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Medical Inpatients' Adherence to Outpatient Psychiatric Aftercare: a Prospective Study of Patients Evaluated by an Inpatient Consultation Liaison Psychiatry Service*,†

Mark J. Ehrenreich, MD, **Charles T. Robinson, MD**, **David B. Glovinsky, MD**, **Lisa B. Dixon, MD, MPH**, **Deborah R. Medoff, PHD**, and **Seth S. Himelhoch, MD, MPH**
University of Maryland, Baltimore

Abstract

Objective—This study sought to determine whether patients on psychiatric medication evaluated by inpatient consultation psychiatrists followed up with psychiatric aftercare and continued psychiatric medication 8 weeks post-discharge. Barriers to care and their effect on aftercare follow-up were assessed.

Method—This was a prospective study of a consecutive sample of adults who received a psychiatric consultation and were prescribed psychotropic medication during hospitalization on the general medical or surgical inpatient units at the University of Maryland Medical Center. Baseline information was collected from 36 patients who received an inpatient psychiatric consultation and were: (1) prescribed psychiatric medications; and (2) discharged to home. Follow-up data was collected from 21 (58.3%) of these patients 8 weeks post-discharge.

Results—Of 36 patients who provided baseline data, 93% recognized they had a psychiatric disorder, 90% recognized the importance of taking psychiatric medication, and 80% recognized the importance of psychiatric aftercare. Aftercare recommendations were included in only 33% of patient discharge instructions. Of 21 patients providing follow-up data, 57% reported receiving psychiatric aftercare. Patients who did not receive psychiatric aftercare were significantly more likely to be at risk for poor literacy (88.9% vs. 33.3% Fisher's exact test = 0.024) and were less often given psychiatric aftercare instructions at discharge (22% vs. 42%).

Conclusions—Poor communication of aftercare instructions as well as poor literacy may be associated with lack of psychiatric aftercare. Consultation psychiatrists should assess literacy and insure aftercare information is provided to patients.

Keywords

medication adherence; aftercare; health literacy; inpatients; psychiatry; consultation

Introduction

Co-occurring psychiatric conditions are common among patients admitted to general medical hospitals [1]. Among those who receive a psychiatric consultation, recommendations are made for psychotropic medications approximately 50% of the time

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Direct reprint requests to: Mark J. Ehrenreich, MD University of Maryland School of Medicine Department of Psychiatry Director, CL Psychiatry Box 349, UMMS 22 S. Greene St. Baltimore, MD 21201 mehrenre@psych.umaryland.edu.

and for psychiatric aftercare approximately 60-75% of the time [2, 3]. Failure to continue psychiatric treatment after discharge may lead to worsening of psychiatric and medical symptoms and poorer quality of life [4]. Despite the importance of psychiatric aftercare, relatively little is known about the degree to which medical inpatients receive psychiatric follow-up or the barriers inhibiting aftercare.

Only two previous American studies published in the early 1980s have reported on adherence to psychiatric aftercare referrals post-discharge from a general hospital setting. Weddington found that only 20% of medical patients seen at a university hospital followed the psychiatric consultants' recommendations to seek psychiatric outpatient treatment [5]. Burstein found that 51% of a group of medical patients from two community hospitals kept their initial psychiatric aftercare appointment; however, these patients were pre-screened for motivation and financial ability prior to referral [6]. More recent European studies report that between 20% and 67.5% of patients seen by a consultation psychiatry service are adherent with psychiatric medications post-discharge [7, 8]. Overall, the differences between European and American systems of care and the age of the American studies render previous research of questionable current relevance.

The goal of this study was to determine the extent to which patients hospitalized for general medical or surgical conditions and also prescribed psychotropic medication by a psychiatric consultant kept their psychiatric aftercare appointments and continued their psychiatric medications. We investigated the types of barriers that prevented patients from following through with psychiatric aftercare recommendations using a modified version of the health belief model [9]. We also evaluated literacy which has been found to be associated with poorer compliance rates [10].

Method

Participants

This was a prospective study of a consecutive sample of adults who received a psychiatric consultation and were prescribed psychotropic medication during hospitalization on the general medical or surgical inpatient units at the University of Maryland Medical Center.

From May 2004 to June 2005 all patients who were medically hospitalized at an urban university hospital and received a psychiatric consultation were evaluated for the study. Eligible patients had to be English-speaking adults (18-85 years old) who received psychotropic medication for a psychiatric condition during their hospital stay. We specifically focused on those receiving psychotropic medication, as we believe these patients were at greatest risk for poor outcomes if they failed to follow-up with psychiatric aftercare. Patients were excluded from the study if they had a final diagnosis of dementia, delirium, or a cognitive disorder, as this would impair their ability to answer survey questions. Patients were also excluded if they were discharged to an institution (e.g., psychiatric hospital, rehabilitation hospital, or long-term care facility), as the goal of the study was to determine patients' receipt of aftercare for their psychiatric problems outside of structured settings.

Of the 117 eligible subjects, 53.8% (63/117) were discharged from the hospital prior to being approached by the research team. Of those the research team could approach, 66% (36/54) provided written informed consent and completed the baseline in-person interview. Among the 18 people who refused to participate in the study, reasons for not participating in the study included the following: 11 were either not interested or did not feel comfortable participating; 3 reported it was too hard for them to participate; 2 reported that they were not

satisfied with their care; 1 denied having a mental illness; and 1 did not provide any information.

Informed Consent and IRB Approval

The study was reviewed and approved by the University of Maryland Institutional Review Board. All subjects provided written informed consent after receiving a complete description of the study.

Procedures

Participants were interviewed at baseline in the hospital setting after the initial consultation. The baseline interview collected information regarding basic demographics and use of medical and mental health services prior to admission to the hospital. We also collected information regarding person-level and system-level barriers to care.

Eight weeks post-hospitalization the participants were contacted again for the follow-up interview. The follow-up interview collected information regarding use of mental health services over the 8 weeks after discharge from the hospital.

Every effort was made to retain participants in the study. Contact attempts were made several times by phone and letter before a participant was considered lost to follow-up. Of the 36 participants who completed the baseline interview, 58.3% (21/36) completed the follow-up interview 8 weeks post-hospitalization. Among the 15 participants who did not complete the follow-up interview at 8 weeks: 11 (73.3%) were unable to be located after discharge; 3 (20.0%) were too sick to complete the interview; and 1 (6.6 %) died. Those who did not complete the follow-up interview were similar to those who did on all baseline characteristics with the following two exceptions: first, they were more likely to report not knowing the specific mental health problem that the psychiatrist saw them for during their hospitalization (Fisher's exact test, $p = 0.035$); and second, they were more likely to report that it was unhelpful to receive a referral to have someone prescribe psychiatric medication (Fisher's exact test, $p = 0.034$).

Individuals were paid $5 for participation in the initial interview and $5 at the completion of the follow-up interview.

Our main outcome measures were whether or not the participants followed up with psychiatric aftercare and whether they continued to take their prescribed psychiatric medication 8 weeks after discharge from the hospital.

With respect to predictor variables, we used a modified version of the health belief model [9] as our conceptual model to assess the participants' willingness to continue to take psychotropic medications after being discharged from the hospital. Based on this model, we used 5-point Likert scales to assess the patient's perceived susceptibility to psychiatric disease, the patient's perceived severity of psychiatric disease, and the patient's perceived benefits of treatment. The specific probes used to evaluate these areas are included in Table 1.

We asked participants questions regarding person-level barriers to care such as medical insurance, pharmacy insurance, and whether they could afford prescriptions. We evaluated literacy using both self-report and the Rapid Estimate of Adult Literacy Medicine (REALM-R) [11]. The REALM-R is a brief 8-item word recognition test used to assess an adult's ability to read common medical words. Risk for poor literacy is defined as correctly recognizing six or less of the eight medical words.

With respect to system-level barriers that may prevent patients from accessing aftercare services, we gathered information from the psychiatric consultants regarding whether they provided aftercare referral information to the primary treatment team and to the patient. We reviewed the hospital discharge instruction form to determine if the medical team provided the patient with written information regarding psychiatric aftercare at the time of discharge.

Analysis

Univariate distributions included percentages for dichotomous variables and means for continuous variables. These descriptive statistics were used to evaluate baseline demographic and clinical characteristics of the sample as well as to describe the components of the health belief model and aspects of the patient-provider communication variables. These statistics were also used to describe follow-up with psychiatric aftercare services, utilization of psychiatric medication, and potential barriers to care 8 weeks post-hospitalization. We used the chi-square and Fisher exact tests to evaluate the degree to which potential barriers to care affected whether or not patients followed up with aftercare recommendations. Statistical analyses were completed using STATA system for Windows, Release 9.0 by STATA Corp. All reported *p* values are two-sided.

Results

Baseline Characteristics of the Study Sample

The participants' age was 46.0 years (s.d. 13.1 years). Over 58% were women and over 63% were white. The majority of participants were married, had a high-school education and reported having some form of health insurance. Approximately 73% had a yearly income of less than $30,000 a year. Over 90% reported having a regular place to receive medical care while only slightly over half reported having a regular place to receive care for psychiatric problems. Over 85% reported taking a psychiatric medication within 90 days of the hospitalization and included the following types of psychotropic medication: 61% received antidepressants; 13% received antipsychotics; 7.4% received mood stabilizers; 5.5% received anxiolytics and 5.5% received hypnotics (see Table 2).

Nearly all the participants agreed or strongly agreed that they had a mental health problem and all reported being aware that they were being prescribed a psychiatric medication during the course of the hospitalization. Over 90% reported that it was very important to continue psychiatric medication after leaving the hospital (see Table 1). Although few insurance barriers were reported, almost 39% reported not being able to afford prescription medication in the last 12 months. With respect to literacy, results of the REALM-R revealed that 50% of the participants were at risk for poor medical literacy skills. Those at highest risk for low literacy were those with less than a high school education ($\chi^2 = 7.2$, Pr = 0.007) and those identified as being not white ($\chi^2 = 8.3$, Pr = 0.004) (see Tables 1 and 3).

System Level: Patient-Provider Communication

The C-L psychiatrist reported communicating the psychiatric aftercare plan to the patient verbally 100% of the time and additionally in writing 21.1% of the time. The C-L psychiatrist reported communicating the psychiatric aftercare plan to the primary team 96.8% of the time. At time of discharge, the primary team recorded the psychiatric aftercare plan in only 33% of patients' discharge instruction forms. In contrast, they listed the psychiatric medications on the discharge form 83.3% of the time (see Table 3).

Follow-Up with Psychiatric Treatment 8 Weeks After Discharge from the Hospital

Of the 21 participants who completed the 8-week follow-up survey, 57.1% reported receiving mental health aftercare. Of these, 50% followed up with a psychiatrist, 42%

followed up with a primary care physician, and 8% followed up with a therapist. Most (85.7%) reported taking medication prescribed for their psychiatric condition. Patients who followed up with mental health aftercare had a trend toward being more likely to report taking their psychiatric medication compared to those who did not report mental health aftercare (100% vs. 66.7%, Fisher's exact test, $p = 0.06$). Of those who took psychiatric medication, 88.9% reported taking it every time as prescribed. Among those who did not follow-up with mental health aftercare, all who reported not taking psychiatric medication reported they could not afford to pay for it.

Those who denied receiving mental health care at follow-up were as likely to report having a regular place to receive psychiatric care at the baseline interview as those who reported receiving mental health care at follow-up (44.4% vs. 58.3%, $p = 0.67$). However, they were significantly less likely to report being psychiatrically hospitalized in the last 12 months (0% vs. 41.6%, Fisher's exact test, $p = 0.045$) (see Table 4).

Age, race, marital status, income, insurance status, and education were not associated with follow-up with mental health aftercare. Compared to those who did follow-up with a mental health referral, those who did not follow-up with a mental health referral were significantly more likely to have an at-risk score for poor literacy on the REALM-R (88.9% vs. 33.3%, Fisher's exact test, $p = 0.02$) and significantly less likely to want a referral to a medical provider to prescribe psychiatric medications (100% vs. 44.4%, Fisher's exact test, $p = 0.008$) (see Table 4).

Discussion

Our study found a greater degree of post-hospitalization psychiatric aftercare follow-up (57%) than did the study by Weddington (20%) [5], but a similar rate to that found by Burstein (51%) [6]. Unlike Weddington's study, our study found no racial differences with respect to follow-up. There were, however, differences between our study and these two earlier studies. Our follow-up data came via patient report and included only patients on psychiatric medication, whereas these earlier studies obtained follow-up information from the provider and included patients not on medication.

Our results are in line with the degree of follow-up with outpatient psychiatry referrals by other patient populations. These follow-up rates have included 49% for Medicaid enrolled psychiatric inpatients [12], 51.3% for psychiatric emergency room patients [13], and 38.1% of pregnant or postpartum women [14].

The vast majority of patients reported continuing to take their psychiatric medication after discharge from the hospital and most reported taking it every day. Among those who did not take their psychiatric medication, the most commonly reported reason was lack of money to pay for the medication. The number of patients who continued to take their psychiatric medication at discharge may not be surprising since 85% of the patients were previously on psychotropic medications at some time during the 90-day period prior to hospitalization.

This study also evaluated potential barriers to the successful transition of medical inpatients to psychiatric aftercare. With respect to person-level barriers associated with the health belief model, most of our participants recognized that they had a mental illness, recognized the severity of the illness, recognized that they were on medication for that illness, and believed that it was important to stay on the medication and receive psychiatric aftercare after discharge. Participants who reported that it would be helpful to receive a referral for someone to prescribe psychiatric medications were more likely to follow up with mental health aftercare. This suggests that patients' self-assessment of the perceived benefit of treatment may be highly associated with follow-up with mental health aftercare.

Our study may overstate the level of adherence to both medications and psychiatric aftercare. Non-completers of the follow-up interview were more likely to deny that they had a mental illness and were less likely to report that it was helpful to receive a psychiatric aftercare referral. Although we are unable to know whether or not the non-completers actually followed up with mental health aftercare and complied with their medication, it is possible that these beliefs correlated not only with lack of follow-up with this study, but also with lack of aftercare.

Our study found that literacy problems were associated with a decreased likelihood of receiving psychiatric aftercare. These findings highlight the importance of evaluating literacy as part of the C-L psychiatric evaluation and ensuring that patients receive aftercare instructions that are appropriate to their reading level. As illiteracy has been previously associated with poor compliance rates [10], those identified as having trouble reading may require additional help to ensure a successful transition to outpatient treatment.

With respect to system-level barriers, we found that the primary team had considerable problems in communicating the psychiatric aftercare treatment plan to the patient. Patients who did not receive psychiatric aftercare were less likely to have had the aftercare referral written on their discharge instructions (22% vs. 41.6%), however, this did not reach statistical significance. This lack of significance could be due to our small numbers or to the fact that the psychiatric consultation team reported communicating the psychiatric aftercare plan directly to the patient. Furthermore, a little over half of the participants reported having a regular doctor or facility from which they could receive care for psychiatric problems. For these individuals, the lack of written aftercare instructions may be less important. Despite this lack of a statistical finding, we believe the failure to include the psychiatric aftercare plan on the discharge instruction sheet represents a significant breakdown in communication that should be addressed. Consultation psychiatrists should consider alternative ways to ensure that this written information is provided to the patient and included in the official discharge instructions.

There are several limitations to this study. First, few patients met inclusion criteria for this study. Large numbers of patients were excluded because they were discharged to rehabilitation or other sub-acute hospital settings. This may be a measure of both the severity and acuity of illness of patients discharged from the hospital. Future research should be directed at evaluating follow-up with psychiatric treatment among those discharged to and from these non-acute medical facilities. Second, we were unable to assess more than half of eligible patients' willingness to participate in the study because of the rapid and sometimes unanticipated discharges that occur in the medical/surgical hospital setting. It is plausible that in these cases the psychiatric consultants were even less likely to arrange aftercare or communicate plans to the patient or medical team and that aftercare plans were even less likely to make it to the patient instruction sheet than for those patients included in the study. Third, we restricted our study to those patients who were placed on psychotropic medications during their hospital stay because we felt that adherence to psychiatric aftercare was most important for this group. We cannot generalize our findings to patients who are referred for psychiatric follow-up and who are not on psychotropic medications at the time of discharge. Fourth, given the small sample size of this study and the difficulty with retention on the post-test measures, we may be at risk of a type-II error (i.e., finding no association between our dependent and independent variables when one really existed). Every effort, though, was made to retain participants in the study. Contact attempts were made several times by phone and letter before a participant was considered lost to follow-up. Fifth, this is a sample drawn from one tertiary care, urban hospital, and these results may not generalize to other types of settings. This may be especially true since different hospitals are likely to use different discharge procedures.

Conclusions

Decreased medical literacy was associated with decreased follow-up with psychiatric aftercare. Psychiatric aftercare recommendations are often not included in the medical team's written discharge instructions. Consultation psychiatrists may need to ensure that patient literacy is adequately assessed and that aftercare instructions are appropriately communicated to the patient. Interventions aimed at improving information transfer at the pivotal point of discharge are warranted.

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Table 1

Results of Baseline Assessment of Health Belief Model: Perceived Susceptibility, Severity, and Benefits of Treatment

	Sample $N = 36^a$ (%)
Perceived susceptibility to psychiatric disease	
Aware seen by psychiatrist	97.2%
Aware of specific mental health problem	83.3
Aware being prescribed meds for mental health problems	100
Agree that they have a mental health problem ($N = 30$)	
Strongly agree	66.7
Agree	26.7
Neither agree nor disagree	0
Disagree	6.6
Strongly disagree	0
Perceived severity of psychiatric disease	
Severity of mental health condition ($N = 30$)	
Very severe	26.7
Moderately severe	30
Severe	16.7
Slightly severe	20.0
Not severe	6.6
Perceived benefits of treatment	
Important continue psychiatric medications when leave hospital ($N = 35$)	
Very important	91.4
Moderately important	2.9
Somewhat important	0
Slightly important	0
Not important	5.7
Important to see a physician to prescribe psychiatric medication ($N = 35$)	
Very important	82.9
Moderately important	5.7
Somewhat important	0
Slightly important	2.8
Not important	8.6
Mental health will be improved by continuing to take psychiatric medication after discharge ($N = 31$)	
Very improved	61.3%
Moderately improved	16.1
Somewhat improved	6.5
Slightly improved	0
Not improved	16.1
Helpful to receive referral ($N = 35$)	
Very	37.1

	Sample $N = 36^a$ (%)
Moderately	14.3
Somewhat	11.4
Slightly	2.9
Not	34.3
Preference regarding which provider prescribes psychiatric medication ($N = 34$)	
Primary care provider	32.3
Psychiatrist	61.7
Other physician	5.9

[a]Number is 36 unless otherwise specified.

Table 2
Demographic and Clinical Characteristics of the Study Sample

Characteristics	Sample *N* = 36
Age (mean ± *SD)*	46.0 ±13.1
Male	41.7%
Race	
Black	30.5%
White	63.9%
Other	5.6%
Veteran	16.6%
Marital status	
Married	57.8%
Divorced	5.6%
Separated	2.8%
Never married	33.3%
Income (*N* = 33)	
< $10,000	30.3%
$10,000–29,999	42.4%
$30,000–49,999	12.1%
> $50,000	15.1%
Education	
High school graduate	75.0%
Years of school completed (mean ± *SD)*	13.2 ± 3.1
Medical care	
Regular place to receive medical care	91.6%
Medically hospitalized in the past year (*n* = 35)	66.6%
Psychiatric care	
Regular place to receive psychiatric care	52.8%
Psychiatrically hospitalized in the past year	33.3%
On psychiatric medications in the past 90 days (*n* = 35)	85.7%

Table 3
Results of Baseline Assessment of Health Belief Model: Barriers to Treatment

Barriers to treatment	Sample $N = 36$[a]
Insurance as a barrier	
Has health insurance	86.1%
Has prescription benefits ($N = 31$)	87.1%
Among those with health insurance, those with prescription insurance ($N = 31$)	90.0%
Financial barriers	
Unable to afford prescription medications in past 12 months	38.9%
Unable to afford mental health counseling in past 12 months	27.8%
Information provided at discharge	
C-L psychiatrist communicated aftercare plan to the primary team ($N = 32$)	96.8%
Verbally	81.2%
In writing	65.6%
Both verbally and in writing	57.7%
C-L psychiatrist communicated aftercare plan to the patient ($N = 33$)	100%
Verbally	100%
In writing	21.1%
Psychiatric aftercare plan written on patient discharge summary	33.3%
Psychiatric medication written on patient discharge summary	83.3%
Literacy as a barrier	
Able to read?	97.2%
Ever have someone help you read?	33.3%
REALM-R[b] (mean ± *sd)*	6.0 ± 2.3
Risk for poor literacy as defined by REALM-R	50%

[a] Number is 36 unless otherwise specified.

[b] Rapid Estimate of Adult Literacy Medicine (REALM-R) is a brief 8-item word recognition test used to assess an adult's ability to read common medical words. Risk for poor literacy is defined as correctly recognizing six or less of the eight medical words.

Table 4

Comparison of Patients Who Reported Receiving Psychiatric Aftercare with Those Who Did Not

	Patients reporting Psychiatric aftercare *N*= 12	Patients denying Psychiatric aftercare *N* = 9	*p*-Value[a]
Demographics and Clinical Characteristics at Baseline			
Age (Years ± *SD*)	44.7 ± 4.2	50.8 ± 5.21	$p = 0.38^b$
Male	5 (44.7%)	4 (44.4%)	$p = 0.62$
Non-white	4 (33.3%)	3 (33.3%)	$p = 1.00$
Married	6 (58.3%)	7 (66.7%)	$p = 1.00$
Income less than $30,000 *(N* = 19)	8 (66.6%	6 (66.6%)	$p = 0.80$
Education (Years ± *SD)*	14.3 ±0.95	12.3 ± 0.81	$p = 0.14$
High school graduate	91.7%	66.7%	$p = 0.28$
Psychiatric hospitalization in the past 12 months	5(41.6%)	0 (0.0%	$p = 0.04$
Had a regular place to receive psychiatric care	7 (58.3%)	4 (44.4%)	$p = 0.67$
On psychiatric medication preceding hospitalization *(N* = 20)	11 (100%)	7 (77.8%)	$p = 0.19$
Health Belief Model			
Perceived susceptibility to psychiatric disease			
Know specific mental health problem	12(100%)	8 (88.9%)	$p = 0.43$
Perceived severity of psychiatric disease			
Perceived severity of psychiatric illness as very or moderately severe (*N* = 20)	5 (66.6%)	8 (62.5%)	$p = 0.42$
Perceived benefits of treatment			
Very important continue psychiatric medications (*N* = 20)	10(90.9%)	8 (88.9%)	$p = 0.71$
Mental health will be improved by continuing to take psychiatric medication (*N* = 19)	6 (54.5%)	5 (62.5%)	$p = 0.73$
Very, moderately, or somewhat helpful to have a referral for someone to prescribe psychotropic medication (*N* = 20)	10(100%)	4 (44.4%)	$p = 0.008$
Reported taking psychiatric medication post-discharge	12(100%)	6 (66.7%)	$p = 0.06$
Barriers to Treatment			
Have insurance (baseline)	10(83.3%)	9 (100%)	$p = 0.49$
Could not afford prescription medication (baseline)	4 (33.3%)	2 (22.2%)	$p = 0.66$
Could not afford mental health counseling (baseline)	4 (33.3%)	1 (11.1%)	$p = 0.34$
Aftercare referral written on discharge instruction sheet	5(41.6%)	2 (22.0%)	$p = 0.64$
Reported needing someone to help them read	3 (25.0%)	6 (66.7%)	p = 0.09

	Patients reporting Psychiatric aftercare *N*= 12	Patients denying Psychiatric aftercare *N* = 9	*p*-Value[a]
At-risk literacy score on REALM-R (≤ 6)	4 (33.0%)	8 (88.9%)	$p = 0.02$

[a] All *p*-values are from the Fisher's Exact Test unless noted otherwise.

[b] Student's f-test.