Risk Factors for Hospital Readmissions in Northern British Columbia

Jim Campbell, PhD, RCSW

Regional Integrated Health Services Advisor

First Nations Health Authority (FNHA)

Dissertation Presentation to NHA - February 25, 2021

UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Presenter - Disclosure

- No disclosures regarding this research.

- Research ethics approvals by:
  - University of Northern BC (UNBC)
  - Northern Health (NHA)
  - First Nations Health (FNHA)

Accredited by UBC CPD
CONTINUING PROFESSIONAL DEVELOPMENT
FACULTY OF MEDICINE

ROYAL COLLEGE
OF PHYSICIANS AND SURGEONS OF CANADA
COLLÈGE ROYAL
DES MÉDECINS ET CHIRURGIENS DU CANADA

Brown Bag Lunch Session–February 25, 2021
Everyone Welcome!
Virtual Session Via WebEx Only
12:15pm – 1:00pm

Teleconference :1 877-385-4099 Passcode: 8353420#
WebEx https://innovationdevelopment.webex.com
Meeting Password: brownbag

Jim Campbell, PhD, RCSW
Regional Integrated Health Services Advisor
First Nations Health Authority

Rehospitalization Risk Factors for Mental Health and Substance Use in Northern British Columbia

Mental health and substance use (MH&SU) rehospitalization rates are used as an indicator of treatment quality, to reduce cost factors, and measure efficacy. This study used secondary data on the 5159 patients (age 15 and older) hospitalized with ICD F code MH&SU diagnosis. These patients had 9103 admissions to 18 hospitals in Northern British Columbia during a five-year period, April 1st, 2010 through March 31st, 2015. Statistical tests were used to examine the associations of two performance measures with five patient factors.

The first measure was hospital readmissions. Of the 5159 patients who had 9103 admissions, 3482 (67.6%) had one hospital admission during the five-year period. The remaining 1677 (32.4%) patients had 3944 readmissions (43.3% of the hospitalizations). Hospitalization rates were compared to five factors. Patients whose cultural identity was Indigenous were over-represented and had increased readmissions. Patients who were single-never in a relationship had increased hospitalizations. Patients with ICD diagnostic F coding of schizophrenia or psychosis had increased hospitalizations.

The second measure was community MH&SU follow-up. Of the 5159 patients, 4512 (87.5%) had contact with community MH&SU during the five-year period. Community MH&SU follow-up was compared to the same five factors. Urban communities with specialized MH&SU services had reduced wait times for follow up. Patients whose cultural identity was Indigenous had longer wait times to access community MH&SU services. Patients who were divorced or separated had longer wait times. Patients with ICD diagnostic F coding for schizophrenia or psychosis had shorter wait times.

The relationship between hospital readmissions and community MH&SU follow-up measures was examined using logistic regression with the five patient factors. An unexpected inverse relationship was found between the two performance measures. Patients who did not have community MH&SU follow-up within 30 days had reduced odds ratio of hospital readmissions, whereas patients who had follow-up within 30 days had an increased odds ratio for hospital readmissions. The findings support use of a Decision Support Tool (DST) for patient planning rather than focus on specific risk factors to predict hospital readmissions.

UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA
UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Presentation Outline

- Introduction
- Premise behind Measures
- Uniqueness of Research
- Study Design & Population
- Methods & Statistical Analysis

First Performance Measure:

- Hospital Readmissions & 5 Factors

Second Performance Measure:

- Community MH&SU Follow-up & 5 Factors

Association of Two Measures

- Inverse Findings on the Measures

- Discussion & Conclusion
- Limitations of Study
- Recommendations & Future Research

Introduction

Why this study is important?

Government reporting & Health Care Quality Performance Measures:

- Canadian Institute of Health Information (CIHI) uses Quality Performance Measures to compare Health Care jurisdictions in Canada & Internationally.
- Two measures commonly used for Mental Health & Substance Use (MH&SU):
    1. Reduce # of hospital readmissions within 30 days (for MH&SU patients).
    2. Increase community follow-up within 30 days (for MH&SU patients).

- BC's Ministry of Health (MOH) applied these 2 measures to MH&SU (hospitals & community) in the 5 Regional Health Authorities from 2002 to current.

Premise behind Two Measures

Assumption - there is relationship between the 2 performance measures.

- An **increase** in community follow-up within 30 days after hospital discharge, should result in a **decrease** in numbers of hospital readmissions within 30 days.

- **NOTE:**
- Research on readmissions measure has predominately been to establish profiles of patients with higher readmission rates with the aim of reducing readmissions.
- (limited success at specific sites, which has not been generalizable to other sites).
- No studies were found that reviewed Community MH&SU follow-up post-hospitalization data in relation to hospital readmissions.

Uniqueness of Research

- Study data was all MH&SU hospitalizations in all 18 hospitals in Northern Health (NHA) region of British Columbia (= total population, not a sample).
- 5-years of data used to reduce seasonal effects & community population fluctuations.
- Studies focus on “MH readmissions”, due to not having method to obtain community follow-up data for MH&SU services to match hospital records.
- **NHA MH&SU programs were integrated, on one clinical information system (Synapse) the pilot region in BC to test MRR (Minimum Reporting Requirements).**
- The MRR included information from: psychiatrists, addiction physicians, mental health clinicians, substance use counsellors, for all MH&SU programs & services.
- Matching community MH&SU data to Hospital provided information CIHI does not have access to: e.g. Indigenous identification, relationship status, employment status, & follow-up rates for community MH&SU programs (30+ possible factors).

Study Design & Population

- **DENOMINATOR:** CIHI criteria - Discharge Abstract Database (DAD) data on 5159 patients (age 15 years up) hospitalized in NHA, who had “primary” ICD F code MH&SU diagnosis.

- The 5159 patients had 9103 admissions to 18 hospitals during the five-year period, April 1st, 2010 through March 31st, 2015.

- **NUMERATOR:** 4512 (87.5%) of the 5159 patients had contact with community MH&SU during the five-years. (Missing 12.5% could be C&Y (MCFD) or Elder (HCC)).

- MEASURES: Hospital discharge dates, readmission dates; plus dates of community contact were used to measure whether: 1) readmission within 30 days, & 2) community MH&SU follow-up occurred within 30 days.

Statistical Methods & Analysis

- 30+ categorical Factors were extracted from Community MH&SU MRR.
- All showed statistical significance to each Performance Measure; however each had small “effect size”, and did not explain which Value in each Factor had the statistical association.

1) <u>ANOVA & Tukey Post Hoc Tests</u>

- Five Factors were selected for statistical association of their Values to each performance measure:
    1. *Community size,*
    2. *Indigenous cultural identity,*
    3. *Employment status,*
    4. *Relationship status, and*
    5. *ICD F Code diagnosis.*

2) <u>Logistic Regression</u>

- Model included five factors; plus 2nd performance measure, “Community MH&SU follow-up within 30 days” to determine odds ratios (OR) to the Dependent measure “Hospital Readmissions”.

Participant Demographics

Of the 5159 patients who were admitted for mental health or substance use issues,

- 1265 (24.5%) were Indigenous; an over-representation 1.4 times their population proportion.
- Sex/gender coding showed slightly more males (2691, 52.2%) compared to females (2468, 47.8%).
- To match CIHI, the Age range was from 15 years up to 99 years. However -
- The mode age was 15 years, median 38 years, & mean 39.3 years, standard deviation of 16.5 years (22.8 years to 55.8 years).
- If Marital status was known, the majority of patients were not in a relationship when hospitalized:
    1. Single & never married - 1950 (37.8%).
    2. Separated - 358 (6.9%).
    3. Divorced - 256 (5.0%).
    4. Widowed - 132 (2.6%).
    5. Married or common-law - 921 (17.9%).
    6. Missing data – 1,542 (29.9%)

First Quality Performance Measure:

"Percentage of people admitted to hospital for mental health/ substance use issue who are readmitted within 30 days"

- 5159 patients had 9103 admissions in 5-year period.
- 3482 (67.6%) only had one hospital admission.
- 1677 (32.4%) had 3944 readmissions (= 43.3% of the hospitalizations).

ANOVA & Tukey Post Hoc Tests conducted,
Five Hypotheses tested, one for each Factor

(Code: Mean = # of hospital (re)admissions)

Hypothesis 1.1 *Patients residing in smaller rural communities will have higher mean numbers of hospitalizations in comparison to patients in larger communities with specialized services.*

- ANOVA - There was **no** statistically significant difference at the $p < .05$ level in the scores between the 3 community sizes: F (2, 5156) = 1.0.
- **Rural** communities (M = 1.71, SD = 1.63) hospitalization rates were similar to - **Urban** communities (M = 1.75, SD = 1.78) hospitalization rates.
- **Mid-size** communities (M = 1.83, SD = 2.09) had a slightly higher mean hospitalization rate (not statistically significant).

1.1 Community size (rural, mid-size, & urban) was **not** statistically significant.

Community & Population	Mean # Readmits	Std. Deviation
Rural (< 2000 pop)	1.71	1.631
Mid-Size (2000-10,000 pop)	1.83	2.092
Urban (>10,000 pop)	1.75	1.678

- Logistic Regression – A limited predictor for hospital readmissions was if the patient lived in a mid-size community, with odds ratio (OR) of 1.275.
- This indicated patients who resided in mid-size communities had slightly increased odds (not statistically significant) of having hospital readmissions compared to patients who resided in rural or urban communities.

Hypothesis 1.2 *Patients culturally identified as Indigenous will have higher mean numbers of hospitalizations compared to non-Indigenous.*

- ANOVA -There **was** a statistically significant difference at the $p < .05$ level in the scores between the three cultural identity groups: F (2, 5156) = 100.47, p = .000.
- Patients who identified as - **Indigenous** (M = 2.15, SD = 2.136) did have the highest (re)hospitalization rates.
- Their hospitalization rates were statistically higher than - **Non-Indigenous** patients (M = 1.89, SD = 1.902).
- Both groups where cultural identity was known had statistically higher (re)hospitalization rates compared to the patient group whose cultural identity was - **Unknown or Not asked** (M = 1.29, SD = 0.927).

1.2 Patients whose cultural identity was Indigenous had both:
Over-representation in population %; Plus statistically higher hospital readmissions.

Cultural Identity	Mean # Readmits	Std. Deviation
Indigenous (1)	**2.15**	**2.136**
Non-Indigenous (2)	**1.89**	**1.902**
Unknown/Not Asked (3)	**1.29**	**0.927**

- Logistic Regression - A strong predictor of hospital readmissions was if patients had an **Indigenous** cultural identity, with an odds ratio (OR) of 1.549.
- This indicated the odds of patients who identified culturally as Indigenous were one & a half times the odds to have hospital readmissions, compared to patients who were **Non-Indigenous,** or whose cultural identity was **Unknown/Not Asked.**

Hypothesis 1.3 *Patients with an employment activity will have lower mean numbers of hospitalizations than patients who were unemployed.*

- ANOVA - There **was** a statistically significant difference at the $p < .05$ level in the scores between the three employment groups: F (2, 5145) = .003.

1. **MH Volunteer** patients had the highest rehospitalization rate (M = 2.62, SD = 3.192) compared to the other two employment categories.
2. **Unemployed** patients (M = 1.78, SD = 1.801) had similar but slightly higher rehospitalization rates compared to;
3. **Employed** patients (M = 1.69, SD = 1.565), who had the lowest rehospitalization rate.

1.3 Employment status was **not** statistically significant, except for MH Volunteers.

Being Employed had slightly reduced readmissions compared to Unemployed.

Employment Categories	Mean # Readmits	Std. Deviation
Employed	**1.69**	**1.565**
Unemployed	**1.78**	**1.801**
MH Volunteers (1)	**2.62**	**3.192**

- Logistic Regression - The predictor with a negative (*B* value) association were patients who were - Employed had an odds ratio of .817, (less than 1).
- This indicated patients who were - **Employed** had somewhat reduced odds to have hospital readmissions compared to patients who were – **Unemployed**, or **MH Volunteers**.

Hypothesis 1.4 *Patients in a relationship will have lower mean numbers of hospitalizations than patients not in a relationship.*

- ANOVA - There **was** a statistically significant difference at the $p < .05$ level in the scores between the three relationship status groups: F (2, 5156) = .000.
- Patients who were - **Single-Never Married** had the highest rehospitalization rate (M = 2.13, SD = 2.255) compared to the other two relationship categories.
- Patients who were - **Married or C/L relationship** (M = 1.65, SD = 1.424), had similar, but slightly higher rehospitalization rates compared to patients who were;
- **Separated/Divorced/Widowed** (M = 1.50, SD = 1.281), who had the lowest rehospitalization rates.

1.4 Single/Never married patients had statistically increased readmissions compared to Married C/L, & Separated/Divorced (lowest rate).

Relationship Status	Mean # Readmits	Std. Deviation
Single-Never Married (1)	2.13	2.255
Married/CL Relationship (2)	1.65	1.424
Separated/Divorced/Widowed (3)	1.50	1.281

- Logistic Regression - A predictor for increased hospital readmissions was being - **Single-never married**, with an odds ratio (OR) of 1.517.
- This indicated – **Single-Never Married** patients had one & a half times the odds of having hospital readmissions compared to patients with other marital or former relationship statuses.

Hypothesis 1.5 *Patients with ICD Schizophrenic Diagnostic F Codes for their initial hospitalization will have higher mean numbers of hospitalizations in comparison to patients diagnosed with other ICD F code categories.*

- ANOVA - There **was** a statistically significant difference at the $p < .05$ level in the scores between the four ICD Diagnostic categories: F (3, 5038) = .000.
- ICD diagnostic F code, F20-29 (**Schizophrenia & Psychosis**) (M = 2.34, SD = 2.497) was statistically different compared to the three other F code groups;
  - F10-19 (**Alcohol & Substance use**) (M = 1.73, SD = 1.597),
  - F30-39 (**Depression & Bi-Polar**) (M = 1.63, SD = 1.456), &
  - F40-49 (**Anxiety & Adjustment**) (M = 1.50, SD = 1.522) with the lowest rehospitalization rate.
- Logistic Regression - The strongest predictor factor on hospital readmissions was F20-F29, **Schizophrenia or Psychosis**, with odds ratio (OR) of 2.316. This predicted patients with this diagnostic group having two and one-third odds of readmissions.
- This diagnostic group was followed by F10-F19, **alcohol or substance use** diagnosis with odds ratio of 1.699, more than one and a half the odds to be readmitted. The other two F code groups had lower odds ratios.

1.5 Patients with ICD F20-29 diagnosis of Schizophrenia or Psychosis had statistically increased hospitalizations; compared to:

F10-19 Alcohol & SU; F30-39 Depression; & F40-49 Anxiety & Adjustment disorders.

ICD Diagnostic F Code Groups	Mean # Readmits	Std. Deviation
F20-F29 Schizophrenia & Psychosis (1)	2.34	2.497
F10-F19 Alcohol & Substance Use (2)	1.73	1.597
F30-F39 Bipolar & Depression (3)	1.63	1.456
F40-F49 Anxiety & Adjustment (4)	1.50	1.522

Second Quality Performance Measure:

"Percentage of people discharged from hospital for mental health/substance use issues who receive community MH&SU follow-up within 30 days"

- Of 5159 patients, 4512 (87.5%) had contact with community MH&SU during the five-years.

ANOVA & Tukey Post Hoc Tests conducted,
Five Hypotheses tested, one for each Factor

(Note: Follow-up was measured in grouped wait days).
*(**CODE**: **1**=0-3 days, **2**=4-7 days, **3**=8-15 days, **4**=16-30 days (within the Performance Measure)*
***5**=31-60 days, **6**=61-365 days (over the Performance Measure).*

Hypothesis 2.1 *Patients residing in smaller rural communities will have longer wait times to access community MH&SU follow-up in comparison to patients in larger communities with specialized services.*

- ANOVA - There **was** a statistically significant difference at the $p < .05$ level in the scores between the three community sizes: F (2, 3897) = .000.
- Wait times for follow-up in 1) **Rural communities** (M = 4.09, SD = 2.322) were similar to 2) **Mid-size communities** (M = 3.84, SD = 2.188), both showing similar mean wait times to access community follow-up (14-30 days).
- In comparison 3) **Urban communities** (M = 3.18, SD = 2.025) had statistically significant less wait times compared to the other two community sizes for patients to access community MH&SU follow-up services (8-15 days).

2.1 **Urban** communities with specialized MH&SU services, had statistically shorter wait-times for follow-up, compared to **Mid-size**, & **Rural** communities.

Community Size & Population	Mean # Wait	Std. Deviation
Urban (> 10000) (1)	3.18	2.025
Mid-Size (2000-10000) (2)	3.84	2.188
Rural (< 2000) (3)	4.09	2.322

Hypothesis 2.2 *Patients culturally identified as Indigenous will have longer wait times to access community MH&SU follow-up in comparison to non-Indigenous patients.*

- ANOVA - There **was** a statistically significant difference at the $p < .05$ level in the scores between the three cultural identity groups: F (2, 3897) = .000.
- Patients whose cultural identity was - **Unknown or Not asked** (M = 3.96, SD = 2.242) had longest wait times to access community MH&SU follow-up services.
- Patients who identified as - **Indigenous** (M = 3.71, SD = 2.204) had second longest wait times to access community MH&SU follow-up services.
- Both cultural identity groups had statistically longer wait times than patients identified as - **Non-Indigenous** (M = 2.93, SD = 1.881), had shortest wait times to access community MH&SU follow-up services.

2.2 Patients whose cultural identity was **non-Indigenous** had statistically shorter wait-times compared to, **Indigenous**, & **Unknown** patients (longest wait-time).

Cultural Identity	Mean # Wait	Std. Deviation
Non-Indigenous (1)	**2.93**	**1.881**
Indigenous (2)	**3.71**	**2.204**
Unknown/Not Asked (3)	**3.96**	**2.242**

Hypothesis 2.3 *Patients with an employment activity will have longer wait times to access community MH&SU follow-up than patients who were unemployed.*

- ANOVA - There was **no** statistically significant difference at the $p < .05$ level in the scores of the three employment groups: F (2, 5145) = .107 on wait times to access community MH&SU follow-up services.
- The three employment categories were similar and not statistically different in relation to each other.
- Patients who were 1) **MH Volunteers** (M = 3.03, SD = 1.975) had shortest wait times to access community MH&SU follow-up; but not statistically different from the other two employment categories.
- Patients who were 2) **Unemployed** (M = 3.39, SD = 2.127), had similar wait times to patients who were 3) **Employed** (M = 3.25, SD = 2.018).

2.3 Employment status was **not** statistically significant regarding community wait-times to access community MH&SU follow-up.

Employment Category	Mean # Wait	Std. Deviation
MH Volunteer	3.03	1.975
Employed	3.25	2.018
Unemployed	3.39	2.127

Hypothesis 2.4 *Patients in a relationship will have longer wait times to access community MH&SU follow-up than patients not in a relationship.*

- ANOVA - There **was** a statistically significant difference at the $p < .05$ level in the scores between the three relationship status groups: F (2, 3897) = .000.
- Only one group had a wait time follow-up rate statistically different from the other groups (not the one hypothesised);
- Patients who were - **Separated/Divorced/Widowed** (M = 3.55, SD = 2.157) had the longest wait times to access community MH&SU follow-up; compared to the other two relationship categories.
- Patients who were - **Married or C/L relationship** (M = 3.34, SD = 2.040), had similar wait times as patients who were - **Single - Never married** (M = 3.19, SD = 2.063); both having shorter wait times for community MH&SU follow-up.

2.4 **Single/Never Married** patients had statistically shorter wait times, compared to both Married or CL; and Divorced/Separated/Widowed patients who had the longest wait times.

Relationship Status	Mean # Wait	Std. Deviation
Single - Never Married (1)	3.19	2.063
Married or C/L Relationship (2)	3.34	2.040
Divorced/Separated/Widowed (3)	3.55	2.157

Hypothesis 2.5 *Patients with ICD Schizophrenic Diagnostic F Codes for their initial hospitalization will have shorter wait times to access community MH&SU follow-up in comparison to patients diagnosed with other ICD F code categories.*

- ANOVA - There **was** a statistically significant difference at the $p < .05$ level in the scores between the four ICD Diagnostic categories: F (3, 3896) = .000.

1. F code F20-29 (**Schizophrenia & Psychosis**) (M = 2.51, SD = 1.772) had the shortest wait times to access community MH&SU follow-up.
2. F code F30-39 (**Depression & Bi-Polar**) (M = 3.14, SD = 1.929) had the second shortest wait times to access community MH&SU.
3. F code F40-49 (**Anxiety & Adjustment**) (M = 3.52, SD = 2.022) had the third longest wait times.
4. F code F10-19 (**Alcohol & Substance use**) (M = 4.05, SD = 2.274) had the longest wait times to access community MH&SU services.

2.5 Patients with ICD F20-29 diagnosis of **Schizophrenia or Psychosis** had statistically the shortest wait times; compared to: F30-39 Depression/Bipolar, & F40-49 Anxiety & Adjustment disorders.

Patients with F10-19 **Alcohol & Substance Use** had statistically longest wait times to access community MH&SU follow-up services.

ICD Diagnostic F Code Groups	Mean # Wait	Std. Deviation
F20-F29 - Schizophrenia & Psychosis (1)	2.51	1.772
F30-F39 - Bipolar & Depression (2)	3.14	1.929
F40-F49 – Anxiety & Adjustment Disorders (3)	3.52	2.022
F10-F19 – Alcohol & Substance use (4)	4.05	2.274

Statistical Association of Two Performance Measures

- **Logistic Regression** – Model containing the 5 factor predictors, and the 2 performance measures - was Statistically significant.

- However, the Model only explained between 5.8% and 8.0% variance in readmissions, and only correctly classified 65.7% of the cases.

Hypothesis 3.1 *Patients rehospitalization rates will be statistically associated with whether patients received community MH&SU follow-up within 30 days.*

- Logistic Regression - The full model containing the five factor predictors, and both performance measures was statistically significant; X^2 (10, N = 4401) – 264.474, p < .001.
- This indicated the model had some ability to distinguish between - patients who would have had a hospital readmission, and had community MH&SU follow-up within 30 days of discharge; compared to patients who did not have follow-up within 30 days.
- However, the model only explained between 5.8% (Cox and Snell R square) and 8.0% (Nagelkerke R squared) variance in readmissions, and only correctly classified 65.7% of the overall cases (not strong).

Inverse Findings on Association of Two Measures

Assumption:

Increased community MH&SU follow-up within 30 days (Measure 2); should **Reduce** hospital rehospitalizations within 30 days (Measure 1).

- Logistic Regression - Patients who **did not** receive community MH&SU follow-up within 30 days had an odds ratio (OR) of .547 (approximately half the odds) of having hospital readmissions within 30 days.
- The inverse association was - patients who **did** receive community MH&SU follow-up within 30 days had an odds ratio (OR) of 1.828 (over one & three-quarters times) the odds of having hospital readmissions within 30 days.
- These results are inverse to the assumption the two measures are based on.

Discussion

Unique findings due having data for both MH&SU Performance Measures:

1. Almost all studies on MH&SU measures focus on MH "readmissions", due to not having methods to collect community follow-up data that matches hospital records for comparisons.
2. NHA Community MH&SU data was unique as it included Substance Use programs integrated with Mental Health services in the MRR system.

   (NOTE: Also - In most jurisdictions in Canada and internationally, MH and SU services are separate program streams so data from both is difficult to collect).
3. The inverse association of patients who received community MH&SU follow-up within 30 days having higher odds of hospital readmissions, compared to patients who did not receive community MH&SU follow-up - could be due to patients with more complex, chronic, or severe conditions being followed-up – a population more likely to have hospital readmissions.
4. In comparison - patients with less severe conditions were not referred to community MH&SU, so were less likely to be readmitted (& their information was unknown/not asked).

Discussion - continued

- Where there was literature on selected Factors, the study findings were supported.
- A majority of this study's findings were new and added to knowledge of both measures; especially the 2nd measure - community MH&SU follow-up.
- The patient factors examined provided information regarding specific Values & Odds Rates on rehospitalizations; however they do not create a statistically specific patient profile to reduce readmissions – which has been the aim of most studies on readmissions.
- There are too many factors in patients' lives; socially, economically, environmentally, medically, and clinically, to develop a patient profile for generalist hospital use given the extend of unknowns, and varying levels of medical and MH&SU services in communities.
- Plus - readmissions may be clinically appropriate at times for diagnosis and treatment for more severe illnesses or medication adjustments.

Conclusion

Proposed Discharge Planning Process

- When patients are admitted to generalized acute care hospitals it may be unknown whether the patient's mental health or substance abuse issues are primary or secondary in relation to their medical needs (co-morbidity).
- A broader approach is needed to identify patients who might need mental health and substance use services, who might not solely meet the performance measure criteria, which could include co-morbid medical needs.
- The use of a **Decision Support Tool** (DST) based on '**Standard**' or '**Complex**' criteria for in-patient assessments, to assist with treatment, for discharge planning to have referrals made to appropriate community-based service (e.g. Primary Care physicians and Interdisciplinary teams, or specialized MH&SU services).
- Specific discharge planning should be provided for patients who identify as **Indigenous** due to over-representation in hospitalizations and readmissions.

Limitations of the Study

- The study focused on rural and Northern patients, hospitals, and community MH&SU services; so is likely not generalizable to large metropolitan urban centres with specialized hospitals and service teams.
- No comparisons were made with rural and Northern areas in other Canadian provinces to compare their allocations of hospitals and community services on a population basis.

- The 2nd measure, community follow-up was based primarily on health authority community MH&SU services, and did not include data from MCFD C&Y MH Service, Family Physicians, or Elder Services (HCC).
- While ICD F Code diagnostic codes are used; there is no nationally agreed “severity” scale used by hospital care providers to measure symptoms of patients at time of admission and discharge.
- Related to this; the community follow-up within 30 days measure does not incorporate patient clinical conditions or service needs by severity prioritization.

Recommendations & Future Research

- Recommendations - Use DST “standard” and “complex” criteria to determine patients needs - 1) following admission for inpatient care, and – 2) for discharge planning to match needs with community services.
- Future Research - on DST criteria and usefulness in referrals to community and specialized services. & how Specialized Services reduce wait times.
- E.g. can use of DST reduce readmissions, and reduce lengths of hospital stay (LOS) by providing quicker follow-up?
- CIHI to approve “severity” scale for MH&SU patients to use with ICD F code diagnosis, at time of hospital admission and discharge to help with planning.
- Specific discharge planning be provided for patients who identify as **Indigenous** to determine reasons for over-representation in hospitalizations and readmissions, and help identify community-based service deficiencies.

Thank you

Questions/Comments