IDENTIFYING RISK FACTORS TO REDUCE READMISSION RATES FOR PATIENTS

WITH PSYCHIATRIC DISORDERS: A QUALITY IMPROVEMENT PROJECT

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Abstract

This QI project was a response to increased 30-day readmissions at an inpatient psychiatric facility in SW Texas, identified as the project site. The long-term goal is to decrease 30-day readmissions by patients with schizophrenia and/or bipolar disorder at the project site. An audit tool was created for this QI project by combining the READMIT clinical risk index and site-specific variables that were identified by site experts. Findings showed the numbers of repeat readmission ($p = .000$) and the age ($p = .031$) demonstrated statistical significance in 30-day readmissions. There was an association between the number of repeat readmissions and the READMIT Tool Score (rs = 0.57, $p < .001$). The correlation coefficient between the two variables was (rs = .0575), which is moderately significant. There was a significant positive association between the READMIT Tool Score and repeat numbers of readmissions: (rs = 0.57, p < .001). Findings also indicate two statistically significant risk factors (age and number of readmissions). One clinically significant variable (discharge on injectable long-acting antipsychotic medication) and higher READMIT clinical risk index scores were associated with 30-day readmissions. Recommendations include adding the top-three risk factors identified (age, number of readmissions, injectable medications at discharge) to the admission and discharge process implemented by repeated PDSA cycles. Other recommendations are to join a state or national registry to help track 30-day readmissions and to conduct a one-year study, including chart audits, to access changes in the specific population.

Keywords: schizophrenia, bipolar, quality improvement, 30 days' readmissions, audit tool, medication non-adherence, long acting injectable antipsychotic, project site

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Identifying Risk Factors to Reduce Readmission Rates for Patients with Psychiatric Disorders:

A Quality Improvement Project

Section I

Introduction

Background

There has been a steady increase in hospital readmissions over the past few years (Centers for Medicare & Medicaid Services [CMS], 2020). The Hospital Readmissions Reduction Program (HRRP), in the Affordable Care Act (ACA), was passed in March 2010 to introduce financial penalties to hospitals that have higher readmission rates for specific medical conditions (CMS, 2017). Readmission rates are considered a measure of mental health services' quality and effectiveness (Marcus et al., 2017).

More than $23 billion is spent on the direct care of patients who have been diagnosed with schizophrenia. However, schizophrenia patients only account for 1% of the United States population (Roque et al., 2017). The Substance Abuse and Mental Health Services Administration (SAMHSA) endorses the National Behavioral Health Quality Forum (NBHQF) to identify gaps in care. A gap identified by NBHQF is the 30-day readmission rate of psychiatric inpatients. Identification of risk factors is necessary. Knowledge of these factors will improve the mental health population's readmission rate (Roque et al., 2017). Doing a retrospective chart review to determine the 30-day risk factors for readmissions in this population will help decrease readmission rates. Providing a baseline to understand better the specific population can ensure the best care and improve patient health outcomes. Reducing readmission rates will improve outcomes for the mental health population, their families, and surrounding communities. Reducing readmission rates will also improve hospital budgets (CMS, 2020). The readmission rates in Texas have continued to increase. Unidentified risk factors and missing quality implementations negatively affect patient outcomes continue. Also, reimbursements to the mental health hospitals in the state of Texas will continue to decrease (SAMHSA, 2018).

The work of Maestri et al. (2018) concluded that not knowing the identifying causes of 30-day readmission is a likely contributor. These unknown causes are especially crucial because effective

measures have been established by research for reducing 30-day readmission rates. However, without accurately identifying the causes of readmission within our organization, it is challenging to reduce readmission rates. This project standardized an audit tool to identify the risk factors of 30-day readmissions specific to the project site. Our project's results helped facilitate care coordination with other providers, improved patient outcomes and decreased 30-day readmission rates.

Needs Assessment

Thirty-day hospital readmissions are defined by Medicare as unplanned readmissions within 30 days of discharge to an acute care hospital for hospitalization (Medicare.gov, 2020). The HRRP, in the ACA, was passed in March 2010 to introduce financial penalties for hospitals that have higher readmission rates for specific medical conditions (CMS, 2012). Approximately 44 million adults, according to The National Alliance on Mental Illness, are diagnosed with mental illness yearly (National Alliance on Mental Illness [NAMI], 2019). The two tools used in this QI project for needs assessment were SWOT (strengths, weaknesses, opportunities, and threats) analysis and FMEA (Failure Mode and Effects Analysis).

SWOT

By focusing on strengths, weaknesses, opportunities, and threats, a SWOT analysis helps identify problems in an organization and helps improve the translation of implementations into practice (Parsons, 2018). We used the SWOT analysis to identify strengths, weaknesses, opportunities, and threats at the project site. The first two sections are strengths and weaknesses, which are considered internal factors, and the last two sections opportunities and threats are external factors that affect the organization (MindTools, n.d.). SWOT analysis identified organizational strengths as the project site's ability to treat a wide range of psychiatric patients from adolescents to the military. The strengths also include access to a multidisciplinary team specializing in psychiatric disorders and telemedicine utilization. The weaknesses identified in the SWOT analysis are the increased readmission rate along with poor discharge planning and poor provider charting. The identified opportunities were to expand the action and reduce the readmission rate using the new intervention to assess the possible causes of 30-day readmissions. The

threats identified were decreased reimbursement due to excessive readmissions, increased competition

from outside sources, and decreased experience from new staff. The SWOT analysis for the project site

identified areas for improvement and possible road-blocks. The SWOT analysis aided in implementing or

improving being translated into our practice (see Appendices A and B).

FMEA

FMEA is a systematic, proactive procedure tool for determining where and how something might

fail, quickly assess the possible causes of failures, and identify the changes needed to change (Lago et al.,

2012). This procedural tool provides assessment readmission rates in our facilities

Failure Mode is the readmission rate within 30 days of discharge from the psychiatry inpatient

hospital. The rate of readmissions within 30 days post-discharge from inpatient psychiatry is alarming,

especially if it continues to rise. The Causes of Failure are lack of education about administering

medication, lack of LAIs, the short length of hospitalization stays, non-compliance with medication, and

lack of discharge follow-up. The failure effects would reduce the readmission rate. And there is a need for

improvement to avoid CMS penalties. The likelihood of occurrence of readmission is 10. The likelihood

that readmission would not be detected is 1 and is unavoidable because it is reported. The severity of

readmission is 10. If it continues to reoccur, the organization will suffer severe penalties that include an

unfavorable organizational reputation. The Risk Profile Number (RPN) is 100, which is the product of the

likelihoods of occurrence, detection, and severity. The RPN 100 is measured on a scale from 1–1000.

Thirty-day readmissions will occur and cause harm to the organization because of the penalties from the

CMS. There are several possible actions to reduce the occurrence of failure. Actions include medication

compliance, intensive outpatient services, LAIs, encouraging seven-days follow-ups post-discharge,

encouraging 30-days follow-ups post-discharge, and reminder text messages to take medications (Institute

for Healthcare Improvement [IHI], 2019).

Provider and QI Assessments

Provider and QI interview assessments aimed to identify possible causes for the 30-day

readmission rate of patients with schizophrenia and/or bipolar disorders. Lack of proper and evidenced-

based tools to identify the cause of 30-day readmission rates was one of the needs identified by the needs assessment. When readmission occurs within 30 days, the Medicare reimbursement can either be reduced or taken off entirely. Moreover, if the readmissions rate becomes excessive, there may be a hold on the Medicare reimbursement for the whole hospital, lasting for up to six months. The hospital readmission program (HRRP) monitors each hospital for readmission rates when a patient is discharged from a hospital and then readmitted in 30 days. Even if another hospital admits the patient, the first hospital will be penalized (CMS, 2012).

This QI project's primary aim was to decrease the rate of 30-day readmissions at the project site for patients with schizophrenia and/or bipolar disorder. The approach was to identify risk factors using secondary data analysis for the patients hospitalized between January 1, 2020, and June 30, 2020. This QI project's second aim was to recommend evidence-based practices to the project site staff to identify those at high risk for 30-day readmissions and improve patient outcomes. A long-term aim was to improve patients' quality of life and functional status.

The organization currently tracks the rate of readmissions based on the insurance and the providers each month. The reports of patients with readmissions within 30 days were run in the Home and Community-Based Services program (HCS) and compared with the total number of admissions in the same month; Then, another report determined the total admissions for the month. The percentage is the number of 30-days readmits divided by the total number of admissions for that month, then multiplied by 100 (Oceans Healthcare, 2020). This current process does not target or identify risk factors from readmission and therefore has no impact on reducing readmission rates.

Purpose, Aim(s), and Objectives

Project Aims

This QI project's primary aim was to decrease the rate of 30-day readmissions in patients with schizophrenia and/or bipolar disorder at the project site. The approach was to identify patients' risk factors through secondary data analysis of patients hospitalized between January 1, 2020 and June 30, 2020. The second aim of this QI was to recommend evidence-based practices to the project site staff that would

improve patient outcomes in this population and decrease 30-day readmissions

Objectives

The first objective was to identify the risk factors that contribute to 30-day hospital readmissions in patients with schizophrenia and/or bipolar disorder by creating an audit tool from research evidence and provider expertise. The second objective was to audit charts between January 1, 2020, and June 30, 2020, identifying risk factors in patients readmitted within 30 days of discharge. The final objective was to analyze the data for patterns that contribute to the readmission of these patients within 30 days of discharge and give recommendations based on the findings.

Project Question

What are the best practices for managing adult patients (18-65 years old) diagnosed with schizophrenia and/or bipolar disorder hospitalized between January 1, 2020, and June 30, 2020, at the project site?

PICOT

P=Adult patients (18–65 years old) diagnosed with schizophrenia and bipolar disorder hospitalized January 1, 2020–June 30, 2020, at the project site.

I=Secondary data analysis of electronic health records (EHRs) of post-discharged hospitalized patients diagnosed with schizophrenia and/or bipolar disorder to identify risk factors for readmission 30-day post-discharge (6-months of data).

C=No comparison.

O=Recommendations for best practices based on the results of secondary data analysis and best evidence-based guidelines for managing patients with schizophrenia and/or bipolar disorder.

T=January 1, 2020–June 30, 2020.

Inclusion Criteria: Adults (aged 18 to 65) diagnosed with schizophrenia and/or bipolar disorder hospitalized January 1, 2020–June 30, 2020, at the project site.

Exclusion Criteria: Under the age of 18, or over 65, drug-induced admissions, readmissions. Before January 1, 2020, or after June 30, 2020.

List of Terms: schizophrenia, bipolar, quality improvement, readmissions, project site.

Theoretical/Conceptual Framework(s)

The Donabedian Model and Dorethea Orem's Theoretical Framework both helped guide this quality improvement project. The Donabedian Model, widely adopted by healthcare professionals, guided our quality improvement project. The model states that improvement in the structure of "the way care is given" should lead to clinical process improvements. These improvements should lead to improved patient outcomes (Moore et al., 2015). The Donabedian Model has three sections: structure, process, and outcomes. The Donabedian Model guided this quality improvement project. It focused first on improving the structure of care that was followed by the clinical process. These steps led to improved patient outcomes, our project's overall goal (see Figure 1).

Figure 1

Donabedian Model Steps

Orem's Self-Care Deficit Theory in Nursing Practice (SCDNT) is one of the nursing theories most commonly used in practice. The theory uses a practical timeliness approach for decisions, making it essential in nursing practice (Denyes, 2001). According to Orem, the agencies involved in the care of the patient's care should identify outstanding needs and provide the means to improve others' self-care (Orem, 1995). Interventions tend to be difficult in our population of interest, schizophrenia and bipolar disorder patients. In this DNP project, our targeted outcome aligns with Orem's self-care perspective: Improve the self-care of this population by identifying risk factors that contribute to readmissions and identifying

alternate options to improve this population's ability to maintain its self-care. Orem's systematic process of assessing knowledge, educating, motivating, reassessing, and re-enforcing education was the guiding framework for our project intervention. SCDNT correlates with our project's goals to increase educational management of medication adherence, which involves self-care behaviors (Berbiglia, 2013; Orem, 1995).

Section II

Literature Review

Review of Evidence

A search of CINHAL, PubMed, PsycInfo, ProQuest, Scopus, Google Scholar, Google, and Academic Search Complete provided clinical practice guidelines, relevant studies, and supporting evidence. The search was performed from April 2020 to July 2020 and was limited to include human subjects, English language, adults 18–65 years old, and publication dates from 2010 to 2020. Older research was input to Scopus for citing that research and added to the body of literature reviewed. The literature synthesized for this review was both qualitative and quantitative articles. Medical Subject Headings (MeSH) terms included: schizophrenia, bipolar disorder, readmissions, rehospitalization, record review, and audit tool. The initial key terms extracted from the PICOT were 30-day readmission and schizophrenia and/or bipolar disorder. The search yielded 222 articles. Reading the Abstract first determined whether an article met the criteria for the project. Articles that met the project criteria were critically appraised for merit. The John Hopkins Nursing Evidence-Based Practice guidelines were the basis for critically evaluating the level of evidence and quality of the literature used in the literature review (see Appendix G, John Hopkins Evidence Rating Scale).

Compared to most chronic illnesses, schizophrenia and bipolar disorder are just as detrimental to personal and economic welfare. Therefore, it is essential to identify and implement rehabilitation treatment strategies that are cost-effective and clinically effective (Almerie et al., 2015). Traditional hospital-based treatment models may not be sufficient. The development of an intervention program should be added (Chi et al., 2016). Over the years, multiple interventions have helped decrease relapse rates that lead to 30-day readmission rates. Some interventions have consisted of telephone follow-ups, shortening the time between the first appointment and discharge, outpatient follow-up, engagement of family members, and medication education (Marcus et al., 2017). Throughout the literature search, there were themes noted: medication compliance, follow-up care, and synthesis of the evidence.

independence and social competencies (Almerie et al., 2015).

Synthesis of the Evidence

Medication compliance strategies and outpatient follow-up after discharge are preventions put in place to help lower relapses in patients with schizophrenic and/or bipolar disorder. MacEwan et al.'s retrospective cohort study on 15,556 patients found that long-acting injectables (LAIs) decreased readmission in patients with schizophrenia and/or bipolar disorder (MacEwan et al., 2016). Studies done by Taipale et al. and Kesserwani et al. showed that Clozapam, an LAI, decreased relapses in patients with mental illness and decreased the readmission rate (Taipale et al., 2018; Kesserwani et al., 2019). A nationwide cohort study done by Tilhone et al., with more than 29,000 patients, reported that Clozapine had the highest reduction rate in relapses for patients with schizophrenia (Tihone et al., 2017). Case-controlled and retrospective cohort studies done by Barrio et al. and Chan et al. on Risperdal, another LAI, also showed benefits compared to oral antipsychotics by improving non-adherence to medication (Barrio et al., 2013; Chan et al., 2015).

According to a study done by Marcus et al. and Razali & Hashum, outpatient follow-ups within 30 days after their discharge lowered rehospitalizations in patients with schizophrenia and/or bipolar disorder (Marcus et al., 2017; Razail & Hashum, 2015). A randomized study done by Almeria et al. suggested that teaching social skills in an outpatient setting to mental health patients results in decreased relapses and readmissions (Almeria et al., 2015). The lack of physician follow-up after the discharge of patients with schizophrenia and/or bipolar disorders contribute to increased relapse and readmission rates. Kurdyak et al. did a 1st and 2nd analysis that showed a decrease in readmission rates if patients followed up with an outpatient physician within 30 days (see Appendix F, Evidence Table & Synthesis Matix).

Themes

Medication Compliance

According to MacEwan et al., taking antipsychotic medications as prescribed to treat certain mental illnesses, such as schizophrenia, reduces the length of stay and the frequency of acute hospitalization (MacEwan et al., 2016). According to Marcus et al., antipsychotics medications are the main factor in the effectiveness of the treatment. However, non-compliance is a significant problem for

most patients (Marcus et al., 2015). There are currently multiple strategies available to improve medication non-compliance, such as pillboxes and text-message reminders systems. However, providers can play an active role in medication adherence if they offer LAI medications when permitted (Maestri et al., 2018). LAI antipsychotics are an alternative option instead of oral medications taken daily. LAIs can be a valuable tool for providers with patients who are non-compliant with their medication regimens (MacEwan et al., 2016). LAIs come in bi-weekly or monthly forms. LAIs offer an alternate route that helps reduce adherence, compared to taken-daily oral medications. Multiple real-world studies show the positive effects of LAIs, such as lowering relapses and readmission rates (Marcus et al., 2015). A large pragmatic study, Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE), found that 74% of the patients taking oral antipsychotic medications discontinued their medications within 18 months of the trial start date (Marcus et al., 2015). LAIs have been effective because they remove one of the risk factors of medication non-compliance by eliminating the need for a daily reminder. The detection of non-compliance is easier and faster in patients taking LAIs than those taking oral medications. Clinical practice guidelines support LAIs as a recommended option for patients with a history of medication non-compliance (Marcus et al., 2015).

Follow-up Care

Although antipsychotic medication is commonly the first line practice for treating schizophrenia and bipolar disorder, a mix of medication management and outpatient care could help decrease these populations' relapse rates. One of the recognized mental health service quality indicators is the receipt of outpatient follow-up after discharging a patient from the hospital. The National Committee on Quality Assurance (NCQA) has also backed this quality indicator (Marcus et al., 2017). The analysis of administrative data collected from psychiatric inpatients who were insured showed that patients discharged and followed up with an outpatient service were 50% less likely to be readmitted (Marcus et al., 2017). Creating an effective transition from patients in inpatient to outpatient intensive care can help lower the risk for future readmissions (Marcus et al., 2017).

The Social Skills Program (SSP) is a part of a rehabilitation package offered in an outpatient

setting. SSP uses behavioral therapy to teach individuals with mental illnesses how to effectively

communicate their emotions to help them achieve personal relationship goals and ultimately gain living

independence and social competencies (Almerie et al., 2015).

Section III

Methodological Framework (Quality Improvement)

Project Question

What are the top-three risk factors specific to our project site for 30-day readmitted adult patients (18–65 years old) diagnosed with schizophrenia and/or bipolar disorder hospitalized between January 1, 2020–June 30, 2020?

Implementation Models/Frameworks and Strategies

This quality improvement project aimed to reduce the 30-day readmission rates by identifying the causes of 30-day readmissions at the project site. An audit tool helped to identify the risk factors. We used the MFI-PDSA model as our methodology framework. MFI stands for Model For Improvement. MFI poses three questions: (a) What are you trying to accomplish? (b) How will you know that a change is an improvement? (c) What practical changes will result in improvement?

Changes resulted from the audit. We used the PDSA model to test our change(s). Recall that PDSA stands for Plan, Do, Study, Act. The first step was to Plan, which consisted of objective cycles, questions/predictions, and plans to carry out the (who, what, when, where) cycle. The reason for completing the PDSA cycle was to create and use an audit tool to evaluate the medical records of patients who had been readmitted with 30 days of discharge and to identify risk factors for readmission. The question: Did the identification of risk factors reduce the 30-day readmission rate?

An audit occurred between August 27, 2020, and September 3, 2020, of all readmission charts between January 1, 2020, and June 30, 2020. The charts were gathered by QI personnel and the nursing staff at the project site. The audit was conducted by (Folasade) a current employee, and Anastasia. The audit occurred at the project site in Texas. The Do phase consisted of executing the plan, documenting problems and unexpected observations, and beginning data analysis. The next step was Study, which consisted of completing the data analysis, comparing the data to the predictions, and summarizing what was learned. The Study step occurred between September 12, 2020, and September 30, 2020. The final stage in the cycle was Act. The Act step included whether to adapt, adopt or abandon and deciding what adaptions were needed.

Subsequently, we planned the next cycle that occurred between October 2, 2020, and October 15, 2020. During the Act phase, recommendations based on our evidence-based findings were given to the project site staff. Suggestions were made to help the staff plan their next PDSA cycle (see Figure 2).

Figure 2

The PDSA Four-Phase Cycle

Measures

The outcome measures are (a) readmission rates within 30 days, along with provider satisfaction and (b) patients' functionality in adult patients, age 18–65, with schizophrenia and/or bipolar disorder. The second measure that the process measured was a retrospective chart review that enabled the extraction of risk factors (see Appendix E).

Synthesis of the Project Team

The DNP students were the team leaders. They coordinated the entire project from August 2020 to November 2020. The DNP students were active in every aspect of the project. The students held meetings weekly with both the preceptor and faculty lead with reports of the project's findings and progression. The DNP students carried out auditing the charts with the audit tool and recorded the data found. The chart auditing took place between August 27, 2020, and September 3, 2020, of all readmission charts between January 1, 2020, and June 30, 2020. The DNP students were also responsible for holding meetings weekly with other project team members (see Appendix C), the first of which was August 27, for an in-service going over final project details. The meeting detailed the project's outcomes, intervention, along with roles and responsibilities.

The DNP students were also responsible for presenting the project to the school. The project site stakeholders gave the evidence-based recommendations from the literature findings and the audit tool during October 2020. The lead faculty met weekly with the DNP students to check on the project's progress and offer expert suggestions. The lead faculty coordinated the project from August 2020 until November 2020, with the DNP students and school. The faculty also assisted the DNP students from September 8, 2020, until September 30, 2020, analyzing data and summarizing the findings.

The project site's medical director was the preceptor. On August 26, 2020, the preceptor met with the DNP students when they presented their proposed project for final approval. The preceptor also made suggestions and offered advice. There were three registered nurses (RNs) apart from the project team who helped the DNP students collect charts and locate specific data on the charts for extraction. The nurses also gathered charts from the medical records ensuring that all the charts were for patients that met our criteria. The RNs also ensured that the charts were available to the DNP students for auditing when needed.

The QI department helped get the DNP access to the patients' electronic charts that met the criteria. The project site used both paper charting and electronic charting. The QI department helped to obtain any charts that were not readily available to the DNP students. The QI department also helped collect some data from intensive outpatient services (IOP) to identify the number of patients who attended IOP. The case managers helped to coordinate discharge plans for the patients. The case managers helped by disseminating the staff's recommendations and encouraging the evidence-based recommendations found using the audit tool. The therapist was the case manager's supervisor and assisted in disseminating the recommendations to the project site staff (see Appendix E).

Data Collection

Readmission rates are considered a measure of mental health services' quality and effectiveness (Marcus et al., 2017). We conducted a retrospective chart review to determine the 30- day risk factors for readmissions in this population will help decrease readmission rates. After approval of the QI project from the hospital system, the DNP students had access to pertinent patient data. There was a retrospective study. This QI project's primary objective was to identify the risk factors that contribute to 30-day

hospital readmissions of patients with schizophrenia and/or bipolar disorder. There was a need to create an audit tool from research evidence and provider expertise. The second objective was to audit charts from January 1 to June 30, identifying risk factors in patients readmitted within 30 days of discharge. The final objective was to analyze the data for patterns that contribute to the readmission of these patients within 30 days of discharge and give recommendations based on the findings.

Both students collected data from the project site's medical records office. The students reviewed the charts from within the locked medical records room. The charts from January 2020 to June 2020 were available for review in a medical records office. The students used an assessment tool to collect data from the charts. We assured data accuracy by doubly reviewing each chart. After each student reviewed five charts, we exchanged those charts and reviewed them again to ensure consistency. Each student picked the first five charts to perform secondary analysis for adult patients (18–65 years old) diagnosed with schizophrenia and/or bipolar disorder at the project site. The chart review process took less than one week. There were no obstacles or barriers to data collection.

READMIT Tool

The READMIT tool-clinical risk index used the terms repeat admission, emergent admission, age, diagnosis, medical comorbidity, intensity, and length of stay (inclusion and exclusion). Thirty-day readmissions have been a critical problem for inpatient psychiatric facilities. The READMIT clinical risk index is the first to be published that determines clinical risk factors and provides scores to measure the 30 days readmission in inpatient psychiatry hospitals. The variables used to derive the score came from the providers who were caring for patients. The READMIT clinical risk index variables are related to existing evidence of psychiatry hospitalization (Vigod et al., 2015). See Appendix H for an example of the READMIT tool.

The READMIT clinical risk index scores variables from 0–41 for readmission. The scores reflect repeat admission, emergent admission, age, threat to self, threat to others, unable to care for self, age, primary diagnosis, unplanned discharge, and medical morbidity. The READMIT clinical risk index comprised the total numbers of the variables and ranged from 0–41. The more points, the higher the rate

of 30-days readmissions by 11%. So, their expected probability of 30-day readmissions used percentages and points. They assigned 2% to 0 points and 49% to 41 points. This assignment was within the 95% confidence interval. Some patients had high scores giving rise to wide confidence intervals (Vigod et al., 2015). The project site team variables were the patient's demographic variables, including marital status, age, race, long-acting medication at discharge, insurance status, primary diagnoses, support system, repeat admission, and outpatient follow-up. Appendix I shows permission to use the READMIT tool.

IRB Approval

Our Quality Improvement project proposal was submitted to the project site/organization on July 14, 2020. On July 21, 2020, the project was determined to be a Quality Improvement project and was exempt from the IRB review process. Appendix J provides a copy of the project approval letter.

University of Iowa Implementation Model

The Iowa Model of evidence-based practice explained the importance of using research within the healthcare system to guide practice decisions (Cullen et al., 2017). The Iowa Model promotes quality care, and it was first developed and applied at the University of Iowa Hospitals and Clinics in 1994. The model finds use in multiple clinical settings and clinical research programs. Also, nursing journal articles frequently reference the model (Titler et al., 2001). The Iowa Model is the implementation model to be used in this QI. The model design assists with the implementation of evidence-based research into clinical practice. The model uses integrated and multidisciplinary approaches that emphasize the significance of considering the entire healthcare system. Coverage includes the organization, the practitioner, and the patient. The model provides the best practices for making clinical decisions (Doody & Doody, 2011).

We selected the Iowa Model of EBP for this project and two other frameworks because they align with this QI project, exploring the problem of 30-day readmissions. Most nursing research is systematically analyzed to improve understanding about subjects of importance to nurses, and then nurses incorporate EBP into their daily practices (Polit & Beck, 2012). The Iowa Model is a good fit for this QI because it aligns with the project goals and outcomes. The Iowa Model permits healthcare professionals to emphasize evidence and problem-focused triggers, causing organizations to examine existing nursing

practices to determine if it can be enhanced using up-to-date research discoveries (Cullen et al., 2017).

The Iowa Model concentrates on infrastructure and teamwork, assimilating behavior, research, and other

forms of evidence (Titler et al., 2001). It also emphasizes the magnitude of considering the healthcare

system as a whole for healthcare providers, patients, and organizations using research within these

frameworks to direct practice decisions (Doody & Doody, 2011). The model emphasizes the need for

support for evidence-based practice throughout the entire healthcare system, from clinicians to the highest

management level. It pinpoints Nurse Practitioners' role in identifying and developing evidence-based

practice within the clinical setting (Zhao et al., 2016) [see Appendix D].

The Seven-Step Iowa Model

1. Identify the trigger that initiates the need for change. This project began as the DNP students and
   the experts in the study site in the Southern part of the United States perceived a need for a
   reduction in 30-day readmissions in schizophrenia and/or bipolar disorder patients, and the causes
   of the 30-day readmissions are not adequately identified (Zhao et al., 2016)

2. Articulate the focus question and prioritize its need. Our focus question was: What were the best
   practices for managing adult patients (18–65 years of age) diagnosed with schizophrenia and/or
   bipolar disorder hospitalized January 1, 2020- June 30, 2020, at the project site?

3. Form a team to investigate and advocate practice change. The gap, which was the unknown
   causes of 30-day readmissions, led to developing the stakeholders' concerns, consisting of the
   DNP students, the preceptor, the chief medical officer, the RNs, and the social services
   department.

4. Review sufficient literature to support the activity's knowledge through traditional research. This
   step represented the primary research studies and occurred with the school's librarian's help. The
   literature review used established tools to find the cause of 30-day readmissions in the project site.
   Evidence Summary is synthesizing all the available research knowledge into a single,
   comprehensive review with a meaningful knowledge statement.

5. Design and pilot the practice change. With the school's librarian's help, there was sufficient evidence to guide our QI project. Our research identified audit tools. With local experts' modifications, these tools helped identify the 30-day readmission rate causes at our site. Using the tools, we assessed the risk for 30-day readmission, from admission to intake to discharge.

6. Integrate and sustain the change. This step was evidence in action, in which the practice alignment reflected the best evidence. This step included approval from the hospital, the governing committee, and acceptance by the hospital board. The DNP students recommend the audit tool to identify the causes of 30-day readmissions from admission to discharge. Secondary analysis identified internal causes. Our literature review identified external causes. We compared the internal and external causes. Subsequently, we recommend to our organization the approaches to reduce 30-day readmissions from our evidenced-based process. Our recommendations set the stage for changing individual and organizational practices through formal and informal channels.

7. Disseminate results. Dissemination meant sharing our recommendations with the organization. It was also a time for a comprehensive view of the impact that the evidence-based practice had on patient health outcomes; provider and patient satisfaction; efficacy and efficiency of care; health policy, economic analysis, and health status impact. The proposed outcome was a reduction of the 30-day readmission rate. And our intervention assessed the causes of readmissions after 30 days using the audit tool. Our interventions' outcome motives were to improve patients' health outcomes, patients' functionality, economic analysis, efficacy, and efficiency at the project site.

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Section IV

Findings

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Sample Size

Ninety-four charts were reviewed with adult patients' inclusion criteria (18–65 years old) diagnosed with schizophrenia and/or bipolar disorder at the project site and readmitted between January 1, 2020 and June 30, 2020. Power analysis used the G-Power software program (Heinrich-Heine-Universität Düsseldorf, 2020) to calculate the effective size needed to achieve 80% power to detect the variables' differences in the sample size. The power analysis allowed the background knowledge of the number of charts to review to be analyzed.

Data Analysis

The reviewed charts used the assessment tool with both the READMIT clinical risk index and the project-site stakeholders' developed variables. Old fashioned paper and pencil helped identify the chart's risk factors. Data were organized in a Microsoft Excel spreadsheet and also entered into IBM-SPSS (Statistical Package for the Social Science) statistics software version 25.) Consequently, both SPSS and Excel performed data analysis. Descriptive statistical analysis (Munro, 2013) included frequencies and some central tendency measures, means, standard deviation, mode, and median to describe the factors causing 30-day readmissions at our project site. The variables developed from the project site are presented as the demographics of the project site variables, including READMIT tool variables. Table 1 shows the QI project-site demographic variables.

The READMIT clinical score of risk index variables includes repeated readmissions, Emergent admission, Age, Diagnosis, Medical comorbidity, Intensity, and Length of stay. The tool score becomes the dependent variable (Vigod et al., 2015). The REAMDIT Tool Score is a continuous variable that is also the dependent variable. The READMIT Tool Score showed the mean was 21.94, with a standard deviation of 3.758 when N = 94. The total of the READMIT score variables did not seem to be distributed normally, even with the sample size of 94. However, it is roughly normality distributed due to some outliers. Consequently, we used nonparametric tests: the Mann-Whitney U test for two independent variables

and the Kruskal-Wallis test for more than two groups to find the risk index variable 30-day readmissions at the project site (Munro, 2013).

Table 1

Demographics of the Project Site Variable

Variables	Percentages
Marital Status	
Married	26.6%
Single	53.2%
Divorced	14.9%
Widowed	5.3%
Admission Status	
Voluntary Status	81%
Involuntary Status	18.1%
Long-Acting Meds	
Discharged with	22.3%
Discharged without	77.7%
Support Group at Discharge	
Family	56.4%
Community Center	1.1%
Salvation Army	1%
Home Health	0%
Church	0%
Jail	0%
Insurance	
Medicaid	48.9%
Medicare	34%
Self-Pay	0%
Private	2.1%
BC/BS	0%
Champus	0%
Others	14%

Variables	Percentages
Disposition	
Living Home	58.5%
Homeless	22.3%
Group Home	12.8%
SNF	1.1%
Assisted Living	5.8%
Private Home	0%
Age	
65 to 75	3.3%
55 to 64	27.7%
45 to 54	19 %
35 to 44	22.3%
25 to 34	14.9%
18 to 24	12.8%
Length of Stay	
Less than 14 days	53.2%
15 to 28 days	42.6%
More than 28 days	4.3%
Race	
Caucasian	86.2%
African American	11.7%
Hispanic	2.1%
Asian	0%
Others	0%

Note. Values expressed as n (%), n = 94.

A nonparametric test is also known as a distribution-free test and was used to analyze the data on SPSS. The Mann-Whitney U test and the Kruskal-Wallis test compare the mean ranks, and the median ranks between the variables and the readmit total score (Munro, 2013). We evaluated our findings using the Mann-Whitney test for two independent variables and the Kruskal-Wallis test for more than two variables to identify factors that cause 30-day readmissions (Munro, 2013). Table 2 shows the statistical table of the READMIT Tool Score (SUM). Figure 3 illustrates the READMIT Tool Score (SUM)

distribution graph. As can be seen, the scores do not have a normal distribution.

Table 2

SPSS READMIT Tool Score (SUM

Statistics

READMIT TOOL SCORE (SUM)		
N	Valid	94
	Missing	904
Std. Error of Mean		.388
Std. Deviation		3.758
Skewness		-.047
Std. Error of Skewness		.249
Kurtosis		-.084
Std. Error of Kurtosis		.493
Minimum		13
Maximum		32

Figure 3

SPSS Histogram of READMIT Tool Score (SUM)

Mean = 21.94
Std. Dev. = 3.758
N = 94
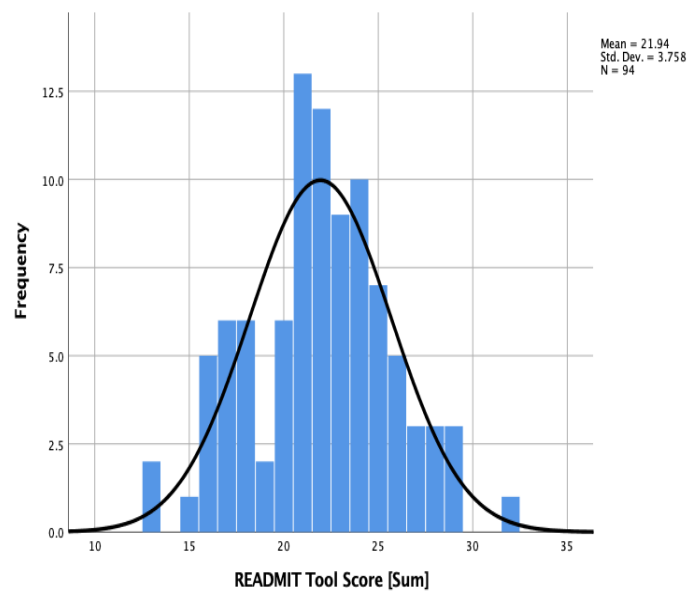
Results

The READMIT Tool scores the number of repeat readmissions, e.g., one, two, three or more times. The mean score for three or more readmissions was 55.68. The mean score for one or two readmissions was 17.60.

Mann-Whitney Comparison

A Mann-Whitney test indicated this difference was statistically significant, U ($N_{3\ or\ more\ times}$ =74, $N_{1or2\ times}$=20) = 142.00, z =-5.548, p < .001, p = .00. The number of repeat readmissions is statistically significant, with the cause of 30-day readmission at the project site. So, patients with more than three readmissions have a greater chance for readmission

Kruskal-Wallis Comparison

A Kruskal-Wallis test showed that age has a statistically significant p-value of .36. Patients' age significantly affects their READMIT Tool Score, p = .031. Those patients above 60 mean = 59.44 had higher scores than 0-30 mean = 45.50 and 30–-60 mean = 42.82). Post hoc Mann-Whitney tests using a Bonferroni adjusted alpha of .017 (.05/3) were used to compare all pairs of groups. The difference in READMIT Tool scores between those over 60 and those less than 30 was the only pair that was significant. There were three age categories. Using the Kruskal-Wallis test, the age group 30 to 60 was more readmitted back within 30 days. This test ranked the mean, and the mean for ages 60–90 was higher than the mean for ages 30–60. We used the pairwise comparison to check for the p-value of the age groups 30–60 and 60–90. The significant level was .05, and the p-value for age group 30–60 was p .0008, which is post hoc significant, and it showed that the age group 30–60 had the greatest risk of being readmitted within 30 days. Tables 3, 4, 5, and 6 show the mean rank and the p-values of the statistically significant variables.

Spearman Correlation

The correlation shows a relationship between two or more groups. We used a nonparametric test. The Spearman rank correlation was employed because it is not affected by distributions. The repeat numbers of readmissions were ordinal variables, which means the variables were ranked, and the

READMIT tool sum was measured in-scale. The correlation coefficient between the two variables was rs

.0575, which is moderately significant. Since rs is a positive coefficient, it indicates when the number of

repeat readmissions increases. It also increases the READMIT Tool Score. There was a significant

positive association between the READMIT Tool Score and repeat numbers of readmissions: rs = 0.57, *p*

< .001. Table 7 shows the correlation between the READMIT Tool Score and repeat numbers of

readmissions.

Table 3

SPSS Mean Rank for Repeat Admissions

Ranks

	RA1_repeat_adm 2	N	Mean Rank	Sum of Ranks
READMIT TOOL SCORE (SUM)	1 to 2	20	17.60	352.00
	3 to 5, 6 or more	74	55.58	4113.00
	Total	94		

Table 4

SPSS P-value for Repeat Admissions

Test Statistics[a]

	READMIT TOOL SCORE (SUM)
Mann-Whitney U	142.000
Wilcoxon W	352.000
Z	-5.548
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: RA1_repeat_adm 2

Note. RA1_repeat_adm 2 is =Repeat numbers of readmissions, Asymp sig = *p*-value=.000.

Table 5

SPSS Mean Rank for Age

Ranks

READMIT TOOL SCORE (SUM)	RA3 Age 2	N	Mean Rank
	0-30	3	45.50
	30-60	65	42.82
	60-90	26	59.44
	Total	94	

Table 6

SPSS the P-value for Age

Test Statistics[a,b]

	READMIT TOOL SCORE (SUM)
Kruskal-Wallis H	6.974
df	2
Asymp. Sig.	.031

a. Kruskal Wallis Test

b. Grouping Variable: RA3 Age 2

Note. RA3 Age2 = Age, Asymp sig = p-value = 0.31.

Table 7

SPSS Spearman Correlation

Correlations

			READMIT TOOL SCORE (SUM)	RA1_repeat_adm 2
Spearman's rho	READMIT TOOL SCORE (SUM)	Correlation Coefficient	1.000	.575[**]
		Sig. (2-tailed)	.	.000
		N	94	94
	RA1_repeat_adm 2	Correlation Coefficient	.575[**]	1.000
		Sig. (2-tailed)	.000	.
		N	94	94

**. Correlation is significant at the 0.01 level (2-tailed).

Non-significant Variables Associated with the READMIT Tool

There were no statistically significant differences in most of the variables when computed with the READMIT Tool Score. Table 7 shows the variables that are not statistically significant with the nonparametric tests we used.

These variables (see Table 8) are not statistically significant, but the variables are clinically significant for the project site. The percentage of patients discharged without long-acting antipsychotics was 77.7%. This discharge statistic is considered one of the risk factors of 30 days readmissions to the project site. The marital status of patients with greater chances of readmission was 53.2%. LAIs have been effective because they remove the risk factors of medication non-compliance by eliminating the need for a daily reminder. The detection of non-compliance is easier and faster for patients who take LAIs than those taking oral medications. Clinical practice guidelines support LAIs as a recommended option for patients with a history of medication non-compliance (Marcus et al., 2015).

Table 8

Project variables that Yielded No Statistical Significance

Statistical Test	Intervention [Independent] Variable	Outcome [Dependent] Variable	Statistical Significance [*p*- level]	Sample Size (n)
Mann-Whitney	Long-acting Medications	READMIT Tool Score (SUM)	.623	94
Mann-Whitney	Readmission Status	READMIT Tool Score (SUM)	.190	94
Kruskal-Wallis	Marital Status	READMIT Tool Score (SUM)	.433	94
Kruskal-Wallis	Disposition Living	READMIT Tool Score (SUM)	.314	94
Mann-Whitney	Insurance	READMIT Tool Score (SUM)	.361	94
Kruskal-Wallis	Race	READMIT Tool Score (SUM)	.826	94
Mann-Whitney	Follow-Up	READMIT Tool Score (SUM)	.960	94
Kruskal-Wallis	Support System	READMIT Tool Score (SUM)	.528	94
Mann-Whitney	Long-acting Medications	READMIT Tool Score (SUM)	.623	94
Mann-Whitney	Readmission Status	READMIT Tool Score (SUM)	.190	94
Kruskal-Wallis	Marital Status	READMIT Tool Score (SUM)	.433	94
Kruskal-Wallis	Disposition Living	READMIT Tool Score (SUM)	.314	94
Mann-Whitney	Insurance	READMIT Tool Score (SUM)	.361	94
Kruskal-Wallis	Race	READMIT Tool Score (SUM)	.826	94
Mann-Whitney	Follow-Up	READMIT Tool Score (SUM)	.960	94
Kruskal-Wallis	Support System	READMIT Tool Score (SUM)	.528	94

Discussion

The purpose of this QI project was to identify patients' risk factors through secondary data analysis to decrease the rate of 30-day readmissions in patients with schizophrenia and/or bipolar disorder at the project site. The second aim was to recommend evidence-based practices to the project site staff based on the secondary analysis and literature review findings that will improve patient outcomes in this population and decrease 30-day readmissions. The first recommendation is to create a trigger tool for admission and discharge, identifying the risk factors found specifically for the project site from the chart audit. The trigger tool can use the PDSA cycle used throughout this QI project. A trigger tool will help identify risk factors specific to the project site to decrease 30-day readmission rates. Adding a trigger tool that is specific to the project site will identify those at risk for readmission highlighting target areas that need interventions.

The first objective was to identify the risk factors that contribute to 30 days of hospital readmissions in patients with schizophrenia and bipolar disorder by creating an audit tool from research evidence and provider expertise. The second objective was to audit charts from January 1, 2020 to June 30, 2020, identifying risk factors in patients readmitted within 30 days of discharge. This QI project found two statistically significant factors as the causes of 30-day readmissions in the project site. The numbers of repeat readmissions ($p = .000$) and the age ($p = .031$) demonstrated statistical significance in 30-day readmissions. The number of repeat readmissions three times and above demonstrated a high chance of being readmitted within 30 days. The age group, 30–60 years old, had more readmissions within 30 days. There was an association between the number of repeat readmissions and the READMIT Tool Score ($rs = 0.57$, $p < .001$. This is known as Spearman's rank correlation coefficient, which shows how closely two sets of data are linked together.

Limitations and Barriers

One of the most significant barriers identified during the execution of this project was the COVID-19 pandemic. The pandemic started in early 2020 and is still current at this writing, December 2020. The pandemic occurred during the same time we were analyzing the patient data. This pandemic

caused a nationwide shut down during specific times, along with shelter-in-place orders. The pandemic forced people to stay home and consequently altered the behavior of this population.

There was limited chart access due to the restrictions put in place because of the pandemic. There was also needed staff availability to help collect and monitor the charts during a staff shortage. Ready access to physical charts was a barrier because the paper charts were in multiple locations at any giving time.

Another project limitation was the lack of generalizability of the findings. The diagnoses were limited to schizophrenia and bipolar disorder. With more diagnoses in the secondary analysis, the number of discharge summaries reviewed would have exceeded 94. The retrospective study chart time should extend beyond six months. Despite these limitations, there were advancements toward identifying risk factors specific at the project site to reduce 30-day readmissions.

Section V

Recommendations and Implications for Practice

This QI project identified specific risk factors for patients with schizophrenia and/or bipolar disorder in one particular area. The use of a standard audit tool and a tool made specifically for the organization allowed better identification of this specific population.

Implications for Practice

As stated in the Findings section, statistical significance was found in two areas, age and number of readmissions. Although other categories did not show significance, there are implications that they should be considered as increased risk factors. The highest clinically significant variable was for patients not discharged who were on LAIs antipsychotic medications.

The first recommendation is that the top-three variables be added to the admission process and the discharge process to identify and create strategies to target those variables.

Targeting specific risks can be done by creating a trigger tool used at admission and discharge. The trigger tool can identify the risk factors found specifically for the project site from the chart audit. The trigger tool can use the PDSA cycle that was employed throughout this QI project. A trigger tool will help identify risk factors specific to the project site to help decrease 30-day readmission rates. Adding a trigger tool specific to the project site will identify those at risk for readmission, highlighting target areas that need interventions. The use of a trigger tool can begin in the next 90 days.

The second recommendation is that the organization take part in the 30-day readmission for mental health patients national or statewide registry. There is currently a registry that tracks explicitly 30-day readmissions across different hospitals. If the organization becomes a part of that registry, they will be able to track more of their patients over a larger scale. This recommendation will allow for better accuracy in tracking 30-day readmitted patients and better identify and implement strategies.

Because the project was conducted during a pandemic, we recommend replicating the secondary data analysis. The recommendation is for the audit to be carried out over a different and more extended period. Additional audits should be carried out using the PDSA cycle to ensure this project's accuracy and

validity. There are implications for future research in combining a standard audit tool such as the READMIT clinical risk index with a tool specific to each organization. Increasing the predictability of 30-day readmission by identifying the particular variables allows for identification during admission and discharge. Once the patient has been identified as having specific variables, strategies can be followed to address those variables. It should also be noted that the READMIT clinical risk index was created in Canada. Canada has universal healthcare, while the United States of America does not. This project should eventually be expanded and include the top-five variables, and possibly the top-ten variables, which contribute to 30-day readmissions in schizophrenia and/or bipolar disorders.

DNP Implications

This QI project was grounded and guided by *The Essentials of Doctoral Education For Advanced Practice*. The DNP Essentials laid the foundation for this QI project with guidance from the eight essential elements. Exploring the nursing theorist and using Dorothy Orem's Care Model, we used evidence-based concepts to enhance healthcare delivery and improve patient outcomes. Examples include evaluating our practice outcome from our audit tool to disseminating research into practice by recommending audit tools and strategies.

This project allowed us to use the skills learned to facilitate meaningful change and shape behavioral health initiatives. Throughout this QI project, technology supported data collection, analysis, and dissemination of the finds. Effective interprofessional collaboration occurred during this project within the facility and with key stakeholders, providers, nurses, and support staff. The final DNP Essential used interpretation of environmental factors, biostatistics, and epidemiology as a part of the foundation to create the initial audit tool. We used a nursing theorist, evidence-based model, quality improvement model, PDSA cycle, and the DNP Essentials. We systematically worked through and created a QI project that focused on quality improvement and improving health outcomes.

Project Sustainability

Sustainability should continue. There is buy-in by the stakeholders and personal interest and investment by the team members and staff. The 30-day readmission rate was first identified in the SWOT

analysis and brought to the stakeholders' attention. The care gap did not align with the organization's mission and strategic plan. The plan is to promote long-term wellness for every patient. Once a review was done and given to the staff on current policies, procedures, literature, and evidence-based practices, they were given a choice to be a part of this project. Those who chose to be a part of the project became personally accountable for their role in the project. There were weekly meetings with team members who could ask questions and give input and feedback during the entire process. The team leaders ensured transparency throughout the whole process, which kept them involved and invested. All team members wish to continue with this project. However, instructions are in place in the event of a turnover at the organization. One of the team leaders will also continue to facilitate the next step of the project. The team leader received assistance from nurses, the QI department, techs, case management, and therapist. The team learned that the chart audit was the first step in decreasing 30-day readmission rates for patients diagnosed with schizophrenia and/or bipolar disorder in their organization. Another PDSA cycle is needed to implement strategies identified by the chart audit.

Becoming a part of the national registry will also contribute to the sustainability of the project. Once a part of the national registry, the accountability and tracking of 30-day readmissions in patients with schizophrenia and/or bipolar disorder will be more accurate and effective. The national registry tracks patients readmitted with 30 days. Tracking allows facilities to determine when a discharged patient is readmitted within 30 days to another facility. Readmission to another facility within 30 days of discharge results in a penalty for the initial facility. Becoming a part of the national registry will inevitably help with the sustainability of our QI project.

Lastly, the QI project aligns with the organization's mission and vision, providing individualized care, and treating the whole person to ensure long-term healing and recovery. This approach will take the entire team working together; It includes the team leaders, doctors, nurses, therapists, stakeholders, and reviews.

Application to Other Clinical Settings

The thirty-day readmission rate in patients with schizophrenia and/or bipolar disorder directly reflects the specific organization. Thirty-day readmission rates in this population contribute to poor health

outcomes and impose a financial burden on an already strained healthcare system. Although there are standardized tools used to help identify and decrease 30-day readmission rates in this population, there still appears to be an upward trend. Using in combination a standardized form along with a tool specific to that organization and their demographics will help better identify patients at risk for 30-day readmission.

Combining a standardized tool and a tool specific to the organization will allow for better accuracy when identifying those at risk for 30-day readmissions. When the organization assesses appropriate variables, a tailor-made audit tool, along with a standard tool such as the READMIT clinical risk index, can predict the likelihood of 30-day readmissions. Do not use the standardized tool alone. An isolated tool might miss the data from a variable specific to the organization and their 30-day readmission rate. Clinical sites would follow this project, helping them set up an audit tool specific to their site and a standardized audit tool to identify trends in variables that contribute to 30-day readmissions. Once the site has identified risk factors specific to their site, they will create a tool that identifies those at risk for 30 readmissions and puts strategies to address those risk factors.

This project can be used as a framework for any setting in healthcare if applied accurately. The project details how to identify possible variables specific to the organization, create an audit tool, and use it with a standardized audit tool. Again, this can be tailored and applied to healthcare areas to identify risk factors specific to organizations to reduce 30-day readmissions.

Methods of Dissemination and Next Steps

Dissemination of our QI project included three stages. The first dissemination was done by presentation to the stakeholders, team members, and the organization's staff. The PowerPoint presentation was a video conference during lunch hour, allowing time for questions and answers. The presentation was done twice to ensure maximum participation, disbursement and was be most impactful.

The second dissemination was a PowerPoint presentation video conference to our advisor, colleagues, and university staff. The dissemination included a poster that outlined significant aspects, findings, and implementation of the QI project coinciding with the DNP Essentials. The presentation was recorded and made downloadable for an interprofessional group. The presentation's availability will allow

the group to disseminate it at a later date.

Unfortunately, due to social distancing, there was no in-person dissemination for 2020. We hope in time to disseminate our findings, implementation, and progress face-to-face. Two possibilities are the Mental Health Nurse Practitioner conferences or the North Texas Nurse Practitioners Association conference. Both play essential roles in improving health outcomes and empowering Nurse Practitioners.

The next step for this QI project will be deciding how to incorporate the top-three risk factors identified through our secondary data analysis. A team lead will help the organization create another PDSA cycle to create a trigger tool using the three top risk factors contributing to 30-day readmissions. The team will also come together with the stakeholders to determine the next steps in becoming part of a registry. We recommended replicating the audit for the project's validity and reliability and identifying risk factors specific to the project site.

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Appendix A

SWOT Analysis

Strengths	**Weaknesses**
What do you do well? What unique resources can you draw on? What do others see as your strengths?	What could you improve? Where do you have fewer resources than others? What are others likely to see as weaknesses?
Treat patients with psychiatric disorders Access to a multidisciplinary team that specializes in psychiatric disorders Telehealth Contract with multiple insurances companies as well as Medicare The ability to manage acute and chronic patients with psychiatric disorders The ability to keep patients safe who are a threat to themselves or others The ability to keep the staff safe The ability to hold 90 patients at one time	The readmission rate of patients with psychiatric disorders Discharge planning Provider charting Insurance barriers Limited financial resources Staff shortage Limited daily collaboration of staff Facility size Poor satisfaction scores
Opportunities	**Threats**
What opportunities are open to you? What trends could you take advantage of? How can you turn your strengths into opportunities?	What threats could harm you? What is your competition doing? What threats do your weaknesses expose you to?
Expand to treat more patients Increase in admits due to Covid19 New long acting medications New treatment plans More resources to collaborate with	Decrease payout due to readmissions Decrease experience of new staff Increase competition

Appendix B

FMEA

FMEA															

Process/Product Name: Oceans Behavioral Healthcare
Responsible: Readmissions Rates
Prepared By: Folasade Olayiwole & Anastaisa Sancho
FMEA Date (Orig.): 14-Jun (Rev.): in 30 days

Process Step/Input	Potential Failure Mode	Potential Failure Effects	SEVERITY (1 - 10)	Potential Causes	OCCURRENCE (1 - 10)	Current Controls	DETECTION (1 - 10)	RPN	Action Recommended	Resp.	Actions Taken	SEVERITY (1 - 10)	OCCURRENCE (1 - 10)	DETECTION (1 - 10)	RPN
What is the process step, change or feature under investigation?	In what ways could the step, change or feature go wrong?	What is the impact on the customer if this failure is not prevented or corrected?		What causes the step, change or feature to go wrong? (how could it occur?)		What controls exist that either prevent or detect the failure?			What are the recommended actions for reducing the occurrence of the cause or improving detection?	Who is responsible for making sure the actions are completed?	What actions were completed (and when) with respect to the RPN?				
Readmission rates	Readmission rate within 30 days of discharge from	Reduce the rate of readmission, and a need for	10	lack of education about medication administrations, lack	10	Currently monitoring readmission rates based on insurances	1	100	Medication compliant, Intensive outpatient services, long-acting	Skateholders: Patients, patient's family Poviders,	None	10	10	1	100
								0							0
								0							0
								0							0
								0							0
								0							0

Appendix C

Project Team

Project Team	Project Role	Action
Anastasia Sancho DNP Student	Team Leader	Coordinating and executing the project from August 27th to November 11th, 2020.
Folasade Olayiwole DNP Student	Team Leader	Coordinating and executing the project from August 27th to November 11th, 2020.
Linda Roussel PHD	Lead faculty Advisor	Advising and coordinating from August to November 2020.
James Butler, MD	Preceptor	Expect advice and monitoring the executing of the project from August to November 2020. Facilitating acceptance of recommendation October 2020-Until.
Taylor Ulmer	Site CEO	Approval of project plans from August to November 2020.
Mellissa Bellard RN	Registered Nurse	Assisting in the auditing of the charts August and September 2020.
Mica Alex RN	Admission nurse	Assisting in the auditing of the charts August and September, 2020
Kristin Williamson LVN	Quality department coordinator	Quality department coordinator Assisting in data collection from August 27th to Sep 3rd.
Shree Miles BWS	Case Manager	Assisting in the dissemination and adoption of recommendations from October 3rd until.
Sara Butler BWS	Case Manager	Assisting in the dissemination and adoption of recommendations from October 3rd until.
Myleene Rock	Therapist	Assisting in the dissemination and adoption of recommendations from October 3rd until.
Mari Tietze	Statistician	Assisting in the analysis of data from September 3rd to September 30th.

Appendix D

Iowa Model

Appendix E

Measure Grid

Measure of Interest (A)	Measure or Metric Needed (B)	Time Period for Measure (Annual, quarterly, monthly, weekly) (C)	Type of Measure (Process, Outcome, Balancing) (D)	Operational Definition-Denominator (E)	Denominator Exclusion (F)	Operational Definition-Numerator (G)	Numerator Exclusion (H)	Data elements needed to operationalize the measure (list each data element separately, using multiple rows) (I)	Level of Measure Need for Data (J)	Location of data (clinical system, survey, quality department) (K)	Requires Permission from Data Owner for Use (Y/N) (L)	Data owner (M)
Adult patients of age 18 to 65 with schizophrenia or bipolar disorder. This measure applies to the patients that newly or existing patients diagnosed with schizophrenia or bipolar disorder	30 days readmission rates in adults patients with schizophrenia or bipolar disorder between ages 18 to 65.	Monthly	Outcome	Total Number (count) of patients discharged from the hospital within the 30 days	Patients that are younger than 18 years and older than 65 years old. Any patients that does not have a diagnosis of Schizophrenia or Bipolar	Total number of patients readmitted to the hospital during the defined time period with schizophrenia or bipolar disorder diagnosed	Patients who are readmitted back to the hospital outside of the 30 days of discharge or admitted for something other than a relapse from their diagnosis of Schizophrenia or Bipolar diagnosed	# of patients in organization during defined timeframe that have schizophrenia and bipolar disorder that are readmitted back in 30 days due to lack of medication compliance, missing appointment after discharge, and self deficit.	Interval and ratio	Quality department	N	Inpatient
								... readmitted within 30 days with a diagnosis of Schizophrenia or Bipolar			N	Intensive out patient services
								# of those patients who are on long term medications			N	Quality department
								# of those patients participating in IOP				
								# of patients readmitted after the implementation is completed				

Appendix F

Evidence Table & Synthesis Matrix

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
1#	Tilhonen et al / 2017	Real -world effectiveness of Antipsychotic treatments in patients with schizophrenia	Nationwide Cohort study/ 29,823	LAIs antipsychotic medications were associated with substantially lower risk of rehospitalization compared with equivalent oral formulations (HR, 0.78; 95% CI, 0.72-0.84 in the total cohort; HR, 0.68; 95% CI, 0.53-0.86 in the incident cohort). Clozapine (HR, 0.58; 95% CI, 0.53-0.63) and all LAIs antipsychotic medications (HRs 0.65-0.80) were associated with the lowest rates of treatment failure compared with the most widely used medication, oral olanzapine.	Clozapine and LAIs antipsychotic medications were the pharmacologic treatments with the highest rates of prevention of relapse in schizophrenia	II/A
2#	MacEwan et al, 2016	Analyzed hospital readmission rates of patients with schizophrenia who were treated with long-acting injectable antipsychotics (LAIs) or with oral antipsychotics after being discharged from a hospitalization	Retrospective cohort analysis/ Analyses were conducted for patients with a sole diagnosis of schizophrenia (N=1,450) and for all patients with schizophrenia (N=15,556), which added patients with a codiagnosis of bipolar disorder	LAIs were associated with significantly lower probability of rehospitalization compared with oral antipsychotics at 60 days for schizophrenia-only patients (adjusted odds ratio [AOR]=.60, 95% confidence interval [CI]=.41-.90) and for all patients (AOR=.70, CI=.52-.95)	Compared with use of oral antipsychotics, use of LAIs was associated with fewer readmissions of Medicaid patients with schizophrenia within 60 days after an index hospitalization	II/B
3#	Taipale et al/2018	Comparative effectiveness of	20-year cohort study/ 62250	With follow-up time up to 20 years (median = 14.1,	Clozapine and LAIs are the most	II/A

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
		antipsychotic drugs for rehospitalization in schizoprenia		interquartile range = 6.9–20.0), 59% of the prevalent cohort were readmitted to psychiatric inpatient care. Olanzapine LAI adjusted hazard ratio = 0.46, 95% confidence interval = 0.36–0.61), Clozapine (0.51, 0.49–0.53), and paliperidone LAI (0.51, 0.40–0.66) were associated with the lowest risk of psychiatric rehospitalization in the prevalent cohort.	effective treatments in preventing psychiatric and all-cause hospitalization among chronic and first-episode patients with schizophrenia.	
4#	Marcus et al./2017	Outpatient follow-up care and risk of hospital readmission in schizophrenia and bipolar disorder	Retrospective longitudinal cohort analysis/ Among inpatients with schizophrenia (N=25,401) or bipolar disorder (N=46,375)	Follow-up visit within 30 days of discharge was associated with a slightly lower AOR of hospital readmission during days 31-120 post-discharge (schizophrenia, AOR=.88, 95% confidence interval [CI]=.81-.96; bipolar disorder, AOR=.91, CI=.85-.98). For patients with schizophrenia, the strongest observed inverse association of follow-up care with readmission risk was among inpatients whose index admissions were 13 to 30 days long (AOR=.73, CI=.61-.89). For patients with bipolar disorder, the strongest corresponding inverse association was among those in the manic phase of illness at the index discharge (AOR=.73, CI=.63-.86).	Outpatient visits during the 30 days after discharge were associated with a lower hospital readmission risk during the following 90 days.	II/A

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
5#	Chi et al./ 2016	The readmission rate and medical cost of patients with schizophrenia after first hospitalization	Retrospective study/808 patients mean age 28.9	570 (70.5%) patients were readmitted within 10years; the median time between admissions was 1.9years, and 25% of subjects were readmitted within 4months of the first hospitalization.	Schizophrenia has a high rate of readmission and high medical cost in naturalistic settings	III/B
6#	Marcus et al./2015	Antipsychotic Adherence and Rehospitalization in Schizoprenia patients receiving oral versus LAIs antipsychotic following hospital discharge	Retrospective cohort design using insurance claim data/ 3,768. Final sample, 91% (n = 3,428) received oral antipsychotics, and 9.0% (n = 340) received LAI antipsychotics after discharge	However, when examined separately, only patients receiving SGA LAIs (AOR = 0.59, 95% CI = 0.38-0.90, P = 0.015) and not FGA LAIs (AOR = 0.90, 95% CI = 0.60-1.34, P = 0.599) had a statistically significant reduction in odds of rehospitalization.	Benefits of LAI antipsychotic medications in routine clinical practice, particularly with regard to second-generation LAIs.	II/B
7#	Maestri et al./2018	Do LAIs antipsychotics prevent or delay hospital readmissions	Retrospective evaluation/240 patients 18-65	Those who received a LAI (N = 120) had a significantly longer survival time (mean 278.0 days) without readmission compared to those who did not (N = 120; mean 243.6 days).	The use of LAI antipsychotics in those with a history of medication non-adherence, particularly those with longer administration frequency, have potentially promising outcomes.	IV/C
8#	Almeria et al./2015	Investigate the Social skills	Literature review/13 RTC 975 participants	Results favored social skills (1 RCT, n = 67, RR 0.29 CI 0.12 to 0.68, very low-quality	Compared to standard care, social skills	I/B

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
		programs for schizophrenia		evidence). Quality of life was also improved in the social skills programs compared to standard care (1 RCT, n = 112, MD -7.60 CI -12.18 to -3.02, very low-quality evidence).	training may improve the social skills of people with schizophrenia and reduce relapse rates, but at present, the evidence is very limited with data rated as very low-quality	
9#	Kesserwani et al./2019	Risk of readmission in patients with schiophrenia and schizoaffective disorder newly prescribed Clozapine	Retrospective observational cohort study/3,6551 Cox proportional-hazards regression model	Patients on Clozapine (n=202) had a reduced risk of readmission compared with patients on other antipsychotics (adjusted hazard ratio=0.79; 95% confidence interval: 0.64-0.99; p=0.043).	Findings suggest that Clozapine is associated with a reduced risk of readmission into secondary mental health services	II/A
10#	Bitter, Feher, Tenyi & Czobor/ 2015	Treatment adherence and insight in schizophrenia	Cross sectional, noninterventional study/262 patients	The primary logistic regression analysis indicated a significant relationship between the total score on the SAI scale and the Compliance Scale (Spearman correlation=0.58; p<0.0001). The relationship was significant for each of the three subscales of SAI. Secondary analyses showed a significant negative association between compliance and score on the CGI-S scale (Spearman correlation: -0.54;	The level of insight and compliance are strongly associated, and that more severe symptoms and increasing levels of hostility, in particular, markedly reduce the compliance of	II/C

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
				p<0.0001), and compliance and hostility, as measured by the PANSS hostility item (Spearman correlation: -0.40; p<0.0001).	the patients with schizophrenia.	
11#	Kurdyak et al./2018	Impact of physician follow-up care on psychiatric readmissionrates in a population-based sample of patients with schizophrenia	First and secondary analysis /19,132 patients	Psychiatric readmission rates were similar among patients with any physician follow-up and significantly lower than among those with no follow-up (26%): PCP only: 22%; adjusted hazard ratio [aHR]=.88, 95% confidence interval [CI]=.81-.96; psychiatrist only, 22%; aHR=.84, CI=.77-.90; both, 21%, aHR=.82, CI=.75-.90).	Timely physician follow-up was associated with reduced risk of psychiatric readmissions, with the greatest reduction among patients at high risk of readmission.	II/A
12#	Shadmi et al./2018	Routine patient report outcomes as a predictor of psychiatric rehospitalization	Multivariate logistic regression model/2842 patients	QoL was found to be a significant predictor of future hospitalization within 6months (odds ratio [OR]=0.71, 95% CI: 0.59-0.86), and self-report of the impact of symptoms on functioning significantly predicted 12-month hospitalization (OR=0.83, 95% CI: 0.74-0.93),	PROMs can identify consumers at high risk for future hospitalization and thus direct interventions for those at highest risk.	III/B
13#	Lorine et al./2015	Risk factors associated with psychiatric readmission	Retrospective chart review/ 207 patients	Diagnosis of schizophrenia/schizoaffective disorder (OR = 18; 95% CI 2.70–117.7; $p < 0.05$), history of alcohol abuse (OR = 9; 95% CI 1.80–40.60; $p < 0.05$), number of previous psychiatric hospitalizations (OR = 2; 95% CI 1.28–3.73; $p < 0.05$), and type of residence at initial	Reducing the risk factors associated with psychiatric readmissions has the potential to lead to the identification and development of preventive intervention	III/B

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
				admission (*e.g.*, homeless, OR = 29; 95% CI 3.99–217; *p* < 0.05) were significant risk factors for early readmission,	strategies that can significantly improve patient safety	
14#	Maples et al./2012	Can medication management coordinator help improve continuity of care after psychiatric hospitalization	Descriptive analysis / 325 patients	After discharge, individuals enrolled in medication management were more likely than comparison patients to attend outpatient appointments, and they had more medication visits and nurse or case manager treatment hours than the comparison group	Although this program succeeded in improving continuity of care, additional interventions may be required to reduce rehospitalization and crisis care	III/B
15#	Boskailo et al./2017	Assessment of inpatient psychiatric readmission risk among patients discharged on an antipsychotic polypharmacy regimen	Retrospective cohort study/ 1,387	Readmission rates of the single (13.7%) versus multiple (15.9%) antipsychotic groups were not statistically different (p=0.286). Logistic regression analysis established that only age (younger) and the prescription of a mood stabilizer at discharge were significant predictors for increased risk for readmission (p=0.010 and p=0.049, respectively)	Concomitant antipsychotic polypharmacy at discharge did not reduce readmission risk over a one-year period. Given the increased risk of side effects and financial costs of polypharmacy, this study did not provide evidence to support this practice	II/B
16#	Komatsu et al./2013	Effectiveness of Information technology aided	Randomized controlled trial/45	Risk of rehospitalization was reduced in the ITAREPS group (2 [9.1%]) compared with the	The relapse prevention effectiveness of	I/B

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
		relapse prevention program in schizophrenia excluding the effect of user adherence	patients over 12 months	control group (8 [34.8%]) (hazard ratio=0.21, 95% CI 0.04-0.99, p=0.049; number needed to treat (NNT)=4, 95% CI 2.1-35.5). The mean number of inpatient days was significantly lower in the ITAREPS group (18.5 days) compared with the control group (88.8 days) (p=0.036).	the ITAREPS was high, and we confirmed that the ITAREPS, i.e., detecting signs of relapse and increasing medication during the warning state, is an effective intervention during the early stages of relapse.	
17#	Olfson, Marcus and Doshi/ 2010	Continuity of care after inpatient discharge of patients with schizoprenia in the Medicaid program	Retrospective longitudinal cohort analysis/ 59,567 patients	Preadmission outpatient mental health visits (AOR = 3.72; 99% CI, 3.44-4.03), depot (AOR = 2.83; 99% CI, 2.53-3.18) or oral (AOR = 1.73; 99% CI, 1.62-1.84) antipsychotics as compared with no antipsychotics, and absence of a substance use disorder diagnosis (AOR = 1.35; 99% CI, 1.25-1.45). General hospital as compared with a psychiatric hospital treatment (AOR = 1.32; 99% CI, 1.14-1.54) and patient residence in a county with a larger number of psychiatrists per capita (AOR = 1.27; 99% CI, 1.08-1.50) were related to receiving follow-up outpatient visits.	Patient characteristics, clinical management, geographical resource availability, and the mental health policy environment all appear to shape access to care following hospital discharge in the community treatment of adult schizophrenia	II/A
18#	Barrio et al./2013	Effectiveness of LAIs risperidone versus oral	Case control study/ 52 patients	Personal and Social Functioning Scale scores were also higher in the RLAI group	Treatment with RLAI instead of oral	

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
		antipsychotic in the treatment of recent – onset schizoprenia		[mean (SD)=72.4 (14.8) vs. 59.7 (13.5); mean difference=13.41; 95% CI=5.65-21.18; P<0.001]. Although not statistically significant, there were fewer readmissions (AOR 0.28; 95% CI=0.06-1.35; P=0.114) and more illness remissions (AOR 3.24; 95% CI=0.20-11.93; P=0.077) in the RLAI group.	antipsychotics in recent-onset schizophrenia might improve clinical symptoms and social functioning. The efficacy of RLAI treatment on remission and readmission rates should be researched further.	
19#	Chan et al./2015	Risperidone LAI and 1-year rehospitalization rate of schizophrenia patients	Retrospective cohort study/379	RLAI group had a significantly higher rate of hospitalization before enrolment (the all-oral antipsychotic group was 32.1%, the oral risperidone group, 35.9%, and the RLAI group, 88.4%, P < 0.0001). After a 1-year follow-up, all three groups were similar in rehospitalization rates (the all-oral antipsychotic group was 28.9%, the oral risperidone group, 30.1%, and the RLAI group, 30.2%, P > 0.999),	Using RLAI reduces the severity of disease in more difficult patients	II/A
20#	Razali & Hashim/ 2015	Modified assertive community treatment: effectiveness on hospitalization and length of stay	Retrospective cross-sectional study/ 88 patients	The final sample comprises 44 patients in each group. There was no significant difference between both groups in number of admissions and average length of stay. However, in the modified ACT group there was a significant reduction in the	Readmission rate was significantly reduced following modified ACT intervention.	I/A

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
				number of admissions after the intervention		
21#	Tilhonen et al./2011	Oral and depot antipsychotics after first hospitalization for schizophrenia	Nationwide cohort study/2,588 patients	Compared with oral risperidone, Clozapine (adjusted hazard ratio=0.48, 95% CI=0.31-0.76) and olanzapine (adjusted hazard ratio=0.54, 95% CI=0.40-0.73) were each associated with a significantly lower rehospitalization risk. Use of any antipsychotic compared with no antipsychotic was associated with lower mortality (adjusted hazard ratio=0.45, 95% CI=0.31-0.67	Use of depot antipsychotics was associated with a significantly lower risk of rehospitalization than use of oral formulations of the same compounds	II/A
22#	Buckley et al./ 2016	Comparison of injectable and oral antipsychotics in relapse rates	RTC 30 -month pragmatic schizophrenia relapse prevention study/ 305 patients	Thirty-two patients (11%) experienced two relapses, and 13 patients (4%) had three relapses. Neither rate of relapse nor time to successive relapses differed between treatment groups	There was an impressively low rate of subsequent relapses in this pragmatic clinical trial. Maintaining frequent clinical contact may be a valid psychosocial relapse prevention treatment	I/B
23#	Lafeuille et al./2015	Comparison of rehospitalization rates and associated cost among patients with schizoprenia receiving paliperidone	Retrospective cohort study/	The risk of all-cause rehospitalization and ER use was significantly lower in the paliperidone palmitate cohort than in the oral antipsychotic cohort (hazard ratio, 0.61; 95% confidence interval [CI], 0.59–0.63; p < 0.0001); institutional costs during the first 6 months	The use of paliperidone palmitate therapy during patients' index hospital admission for schizophrenia was associated with a reduced	II/B

Article #	Author / Year	Purpose	Design /- Sample	Results	Implications	Level/Quality
		palmitate or oral antipsychotics		after discharge were significantly lower in the paliperidone palmitate cohort than in the comparator group (adjusted mean monthly cost difference –$404; 95% CI, –$781 to –$148; p < 0.0001).	risk of hospital readmission or ER use and lower post- discharge institutional costs.	
24#	Novak/2015	Psychiatrist's adherence: a new factor in relapse prevention of schizophrenia. A randomized controlled study on relapse control through telemedicine system	RCT/146 patients	In a post hoc multivariate Cox proportional-hazards model, out of 13 potential predictors, only ITAREPS-related variables (number of alerts without pharma-cological intervention/ HR = 1.38, P = 0.042/ and patient non-adherence with ITAREPS / HR = 1.08, P = 0.009/) increased the risk of hospitalization	In context with previous ITAREPS studies suggest non-adherence of both psychiatrists and patients as the main reasons for the failure of this preventive strategy	I/B
25#*	Kelly et al./1990	Medication compliance and health education among outpatients with chronic mental disorders	418 patients in a six-month trial over a four-year study	Both interventions significantly improved medication compliance among those who received them.	Comparatively brief interventions can significantly alter medication compliance behavior and improve the quality of life for patients with chronic psychiatric disorders.	IV/B

Appendix G

Johns Hopkins Evidence Rating Scales

JHNEBP EVIDENCE RATING SCALES

STRENGTH of the Evidence	
Level I	Experimental study/randomized controlled trial (RCT) or meta analysis of RCT
Level II	Quasi-experimental study
Level III	Non-experimental study, qualitative study, or meta-synthesis.
Level IV	Opinion of nationally recognized experts based on research evidence or expert consensus panel (systematic review, clinical practice guidelines)
Level V	Opinion of individual expert based on non-research evidence. (Includes case studies; literature review; organizational experience e.g., quality improvement and financial data; clinical expertise, or personal experience)

QUALITY of the Evidence		
A High	Research	consistent results with sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence.
	Summative reviews	well-defined, reproducible search strategies; consistent results with sufficient numbers of well defined studies; criteria-based evaluation of overall scientific strength and quality of included studies; definitive conclusions.
	Organizational	well-defined methods using a rigorous approach; consistent results with sufficient sample size; use of reliable **and** valid measures
	Expert Opinion	expertise is clearly evident
B Good	Research	reasonably consistent results, sufficient sample size, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence
	Summative reviews	reasonably thorough and appropriate search; reasonably consistent results with sufficient numbers of well defined studies; evaluation of strengths and limitations of included studies; fairly definitive conclusions.
	Organizational	Well-defined methods; reasonably consistent results with sufficient numbers; use of **reliable and valid** measures; reasonably consistent recommendations
	Expert Opinion	expertise appears to be credible.
C Low quality or major flaws	Research	little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn
	Summative reviews	undefined, poorly defined, or limited search strategies; insufficient evidence with inconsistent results; conclusions cannot be drawn
	Organizational	Undefined, **or** poorly defined methods; insufficient sample size; inconsistent results; undefined, poorly defined or measures that lack adequate reliability or validity
	Expert Opinion	expertise is not discernable or is dubious.

A study rated an A would be of high quality, whereas, a study rated a C would have major flaws that raise serious questions about the believability of the findings and should be automatically eliminated from consideration.

Newhouse R, Dearholt S, Poe S, Pugh LC, White K. The Johns Hopkins Nursing Evidence-based Practice Rating Scale. 2005. Baltimore, MD, The Johns Hopkins Hospital; Johns Hopkins University School of Nursing.
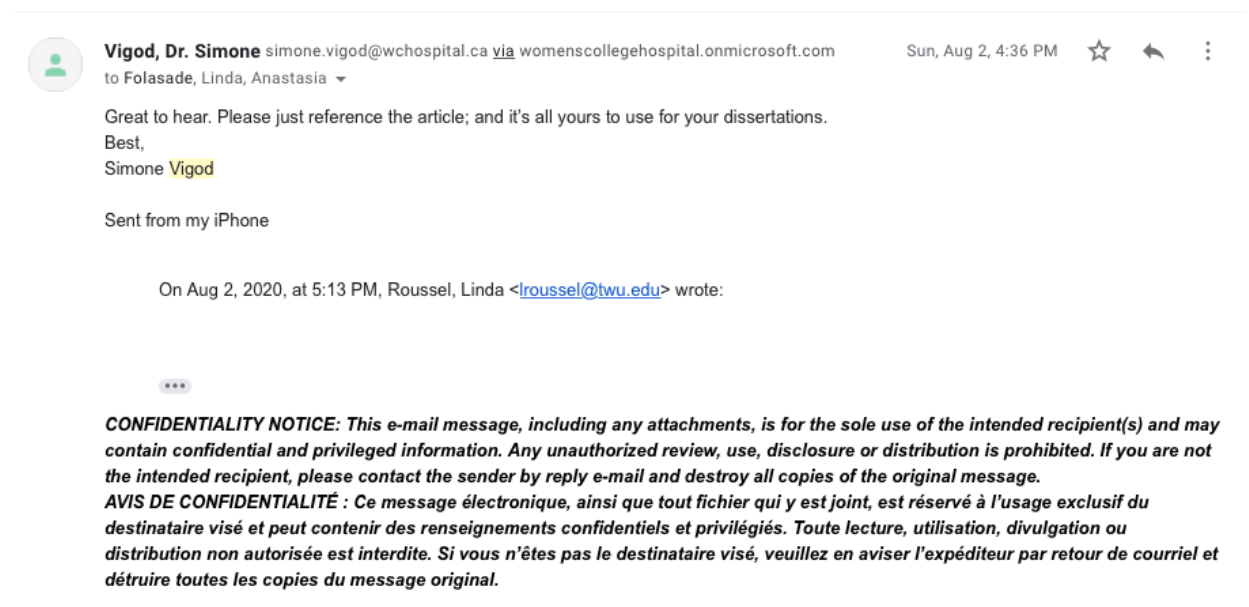
Appendix H

READMIT Tool

Table 4
READMIT index (Range 0–41 points) for quantifying risk of 30-day readmission after discharge, with points assigned to values within each of the 12 variables in the index.

Risk factor	Variable	Value	Points
"R" – Repeat admission (lifetime)	Number prior to index	0	0
		1 to 2	2
		3 to 5	5
		6 or more	7
"E" – Emergent admission	Threat to others	No	0
		Yes	1
	Threat to self	No	0
		Yes	1
	Unable to care for self	No	0
		Yes	2
"A" – Age	Age group (years)	Older than 94	0
		85 to 94	1
		75 to 84	2
		65 to 74	3
		55 to 64	4
		45 to 54	5
		35 to 44	6
		25 to 34	7
		18 to 24	8
"D" – Diagnosis and discharge	Primary diagnosis	Alcohol or substance	0
		Depression	2
		Psychosis or Bipolar	4
		Other	3
	Any personality disorder	No	0
		Yes	2
	Unplanned discharge	No	0
		Yes	5
"M" – Medical morbidity	Charlson comorbidity score[a]	0	0
		1 to 2	1
		3 or more	2
"I" – Intensity (past year)	Outpatient psychiatrist visits	Less than 2	0
		2 or more	2
	Emergency department visits	None	0
		1 or more	3
"T" – Time in hospital	Length of stay (Days)	More than 28 days	0
		15 to 28	3
		Less than 14	4
Total possible score			**41**

[a] For Charlson comorbidity score, assign 1 point each for previous myocardial infarction, cerebrovascular disease, peripheral vascular disease, diabetes; 2 points each for heart failure, chronic obstructive pulmonary disease, mild liver disease, any tumor (including lymphoma or leukemia); 3 points each for dementia, connective tissue disease; 4 points each for AIDS and moderate or severe liver disease; and 6 points for metastatic solid tumour.

Appendix I

Permission to use READMIT Tool

Vigod, Dr. Simone simone.vigod@wchospital.ca via womenscollegehospital.onmicrosoft.com   Sun, Aug 2, 4:36 PM   ☆   ↩   ⋮
to Folasade, Linda, Anastasia ▾

Great to hear. Please just reference the article; and it's all yours to use for your dissertations.
Best,
Simone Vigod

Sent from my iPhone

On Aug 2, 2020, at 5:13 PM, Roussel, Linda <lroussel@twu.edu> wrote:

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Appendix J

Quality Improvement Project Approval

Oceans Behavioral Hospital

Name: Folasade Olayiwole and Anastasia Sancho

Credentials: Folasade Olayiwole Psychiatry Mental Health Nurse Practitioner
and Anastasia Sancho Family Nurse Practitioner, B-C

Organization: Texas Woman's University   **Department** College of Nursing

Job Title: DNP Students

Has your Supervisor Approved this Project? Yes ☒ No ☐

> If no, please explain: click here to enter text.

Are you currently a student? Yes ☒ No ☐

> If yes, where? Texas Woman's University

> Faculty Advisor/Chair Name: Dr. Linda Roussel

> Email: lroussel©twu.edu

Project Summary

Project Title: Identifying risk factors to reduce readmissions for patients with psychiatric disorders: A quality improvement project

Project Type: Quality/Process Improvement
Oceans Behavioral Hospital: Quality

PICOT or Research Question: P- Adult patients (18 years- 65 years old) diagnosed with schizophrenia and/or Bipolar Disorder readmitted between Jan 1, 2020- June 30, 2020, at project site. I=Secondary data analysis of paper charts and electronic health records (EHRs) of post-discharged hospitalized patients diagnosed with Schizophrenia and/or Bipolar Disorder to identify risk factors for readmission 30 days' post-discharge (6 months of data). C=No comparison O=Recommendations for best practices based on results of secondary data analysis and best evidence-based guidelines to decrease 30 day readmission in patients with Schizophrenia and/or Bipolar Disorder T=Jan 1, 2020 - June 30, 2020 (chart extraction) .

Background: There has been a steady increase in hospital readmission over the past few years (Centers for Medicare & Medicaid Services [CMS], 2020). Hospital Readmissions Reduction Program (HRRP), in the Affordable Care Act (ACA), was passed in March 2010 to introduce financial penalties to hospitals that have higher readmission rates for specific medical conditions (CMS, 2017). According to (CMS, 2020) there have been many strategic programs put in place to reduce the rates of readmission in hospitals nationwide. Readmission rates are considered a measure of the quality and effectiveness of mental health services (Marcus et al., 2017). An excess of $23 billion is spent on the direct care of patients diagnosed with schizophrenia, however schizophrenia patients only account for 1% of the population in the United States (Roque et al., 2017). The National Behavioral Health Quality Forum (NBHQF) is endorsed by SAMHSA to identify gaps in care. A gap identified by NBHQF is the 30 day readmission rate of psychiatric inpatients. In order to improve the readmission rate in the mental health population risk factors need to be identified (Roque et al., 2017). Doing a retrospective chart review to determine the 30- day risk factors for readmissions in this population, will help decrease readmission rates. Reducing readmission rates not only

Appendix L (cont'd)

improves the outcomes of the mental health population, their families and surrounding communities, it will also improve the hospital budgets (CMS,2020). With the continued increasing in the readmission rates in Texas, if risk factors are not identified and quality implementations not in place, it will affect the reimbursement to the mental health hospitals in the state of Texas (Substance Abuse and Mental Health Services Administration [SAMHSA], 2018).

Target Population: Inclusion Criteria: Adults (aged 18 to 65) diagnosed with Schizophrenia and/or Bipolar Disorder hospitalized January 1, 2020- June 30, 2020, at the project site.

Exclusion Criteria: Under the age of 18 over the age of 65, drug-induced admissions, readmissions before January 1, 2020, or after June 30, 2020.

Project Interventions: This project would be conducted at the project site in the 50 —bed inpatient psychiatric unit. The hospital accepts both males and female adults with mental health disorders that could possibly be selected for this project. The Model for Improvement will be used as the methodological framework for this DNP project. Associates in Process Improvement made this model combines three goal statements with the original Plan-Do-Study-Act (PDSA) process improvement cycle that was developed by created by Dr. Deming ((Deming, 1986). The initial step in this model is to set a goal, establish a metric to use to measure the progress towards the goal, be set, and an innovation to be used to achieve it. Once these are selected, the innovation must be tested (Institute for Healthcare Improvement, 2019). This is accomplished using the PDSA cycle. The first step is to make a detailed plan that includes aims, objectives, and predictions about the innovation; the second step is the testing and the collection of data of the innovation. The third is to study or analyze the results and come to conclusions about the innovation. Lastly, is to act, based on the results, the innovation may be disseminated to a larger scale, or the innovation needs to be remolded at this point it would go back to the plan step, and the cycle can be started all over again. PDSA cycle allows for continuous improvement (Institute for Healthcare Improvement, 2019). The audit tool would be used to extract data to identify the risk factors of readmissions 30. We will extract data from the EHR of patients admitted from January 1-June 30, 2020, using the above inclusion/exclusion criteria. From the data extracted, the DNP students will do secondary data analysis to identify the risk factors that increase a patient's risk for readmission based on the results of the audit tool. The risk factors will be compared to the research evidence and recommendations for best practices that would be shared with providers at the project site. An audit tool would be developed based on the research and expert provider feedbacks. The audit tool would be used to extract data to identify the risk factors of readmissions 30. We will extract data from the EHR of patients admitted from January 1-June 30, 2020, using the above inclusion/exclusion criteria. From the data extracted, the DNP students will do secondary data analysis to identify the risk factors that increase a patient's risk for readmission based on the results of the audit tool. The risk factors will be compared to the research evidence and recommendations for best practices that would be shared with providers at the project site.

Outcomes: There are three outcome measures of interest for this project. The primary focus is on outcome measures of readmission rates within 30 days, provider satisfaction, and patients' functionality in adult patients age 18 to 65 with schizophrenia and/or bipolar disorder. The second measure is the process measures related to the quality and efficiency of the audit tool that would be made based on evidence-based practice and the experts at the project site. An audit tool would be used to identify the risk factors of increased 30 days' readmission rates by auditing six months' worth of charts of patients that are readmitted within 30 days from January 1, 2020 to June 30, 2020.

Data Collection: Readmit tool and an audit tool developed by the DNP students in conjunction with the expert provider feedbacks will be used to do the data extraction.

Data Analysis Plan: Descriptive analysis will include categorical and ordinal, descriptive statistics, means, medians, mode, frequency, and standard deviation (T-test) to visually describe causes of readmissions within 30 days. The Ordinal categorical data, such as low risk, moderate risk, and high-risk scores from the audit tool, would be analyzed to know the highest risk factors based on the audit tool. A Bar chart would represent the categorical data, and the scores of the audit tool would be evaluated and compared using Pearson's Chi-square, T-test, and power Analysis.

Appendix L (cont'd)

Sustainability Plan: Project Sustainability: Dissemination of results of projects and creative work such as posters influence discussion of baseline data, and best practices for NP providers' strategies for managing this patient population. Dissemination of designs, processes, and outcomes allows others to truly understand the project. Report findings and recommendations to Oceans Behavioral Hospital Present DNP project results at local and regional conferences through poster and PP presentations. Sustainability: OBH providers, the DNP student, and other stakeholders goal is long-term outcomes.

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Signature of Chief Medical Office

Dr. James Butler

Date: