Developing a Hospital-Based Performance Improvement Project to Reduce 30-Day Psychiatric Readmissions at an Academic Safety-Net Psychiatric Hospital

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Background

Each year, approximately 9,000 individuals with a serious mental illness (SMI) receive inpatient psychiatric services at the University of Texas Harris County Psychiatric Center (HCPC), a regional safety-net psychiatric hospital in Houston, Texas. HCPC serves a diverse patient population of children and adults with a mean age of 33.7 years (sd = 13.3). The majority of the patients served are male (61.1%) and identify as non-Hispanic white (40.8%) or African American (40.5%), while fewer identify as Hispanic (15.8%), Asian (1.7%), or another race/ethnicity (1.2%). Most HCPC patients are uninsured (70.8%), and many are discharged into homeless shelters (33%).

Chronic recidivism and rapid readmissions are a growing concern at HCPC due to increased costs and less than optimal outcomes. In 2015, HCPC had a 30-day readmission rate of 12.5% and 247 patients were super-utilizers, defined as having four or more HCPC admissions within one year. HCPC patients readmitted within 30 days of discharge received an additional 10,207 HCPC inpatient days of care in 2015 at a total cost of $5,384,294 (based on a cost of $527.51 per bed day). Additionally, HCPC super-utilizers accounted for 9,828 HCPC inpatient days at a total cost of $5,184,368.

Thirty-day readmission rates are important indicators for healthcare 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. In 2014, our research group began examining 30-day readmissions at HCPC using mixed methods research to analyze electronic medical record (EMR), psychometric, and patient interview data. Our first study examined factors differentially associated with earlier readmission among a sample of HCPC patients readmitted within 30 days of discharge from 2001 to 2010. While multiple clinical, treatment and patient-reported factors were differentially associated with earlier readmission, the lack of engagement in post-discharge aftercare services was the strongest predictor of earlier readmission. We concluded that innovative strategies targeting patient and service delivery factors were needed to improve HCPC patients' transition from inpatient to outpatient mental health services. In the second study, we utilized the Andersen Behavioral Model of Health Care Use to examine racial disparities during HCPC admission (from 2010 to 2013) associated with predisposing, enabling, and need factors. In the multivariate analysis, African American race was associated with
multiple factors including younger age, female gender, multiple HCPC hospitalizations, elevated positive and negative symptoms of psychosis, a diagnosis of schizophrenia, and substance use. Additionally, screening positive for cannabis use at hospital admission was found to moderate the relationship between being female and African American.

In our third study, we utilized the Andersen conceptual framework (Figure 1) to examine predictors of psychiatric readmission within 30 and 90 days and one year of discharge among HCPC patients with bipolar disorder who were hospitalized in 2013. We identified several enabling and need factors significantly associated with an increased risk of readmission across all time periods examined, including being uninsured, having three or more HCPC hospitalizations, and having functional impairments. Additionally, patients who were homeless were more likely to be readmitted within 30 and 90 days of discharge. Our findings suggest that the prevention of early psychiatric readmission for HCPC patients diagnosed with bipolar disorder may be best achieved by developing and implementing innovative transitional care interventions that address multiple psychiatric hospitalizations, housing instability, lack of insurance coverage, and functional impairment.

**Figure 1. Conceptual Model: Andersen’s Behavioral Model of Health Service Use**
We are currently analyzing patient interview and EMR data to examine barriers and facilitators to post-discharge engagement with outpatient mental health services among adult female HCPC patients readmitted within 30 days of discharge. Our study utilizes a Social Determinants of Health Framework to develop strategies to address the complex needs of this vulnerable population. We have analyzed data from 60 semi-structured interviews conducted by HCPC social workers with adult female patients readmitted within 30-days of discharge. Only 12% of adult female HCPC patients interviewed reported attending an outpatient appointment between HCPC discharge and readmission. Additionally, 43% of interviewees reported using substances after discharge. When asked about their beliefs about the reason for readmission, 37% of interviewees reported having medication problems after discharge, and 40% reported living in a stressful environment after discharge. An analysis of the EMR data for the interviewed patients revealed that the majority had four or more HCPC admissions, were unemployed, homeless, uninsured, and involuntarily readmitted.

**Implementing a Hospital-Based Performance Improvement Project**

To improve patient quality of care and reduce 30-day readmissions, HCPC has initiated a hospital-based performance improvement (PI) project using a Social Determinants of Health framework. Social determinants of health are the conditions in the environment in which people live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. Our readmissions reduction interventions target specific social determinants known to affect outcomes for SMI patients including unemployment, homelessness, lack of transportation, lack of access to health insurance and primary care services, substance use, low-health literacy levels, and unsafe social environments.

Our PI project seeks to reduce 30-day readmission rates through the implementation of health systems innovations and evidence-based practices. HCPC is implementing a population health approach, intervening with patients both as individuals and as members of the SMI population. The initiative incorporates previous health disparities 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.

**Translating Research to Practice**

Our preliminary 30-day readmissions research enabled us to identify four priority areas for implementing strategies to reduce 30-day readmissions and to intervene with super-utilizers (4 + HCPC admissions) including:

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

Based on these priority areas, we are leveraging existing hospital resources and are creating community partnerships to reduce readmissions.
**Risk Stratification**
A 30-day readmission risk stratification algorithm is being implemented in the HCPC EMR as an alert system for providers to personalize patient care, improve care coordination, and improve discharge planning. Patients at moderate or high risk for readmission will receive targeted inpatient interventions to address the readmissions priority areas.

**Targeted Interventions**
- Intensive Case Reviews
- Linkage to Evidence-Based Interventions in the Community
- Medication Reconciliation
- Motivational Interviewing
- Substance Use Counseling and Peer Support
- Teach Back
- Transitional Care Interventions

**Priority Area One: Medication Adherence**
Prior to discharge, medication reconciliation will be conducted with all patients. Medication reconciliation is the process of comparing a patient's medication orders to all medications the patient has been taking. At discharge, all HCPC patients receive detailed information and a 7-day supply of medications. Teach-back techniques are utilized to ensure patients understand medication instructions and dosage. Teach Back is a research-based health literacy intervention that promotes adherence, quality, and patient safety. Teach-Back involves asking the patient 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, if needed, re-explain and check again. HCPC patients at high risk for readmission also receive counseling from the pharmacist, an intervention associated with reduced psychiatric readmissions.

**Priority Area Two: Engagement in Post-Discharge Outpatient Services**
Prior research has associated poor aftercare attendance with early psychiatric readmission. HCPC is collaborating with the Harris Center for Mental Health and IDD to improve post-discharge service engagement. Continuity of Care (COC) workers are co-located at HCPC to improve the post-discharge transition to outpatient mental health services. Motivational Interviewing (MI) is a client engagement, motivational enhancement and counseling process widely used in mental health and substance abuse treatment. A one-hour motivational interview prior to psychiatric hospital discharge has been associated with improved attendance at the first outpatient appointment compared to treatment as usual. HCPC social workers and COC workers are trained in MI techniques including reflective listening and discussion of treatment obstacles. HCPC is piloting a MI interview script that addresses engagement issues specific to our patient population, and we are planning to provide MI prior to discharge for all HCPC super utilizers.

**Priority Area Three: Substance Use**
HCPC is collaborating with community agencies to co-locate addictions counselors and peer recovery coaches within HCPC. A masters-level clinician facilitates substance abuse groups on psychiatric units. High-risk patients participate in individualized counseling with an addictions counselor during hospitalization. An addictions counselor facilitates patient and family education
groups at HCPC focusing on substance use education. Peer recovery coaches work with high-risk patients after discharge.

**Priority Area Four: Housing Instability/Homelessness**

HCPC social workers conduct intensive case reviews for readmitted homeless patients to review previous discharge placements and to identify housing and community resources. HCPC leadership is working with community coalitions to improve resource availability for homeless patients. HCPC social workers are involving families in discharge planning to prevent family placement disruptions. Several evidence-based interventions shown to reduce psychiatric readmissions have been evaluated with homeless populations and are available in our region including: Assertive Community Treatment (intensive wrap around services), Critical Time Intervention (time-limited intensive case management), and cognitive behavioral therapy. HCPC is working with community partners to increase access to these interventions for homeless patients.

**Developing a HCPC Readmissions Reduction Collaborative**

Hospital and community stakeholders are meeting regularly at HCPC to identify and implement strategies for reducing 30-day readmissions. Collaborative participants include clinicians, health administrators and academic researchers who meet to review data and identify best-practices. Collaborative goals include monitoring the HCPC 30-day readmission rate and developing a regional community health strategy for improving post-discharge mental health service engagement. On-going PI efforts include monitoring hospital performance by tracking patient data and comparing it with national guidelines and internal benchmarks. Additional goals include comparing 30-day readmissions by referral source as well as length of stay. HCPC believes that collaboration with community-based partners is essential to reducing 30-day readmissions.
Researchers

Jane E. Hamilton, Ph.D., M.P.H., L.C.S.W. is an Assistant Professor at the University of Texas Health Science Center Houston, McGovern Medical School in the Department of Psychiatry and Behavioral Sciences. She completed a Ph.D. in health services research, health policy, and biostatistics and a M.P.H. in community health practice at the University of Texas School of Public Health in Houston, Texas. Dr. Hamilton's research focuses on early intervention and the implementation of evidence-based interventions to improve patient outcomes. During the last seven years, she has conducted program evaluations of mental health, substance abuse, integrated care, and emergency department services. Prior to returning to school to pursue doctoral studies, Dr. Hamilton was a clinical social worker and board approved clinical social work supervisor in Houston, Texas providing evidence-based psychotherapy services for children and youth with complex mental health needs. Dr. Hamilton has received funding as a training fellow both through the National Cancer Institute and the Health Resources and Services Administration Maternal and Child Health Bureau. She has published multiple peer-reviewed articles in medical journals in the areas of psychiatric services research, mental health disparities, program evaluation methods, and health policy. She currently provides evidenced-based psychotherapy for individuals experiencing first episode psychosis in the Early Diagnosis and Intervention of Psychosis (EDIP) Clinic at McGovern Medical School.

Danielle Dobecka (Spiker), B.A., M.P.H. (Candidate) is a Research Coordinator at the University of Texas Health Science Center Houston, McGovern Medical School in the Department of Psychiatry and Behavioral Sciences. She completed her BA in Psychology at American University in 2010 and is currently in the process of completing her MPH in Healthcare Management at the University of Texas School of Public Health in Houston, Texas. Her thesis research is focused on pediatric readmissions at HCPC. Mrs. Dobecka's research focuses on mood disorders in both adult and pediatric populations. During the last five years, she has collaborated with many investigators at the McGovern Medical School to study the genetic underpinnings of Bipolar Disorder, early intervention and prognosis in Pediatric Bipolar Disorder, and novel treatments in Treatment Resistant Depression. Currently Mrs. Dobecka coordinates more than a dozen research trials which provide experimental treatments such as Deep Brain Stimulation therapy, Ketamine therapy, and stem cell therapy.

Olivia Moffitt, M.D. is a second year Psychiatry resident at the University of Texas Health Science Center Houston, McGovern Medical School. She received her MD from McGovern Medical School in 2015 after completing her undergraduate degree in Natural Science at Fordham University in 2008. Dr. Moffitt’s current research examines patient readmissions at HCPC. Though most of her research experience has been in basic science, she is excited about the opportunity to focus on clinically oriented projects contributing to improved patient outcomes.
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