Journal of HOSPITAL MEDICINE www.journalofhospitalmedicine.com

ORIGINAL RESEARCH

Contribution of Psychiatric Illness and Substance Abuse to 30-Day Readmission Risk

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BACKGROUND: Little is known about the contribution of psychiatric illness to medical 30-day readmission risk.

OBJECTIVE: To determine the independent contribution of psychiatric illness and substance abuse to all-cause and potentially avoidable 30-day readmissions in medical patients.

DESIGN: Retrospective cohort study.

SETTING: Patients discharged from the medicine services at a large teaching hospital from July 1, 2009 to June 30, 2010.

MEASUREMENTS: The main outcome of interest was 30-day all-cause and potentially avoidable readmissions; the latter determined by a validated algorithm (SQLape) in both bivariate and multivariate analysis. Readmissions were captured at 3 hospitals where the majority of these patients are readmitted.

RESULTS: Of 6987 discharged patients, 1260 were readmitted within 30 days (18.0%); 388 readmissions were potentially avoidable (5.6%). In multivariate analysis, 2 or more prescribed outpatient psychiatric medications (odds ratio [OR]: 1.1, 95% confidence interval [CI]: 1.01-1.20) or any prescription of anxiolytics (OR: 1.16, 95% CI: 1.00–1.35) were associated with increased all-cause readmissions, whereas discharge diagnoses of anxiety (OR: 0.82, 95% CI: 0.68-0.99) or substance abuse (OR: 0.80, 96% CI: 0.65-0.99) were associated with fewer all-cause readmissions. These findings were not replicated as predictors of potentially avoidable readmissions; rather, patients with discharge diagnoses of depression (OR: 1.49, 95% CI: 1.09-2.04) and schizophrenia (OR: 2.63, 95% CI: 1.13-6.13) were at highest risk.

CONCLUSIONS: Our data suggest that patients treated during a hospitalization for depression and for schizophrenia are at higher risk for potentially avoidable 30-day readmissions, whereas those prescribed more psychiatric medications as outpatients are at increased risk for all-cause readmissions. These populations may represent fruitful targets for interventions to reduce readmission risk. *Journal of Hospital Medicine* 2013;8:450–455. © 2013 Society of Hospital Medicine

Readmissions to the hospital are common and costly.[1] However, identifying patients prospectively who are likely to be readmitted and who may benefit from interventions to reduce readmission risk has proven challenging, with published risk scores having only moderate ability to discriminate between patients likely and unlikely to be readmitted.[2] One reason for this may be that published studies have not typically focused on patients who are cognitively impaired, psychiatrically ill, have low health or English literacy, or have poor social supports, all of whom may represent a substantial fraction of readmitted patients.[2–5]

Psychiatric disease, in particular, may contribute to increased readmission risk for nonpsychiatric (medical) illness, and is associated with increased utilization of healthcare resources.[6–11] For example, patients with mental illness who were discharged from New York hospitals were more likely to be rehospitalized and had more costly readmissions than patients without these comorbidities, including a length of stay nearly 1 day longer on average.[7] An unmet need for treatment of substance abuse was projected to cost Tennessee $772 million of excess healthcare costs in 2000, mostly incurred through repeat hospitalizations and emergency department (ED) visits.[10]

Despite this, few investigators have considered the role of psychiatric disease and/or substance abuse in medical readmission risk. The purpose of the current study was to evaluate the role of psychiatric illness and substance abuse in unselected medical patients to determine their relative contributions to 30-day all-cause readmissions (ACR) and potentially avoidable readmissions (PAR).

METHODS

Patients and Setting

We conducted a retrospective cohort study of consecutive adult patients discharged from medicine services at Brigham and Women's Hospital (BWH), a 747-bed tertiary referral center and teaching hospital, between

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Additional Supporting Information may be found in the online version of this article.

Received: November 8, 2012; **Revised:** February 27, 2013; **Accepted:** March 7, 2013
2013 Society of Hospital Medicine DOI 10.1002/jhm.2044
Published online in Wiley Online Library (Wileyonlinelibrary.com).

July 1, 2009 and June 30, 2010. Most patients are cared for by resident housestaff teams at BWH (approximately 25% are cared for by physician assistants working directly with attending physicians), and approximately half receive primary care in the Partners system, which has a shared electronic medical record (EMR). Outpatient mental health services are provided by Partners-associated mental health professionals including those at McLean Hospital and MassHealth (Medicaid)-associated sites through the Massachusetts Behavioral Health Partnership. Exclusion criteria were death in the hospital or discharge to another acute care facility. We also excluded patients who left against medical advice (AMA). The study protocol was approved by the Partners Institutional Review Board.

Outcome

The primary outcomes were ACR and PAR within 30 days of discharge. First, we identified all 30-day readmissions to BWH or to 2 other hospitals in the Partners Healthcare Network (previous studies have shown that 80% of all readmitted patients are readmitted to 1 of these 3 hospitals).[12] For patients with multiple readmissions, only the first readmission was included in the dataset.

To find potentially avoidable readmissions, administrative and billing data for these patients were processed using the SQLape (SQLape s.a.r.l., Corseaux, Switzerland) algorithm, which identifies PAR by excluding patients who undergo planned follow-up treatment (such as a cycle of planned chemotherapy) or are readmitted for conditions unrelated in any way to the index hospitalization.[13,14] Common complications of treatment are categorized as "potentially avoidable," such as development of a deep venous thrombosis, a decubitus ulcer after prolonged bed rest, or bleeding complications after starting anticoagulation. Although the algorithm identifies theoretically preventable readmissions, the algorithm does not quantify how preventable they are, and these are thus referred to as "potentially avoidable." This is similar to other admission metrics, such as the Agency for Healthcare Research and Quality's prevention quality indicators, which are created from a list of ambulatory care-sensitive conditions.[15] SQLape has the advantage of being a specific tool for readmissions. Patients with 30-day readmissions identified by SQLape as planned or unlikely to be avoidable were excluded in the PAR analysis, although still included in ACR analysis. In each case, the comparison group is patients without any readmission.

Predictors

Our predictors of interest included the overall prevalence of a psychiatric diagnosis or diagnosis of substance abuse, the presence of specific psychiatric diagnoses, and prescription of psychiatric medications to help assess the independent contribution of these comorbidities to readmission risk.

We used a combination of easily obtainable inpatient and outpatient clinical and administrative data to identify relevant patients. Patients were considered likely to be psychiatrically ill if they: (1) had a psychiatric diagnosis on their Partners outpatient EMR problem list and were prescribed a medication to treat that condition as an outpatient, or (2) had an International Classification of Diseases, 9th Revision diagnosis of a psychiatric illness at hospital discharge. Patients were considered to have moderate probability of disease if they: (1) had a psychiatric diagnosis on their outpatient problem list, or (2) were prescribed a medication intended to treat a psychiatric condition as an outpatient. Patients were considered unlikely to have psychiatric disease if none of these criteria were met. Patients were considered likely to have a substance abuse disorder if they had this diagnosis on their outpatient EMR, or were prescribed a medication to treat this condition (eg, buprenorphine/naloxone), or received inpatient consultation from a substance abuse treatment team during their inpatient hospitalization, and were considered unlikely if none of these were true. We also evaluated individual categories of psychiatric illness (schizophrenia, depression, anxiety, bipolar disorder) and of psychotropic medications (antidepressants, antipsychotics, anxiolytics).

Potential Confounders

Data on potential confounders, based on prior literature,[16,17] collected at the index admission were derived from electronic administrative, clinical, and billing sources, including the Brigham Integrated Computer System and the Partners Clinical Data Repository. They included patient age, gender, ethnicity, primary language, marital status, insurance status, living situation prior to admission, discharge location, length of stay, Elixhauser comorbidity index,[18] total number of medications prescribed, and number of prior admissions and ED visits in the prior year.

Statistical Analysis

Bivariate comparisons of each of the predictors of ACR and PAR risk (ie, patients with a 30-day ACR or PAR vs those not readmitted within 30 days) were conducted using χ^2 trend tests for ordinal predictors (eg, likelihood of psychiatric disease), and χ^2 or Fisher exact test for dichotomous predictors (eg, receipt of inpatient substance abuse counseling).

We then used multivariate logistic regression analysis to adjust for all of the potential confounders noted above, entering each variable related to psychiatric illness into the model separately (eg, likely psychiatric illness, number of psychiatric medications). In a secondary analysis, we removed potentially collinear variables from the final model; as this did not alter the results, the full model is presented. We also conducted

a secondary analysis where we included patients who left against medical advice (AMA), which also did not alter the results. Two-sided P values <0.05 were considered significant, and all analyses were performed using the SAS version 9.2 (SAS Institute, Inc., Cary, NC).

RESULTS

There were 7984 unique patients discharged during the study period. Patients were generally white and English speaking; just over half of admissions came from the ED (Table 1). Of note, nearly all patients were insured, as are almost all patients in Massachusetts. They had high degrees of comorbid illness and large numbers of prescribed medications. Nearly 30% had at least 1 hospital admission within the prior year.

All-Cause Readmissions

After exclusion of 997 patients who died, were discharged to skilled nursing or rehabilitation facilities, or left AMA, 6987 patients were included (Figure 1). Of these, 1260 had a readmission (18%). Approximately half were considered unlikely to be psychiatrically ill, 22% were considered moderately likely, and 29% likely (Table 2).

In bivariate analysis (Table 2), likelihood of psychiatric illness ($P < 0.01$) and increasing numbers of prescribed outpatient psychiatric medications ($P < 0.01$) were significantly associated with ACR. In multivariate analysis, each additional prescribed outpatient psychiatric medication increased ACR risk (odds ratio [OR]: 1.10, 95% confidence interval [CI]: 1.01-1.20) or any prescription of an anxiolytic in particular (OR: 1.16, 95% CI: 1.00–1.35) was associated with increased risk of ACR, whereas discharge diagnoses of anxiety (OR: 0.82, 95% CI: 0.68-0.99) and substance abuse (OR: 0.80, 95% CI: 0.65-0.99) were associated with lower risk of ACR (Table 3).

Potentially Avoidable Readmissions

After further exclusion of 872 patients who had unavoidable readmissions according to the SQLape algorithm, 6115 patients remained. Of these, 388 had a PAR within 30 days (6.3%, Table 1).

In bivariate analysis (Table 2), the likelihood of psychiatric illness ($P = 0.02$), number of outpatient psychiatric medications ($P = 0.04$), and prescription of anxiolytics ($P = 0.01$) were significantly associated with PAR, as they were with ACR. A discharge diagnosis of schizophrenia was also associated with PAR ($P = 0.03$).

In multivariate analysis, only discharge diagnoses of depression (OR: 1.49, 95% CI: 1.09-2.04) and schizophrenia (OR: 2.63, 95% CI: 1.13-6.13) were associated with PAR.

DISCUSSION

Comorbid psychiatric illness was common among patients admitted to the medicine wards. Patients with documented discharge diagnoses of depression or schizophrenia were at highest risk for a potentially avoidable 30-day readmission, whereas those prescribed more psychiatric medications were at increased risk for ACR. These findings were

TABLE 1. Baseline Characteristics of the Study Population

Characteristic	All Patients, N (%)	Not Readmitted, N (%)	ACR, N (%)	PAR N (%)*
Study cohort	6987 (100)	5727 (72)	1260 (18)	388 (5.6)
Age, y				
<50	1663 (23.8)	1343 (23.5)	320 (25.4)	85 (21.9)
51–65	2273 (32.5)	1859 (32.5)	414 (32.9)	136 (35.1)
66–79	1444 (20.7)	1176 (20.5)	268 (18.6)	80 (20.6)
>80	1607 (23.0)	1349 (23.6)	258 (16.1)	87 (22.4)
Female	3604 (51.6)	2967 (51.8)	637 (50.6)	206 (53.1)
Race				
White	5126 (73.4)	4153 (72.5)	973 (77.2)	300 (77.3)
Black	1075 (15.4)	899 (15.7)	176 (14.0)	53 (13.7)
Hispanic	562 (8.0)	477 (8.3)	85 (6.8)	28 (7.2)
Other	224 (3.2)	198 (3.5)	26 (2.1)	7 (1.8)
Primary language				
English	6345 (90.8)	5180 (90.5)	1165 (92.5)	356 (91.8)
Marital status				
Married	3642 (52.1)	2942 (51.4)	702 (55.7)	214 (55.2)
Single, never married	1662 (23.8)	1393 (24.3)	269 (21.4)	73 (18.8)
Previously married†	1683 (24.1)	1386 (24.2)	289 (22.9)	101 (26.0)
Insurance				
Medicare	3550 (50.8)	2949 (51.5)	601 (47.7)	188 (48.5)
Medicaid	539 (7.7)	430 (7.5)	109 (8.7)	33 (8.5)
Private	2892 (41.4)	2344 (40.9)	548 (43.5)	167 (43.0)
Uninsured	6 (0.1)	4 (0.1)	2 (0.1)	0 (0)
Source of index admission				
Clinic or home	2136 (30.6)	1711 (29.9)	425 (33.7)	117 (30.2)
Emergency department	3592 (51.4)	2999 (52.4)	593 (47.1)	181 (46.7)
Nursing facility	1204 (17.2)	977 (17.1)	227 (18.0)	84 (21.7)
Other	55 (0.1)	40 (0.7)	15 (1.1)	6 (1.6)
Length of stay, d				
0–2	1757 (25.2)	1556 (27.2)	201 (16.0)	55 (14.2)
3–4	2200 (31.5)	1842 (32.2)	358 (28.4)	105 (27.1)
5–7	1521 (21.8)	1214 (21.2)	307 (24.4)	101 (26.0)
>7	1509 (21.6)	1115 (19.5)	394 (31.3)	127 (32.7)
Elixhauser comorbidity index score				
0–1	1987 (28.4)	1729 (30.2)	258 (20.5)	66 (17.0)
2–7	1773 (25.4)	1541 (26.9)	232 (18.4)	67 (17.3)
8–13	1535 (22.0)	1212 (21.2)	323 (25.6)	86 (22.2)
>13	1692 (24.2)	1245 (21.7)	447 (35.5)	169 (43.6)
Medications prescribed as outpatient				
0–6	1684 (24.1)	1410 (24.6)	274 (21.8)	72 (18.6)
7–9	1601 (22.9)	1349 (23.6)	252 (20.0)	77 (19.9)
10–13	1836 (26.3)	1508 (26.3)	328 (26.0)	107 (27.6)
>13	1866 (26.7)	1460 (25.5)	406 (32.2)	132 (34.0)
Number of admissions in past year				
0	4816 (68.9)	4032 (70.4)	784 (62.2)	279 (71.9)
1–5	2075 (29.7)	1640 (28.6)	435 (34.5)	107 (27.6)
>5	96 (1.4)	55 (1.0)	41 (3.3)	2 (0.5)
Number of ED visits in past year				
0	4661 (66.7)	3862 (67.4)	799 (63.4)	261 (67.3)
1–5	2326 (33.3)	1865 (32.6)	461 (36.6)	127 (32.7)

NOTE: **Abbreviations:** ACR, all-cause readmission; ED, emergency department; PAR, potentially avoidable readmission. PAR cohort excludes patients with unavoidable readmissions. *Percentages may not add up to 100% due to rounding or when subcategories were very small (<0.5%). †Previously married includes patients who were divorced or widowed.

TABLE 2. Bivariate Analysis of Predictors of Readmission Risk

	All-Cause Readmission Analysis			Potentially Avoidable Readmission Analysis		
	No. in Cohort (%)	% of Patients With ACR	P Value*	No. in Cohort (%)	% of Patients With PAR	*P* Value*
Entire cohort	6987	18.0		6115	6.3	
Likelihood of psychiatric illness						
Unlikely	3424 (49)	16.5		3026 (49)	5.6	
Moderate	1564 (22)	23.5		1302 (21)	7.1	
Likely	1999 (29)	16.4		1787 (29)	6.4	
Likely versus unlikely			0.87			0.20
Moderate + likely versus unlikely			0.001			0.02
Likelihood of substance abuse			0.01			0.20
Unlikely	5804 (83)	18.7		5104 (83)	6.5	
Likely	1183 (17)	14.8		1011 (17)	5.4	0.14
Number of prescribed outpatient psychotropic medications			<0.001			0.04
0	4420 (63)	16.3		3931 (64)	5.9	
1	1725 (25)	20.4		1481 (24)	7.2	
2	781 (11)	22.3		653 (11)	7.0	
>2	61 (1)	23.0		50 (1)	6.0	
Prescribed antidepressant	1474 (21)	20.6	0.005	1248 (20)	6.2	0.77
Prescribed antipsychotic	375 (5)	22.4	0.02	315 (5)	7.6	0.34
Prescribed mood stabilizer	81 (1)	18.5	0.91	69 (1)	4.4	0.49
Prescribed anxiolytic	1814 (26)	21.8	<0.001	1537 (25)	7.7	0.01
Prescribed stimulant	101 (2)	26.7	0.02	83 (1)	10.8	0.09
Prescribed pharmacologic treatment for substance abuse	79 (1)	25.3	0.09	60 (1)	1.7	0.14
Number of psychiatric diagnoses on outpatient problem list			0.31			0.74
0	6405 (92)	18.2		5509 (90)	6.3	
1 or more	582 (8)	16.5		474 (8)	7.0	
Outpatient diagnosis of substance abuse	159 (2)	13.2	0.11	144 (2)	4.2	0.28
Outpatient diagnosis of any psychiatric illness	582 (8)	16.5	0.31	517 (8)	8.0	0.73
Discharge diagnosis of depression	774 (11)	17.7	0.80	690 (11)	7.7	0.13
Discharge diagnosis of schizophrenia	56 (1)	23.2	0.31	50 (1)	14	0.03
Discharge diagnosis of bipolar disorder	101 (1)	10.9	0.06	92 (2)	2.2	0.10
Discharge diagnosis of anxiety	1192 (17)	15.0	0.003	1080 (18)	6.2	0.83
Discharge diagnosis of substance abuse	885 (13)	14.8	0.008	803 (13)	6.1	0.76
Discharge diagnosis of any psychiatric illness	1839 (26)	16.0	0.008	1654 (27)	6.6	0.63
Substance abuse consultation as inpatient	284 (4)	14.4	0.11	252 (4)	3.6	0.07

NOTE: **Abbreviations:** ACR, all-cause readmission, PAR, potentially avoidable readmission. *All analyses performed with χ^2 trend test for ordinal variables in more than 2 categories or Fisher exact test for dichotomous variables. Comparison group is patients without a readmission in all analyses. PAR analysis excludes patients with nonpreventable readmissions as determined by the SQLape algorithm.

independent of a comprehensive set of risk factors among medicine inpatients in this retrospective cohort study.

This study extends prior work indicating patients with psychiatric disease have increased healthcare utilization,[6–11] by identifying at least 2 subpopulations of the psychiatrically ill (those with depression and schizophrenia) at particularly high risk for 30-day PAR. To our knowledge, this is the first study to identify schizophrenia as a predictor of hospital readmission for medical illnesses. One prior study prospectively identified depression as increasing the 90-day risk of readmission 3-fold, although medication usage was not assessed,[6] and our report strengthens this association.

There are several possible explanations why these two subpopulations in particular would be more predisposed to readmissions that are potentially avoidable. It is known that patients with schizophrenia, for example, live on average 20 years less than the general population, and most of this excess mortality is due to medical illnesses.[19,20] Reasons for this may include poor healthcare access, adverse effects of medication, and socioeconomic factors among others.[21,22] All of these reasons may contribute to the increased PAR risk in this population, mediated, for example, by decreased ability to adhere to postdischarge care plans. Successful community-based interventions to decrease these inequities have been described and could serve as a model for addressing the increased readmission risk in this population.[23]

Our finding that patients with a greater number of prescribed psychiatric medications are at increased risk for ACR may be expected, given other studies that have highlighted the crucial importance of medications in postdischarge adverse events, including readmissions.[24] Indeed, medication-related errors and toxicities are the most common postdischarge adverse events experienced by patients.[25] Whether psychiatric medications are particularly prone to causing postdischarge adverse events or whether these medications represent greater psychiatric comorbidity cannot be answered by this study.

TABLE 3. Multivariate Analysis of Predictors of Readmission Risk

	ACR, OR (95% CI)	PAR, OR (95% CI)*
Likely psychiatric disease	0.97 (0.82-1.14)	1.20 (0.92-1.56)
Likely and possible psychiatric disease	1.07 (0.94-1.22)	1.18 (0.94-1.47)
Likely substance abuse	0.83 (0.69-0.99)	0.85 (0.63-1.16)
Psychiatric diagnosis on outpatient problem list	0.97 (0.76-1.23)	1.04 (0.70-1.55)
Substance abuse diagnosis on outpatient problem list	0.63 (0.39-1.02)	0.65 (0.28-1.52)
Increasing number of prescribed psychiatric medications	1.10 (1.01-1.20)	1.00 (0.86-1.16)
Outpatient prescription for antidepressant	1.10 (0.94-1.29)	0.86 (0.66-1.13)
Outpatient prescription for antipsychotic	1.03 (0.79-1.34)	0.93 (0.59-1.45)
Outpatient prescription for anxiolytic	1.16 (1.00–1.35)	1.13 (0.88-1.44)
Outpatient prescription for methadone or buprenorphine	1.15 (0.67-1.98)	0.18 (0.03-1.36)
Discharge diagnosis of depression	1.06 (0.86-1.30)	1.49 (1.09-2.04)
Discharge diagnosis of schizophrenia	1.43 (0.75-2.74)	2.63 (1.13-6.13)
Discharge diagnosis of bipolar disorder	0.53 (0.28-1.02)	0.35 (0.09-1.45)
Discharge diagnosis of anxiety	0.82 (0.68-0.99)	1.11 (0.83-1.49)
Discharge diagnosis of substance abuse	0.80 (0.65-0.99)	1.05 (0.75-1.46)
Discharge diagnosis of any psychiatric illness	0.88 (0.75-1.02)	1.22 (0.96-1.56)
Addiction team consult while inpatient	0.82 (0.58-1.17)	0.58 (0.29-1.17)

NOTE: **Abbreviations:** ACR, all-cause readmissions; CI, confidence interval; OR, odds ratio; PAR, potentially avoidable readmissions. *All analyses performed by multivariate logistic regression adjusting for patient age, gender, ethnicity, language spoken, marital status, insurance source, discharge location, length of stay, comorbidities (Elixhauser), number of outpatient medications, number of prior emergency department visits, and admissions in the prior year. Analyses were performed by entering each exposure of interest into the model separately while adjusting for all covariates. Comparison group is patients without any readmission for all analyses.

It was surprising but reassuring that substance abuse was not a predictor of short-term readmissions as identified using our measures; in fact, a discharge diagnosis of substance abuse was associated with lower risk of ACR than comparator patients. It seems unlikely that we would have inadequate power to find such a result, as we found a statistically significant negative association in the ACR population, and 17% of our population overall was considered likely to have a substance abuse comorbidity. However, it is likely the burden of disease was underestimated given that we did not try to determine the contribution of long-term substance abuse to medical diseases that may increase readmission risk (eg, liver cirrhosis from alcohol use). Unlike other conditions in our study, patients with substance abuse diagnoses at BWH can be seen by a dedicated multidisciplinary team while an inpatient to start treatment and plan for postdischarge follow-up; this may have played a role in our findings.

A discharge diagnosis of anxiety was also somewhat protective against readmission, whereas a prescription of an anxiolytic (predominantly benzodiazepines) increased risk; many patients prescribed a benzodiazepine do not have a Diagnostic and Statistical Manual of Mental Disorders–4th Edition (DSM-IV) diagnosis of anxiety disorder, and thus these findings may reflect different patient populations. Discharging physicians may have used anxiety as a discharge diagnosis in patients in whom they suspected somatic complaints without organic basis; these patients may be at lower risk of readmission.

Discharge diagnoses of psychiatric illnesses were associated with ACR and PAR in our study, but outpatient diagnoses were not. This likely reflects greater severity of illness (documentation as a treated diagnosis on discharge indicates the illness was relevant during the hospitalization), but may also reflect inaccuracies of diagnosis and lack of assessment of severity in outpatient coding, which would bias toward null findings. Although many of the patients in our study were seen by primary care doctors within the Partners system, some patients had outside primary care physicians and we did not have access to these records. This may also have decreased our ability to find associations.

The findings of our study should be interpreted in the context of the study design. Our study was retrospective, which limited our ability to conclusively diagnose psychiatric disease presence or severity (as is true of most institutions, validated psychiatric screening was not routinely used at our institutions on hospital admission or discharge). However, we used a conservative scale to classify the likelihood of patients having psychiatric or substance abuse disorders, and we used other metrics to establish the presence of illness, such as the number of prescribed medications, inpatient consultation with a substance abuse service, and hospital discharge diagnoses. This approach also allowed us to quickly identify a large cohort unaffected by selection bias. Our study was single center, potentially limiting generalizability. Although we capture at least 80% of readmissions, we were not able to capture all readmissions, and we cannot rule out that patients readmitted elsewhere are different than those readmitted within the Partners system. Last, the SQLape algorithm is not perfectly sensitive or specific in identifying avoidable readmissions,[13] but it does eliminate many readmissions that are clearly unavoidable, creating an enriched cohort of patients whose readmissions are more likely to be avoidable and therefore potentially actionable.

We suggest that our study findings first be considered when risk stratifying patients before hospital discharge in terms of readmission risk. Patients with depression and schizophrenia would seem to merit postdischarge interventions to decrease their potentially avoidable readmissions. Compulsory community treatment (a feature of treatment in Canada and Australia that is ordered by clinicians) has been shown to decrease mortality due to medical illness in patients who have been hospitalized and are psychiatrically ill, and addition of these services to postdischarge care may be useful.[23] Inpatient physicians could work to ensure follow-up not just with medical providers but with robust outpatient mental health programs to decrease potentially avoidable readmission risk, and administrators could work to ensure close linkages with these community resources. Studies evaluating the impact of these types of interventions would need

to be conducted. Patients with polypharmacy, including psychiatric medications, may benefit from interventions to improve medication safety, such as enhanced medication reconciliation and pharmacist counseling.[26]

Our study suggests that patients with depression, those with schizophrenia, and those who have increased numbers of prescribed psychiatric medications should be considered at high risk for readmission for medical illnesses. Targeting interventions to these patients may be fruitful in preventing avoidable readmissions.

Acknowledgements

The authors thank Dr. Yves Eggli for screening the database for potentially avoidable readmissions using the SQLape algorithm.

Disclosures: Dr. Donzé was supported by the Swiss National Science Foundation and the Swiss Foundation for Medical–Biological Scholarships. The authors otherwise have no conflicts of interest to disclose. The content is solely the responsibility of the authors and does not necessarily represent the official views of the US Department of Veterans Affairs.

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