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Descriptive Study of 30-day Hospital Readmissions for Person 65 and Older in Louisiana 2011-2014

Elizabeth Levitzky, PhD, MBA, Asha Buehler, MPH Candidate, Tina Patel Gunaldo, PhD, DPT, MHS, Susanne Straif-Bourgeois, PhD, MPH

Purpose: Investigate gender, race, discharge status location and health conditions that are associated with hospital readmissions for Louisianians 65 years of age and older. The primary analysis focused on readmissions that occurred within 30 days of a previous hospital admission discharge.

Methods: Utilizing data from the Louisiana Hospital Inpatient Discharge Database (LAHIDD), a unique patient identifier was created for each person admitted to a reporting facility. Hospital admissions missing age, gender, race, diagnosis code group, number of admissions, insurance payer group, and discharge location were excluded. The final dataset contained 670,065 admissions and 207,897 unique patients. Two additional variables were created, the first flagged admissions within 30 days of a previous discharge and the second was utilized to determine the number of admissions per patient. Our analysis focused on five diagnosis categories – circulatory, digestive, infectious, respiratory diseases, and unintentional injuries.

Conclusions: In our study, we found differences in readmission rates among patients 65 years and older grouped by race, gender, and discharge location prior to readmission. Within these older patients, the rate of readmission varied by diagnosis code category with circulatory diseases having the highest rate among the five diagnosis categories of interest. White males showed the highest rates in each category. The discharge location prior to the 30-day readmission also differed among the race and gender groups.

INTRODUCTION

Since 2012, hospitals in the U.S. have been financially penalized for inpatient readmissions.¹ The Centers for Medicare and Medicaid Services (CMS) defines a readmission as “an admission to a subsection hospital within thirty days of a discharge from the same or another subsection hospital.”¹ Currently, acute exacerbation of chronic obstructive pulmonary disease (COPD), aspiration pneumonia, coronary artery bypass graft, elective total hip arthroplasty, elective total knee arthroplasty, heart failure, myocardial infarction, pneumonia, and sepsis with pneumonia present on admission, are diagnoses included in the readmission measures.¹ In 2010, Louisiana had a 16.3% readmission rate overall, diagnosis specific rates were: surgical (12.0%), congestive heart failure (CHF) (22.8%), acute myocardial infarction (AMI) (17.9%), and pneumonia (15.8%).²

Many publications and national reports provide information on hospital readmissions for individuals who have Medicare as an insurance type. Interest specific to Medicare is related to government spending and related health outcomes. The U.S. federal government accounted for 29% of healthcare

spending in 2015, the largest share compared to households, private businesses, and state and local governments.³ Medicare spending was \$646.2 billion in 2015 and is expected to grow.⁴ In 2012, even though the elderly were the smallest population group, this group accounted for 34% of all healthcare spending.⁴ In addition, healthcare spending for individuals 65 years of age and older is three times more than the working-age person, \$18,988 versus \$6,632 respectively.⁴ A better understanding of the factors that influence hospital readmissions, particularly in those over 65 years of age, is an essential element for improving healthcare quality, efficiency and equity in the U.S.⁶⁻¹⁰

Over the past five years, Louisiana has consistently had a higher percentage of 30-day hospital readmissions for Medicare enrollees as compared to national readmission percentages.⁶ However, in Louisiana there is limited information regarding hospital readmissions for race, gender, and discharge location prior to the 30-day readmission, all of which can have an impact on hospital readmission rates. Therefore, our team of authors analyzed the Louisiana Hospital Inpatient Discharge Database

(LAHIDD) to identify differences in 30-day hospital readmissions in Louisiana residents 65 years and older.

METHODS

LAHIDD patient admission data for the period 2011 to 2014 was provided by the Louisiana Department of Health (LDH) for this descriptive data analysis. The LAHIDD data represents approximately 50% of the Louisiana’s licensed hospitals and 90% of acute care beds during the period 2011-2014. The LAHIDD database includes forty-five data elements which are directly received from providers and a third-party vendor hired on behalf of the Louisiana Hospital Association (LHA) providers.

The data was transferred from LDH via a secure site and imported into Microsoft Access®. A unique patient identifier and encounter number was assigned to each patient admission record. For admission records where the patient’s race was labeled as missing, invalid, or not coded, the race code was changed to “unknown.” Admission records where the discharge date and next admission date at the same facility were equal, were deemed a transfer within the facility and were combined into a single hospital admission record. The first three admission diagnosis codes (ICD-9) were grouped into 19 categories using the Clinical Classification System (CCS).¹¹

Next, we utilized a data step in SAS¹² to calculate the gap between the current admission date and the previous admissions date. An indicator variable was created assigning a value of 1 when the patient’s admission date was within 30 days of the previous admission date and a value of 0 when the gap was greater than 30 days. A “readmissions” field was created to tally the cumulative readmissions for each patient over the four-year period.

The discharge status category was utilized to evaluate the discharge location prior to the 30-day hospital readmission. The patient’s first hospital admission was categorized as “initial” and a separate category was set aside for patients who expired during their hospitalization. The discharge status category “home” was defined as home with no specified support, and “home health” indicated discharge to home with home health and/or hospice care. The “care facility” category included discharge to a nursing home, skilled nursing facility, inpatient rehabilitation facility and/or a long-term acute care facility. LAHIDD patients records with a discharge code of transferred, unknown, or missing were grouped in the “other” category.

RESULTS

During the four-year period a total of 90,869 patients over the age of 65 years were admitted to the hospital 312,582 times. Among these patients there were 69,943 30-day readmissions, 22.4% of all hospital admissions. Table 1 provides demographic information for patients sixty-five years of age and older.

Table 1. Patient Demographics 65 years and older. Louisiana 2011 - 2014.

Age Group	All Admissions 312,582 (%)	Unique Patients 90,869 (%)	30-Day Readmissions 69,943 (%)
65-74 years	40.8	40.1	42.1
75-84 years	37.5	37.5	37.1
85 years and over	21.7	22.4	20.8
Gender			
Males	57.4	57.0	55.4
Females	42.6	43.0	44.6
Race			
Black	23.7	22.4	24.8
White	76.3	77.6	75.2
Insurance			
Commercial	10.3	10.7	10.1
Medicaid	0.7	0.7	0.8
Medicare	79.0	79.3	77.7
Self/No insurance	0.3	0.2	0.3
Other	9.6	9.1	11.1
Total	100.0	100.0	100.0

The 30-day readmission rates for patients 65 years of age and older were highest for white males overall and for the five diagnosis code categories focused on for this study. Black females had the lowest 30-day readmission rates overall and for each of the five diagnosis code categories. Further analysis of the individual diagnosis code categories showed that patients with a primary diagnosis code for circulatory problems had the highest readmissions rates for all race and gender categories (Figure 1).

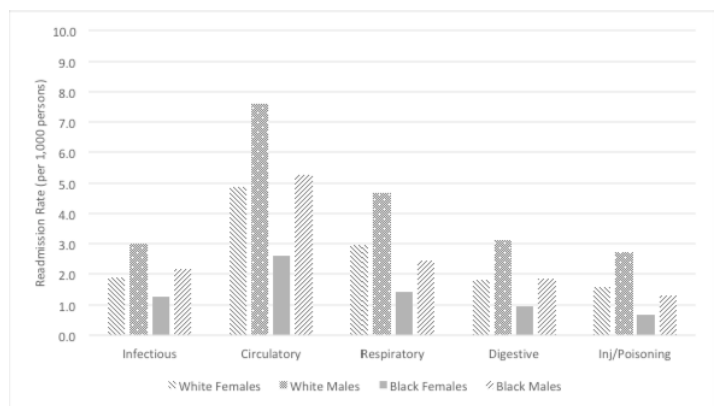


Figure 1. 30-day readmission rates by diagnosis category, race, and gender for patients 65 years and older. Louisiana 2011 - 2014.

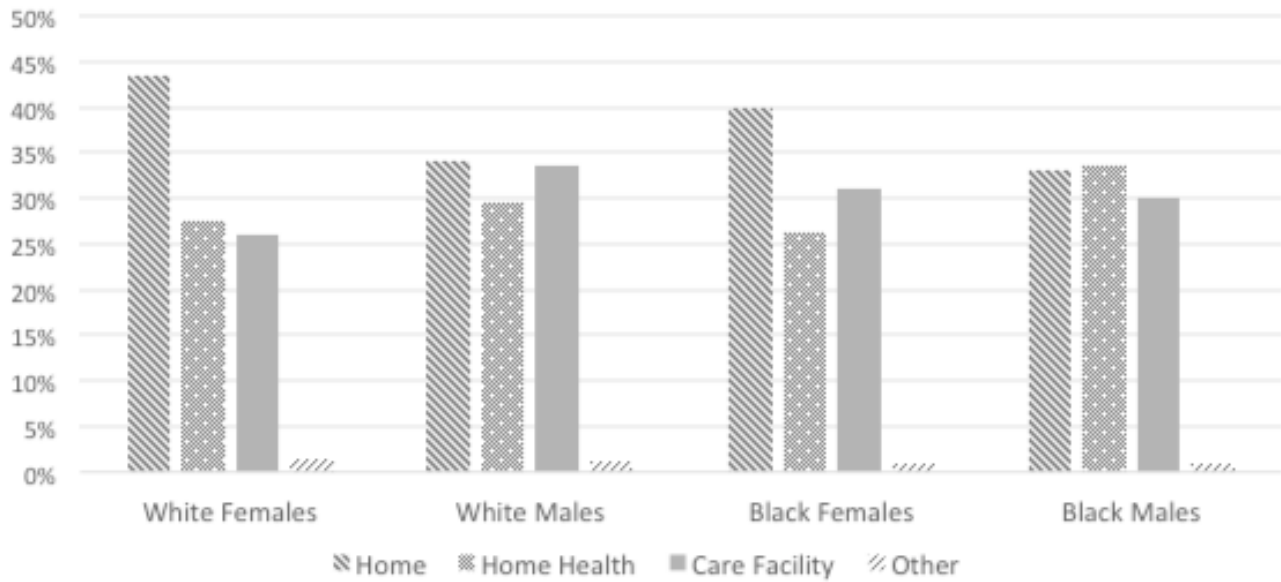


Figure 2: Discharge location prior to the 30-day hospital readmission by race and gender for for patients 65 years and older. Louisiana 2011 - 2014.

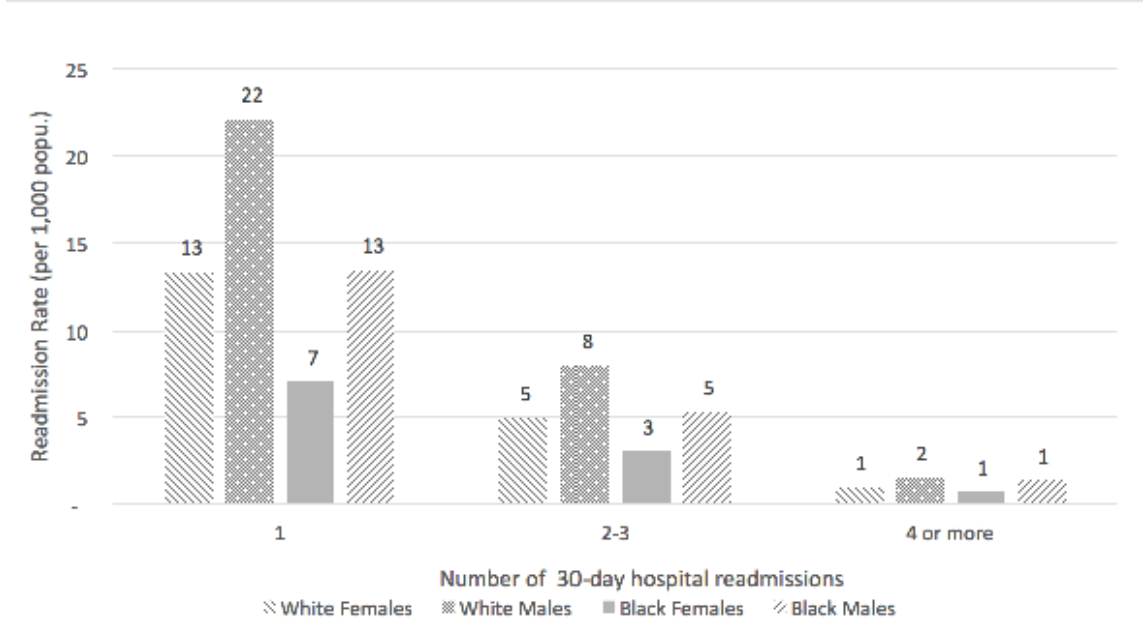


Figure 3. Number of 30-day hospital readmissions in patients 65 years and older, by race and gender. Louisiana 2011 - 2014.

Figure 2 provides an overview of discharge location prior to 30-day hospital readmission by gender and race. Among readmitted patients 65 years and older, white and black females were more likely to have a prior discharge status to home (43% and 40%, respectively). Less than 30% of white and black females received home health services prior to their 30-day readmission. Among white and black males, the proportions being readmitted from home, home health, and a care facility were between 30%-34%.

The number of 30-day readmissions for patients 65 years and older were also categorized by number of 30-day hospital readmissions within the four-year period: 1 readmission, 2-3 readmissions, and 4 or more readmissions. White males had the highest rate with similar rates for white females and black males. Black females had the lowest rate in all three frequency categories. Within each readmission category circulatory

diagnoses were the largest proportion followed by infectious diseases and respiratory related diagnoses (Figure 3).

DISCUSSION

Thirty day hospital readmissions data will continue to be utilized as an outcome measure for reimbursement through a value-based care system. Expanding research in this area to include analysis of additional factors, such as gender, race and discharge location, has the potential to impact readmissions rates. Many hospitals have developed quality improvement programs specific to diagnoses in an effort to decrease the number of readmissions.

Circulatory-related diagnoses were the leading readmission diagnosis for the 30-day readmission rates in all race and gender categories with respiratory-related diagnoses second. These findings are consistent with other studies on hospital readmissions of individuals 65 years and older.¹³⁻¹⁵ At the same time our results differed from similar studies in rates of readmission by gender and race. First, the highest readmission rate was in the white males relative to the other groups, other studies report higher rates among blacks 65 years and older. Second was the low rate of readmission for black females which persisted across all levels of analysis. Studies conducted nationally and in other regions of the U.S. have found higher rates and odds ratios of 30-day readmission among blacks compared to whites.^{14,15} Access to care or the perception that access is limited is a possible explanation for the observed rates in this study population. In the past ten years, the Louisiana public hospital system has gone through a transformation placing a greater emphasis on financial stability, resulting in billing patients for services, curtailing services, and closing units that are not financially viable. The impact may have been greater on the under- and uninsured elderly population, leading them to only seek care when they can no longer avoid hospitalization.

We explored the possible root cause of the disparity in readmission rates by examining where patients were discharged prior to their 30-day hospital readmission (home, home with home health services, care facility, and other). Our findings showed that home was the most common prior discharge location for females, whereas percentages for males were approximately equal between home, home with home health services, and care facilities. Supporting the need for well-informed post-discharge caregivers, the Dartmouth Atlas Project reported that patients and their caregivers frequently have a limited understanding of the health problems and the treatment plan to adhere to after leaving the hospital.² In some cases, the discharge instructions are focused on the primary reason for the current admission, not factoring in the attention needed for the patient's other illnesses that may be equally or more important. For patients with multiple chronic conditions, the coordination of post-discharge care among specialist healthcare providers is an important factor in the patient's recovery. The situation may be exacerbated when women, typically the caregiver, are discharged to home without home health services, relying on

others less accustomed to the caregiver role.²

The results on the number of 30-day hospital readmissions for patients 65 years and older (Figure 3) showed white males with the highest rate for each readmission category. In a study on 30-day hospital readmission for heart related conditions in California, Ranashnghe, et al., found a greater proportion of patients ≥ 65 years were white but differed from our results showing a more balanced distribution by gender with 48% of heart patients were female.¹⁶

In order to reduce the high rate of readmission for chronic diseases in Louisiana, healthcare providers and educators will need to address the risk factors associated with these diseases that patients can modify or eliminate. Educating patients during discharge on adopting more healthy habits, such as tobacco cessation, appropriate alcohol consumption, improving nutrition/eating habits, and increasing physical activity as a component of discharge planning, will lead to better health outcomes. However, it must be stated that healthcare providers alone cannot address all of these issues. Creating healthier communities needs to be a team approach including stakeholders internal and external to the healthcare industry.¹⁷⁻¹⁸

Our study had several limitations. The LAHIDD dataset analyzed covered a time period when the management of the Louisiana public hospitals transitioned to private hospital partners which impacted reporting hospital admissions data from some locations, especially in 2013 and 2014. However, the LAHIDD dataset for this time frame is also utilized for federal reporting by the Agency for Healthcare Research and Quality, Healthcare and Utilization Project.⁷⁻⁹ A second limitation was the use of secondary data utilized by hospitals for insurance claims in which diagnosis codes may have been ranked to yield higher reimbursement. Future research should focus on longitudinal analysis of patients with 30-day hospitals readmissions to determine if discharge location recommendations has an impact on readmission rates.

CONCLUSION

More research is needed to explore potential factors that influence 30-day hospital readmissions such as comorbid conditions and insurance types in all age groups. The data collected and analyzed was prior to Medicaid expansion in Louisiana on January 12, 2016. More recent hospital admission data for 2015 and 2016 could examine the impact of broadening healthcare coverage on initial hospitalizations and 30-day hospital readmissions.

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