Developing a Hospital-Based Performance Improvement Project to Reduce 30-Day Psychiatric Readmissions at UT Health Harris County Psychiatric Center

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Impacting Population Health

• The University of Texas, Harris County Psychiatric Center (HCPC) is implementing a population health approach, intervening with patients both as individuals and as members of a population with serious mental illness.

• The initiative incorporates previous research conducted at HCPC that suggests some population groups are more vulnerable to a particular health outcome than others.

• Using this approach, HCPC is able to identify the health and social needs of its patient population and determine how best to prevent or meet those needs.
Why Examine 30-Day Psychiatric Readmissions?

• Health care reform established the goal of reducing 30-day readmissions across medical conditions.

• Increased interest in 30-day psychiatric readmission rates as quality indicators.

• Internationally accepted indicator of the quality of inpatient care as well as the transition to community-based care after discharge.
UTHealth Harris County Psychiatric Center (HCPC)

- Academic safety-net psychiatric hospital in Houston, Texas.
- Approximately 9,000 children, adolescents, and adults are served per year.
- 276 beds, 10 psychiatric units, and 20 attending psychiatrists.
- In 1990, a patient’s average length of stay was 27 days.
- Today, our average length of stay is 7 days.
- Many patients are involuntarily admitted through a court-ordered commitment process.
# HCPC Patient Characteristics

<table>
<thead>
<tr>
<th>Patient Characteristic</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>61%</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>41%</td>
</tr>
<tr>
<td>African American</td>
<td>41%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>17%</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>28%</td>
</tr>
<tr>
<td>Major Depression</td>
<td>28%</td>
</tr>
<tr>
<td>Bipolar Disorder</td>
<td>38%</td>
</tr>
<tr>
<td>Uninsured</td>
<td>85%</td>
</tr>
<tr>
<td>Discharged into Homeless Shelters</td>
<td>33%</td>
</tr>
</tbody>
</table>
Statement of the Readmissions Problem

Chronic recidivism and rapid readmissions are a growing concern at HCPC due to increased costs and less than optimal outcomes.

2016 Readmissions Data

<table>
<thead>
<tr>
<th>Admission Type</th>
<th>HCPC Bed Days</th>
<th>Costs ($530/Bed Day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Day Readmission</td>
<td>8,925</td>
<td>$4,730,250</td>
</tr>
<tr>
<td>Super-Utilizers (4+ Admissions per Year)</td>
<td>8,362</td>
<td>$4,431,860</td>
</tr>
</tbody>
</table>

Note: 195 super-utilizer patients accounted for 971 admissions accounting for 11% of all 2016 admissions.
Readmissions Research at HCPC

**Study 1:** Factors Differentially Associated with Early Readmission at a University Teaching Psychiatric Hospital. (Hamilton J.E. et al. *Journal of Evaluation in Clinical Practice.* 2015).

**Study 2:** Predictors of Psychiatric Readmission among Patients with Bipolar Disorder at an Academic Safety-Net Hospital. (Hamilton J.E. et al. *Australian and New Zealand Journal of Psychiatry.* 2016).

**Study 3:** Post-Discharge Engagement with Outpatient Mental Health Services among Female Psychiatric Patients Readmitted within 30 Days of Discharge a Mixed-Methods Analysis. (Hamilton J.E. et al. *In Preparation*).
Factors differentially associated with early readmission at a university teaching psychiatric hospital

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Keywords: evaluation, health services research, patient-centered care

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Abstract

Rationale, aims and objectives: The rate of psychiatric readmissions within 30 days of discharge is a well-established behavioral health system performance measure linked to the quality of inpatient hospital care as well as to access to community-based aftercare services. The purpose of this study was to examine the factors differentially associated with earlier readmission among a sample of patients (n = 588) readmitted within 30 days of discharge to a university teaching psychiatric hospital from 2001 to 2010.

Methods: Quality assurance interviews were conducted with patients readmitted within 30 days of discharge. The interview data were merged with clinical symptom and electronic medical record data. Multinomial logistic regression analysis was used to examine readmission within 7 days and from 8 to 14 days compared with 15-30 days after discharge while controlling for sociodemographic and treatment variables previously associated with psychiatric readmission.

Results: Multiple clinical, treatment and patient-reported factors were differentially associated with earlier readmission. In particular, lack of engagement in post-discharge aftercare services was a strong predictor of earlier readmission.

Conclusions: Strategies are needed to improve patients’ transition from inpatient psychiatric hospitalization to aftercare services. Psychiatric hospitals attempting to reduce very early readmissions should seek to implement innovative transitional care initiatives targeting both patient and treatment factors.

Introduction

In the era of health care reform, health care payers, policy makers and providers have become increasingly concerned about the high rates of patient readmissions following hospitalization [1]. Although the primary focus has centered on readmission to short-term acute care hospitals, there is growing interest in understanding readmission following psychiatric hospitalization. Psychiatric readmission rates have historically been viewed as important indicators for health care planning due to their connection to the quality and continuity of care for patients as well as the high costs associated with additional inpatient care [2–6].

The rate of psychiatric patients readmitted within 30 days of discharge is an established behavioral health system performance measure [7] linked to the quality of inpatient hospital care [8] and to access to community-based aftercare services [9]. Although 30-day psychiatric readmissions have been a focus of research, studies have not examined differential influences of patient and treatment factors on critical time frames within a 30-day readmission period [10–16].

The impetus of the Affordable Care Act to reduce 30-day readmissions in the United States provide an opportunity to develop and implement readmission reduction strategies. However, additional research is needed to elucidate how specific factors influence psychiatric readmissions at different time periods within 30 days of discharge. To extend current research, we linked and analyzed patient interviews, psychiatric symptom and medical record data obtained from our psychiatric hospital. The goal of our study was to examine readmission patterns among psychiatric patients and the predictors of 30-day readmission from 1 to 7 days and from 8 to 14 days after discharge compared with 15–30 days after discharge. Based on prior research, we hypothesized that...
1st Study: Factors Differentially Associated with Early Readmission at HCPC

- Quality improvement interviews (n = 588) were conducted with patients readmitting within 30 days of HCPC discharge from January 2001 to November 2010.

- Interview data were merged with electronic medical record data.

- Statistical modeling was conducted to identify predictors of earlier readmission: post-discharge days 1 – 7 and days 8 – 14 compared to 15 – 30 days after discharge.
<table>
<thead>
<tr>
<th>30-Day Readmission Patient Interview Questions</th>
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<tbody>
<tr>
<td>Marital status?</td>
</tr>
<tr>
<td>Employment status?</td>
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<tr>
<td>Years of education?</td>
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<tr>
<td>Arrest history?</td>
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<tr>
<td>Voluntary/Involuntary status?</td>
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<tr>
<td>Since the hospitalization, has the patient been employed?</td>
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<tr>
<td>Does patient have financial support?</td>
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<tr>
<td>Where did the patient live after the last hospitalization?</td>
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<tr>
<td>What is the patient’s belief as to why s/he returned so quickly?</td>
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<tr>
<td>Overall helpfulness of the last hospital stay?</td>
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<tr>
<td>Adherence with psychiatric medication?</td>
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<tr>
<td>What is patient’s overall experience with medication effectiveness?</td>
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<tr>
<td>What is patient’s overall experience with medication side effects?</td>
</tr>
<tr>
<td>Patient’s aftercare agency referral?</td>
</tr>
<tr>
<td>Patient’s attendance at the aftercare agency?</td>
</tr>
<tr>
<td>Significant Predictors within 7 Days</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Elevated Mental health Symptoms (Brief Psychiatric Rating Scale)</td>
</tr>
<tr>
<td>• Grandiosity</td>
</tr>
<tr>
<td>• Suspiciousness</td>
</tr>
<tr>
<td>Inconsistent Financial Support</td>
</tr>
<tr>
<td>Readmitted before 1st scheduled aftercare appointment</td>
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<tr>
<td>Missed first aftercare appointment</td>
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<tr>
<td><strong>Significant Predictors 8 - 14 Days</strong></td>
</tr>
<tr>
<td>High School Degree</td>
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<tr>
<td>Readmitted before 1st scheduled aftercare appointment</td>
</tr>
</tbody>
</table>
Predictors of psychiatric readmission among patients with bipolar disorder at an academic safety-net hospital

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Abstract

Objectives: Even with treatment, approximately one-third of patients with bipolar disorder relapse into depression or mania within 1 year. Unfavorable clinical outcomes for patients with bipolar disorder include increased rates of psychiatric hospitalization and functional impairment. However, only a few studies have examined predictors of psychiatric hospital readmission in a sample of patients with bipolar disorder. The purpose of this study was to examine predictors of psychiatric readmission within 30 days, 90 days and 1 year of discharge among patients with bipolar disorder using a conceptual model adapted from Andersen’s Behavioral Model of Health Service Use.

Methods: In this retrospective study, univariate and multivariate logistic regression analyses were conducted in a sample of 2443 adult patients with bipolar disorder who were consecutively admitted to a public psychiatric hospital in the United States from January 1 to December 2013.

Results: In the multivariate models, several enabling and need factors were significantly associated with an increased risk of readmission across all time periods examined, including being uninsured, having ≥3 psychiatric hospitalizations and having a lower Global Assessment of Functioning score. Additional factors associated with psychiatric readmission within 30 and 90 days of discharge included patient homelessness. Patient race/ethnicity, bipolar disorder type or a current manic episode did not significantly predict readmission across all time periods examined; however, patients who were male were more likely to readmit within 1 year. The 30-day and 1-year multivariate models showed the best model fit.

Conclusion: Our study found enabling and need factors to be the strongest predictors of psychiatric readmission, suggesting that the prevention of psychiatric readmission for patients with bipolar disorder at safety-net hospitals may be best achieved by developing and implementing innovative transitional care initiatives that address the issues of multiple psychiatric hospitalizations, housing instability, insurance coverage and functional impairment.

Keywords
Bipolar disorder, psychiatric readmissions, multiple hospitalizations, functional impairment

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Predictors of Psychiatric Readmission among Patients with Bipolar Disorder

• Study examined predictors of HCPC readmission within 30 days, 90 days and 1 year of discharge.

• Conceptual model adapted from Andersen’s Behavioral Model of Health Service Use.

• Statistical modeling was conducted in a sample of 2443 adult patients with bipolar disorder admitted to HCPC from January through December 2013 to examine significant predictors of readmission.
Andersen’s Behavioral Model of Health Service Use

Groups factors associated with health service utilization into three categories:

• **Predisposing** (characteristics of the individual including age, gender, race, marital status)

• **Enabling** (system or structural factors that make health service resources available to the individual)

• **Need** (severity of illness/clinical factors)


Conceptual Model: Andersen’s Behavioral Model of Health Service Use

HCPC Patients with Bipolar Disorder

Predisposing Factors (Age, Gender, Race/Ethnicity, Marital Status)

HCPC Psychiatric Readmission

Enabling Factors (Insurance Status, Homelessness, Prior Utilization, Involuntary Status)

Need Factors (Bipolar Disorder Type, Current Manic Episode, GAF Score)
Study Results

Across all time periods, increased readmission risk associated with:

- Being uninsured
- 3 or more psychiatric hospitalizations
- A lower Global Assessment of Functioning (GAF) score

Within 30 and 90 days of discharge, increased readmission risk associated with patient homelessness.

Within 1 year of discharge, increased readmission risk associated with male gender.
Special Populations: Examining 30-Day Psychiatric Readmissions among Women with Serious Mental Illness

**Study Aims:** Describe factors influencing 30-day psychiatric readmissions among women using a *Social Determinants of Health* framework.

**Methods:** HCPC social workers conducted 60 semi-structured interviews with adult female 30-day readmitted patients in 2016. Medical chart reviews were conducted to supplement the interview data. *Interview results are shared with the new treatment team to inform current treatment planning.*

**Translating Research to Practice Goals:** Develop a tailored intervention to improve engagement with outpatient services and reduce psychiatric readmissions among adult female patients.
Patient Interview Form: 30-Day Psychiatric Readmissions

Medical Record Number: __________
Number of Days between Hospitalizations: __________
Involuntary: Y □ N □  Homeless: Y □ N □

What is patient’s belief as to why s/he returned so quickly to the hospital? (Check all that apply)
□ Patient wasn’t ready to leave during previous hospitalization
□ Medication problems
□ Living situation after discharge was stressful (environmental stressors)
□ Other

Y □ N □  Did patient attend any aftercare appointments? (If no, please answer the next question).

Patient’s description why s/he did not attend aftercare appointments (please describe in patient’s own words using quotation marks):

If patient did attend aftercare (please describe in patient’s own words what factors helped with successful engagement):

Y □ N □  Was there post-discharge substance abuse?

Patient’s description of what led to this readmission (please describe in patient’s own words using quotation marks):

Previous Social Services clinician’s perception of factors leading to this readmission (please describe in social worker’s own words using quotation marks):
30-day Readmission Interview Results

Only 12% of adult female patients interviewed reported attending an aftercare appointment prior to readmission.

43% reported using substances after discharge.

Patient Reported Beliefs about Reasons for Readmission
37% reported having medication problems after discharge.
40% reported living in a stressful environment after discharge.

Chart reviews revealed the majority of patients interviewed had 4+ HCPC admissions and were unemployed, homeless, uninsured, and involuntarily readmitted.
Focus Groups with HCPC Patients to Tailor Readmissions Reduction Interventions

In 2016, we conducted two focus groups on the HCPC Schizophrenia Unit to obtain patient-reported information on:

• Intervention needs and preferences.
• Barriers and facilitators to post-discharge engagement in outpatient services.

Themes Emerging from Focus Group Data

• Patients exhibited low levels of health literacy and reported lacking understanding of their mental illnesses and discharge plans.
• Patients reported difficulties accessing psychiatric medications and attending scheduled appointments.
Developing a Hospital-Based Performance Improvement Project to Reduce 30-Day Psychiatric Readmissions at HCPC
Translating Research to Practice

Our research enabled us to identify priority areas for implementing strategies to reduce 30-day readmissions and to intervene with super-utilizers.

• Medication Adherence
• Engagement in Post-Discharge Outpatient Services
• Substance Use
• Housing Instability/Homelessness

Based on these priority areas, we are leveraging existing hospital resources to implement evidence-based interventions and are creating community partnerships to reduce readmissions.
Leveraging the HCPC Electronic Health Record (EHR) to Identify High-Risk Patients through Risk Stratification

An alert system is being implemented in the EHR to target the following patients:

- Patients at risk for 30-day readmissions
- Super-utilizer patients (4+ HCPC admissions in 1 Year)
- Homeless patients

We conducted a systematic review of the psychiatric readmissions literature to identify readmissions risk factors (n = 18 studies).

7 studies found a positive relationship between a greater number of previous psychiatric hospitalizations and readmission within 30 days of discharge.

<table>
<thead>
<tr>
<th>Priority Area</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Medication Adherence</td>
<td>Shared Decision Making</td>
</tr>
<tr>
<td></td>
<td>Teach-Back</td>
</tr>
<tr>
<td></td>
<td>Medication Reconciliation</td>
</tr>
<tr>
<td>Patient Engagement</td>
<td>Motivational Interviewing</td>
</tr>
<tr>
<td></td>
<td>Intensive Case Reviews</td>
</tr>
<tr>
<td>Substance Use</td>
<td>Inpatient Substance Use Groups</td>
</tr>
<tr>
<td></td>
<td>Patient and Family Psychoeducation</td>
</tr>
<tr>
<td></td>
<td>Referrals to evidence-based services</td>
</tr>
<tr>
<td>Homelessness</td>
<td>Supported Housing</td>
</tr>
<tr>
<td></td>
<td>Referrals to evidence-based services</td>
</tr>
</tbody>
</table>
Shared Decision Making (SDM)

*The Pinnacle of Patient-Centered Care*

A provider’s role in SDM is to:

• Educate patients about all available treatments.
• Acknowledge and help clarify patient preferences and values.
• Empower patients to take an active role in the decision-making process.

• The only preference driving variations in care should be that of the patient.

• SDM is associated with decreased anxiety, quicker recovery, and increased treatment adherence.

• SDM innovations include electronic decision aids and interactive technologies to provide patient education.

Teach-Back

Teach-Back is an evidence-based health literacy intervention that promotes adherence, quality, and patient safety.

Patients are asked in a supportive manner to explain, in their own words, what they need to know, or do, after discharge as a way to check for understanding and to re-explain discharge instructions if needed.

At HCPC, Teach-Back techniques are utilized by treatment team members to ensure:

• patients understand medication instructions and dosage.
• patients understand their aftercare plans and have supports in place to attend aftercare appointments.

http://www.teachbacktraining.org/

Medication Best Practices

**Medication Reconciliation**

- Process of comparing a patient's medication orders to all medications the patient has been taking.
- All patients receive detailed information about medications.
- Teach-back techniques are utilized to ensure patients understand medication instructions.
- Detailed information is provided to outpatient providers and caregivers as needed.

**Medication Fill and Counseling at Discharge**

- Patients are provided with filled psychiatric prescriptions and medication counseling from the pharmacist, which has been associated with reduced readmissions.

Motivational Interviewing (MI)

MI is a patient engagement, motivational enhancement, and counseling process widely used in mental health and substance abuse treatment.

A 1-hour MI session conducted prior to psychiatric hospital discharge has been shown in prior research to improve attendance at the 1st outpatient appointment compared to treatment as usual.

HCPC psychiatry residents, social workers and pharmacists are trained in MI techniques using the OARS approach (open-ended questions, affirmations, reflective listening, and summarizing).

A MI script that addresses treatment engagement and medication adherence issues is being piloted at HCPC.

HCPC 2016 Pilot Interventions

In 2016, evidence-based interventions were implemented with patients from one of the two treatment teams on the HCPC Schizophrenia Unit (second treatment team patients served as controls).

The intervention group (n = 615) compared to the control group (n = 513) had reduced 30-day readmissions (14% vs. 20%; chi-square 5.914; p = 0.015).

<table>
<thead>
<tr>
<th>Schizophrenia Unit</th>
<th>2015 Readmission Rate</th>
<th>2016 Readmission Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention Group</td>
<td>17%</td>
<td>14%</td>
</tr>
<tr>
<td>Control Group</td>
<td>15%</td>
<td>20%</td>
</tr>
</tbody>
</table>
Program Evaluation Methods

- As part of the program evaluation, a Root Cause Analysis (RCA) will be conducted.

- The RCA goal is to identify the factors resulting in HCPC readmissions to determine what actions and/or inactions need to be changed to reduce readmissions and to identify lessons learned for future planning.

- RCA will provide valuable information about systems-level factors and supports leading to readmissions including why patients are non-adherent and barriers to outpatient engagement.

- Data to be examined includes: HCPC electronic medical record and patient and provider interview data.


New York State Office of Mental Health. Reducing Behavioral Health Readmissions: Strategies and Lessons Learned
Multidisciplinary Approach

• There are multiple opportunities for quality improvement in psychiatric services.

• Given the complex nature of serious mental illness (SMI) and the vulnerability of the SMI population, multidisciplinary collaboration is vital to the success of our initiative.

• Our goal is to develop a multidisciplinary approach for our performance improvement projects:
  • Engaging all HCPC disciplines/departments in the PI projects
  • Create a HCPC faculty/staff workgroup for each PI project
  • Involving HCPC faculty physicians and psychiatry residents in quality research
Research Collaborators

UTHealth
The University of Texas Health Science Center at Houston
School of Public Health

The Harris Center for Mental Health and IDD

Patient Care Intervention Center

McGovern Medical School

UTHealth
The University of Texas Health Science Center at Houston
School of Biomedical Informatics
Q&A