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## Separate may not be equal: A preliminary investigation of clinical correlates of electronic psychiatric record accessibility in academic medical centers

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### Abstract

**Objectives**—Electronic Medical Records (EMR) have the potential to improve the coordination of healthcare in this country, yet the field of psychiatry has lagged behind other medical disciplines in its adoption of EMR.

**Methods**—Psychiatrists at 18 of the top US hospitals completed an electronic survey detailing whether their psychiatric records were stored electronically and accessible to non-psychiatric physicians. Electronic hospital records and accessibility statuses were correlated with patient care outcomes obtained from the University Health System Consortium Clinical Database available for 13 of the 18 top US hospitals.

**Results**—44% of hospitals surveyed maintained most or all of their psychiatric records electronically and 28% made psychiatric records accessible to non-psychiatric physicians; only 22% did both. Compared with hospitals where psychiatric records were not stored electronically, the average 7-day readmission rate of psychiatric patients was significantly lower at hospitals with

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**Appendix A. Supplementary data:** Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.ijmedinf.2012.11.007>.

psychiatric EMR (5.1% vs. 7.0%,  $p = .040$ ). Similarly, the 14 and 30-day readmission rates at hospitals where psychiatric records were accessible to non-psychiatric physicians were lower than those of their counterparts with non-accessible records (5.8% vs. 9.5%,  $p = .019$ , 8.6% vs. 13.6%,  $p = .013$ , respectively). The 7, 14, and 30-day readmission rates were significantly lower in hospitals where psychiatric records were both stored electronically and made accessible than at hospitals where records were either not electronic or not accessible (4% vs 6.6%, 5.8% vs 9.1%, 8.9 vs 13%, respectively, all with  $p = 0.045$ ).

**Conclusions**—Having psychiatric EMR that were accessible to non-psychiatric physicians correlated with improved clinical care as measured by lower readmission rates specific for psychiatric patients.

### Keywords

Electronic Medical Records (EMR); Medical records; Psychiatry Electronic Health Records (EHR); eHealth

## 1. Introduction

The United States is currently considering reforming many aspects of healthcare, including the universal implementation of EMR. Demonstrating and quantifying the potential improvement in patient care from the adoption of an EMR system can be difficult but is important if implementation is to occur in the near future [1–5]. Amarasingham and colleagues recently reported that each 10-point increase in the “automation of notes and records” score from the Clinical Information Assessment Tool contributed to a 15 percent lower odds of dying while hospitalized [6].

Psychiatry has lagged behind other medical disciplines in its adoption of EMR [3,5,7–9]. One potential explanation for this is the restricted access to psychiatric records within hospitals. It is often assumed that psychiatrists and patients both desire greater restrictions on access to psychiatric records. However, patient and psychiatrist opinions on this matter have been studied on a limited basis. At the University of Michigan Health System Department of Psychiatry, researchers found that of patients who did not want their psychiatric records transferred to an electronic system, a significant number cited fear of breach of confidentiality as their primary concern [10]. However, only 5% of their total patient population refused the transfer of their records, suggesting that actual patient opposition to electronic psychiatric records is rather small. While the desire to protect intimate details of a patient's psychiatric history emerges from the best of intentions, it may also be that the assumption that these records should be treated separately is related to the stigma surrounding psychiatric disorders.

A negative attitude towards a person with a psychiatric illness based on societal assumptions, prejudices, stigma and often a lack of knowledge of an illness, can initiate a vicious cycle of discrimination and often a worsening of mental illness [11–13]. Current literature points to the stigma of mental illness as a causal factor for lower quality care. It also suggests stigma is a barrier to receiving care; specifically, the fear of stigmatization by society often prevents patients from seeking care for a mental illness. Surprisingly this fear

is inadvertently perpetuated even in the healthcare profession, where professionals are expected to have an understanding of the importance of psychiatric care.

Medical students admitted hesitation to seek help for a mental illness for fear of discrimination by peers as well as instructors [14]. The study found that the major barrier to help-seeking behavior was the perceived stigma of mental illness and stress. In addition to the fear of stigma, it was noted that apprehension about the confidentiality of services would not be maintained was also a reason that medical students did not seek help from services offered by their institution.

Much of the apprehension about EMR and unrestricted access to psychiatric records originates – correctly – from concern for confidentiality of records [2]. In response, it has become common practice to exclude details from psychiatric evaluations from a patient's medical charts [15,16]. This endeavor, however, counters any efforts to bridge the gap between medicine and psychiatry. Instead, the separation of psychiatric records from other medical records reinforces that medical professionals see a distinct difference between psychiatry and other healthcare specialties. Furthermore, it fails to address the importance of an interaction between the two fields. In one study, all psychiatric patients with repeat visits to the emergency department had prior mental health records that were unavailable to ED clinicians at the time of the patient crisis [17].

The need to balance patient confidentiality with the provision of optimal quality of care requires careful consideration of the competing concerns of a variety of stakeholders. Because of factors that include stigma regarding psychiatric illness, the application of Health Information Technology to psychiatric care has lagged significantly behind somatic medical care.

There remains – and should remain – debate about how psychiatric medical records should be stored, and whether or not they should be made accessible to non-psychiatric physicians. Much of the debate centers on the issue of confidentiality [2,18]. We know of no prior exploratory investigation that has studied this issue systematically and descriptively. We further know of no prior examination of the impact of these decisions on the quality of psychiatric patient care (e.g., readmission rates, length of stay, etc.). Lastly, we are not aware of any published studies on the prevalence and availability of EMR in psychiatry.

In 2007 there were 18 hospitals listed on US News and World Report's ranking of Best Hospitals in the United States. We surveyed all of these hospitals to determine if these centers have psychiatric EMR and whether unrestricted access is given to non-psychiatric practitioners. We then analyzed whether access to electronic psychiatric records correlated with improved patient care outcomes.

## 2. Method

We identified the nation's top hospitals as those ranked on US News and World Report's Best Hospitals list (2007). After initially conducting phone surveys asking about the psychiatric record keeping practices at these hospitals, we developed a forced-choice questionnaire on surveymonkey.com to confirm and standardize the results.

The survey focused on whether inpatient psychiatric admission and discharge summaries, psychiatric Emergency Department evaluations, and psychiatric consultation notes were paper or electronic and whether psychiatric records were “able to be viewed by non-psychiatric physicians while working on a *medicine floor*” (and, if so, whether access was “unrestricted”). We obtained responses from 100% of the hospitals from which we requested information through a two-step process. We identified an initial group of psychiatrists, generally the director of psychiatry residency training or the head of consultation-liaison psychiatry, to whom we emailed our survey (Supplementary Document). We obtained initial responses from psychiatrists at 14/18 (77.8%) hospitals. Additional psychiatrists were identified at the remaining four sites, and a second query returned results from the remaining four hospitals, hence data was collected from all sites by the end of 2008 (100%).

Hospital-level patient outcomes data were acquired through the University Health System Consortium (UHC) Clinical Database. The database was queried to find the percentage of psychiatric and non-psychiatric patients readmitted (defined as patients who were re-hospitalized for any related or unrelated reasons to any service) within 7, 14, and 30 days of discharge, as well as the average length of stay (LOS) for psychiatric patients. A psychiatric patient was defined as someone whose discharge note was signed by a psychiatrist or a psychologist. The observation period was calendar year 2007. Based on these criteria, data was available for 13 of the 18 hospitals; therefore outcomes analyses (Tables 2 and 3) were performed on data from the 13 hospitals available through the UHC Clinical Database. The study's protocol was reviewed by the Johns Hopkins Medical IRB approved on July 17, 2008 (Protocol NA\_00020219).

We classified the hospitals into three separate groups for comparison: (1) those with a full psychiatric EMR (i.e. electronic psychiatric inpatient admission, discharge, and consultation summaries, and psychiatric ED notes) vs. those with paper records in at least one category, (2) those with four types of psychiatric records to which non-psychiatric physicians had unrestricted access vs. those with restricted records in at least one category and (3) those with fully accessible, electronic records vs. those with paper records and/or limited accessibility. All four types of psychiatric records had to be stored electronically and available without restrictions to non-psychiatric physicians in order to be in the group considered “fully” electronic or accessible with a score of 4 (we use “unrestricted access” and “fully accessible” interchangeably in this analysis).

Prior to analysis, the data were inspected for erroneously missing data, out of range values, and coding errors. Data from one hospital was removed from the patient outcomes analysis due to incomplete survey data response despite multiple attempts at follow-up. Nonetheless, we still present the descriptive information we obtained from the initial survey. Descriptive statistics on hospital demographic variables, outcomes variables, and predictor variables were calculated for the entire sample and for subgroups of hospitals stratified by use of EMR, accessibility of psychiatric records, and accessibility of electronic psychiatric records. Two-by-two contingency tables provided frequency and percent distributions and were used to describe the distribution of EMR use by accessibility of psychiatric records. The significance of group differences was evaluated by non-parametric procedures. A two-sample Mann-Whitney test was used for continuous measures and the Fisher's exact test of

independence was utilized for dichotomous variables. Two-tailed p-values are also reported. Due to the small sample size, multivariate analyses and parametric procedures that depend on a normal distribution were not calculated. Analyses for this study were conducted with SPSS 15.0 statistical software (SPSS, Chicago, Illinois, 2006).

### 3. Results

Table 1 summarizes the characteristics of the 18 hospitals that were studied: it showed whether their records were electronic and accessible to non-psychiatric physicians, the hospital and psychiatric department ranking in 2007, and the number of medical and psychiatric beds. To preserve the confidentiality of the hospitals that participated in this study, we de-identified them by listing them as hospitals 1–18 and by giving ranges for their rankings and beds.

There was no correlation between any of the examined hospital characteristics, such as their size or the ranking of their psychiatry specialty services, shown in Table 1, and their psychiatric record keeping practices (i.e. electronic storage or accessibility). Within the groupings established for our analyses (EMR Score 4 vs. EMR Score < 4; Access Score 4 vs. Access Score < 4; Combined EMR/Access Score 4 vs. Combined EMR/Access Score < 4), we compared the demographics outlined above. The number of total hospital beds ( $p = .908$ ,  $p = .739$ ,  $p = 1.00$ , respectively) as well as the number of psychiatric beds was comparable across the groups ( $p = .093$ ,  $p = .317$ ,  $p = .257$ , respectively). Moreover, there was no statistically significant difference in the average hospital ranking between the groups ( $p = .324$ ,  $p = .841$ ,  $p = .571$ , respectively), nor were there any differences in the number of hospitals with a psychiatry specialty ranking in the top 24 ( $p = .608$ ,  $p = .580$ ,  $p = .520$ , respectively).

We first evaluated the prevalence of EMR in psychiatry. Each of the 18 hospitals had electronic records in at least one of the four psychiatric record categories (psychiatric admission note, discharge note, ED note, and/or consultation note). Three of the eighteen sites (16.7%) had electronic records in one category, 3/18 (16.7%) in two, 4/18 (22.2%) in three, and 8/18 in all four (44.4%). Six of the eighteen (33.3%) had electronic admissions summaries, 8/18 (44.4%) discharge summaries, 8/18 (44.4%) psychiatric ED notes, and 14/18 (77.8%) consult notes, respectively.

While all sites had electronic records in at least one category, not all hospitals gave non-psychiatric physicians unrestricted access to at least one type of psychiatric note. Four of the eighteen sites (22.2%) had no accessibility, 5/18 (27.8%) were accessible in one category, 1/18 (5.6%) in two, 3/18 in three (16.7%), and 5/18 (27.8%) in all four. For each of the five hospitals that had only one type of note that was accessible to non-psychiatric physicians, it was the consult note that was unrestricted.

Of the five hospitals which had accessible psychiatric records, four had full EMR access as well. It is apparent that EMR facilitates accessibility; logistically, a hospital that granted non-psychiatric physicians unrestricted access to all psychiatric patient records maintained those records electronically 80% of the time, whereas 50% of the hospitals that maintained

all of their psychiatric records electronically granted non-psychiatric physicians unrestricted access to all such records.

Table 2 shows comparisons of aggregate patient outcomes for psychiatric patients by psychiatric EMR use, accessibility of records, and electronic access to notes among the 13 hospitals whose information was available through the UHC Clinical Outcomes Database. Within hospitals with full EMR systems, the 7-day, 14-day, and 30-day readmission rates for psychiatric patients were lower compared to hospitals without full EMR. The 7-day readmission rate reached statistical significance (5.1% vs. 7.0%,  $p=.040$ ). When parsed by accessibility, again into the groups with full accessibility vs. those without, hospitals with fully accessible psychiatric records had lower 7-day, 14-day, and 30-day readmission rates for psychiatric patients. The 14 day (5.8% vs. 9.5%,  $p = .019$ ) and 30 day (8.6% vs. 13.6%,  $p = .013$ ) rates reached statistical significance. Finally, when looking at the combination, hospitals with both full EMR and unrestricted accessibility of psychiatric records had statistically significantly lower 7, 14, and 30-day readmission rates ( $p = .045$  in all categories). Despite the fact that not all comparisons reached statistical significance as described above, the readmission rates all trended in the direction of being lower in the groups with full psychiatric EMR and/or unrestricted access at all follow-up time points examined.

Use of a full EMR predicted a 10–27% difference in readmission rates. The accessibility of records predicted a larger decrease, ranging from 35 to 38%, and likewise, the combination of EMR and accessibility, between 31 and 39%.

The average LOS for psychiatric patients was comparable between the two groups when separated by EMR use, accessibility, and combined EMR use and accessibility (Table 2). Thus, it is likely that the psychiatric patients had comparable disease severity when the hospitals were grouped according to psychiatric EMR and accessibility.

In order to ascertain if the significantly lower rate of psychiatric patient readmissions was specific to psychiatric patients or merely an artifact, we assessed the readmission rates for all non-psychiatric patients using the same comparison groups (Table 3). There was no correlation between readmission rates for non-psychiatric patients and any of the three groupings used in the hospital comparisons shown in Table 2. This suggests that the findings for psychiatric patients are specific to the method by which this population's records are stored and accessed.

#### 4. Discussion

We determined that less than 50% of hospitals surveyed had all inpatient psychiatric records in an EMR system, less than 30% of hospitals gave non-psychiatric physicians access to all four types of psychiatric records, and less than 25% had both a full psychiatric EMR and fully accessible records. Our analysis also provides evidence that hospitals utilizing psychiatric EMR and making psychiatric records available to non-psychiatric doctors have lower readmission rates for psychiatric patients. LOS for psychiatric patients, a surrogate indicator of illness severity, was comparable regardless of how hospitals stored their psychiatric records and whether or not they gave access to non-psychiatric physicians. Thus



the lower average rate of readmission in hospitals with accessible psychiatric EMR was unlikely to be due to differences in patient case severity. Non-psychiatric patients' readmission rates did not differ between hospital groups, a finding that reinforced the specificity of the trend for lower readmission rates for psychiatric patients.

Whereas factors such as the socioeconomic status of the patient, level of social support, and the availability of local follow-up care can influence the likelihood of a patient's readmission, we attempted to control for these variables using surrogate markers (such as hospital ranking and bed number) and found that they did not correlate with readmission rates. Moreover, the association between access to psychiatric EMR and lower readmission rates was specific to psychiatric patients and not to medical patients, who had similar demographic characteristics, indicating that these factors likely did not confound the relationship.

Hospitals with electronically accessible psychiatric records had lower percent differences in patient readmission rates, sometimes as great as 40% lower as compared to their counterparts that did not utilize such record keeping methods. Our findings, which indicate that improved healthcare outcomes depend on the state of Information Technology, are consistent with those of Amarasingham and colleagues.

## 5. Limitations and future studies

There are several potential limitations of this study. The small sample size ( $n = 18$ ) along with the homogeneity of the type of hospitals limits the generalizability of the results. As we surveyed some of the nation's leading teaching hospitals, however, it is likely that the limitations noted in this cohort will only be magnified in a sample of smaller community hospitals. The study relied on the accuracy of the survey responses of local psychiatrists who were full time employees of the hospitals from which we sought information. Site visits were not undertaken to corroborate the reported methods of psychiatric record characteristics.

Further analyses are essential to confirm and extend the reported findings. Accessibility is a multi-faceted issue as there are many variations in each site's EMR system, such as "break the glass" features, firewalls, etc. We addressed this ambiguity in the term "access" by clearly defining an "accessible" system as one which gives non-psychiatric physicians working on medicine floors direct and unrestricted access to the psychiatric records. In today's inpatient healthcare system, time is at a premium for clinicians, and any additional impediments to gaining access to patients' psychiatric records as compared to medical records could prove a deterrent. A follow-up study detailing the variation in EMR systems would be beneficial. A second point warranting follow-up would be stratifying readmissions to related psychiatric and unrelated non-psychiatric units to allow us to learn more about the interplay between psychiatric and medical care. Presumably, unrelated readmissions would necessitate more communication between the disciplines, as on an unrelated readmission to a non-psychiatric service where the availability of electronic psychiatric health records could be crucial to providing optimal continuity of care. Nonetheless, for a psychiatry-related readmission, use of an accessible EMR could also be critical. For instance, in an outpatient

setting, a medical doctor could be alarmed about the mental status of his patient but not have access to the patient's psychiatric records. Because the physician does not know the patient's psychiatric discharge plan from his prior admission, the physician could be more likely to send the patient to the Emergency Department (ED), where the patient would be readmitted and re-evaluated. ED physicians who do not have access to psychiatric records could be more likely to readmit patients to psychiatric services because they lack information about their current treatment plan, appearance on discharge, follow-up plan, etc. A third important issue warranting follow-up in subsequent studies is whether non-psychiatric physicians take greater interest or attention in assessing psychiatric records when they are in EMR or non-EMR form. Finally, subsequent studies could address additional variables such as socioeconomic status of the patient and how they effect readmission rates independent of access to psychiatric EMR. These considerations must be explored in future analyses with a larger sample.

## 6. Conclusion

The data suggest a disparity in the health outcomes in psychiatric patients; it would be invaluable to further examine why such a disparity exists. This study suggests that to ensure a higher quality of care for psychiatric patients we must be willing to consider not only parity of coverage but also of record modernization and accessibility. Eventually, we can envision a time where psychiatric records will be treated with the same confidentiality as other health records; this may then help to dispel the stigma surrounding the often misunderstood nature of mental illness for clinicians as well as the general public.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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### Summary points

#### What was already known on the topic

- There had been no systematic assessment of how many psychiatric hospitals kept their mental health records in electronic or hand-written form, nor information about how often they provided non-psychiatric medical practitioners access to such records.
- It was clear that because of heightened stigma surrounding mental illness, psychiatric practitioners were reluctant to provide access to their patient's mental health records. However there had been very little investigation of the potential consequences of restricting access to mental health records, for example the potential impact on their patient's coordinated medical care.

#### What this study has added to our knowledge

- Our study illuminated the manner of storage (electronic vs. hand-written) of psychiatric records in the US by sampling the top rated psychiatric hospitals according to the US News and World Report. We also documented the rate that these records were shared with non-psychiatric physicians at the same hospitals.
- We were also able to provide evidence in support of the finding that the manner of storage (i.e. electronic) and access (i.e. unrestricted) of psychiatric records correlated with a significantly better healthcare outcome for psychiatric patients.

**Table 1 – Hospital demographics**

		Combined EMR/Access Score	EMR Score	Access Score	US News Ranking	US News Psychiatry Ranking	Number of Beds	Number of Inpatient Psychiatric Beds
Hospital	1	4	4	4	4-6	1-6	501-1000	21-30
Hospital	2	4	4	4	1-3	7-12	1001-1500	101-110
Hospital	3	4	4	4	13-15	Unranked	501-1000	21-30
Hospital	4	4	4	4	10-12	Unranked	1-500	10-20
Hospital	5	2	3	3	10-12	Unranked	501-1000	21-30
Hospital	6	1	1	3	16-18	Unranked	501-1000	51-60
Hospital	7	1	3	1	4-6	19-24	1001-1500	71-80
Hospital	8	1	1	4	10-12	19-24	501-1000	41-50
Hospital	9	1	4	1	4-6	1-6	1501+	21-30
Hospital	10	1	1	2	16-18	Unranked	501-1000	21-30
Hospital	11	1	2	3	13-15	13-18	501-1000	21-30
Hospital	12	0	3	1	7-9	13-18	1001-1500	81-90
Hospital	13	0	4	0	7-9	7-12	501-1000	21-30
Hospital	14	0	2	1	1-3	1-6	501-1000	111-120
Hospital	15	0	4	0	13-15	10-12	1-500	31-40
Hospital	16	0	4	0	1-3	1-6	501-1000	71-80
Hospital	17	0	2	0	7-9	13-18	1-500	81-90
Hospital	18	0	3	1	16-18	7-12	1001-1500	71-80

**Notes:**

Hospitals were de-identified and numbered to preserve the confidentiality of the sites. Hospital rankings and bed counts were broken into ranges for the same reason. Three separate classification schemes were used to analyze the hospitals:

1) Combined EMR use and accessibility

2) EMR use

3) Accessibility of psychiatric records amongst non-psychiatric physicians

Four record types were considered:

1. Psychiatric admission notes
2. Psychiatric discharge summaries
3. Psychiatric ED notes

#### 4. Psychiatric consultation notes

Hospitals were assigned a 0 or a 1 for each note type:

**1=Accessible and electronic psychiatric records, 0=Not accessible and/or electronic**

“Electronic” was indicated as such a responses to the question of paper vs. electronic, and “accessible” was defined as yes the survey questions: 1) are psychiatric records able to be viewed by non-psychiatric physicians while working on a *medicine* floor? 2) Is access unrestricted? A “0” was assigned to hospitals without electronic records or those who answered “no” to one or both of the accessibility questions, and a “1” to those that answered “electronic” and “yes” to the accessibility questions.

**1=Electronic psychiatric records, 0=Paper psychiatric records**

**1=Accessible, 0=Not Accessible**

Hospitals were assigned a score between 0-4, the sum of the values from the individual note type categories.

Grey lines denote hospitals whose outcomes data in the following data tables were not available through the UHC database.

**Table 2 – Aggregate psychiatric patient readmission rates and length of stay by hospital-level EMR use of all notes, accessibility of all notes, and electronic access to all notes**

	EMR Score 4 (n=8)	EMR Score <4 (n=5)	p-value	% change	Access Score 4 (n=5)	Access Score <4 (n=8)	p-value	% change	Combined EMR/Access Score 4 (n=4)	Combined EMR/Access Score <4 (n=9)	p-value	% change
Related or Unrelated Readmissions, mean percentage (SD)												
7 day	5.1 (2.9)	7.0 (1.6)	0.040	27.1	4.3 (1.0)	6.7 (2.9)	0.057	35.8	4.0 (1.0)	6.6 (2.7)	0.045	39.4
14 day	7.2 (3.1)	9.5 (2.3)	0.107	25	5.8 (0.9)	9.5 (2.9)	0.019	38.9	5.8 (1.1)	9.1 (3.0)	0.045	36.3
30 day	11.0 (4.0)	12.3 (3.1)	0.242	10.6	8.6 (2.1)	13.6 (3.1)	0.013	36.8	8.9 (2.4)	13.0 (3.4)	0.045	31.5
Average length of stay for patients with primary psych dx (days), mean (SD)	8.7 (2.0)	10.5 (1.0)	0.079	14.10	9.9 (2.2)	9.1 (1.7)	0.558	-8.80	9.3 (2.2)	9.4 (1.8)	0.877	1.10

**Notes:**

Two-tailed significance based on Mann-Whitney U test

Psychiatric patients (n=16,364) are defined as a patients admitted for observation with a discharge note signed by a child/adolescent psychiatrist, a general psychiatrist, a geriatric psychiatrist, or a psychologist.

Readmission rates are for psychiatric patients who were re-hospitalized for any related or unrelated reasons to any service.

%Change as the percentage decrease in readmission rate or LOS that a hospital would be predicted to experience were it to switch from a <4 category to a 4 category, based on the difference in our two groups

**Table 3 – Aggregate non-psychiatric patient readmission rates by hospital-level EMR use of all notes, accessibility of all notes, and electronic access to all notes**

	EMR Score 4 (n=8)	EMR Score <4 (n=5)	p-value	% change	Access Score 4 (n=5)	Access Score <4 (n=8)	p-value	% change	Combined EMR/Access Score 4 (n=4)	Combined EMR/Access Score <4 (n=9)	p-value	% change
Related or Unrelated Readmissions, Mean percentage (SD)												
7 day	5.4 (0.78)	5.1 (0.65)	0.661	-5.9	5.5 (1.0)	5.2 (0.49)	0.884	-5.8	5.6 (1.1)	5.1 (0.5)	0.44	-9.8
14 day	8.5 (0.78)	8.3 (1.2)	0.770	-2.4	8.4 (1.0)	8.4 (0.94)	0.884	0	8.6 (1.0)	8.3 (0.9)	0.643	-3.6
30 day	12.9 (0.87)	13.0 (1.8)	0.661	0.8	12.7 (0.91)	13.0 (1.4)	0.464	2.3	12.9 (0.9)	12.9 (1.4)	0.877	0

**Notes:**

Two-tailed significance based on Mann-Whitney U test

Non-psychiatric patients are defined as a patients admitted for observation with a discharge note signed by a practitioner other than a child/adolescent psychiatrist, a general psychiatrist, a geriatric psychiatrist, or a psychologist.

Readmission rates are for non-psychiatric patients who were re-hospitalized for any reasons to any service.

%Change as the percentage decrease in readmission rate that a hospital would be predicted to experience were it to switch from a <4 category to a 4 category, based on the difference in our two groups