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## A Quality Improvement Project Educating Behavioral Health Clinicians on the Utility of the READMIT Clinical Index to Predict Risk of Psychiatric Re-Hospitalization of Adults

Erika Ryan

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A Quality Improvement Project Educating Behavioral Health Clinicians on the Utility of the  
READMIT Clinical Index to Predict Risk of Psychiatric Re-Hospitalization of Adults

Erika J. Ryan

University of Massachusetts, Amherst

College of Nursing

DNP Project Chair: Gabrielle Abelard, DNP, PMHNP, PMHCNS-BC

DNP Project Mentor: Heather Murphy, MSW, LICSW

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## UTILITY OF THE READMIT CLINICAL INDEX

### Abstract

**Background:** The need for preventative means to reduce the high percentage of adult psychiatric readmission rates is striking. Increased cost of readmission for psychiatric higher level of care and the decline in the individuals' ability to live in the community are clear indicators of this crisis.

**Purpose:** The aim of this quality improvement project was to present the current evidence around the READMIT clinical risk index to identify adults who may be at risk for early psychiatric readmission to community based behavioral health clinicians.

**Methods:** The project was designed using a quality improvement (QI) approach with the aim of enhancing nursing knowledge of clinicians through a presentation covering the use of the READMIT clinical risk index. Data collection included the analyzation of scores from a pre presentation and post presentation test; a Likelihood of Use survey and the percentage of clinicians who used the index during a two-month roll out period.

**Results:** Twenty-two behavioral health clinicians participated in the presentation on the READMIT index. The results of the pre and post-test analysis demonstrated the average learning gain was 87.50%, which exceeded the objective of 80%. Additionally, the majority (76.18%) of the behavioral health clinicians responded that they felt the clinical risk index is a valuable assessment tool. However, data retrieval demonstrated that none of the participants had used the READMIT clinical risk index during the roll out period.

**Conclusion:** The participants responded positively about the effectiveness of the risk index as evidenced by the responses on the Likelihood of Use survey. Further steps are needed to encourage the targeted use of the READMIT index in everyday practice.

**Keywords:** education, training, clinicians, community mental health, psychiatric re-hospitalization, intervention, guidelines, patient outcomes

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### A Quality Improvement Project Educating Behavioral Health Clinicians on the Utility of the READMIT Clinical Index to Predict Risk of Psychiatric Re-Hospitalization of Adults

A growing concern over the past few decades has been in regards to the high number of community dwelling adults who require readmission back to a higher level of psychiatric care shortly after discharge. Included in a higher level of psychiatric care are inpatient hospital and respite unit admissions. These concerns relate to the assertion that frequent re-hospitalizations result in high costs of inpatient care, and disruption to the lives of the individuals causing a lessened ability to live independently (Taylor et al., 2016). The aim of this Doctor of Nursing Practice (DNP) project is to introduce a clinical index as a tool to assist behavioral health clinicians in the identification of adults in the community who may be at risk of early readmission to a higher level of psychiatric care.

#### **Background**

Evidence from the literature demonstrates broad agreement on the need for a standardized transition from higher levels of care, such as inpatient hospitalizations and respite care, to a return to the community (Taylor et al., 2016; Shaffer et al., 2015; Noseworthy et al., 2014). Roughly 40% to 60% of psychiatric patients hospitalized are anticipated to return to the hospital within twelve months of discharge (O'Connell et al., 2018). A procedure for behavioral healthcare providers to identify these patients is needed.

Rylander et al. (2016) reviewed 693 medical records to determine risk of readmission. Factors that were significant in the prediction of readmission included being of the African American race (OR=2.7; 95% CI, 1.5-4.8), diagnosis upon discharge of schizophrenia (OR=2.1; 95% CI, 1.25-3.6), a co-morbid personality disorder (OR=2.1; 95% CI, 1.2-3.5), any prior admissions for medical reasons (OR=3.2; 95% CI, 1.9-5.4), any prior psychiatric hospitalization

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(OR=3.5; 95% CI, 2.1-5.9), the need for use of emergency medications during a hospitalization (OR=2.9; 95% CI, 1.4-6.1), and not having a documented follow-up appointment when discharged (OR= 1.7; 95% CI, 0.99-2.8). Nearly 89% of hospitalizations for diagnosed mood disorder and 78% of stays for schizophrenia lead to patients being discharged to home or self-care. In contrast, only about 62% of patients admitted for non-mood disorders had a discharge to home or self-care (Heslin & Weiss, 2015).

Current evidence supports the need for use of community-coordinated services to maintain health and stability post discharge as a means to decrease psychiatric re-hospitalization (Chang & Chou, 2015). A plan upon discharge that includes community supports and a way to identify individuals who would benefit from community supports is crucial. It was noted that individuals who kept at least one outpatient appointment were half as likely to be re-hospitalized compared to individuals who did not keep any out-patient mental health appointments (Taylor et al., 2016). An inability to effectively identify at risk adults is a factor that leads to increased psychiatric hospitalizations.

During the years from 2003 to 2011 in the United States, hospitalization for a diagnosed mental disorder increased at a rate faster than all other types of hospitalizations i.e. maternal/neonatal, injury, medical, and surgical (Heslin & Weiss, 2015). In an effort to improve this problem, Medicaid Services in 2012 set a standard that hospitals with high preventable readmission rates would receive reduced payment (Rylander et al., 2016) thereby affecting overall healthcare costs as well as the care of this high risk population. Also, in the U.S in 2012, there were about 847,000 individuals hospitalized for mood disorders, of these 9% were readmitted within 30 days with a primary diagnosis of mood disorder. Another 12.6% were readmitted with any mood disorder diagnosis and 15% were readmitted for other behavioral health reasons (Heslin & Weiss, 2015).

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The cost related to frequent admission to a higher level of psychiatric care is greater than community based care. In 2006 as reported by Stensland, Watson and Grazier (2012), the average five day hospital stay for an individual with Bipolar Disorder was \$4356 and “22% of total hospital costs were attributable to adults with a [mental or substance use] disorder in 2004” (Stensland, Watson, & Grazier, 2012, p.666). As a proactive approach to the problem of frequent early re-admissions to a higher level of psychiatric care, Vigod et al. (2015) developed the READMIT clinical risk index.

The READMIT tool is a helpful index to identify individuals at risk for psychiatric re-admissions and a valuable tool in the reduction of readmission rates among adults with behavioral health disorders. The mnemonic for remembering the variables in the READMIT clinical index is as follows: history of repeat admissions (R); emergent nature of the index admission (harm to self, harm to others, inability to care for self) (E); age (A); diagnoses of psychosis, bipolar disorder and personality disorder; and unplanned discharge (D); medical comorbidity (M); intensity of out-patient and emergency department use prior to admission (I); and time in hospital (T) (Vigod et.al., 2015). The total number of possible points or READMIT score range from 0 to 41. Each one point increase in the READMIT score increased the odds of 30-day readmission by 11% (OR 1.11, 95% CI 1.10-1.12) (Vigod et.al., 2015). This risk tool was able to be predictive at 90% of those targeted for readmission. The index is internally validated to quantify 30-day readmission risk after psychiatric hospitalization with a probability of 30 day readmission expectation ranging from, 2% with a READMIT score of 0, to a 49% probability with a score of 41, and “has moderate discriminative capacity in both derivation (C-statistic = 0.631) and validation (C-statistic = 0.630) datasets” (Vigod et.al., 2015, p. 205) (See READMIT Clinical Risk Index Appendix A).

Specifically with this DNP project, behavioral health clinicians will receive education on



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the use of the READMIT clinical risk index and data will be collected to analyze frequency of use in practice by the clinicians in their assessments of adults at potential risk for psychiatric readmissions.

### **Problem Statement**

The rise in readmission rates of recently discharged adults with behavioral health diagnoses result in increased health care costs, a disruption in the daily lives of those adults and compounds their challenges towards achieving independence. A main cause of this increase is inadequate identification of those who would benefit after discharge from comprehensive supports during their transition back to the community.

The quality improvement project will focus on education of behavioral health clinicians regarding the importance and utilization of the READMIT clinical risk index. This risk index serves as a method to identify adults at risk for early psychiatric readmission to a higher level of care.

### **Review of the Literature**

A comprehensive search of the literature was completed. The first database PsychINFO was accessed using search terms “education or training “and “clinicians or therapists or counselors or nurses or doctors” and “patient outcomes or re-hospitalization” and “community mental health “. After the application of date parameters 2011 to 2019 and search of only academic journal articles, this search yielded 18 articles. Articles that were not related to training of staff were excluded and the remaining two articles were chosen for review.

The next database accessed was CINHALL Complete using search terms “education or learning or teaching “ and “community mental health or clinicians or nurses” and “patient outcomes”, this search yielded 1047 results. Due to the high number of articles, date parameters of 2015 to 2019 and only peer reviewed academic journals were applied, the search yielded 294

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articles. An additional parameter of full text articles in the English language was added which yielded 116 articles. Articles which had nursing students or education in schools or universities in the titles were excluded. Articles with a focus on children as well as articles not related to education of staff were also excluded, of the remaining 10 articles, one was chosen for review based on a higher quality and level of evidence.

Additional search terms were applied to the database CINAHL Complete, “psychiatric hospitalization and readmission” and “intervention or guidelines”. This search yielded 30 articles which after applying date parameters of 2011 to 2019 and academic journals, the resulting number of articles were 13. Articles related to military veterans and not related to behavioral health were excluded and seven articles were selected for review.

The initial review of the articles in this search support education of staff to improve confidence related to performance and the use of the attained educational information following an educational training. The articles also support the predictive ability to assess and identify potential early psychiatric readmission and the resulting benefit of community support interventions in the reduction of psychiatric re-hospitalizations.

Level of evidence I, II or III that were written in the last eight years were preferred and viewed for content and validity using the John’s Hopkins Evidence Level Model (2017). The chosen ten studies include one meta analysis of randomized control trials (Correll et al, 2018) level of evidence I-A. One randomized controlled trial (Martino et al., 2011), one cluster controlled trial (Yang et al., 2017), one prospective study (Shadmi et al., 2018), one experimental study (Maples et al., 2012), one systematic review meta-analysis of controlled trial, (Holzinger et al., 2017) which are all level of evidence I-B. Three quasi-experimental studies (Siebeko et al., 2018; Taylor et al., 2016; Shaffer et al., 2015) level of evidence II-B. One qualitative descriptive study, (Noseworthy, Sevigny, Laizner, Houle and Riccia, 2014) level of evidence III-A.

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### Synthesis

The articles reviewed explored how clinicians can predict risk factors for re-hospitalization, what interventions prove effective in decreasing readmission rates among adults and the effect of education on staff confidence, knowledge attainment, and skill following an educational training. Increased staff confidence of the education learned, improves utility in clinical practice and provides better patient outcomes (Yang et al., 2017; Sibeko et al., 2018).

In a cluster controlled trial by Yang et al. (2017) seven clinical teams of healthcare professionals working for Hospice Care consisting of four to seven doctors and nurses per team were assigned to control and intervention groups. The control group consisted of four clinical teams who provided care as usual. The intervention group, which consisted of the remaining three clinical teams, was provided a 30 minute educational training which included a tool to help the professionals structure their assessment questions (Yang et al., 2017). Post training analysis of the two groups demonstrated that the intervention group included more healthcare professional referrals of patients to a Masters level Social Worker (MSW) for further support after use of the tool; 49.2% in the intervention group compared to 35.0% in the control group,  $p=0.057$  (Yang et al., 2017). Comparing assessments completed by the intervention group and control groups, by means of a medical record review, evidence shows that the intervention group completed more assessments as evidenced by Fisher's between-group differences exact test,  $p\leq 0.0001$ , the intervention group completed the assessment 32.1% of the time and the control group 0% (Yang et al., 2017). This demonstrates how training provided to healthcare professionals led to a greater utility of an assessment tool and may contribute to better patient outcomes.

Increased knowledge of skills obtained during an educational training positively enhances staff confidence, which directly improves quality of care provided to patients (Sibeko et al.,

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2018; Martino et al., 2011). A quasi-experimental study evaluating educational training of community health workers (CHW) was conducted by Siebeko et al. (2018). The purpose of the CHW training was a focus on mental health and assessment for improved knowledge, confidence and attitude toward mental illness post education (Siebeko et al., 2018). There were 58 CHW participants, baseline data was collected to assess for confidence, attitudes and knowledge (Siebeko et al., 2018). At the end of each training session data were collected, providing participant feedback about the session and ultimately, at the close of the educational program, post-education data were collected for confidence, attitude and knowledge (Siebeko et al., 2018). Additionally, three months after the end of training, data related to the knowledge retained from the educational training were collected (Siebeko et al., 2018). Results showed that training significantly increased confidence in staff, 54 participants' average confidence score pre and post education showed this increase,  $t=-8.749$ ,  $df = 54$ ,  $p < 0.001$  (Siebeko et al., 2018). Attitudes and knowledge also showed an increase post education with 46 participants having improved their ability to correctly diagnose based on a case study (63.04%), this improvement remained when comparing the post-assessment and 3-month assessment scores (Siebeko et al., 2018). Regarding attitude, there were many areas assessed, one area of assessment was benevolence, cluster scores significantly increased post training,  $t=-1.818$ ,  $df = 44$ ,  $p\text{-value} = 0.0379$  (Siebeko et al., 2018). The participants expressed contentment with the training and relayed feelings of gratitude and empowerment associated with their role (Siebeko et al., 2018). This study demonstrates the powerful impact education can have on staff's knowledge, confidence, skills and attitude toward mental illness.

A study educating behavioral health clinicians on Motivational Interviewing (MI), an evidence-based model of treatment for substance use, was conducted by Martino et al. (2011). A randomized control trial of 92 clinicians from twelve outpatient programs treating substance

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abuse were randomly allocated to an expert led training group (EX), a self study group (SS) and a train the trainer group (TT) (Martino et al., 2011). All of the clinicians in the EX and TT groups attended an educational training which consisted of 15 hours, showing a slightly better rating of the training led by the expert trainer identifying that there were more specific strategies covered, however both the train the trainer and the expert led trainings received in general high ratings (Martino et al., 2011). The clinicians in the SS group were given the MI textbook, treatment manual, training videotapes and were asked to spend 20 hours studying the materials over the course of 12 weeks (Martino et al., 2011). Assessment of clinician knowledge and utility of education attained shows higher knowledge retention and utility in the EX and TT groups than in the SS groups (Martino et al., 2011). Expert led training versus a self study model shows a significant increase of 76% versus 33% in skills and competence at 12 weeks post education follow up (Martino et al., 2011).

The majority of the articles related to psychiatric readmission, support the need for early identification of at risk individuals. The average five day hospital stay for an individual with Bipolar Disorder was \$4356 and “22% of total hospital costs were attributable to adults with a [mental or substance use] disorder in 2004” (Stensland, Watson, & Grazier, 2012, p.666). The literature also supports the use of interventions that include support from behavioral health professionals, psycho education, medication and symptom monitoring as well as ensuring connections with social services to help maintain stability in the community (Maples et al., 2012; Holzinger et al., 2017; Shaffer et al., 2015; Taylor et al., 2016). Results from the quasi-experimental study of 195 individuals who were readmitted to a psychiatric hospital within 30 days of having been discharged, by Taylor et al., (2016), evaluated 87 individuals who received the intervention of a brief interview and usual care, the remaining were in the control group receiving solely usual care. The interview explored barriers and motivational factors relating to

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the continuing of outpatient treatment and assistance with any needed referrals (Taylor et al., 2016). Results showed that individuals who did not have an interview and community support plan were more than twice as likely to need readmission within 30 days (Taylor et al., 2016). The use of community supports in the maintenance of people remaining in their communities is widely documented in the literature.

A quasi-experimental investigation by Shaffer et al. (2015) was conducted at six community-based provider organizations and focused on a research model connecting patients to community resources and treatment. A sample of 149 adults whom were readmitted within 30 days of a psychiatric hospital discharge, were referred to an acute level of service coordination (ASC) implementing BCTI (brief critical time intervention). A comparison cohort of 224 adults served by ASC at the same organizations before implementation of BCTI was derived from administrative data. This study found with the use of an intervention model to assist in better utilization of community support services, that 28% of the 149 patients were readmitted within 30 days of discharge, as compared to 47% of 224 patients who were not in the intervention group (Shaffer et al., 2015). The positive outcomes of early intervention services compared to treatment as usual is supported by a meta-analysis conducted by Correll et al. (2018) noting psychoeducation, medication adherence and social supports provide superior outcomes and maintenance of community living.

Shadmi et al., (2018) looked at patient self-report of symptoms and quality of life using patient reported outcomes (PROMS), in a prospective study with 2842 adults with a diagnosis of schizophrenia consented to participate in the study. Of the participants 10% had been hospitalized within the past six months. The scales used in the study were the Effects of Symptoms on Daily Functioning (ESDF) and Quality of Life (QOL). The results grouped the participants into risk levels and analyzed readmission at six and 12 months. The scales

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demonstrated a moderate to strong correlation  $r = 0.48$ ;  $p < 0.001$  and risk of psychiatric hospital readmission (Shadmi et al., 2018). The highest risk category in the 6 month model had a positive predicted value of a 3.5 fold increased likelihood of readmission within the next six months when compared to the total consumer population (Shadmi et al., 2018). Results demonstrated that the holistic view of valuing an individual's experiences via self-reporting as well as improving the individuals' self-management of their illness through learning about monitoring for self-management of symptoms, empowered individuals. This resulted in reduced symptoms, improved attitude and adherence to medication, improved functioning, effective coping and quality of life on the part of the patient (Shadmi et al., 2018). The reduced readmission rates were seen in all risk groups except for those who reported lower scores on QOL and ESDF which predicts early signs of deterioration (Shadmi et al., 2018).

The experience of mental health clinicians working to support behavioral health patients by securing community supports was studied by Noseworthy et al. (2014) the study showed a need for knowledge to be more efficiently shared between providers and clinicians to establish trust with the patient. This along with sufficient community support services was reported by mental health clinicians to be important components to a smooth transition from a higher level of psychiatric care to stability in the community (Noseworthy et al., 2014).

The articles reviewed explored how providers can predict risk factors for re-hospitalization assisting in identification of at risk adults and what interventions prove effective in decreasing readmission rates. The literature review supports the need for early intervention, psycho education and monitoring to maintain stability and connections in the community. The need to identify at risk adults is crucial in the prevention of psychiatric readmissions and in the offering of community supports.

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Literature supports the training of professionals which improves confidence and the utility of standardized tools for improved patient outcomes and the importance of the identification of at risk individuals in the prevention of psychiatric readmissions. The articles reviewed support the need for the DNP project to assist in the identification of adults at risk for psychiatric readmissions.

### **Evidence Based Practice**

The DNP project includes education of behavioral health clinicians on the READMIT clinical risk index and its application during the first out-patient behavioral health appointment following discharge from a higher level of psychiatric care. The READMIT clinical risk index has been selected because to date there is a gap in literature regarding other tools that are used to assess for potential risk of psychiatric readmission, and for this reason the READMIT clinical index was selected. A descriptive retrospective study using the READMIT clinical risk index was conducted by Roque, Findlay, Okoli and El-Mallakh (2017). The findings of this study using a convenience sample of 1205 medical records having assessable risk scores, noted that the higher the clinical risk score, specifically in areas of quantity of lifetime admissions, being a younger adult and having a diagnosis of a mood disorder or personality disorder increased the probability of a 30 day readmission among the study sample (Roque, Findlay, Okoli, & El-Mallakh, 2017). The mean READMIT risk score in this study was 20 (SD=4.2), and included a higher lifetime repeat admission score compared to those who were not readmitted in 30 days (M=5.7 vs. M=3.4,  $p < .0001$ ), (Roque, Findlay, Okoli, & El-Mallakh, 2017). Roque and colleagues further explained that quantity of lifetime admissions is the most modifiable risk variable. The study supports the utility of this risk index in clinical practice with the goal of identifying vulnerable adults at high risk of readmission and reducing repeat psychiatric readmission rates. The use of this standardized tool will assist clinicians in predicting risk of



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early psychiatric re-hospitalization in adults. The clinical index tool also allows for early identification of possible patient dysregulation and deterioration thereby assisting in the prevention of frequent crisis use, ER use and ultimate need for higher level of psychiatric care. The intervention that is part of this project is the education of behavioral health clinicians on the use of the READMIT clinical index.

### **Theoretical Framework/Model**

The theoretical framework utilized for this project is the National Quality Strategy (NQS) developed by the Agency for Healthcare Research and Quality on behalf of the U.S. Department of Health and Human Services (HHS) (AHRQ, 2017). The three main focuses of this framework are affordable care, better care, healthy people and communities (Bonnell & Smith, 2018). Additionally, the model also reviews six priorities which include engaging individuals and their families in care, reduction of harm associated with health care, the promotion of effective treatments and prevention, good communication and care coordination, engaging members of the community to promote best practices related to health, and the making of quality health care affordable to everyone (Bonnell & Smith, 2018) (See NQS Model Appendix B). In line with the theoretical framework, the DNP project focuses on the education of the behavioral health clinicians at the out-patient behavioral health clinic in Western Massachusetts on the use of the READMIT clinical index to identify individuals at risk; this supports better care, effective treatments and prevention promoting healthy people and healthy communities.

Through the identification of at risk adults, it is possible for an agency to offer added supports which will improve mental health stability. The use of this clinical index will allow for at risk individuals to be identified so referrals and care coordination in support of the individuals and their families may be completed, thereby assisting in their ability to remain and thrive in their community. The promotion of the READMIT clinical index may reduce the cost of health

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care by maintaining individuals in their homes and communities. The preceding points further align with the additional six priorities stated in the NQS of engaging individuals and their families in care, reduction of harm associated with health care, the promotion of effective treatments and prevention, good communication and care coordination, engaging members of the community to promote best practices related to health, and the making of quality health care affordable to everyone. The overarching goal of this project is the reduction of early readmission rates through the education of outpatient clinicians to the utility of a standardized clinical index to identify adults at risk of psychiatric readmission to a higher level of care.

### **Methods**

#### **Description of Community Group and Population**

A community based, non-profit out-patient behavioral health clinic was the site selected for this DNP project intervention. The out-patient behavioral health clinic is located in an underserved area in Western Massachusetts. Clients who receive services at this clinic are diverse, primarily of lower socio-economic status, and speak predominantly Spanish. Based on outpatient demographic data collected, and provided by the agency's Clinical Operations Director, the total numbers of active clients are 2,422.

The behavioral health clinicians at this clinic primarily see the patients first following discharge from higher levels of psychiatric care, including, inpatient hospitalization and respite care. The clinic providers are masters level or higher and include 19 full-time and four fee-for-service behavioral health clinicians who are primarily bilingual in English and Spanish and specifically include, Licensed Psychologists, Licensed Alcohol and Drug Counselors, Licensed Social Workers, and Licensed Mental Health Counselors. As a collective group of providers they are trained in Dialectical Behavior Therapy (DBT), Cognitive Behavioral Therapy (CBT),

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Trauma Focused Cognitive Behavioral Therapy (TFCBT), Attachment Regulation and Competency model (ARC) as well as Motivational Interviewing (MI).

### **Goals, Objectives and Expected Outcomes**

One of the goals of this DNP project was to provide education to behavioral health clinicians on the importance and use of the READMIT clinical index. The index is used to identify adults with behavioral health disorders who are at risk of early psychiatric readmission to higher levels of care. The identification of at risk individuals assists the agency in determining consequential offering of supports based on risk index scores to maintain an individual in their community, decreasing health care cost and improving an individual's ability to remain in their own environment, increasing positive patient outcomes.

The goals of this project intervention were aimed at providing education and to assess the attainment of knowledge, through a pre and post-test pertaining to the READMIT clinical index tool. As well as to measure the clinician's perception of the clinical index tool using a Likelihood of Use Survey and to decipher whether the tool was a valuable addition to clinical practice. Lastly, the final goal determined utility of the READMIT tool by assessing the clinicians' application of the index in clinical practice.

Specific goals and objectives included:

#### Goals:

1. A power point presentation will be the mode of education on the use of the READMIT index. The DNP student will conduct a presentation during two regularly scheduled staff meetings.
2. The behavioral health clinicians' attainment of knowledge using a pre and post-test about the READMIT clinical index tool will be administered during the presentation.

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3. Following the educational presentation, assessment of the likelihood of use of the READMIT index in clinical practice via survey will be given.
4. Assessment of the number of clinicians using the clinical index in clinical practice during the two months following education.

### Objectives:

1. Behavioral health clinicians will be educated on the use of the READMIT clinical index with scores demonstrating an 80% increase in knowledge from pre-test to post-test following the educational presentation.
2. Behavioral health clinicians will have a 40% or more likelihood to use the READMIT clinical index, as responded on the Likelihood of Use survey.
3. The READMIT clinical index usage will increase to 40% within the two months following the educational presentations.

### Expected Outcomes:

1. Improved understanding of the use of the READMIT clinical index by behavioral health clinicians.
2. Utility of the READMIT clinical index by behavioral health clinicians in everyday practice.

## **Implementation**

This DNP project took place during the fall of 2019 and consisted of two planning meetings with the project site's Clinical Operations Director/Project Mentor to review project goals and objectives, data collection procedures and scheduling of the educational presentation. Both meetings occurred in October and included subsequent planning meetings with key stakeholders including the Clinic Division Director and the Director of Quality Assurance and Training. After discussion with the agency stakeholders the presentation schedule and goals

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were established. The educational presentation on the READMIT Index for the behavioral health clinicians occurred on November 12,<sup>th</sup> and 13,<sup>th</sup> 2019. Also as follow up to the presentation and implementation of the READMIT Index, this DNP student shared the results of the collected data with the agency's Clinical Operations Director on February 11,<sup>th</sup> 2020, (See Project Timeline Appendix C).

This DNP project used a Quality Improvement (QI) design with a convenience sample of participants currently employed at the project site (n=22). The QI project included an intervention to educate community based behavioral health clinicians during two regular staff meetings in November 2019, regarding the importance and use of the READMIT clinical risk index. The clinical index is a standardized tool to identify adults with a diagnosed mental health disorder who after discharge, are at a risk of early readmission to a higher level of psychiatric care.

The two educational presentations were completed by the DNP student with the assistance of the behavioral health clinic's clinical supervisor during two regularly scheduled staff meetings covering the same information. A PowerPoint presentation prepared by the DNP student was used to educate participants about the READMIT clinical index. The presentation included the following information; project goals and objectives and the importance and rationale for the use of the READMIT clinical index. Other components of the PowerPoint presentation delivered to participants included information describing the relationship between frequent re-hospitalizations and the use of the READMIT clinical index as a tool to identify at risk individuals. Also an introduction of the tool and instructions on how to use the tool in clinical practice was also provided. Ultimately, the presentation reinforced the use of the tool and directives were given to the participants that the READMIT clinical index had been included in

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the electronic health record for ease of inclusion in existing daily workflow (See Educational Power Point Presentation Appendix D).

### **Measurement Instruments**

There were two measurement tools used for this QI project including a pre and post-test and a Likelihood of Use survey. In addition to the pre and post- test and the Likelihood of Use survey, data was collected through the agency's electronic health record (EHR) to determine the utility of the READMIT index; the ensuing paragraph describes the measurement tools in more detail.

The DNP student designed a pre-test and a post-test consisting of four multiple choice questions addressing the same content, which covered evidenced based information related to the READMIT clinical index. The multiple choice questions were designed using the objectives of the DNP prepared PowerPoint presentation and included questions asking; what the mnemonic READMIT stood for, what population the clinical index evaluated, what primary theme was being assessed, and what were the range of risk scores. Quantitative data pertaining to the pre and post-test scores were collected. Each pair of pre and post-tests was assigned a number and the DNP student placed the tests in a plain envelope assigned with the same number to ensure anonymity. Following an introduction of the DNP project the envelopes were passed out to the participants and they were asked to keep the tests and envelopes together and to complete the pre-test before the start of the educational presentation. At the end of the PowerPoint presentation the participants were given time for questions and comments and then were asked to answer the questions on the post-test (See Pre and Post Knowledge Based Test Appendix E). Following the administration of the post-test, the DNP student collected the envelopes and provided the participants with an anonymous survey to complete.

## UTILITY OF THE READMIT CLINICAL INDEX

The second measurement tool implemented for the QI project included the use of a DNP student designed survey to assess the participants' likelihood that they would use the READMIT Index. The participants were asked to complete an anonymous five question survey related to the effectiveness of the READMIT clinical index for the patients supported by the participants. The Likelihood of Use survey utilized a Likert scale, ranging from 1 to 5, "not likely" to "very likely". Questions included in the survey pertained to; treatment planning, the assessment process, how likely the participants would use the clinical index tool regularly in practice, and the participants' perceived benefit of the tool on patient outcomes (See Likelihood of Use Survey Appendix F).

The third measurement utilized for this project assessed utility of the READMIT index in clinical practice by the behavioral health clinicians at the project site and was implemented following the administration of the pre and post-test, the presentation, and the administration of the Likelihood of Use survey. Clinicians were asked to utilize the READMIT index as they deemed appropriate in clinical practice during a two-month roll out period following the educational presentation starting November 14<sup>th</sup>, 2019 and concluding January 14<sup>th</sup>, 2020. At the completion of the two month roll out, data was retrieved through the agency's electronic health record (EHR) utilizing Structured Query Language (SQL). The SQL is a data retrieval program that is currently being used by the site to collect agency utilization data and was the final step in demonstrating the benefits of the READMIT tool in clinical practice via utilization by the behavioral health clinicians.

### **Data Analysis**

The quantitative data from the pre and post-tests were analyzed by the DNP student to include the score of the pre-test and the score of the post-test and then analyzed utilizing the Learning Gain Formula from the Brigham and Women's Hospital Center for Nursing Excellence

## UTILITY OF THE READMIT CLINICAL INDEX

(2013). The Learning Gain Formula was used to help evaluate statistical significance of the pre and post-test scores of participant's educational attainment. The learning gain formula uses the post learning score minus the pre learning score divided by the max score (100%) minus the pre learning score times 100 (See Learning Gain Formula Appendix G). Data from the Likelihood of Use survey was collected during the educational presentation and subsequently entered into Survey Monkey by the clinical operations department working with the agency's Clinical Operations Director, then analyzed through Tableau, a business intelligent platform and R a statistical computing platform, which are tools currently utilized for statistical analysis by the project site. The clinical operations department created bar graphs for added explanation of the results of the analyzed data. Finally, the percentage of clinicians using the clinical index tool during the two-month rollout period was retrieved through the agency's EHR by the clinical operations department.

### **Protection of Human Subjects**

The University of Massachusetts, Amherst (UMass) Internal Review Board (IRB) approval was obtained prior to initiating the DNP project (See University of Massachusetts Internal Review Board Approval Appendix H). This project did not pose any known risks to patients or behavioral health clinicians. Guidelines from the Health Insurance Portability and Accountability Act was maintained which, among other guarantees, protects the privacy of patients' health information. Additionally, the DNP student and practice personnel who conducted the project followed the Standards of Care for practice in a community outpatient behavioral health clinic. The community based out-patient behavioral health clinic does not have an IRB therefore the site agreement was provided to conduct this quality improvement project by the agency's Clinical Operations Director. Additionally, during the educational presentation,



## UTILITY OF THE READMIT CLINICAL INDEX

there was an explanation provided by the DNP student regarding the project goals, and a review of procedures to be followed to ensure anonymity for the project participants.

### Results

The implementation of this DNP project took place over four months from October 2019 to January 2020 and included twenty two participants. The educational presentation of the READMIT clinical risk index took place over a two-day period during two regularly scheduled staff meetings. Participant make up for the QI project included; LADC<sub>1</sub> (n=1), LCSW (n=1), Psy.D. (n=3), LMHC (n=3), PHD licensed psychologist (n=1), LICSW (n=2), unlicensed Masters level clinicians, MA, Med., MSW (n=11). Participants attended the educational presentation on the READMIT risk index either on the first or the second day it was offered, depending on their previously assigned attendance schedule for the regular staff meetings. All participants regardless of which day they attended the presentation received the same information. The data collected to evaluate this DNP project assessed three areas that included scores from the pre and post-tests, answers to the Likelihood of Use survey, and the number of participants who utilized the READMIT clinical risk index during the two-month roll out period of the risk index. Of the twenty-two participants all twenty-two completed the pre and post-test and twenty-one completed the Likelihood of Use survey.

### Pre and Post-Test Scores

The pre and post-test scores were analyzed to assess for learning gain as described for objective number one. *Behavioral health clinicians will be educated on the use of the READMIT clinical index with 80% demonstrating increase knowledge scores following the intervention.* The anonymous individual participants' pre and post-test scores and the score of the educational attainment are seen in Table 1 (See Table 1 Educational Attainment Appendix I).

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The learning gain from the analysis of the 22 pairs of scores from the pre and post-tests were calculated to measure the improvement between pre and post education. Slightly less than half of the participants (n=10; 45.45%) scored 50% on their pre-test. Seven (31.82%) of the participants scored a 25% or less on the pre-test and five (22.73%) scored 75% or higher. Once the educational presentation was conducted and the participants completed the post-test, the majority of participants (n=20; 90.91%) scored 100% on their post-tests. Following the learning gain formula (See Learning Gain Formula Appendix G), demonstrating participants' attainment of knowledge, the post-test score was subtracted from the pre-test score, that number was then divided by the max score of 100% minus the pre-test score. This number was then multiplied by 100. This formula showed the results of the learning gain for all participants demonstrating the average learning gain for the 22 participants was 87.50%, which exceeded the objective of 80% increased knowledge gain following the educational presentation (See Analysis of Learning Gain Appendix J).

### **The Likelihood of Use Survey Scores**

The Likelihood of Use survey was completed by 21 of the 22 participants also exceeded the DNP project objective number two. *Behavioral health clinicians will have a 40% or more likelihood to use the READMIT clinical index, as responded on the Likelihood of Use survey,* illustrating that 47.62% of the participants consider the utility of the READMIT index to be beneficial for use in every day clinical practice.

In response to the first question on the survey, close to half of the participants (n=10; 47.62%) responded that they think the READMIT index would be effective for current clients on their caseload. Six (28.57%) of participants responded the risk index would very likely be effective for their current caseload and five (23.81%) of participants felt the index would be neither likely nor unlikely to be effective given their current client caseload. In summary,

## UTILITY OF THE READMIT CLINICAL INDEX

76.19% (n=16) response by participants felt that the index would be effective for their current client caseload.

The second question on the survey demonstrated that the majority (n=18; 85.71%) of participants responded that they felt the index is likely or very likely to be effective in treatment planning. In response to the third question of the survey, the majority of participants (n=9; 42.86%) felt the risk index was very likely to be a helpful addition to their assessment process and six participants (28.57%) felt the index would likely be a helpful addition to their assessment process. Demonstrating that 71.43% of participants felt the clinical index was a helpful addition to their assessment process.

Response to survey question four showed that slightly less than half of the participants responded that they are very likely or likely (n=10; 47.62%) to use the index regularly in practice. Nine (42.86%) of the participants responded that they are neither likely nor unlikely to use the clinical index regularly in their practice and two (9.52%) responded they felt they were not likely or slightly unlikely to use the index in everyday practice. Indicating that, 52.38% of the 21 participants who completed the Likelihood of Use survey responded that they were neither likely or unlikely and slightly unlikely to not likely to use the REAMIT clinical risk index regularly in their practice.

The final question of the survey represented that the majority of the participants responded that the risk index is very likely or likely (n=16; 76.19%) to have a positive impact on patient outcomes. Demonstrating that the majority of participants responded that they found the index to be a useful assessment tool, however slightly less than half (47.62%) responded that were very likely or likely to use the index in everyday practice (See Analysis of the Likelihood of Use survey Appendix K).

### **READMIT Clinical Index Utilization**

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The third measurement that was assessed as part of the evaluation of the DNP project was in reference to objective number three. *The READMIT clinical index usage will increase to 40% within the two months following the educational presentations.* The data pertaining to the number of participants who used the READMIT clinical risk index during the two-month roll out period between November 2019 and January 2020 was pulled from the agency's electronic health record (EHR) by the agency's clinical operations department, utilizing Structured Query Language (SQL), a data retrieval program built within the EHR that demonstrated the usability of the READMIT tool by the behavioral health clinicians. Unfortunately, after review of the SQL, results indicated that none of the participants had used the READMIT clinical risk index post intervention.

### **Discussion**

This Quality Improvement project included a presentation of the READMIT clinical risk index demonstrating favorable results related to attainment of knowledge. There were two other objectives of this project including, the likelihood that the clinicians viewed the risk index as beneficial to their clinical practice and the utility of the risk index. Positive results were obtained for the objective, likelihood of use; however, as far as implementation of the risk index, unfortunately none of the participants utilized the tool.

The education of the behavioral health clinicians who participated in the presentation of the READMIT clinical risk index demonstrated increased knowledge and an educational attainment that exceeded objective number one set for this DNP project as evidenced by the analysis of the pre and post-test scores which resulted in an average learning gain of 87.50% and was completed by all twenty-two participants. The increased knowledge of skills through an educational intervention positively enhances staff confidence, which directly improves quality of care provided to patients (Siebeko et al., 2018; Martino et al., 2011).

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The behavioral health clinicians also exceeded objective two regarding the likelihood of use. There was almost 100% completion by the clinicians of the Likelihood of Use survey; twenty-one of the twenty-two participants completed the survey. The reason is unknown why the remaining participant did not complete the survey. The majority (76.18%) of the behavioral health clinicians responded that the clinical index is a valuable assessment tool to improve outcomes for their patients.

Although two of the three QI project objectives were met, objective three regarding the use of the risk index was not met. The DNP student asked the project site's clinical operations department if there was any opportunity during the two-month roll out period for the utility of the risk index. Meaning, during the two-month roll out period of the index, did the behavioral health clinicians have any appointments with patients following a discharge from an inpatient hospitalization or respite stay. However, data from the EHR pertaining to a specific type of appointment was unable to be retrieved, so this information was not available for evaluation in determining possible reason for the lack of utility. In addition, the agency's Clinical Operations Director/project mentor expressed her enthusiasm about this project and her desire to use this risk index at the behavioral health clinic in regular clinical practice even after the completion of the DNP project. The agency's Clinical Operations Director discussed with the DNP student possible ideas to encourage use of the risk index by the behavioral health clinicians such as, adding regular reminders in the EHR. The regular reminders in the EHR may assist the behavioral health clinicians in consistently utilizing the clinical index.

Consistent clinician utility of the READMIT index allows supportive community based services to be offered to adults who were found to be at risk for psychiatric re-admission. Had the behavioral health clinicians who participated in the educational presentation utilized the READMIT clinical risk index in the assessment of at risk adults, community services in support

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of the patient remaining in their communities could have been provided by the agency. Furthermore, the identification and support of at risk patients is in accordance with future goals of the state of Massachusetts and the use of Value Based Health Care (Massachusetts Medical Society, 2017) which describes that providers are paid based on patient outcomes. The identification and provision of community support for adults at risk of psychiatric re-admission could have been a contributing factor to the reduction of the cost of health care services by supporting patients in their communities. The reduction of the overall cost of health care services leads to health care becoming more affordable for everyone. Affordable health care is one of the foci of the project's theoretical framework the National Quality Strategy (NQS). The ability to identify at risk individuals in their communities prior to them requiring a higher level of psychiatric care may decrease the frequency of psychiatric re-admissions.

The possible barriers to the lack of utility of the READMIT clinical risk index by the behavioral health clinicians may be due to the notion of resistance to change and perceived disruption of workflow with the introduction of a new assessment tool. This barrier could have been lessened by offering continued support to the clinicians after the educational presentations. Continued support and training can have a positive impact on the perception of the value of a tool when implementing a new assessment tool (Turner, Litchfield, Finnikin, Aiyegbusi, & Calvert, 2020). Also, during a previous planning meeting to discuss the project and the educational presentation, there was some hesitation by the Clinic Division Director due to fears that the project would add extra work for the clinicians. However, this sentiment by the director changed after the READMIT clinical risk index was presented by the DNP student. Conversely, during the roll out period of the READMIT clinical risk index, there may have been continued resistance by the director and clinicians regarding the implementation of a new risk assessment tool and added work to incorporate into their existing work flow.

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Another barrier may have been related to the Master's level and doctoral trained clinicians' hesitation to receive training from a student, and their perception of the DNP student as a novice as opposed to an expert of the presentation information. Martino et al. (2011) found that among training participants, expert led training confirmed higher knowledge retention and utility of content. Consequently, barriers and resistances may have been related to both the clinic directors and behavioral health clinicians' perceptions of the DNP student as a novice and the disruption of workflow.

### **Conclusion**

As noted in the literature, the frequency of psychiatric re-hospitalizations is a well-known phenomenon in health care systems, and there remains a need for effective approaches to address this demand. The use of a standardized risk assessment tool is a beneficial approach as a solution to this need. This Quality Improvement Project implemented an educational intervention, provided by the DNP student, which included education on the use of a standardized clinical risk index in the identification of adult patients who are at risk of early psychiatric readmissions. Additionally, the project evaluated post educational learning gain through analysis of pre and post-tests completed by the community behavioral health clinicians which exceeded the project objective. Further, the assessment of the clinicians' perception of the usefulness of the READMIT clinical risk index in everyday practice met the DNP project objective and showed that the majority of participants believed this tool to be an effective component to improving patient care and outcomes. Also, the utility of this index may identify the risk of early readmission for patients with behavioral health challenges which cause disruption in their lives leading to a lessening ability to live independently in the community. Unfortunately, none of the behavioral health clinicians used the clinical index; therefore this project objective was not met.

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Further steps are needed to encourage the targeted use of the READMIT tool in everyday practice. The high costs of inpatient care compared to the modest costs of community care reinforce the need to identify and ultimately provide support to individuals found to be at risk of early re-admission. The participants responded positively about the use of the risk index as evidenced by the responses on the Likelihood of Use survey but the possible resistance to change to existing workflow and potentially, the behavioral health clinicians' perceptions of the DNP student as a novice, showed non use of the clinical index in the two-month roll out period after education.

If this project were to be conducted at a future date, additional follow up could include a qualitative survey with participants to provide information about possible reasons for lack of use of the clinical risk index. Another consideration could include providing follow up presence at subsequent staff meetings post intervention, to show support for the project goals and offer inquiry into the perceived barriers to the utility of the READMIT Index. Also, another consideration for conducting this project at a future date could include measurement of outcomes when the clinical index had become a regular part of workflow and utility by the clinicians, to determine if the percentage of psychiatric re-admissions to a higher level of care decreased for the patients of this community based, behavioral health clinic.

In summary, the use of the READMIT clinical risk index allows for the timely identification of adults at risk of re-hospitalization, which may decrease the use of crisis services, ER visits, and frequent re-admissions to higher levels of psychiatric care. The early identification of adults at risk for psychiatric re-hospitalization reduces the cost of healthcare spending and may improve overall health. Moreover, the regular targeted utility of the READMIT clinical index by behavioral health clinicians may improve patient outcomes and allow for community dwelling adults at risk of psychiatric re-admission to remain in their communities.



## UTILITY OF THE READMIT CLINICAL INDEX

## References

Agency for Healthcare Research and Quality. (2017). About the national quality strategy.

Retrieved from <https://www.ahrq.gov/workingforquality/about/index.html>

Bonnel, W. & Smith, K. (2018). *Proposal Writing for Clinical Nursing and DNP Projects*. New York, NY: Springer Publishing Company, LLC.

Brigham and Women's Hospital Center for Nursing Excellence. (2013). *Pre and post test*

*guidelines*. Retrieved from: <https://www.brighamandwomens.org/assets/BWH/medical-professionals/nursing/pdfs/pre-post-test.pdf>

Chang, Y., & Chou, F. (2015). Effects of home visit intervention on re-hospitalization rates in psychiatric patients. *Community Mental Health Journal*, 51(5), 598-605.

doi:10.1007/s10597-014-9807-7

Correll, C. U., Galling, B., Pawar, A., Krivko, A., Bonetto, C., Ruggeri, M., . . . Marcy, P.

(2018). Comparison of early intervention services vs treatment as usual for early-phase psychosis: A systematic review, meta-analysis, and meta-regression. *JAMA Psychiatry*, 75(6), 555-565. doi:10.1001/jamapsychiatry.2018.0623

Heslin, K., & Weiss, A. (2015). Hospital readmissions involving Psychiatric Disorders, 2012.

Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality.

Retrieved from: <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb189-Hospital-Readmissions-Psychiatric-Disorders-2012.pdf>

Holzinger, F., Fahrenkrog, S., Roll, S., Kleefeld, F., Adli, M., & Heintze, C. (2017). Discharge management strategies and post-discharge care interventions for depression - systematic review and meta-analysis. *Journal of Affective Disorders*, 223, 82-94.

doi:10.1016/j.jad.2017.07.026

## UTILITY OF THE READMIT CLINICAL INDEX

Maples, N.J., Copeland, L.A., Zeber, J.E., Li, X., Moore, T.A., Dassori, A., ... Miller, A.L.

(2012). Can medication management coordinators help improve continuity of care after psychiatric hospitalization? *Psychiatric Services*, 63(6), 554–560. <https://doi-org.silk.library.umass.edu/10.1176/appi.ps.201100264>

Martino, S., Ball, S.A., Nich, C., Canning-Ball, M., Rounsaville, B.J., & Carroll, K. M. (2011).

Teaching community program clinicians motivational interviewing using expert and train-the-trainer strategies. *Addiction*, 106(2), 428-441.

Massachusetts Medical Society. (2017). What is value-based healthcare? *New England Journal of*

*Medicine*. Retrieved from: <https://catalyst.nejm.org/what-is-value-based-healthcare/>

Noseworthy, A.M., Sevigny, E., Laizner, A., Houle, C. & La Riccia, P. (2014). Mental health

care professionals' experiences with the discharge planning process and transitioning patients attending outpatient clinics into community care. *Archives of Psychiatric Nursing*, 28, 263-271.

O'Connell, M. J., Sledge, W. H., Staeheli, M., Sells, D., Costa, M., Davidson, L., & Wieland, M.

(2018). Outcomes of a peer mentor intervention for persons with recurrent psychiatric hospitalization. *Psychiatric Services*, 69(7), 760-767. doi:10.1176/appi.ps.201600478

Roque, A. P., Findlay, L. J., Okoli, C. & El-Mallakh, P. (2017). Patient characteristics associated

with inpatient psychiatric re-admissions and the utility of the READMIT clinical risk index. *Issues in Mental Health Nursing*, 38(5), 411-419.

Rylander, M., Colon-Sanchez, D., Keniston, A., Hamalian, G., Lozano, A., & Nussbaum, A.

(2016). Risk factors for readmission on an adult inpatient psychiatric unit. *Quality Management In Health Care*, 25, 22-31. doi: 10.1097/QMH.0000000000000077

Shadmi, E., Gelkopf, M., Garber-Epstein, P., Baloush-Kleinman, V., Doudai, R., & Roe, D.

(2018). Routine patient reported outcomes as predictors of psychiatric rehospitalization.

## UTILITY OF THE READMIT CLINICAL INDEX

*Schizophrenia Research*, 192, 119-123. doi:10.1016/j.schres.2017.04.049

Shaffer, S. L., Hutchison, S. L., Ayers, A. M., Goldberg, R. W., Herman, D., & Duch, D. A.

(2015). Brief critical time intervention to reduce psychiatric rehospitalization. *Psychiatric Services*, 66(11), 1155-1161. doi:10.1176/appi.ps.201400362

Sibeko, G., Milligan, P. D., Roelofse, M., Molefe, L., Jonker, D., Ipser, J., ... Stein, D. J. (2018).

Piloting a mental health training programme for community health workers in South Africa: An exploration of changes in knowledge, confidence and attitudes. *BMC Psychiatry*, 18. Retrieved from:

<http://search.ebscohost.com.silk.library.umass.edu/login.aspx?direct=true&db=psyh&AN=2018-29185-001&site=ehost-live&scope=site>

Stensland, M., Watson, P., & Grazier, K. (2012). An examination of costs, charges, and payments for inpatient psychiatric treatment in community hospitals. *Psychiatric Services*, 63 (7) 666-671.

Taylor, C., Holsinger, B., Flanagan, J., Ayers, A., Hutchison, S., & Terhorst, L. (2016).

Effectiveness of a brief care management intervention for reducing psychiatric hospitalization readmissions. *Journal of Behavioral Health Services & Research*, 43(2), 262-271. doi:10.1007/s11414-014-9400-4

Turner, G. M., Litchfield, I., Finnikin, S., Aiyegbusi, O. L., & Calvert, M. (2020). General practitioners' views on use of patient reported outcome measures in primary care: A cross-sectional survey and qualitative study. *BMC Family Practice*, 21(1), 1–10.

<https://doi-org.silk.library.umass.edu/10.1186/s12875-019-1077-6>

Vigod, S., Kurdyak, P., Seitz, D., Herrmann, N., Fung, K., Lin, E., Perlman, C., Taylor, V., Rochon, P., & Gruneir, A. (2015). READMIT: A clinical risk index to predict 30-day

## UTILITY OF THE READMIT CLINICAL INDEX

readmission after discharge from acute psychiatric units. *Journal of Psychiatric Research*, 61, 205-213.

Yang, G. M., Tan, Y. Y., Cheung, Y. B., Lye, W. K., Lim, S. H. A., Ng, W. R., ... Neo, P. S. H. (2017). Effect of a spiritual care training program for staff on patient outcomes. *Palliative & Supportive Care*, 15(4), 434-443.

<https://doi.org.silk.library.umass.edu/10.1017/S1478951516000894>

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## Appendix A

## READMIT Clinical Risk Index Form

**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)	<i>Number prior to index</i>	0	0	
		1 to 2	2	
		3 to 5	5	
		6 or more	7	
"E" – Emergent admission	<i>Threat to others</i>	No	0	
		Yes	1	
	<i>Threat to self</i>	No	0	
		Yes	1	
	<i>Unable to care for self</i>	No	0	
		Yes	2	
"A" – Age	<i>Age group (years)</i>	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	
"D" – Diagnosis and discharge	<i>Primary diagnosis</i>	18 to 24	8	
		Alcohol or substance	0	
		Depression	2	
		Psychosis or Bipolar	4	
		Other	3	
		<i>Any personality disorder</i>	No	0
		Yes	2	
		<i>Unplanned discharge</i>	No	0
		Yes	5	
		"M" – Medical morbidity	<i>Charlson comorbidity score<sup>a</sup></i>	0
1 to 2	1			
3 or more	2			
"I" – Intensity (past year)	<i>Outpatient psychiatrist visits</i>	Less than 2	0	
		2 or more	2	
	<i>Emergency department visits</i>	None	0	
		1 or more	3	
"T" – Time in hospital	<i>Length of stay (Days)</i>	More than 28 days	0	
		15 to 28	3	
		Less than 14	4	
<b>Total possible score</b>			<b>41</b>	

<sup>a</sup> 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.

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**Appendix B**

**NQS Model**



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Appendix C

Project Timeline

Tasks	September 2019	October 2019	November 2019	December 2019	January 2020	February 2020
Discussion with Clinicians facilitator and program director about date for education on READMIT index (next scheduled staff meeting)		X				
Education of READMIT index and start of implementation			X			
DNP student in collaboration with facilitator will collect the data related to the number of clinicians who implemented the index into clinical practice.				X	X	
Share results of program outcome with stakeholders						X

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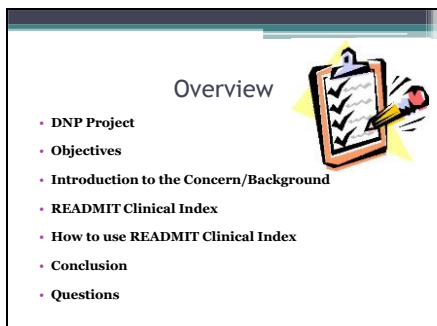
## Appendix D

## READMIT Educational Presentation

Slide 1



Slide 2





## UTILITY OF THE READMIT CLINICAL INDEX

### Slide 3

### DNP Project

- Doctor of Nursing Practice is a clinical doctorate providing nursing education as a terminal degree which improve practice, influences evidence-based care and clinical policies in order to improve patient outcomes and advance the nursing profession
- The focus of the project is on identification of adults with behavioral health disorders who are at risk of re-admission to a higher level of psychiatric care i.e. inpatient hospitalization or Respite units

This Educational presentation provides and educates you the clinicians with a tool to identify adults at risk of readmission to a higher level of psychiatric care and a better understanding of the need for such identification. A pre and post test as well as a Likert based survey will be asked to be completed. Participation is voluntary.

### Slide 4

### Presentation Objectives

- Improved knowledge of the importance of the READMIT Clinical Index
- Introduction to the READMIT Clinical Index
- Knowledge gained about how to use the READMIT Clinical Index in practice

### Slide 5

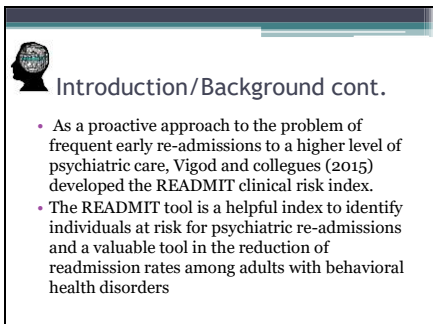
### Introduction to Concern /Background

- Frequent re-hospitalizations result in high costs of inpatient care, and disruption to the lives of the individuals causing a lessened ability to live independently (Taylor et al., 2016)
- Roughly 40% to 60% of psychiatric patients hospitalized are anticipated to return to the hospital within twelve months of discharge (O'Connell et al., 2018).
- During the years from 2003 to 2011 in the United States, hospitalization for a diagnosed mental disorder increased at a rate faster than all other types of hospitalizations i.e. maternal/neonatal, injury, medical, and surgical (Heslin & Weiss, 2015)

The cost related to frequent admission to a higher level of psychiatric care is greater than community based care. In 2006 as reported by Stensland, Watson and Grazier (2012), the average 5 day hospital stay for an individual with Bipolar Disorder was \$4356 and “22% of total hospital costs were attributable to adults with a [mental or substance use] disorder in 2004” (Stensland, Watson, & Grazier, 2012, p.666)

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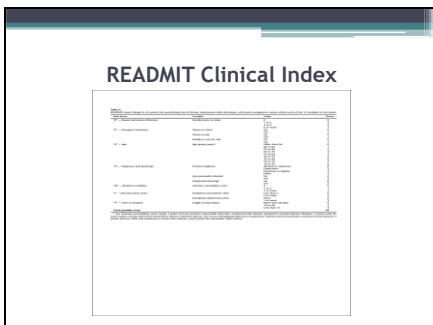
### Slide 6



**Introduction/Background cont.**

- As a proactive approach to the problem of frequent early re-admissions to a higher level of psychiatric care, Vigod and colleagues (2015) developed the READMIT clinical risk index.
- The READMIT tool is a helpful index to identify individuals at risk for psychiatric re-admissions and a valuable tool in the reduction of readmission rates among adults with behavioral health disorders

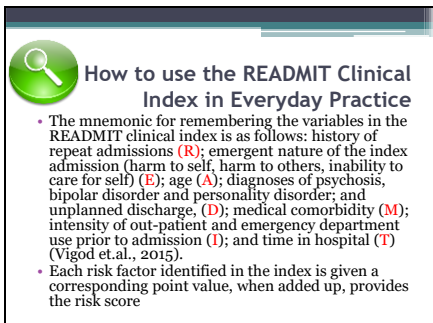
### Slide 7



**READMIT Clinical Index**

Variable	Points
History of repeat admissions (R)	0-4
Emergent nature of admission (E)	0-2
Age (A)	0-2
Diagnoses of psychosis, bipolar disorder and personality disorder (D)	0-2
Medical comorbidity (M)	0-2
Intensity of out-patient and emergency department use prior to admission (I)	0-2
Time in hospital (T)	0-2
<b>Total</b>	<b>0-41</b>

### Slide 8



**How to use the READMIT Clinical Index in Everyday Practice**

- The mnemonic for remembering the variables in the READMIT clinical index is as follows: history of repeat admissions (**R**); emergent nature of the index admission (harm to self, harm to others, inability to care for self) (**E**); age (**A**); diagnoses of psychosis, bipolar disorder and personality disorder; and unplanned discharge, (**D**); medical comorbidity (**M**); intensity of out-patient and emergency department use prior to admission (**I**); and time in hospital (**T**) (Vigod et.al., 2015).
- Each risk factor identified in the index is given a corresponding point value, when added up, provides the risk score

The total number of possible points or READMIT score ranges from 0 to 41. This is information that you most likely have gathered as part of the psychiatric history.

## UTILITY OF THE READMIT CLINICAL INDEX


## Slide 9

Sample Clinical Index				
Risk Factor	Variable	Value	Points	Indiv. score
Repeat Admissions	Nurse prior to admit	0	0	5
		1-3	2	
		4-5	3	
		6+	7	
Emergency admission	Treat to admit	No	0	2
		Yes	1	
		Under doctor's care	1	
		No	0	
Age	Age group (years)	0-17	0	7
		18-24	1	
		25-34	2	
		35-44	3	
		45-54	4	
		55-64	6	
		65-74	7	
		75+	8	
Discharge and Discharge	Primary Discharge	Acute or Short-term	0	5
		Depression	2	
		Posterior or Bipolar	4	
		No	0	
		Any Personality Disorder	2	
		No	0	
Updated Discharge	No	0	5	
	Yes	5		

## Slide 10



**How to use the READMIT Clinical Index in Everyday Practice cont.**

- Each 1-point increase in READMIT score increased the odds of 30-day readmission by 11% (OR 1.11, 95% CI 1.10-1.12) (Vigod et al., 2015)
- All adult patients can be screened using the READMIT clinical index to assess for risk of readmission



## Slide 11

**Conclusion**

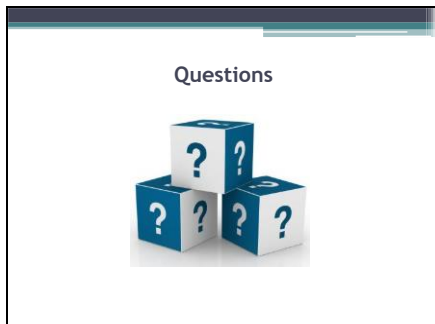
- As behavioral health clinicians you are usually the first behavioral health provider to see the patient after discharge from a higher level of psychiatric care
- The READMIT clinical index has become part of your existing EHR for ease of inclusion to your current work flow

(in the middle)The use of the READMIT index provides you with a tool to identify those adults at risk for readmission allowing for a preemptive approach to support them in their community

(last)Thank you for your time and commitment to your patients and I look forward to continuing to work with you as you begin using this tool in your everyday practice.

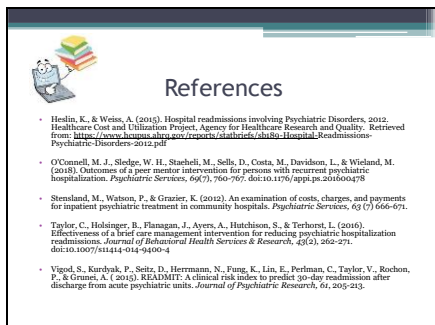
## UTILITY OF THE READMIT CLINICAL INDEX

### Slide 12



If you have any questions or concerns regarding this project feel free to contact me at [ejryan@umass.edu](mailto:ejryan@umass.edu)

### Slide 13



## UTILITY OF THE READMIT CLINICAL INDEX

**Appendix E****Pre and Post Knowledge Based Test**

## PRE test

1. What is the READMIT index predictive of?
  - a. Risk of medication non-adherence
  - b. Chance of readmission for infection
  - c. Risk of early psychiatric readmission
2. What population is the READMIT index used for? (circle all that apply)
  - a. Children
  - b. Adults
  - c. Medical
  - d. Psychiatric
3. What are the ranges of points for a risk score?
  - a. 1-10
  - b. 0-20
  - c. 1-35
  - d. 0-41
4. What are the benefits of using the READMIT index?
  - a. Identification of uncooperative clients
  - b. Standardized requirement for adherence to therapy and medication
  - c. Standardized tool for assessment of risk for mental health decline

## POST test

1. What does READMIT stand for?
  - a. Ready, examine, ask, discover, monitor, investigate, treatment

## UTILITY OF THE READMIT CLINICAL INDEX

- b. Repeat admission, emergent admission, age, diagnosis and discharge, medical morbidity, intensity, time in hospital
  - c. Reassure, expectancy, actualize, discourage, mobilize, intensive, team
2. What is the primary prediction of the READMIT index?
- a. risk of adult early readmission to higher level of psychiatric care
  - b. risk of repeated no show to outpatient appointments
  - c. risk of medication non adherence
3. What is the timeframe of 'early' readmission?
- a. 90 to 180 days
  - b. 45 to 90 days
  - c. 30 days or less
4. What are the ranges of points for a risk score?
- a. 1-10
  - b. 0-20
  - c. 1-35
  - d. 0-41

## UTILITY OF THE READMIT CLINICAL INDEX

**Appendix F****Likelihood of Use Survey**

Please rate the following on a scale from 1 to 5 “not likely” to “very likely”

1. Is the READMIT index effective for clients on your caseload?
2. Do you think the index can be effective in treatment planning?
3. Did you find this tool to be a helpful addition to your assessment process?
4. How likely are you to use this tool regularly in your practice?
5. Will utilizing the READMIT index with clients have a positive impact on outcomes?

## UTILITY OF THE READMIT CLINICAL INDEX

**Appendix G****Learning Gain Formula**

$$\text{Learning Gain} = \frac{\text{Post Learning Score} - \text{Pre Learning Score}}{\text{Max. Score} - \text{Pre Learning Score}} \times 100$$



## UTILITY OF THE READMIT CLINICAL INDEX

## Appendix H

## University of Massachusetts Internal Review Board Approval

UMassAmherst

Human Research Protection Office

Mass Venture Center  
100 Venture Way, Suite 116  
Hadley, MA 01035  
Telephone: 413-545-3428

**Memorandum – Not Human Subjects Research Determination**

Date: September 26, 2019

To: Erika Ryan, Nursing

**Project Title:** A Quality Improvement Project Educating Behavioral Health Clinicians on the Utility of the READMIT Clinical Index to Predict Risk of Psychiatric Re-Hospitalization of Adults

IRB Determination Number: 19-172

The Human Research Protection Office (HRPO) has evaluated the above named project and has made the following determination based on the information provided to our office:

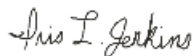
- The proposed project does not involve research that obtains information about living individuals [45 CFR 46.102(f)].
- The proposed project does not involve intervention or interaction with individuals OR does not use identifiable private information [45 CFR 46.102(f)(1), (2)].
- The proposed project does not meet the definition of human subject research under federal regulations [45 CFR 46.102(d)].

**Submission of an Application to UMass Amherst IRB is not required.**

Note: This determination applies only to the activities described in the submission. If there are changes to the activities described in this submission, please submit a new determination form to the HRPO prior to initiating any changes.

A project determined as "Not Human Subjects Research," must still be conducted in accordance with the ethical principles outlined in the Belmont Report: respect for persons, beneficence, and justice. Researchers must also comply with all applicable federal, state and local regulations as well as UMass Amherst Policies and procedures which may include obtaining approval of your activities from other institutions or entities.

Please do not hesitate to call us at 413-545-3428 or email [humansubjects@ora.umass.edu](mailto:humansubjects@ora.umass.edu) if you have any questions.



Iris L. Jenkins, Assistant Director  
Human Research Protection Office

UTILITY OF THE READMIT CLINICAL INDEX

Appendix I

Table 1 Educational Attainment

Table 1		
<i>Educational Attainment</i>		
Scores of testing	N=22	
<u>Pre testScore</u>	<u>Post test Score</u>	<u>Score of educational attainment</u>
50%	100%	100
75%	100%	100
50%	100%	100
50%	100%	100
75%	100%	100
25%	100%	100
50%	100%	100
50%	100%	100
75%	100%	100
0%	75%	75
50%	25%	-50
0%	100%	100
50%	100%	100
75%	100%	100
50%	100%	100
0%	100%	100
25%	100%	100
25%	100%	100
25%	100%	100
100%	100%	0
50%	100%	100
50%	100%	100

UTILITY OF THE READMIT CLINICAL INDEX

Appendix J

Analysis of Learning Gain

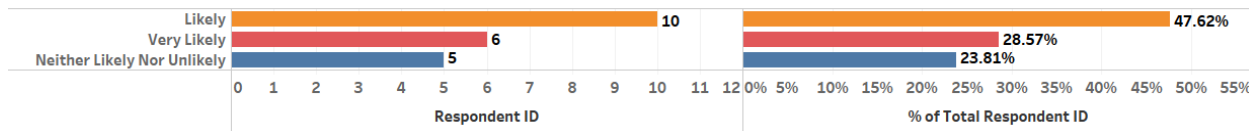


UTILITY OF THE READMIT CLINICAL INDEX

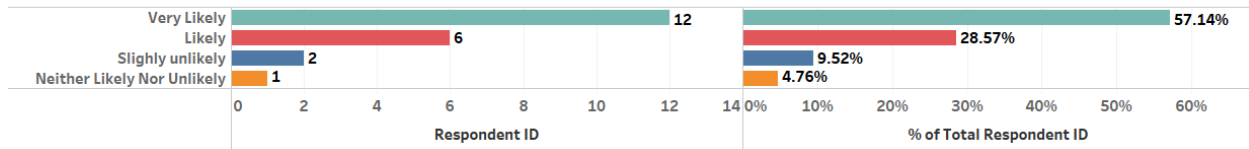
Appendix K

Analysis of Likelihood of Use Survey

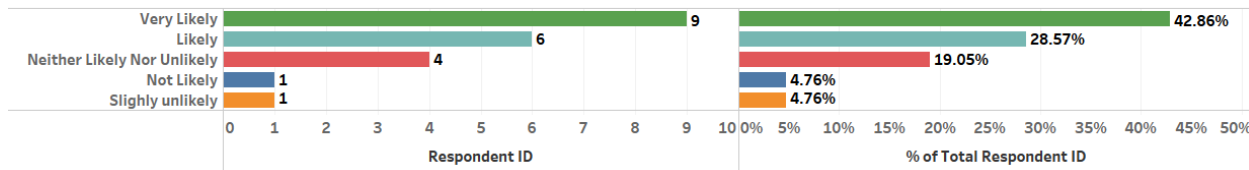
1. Is the READMIT index effective for clients on your CaseLoad?



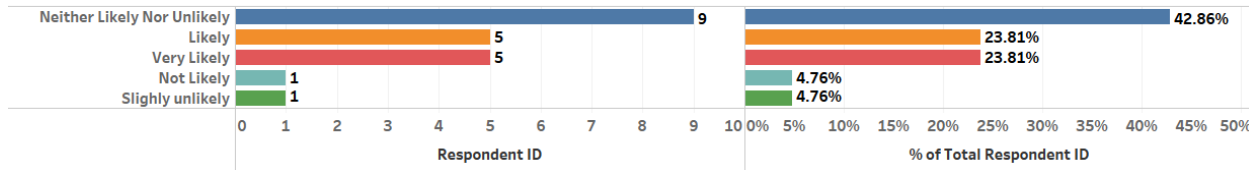
2. Do you think the index can be effective in treatment planning?



3. Did You find this tool to be a helpful addition to your assessment process?



4. How Likely are you to use this tool regularly in your practice?



5. Will utilizing the READMIT index with clients have a positive impact on the outcomes?

