

Original Article

Evaluation of a Discharge Medication Service on an Acute Psychiatric Unit

John R. Tomko, PharmD, BCPP*; Nadeem Ahmed, MD[†]; Koushik Mukherjee, MD[‡];
Rebecca S. Roma, MD, MBA[§]; Donna DiLucente, BSN[§]; and Karen Orchowski, BSPHarm[¶]

Abstract

Background: Nonadherence with medication is a major factor that influences acute psychiatric hospital readmission. Pharmacists can positively influence rapid psychiatric readmission due to nonadherence by counseling patients and providing filled prescriptions on discharge.

Objective: This study is a retrospective evaluation of a pharmacist-driven discharge medication service for hospitalized psychiatric patients. Measured outcomes include a comparison of rapid readmissions pre and post implementation. Rapid readmissions between the concurrent study group and excluded group were also compared.

Methods: From October 2010 to November 2011, home-bound subjects being discharged from the hospital's behavioral health unit were provided filled psychiatric prescriptions for self-administration upon discharge, coupled with medication counseling. A series of statistical comparisons were made between the 2 prior years' overall rapid readmissions. This was subsequently compared with the overall rapid readmission rate during the study year. The study group's rapid readmissions were then compared to the overall rapid readmission rate of the study year as well as to the concurrent excluded group.

Results: Thirty-day hospital readmissions were found to be significantly decreased in studied subjects compared to total rapid readmissions during the previous year ($P = .004$) and to the excluded group ($P = .020$).

Conclusion: Immediate availability of prescriptions upon discharge, coupled with development of therapeutic alliances with patients, removes some of the barriers to patient medication adherence in the discharged, acute psychiatric patient. The program provided positive outcomes with regard to decreased frequent, rapid readmission to the acute care psychiatric unit due to medication non-adherence.

Key Words—hospital readmission, medication adherence, pharmacist, prescriptions, psychiatry, therapeutic alliance

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Medication nonadherence is a modifiable problem that leads to many negative health care outcomes. The psychiatric patient is particularly vulnerable to the negative consequences of non-adherence causing rapid and repeated readmission to acute care units. Costs associated with rapid readmission

lead to significantly higher total costs of care compared to patients who are adherent to pharmacotherapy.^{1,2} Prevention of these readmissions is a goal of the mental health system. Patient treatment in the less costly and restrictive outpatient setting provides patients an opportunity for an improved quality of life.

*Assistant Professor of Pharmacy Practice and Clinical Pharmacy Specialist, Department of Pharmacy, Duquesne University and UPMC Mercy Hospital, Pittsburgh, Pennsylvania; [†]Director of Inpatient Psychiatric Services, [‡]Psychiatrist, Mercy Behavioral Health and UPMC Mercy Hospital, Pittsburgh, Pennsylvania; [§]Department of Nursing Services, Utilization, UPMC Mercy Hospital, Pittsburgh, Pennsylvania; [¶]Pharmacy Manager, UPMC Mercy Ambulatory Pharmacy, Pittsburgh, Pennsylvania. Corresponding author: John R. Tomko, PharmD, Department of Pharmacy, Duquesne University/UPMC Mercy, 212 Bayer Learning Center, 600 Forbes Avenue, Pittsburgh, PA 15282; phone: 412-396-5134; fax: 412-232-3457; e-mail: tomko170@duq.edu; tomkojr@upmc.edu

It has been estimated that one-third of all patients do not fill prescriptions received from their physicians in any disease state or illness.³ In conditions such as hypertension, for example, approximately 20% of patients become nonadherent during the first fill.⁴ The negative outcomes of partial adherence were characterized in myocardial infarction patients; there was a 44% increase in 1-year mortality with partial adherence and an 80% increase with complete non-adherence.⁵

Similar nonadherence issues occur in mental health care. In the first month of treatment, approximately 50% of depressed patients become non-adherent.⁶ There have been estimates of a mean 49.5% nonadherence rate in schizophrenia.⁷ It has also been shown that nonadherence with medications is a modifiable risk factor for rehospitalization risk in the severely mentally ill population, with 50% of patients becoming nonadherent in the first month following discharge, despite the belief that medications were helpful. Patients in this study also expressed that financial and transportation constraints made receiving their medications following discharge problematic, leading to rapid nonadherence and decompensation.⁸

Nonadherence is a multifactorial problem in patient care.⁹ Presence of depression, cognitive impairment,¹⁰ inadequate discharge planning, lack of insight,⁷ poor provider-patient relationship, barriers to medications,^{11,12} and cost of medications^{13,14} negatively impact adherence. Stigma and illness severity are also predictors of nonadherence in patients with depression.¹⁵ History of nonadherence, substance misuse, lack of insight into illness, weak alliance with inpatient staff, and lack of family or social support predict nonadherence in patients with schizophrenia.¹⁶

Previous work has evaluated the rapid readmission rates for patients discharged from a hospital medical-surgical unit.¹⁷ In this study, the primary measured outcome was 30-day readmission to the hospital. The intervention in this transitional program was pharmacist discharge counseling of high-risk patients, which resulted in a 27% decrease in 30-day readmissions.

Pharmacists have been encouraged to develop trusting and caring therapeutic alliances with patients to influence positive outcomes.¹⁸ The therapeutic alliance has been shown to be beneficial in patient outcomes amongst health care professionals in mental health as well.¹⁹ Previous research has shown that therapeutic alliances have a positive influence on medication adherence in bipolar disorder patients²⁰ and

patients with schizophrenia.^{21,22} It has also been shown that pharmacists improve psychometric scoring on Beck Depression Inventory in outpatient depressed patients by developing a therapeutic alliance.²³

OBJECTIVE

To intervene in medication adherence, we implemented a medication discharge program in the inpatient acute psychiatric unit of the hospital. We postulated that by providing discharged, home-bound psychiatric patients with the initial filling of psychiatric prescriptions upon discharge from the acute psychiatric unit, coupled with pharmacist-patient discharge counseling, we could remove some barriers to medication nonadherence and prevent subsequent rapid readmission (within 30 days) to the acute psychiatric unit. Through eliminating potential barriers such as not filling prescriptions, not having personal financial resources available at discharge for potential copayments, and not having properly requested and acquired medication prior authorizations, we hoped to improve adherence and avoid delays in self-administered pharmacotherapy. Additionally, providing patient education, medication scheduling, and patient discharge planning (as part of the acute psychiatric admission therapeutic alliance process) may aid ongoing recovery following discharge. This particular work involved the retrospective evaluation of the pharmacist-driven discharge medication service by measuring its effect upon rapid rehospitalization of discharged patients.

METHODS

The Behavioral Health Unit (BHU) is a 24-bed acute psychiatric unit contained within an urban, university-affiliated, tertiary acute care hospital. The unit provides services in acute psychiatric care, including mood, thought, and anxiety disorders, to adult patients over the age of 18 years, many of whom have co-morbid substance abuse disorders.

Description of the Service

The program was initiated at the BHU in October 2010. The service was provided to all home-bound, discharged subjects; hence, subjects being discharged to a home environment comprised the study group. Each subject discharged from the acute psychiatric unit during weekday clinical pharmacy service hours, which were between the hours of 7:00 a.m. and 1:00 p.m., was provided with the first filling of prescribed psychiatric medications upon discharge. Prescriptions were filled with a 30-, 15-, or 7-day supply of

medications, depending upon their type of medication coverage or risk of suicidality. Prior to the start of this initiative, we sought legal assistance from the hospital system's legal department to avoid antitrust violations or conflict with patient choice. All prescriptions were filled by the hospital's outpatient pharmacy services, thus avoiding Robinson Patman Act infringement. Planning for the implementation of the service began in June 2010, and the program became operational on October 1, 2010.

Discharge Planning During Admission

In conjunction with the utilization nurse, we obtained insurance prior authorizations for selected medications during admission. Delays in filling such prescriptions may be a factor in patient nonadherence and psychiatric decompensation; hence authorizations were sought for these specific discharge prescriptions for all patients in order to avoid a potential source of nonadherence. Prior authorizations were obtained for oral medications and prescribed long-acting injectable antipsychotic medications for administration in the postdischarge setting.

The clinical pharmacy specialist developed relationships with subjects from both study groups during daily psychiatric rounds and various on-unit interactions. This therapeutic alliance building was nurtured during the subjects' admission in the unit.

Discharge Day

On the day of discharge, the attending psychiatrist gave the subject's discharge psychiatric prescriptions to the clinical pharmacist. These prescriptions, in conjunction with the necessary patient demographics and insurance information, were subsequently faxed to the outpatient pharmacy for filling. A photocopy of the discharge prescriptions, marked as a copy, was placed in the study subject's chart so the nursing service discharge summary would be accurate. Once filled, prescriptions were delivered to the clinical pharmacist by outpatient pharmacy personnel.

Brief patient education leaflets for each medication were added to the prescription bag by the clinical pharmacist in addition to the legally required drug information print-outs. The internally developed leaflets were designed as quick reference materials to aid adherence. Leaflets provided a brief description of the medications' intended use, expected effects of the drug, management of problematic side effects, and adverse drug reactions that require prescriber notification.

Prior to discharge, the clinical pharmacist met with each of the discharged subjects individually, counseling

them on medication identification and uses, side effects, and ways to manage these side effects. During this session, the subject's medication schedule was reviewed with emphasis placed upon avoiding barriers to adherence, followed by a final assessment of the patient's understanding of medication therapy. The subject was then given an opportunity to ask any additional questions or express concerns about the pharmacotherapy. Subjects who were prescribed long-acting antipsychotic injections were counseled as well, and the date of the next outpatient injection appointment was emphasized. The clinical pharmacist stressed the importance of adherence with outpatient appointments with the psychiatrist and/or therapist and the potential need for laboratory tests at certain visits. Patients were then asked to reiterate what their medications were for, their dosing schedules, and to elucidate why follow-up appointments were important to their care. Lastly, study subjects were instructed to bring their prescription vials to the local pharmacy for transfer and any further refills. Patient discharge encounters lasted on average between 3 and 10 minutes per patient.

Subjects enrolled in private insurance or Medicare Part D programs may have incurred copayments for their discharge prescriptions. To comply with insurance plan agreements mandating an attempt to collect copayments, a bill for any incurred copayments was included in the bag with the address of the outpatient pharmacy for reimbursement. Since the goal of the program was to enhance adherence, failure to return copayments was not followed up by collection services. Indigent patients without any source of funding were given an initial supply of medications (14 days); the cost was covered by a community resource funded by charitable donations. These patients were then directed to apply for public assistance or to visit a local 340b charitable pharmacy for refills.

At the completion of the counseling session, the medication bag was sealed and placed at a designated storage area in the nursing station. The discharging nurse gave the subjects the medications, leaflets, and medication information forms when they departed the hospital.

Excluded Subjects

Excluded subjects included those being discharged to a mental health step-down facility, rehabilitation program, partial hospitalization programs with respite housing, or placement where medications were supplied on-site and administration was performed by in-house nursing staff. Other excluded subjects included

those who were involved with the psychiatry practice's community treatment teams (CTT). CTT case managers took the excluded subjects to the pharmacy prior to their return home, thus avoiding the need for the service. Patients enrolled in a mobile medication program were also excluded. Mobile medication services deliver single daily doses of medications to the patient's home daily to enhance medication adherence.

Outcomes

The measured outcome from this program was a comparison of rapid rehospitalizations of study subjects compared to overall rapid readmissions during the years prior to implementation, to the overall rapid readmission rate during the study year, and to excluded subjects during the study year. Rapid rehospitalization was defined as rehospitalization within 30 days following hospital discharge. Data were collected for a 13-month period following program implementation from October 1, 2010 until November 1, 2011 and were compared to overall rapid readmissions during prior years. All information was gathered in a de-identified format, including diagnosis, medications dispensed, insurance coverage plan, prior authorizations, and readmissions within 30 days. During the final month of the 2011 evaluation period, only readmission data were collected in order to capture rapid readmissions from the final dispensing month. Summaries of subject diagnoses, medication insurances, and dispensed medications are shown in Tables 1, 2, and 3.

Analysis

This was a new service in a private hospital, so no direct comparison of data from previous years was available. To provide insight into the apparent decrease in rapid readmissions during 2010-2011, a series of statistical comparisons was made between the 2 prior years' overall rapid readmissions, then versus overall readmissions between these prior years and the study year, and lastly between studied and excluded subject rates during the 2010-2011 year. All readmission comparisons were made with chi-square tests using SPSS Version 17.0 (SPSS, Inc., Chicago, IL). A priori α error was set at 0.05 and power at 0.95, requiring 145 subjects (critical $\chi^2 = 3.84$). The analysis of the program was approved by the hospital and university institutional review board and adheres to the precepts of the Declaration of Helsinki.

RESULTS

It was noted empirically following the first year of the program that overall rapid readmission rates to the

Table 1. Distribution by primary psychiatric diagnosis of patients discharged to home

Primary psychiatric diagnosis	No. (%) of patients
Major depressive disorder	230 (45.6)
Bipolar disorder, NOS	175 (34.7)
Schizophrenia, NOS	72 (14.3)
Schizoaffective disorder	16 (3.2)
Anxiety disorders	
Generalized anxiety disorder	6 (1.2)
Obsessive compulsive disorder	2 (0.4)
Posttraumatic stress disorder	3 (0.6)

Note: NOS = not otherwise specified.

BHU had decreased from 4.90% during 2009-2010 to 3.71% during 2010-2011, translating to a 24.3% reduction in rapid readmissions. Analysis was subsequently performed to determine whether the discharge medication program influenced the rapid readmission rate.

When comparing the number of rapid readmissions during 2008-2009 to the 2009-2010 year, there was no statistical difference in the total number of rapid readmissions in the 2 years prior to program initiation. Comparison was then performed between the overall rapid readmissions during the study year (2010-2011) and the previous year. Despite the decrease in rapid readmission rate of 24.3%, no statistical difference was found.

Comparison of home-bound subjects receiving discharge medications in 2010-2011 was then compared to 30-day readmissions of the excluded discharged population during the same study period. Rapid readmissions for home-bound subjects who received discharge medications was decreased significantly ($\chi^2 = 8.515$, $df = 1$; $P = .004$) compared to

Table 2. Distribution of studied patient prescription drug coverage

Insurance coverage	No. of patients (N = 504)
Medicaid and Medicare	
Part D programs	282
Private insurances	78
County mental health funds	134
Waived costs (no coverage)	10
Prior authorizations received	72

Table 3. Prescription medication classifications dispensed upon discharge from the hospital unit

Medication class	No. of prescriptions
Antidepressants	
Selective serotonin reuptake inhibitors	220
Serotonin norepinephrine reuptake inhibitors	45
Tricyclic antidepressants	18
Mixed mechanism antidepressants (<i>trazodone, bupropion, mirtazepine</i>)	178
Mood stabilizers (<i>including lithium, carbamazepine, divalproex, lamotrigine, as well as gabapentin, topiramate, and oxcarbazepine</i>)	207
Antipsychotics, oral	
Atypical	243
Typical	21
Anxiolytics	
Hydroxyzine	74
Bupirone	9
Benzodiazepines	29
Miscellaneous psychiatric medications (<i>anticholinergics, alpha agonists and antagonists, dopamine agonists, sedative/hypnotics, naltrexone, acamprosate</i>)	53
Total prescriptions provided	1,097
Controlled substances dispensed (<i>lorazepam, clonazepam, diazepam, zolpidem, temazepam</i>)	34
Average no. of prescriptions provided per patient	2.17

excluded subjects. Additionally, when overall rapid readmissions for 2010-2011 home-bound study subjects were compared to the previous year's total rapid readmissions, the reduction was also statistically significant ($\chi^2 = 5.447$, $df = 1$; $P = .020$). A summary of findings is contained in Table 4.

DISCUSSION

One of the major challenges of acute psychiatric care is nonadherence to prescribed medications and

treatment immediately following discharge. Many patients may not fill prescriptions following hospitalization for various reasons, so removing barriers to medication adherence is beneficial to positive patient outcomes. Medication availability, adherence, and insight during this critical, transitional phase of treatment are areas in which the pharmacist can influence patient care, allowing patients to be treated in the more cost-efficient outpatient setting while helping them to enjoy an improved quality of life. This study

Table 4. Comparison of 30-day readmission rates for patients discharged from the Behavioral Health Unit

Year	Discharges	30-day readmissions	Readmission rate
2008-2009 ^a	845	42	4.97% ^c
2009-2010 ^a	918	45	4.90% ^{c,d,e}
2010-2011 ^b Total	1,105	41	3.71% ^d
2010-2011 ^b Excluded	601	29	4.83% ^f
2010-2011 ^b Program	504	12	2.38% ^{e,f}

^aData from years prior to program implementation.

^bData during program implementation.

^c $\chi^2 = 0.004$, $df = 1$; $P = .947$.

^d $\chi^2 = 1.79$, $df = 1$; $P = .186$.

^e $\chi^2 = 5.447$, $df = 1$; $P = .020$.

^f $\chi^2 = 8.515$, $df = 1$; $P = .004$.

provides evidence that pharmacists can help in the prevention of rapid mental status decline by encouraging medication adherence.

The goal of the discharge medication service was to decrease rapid readmission by removing barriers to filling prescriptions and encouraging adherence. These goals were actualized through the therapeutic alliance developed during the patient admission. Making medications available to patients immediately upon discharge provides a convenient and helpful step in transitioning the patient from a medication-administering environment to medication self-sufficiency in the outpatient setting. By encouraging medication adherence during this first critical month, pharmacists can help patients become more invested in their treatment and possibly gain more insight into their disorder, thus reducing the need for rapid readmission.

Similarities in overall rapid readmissions during the 2008-2009 and 2009-2010 years, coupled with the lack of significance between the previous years and overall 2010-2011 study year, point to the fact that the improvement in rapid readmissions was attributable to the discharge medication program. The rate of rapid readmission between studied patients and those discharged to a placement facility (excluded patients) was quite different during the study year and resulted in a 50.7% decrease in 30-day readmissions between groups. These findings support the positive influence of the discharge medication program as a factor in decreasing rapid readmission.

The introduction of clinical pharmacy services to the BHU just prior to the start of the medication program allowed the pharmacist an excellent opportunity to develop therapeutic alliances with admitted patients. Daily patient interactions on the unit, culminating at the discharge planning and counseling session, may provide patients with insight into their illness and give them an understanding of the importance of continuing to take their prescribed medications following discharge. Beneficial therapeutic relationships can help prevent frequent patient decompensation and rehospitalization, resulting from medication nonadherence.

An explanation for the increase in the number of admissions during the 2010-2011 year (see **Table 4**) may be due to the aforementioned introduction of clinical pharmacy services on the BHU. Prior to this year, no clinical pharmacy services were provided on the BHU. The establishment of clinical pharmacy specialist services in psychiatry provided a venue for active pharmacist input and interprofessional interactions in treatment teams and psychiatrist rounds,

the goal of which was to tailor and optimize patient drug regimens. Additionally, pharmacy-led medication groups and other patient interactions helped to build the therapeutic alliance with the patient population. Pharmacy services' influence on positive treatment outcomes may have contributed to the increased number of admission beds available during the 2010-2011 year, resulting in a shortened patient length of stay. Further studies are planned to measure long-term outcomes in the prevention of psychiatric readmission as a result of the discharge medication program and to quantify the economic benefits of clinical pharmacy services on this unit.

Limitations

Patients who were discharged during hours not served by clinical pharmacy staff, such as evenings or weekends, were not included in the program and thus were counted within the excluded patient data. This was determined to be the most conservative estimate of the results during this program evaluation. It was also not possible to determine whether patients sought readmission to another psychiatric hospital during the 30-day postdischarge period. There are 4 other hospital psychiatric units within a 10-mile radius of the study site, and mental health records or admission records for these were not accessible.

The patient population studied was a general, acute psychiatric population. Patients who were excluded were being discharged to another supervised mental health facility that contained, as part of their care, medication administration by health care professionals. Patients in this group may have been suffering from more severe forms of mental illness.

The patients served by the BHU were predominantly from an urban or suburban population. Information regarding age, sex, or race was not collected, because the purpose of the study was to evaluate the influence of the program upon rapid readmission for all discharged, home-destined patients. It cannot be determined whether the readmissions included in the study were from a particular ethnicity, age group, sex, or illness, because data were analyzed from a de-identified database.

One of the purposes of clinical pharmacy services is to minimize the number of medications that are necessary to manage a patient's psychiatric diagnosis. The average number of medications dispensed upon discharge may be slightly diminished, because, on many occasions, patients may have had medications added to their admission regimens. In cases where patients had a sufficient supply of medications that

were not changed during the admission, as determined by ambulatory pharmacy prescription adjudication, any new prescriptions were filled and the patients were instructed to continue taking the previously obtained, current medications along with the new filled prescriptions.

Outpatient pharmacy services were provided by the facility, thus prescriptions were filled in a retail setting. The proximity of this affiliated outpatient pharmacy made program implementation less complex. This service may become problematic in a facility that does not provide ambulatory pharmacy services.

Conclusion

Filling patients' prescriptions for psychiatric medications prior to their discharge from a hospital psychiatric unit can decrease their rapid relapse into mental illness. Combined with therapeutic alliance development and patient counseling by a pharmacist during the admission, this medication service can be a positive influence for ongoing medication adherence and patient recovery in the mental health patient population.

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