First Nations and Métis Health Service:

Royal University Hospital Chart Audit Report

Prepared by:

Chijioke K. Nwankwo
Masters of Public Health Practicum Student
&
Dr. Charlene Haver
Health Research Facilitator and Innovation Analyst

Office of the Associate Vice-President Research - Health, University of Saskatchewan /
Vice-President Research and Innovation, Saskatoon Health Region

FINAL
February 5, 2015

University of Saskatchewan

Saskatoon Health Region

This report may be referenced as:

Nwankwo, C.K., Haver, C.R.A., Eagle, G., & Lafond, G. First Nations and Métis Health Service. Royal University Hospital Chart Audit Report. February, 2015.

We would like to thank the Public Health Observatory in the Saskatoon Health Region for their contribution towards the residence mapping.

INTRODUCTION

Aboriginal people in Canada have greater health disparities compared to the rest of the population (Adelson, 2005). These health disparities generally translate into an increased burden on the health care system in the form of increased emergency department (ED) visits, increased hospital admissions, and an increased length of stay in the hospital. The length of stay is monitored keenly by various stakeholders and government officials because of its cost implications and impact on healthcare. CIHI (2014a) estimates the average cost of a hospital stay per patient to be $6,174 in Saskatchewan. This is the highest provincial amount and is 15.7 percent higher than the national average of $5,335 (CIHI, 2014a). The literature suggests that issues such as timely access to primary care, racial profiling, and stereotyping continue to perpetuate these health disparities (Browne et al., 2011; Tang & Browne, 2008).

The First Nations and Métis Health Service (FNMHS) was created by the Saskatoon Health Region to improve the health of First Nations and Métis populations by collaborating with other healthcare professionals to provide equitable care. Services provided by the unit include: links to traditional supports, such as ceremonies and elders; coordination of care to provide assistance with transportation, accommodations, meals, etc. within the First Nations and Inuit Health Branch Guidelines; patient advocacy to foster communication between the staff and clients; facilitation of services, such as ensuring appropriate care for patients with complex needs; and resources to connect with Health Canada's Non-Insured Health Benefits (NIHB).

PURPOSE

Upon request from Gabe Lafond, Director of the FNMHS, a Masters of Public Health student under the supervision of the Office of the Associate Vice-President Research – Health and the First Nations and Métis Health Service carried out a retrospective chart audit. The audit sought to examine the characteristics of the First Nations and Métis patients seeking care at Royal University Hospital (RUH) in Saskatoon, Saskatchewan. Key variables of interest included: length of stay (LOS), delay in discharge and the number of comorbidities. Information obtained from this audit is to be used by the Saskatoon Health Region for quality improvement purposes.

RESULTS

A total of 100 charts were reviewed. The audit examined general medicine admissions to RUH between January 2013 and July 2014. Patient charts that did not fit the inclusion criteria were not examined and no data was recorded. All patients identified were First Nations. Métis patients were unable to be identified due to the current standards of recording information in health record charts. No method currently exists for patients to self-identify as Métis; therefore, making it extremely difficult to determine from the charts if patients are Métis. First Nations patients could be identified through recording of their DIAND (Department of Indian Affairs and Northern Development) number, which characterizes patients as registered Indians under the Indian Act. The inability to include Métis people is a limitation of this quality improvement work, which is further discussed in the limitations section.

Demographic and Clinical Results

From the sample of 100 patients, 54 were female and 46 were male. The average age of all patients was 44.3 [standard deviation (SD) 17.0] years. The majority of patients communicated in the English language alone (89 patients); while six patients spoke English and Cree, one spoke English and Dené, and one spoke Dené alone. For residence, 44 patients resided in urban areas, 27 lived on reserve, and 17 were rural residents. Sixty-nine of the 100 patients had a regular primary care provider; whereas the remaining 31 patients did not have one. For the number of co-morbidities, 10 patients lived with six or more comorbidities, 45 had 3-5 comorbidities, 28 had 1-3 comorbidities, and only 17 were without any comorbidity. There was a high use of the emergency department for admissions, with 96 patients admitted to the hospital via the emergency department (ED). See Table 1 for a summary of the above data; as well as data on prior admissions to RUH, prior ED visits to RUH, and discharge destination.

Seven patients experienced a delay in discharge (Table 1). Of the patients who experienced delays, three of the cases were delayed due to bed space availability at the receiving facility (e.g. home hospital). Two cases were delayed due to transportation issues, one case was delayed for community support issues, and one case was delayed for further medical issues. When investigating the residence of the patients who experienced a delay in discharge, three lived in urban areas, three lived on reserve, and one patient resided in a rural area.

Eight patients were discharged against medical advice and one patient left before formal discharge (Table 1). The average age of patients who left against medical advice was 34.3 years and half of the patients had a primary care provider. Refer to Table 2 for characteristics of the patients who left against medical advice.

The chart audit also noted additional physical, psychological, and environmental diagnoses experienced by patients. Twenty-seven patients had no record of physical, psychological, or environmental diagnoses. Nineteen had additional physical diagnoses; 19 had recorded substance abuse; seven had psychological diagnoses; three had environmental challenges, such as access issues at home; and 22 had two or more different combinations of physical, psychological, or environmental diagnoses.

The most common reason for admission was infection (23 patients), which included both skin and respiratory infections. Intestinal or gallbladder diagnoses accounted for 17 admissions. The next most common reasons for admission were respiratory diagnoses and overdose, each accounting for 11 admissions. See Table 3 for a summary of reasons for admission.

Table 1. Demographics & Clinical Data

	Absolute Number	Percent
Gender		
Male	46	46%
Female	54	54%
Primary Language Spoken		
English	89	89%
English/Cree	6	6%
English/Dené	1	1%
Dené	1	1%
Residence		
Urban	44	44%
Reserve	27	27%
Rural	17	17%
Homeless	6	6%
Medical facility	4	4%
Correctional facility	2	2%
Primary Care Provider		
Yes	69	69%
No	31	31%
# of Comorbidities		
0	17	17%
1 - 2	28	28%
3 - 5	45	45%
6 +	10	10%
Admittance to Hospital		
Admitted through ED	96	96%
Other	4	4%
# of Admissions to RUH in Previous Year		
None	64	64%
One	23	23%
Two	8	8%
Three or more	5	5%
# of ED Visits to RUH in Previous Year		
None	54	54%
One	23	23%
Two	9	9%
Three or more	14	14%
Discharge Destination		
Home	68	68%
Another Hospital	7	7%
Another Care Facility	6	6%
Family Members Home	5	5%
Other	14	14
Delay in Discharge		
Yes	7	7%
No	93	93%
Discharge Profile		
Discharged Against Medical Advice	8	8%
Left Before Formal Discharge	1	1%
Formally Discharged	91	91%

Note: The number of missing data points varies in each indicator due to the availability of information in each chart. Emergency Department (ED).

Table 2. Characteristics of Patients Discharged Against Medical Advice

	Absolute Number	Percent
Gender		
Male	6	75%
Female	2	25%
Primary Care Provider		
Yes	4	50%
No	4	50%
Substance Abuse		
Yes	5	63%
No	3	38%

Note: This summary data only includes the eight patients who were discharged against medical advice.

Table 3. Reason for Admission

Reason for Admission	Absolute Number	Percent
Infection	23	23%
Intestinal or Gallbladder Diagnoses	17	17%
Respiratory	11	11%
Overdose	11	11%
Cardiology	6	6%
Neurology	5	5%
Blood Disorder	4	4%
Infectious Disease	3	3%
Complications from a Condition or Surgery	3	3%
Renal	2	2%
Fractures or Wounds	2	2%
Other	9	9%
Two or more admitting Diseases	4	4%

Note: 'Infection' included conditions such as sepsis and pneumonia, whereas Infectious Disease' included conditions such as tuberculosis. 'Other' included conditions that did not fit in any of the categories listed above (e.g. skin lesions, fever, and meningitis). Two or more admitting diseases included all patients who were admitted on account of more than one disease.

The average length of stay for all patients was 9.7 (SD 14.5) days, with a range of 0 to 90 days. The average length of stay for patients who lived in an urban residence was 9.2 (SD 12.8) days; rural residence was 12.4 (SD 19.3) days, and on reserve was 10.7 (SD 16.7) days. There was no significant difference for length of stay between those who lived in urban areas, rural areas or on reserves (ρ=0.761) (Figure 1).

There was a significantly longer hospitalization period for patients who experienced a delay in discharge (26.0 SD 24.0 days) compared to those without a delay in discharge (8.5 SD 12.9 days) (ρ<0.05) (Figure 2).

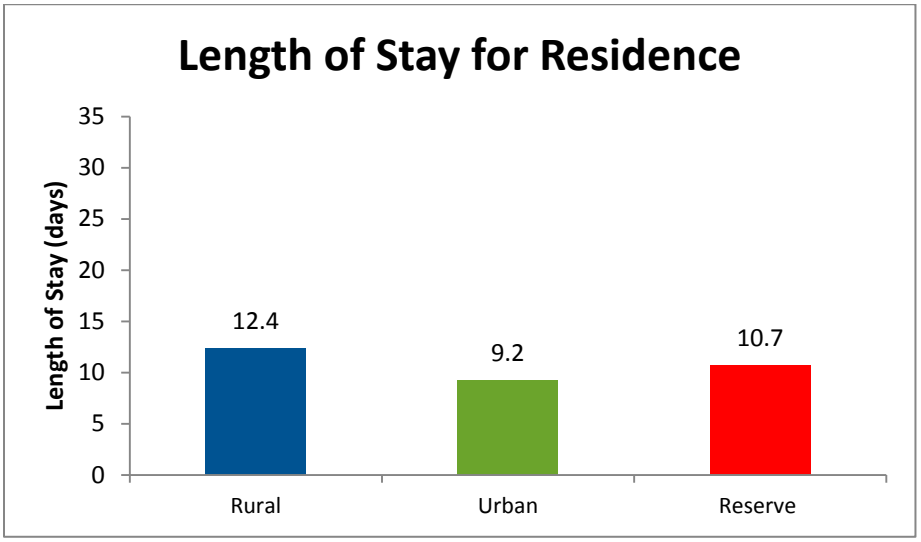

Figure 1. Length of Stay for Residence. Length of stay was not significantly different between patients who resided in rural areas (17 patients), urban areas (44 patients) or on reserve (27 patients) (p=0.761).

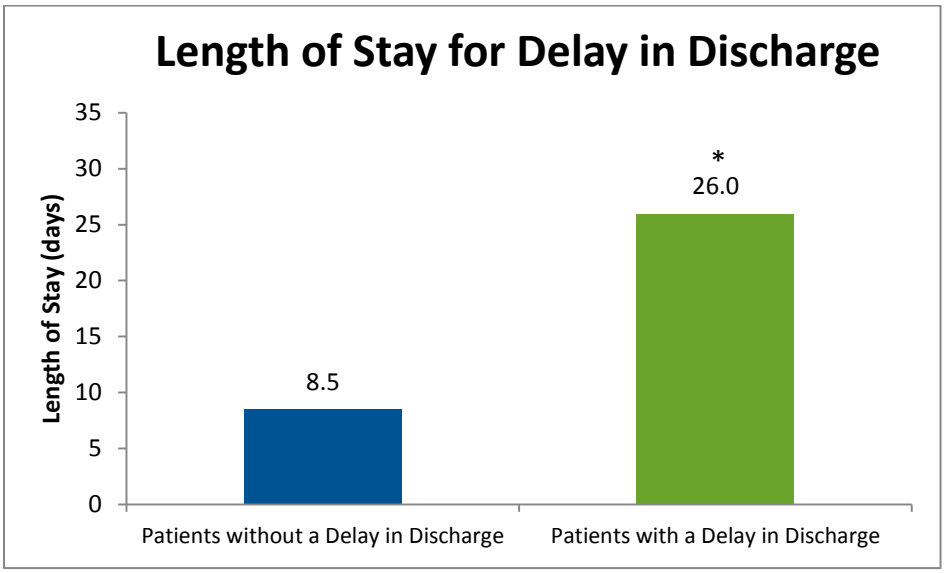

Figure 2. Length of Stay for Delay in Discharge. * Length of stay for patients who had a delay in discharge (7 patients) was significantly longer than those who did not have a delay in discharge (93 patients) (ρ<0.05).

Length of stay for patients with a regular primary care provider was 9.5 (SD 14.7) days, with a range of 0 to 90 days, which was not significantly different from patients without a regular primary care provider who had a length of stay of 10.2 (SD 14.2) days, with a range of 1 to 62 days (ρ=0.836). Further, length of stay did not statistically differ for patients admitted through the ED compared to those not admitted through the ED (ρ=0.784). Patients admitted through the ED had a length of stay of 9.8 (SD 14.7) days, with a range of 0 to 90 days, whereas patients not admitted through the ED had a length of stay of 7.8 (SD 4.3) days, with a range of 4 to 14 days. Although the range of 4 to 14 days for those not admitted through the ED was much smaller than those admitted through the ED (range 0 to 90 days), there were only four patients who were not admitted through the ED.

Results showed that the number of comorbidities did not vary according to area of residence (ρ=0.675). Patients living in an urban residence had 2.9 (SD 2.2) comorbidities, patients in a rural residence had 2.5 (SD 1.3) comorbidities, and patients living on reserve had 2.6 (SD 2.3) comorbidities. The number of comorbidities was not statistically different for patients who experienced a delay in discharge (3.7 SD 2.6 comorbidities) and those who did not experience a delay in discharge (2.7 SD 2.0 comorbidities) (ρ=0.224).

Residence Mapping Results

Postal code data was analyzed and mapped to determine where the chart audit patients resided in Saskatchewan. The analysis showed that 46 patients were from the Saskatoon Census Metropolitan Area, 32 from rural south Saskatchewan, 15 from rural north Saskatchewan, and seven from small cities. Please refer to Figure 3 for the patient residence map.

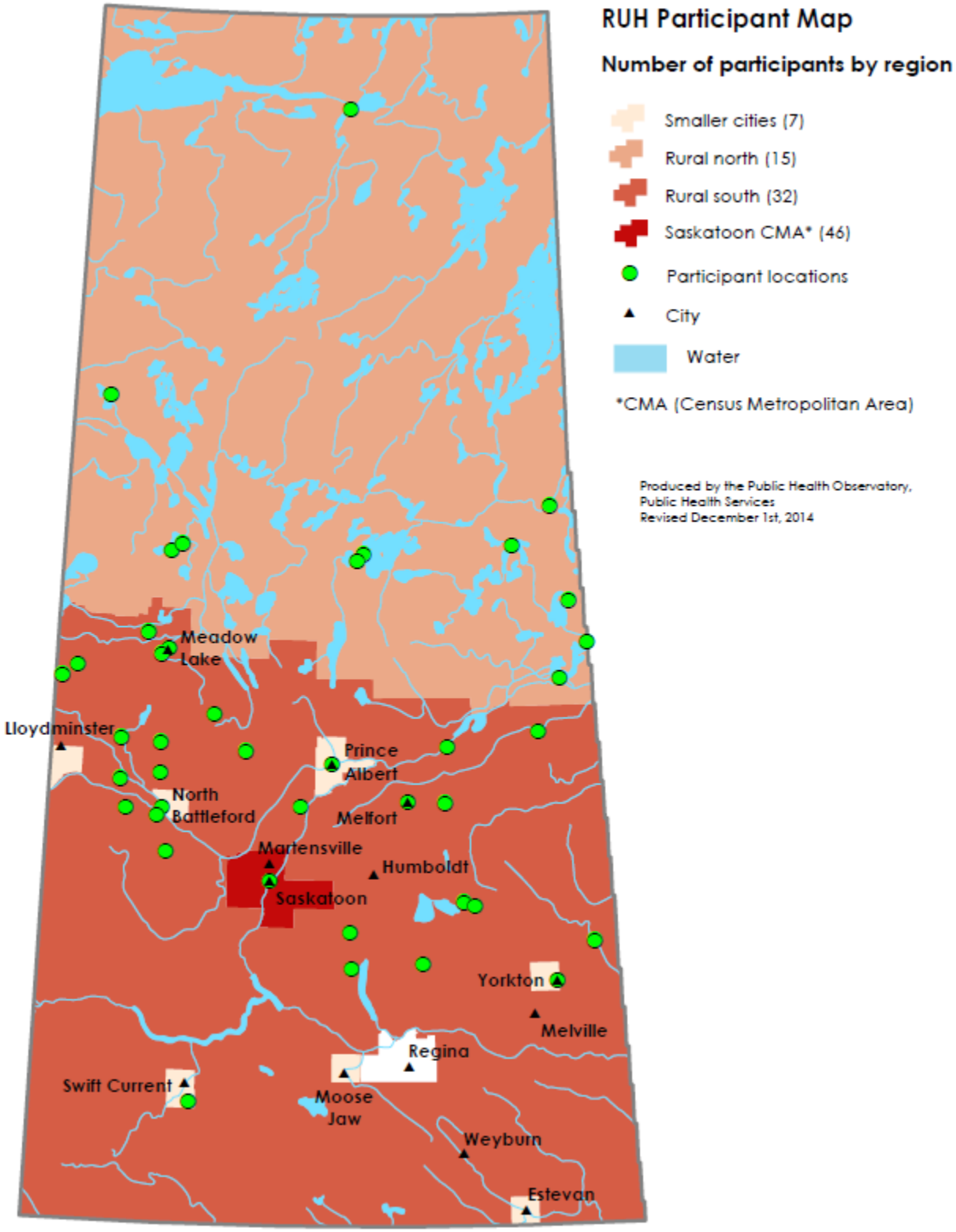

Figure 3. RUH Patient Residence Map

DISCUSSION

The main purpose of the chart audit was to examine the characteristics of First Nations and Métis patients seeking care at Royal University Hospital (RUH) in Saskatoon, Saskatchewan. Statistical analyses were completed for six comparisons: length of stay for residence; length of stay for delay in discharge; length of stay for primary care provider; length of stay for ED admissions; comorbidities for residence; and comorbidities for delay in discharge. The only statistically significant finding was that patients who had a delay in discharge (LOS 26.0 days) stayed in hospital significantly longer than patients without a delay in discharge (LOS 8.5 days). Considering that one day in hospital for a general medicine patient in SHR costs $528 (Saskatoon Health Region, Department of Finance, January 29, 2015), a delay in discharge that increases the length of stay can become increasingly expensive for health care organizations. It should be noted that the cost of $528/day is the direct patient care cost and does not include any support services, physician costs, diagnostic tests, etc. The difference between the average lengths of stay for those who had a delay in discharge (26 days) compared those who did not have a delay in discharge (8.5 days) is 17.5 more days in hospital. This equates to an additional $9,240 per patient who had a delay in discharge.

Although the other analyses were not found to be statistically significant, it is likely that many of the findings would become significant if the work was replicated with a larger sample size; such as the difference between length of stay and residence (rural, urban, and reserve). With a small sample size (100 patients) and a high variability in many of the measures (i.e. high standard deviations), it was difficult to detect statistically significant differences in the present chart audit.

It should be highlighted that although not all findings were statistically significant, they may be clinically significant; meaning that the findings may be considered impactful from a clinical point of view. For example, the number of comorbidities was not statistically different for patients who experienced a delay in discharge (3.71 SD 2.6) and patients who did not experience a delay in discharge (2.73 SD 2.0) ($p = 0.224$). However, it may be clinically meaningful that patients with a delay in discharge had 1.4 times more comorbidities than patients who did not have a delay in discharge. A CIHI report (2008) showed that hospital costs rise as the number of comorbidities increase. It is also interesting to note that there was a graded increase in the average length of stay as the number of comorbidities increased (no comorbidity LOS 6.2 days; 1-2 comorbidities LOS 7.9 days; 3-5 comorbidities LOS 11.1 days; six or more comorbidities LOS 14.7 days). Future work could further investigate this trend in the population studied.

The average length of stay for patients was highly variable, as indicated by the large standard deviations. The length of stay for all patients was 9.7 days, with a standard deviation of 14.5 days. In addition, the range was 0 to 90 days. The average length of stay was higher than the national and provincial (Saskatchewan) estimates of the average length of stay for acute in-patient hospitalizations determined by CIHI (2014b) to be 7.6 days and 6.9 days, respectively.

Length of stay for patients who lived in an urban area was 9.2 days and patients who lived on reserve had an average length of stay of 10.7 days. Rural patients had an average length of stay of 12.4 days, which is 3.2 days and 1.7 days longer than urban patients and on reserve patients, respectively. The reasoning for the longer length of stay for rural patients is unknown. Although rural patients stayed longer in hospital, which costs more, the longer length of stay may actually provide better care for rural patients. Longer hospital stays may limit transfers to other hospitals or to other care facilities that rural patients may be transferred to; and in addition, may ensure that the patient is ready to go home before they are discharged. To determine the actual reasons for a longer length of stay, qualitative research (e.g. interviews) with patients and families should be carried out.

Qualitative research may also assist to further understand some of the other findings. The chart review showed that 69 percent of patients had a primary care provider. This value is much lower than the national average of 85.1 percent and the Saskatchewan average of 82.2 percent (CIHI, 2014c). Although there was no significant difference in the length of stay for individuals with a primary care provider and those without a primary care provider (ρ=0.836), it is likely that an increase in the number of patients who have a primary care provider will lead to better health outcomes. Further work should be done in consultation with patients and health care professionals to determine why the First Nations patients sit below the provincial and national average for having primary care providers. This may be due to access to care; and if further examined, the limitations in primary care providers for this population may be addressed.

It was shown that 96 percent of the patients were admitted through the ED, suggesting a high usage of ED services. The high use of the ED may be due to patients waiting until they are very sick to seek medical care. Newton et al. (2012) stated that high use of the ED could be due to a lack of access to primary care. In the present chart audit, the residence map showed that 54 percent of the patients resided outside of Saskatoon, with 15 percent of patients residing in the rural north, and 32 percent residing in the rural south, which could have attributed to the high incidence of ED visits. In contrast, high use of the ED may more simply be an issue of preference of the ED (Newton et al., 2012). Durand et al. (2012) provided evidence to show that patient preference for the ED was based on their perception of the ED as a suitable and efficient provider of care. More work is needed in this area to determine why the ED is used at such a high rate in the population studied.

Of all the charts reviewed, eight patients left the hospital against medical advice and one patient left before formal discharge. The proportion of patients discharged against medical advice is 6.2 times greater than the value obtained for Canada (CIHI, 2013). The average length of stay for patients who left against medical advice was two days. According to CIHI (2013), this is not surprising given that the decision to leave is typically made early in the course of in-patient admissions. The average age of patients who left against medical advice was 34.3 years. Six of the patients were male and five patients were noted to have substance abuse issues. These findings are similar to the CIHI (2013) report, which identifies younger males and substance abuse as common characteristics of individuals leaving against medical advice. The literature suggests that communication gaps (CIHI, 2013; Alfandre, 2009) and interaction issues (Harrison et al., 2012) are possible determinants of a patient's decision to leave against medical advice. Patients who leave against medical advice are also noted to have adverse medical outcomes and tend to be high users of hospital services (CIHI, 2013). More research is required in the population studied to determine how to limit the number of patients leaving against medical advice.

LIMITATIONS

A key limitation to this chart review was the absence of self-identification for Métis patients. This resulted in only First Nations patients being included in the data set, as First Nations patients were able to be identified through their DIAND numbers. In order to effectively improve the care for Métis patients, work needs to be done in this area to determine how to allow patients to self-identify upon admission to hospital.

The second limitation identified was the variability in the depth of information obtained from the charts reviewed. Given that the information in the charts was retrospective and was entered by different health professionals with varied writing styles (some more detailed, others more succinct), there was variance in the depth of information provided, which may influence the data quality.

Lastly, this audit was limited by the ability to only track prior admissions and prior ED visits to the same hospital (RUH). The current information recording systems are not linked to determine patient admissions across the three Saskatoon Hospitals in the Saskatoon Health Region. It should be recognized that the data presented in this report contains information from a single hospital within the Saskatoon Health Region and included data from First Nations patients only. As such, the generalizability of this data is limited.

RECOMMENDATIONS

It is strongly recommended that a method for patients to self-identify upon admission to hospital is implemented. This would allow Métis patient's health care experiences to be tracked and improved. In addition, it would allow for a much broader data sample of First Nations patients to carry-out quality improvement work.

It is recommended that the present work be followed-up with larger sample sizes for further statistical comparisons. Specifically, the relationship between the number of co-morbidities and length of stay should be investigated; as well as the high ED usage for the population studied.

In addition, a qualitative approach, such as the use of interviews or focus groups with patients, families, and health care providers is needed to provide rich experiential data that may further improve quality of care for First Nations and Métis people. Qualitative work should focus on the reasons for a longer length of stay, reasons for a delay in discharge, as well as the root causes of the lack of primary care providers for the population studied.

CONCLUSION

One of the main findings of the chart audit was that First Nations patients who experienced a delay in discharge stayed in hospital significantly longer than patients without a delay in discharge. Although various findings were not statistically significant due to small sub-samples, they may be clinically relevant. Thus, further investigation of this preliminary work is needed, with larger sample sizes and qualitative approaches to provide important contextual information regarding individuals' experiences. The present chart audit reaffirmed the need for patients to have the option to self-identify upon admission to hospital. It is imperative that systems are put in place to gain a better understanding of the First Nations and Métis populations being served. Research is needed, in collaboration with First Nations and Métis patients and families to further understand this population's hospital stay in order to improve services and health outcomes.

METHODOLOGY

The chart audit was carried out by a Masters of Public Health practicum student under the supervision of the Office of the Associate Vice-President Research–Health, University of Saskatchewan/Vice-President Research and Innovation, Saskatoon Health Region and the First Nations and Métis Health Service, Saskatoon Health Region. Ethics approval was obtained from the Biomedical Research Ethics Board at the University of Saskatchewan and Operational Approval was obtained from the Saskatoon Health Region prior to initiation of the chart audit.

A retrospective chart audit was completed by pulling charts with patients admitted from January 2013 to July 2014. Inclusion criteria included First Nations or Métis patients that were admitted to the general medicine ward at Royal University Hospital in Saskatoon, Saskatchewan. Upon investigation into how the patient charts would be identified, it was determined that only First Nations patients could be identified through their DIAND numbers. Métis patients were, therefore, not included in the sample due to these limitations. Once the First Nations patients were identified, a random sample of 100 patients was selected for the chart audit. The Health Records Department at Royal University Hospital randomly selected the patient charts that were used for data collection. As the patient charts were pulled in the Health Records Department, a Masters of Public Health Practicum Student collected the data and recorded the necessary information using a chart audit tool.

The chart audit tool used for data collection was a modification of a similar tool used for a previous chart audit at St. Paul's Hospital, in Saskatoon (Haver et al., 2014). The tool was adapted for the unique circumstances in RUH and was restructured to enhance the efficiency of data collection. The chart audit tool included 19 items. The first items consisted of patient demographics including age, gender, primary language spoken, and postal code. The next items included clinical information such as the date admitted, whether the patient was admitted through the emergency department, the reason for admission, the presence of comorbidities, whether the patient had a primary care provider, the number of previous admissions in the calendar year, and the date discharged. The audit tool also collected data on the reasons for any delay in discharge, as noted by the care team. Each chart that met the inclusion criteria was carefully reviewed and the variables were recorded. Unique identifiers, such as patient name were not recorded.

In the charts, valuable information was obtained from the discharge summary, progress notes, practitioner's orders, patient profile, physical and occupational therapy notes, social work notes, and nursing admission assessment charts. On average, the review of each chart took approximately 10 to 30 minutes, depending on the length of the chart.

Data Analysis

Data was analyzed using IBM SPSS Statistics 21. Descriptive statistics were used to summarize the demographic data and clinical characteristics. Descriptive data was analyzed using frequency counts and percentages. One-way ANOVAs (Analysis of Variance) and t-tests were used to analyze planned comparisons. Length of stay was compared for the following variables: residence (rural, urban, and reserve), delay in discharge (yes, no), primary care provider (yes, no), and admittance through the emergency department (yes, no). Also, the number of comorbidities was compared for residence (rural, urban, and reserve) and delay in discharge (yes, no). Significance was accepted at $p<0.05$. Where appropriate, Tukey's B was used for post-hoc tests.

REFERENCES

Adelson, N. (2005). The embodiment of inequity: Health disparities in Aboriginal Canada. *Canadian Journal of Public Health, 96*(2), S45-61.

Alfandre, D. J. (2009). “I’m going home”: Discharges against medical advice. *Mayo Clinic Proc, 84*(3), 225-260.

Browne, A. J., Smye, V. L., Rodney, P., Tang, S. Y., Mussell, B., & O'Neil, J. (2011). Access to primary care from the perspective of Aboriginal patients at an urban emergency department. (Research Support, Non-U.S. Gov't). *Qualitative Health Research, 21*(3), 333-348. doi: http://dx.doi.org/10.1177/1049732310385824

Canadian Institute for Health Information. (2008). The cost of hospital stays: Why costs vary. Ottawa, ON, CAN: Canadian Institute for Health Information. Retreived January 29, 2015 from https://secure.cihi.ca/free_products/2008hospcosts_report_e.pdf

Canadian Institute for Health Information. (2013). Leaving against medical advice: Characteristics associated with self-discharge. Ottawa, ON, CAN: Canadian Institute for Health Information. Retrieved July 29, 2014 from https://secure.cihi.ca/free_products/LAMA_aib_oct012013_en.pdf

Canadian Institute for Health Information. (2014a). Average cost of hospital stay. Ottawa, ON, CAN: Canadian Institute for Health Information. Retrieved July 30, 2014 from http://ourhealthsystem.ca/#!/indicators/015/average-cost-of-a-hospital-stay/;overview;/

Canadian Institute for Health Information. (2014b). Inpatient hospitalizations: Volumes, length of stay and standardized rates. Ottawa, ON, CAN: Canadian Institute for Health Information. Retrieved July 30, 2014 from http://apps.cihi.ca/MicroStrategy/asp/Main.aspx?server=torapprd30.cihi.ca&project=Quick+Stats&uid=pce_pub_en&pwd=&evt=2048001&visualizationMode=0&documentID=C6F8B4144B03958E3AE3CAB5DD440EA7

Canadian Institute for Health Information. (2014c). Have a regular doctor. Ottawa, ON, CAN: Canadian Institute for Health Information. Retrieved July 30, 2014 from http://ourhealthsystem.ca/#!/indicators/001/have-a-regular-doctor

Durand, A.-C., Palazzolo, S., Tanti-Hardouin, N., Gerbeaux, P., Sambuc, R., & Gentile, S. (2012). Nonurgent patients in emergency departments: rational or irresponsible consumers? Perceptions of professionals and patients. *BMC Research Notes, 5*(1), 525-533. doi: 10.1186/1756-0500-5-525

Haver, C.R.A., Cottrell-Lingenfelter, C., Colton, T., Eagle, G., Clarke, S., & Lafond, G. (2014). First Nation and Métis Health Service: St. Paul’s Hospital Chart Audit Report.

Harrison, B., Finkelstein, M., Puumala, S., & Payne, N. R. (2012). The complex association of race and leaving the pediatric emergency department without being seen by a physician. *Pediatric Emergency Care, 28*(11), 1136-1145. doi:http://dx.doi.org/10.1097/PEC.0b013e31827134db

Newton, A. S., Rosychuk, R. J., Dong, K., Curran, J., Slomp, M., & McGrath, P. J. (2012). Emergency healthcare use and follow-up among sociodemographic groups of children who visit emergency departments for mental health crises. (Research Support, Non-U.S. Gov't). *Canadian Medical Association Journal, 184*(12), E665-674. doi: http://dx.doi.org/10.1503/cmaj.111697

Tang, S. Y., & Browne's, A. J. (2008). 'Race' matters: Racialization and egalitarian discourses involving Aboriginal people in the Canadian healthcare context. (Research Support, Non-U.S. Gov't). *Ethnicity & Health, 13*(2), 109-127. doi: http://dx.doi.org/10.1080/13557850701830307