

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



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Section I –Introduction/Background

- Increase in 30 day readmissions (CMS, 2020)
- Hospital Readmissions Reduction Program (HRRP) financial penalties (CMS, 2020)
- Readmissions one of the measure of quality and effectiveness of healthcare (Marcus et al., 2017)
- Readmission rate 7.5 % in Texas compared to 7.2% United States (SAMHSA, 2018)

Background



- Approximately 44 mil diagnosed with mental illness every year (Maestri et al., 2018)
- Schizophrenia/Bipolar disorder most commonly diagnosed serious mental illness (Roque et al., 2017)
- Medicaid spending on MH 30% of the total MH expenditure (Roque et al., 2017)
- \$23 billion spend on direct care for schizophrenia although they are 1% of the population (Roque et al., 2017)

Background

- People with mental illness are more vulnerable to poor long-term health outcomes (Roque et al., 2017)
- Limited access to medical treatment (Roque et al., 2017)
- At a higher risk for mortality and morbidity (Roque et al., 2017)
- Barriers- cognitive decline, inability to receive follow-up care, transportation, medication non- adherence (cost, memory, medication beliefs) (Roque et al., 2017)

Purpose/Aim

- Global Aim: Decrease 30 day readmissions specific to project site
- Project Purpose: Identifying risk factors that contribute to 30 day readmissions
- Create an audit tool to Identify risk factors specific to the project site
- Do a retrospective audit of charts using the audit tool created
- Recommend evidence based practices specific to organization to improve quality of life and reduce 30 day readmissions

PICOT

- 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)

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 Jan 1, 2020- June 30, 2020?

Conceptual and Theoretical Frameworks

- **Donabedian Model**

Structure---Process---Outcomes

Dorthea Orem's Self-Care Deficit Model

- Orem's systematic process of assessing knowledge, educating, motivating, reassessing, and re-enforcing education is the guiding framework for our project intervention

Section II: Evidence Synthesis/Themes

- CINAHL, PubMed, PsycInfo, ProQuest, Scopus, Google Scholar, Google and Academic Search Complete
- Publication date 2010-2020
- 222 articles addressed psychiatric 30 day readmissions
- 25 articles used in the evidence synthesis

Themes

- Medication non-adherence (MacEwan et al., 2016; Maestri et al., 2018; NIH, 2020)
- Long acting injectable medications over oral medications (Marcus et al., 2015; MacEwan et al., 2016)
- Intensive outpatient follow-up after discharge (Almerie et al., 2015; Chi et al., 2016; Marcus et al., 2017)

Section III Methodology

- **MFI-PDSA (IHI): Guiding questions**
- What are we trying to accomplish?
- How will we know a change is an improvement?
- What change can we make that will result in improvement?

PDSA cycle

- Plan- Identify risk factors that contribute to 30 readmission rates at project site by creating an audit tool specific to that project site population.
- Do-Audit charts over 6 mo- using a established reliable audit tool (READMIT) in combination with variables identified by project site experts

PDSA cycle

- Study- analyze, evaluate and interpret the data- identifying risk factors and their trends.
- Act- recommend interventions specific to the data trends- education, trigger tool, national registry and future PDSA cycles to advance future works



Audit Tool

- READMIT tool- clinical risk index (Repeat admission, Emergent admission, Age, Diagnosis, Medical comorbidity, Intensity, Length of stay (inclusion and exclusion) (Vigod, et al., 2015)

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) | <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 | | |
| | | 18 to 24 | 8 | | |
| | | "D" – Diagnosis and discharge | <i>Primary diagnosis</i> | Alcohol or substance | 0 |
| | | | | Depression | 2 |
| Psychosis or Bipolar | 4 | | | | |
| <i>Any personality disorder</i> | Other | | 3 | | |
| | No | | 0 | | |
| | Yes | | 2 | | |
| "M" – Medical morbidity | <i>Unplanned discharge</i> | No | 0 | | |
| | | Yes | 5 | | |
| | | Charlson comorbidity score ^a | 0 | | |
| "I" – Intensity (past year) | <i>Outpatient psychiatrist visits</i> | 1 to 2 | 1 | | |
| | | 3 or more | 2 | | |
| | <i>Emergency department visits</i> | Less than 2 | 0 | | |
| | | 2 or more | 2 | | |
| "T" – Time in hospital | <i>Length of stay (Days)</i> | None | 0 | | |
| | | 1 or more | 3 | | |
| | | More than 28 days | 0 | | |
| | | 15 to 28 | 3 | | |
| 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.

Audit tool

Project site specific variables provided by the expert providers at the project site:

Marital status, disposition, Type of payor, race, readmission status, medication discharged on, and adherence with outpatient follow-up

Analysis of the Data

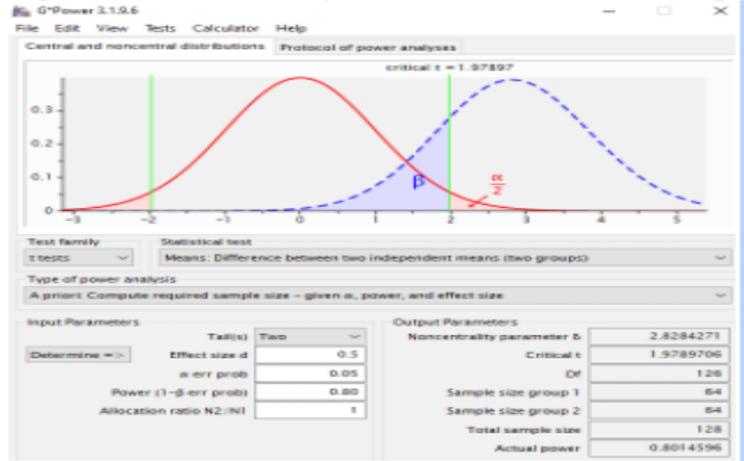
- Categorical-ordinal
- Descriptive statistical
- Mean, median, mode, standard deviation
- Frequency- illustrate through histogram chart, nonparametric test

Data Analysis: Power Analysis

Sample Size A Priori Estimate

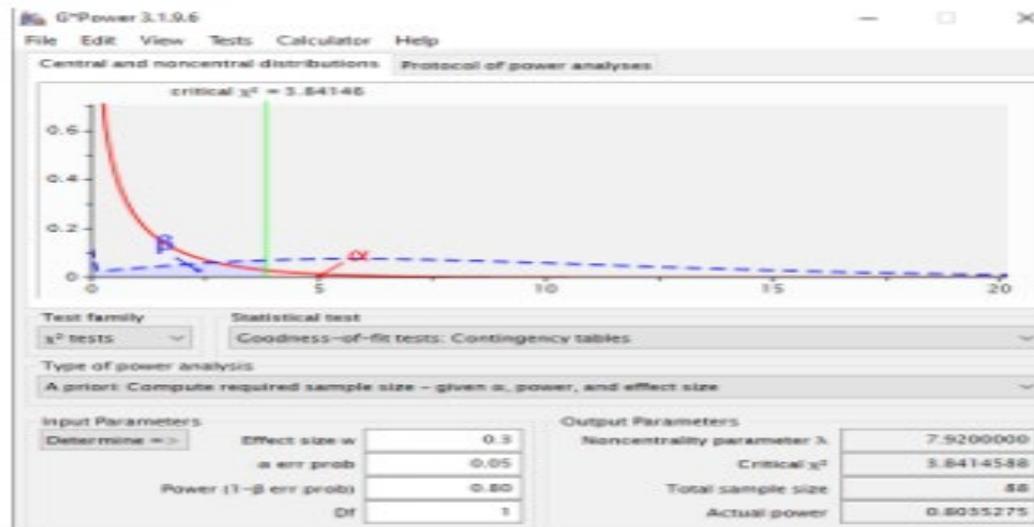
Power analysis was conducted using the G-Power software program (Heinrich-Heine-Universität Düsseldorf, 2020). This was to estimate the target sample size for 80% power, p of .05 and medium effect size. Figures 1 and 2 illustrate the results for t-Test and chi-square statistical tests, respectively.

Figure 1. Power Analysis for t-Test of Two Independent Groups



Data Analysis: Power Analysis (cont.)

Figure 2. Power Analysis for chi-square 2 x 2 table



Section IV- Finding

- Sample size
- Pilot study evaluation will be done to determine validity and reliability of our work
- Dependent and Independent variables
- Mann Whitney/ Kruskal-Wallis
- Spearman correlation

Demographics

| Variables | Percentages (n=94) |
|-----------------------|--------------------|
| 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% |

Demographics

| 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 Medications | |
|--------------------------------|--------------|
| Discharged on Long-acting | 22.3% |
| Discharged without | 77.7% |

| Support Group at Discharged | |
|------------------------------------|--------------|
| Family | 56.4% |
| Community Center | 1.1% |
| Salvation Army | 1% |
| Home Health | 0% |
| Church | 0% |
| Jail | 0% |

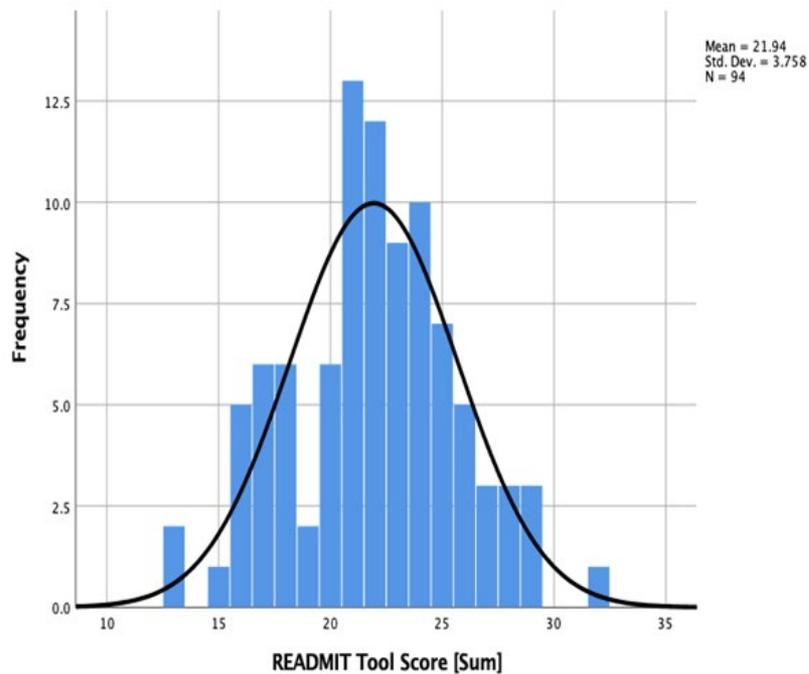
| Insurance | |
|------------------|--------------|
| Medicaid | 48.9% |
| Medicare | 34% |
| Self-Pay | 0% |
| Private | 2.1% |
| BC/BS | 0% |
| Champus | 0% |
| Others | 14% |

SPSS READMIT Tool Score

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 |

READMIT Tool Histogram



Mann Whitney

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 | | |

SPSS Mean Rank 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

Kruskal-Wallis

SPSS Mean Rank for Age

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

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

Findings : Correlation

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 READMIT Tool

| 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 |
| | | | | |
| | | | | |

Barriers

Social
Isolation

Covid -19

Access to
charts

Findings Conclusion

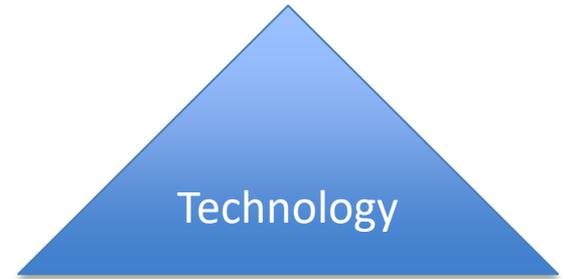
The numbers of repeat admission ($p = .000$) and the age ($p = .031$) demonstrated statistical significance in 30 days readmissions. The number of repeat admissions, 3 times and above, demonstrated a high chance of a patient being readmitted within 30 days. The age group 30 to 60 was more readmitted back within 30 days. There was an association between the number of repeat admissions and the READMIT Tool Score ($r_s = 0.57$, $p < .001$).

The correlation coefficient between the two variables is $r_s .0575$, which is moderately significant. This is a positive coefficient, and it indicates that when the numbers of repeat admission increase, it also increases the READMIT Tool Score. There was a significant positive association between the READMIT Tool Score and repeat numbers of admissions; $r_s = 0.57$, $p < .001$.

Section V- Implication for Practice

- Age and number of readmissions
- Clinically significant variables
- National Registry

DNP Implication



Project Sustainability

- DNP team leader in-house
- Stakeholders buy-in/Medical director
- Team members commitment
- Continuity folder
- Continued PDSA/ creating a tool

Application to other Clinical Settings

- Site specific audit to determine risk-factors for specific population
- Using a standard audit tool along with a site specific tool to increase accuracy
- Assist in decreasing readmissions and health outcomes

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 Jan 1, 2020- June 30, 2020?

Conclusion

- Did the frameworks support our project
- Did the research support our finding?
- Did our findings align with our?
evidence synthesis?

Methods of Dissemination

TWU Presentation

Project site in-service

**Future plan
Professional
organization/Conference**

Questions ???

Thank you

Dr. Roussel

Dr. Tietze

Dr. Hawkins

Ms. Elaine Cox

Dr. Butler and the entire staff at the project site

Julie Durand PHMNP-BC

This project is dedication to our Mothers

References

- Berbiglia, V. A. (2013). Orem's self-care deficit theory in nursing practice. *Nursing Theory*, 222.
- Centers for Medicare & Medicaid Services. (2012). Readmissions Reduction Program. Retrieved from <http://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html>
- Donabedian's Quality Framework. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK44008/figure/A25995/>
- Doody, C. M., & Doody, O. (2011). Introducing evidence into nursing practice: Using the IOWA model. *British Journal of Nursing*, 20(11), 661-664.
- Goode, C. J. (2001). The Iowa model of evidence-based practice to promote quality care. *Critical care nursing clinics of North America*, 13(4), 497-509.
- Heinrich-Heine-Universität Düsseldorf. (2020). *G*Power: Statistical power analyses for windows and mac*. <https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html>. <https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html>



References

Institute for Healthcare Improvement. (2020). Plan-do-study-act (PDSA) worksheet.
<http://www.ihl.org/resources/Pages/Tools/PlanDoStudyActWorksheet.aspx>

MediCare.Gov. (2020). 30 day unplanned readmission and death measures.
<https://www.medicare.gov/hospitalcompare/Data/30-day-measures.html>

MindTools. (n.d.). SWOT analysis. How to develop a strategy for success. Retrieved from:
https://www.mindtools.com/pages/article/newTMC_05.htm

Moore, L., Lavoie, A., Bourgeois, G., & Lapointe, J. (2015). Donabedian's structure-process-outcome quality of care model: Validation in an integrated trauma system. *The journal of trauma and acute care surgery*, 78(6), 1168–1175.
<https://doi.org/10.1097/TA.0000000000000663>

National Institute of Mental Health. (2020). Bipolar.
<https://www.nimh.nih.gov/health/topics/bipolar-disorder/index.shtml>

National Institute of Mental Health. (2020). Schizophrenia.
<https://www.nimh.nih.gov/health/topics/schizophrenia/index.shtml>

References

- Orem, D. E. (1995). *Nursing concepts of practice* (5th ed.). St. Louis, MO: Mosby-Year Book.
- Parsons, N. (2018). What is a SWOT analysis, and how to do it right (with examples). LivePlan.
- Polit, D., & Beck, C. (2012). Essentials of nursing research. *Ethics*, 23(2), 145-160.
- Titler, M. G., Kleiber, C., Steelman, V. J., Rakel, B. A., Budreau, G., Everett, L. Q., ... & Zhao J, Duan S, Liu X, Han L, Jiang Y et al. (2016) Discussion on Clinical Application of Iowa Model in TCM Nursing Care. *J Altern Complement Integr Med* 2: 011.
- Roque, A. P., Findlay, L.J., Okoli, C., & El-Mallakh. (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, DOI:10.1080/01612840.2016.1269856
- Substance Abuse and Mental Health Services Administration. (2018). Texas mental health national outcome measures (NOMS): SAMHSA Uniform Reporting System. Retrieved from <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/Texas-2018.pdf>
- Vigod, S., Kurdyak, P., Seitz, D., Herrmann, N., Fung, K., Lin, E., . . . Gruneir, A. (2015). READMIT: A clinical risk index to predict 30-day readmission after discharge from acute psychiatric units. *Journal of Psychiatric Research*, 61, 205-213.