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# Emergency Department Length-Of-Stay For Psychiatric Visits Was Significantly Longer Than For Nonpsychiatric Visits, 2002–11

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**ABSTRACT** Despite increases in the use of emergency department (EDs) for mental health care, there are limited data on whether psychiatric patients disproportionately contribute to ED crowding. We conducted a retrospective analysis using a national database of ED visits in the period 2002–11 to describe trends in median and ninetieth-percentile length-of-stay for patients with psychiatric versus nonpsychiatric primary diagnoses. Psychiatric patients who visited the ED were transferred to another facility at six times the rate of nonpsychiatric patients. Median lengths-of-stay were similar for psychiatric and nonpsychiatric patients among those who were admitted to the hospital (264 versus 269 minutes) but significantly different for those who were admitted for observation (355 versus 279 minutes), transferred (312 versus 195 minutes), or discharged (189 versus 144 minutes). Overall, differences in ED length-of-stay between psychiatric and nonpsychiatric patients did not narrow over time. These findings suggest deficiencies in ED capacity for psychiatric care, which may necessitate improvements in both throughput and alternative models of care.

**T**he ability of the US health care system to provide adequate resources for people who need mental health care has become increasingly constrained. As the number of inpatient psychiatric beds continues to decline—from approximately 500,000 in the 1970s to 113,569 in 2010<sup>1–3</sup>—an enormous mismatch between supply and demand has forced patients to seek other avenues for treatment, including emergency departments (EDs). Various care models have gained traction, including comanagement of patients with ED and mental health providers, dedicated psychiatric emergency services, mobile crisis outreach teams, and medical homes that provide care coordination and case management.<sup>4</sup> However, thus far these programs have not been able to offset the shortage of inpatient facilities across the country.

For many people, the ED has therefore become

a gateway to mental health care. Although one-eighth of all ED visits are for mental health diagnoses,<sup>5</sup> the majority of EDs still have no psychiatric services available.<sup>6</sup> As of 2007, 80 percent of EDs practiced boarding (keeping patients in the ED while waiting for a hospital bed to become available or for transfer to another facility), and a third of EDs boarded psychiatric patients for longer than eight hours after the disposition of their cases was decided upon.<sup>6</sup> Boarding affects the care received by other patients because boarded patients reduce ED capacity and increase pressure on staff and resources. Thus, a critical challenge for emergency physicians is how best to manage psychiatric patients while also maintaining the ability to care for other patients in crowded EDs.

As a measure of ED throughput, length-of-stay is commonly considered a surrogate marker for crowding.<sup>7–9</sup> In 2008 the National Quality Forum

approved two quality measures related to ED length-of-stay: the median time from arrival to ED departure for admitted patients and for discharged patients.<sup>10</sup> The Centers for Medicare and Medicaid Services now associates several core measures, including length-of-stay, with reimbursement.<sup>11</sup>

Although there are no specific acceptable time frames for ED length-of-stay, various organizations have suggested median lengths of less than four hours for discharged patients and of less than eight hours for admitted patients.<sup>10,12</sup> As these quality measures become more widely adopted, more robust national data are needed on EDs' capacity to deliver mental health care and on the quality of care for psychiatric patients more generally.

A small number of studies have examined ED length-of-stay.<sup>13,14</sup> However, existing estimates for psychiatric patients are limited in scope<sup>15</sup> and highly variable, with averages ranging from 6.8 hours to 34.0 hours.<sup>1,14,16,17</sup> Accurately estimating length-of-stay is important because prolonged wait times are associated with a number of patient-oriented outcomes, including patient dissatisfaction, delayed physician evaluation, increased rate of hospitalizations, poor quality of care, and increased mortality.<sup>4,18–20</sup>

One concern of policy makers is whether long lengths-of-stay in the ED occur chiefly among psychiatric patients and therefore reflect disparities in quality of and access to care between this population and others, or whether these trends are consistent with the well-documented increases in ED crowding<sup>21,22</sup> more generally. In this study we addressed such questions by comparing lengths-of-stay between psychiatric and nonpsychiatric visits with different dispositions, and we identified trends in psychiatric-related ED visits over a ten-year period.

## Study Data And Methods

**STUDY DESIGN, DATA SOURCES, AND PATIENT SELECTION** In this sequential cross-sectional study we conducted a retrospective analysis of lengths-of-stay of psychiatric and nonpsychiatric ED visits in the period 2002–11. We used data from the National Hospital Ambulatory Medical Care Survey (NHAMCS), a national survey conducted by the Centers for Disease Control and Prevention that collects data on the use and delivery of ambulatory care services in a variety of settings, excluding federal hospitals. Using a four-stage probability procedure, NHAMCS derives unbiased national estimates based on sampling visits to hospital emergency and outpatient departments.<sup>23</sup> The data for each year include information on approximately 40,000 patients across

350–400 US EDs.

This study was deemed exempt from review by the Institutional Review Board of the University of California, San Francisco.

**DATA AND VARIABLES** We identified psychiatric diagnoses based on *International Classification of Diseases*, Ninth Revision, Clinical Modification (ICD-9-CM), codes for principal diagnoses from all records that included diagnostic information. Visits were categorized as related to mental health only if the primary diagnosis was a major mental health problem according to the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-V), as defined by ICD-9 codes; if the reason for visit, defined by National Center for Health Statistics classification codes, was related to mental health; or if ICD-9 injury codes were related to suicide.<sup>24,25</sup>

Since ICD-9-CM diagnosis codes in NHAMCS are subject to potential biases related to differences in clinical coding specificity, we grouped diagnoses using the Healthcare Cost and Utilization Project's Clinical Classifications Software for multilevel diagnoses into the following categories: mood disorders, alcohol-related disorders, anxiety disorders, schizophrenia or psychotic disorders, nonalcohol substance abuse disorders, suicide attempt or intentional self-harm, and other.<sup>24,25</sup> All other diagnoses were categorized as nonpsychiatric visits, including those of patients with secondary psychiatric diagnoses who presented to the ED with medical problems. We limited our analyses to adults ages eighteen and older.

*Length-of-stay* was defined as the difference between the time of triage and the time of departure from the ED for a given patient. We stratified ED length-of-stay by visit disposition. Each visit could have multiple dispositions—for example, a patient could be admitted for observation and later admitted to the hospital. To create mutually exclusive categories, we assigned single disposition types to each visit in a hierarchical manner described elsewhere.<sup>26</sup> Patients who had missing data for length-of-stay or disposition or a disposition of “other” or “left against medical advice” and those who were reported to have died in the ED were excluded from the analysis. Patients excluded because of missing data on length-of-stay or primary diagnosis or because they had one of the excluded dispositions accounted for 12.3 percent of weighted visits.

NHAMCS also collects information on a range of patient-specific characteristics, including age, sex, race/ethnicity, urgency of initial triage based on patient acuity, and insurance status, and on hospital characteristics, including geographic region (Northeast, Midwest, South, and West) and urban or rural location.

**ANALYSIS** Because NHAMCS is a national probability sample survey, its estimation process involves complex adjustments for both survey and item nonresponse and makes several weighted ratio adjustments within and across hospitals. Each record can represent many thousands of visits, and a visit sampling weight is used to produce unbiased national annual estimates. The weights have the following four components: inflation by reciprocals of selection probabilities, adjustment for nonresponse, population ratio adjustments, and weight smoothing. Additional adjustment factors account for the seasonality of the reporting period and for nonresponding hospitals. The NHAMCS estimation process is detailed elsewhere.<sup>25</sup>

We present both unweighted and weighted characteristics of ED visits. Reasons for psychiatric ED visits were characterized descriptively, with trends in frequency of diagnoses over time assessed using the least-squares method of linear regression. Length-of-stay data are presented as medians and ninetieth percentiles, corresponding to the National Quality Forum measures.<sup>10</sup> We further stratified length-of-stay by psychiatric versus nonpsychiatric visits and by disposition, and we constructed histograms to ensure that distributions of median and mean lengths-of-stay were similar.

Ninety-five percent confidence intervals and *p* values were calculated for mean and median lengths-of-stay using standard methods that accounted for the complex survey design and sampling weights. Trends in length-of-stay were evaluated by specifying custom contrasts in log-transformed linear regression models to account for data skewness. All analyses were performed using SAS, version 9.4, and SUDAAN, version 10.0.

**LIMITATIONS** Our study had several limitations. First, although NHAMCS data are collected by hospital staff members and undergo a number of completeness checks, a small proportion of visits had no data on length-of-stay or primary diagnosis and were excluded from our study, as noted above. However, these visits did not differ systematically from those included in the study.

Second, NHAMCS only recently started collecting information about boarding times for admitted patients, which could help distinguish between the time a patient spent receiving appropriate evaluation and the time he or she spent waiting for an inpatient bed.

Third, the 2009–11 NHAMCS surveys included separate questions about length-of-stay in observation units. In earlier surveys, length-of-stay in such units could erroneously be included in ED length-of-stay (for example, patients in observation units that were located in the ED could be

## Our data point to some challenges to the ability of EDs to meet the population's mental health needs.

counted as ED patients instead of observation unit patients).

Finally, the effects of health care reform and of the associated influx of newly insured patients on ED demand and quality of care remain to be investigated with newer iterations of the data set.

### Study Results

We analyzed 234,094 records that satisfied our inclusion criteria, representing 811.0 million weighted ED visits for the period 2002–11. Patients who were seen in the ED for psychiatric reasons were more likely to be young, male, and uninsured or enrolled in Medicaid than those seen for nonpsychiatric reasons (Exhibit 1). Patients who made psychiatric visits were more likely than other patients to be triaged with higher acuity and to have used the ED previously (online Appendix Exhibit A1).<sup>27</sup>

Once evaluated, patients who made psychiatric visits were also more likely than other patients to be admitted for hospitalization (17.8 percent versus 14.6 percent), transferred to another facility (9.6 percent versus 1.6 percent), or admitted for observation (2.0 percent versus 1.5 percent) (Exhibit 1). In contrast, discharges accounted for 67.1 percent of psychiatric visits but 82.1 percent of nonpsychiatric visits.

There were 82.2 million ED visits by adults in 2002, climbing to 106.8 million in 2011—an increase of about 30 percent in ten years (data not shown). The proportion of visits related to mental health rose from 5.4 percent in 2002 to 6.4 percent in 2011, and the absolute number of those visits rose from 4.4 million to 6.8 million—a 55 percent increase.

The most prevalent adult psychiatric diagnoses in the ED in 2010–11 were alcohol-related disorders, anxiety disorders, and suicide or intentional self-harm (Exhibit 2). Visits for alcohol-related disorders as a proportion of psychiatric-related visits increased significantly over the study period, from 27.9 percent to 33.7 percent. The proportions of mental health visits for

**EXHIBIT 1**
**US emergency department visits with psychiatric and nonpsychiatric diagnoses, by patients' sociodemographic characteristics, 2002-11**

Characteristic	Psychiatric visits		Nonpsychiatric visits	
	Unweighted number (1,000s)	Weighted %	Unweighted number (1,000s)	Weighted %
All patients	13.9	100.0	220.2	100.0
<b>AGE RANGE (YEARS)</b>				
18-44	8.4	60.4	117.1	53.3
45-64	4.3	30.2	58.8	26.7
65 and older	1.2	9.4	44.3	20.0
<b>SEX</b>				
Female	6.5	49.9	125.2	57.3
Male	7.4	50.1	94.9	42.7
<b>RACE/ETHNICITY</b>				
Non-Hispanic white	8.3	67.4	140.0	65.1
Non-Hispanic black	3.0	18.6	46.4	21.1
Hispanic	2.0	11.1	25.1	10.7
Other	0.6	2.9	8.9	3.1
<b>INSURANCE TYPE</b>				
Private	3.0	24.6	74.1	33.6
Medicaid	4.1	24.1	40.1	17.3
Medicare	2.1	16.7	46.0	21.2
Uninsured	2.8	22.6	35.3	16.7
Other or unknown	1.8	11.9	24.4	11.2
<b>TRIAGE TIME (MINUTES)</b>				
Less than 15	3.2	24.2	34.4	15.3
15-60	5.7	42.1	88.6	40.8
61-120	2.2	16.5	52.8	24.8
More than 120	1.0	6.6	20.4	9.0
Unknown	1.9	10.6	23.9	10.1
<b>DISPOSITION</b>				
Discharged	8.9	67.1	180.4	82.1
Admitted to hospital	2.7	17.8	32.1	14.6
Observation	0.6	2.0	3.7	1.5
Transferred to another facility	1.3	9.6	3.5	1.6

**SOURCE** Authors' analysis of data for 2002-11 from the National Hospital Ambulatory Medical Care Survey. **NOTES** All differences in weighted percentages between psychiatric and nonpsychiatric visits were significant ( $p < 0.001$ ). "Observation" means admitted to a short-term clinical decision or observation unit.

**EXHIBIT 2**
**Reasons for psychiatric visits to US emergency departments, 2002-11**

Reason	2-year average rates of reasons (%)				
	2002-03	2004-05	2006-07	2008-09	2010-11
Mood disorders	8.9	11.1	11.6	12.4	10.9
Alcohol-related disorders**	27.9	31.3	30.0	32.5	33.7
Anxiety disorders	25.4	25.3	22.9	24.8	24.3
Schizophrenia or psychotic disorders	9.2	7.4	7.4	6.3	7.2
Nonalcohol substance abuse disorders	12.7	11.7	13.5	10.6	11.5
Suicide attempt or intentional self-harm	10.8	9.1	8.8	10.2	14.7
Other	5.3	4.2	5.9	3.4	2.3

**SOURCE** Authors' analysis of data for 2002-11 from the National Hospital Ambulatory Medical Care Survey. **NOTE** Significance refers to trend over time. \*\* $p < 0.05$

suicide or intentional self-harm increased from 10.8 percent to 14.7 percent, although this change was not significant. The proportions of anxiety-related disorders and mood disorders were stable.

Median ED length-of-stay for psychiatric patients admitted to the hospital from the ED was 264 minutes, which was similar to the 269 minutes for nonpsychiatric patients (Exhibit 3; see also Appendix Exhibit A2).<sup>27</sup> Among patients admitted for observation, median length-of-stay for psychiatric visits was 76 minutes longer than for nonpsychiatric visits (Exhibit 3). Similarly, compared to other patients, psychiatric patients who were transferred to another facility or discharged had longer median lengths-of-stay (117 minutes and 44 minutes longer, respectively). For patients who were admitted for observation, transferred, or discharged, the median, mean, and ninetieth-percentile lengths-of-stay were significantly longer for those with psychiatric visits than for other patients (Appendix Exhibit A2).<sup>27</sup>

In nearly every year in the period 2002–11, psychiatric patients who were discharged or transferred experienced longer median lengths-of-stay than did nonpsychiatric patients (Exhibit 4; see also Appendix Exhibits A3 and A4).<sup>27</sup> For ED visits leading to discharge, median length-of-stay was 35 minutes longer for psychiatric patients than for others in 2002 and 33 minutes longer in 2011 (Exhibit 4). Among

transferred patients, median length-of-stay was 82 minutes longer for psychiatric patients than for others in 2002, and the difference increased to 114 minutes in 2011. Among patients admitted for observation, the median length-of-stay for psychiatric patients declined from 624 minutes in 2002 to 221 minutes in 2011, approaching the median length-of-stay for other patients—which remained stable over the study period. Among those admitted for hospitalization, psychiatric patients did not experience longer median lengths-of-stay, compared to other patients.

When we used ninetieth-percentile measures, we found that psychiatric visits were longer than nonpsychiatric visits, across nearly all years and dispositions. For example, in 2002, among patients who were discharged, the ninetieth-percentile length-of-stay for psychiatric visits was 513 minutes versus 325 minutes for other visits (Exhibit 4). In 2011 the greater length for psychiatric visits than for other visits was 149 minutes for patients who were discharged, 835 minutes for those who were admitted for observation, and 269 minutes for those who were transferred.

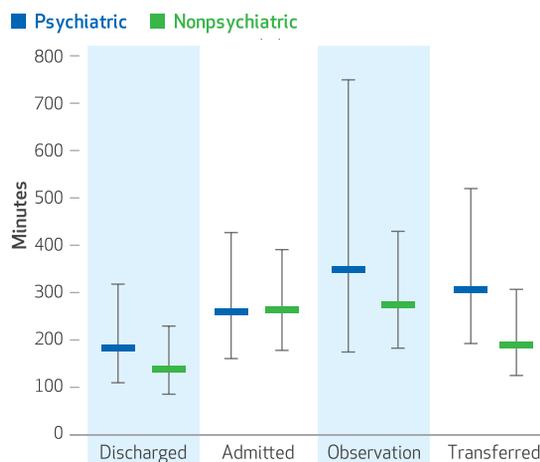
## Discussion

This study confirmed that ED length-of-stay was significantly longer for psychiatric than for nonpsychiatric visits when patients were discharged, admitted for observation, or transferred to another facility. In the context of persistent increases in ED utilization in the period 2002–11, shown in our study and previous ones,<sup>28,29</sup> gaps in length-of-stay between the two types of visits did not close over time.

Median ED lengths-of-stay for both psychiatric and nonpsychiatric patients met proposed quality targets of less than four hours for discharged patients and less than eight hours for admitted patients.<sup>10</sup> However, we also examined measures of variance including ninetieth-percentile length-of-stay, which offers a more complete picture of the outliers that may be driving ED crowding and is an accepted measure of length-of-stay in Canada, Australia, and other countries.<sup>30,31</sup> Ninetieth-percentile lengths-of-stay for psychiatric patients who were discharged, transferred, or admitted for observation were significantly longer than those for nonpsychiatric patients with the same dispositions (in 2011 approximately eight, twelve, and twenty-three hours versus six, seven, and nine hours, respectively). Wait time for patients who were transferred is of particular interest since it is an important contributor to ED boarding and, therefore, crowding, and it reflects to some extent the capacity of the health care system at large.

### EXHIBIT 3

Median length-of-stay in the emergency department and interquartile range, by disposition of cases, 2002–11



**SOURCE** Authors' analysis of data for 2002–11 from the National Hospital Ambulatory Medical Care Survey. **NOTES** The error bars show first and third quartiles. "Admitted" means admitted to the hospital. "Observation" means admitted to a short-term clinical decision or observation unit. "Transferred" means transferred to another facility.

**EXHIBIT 4**

**Median and nintieth-percentile lengths-of-stay, in minutes, for psychiatric and nonpsychiatric visits to US emergency departments, by disposition of cases, 2002–11**

	Discharged		Admitted		Observation		Transferred	
	Psych.	Nonpsych.	Psych.	Nonpsych.	Psych.	Nonpsych.	Psych.	Nonpsych.
<b>2002</b>								
Median	166	131	237	260	624	255	282	200
90th percentile	513	325	703	670	1,025	1,104	738	541
<b>2003</b>								
Median	179	133	261	255	197	260	251	171
90th percentile	538	327	1,312	629	1,473	1,176	757	456
<b>2004</b>								
Median	186	136	229	253	936	274	311	175
90th percentile	518	336	646	600	2,341	1,165	797	492
<b>2005</b>								
Median	180	140	249	265	330	264	366	174
90th percentile	519	360	712	595	1,054	590	890	428
<b>2006</b>								
Median	204	143	250	265	571	283	375	175
90th percentile	693	338	670	566	956	769	1,146	544
<b>2007</b>								
Median	191	151	274	272	310	293	344	225
90th percentile	547	352	791	571	1,594	1,008	893	475
<b>2008</b>								
Median	196	151	241	279	384	307	326	198
90th percentile	534	344	614	576	1,317	1,026	726	410
<b>2009</b>								
Median	190	154	272	281	237	268	183	190
90th percentile	581	357	696	562	1,005	599	560	436
<b>2010</b>								
Median	204	148	288	271	334	284	248	196
90th percentile	575	341	645	532	1,358	664	886	378
<b>2011</b>								
Median	183	150	272	271	221	263	341	227
90th percentile	491	342	575	583	1,378	543	711	442

**SOURCE** Authors' analysis of data for 2002–11 from the National Hospital Ambulatory Medical Care Survey. **NOTES** Admitted" means admitted to the hospital. "Observation" means admitted to a short-term clinical decision or observation unit. "Transferred" means transferred to another facility.

The process of transferring patients to psychiatric facilities is unique to this population. It requires several steps, including medical clearance, psychiatric screening and evaluation, insurance authorization, inpatient bed availability, and arranging for transportation. Highlighting a scarcity of inpatient psychiatric beds and resources, our results showed that psychiatric patients were transferred to another facility at six times the rate of nonpsychiatric patients and waited disproportionately longer than nonpsychiatric patients to be transferred.

The transfer rate for psychiatric conditions in our study approached those in the literature for other acute medical conditions,<sup>32</sup> including cerebrovascular disease and myocardial infarction. While almost all of these acute medical condi-

tions usually require hospitalization, only 11.9 percent of psychiatric ED cases eventually lead to admission.<sup>33</sup> This suggests that of transferred psychiatric patients, a nontrivial proportion are being evaluated by specialty providers outside the hospital and then discharged. We therefore recommend a closer look at transfer practices for psychiatric patients to determine process-specific targets for reducing ED length-of-stay. These targets might include improving the clinical pathways that are followed for medical clearance and the criteria providers use in conducting psychiatric screening, and defining the role of specialty providers in the ED.

When we compared psychiatric and nonpsychiatric visits, we found that differences in median length-of-stay for patients admitted for ob-

servation dissipated during the study period. This finding could in part be a result of an increase in the percentage of EDs with protocol-driven dedicated observation units as a part of best practices, which conceptually could limit unnecessary admissions for conditions such as intoxication.<sup>34</sup> However, these benefits do not appear to have been distributed equally across all visits to the ED, as ninetieth-percentile length-of-stay for psychiatric patients admitted for observation was much higher than that for nonpsychiatric patients. This finding suggests that a small proportion of patients admitted for observation were experiencing disproportionately long lengths-of-stay.

When used for medical conditions, ED observation units have demonstrated reductions in lengths-of-stay and admission rates,<sup>35–37</sup> as well as cost-effectiveness and clinical outcomes that were not inferior to those of inpatient care. However, their role in psychiatric emergency care is less standardized.<sup>3</sup> More research is needed to better understand the types of patients most likely to benefit from the acute stabilization or diagnostic clarification that observation units can offer, and to develop appropriate ED protocols for their care.

Given the persistent upsurge in ED utilization, we expected that lengths-of-stay would rise for all patients, reflecting worsening overall crowding. Median lengths-of-stay did not rise linearly from year to year and, for many dispositions, remained stable over time despite increases in ED volume. Several factors may have contributed to these findings, including improvements in ED flow via inpatient capacity planning, more timely hospital discharges, and computerized bed management systems; access to community services to improve continuity of care and prevent readmission; and increased national attention to the problem of ED crowding.

Overall, however, our data point to some challenges to the ability of EDs to meet the population's mental health needs and reflect a unique set of structural factors regarding mental health resources—chief among them a critical scarcity of inpatient psychiatric beds. Moreover, our findings of prolonged lengths-of-stay for discharged psychiatric patients could be partially due to a shortage of outpatient mental health facilities and substance abuse treatment programs that might delay disposition of patients' cases as linkages to these critical services are arranged.<sup>16,17,38,39</sup> More appropriate evaluation and treatment of psychiatric emergencies can take place when patients have more prompt access to psychiatric providers.

Most proposed solutions have called for more inpatient beds or better access to existing beds,

## Differences in lengths-of-stay underline disparities in access to care for people with mental illnesses.

including promoting forward flow through the ED. The use of dedicated psychiatric emergency services (which can be stand-alone units or affiliated with EDs) and regional psychiatric emergency services (which handle all psychiatric emergencies in a particular geographic area) may be another way to shift care for psychiatric patients from the general ED setting to an organized group of psychiatric providers.<sup>6</sup> As of 2002 the capacity of these twenty-four-hour facilities had more than tripled in the previous three decades, rising to 79,000 beds.<sup>40</sup> While they have yet to offset the shortage of inpatient resources, these and other alternative treatment designs may help meet the needs of psychiatric patients who currently seek care in the ED. Longer-term improvements in reimbursement for and capacity and quality of psychiatric care are needed to further strengthen care for patients with mental illness.

### Conclusion

In this sequential cross-sectional, nationally representative study, we evaluated trends in ED lengths-of-stay for psychiatric and nonpsychiatric visits in the period 2002–11. Lengths-of-stay were significantly longer for psychiatric patients who were discharged, admitted for observation, or transferred to another facility, compared to nonpsychiatric patients with similar dispositions. Psychiatric visits also ended in disproportionately higher transfer rates than nonpsychiatric visits, with wait times for transfer increasing over the study period.

While it may be true that psychiatric conditions are fundamentally different from medical conditions, these differences in lengths-of-stay underline disparities in access to care for people with mental illnesses. A number of structural and process-related improvements could increase the system's capacity to care for a growing population with mental health needs. ■

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## NOTES

- Manderscheid RW, Berry JT, editors. *Mental health, United States, 2004* [Internet]. Rockville (MD): Substance Abuse and Mental Health Services Administration; 2006. Table 19.2, Highlights of organized mental health services in 2002 and major national and state trends; [cited 2016 Aug 11]. p. 203. [DHHS Pub. No. (SMA)-06-4195]. Available from: <http://store.samhsa.gov/shin/content/SMA06-4195/SMA06-4195.pdf>
- Substance Abuse and Mental Health Services Administration. *Behavioral health, United States, 2012* [Internet]. Rockville (MD): SAMHSA; 2013 [cited 2016 Aug 9]. [DHHS Pub. No. (SMA)13-4797]. Available from: <http://www.samhsa.gov/data/sites/default/files/2012-BHUS.pdf>
- American College of Emergency Physicians. *Care of the psychiatric patient in the emergency department—a review of the literature* [Internet]. Irving (TX): ACEP; 2014 Oct [cited 2016 Jul 18]. Available from: [https://www.acep.org/uploadedFiles/ACEP/Clinical\\_and\\_Practice\\_Management/Resources/Mental\\_Health\\_and\\_Substance\\_Abuse/Psychiatric%20Patient%20Care%20in%20the%20ED%202014.pdf](https://www.acep.org/uploadedFiles/ACEP/Clinical_and_Practice_Management/Resources/Mental_Health_and_Substance_Abuse/Psychiatric%20Patient%20Care%20in%20the%20ED%202014.pdf)
- Alakeson V, Pande N, Ludwig M. A plan to reduce emergency room “boarding” of psychiatric patients. *Health Aff (Millwood)*. 2010;29(9):1637–42.
- Abid Z, Meltzer A, Lazar D, Pines J. Psychiatric boarding in U.S. EDs: a multifactorial problem that requires multidisciplinary solutions [Internet]. Washington (DC): George Washington University; 2014 Jun [cited 2016 Jul 15]. (Policy Brief.) Available from: <https://smhs.gwu.edu/urgentmatters/sites/urgentmatters/files/Psychiatric%20Boarding%20in%20U.S.%20EDs%20A%20Multifactorial%20Problem%20that%20Requires%20Multidisciplinary%20Solutions.pdf>
- American College of Emergency Physicians. *ACEP psychiatric and substance abuse survey 2008* [Internet]. Irving (TX): ACEP; [cited 2016 Jul 18]. Available from: [https://www.acep.org/uploadedFiles/ACEP/Advocacy/federal\\_issues/PsychiatricBoardingSummary.pdf](https://www.acep.org/uploadedFiles/ACEP/Advocacy/federal_issues/PsychiatricBoardingSummary.pdf)
- McCarthy ML, Zeger SL, Ding R, Levin SR, Desmond JS, Lee J, et al. Crowding delays treatment and lengthens emergency department length of stay, even among high-acuity patients. *Ann Emerg Med*. 2009;54(4):492–503.
- Hing E, Bhuiya F. Wait time for treatment in hospital emergency departments: 2009 [Internet]. Hyattsville (MD): National Center for Health Statistics; 2012 Aug [cited 2016 Jul 18]. (NCHS Data Brief No. 102). Available from: <http://www.cdc.gov/nchs/products/data/briefs/db102.htm>
- McHugh M, Van Dyke K, McClelland M, Moss D. Improving patient flow and reducing emergency department crowding: a guide for hospitals [Internet]. Rockville (MD): Agency for Healthcare Research and Quality; 2011 Oct [cited 2016 Jul 18]. (AHRQ Publication No. 11[12]-0094). Available from: <http://www.ahrq.gov/sites/default/files/publications/files/ptflowguide.pdf>
- National Quality Forum. *National voluntary consensus standards for emergency care: a consensus report* [Internet]. Washington (DC): NQF; 2009 [cited 2016 Jul 18]. Available for download from: [http://www.qualityforum.org/Publications/2009/09/National\\_Voluntary\\_Consensus\\_Standards\\_for\\_Emergency\\_Care.aspx](http://www.qualityforum.org/Publications/2009/09/National_Voluntary_Consensus_Standards_for_Emergency_Care.aspx)
- CMS.gov. *Clinical quality measures finalized for eligible hospitals and critical access hospitals beginning with FY 2014* [Internet]. Baltimore (MD): Centers for Medicare and Medicaid Services; [cited 2016 Jul 18]. Available from: [https://www.cms.gov/regulations-and-guidance/legislation/ehrincentiveprograms/downloads/2014\\_cqm\\_eh\\_finalrule.pdf](https://www.cms.gov/regulations-and-guidance/legislation/ehrincentiveprograms/downloads/2014_cqm_eh_finalrule.pdf)
- Joint Commission. *The “patient flow standard” and the 4-hour recommendation* [Internet]. Oak Brook (IL): Joint Commission; 2013 Jun [cited 2016 Jul 22]. Available from: <https://www.jointcommission.org/assets/1/18/S1-JCP-06-13.pdf>
- Herring A, Wilper A, Himmelstein DU, Woolhandler S, Espinola JA, Brown DFM, et al. Increasing length of stay among adult visits to U.S. emergency departments, 2001–2005. *Acad Emerg Med*. 2009;16(7):609–16.
- Carr BG, Hollander JE, Baxt WG, Datner EM, Pines JM. Trends in boarding of admitted patients in US emergency departments 2003–2005. *J Emerg Med*. 2008;39(4):506–11.
- Slade EP, Dixon LB, Semmel S. Trends in the duration of emergency department visits, 2001–2006. *Psychiatr Serv*. 2010;61(9):878–84.
- Weiss AP, Chang G, Rauch SL, Smallwood JA, Schechter M, Kosowsky J, et al. Patient- and practice-related determinants of emergency department length of stay for patients with psychiatric illness. *Ann Emerg Med*. 2012;60(2):162–71.
- Stephens RJ, White SE, Cudnik M, Patterson ES. Factors associated with longer length of stay for mental health emergency department patients. *J Emerg Med*. 2014;47(4):412–9.
- Chalfin DB, Trzeciak S, Likourezos A, Baumann BM, Dellinger RP. Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. *Crit Care Med*. 2007;35(6):1477–83.
- Bindman AB, Grumbach K, Keane D, Rauch L, Luce JM. Consequences of queuing for care at a public hospital emergency department. *JAMA*. 1991;266(8):1091–6.
- Guttmann A, Schull MJ, Vermeulen MJ, Stukel TA. Association between waiting times and short term mortality and hospital admission after departure from emergency department: population based cohort study from Ontario, Canada. *BMJ*. 2011;342:d2983.
- Hoot NR, Aronsky D. Systematic review of emergency department crowding: causes, effects, and solutions. *Ann Emerg Med*. 2008;52(2):126–36.
- Kellermann AL. Crisis in the emergency department. *N Engl J Med*. 2006;355(13):1300–3.
- McCaig LF, McLemore T. Plan and operation of the National Hospital Ambulatory Medical Care Survey. Series 1: programs and collection procedures. *Vital Health Stat* 1. 1994;(34):1–78.
- Larkin GL, Claassen CA, Emond JA, Pelletier AJ, Camargo CA. Trends in US emergency department visits for mental health conditions, 1992 to 2001. *Psychiatr Serv*. 2005;56(6):671–7.
- National Center for Health Statistics. *2008 NHAMCS micro-data file documentation* [Internet]. Hyattsville

- (MD): NCHS; [cited 2016 Jul 22]. Available from: [ftp://ftp.cdc.gov/pub/health\\_statistics/nchs/dataset\\_documentation/nhamcs/doc08.pdf](ftp://ftp.cdc.gov/pub/health_statistics/nchs/dataset_documentation/nhamcs/doc08.pdf)
- 26 Fee C, Burstin H, Maselli JH, Hsia RY. Association of emergency department length of stay with safety-net status. *JAMA*. 2012;307(5):476–82.
  - 27 To access the Appendix, click on the Appendix link in the box to the right of the article online.
  - 28 Tang N, Stein J, Hsia RY, Maselli JH, Gonzales R. Trends and characteristics of US emergency department visits, 1997–2007. *JAMA*. 2010;304(6):664–70.
  - 29 Weiss AJ, Wier LM, Stocks C, Blanchard J. Overview of emergency department visits in the United States, 2011 [Internet]. Rockville (MD): Agency for Healthcare Research and Quality; 2014 [cited 2016 Jul 18]. (H-CUP Statistical Brief No. 174). Available from: <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb174-Emergency-Department-Visits-Overview.pdf>
  - 30 Australian Institute of Health and Welfare. Hospital performance: emergency department length of stay: the 4-hour target [Internet]. Canberra: AIHW; c 2016 [cited 2016 Jul 18]. Available from: <http://www.aihw.gov.au/haag10-11/hospital-performance-emergency-department-length-stay/>
  - 31 Canadian Institute for Health Information. Health care in Canada, 2012: a focus on wait times [Internet]. Ottawa: CIHI; 2012 [cited 2016 Jul 18]. Chapter 2: Waits for emergency department care. Available from: [https://www.cihi.ca/en/HCCIC2012\\_CH2\\_EN.pdf](https://www.cihi.ca/en/HCCIC2012_CH2_EN.pdf)
  - 32 Kindermann D, Mutter R, Pines JM. Emergency department transfers to acute care facilities, 2009 [Internet]. Rockville (MD): Agency for Healthcare Research and Quality; 2013 May [cited 2016 Jul 18]. (H-CUP Statistical Brief No. 155). Available from: <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb155.jsp>
  - 33 National Center for Health Statistics. Emergency department visits [Internet]. Hyattsville (MD): NCHS; [last updated 2015 Jul 6; cited 2016 Jul 18]. Available from: <http://www.cdc.gov/nchs/fastats/emergency-department.htm>
  - 34 APA Task Force on Psychiatric Emergency Services. Report and recommendations regarding psychiatric emergency and crisis services: a review and model program descriptions [Internet]. Arlington (VA): American Psychiatric Association; 2002 Aug [cited 2106 Jul 18]. Available for download from: <https://www.psychiatry.org/psychiatrists/search-directories-databases/library-and-archive/task-force-reports>
  - 35 Ross MA, Hockenberry JM, Mutter R, Barrett M, Wheatley M, Pitts SR. Protocol-driven emergency department observation units offer savings, shorter stays, and reduced admissions. *Health Aff (Millwood)*. 2013;32(12):2149–56.
  - 36 Goodacre S, Nicholl J, Dixon S, Cross E, Angelini K, Arnold J, et al. Randomised controlled trial and economic evaluation of a chest pain observation unit compared with routine care. *BMJ*. 2004;328(7434):254.
  - 37 Schull MJ, Vermeulen MJ, Stukel TA, Guttman A, Leaver CA, Rowe BH, et al. Evaluating the effect of clinical decision units on patient flow in seven Canadian emergency departments. *Acad Emerg Med*. 2012;19(7):828–36.
  - 38 Heslin KC, Elixhauser A, Steiner CA. Hospitalizations involving mental and substance use disorders among adults, 2012 [Internet]. Rockville (MD): Agency for Healthcare Research and Quality; 2015 Jun [cited 2016 Jul 18]. (H-CUP Statistical Brief No. 191). Available from: <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb191-Hospitalization-Mental-Substance-Use-Disorders-2012.pdf>
  - 39 Chang G, Weiss AP, Orav EJ, Jones JA, Finn CT, Gitlin DF, et al. Hospital variability in emergency department length of stay for adult patients receiving psychiatric consultation: a prospective study. *Ann Emerg Med*. 2011;58(2):127–36.
  - 40 Foley DJ, Manderscheid RW, Atay JE, Maedke J, Sussman J, Cribbs S. Highlights of organized mental health services in 2002 and major national and state trends. In: Manderscheid RW, Berry JT, editors. *Mental health, United States, 2004* [Internet]. Rockville (MD): Substance Abuse and Mental Health Services Administration; 2006 [cited 2016 Jul 22]. p. 200–36. (DHHS Publication No. (SMA)-06-4195). Available from: <http://store.samhsa.gov/shin/content/SMA06-4195/SMA06-4195.pdf>