "no" if there is documentation that indicates no evidence of any current use. Enter "not documented" if there is no documentation about alcohol abuse.
18. Active substance abuse	Enter "yes" if toxicology screen is positive for nonprescribed medication. Enter "yes" if there is positive documentation of current intentional illegal or prescription drug misuse. Enter "no" if there is documentation that indicates no current or intentional illegal or prescription drug misuse. Enter "no" if there is a history of illegal drug use or drug misuse. Enter "not documented" if there is no documentation of current intentional illegal drug use or prescription drug misuse.
19. Active medical problem	Enter "yes" if patient has any medical problem documented that requires diagnostic evaluation, treatment, or specialty consultation while the patient is in the ED. Examples include hypertension requiring medication and abdominal pain requiring imaging or medication. In addition, specify any medical reason (if documented) that receiving medical facility would not accept patient.

**Section 3.** psychiatric diagnostic impression

20. Final psychiatric diagnosis	Check off box according to diagnosis documented in mental health or ED medical record. Enter the primary emergency physician discharge diagnosis. If the emergency physician discharge diagnosis is not documented in the ED chart, you may look elsewhere for this documentation. You may enter more than 1 diagnosis if appropriate (3/15/12). Enter "not documented" if the primary emergency physician discharge diagnosis is not documented or not legible.
21. ICD-9 code	Enter appropriate primary and secondary ICD-9 code found in medical record or hospital billing report for patient. Applicable ICD-9 codes are 290.0 through 319. Note that substance abuse codes are embedded within mental health codes and are 291.0 through 292.9, in addition to 303-305.93.

**Section 4.** psychiatric and behavioral treatment

22. Close observation	Enter "yes" if an order is written for close observation, 1:1, or physical or chemical restraints. Enter "yes" if nursing or physician documentation indicates close observation or 1:1 observation, or security present. Enter "not specified" if none of the above documentation is found.
22a. Did patient require physical restraints?	Indicate "yes" if patient received physical restraints during any portion of his or her ED stay. If patient required no restraints or chemical restraints, indicate "no."

**Section 5.** disposition

23. Was patient placed into observation status while in the ED?	Enter "yes" if patient has orders to admit to observation status/category or has an admit to observation note while in the ED itself, awaiting further evaluation or placement. Enter "no" if an observation order or admit to observation note is not present.
24. Transferred to outside psychiatric facility	Enter "yes" if patient transferred to outside psychiatric facility (whether freestanding or within general acute care hospital). If "no," proceed to question 28.
25. Name of psychiatric facility	Enter name of psychiatric freestanding hospital or the name of the general acute care hospital with an inpatient psychiatric unit.

**Section 5.** Continued.

26. Location of psychiatric facility	Enter location of above psychiatric unit.
27. Type of facility	Enter type of facility.
Type of admission	Enter the type of admission according to the available choices: inpatient, observation, or crisis stabilization unit (CSU). Enter "other" if specified and not any of the choices If not otherwise specified, assume patient was admitted to inpatient bed status.
Admitted to your hospital's psychiatric unit?	Enter "yes" if patient admitted to your hospital's psychiatric unit on campus.
(a) If yes, type of admission	Enter "inpatient" for regular psychiatric admission. Enter "observation only" if patient admitted to a non ED location as observation case. Observation box to be checked if an "observation order" or "admit to observation note" is present. If not found, check inpatient box.
Admitted to geriatric psychiatric unit?	Enter "yes" if patient admitted to designated hospital geriatric psychiatric unit.
(a) If yes, type of admission	Enter "inpatient" for regular psychiatric admission. Enter "observation only" if patient admitted to a non ED location as observation case. Observation box to be checked if an "observation order" or "admit to observation note" is present. If not found, check inpatient box.
30. Admitted to substance abuse treatment facility?	Enter "yes" if patient was admitted to any substance abuse treatment facility/unit.
31. Discharged	Enter "yes" if discharged.
32. Discharge disposition	Check off appropriate outpatient setting. Enter "discharged home" if exact disposition and setting not specified. Enter "nursing home" or "assisted living" for those patients sent to these locations, as well as any facility that provides skilled or intermediate nursing care. Enter "residential setting" for (1) patients being discharged to a community group home for developmentally, or severely disabled patients that does not provide skilled or intermediate nursing care or (2) a shelter, youth/group home, or (3) halfway house for drugs or alcohol. Consider an adult or elder day care setting a residential setting. Enter "safe house" for those who are discharged into a protective setting against physical or emotional abuse. Enter "home" if exact disposition and setting not specified. Enter "other" if any other disposition setting documented.

**Section 6.** miscellaneous

33. Primary mental health professional	For this question, we want to capture who performed the initial mental health evaluation at your institution. ESP=emergency service provider (Mass Behavioral Health Program-contracted provider). If other, please specify.
34. Secondary mental health evaluator if applicable?	This question attempts to capture whether there was a separate mental health evaluation in addition to the primary one. Answer "no" if an attending psychiatrist evaluated a patient as part of supervision of any in house clinician (resident, social worker, etc). If no, skip to question 35.
35. If yes, check all that apply	Same as question 33

**Section 7.** medical history

36. Medical history?	Check off any medical condition listed in patient's medical history.
37. Current history/social history?	Check off only those conditions or social history that is abstracted from the medical record. Check box "aggression/violence" if there is written documentation that the patient is violent, agitated, aggressive, abusive, or likely to assault or has a history of these behaviors. This would include documentation of restraint usage or resistance to medical treatments (eg, pulling at tubes), and combativeness. Check box "recent psych admission" (1 within past month) or >3 within past year if specifically documented in the medical record. Check box "incarceration" if medical record indicates previous imprisonment, jail, incarceration, or police accompaniment or arrest. Check box "homeless" if there is documentation in the chart that patient is currently homeless. Check box "developmentally disabled" if there is any documentation of developmental delay or disability. Check box "insurmountable language barrier" if there is documentation in the chart that the patient speaks a language other than English or Spanish. Also enter "insurmountable language barrier" if the patient has a physical inability to speak or is hard of hearing. Check box "sexual offender" if medical record indicates any documentation of such, or history of sexual predatorship.

**Section 7.** Continued.

Did patient have a previously arranged bed at a receiving facility?	<p>Answer “yes” if patient had a mental health evaluation before the ED visit and a bed was already arranged/obtained at a receiving facility before (or in place of) a repeated mental health evaluation at your hospital. Only answer “yes” if bed is verified by receiving facility.</p> <p>Answer “no” if bed was requested before ED visit but receiving facility had not arranged a bed or if no bed was requested before ED visit.</p> <p>If the mental health bed request occurred before ED visit and bed search was in progress on patient arrival to ED, then see question 11 explanation for date/time of bed request.</p>
---	--

**APPENDIX E3****Aggregate data abstraction form**

(Site Specific)

Reviewer's Initials \_\_\_ \_ \_

**Section 1.** Aggregate Information

1. Total ED volume _____		
2. Psychiatric ICD-9 volume _____		
3. Substance abuse ICD volume _____		
4. In patient psych beds		<input type="radio"/> Yes <input type="radio"/> No
If yes, number of beds	<input type="radio"/> Adult _____	<input type="radio"/> Adolescent _____ <input type="radio"/> Geriatric _____
5. Substance abuse beds within hospital		<input type="radio"/> Yes <input type="radio"/> No
6. Primary on-call mental health resource (weekdays)		<input type="radio"/> Internal <input type="radio"/> Outsourced
MA Health patients/Medicaid		<input type="radio"/> Internal <input type="radio"/> Outsourced
Commercial payers		<input type="radio"/> Internal <input type="radio"/> Outsourced
Uninsured		<input type="radio"/> Internal <input type="radio"/> Outsourced
Medicare		
7. Primary on-call mental health resource (weekends/holidays)		<input type="radio"/> Internal <input type="radio"/> Outsourced
MA Health patients/Medicaid		<input type="radio"/> Internal <input type="radio"/> Outsourced
Commercial payers		<input type="radio"/> Internal <input type="radio"/> Outsourced
Uninsured		<input type="radio"/> Internal <input type="radio"/> Outsourced
Medicare		
8. Primary on-call mental health resource (after hours)		<input type="radio"/> Internal <input type="radio"/> Outsourced
MA Health patients/Medicaid		<input type="radio"/> Internal <input type="radio"/> Outsourced
Commercial payers		<input type="radio"/> Internal <input type="radio"/> Outsourced
Uninsured		<input type="radio"/> Internal <input type="radio"/> Outsourced
Medicare		
9. Mean and median arrival to departure time for medical/surgical admissions _____		
10. Mean and median arrival to departure time for medical/surgical transfers _____		

**APPENDIX E4****Aggregate abstraction form**

Review Manual

**Special Instructions for Online Data Entry With REDCap****Pop-up Questions From Branching Logic**

This online form is programmed with branching logic, so some questions will appear on the screen only when certain questions are answered in a way that makes them “pop up.” In other words, some questions on the hard-copy form are “hidden” on the online version until they are prompted.

**Variable Validation**

Some questions have been programmed so that answers are accepted only after they have been validated. In the event that an invalid answer is typed into a response, a

pop-up screen will appear with an error message, and a new response must be entered.

**“Other” Response**

Whenever the “other” response is selected, a pop-up text box will appear that allows one to enter text to specify the response.

**Required Responses**

Every question that appears or “pops up” on the screen requires a response. The answers to the questions have been organized so that “other” and “not documented” are always possible options, so no questions should ever be skipped. When you save the document, a pop-up screen will inform you if you have skipped any questions.

**Saving Data**

When you save each form, it must be categorized as “complete,” “incomplete,” or “unverified” as follows:

Click “complete” if all fields have responses.  
 Click “incomplete” if any fields are pending responses.  
 Click “unverified” if no information is found for the required field.

Remember to click the “Save” or “Save and continue” button when you are done regardless of whether the form is complete, incomplete, or unverified.

Reviewer’s initials

Enter the initials of the reviewer completing the form.  
 If the abstractor does not have a middle name, use X for the middle initial.  
 Examples:  
 Jane A. Jones: J A J

Reviewer’s Initials \_\_\_\_ \_\_\_\_ \_\_\_\_

1. Total ED volume	Indicate total year-end volume for most recent fiscal year.
2. Psychiatric ICD-9 volume	Indicate most recent fiscal year psychiatric volume, using mental health ICD-9 codes 290 through 319 and subtracting substance abuse ICD-9 codes 291.0 through 292.9, as well as 303–305.93.
3. Substance abuse ICD volume	Indicate most recent fiscal year substance abuse volume, using substance abuse ICD-9 codes 291.0 through 292.9, in addition to 303–305.93.
4. Inpatient psych beds	Indicate “yes” if your hospital has any licensed inpatient psychiatric beds within the hospital at the initiation of the 2-wk study period. If yes, indicate how many licensed beds for each category: adult, adolescent, geriatric.
5. Substance abuse beds within hospital	Indicate “yes” if your hospital has any licensed outpatient substance abuse beds at the initiation of the 2-wk study period.
6. Primary on-call mental health resource (weekdays)	Indicate by insurer if your usual and customary initial on-call mental health clinician for behavioral patients is internal resource (attg psychiatrist, resident, social worker, psychologist or mental health nurse, etc) or outsourced, ie, external (state designated mobile screener or other outside vendor that provides mental health evaluation). Weekdays are normal business hours, 8:30 AM to 5 PM. Mass Health or Medicaid Commercial payers include Tufts, Harvard, and Blue Cross Blue Shield. Uninsured are those without any documented insurance. Medicare is one of any multiple Medicare products.
7. Primary on-call mental health resource (weekends/holidays)	Same as above.
8. Primary on-call mental health resource (after hours)	Same as above <i>After hours</i> is defined as outside of business hours. If this resource changes at a certain time after business hours, then indicate the mental health resource that exists overnight.
9. Mean arrival to departure time for medical/surgical admissions	Indicate your mean arrival to departure time in minutes for medical/surgical admissions during the same 2-wk study period. Arrival time is defined as either initial greeting or triage, whichever comes first. If neither greeting time nor triage time is recorded, indicate arrival time as registration time. Exclude all pediatric and ob/gyn admissions. Do not include observations within your department.
10. Mean arrival to departure time for medical/surgical transfers	Indicate your mean arrival to departure time in minutes for medical/surgical transfers during the same 2-wk study period. If neither greeting time nor triage time is recorded, indicate arrival time as registration time. Exclude all pediatric and ob/gyn transfers.

## APPENDIX E5

### Code for data analysis

```
GET DATA /TYPE=XLSX
/FILE='Z:\ Consultations \ Volturo \ MACEP final
modeling Oct 2.xlsx'
/SHEET=name 'Survival Analysis'
```

```
/CELLRANGE=full
/READNAMES=on
/ASSUMEDSTRWIDTH=32767.
EXECUTE.
DATASET NAME DataSet1 WINDOW=FRONT.
1) Kaplan-Meyer Analysis
```



```

KM TotalLOS BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM DoortoRequest BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM DoortoRequest BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM RequesttoPsychiatry BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM RequesttoPsychiatry BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE PAIRWISE POOLED.
KM PsychtoDisposition BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM PsychtoDisposition BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE PAIRWISE POOLED.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE PAIRWISE POOLED.
USE ALL.
COMPUTE filter_$(Admit = 1).
VARIABLE LABELS filter_$ 'Admit = 1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE PAIRWISE POOLED.
USE ALL.
COMPUTE filter_$(Transferred = 1).
VARIABLE LABELS filter_$ 'Transferred = 1
(FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
USE ALL.
COMPUTE filter_$(Transferred = 1 AND
Admit=1).
VARIABLE LABELS filter_$ 'Transferred = 1 AND
Admit=1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.

```

```

KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
USE ALL.
COMPUTE filter_$=(Transferred = 1 OR Admit=1).
VARIABLE LABELS filter_$ 'Transferred = 1 OR
Admit=1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE PAIRWISE POOLED.
USE ALL.
COMPUTE filter_$=(Discharged = 1).
VARIABLE LABELS filter_$ 'Discharged = 1
(FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
KM DispositiontoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE PAIRWISE POOLED.
KM MedCleartoDeparture BY Insurance
/STATUS=Status(1)
/PRINT MEAN
/PLOT SURVIVAL
/TEST LOGRANK
/COMPARE OVERALL POOLED.
2) Cox Proportional Hazards Model
1) Disposition to Departure: time it takes the patients
to leave the ED, no matter where they go (n=732-48
(pre-arranged)=684)
GET DATA /TYPE=XLSX
/FILE='Z:\ Consultations\ Volturo\ MACEP final
modeling Dec 18.xlsx'
/SHEET=name 'Survival Analysis'
/CELLRANGE=full
/READNAMES=on
/ASSUMEDSTRWIDTH=32767.
EXECUTE.
DATASET NAME DataSet1 WINDOW=FRONT.
USE ALL.
COMPUTE filter_$=(PreArranged ~ = 1).
VARIABLE LABELS filter_$ 'PreArranged ~ = 1
(FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Alcohol
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Substance
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Comorbidity
/PRINT=CI(95)

```

```

/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Aggression
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER RecentPsych
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Prison
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Homeless
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER DayCode
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Sex
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Age
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture

```

```

/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Alcohol Comorbidity DayCode
Age
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
2) Disposition to Admission: time it takes the patients to
leave the ED, when they are admitted to the hospital they
entered (n=144)
USE ALL.
COMPUTE filter_$=(Admit = 1).
VARIABLE LABELS filter_$ 'Admit = 1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Age
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Sex
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Race
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Alcohol
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).

```

```

COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Substance
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Comorbidity
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Aggression
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER RecentPsych
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Prison
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Homeless
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER DayCode
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)

```

```

/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER DayCode Aggression
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
3) Disposition to Transfer: time it takes the patients to
leave the ED, when they are transferred elsewhere (n=265-
24 (pre-arranged)=241)
USE ALL.
COMPUTE filter_$=(Transferred = 1 AND
PreArranged ~ = 1).
VARIABLE LABELS filter_$ 'Transferred = 1 AND
PreArranged ~ = 1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Age
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Sex
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Race
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Alcohol
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).

```

```

COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Substance
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Comorbidity
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Aggression
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER RecentPsych
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Prison
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Homeless
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER DayCode
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)

```

```

/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER DayCode Homeless
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
5) Disposition to Admission+Transfer: time it takes the
patients to leave the ED, when they are discharged
(n=345)
USE ALL.
COMPUTE filter_$=(Admit = 1 OR Transferred = 1
AND PreArranged ~ = 1).
VARIABLE LABELS filter_$ 'Admit = 1 OR
Transferred = 1 AND PreArranged ~ = 1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Age
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Sex
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Race
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER DayCode
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).

```



```

COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Alcohol
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Substance
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Comorbidity
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Aggression
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER RecentPsych
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Prison
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Homeless
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Homeless Aggression DayCode
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
6) Disposition to Discharge: time it takes the patients to
leave the ED, when they are discharged (n=339)
USE ALL.
COMPUTE filter_$=(Discharged = 1 AND
PreArranged ~ = 1).
VARIABLE LABELS filter_$ 'Discharged = 1 AND
PreArranged ~ = 1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Age
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Sex
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Race
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER DayCode
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture

```

```

/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Alcohol
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Substance
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Comorbidity
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Aggression
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER RecentPsych
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Prison
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Homeless
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
COXREG DispositiontoDeparture
/STATUS=Status(1)
/CONTRAST (Insurancesep)=Indicator(1)
/METHOD=ENTER Insurancesep
/METHOD=ENTER Arrival
/PRINT=CI(95)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20).
3) Logistic Regression
GET DATA /TYPE=XLSX
/FILE='C:\Users\marandal
\Desktop\Volturo\MACEP final modeling Dec
18.xlsx'
/SHEET=name 'Survival Analysis'
/CELLRANGE=full
/READNAMES=on
/ASSUMEDSTRWIDTH=32767.
EXECUTE.
DATASET NAME DataSet1 WINDOW=FRONT.
LOGISTIC REGRESSION VARIABLES LOS24
/METHOD=ENTER Insurancesep
/CONTRAST (Insurancesep)=Indicator(1)
/CRITERIA=PIN(.05) POUT(.10) ITERATE(20)
CUT(.5).
LOGISTIC REGRESSION VARIABLES LOS24
/METHOD=ENTER Insurancesep
/METHOD=ENTER Age
/CONTRAST (Insurancesep)=Indicator(1)
/PRINT=CI(95)
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)
CUT(0.5).
LOGISTIC REGRESSION VARIABLES LOS24
/METHOD=ENTER Insurancesep
/METHOD=ENTER Sex
/CONTRAST (Insurancesep)=Indicator(1)
/PRINT=CI(95)
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)
CUT(0.5).
LOGISTIC REGRESSION VARIABLES LOS24
/METHOD=ENTER Insurancesep
/METHOD=ENTER Race
/CONTRAST (Insurancesep)=Indicator(1)
/PRINT=CI(95)
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)
CUT(0.5).
LOGISTIC REGRESSION VARIABLES LOS24
/METHOD=ENTER Insurancesep
/METHOD=ENTER PreArranged
/CONTRAST (Insurancesep)=Indicator(1)
/PRINT=CI(95)
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)
CUT(0.5).
LOGISTIC REGRESSION VARIABLES LOS24
/METHOD=ENTER Insurancesep
/METHOD=ENTER Arrival

```

/CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Arrival  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /CONTRAST (Arrival)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Alcohol  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Substance  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Comorbidity  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Aggression  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER RecentPsych  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24

/METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Prison  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Homeless  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Age Arrival Aggression  
 RecentPsych Prison Homeless  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /CONTRAST (Arrival)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER DayCode  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Age Arrival DayCode Aggression  
 Homeless  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /CONTRAST (Arrival)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).  
 LOGISTIC REGRESSION VARIABLES LOS24  
 /METHOD=ENTER Insuranceseep  
 /METHOD=ENTER Age Arrival DayCode Aggression  
 Homeless  
 /METHOD=ENTER PreArranged  
 /CONTRAST (Insuranceseep)=Indicator(1)  
 /CONTRAST (Arrival)=Indicator(1)  
 /PRINT=CI(95)  
 /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20)  
 CUT(0.5).

**Editor's Capsule Summary** *What question this study addressed:*

This cross-sectional study examined potential patient- and administrative-level correlates of emergency department (ED) length of stay among 885 consecutive patients requiring mental health evaluation at a nonrandom but diverse sample of 10 Massachusetts EDs. *What this study adds to our knowledge:*

Patients requiring psychiatric admission or transfer had significantly longer length of stay than those discharged. Most of this difference was due to wait for a bed, not due to evaluation time; this wait was significantly longer for Medicaid and uninsured patients.