New Mexico Epidemiology

April 17, 2015 Volume 2015, Number 3

Hospital Readmissions among the Homeless Population in Albuquerque

Victoria F. Dirmyer, PhD
Epidemiology and Response Division
New Mexico Department of Health

On a given night in January 2013, there were approximately 610,042 people experiencing homelessness in the United States. Although this number appears high, homelessness has decreased by 3.7 percent in the United States from 2012–2013.[1] The estimated rate of homelessness in New Mexico was 13.5 homeless persons per 10,000 population.[1] According to the report, New Mexico saw an overall decrease of 13.1 percent in homelessness from 2012-2013. A point-in-time (PIT) count of homelessness in Albuquerque in 2013 counted 1,170 individuals as being homeless; representing 903 households, 781 without children and 122 with children.[2] These are most likely underestimates of the true homeless population in Albuquerque, as these counts are usually completed at shelters, missing out on the numerous homeless individuals living on the street or under other living conditions. These counts also do not include homeless youth. In a report by the National Center on Family Homelessness on Child Homelessness, New Mexico ranked fifth worst out of 50 states based on factors such as extent of child homelessness, risk for child homelessness (based on poverty rates, home foreclosures, children without health insurance, and number of female-headed households), child well-being, and state policy and planning objectives.[3]

Homeless individuals are frequent visitors to hospitals, especially emergency departments. Studies have shown that homeless individuals are hospitalized more often, and once hospitalized have longer lengths of stay and incur higher hospital costs compared to non-homeless individuals.[4-7] Homeless individuals are more likely to be readmitted compared to housed individuals; hospital readmissions can be viewed as a healthcare quality indicator, with readmissions indicating inadequate treatment and/or discharge status.

In this analysis, a 30-day hospital readmission rate was calculated for homeless patients. A multivariate regression analysis was conducted to determine patient and visit characteristics that increased the odds of a readmission.

Methods

This study is a retrospective analysis of hospital inpatient and discharge data, referred to as the HIDD dataset. This dataset consists of hospital discharges from non-federal hospitals across the state of New Mexico. Data elements included in this dataset include but are not limited to patient characteristics including name, date of birth, age, address, and insurance information as well as visit characteristics including up to 18 diagnosis fields, procedure codes, and admission and discharge dates.

Three years of HIDD data were analyzed (2010–2012) with a focus on Albuquerque area hospitals. We were mainly interested in homeless patients in the Albuquerque area because of the greater number of resources available to the homeless (shelters, centers, etc.) as well as the number of hospitals who could provide data on homeless patients. As of 2013, there were 12 hospitals in the Albuquerque metropolitan area, including a large, teaching hospital in the University of New Mexico Hospital System.

A homeless record was defined by the patient's address; either recorded as 'homeless', 'none', or an address for a shelter in Albuquerque. The shelter list used for this analysis was found on the homeless shelter directory website. Patient records that had at least one instance of being homeless and visiting an Albuquerque hospital were included in the analysis. Once identified as a homeless patient, all records for that patient were included in the readmission analysis. If a patient visited an Albuquerque hospital, and then went to visit a hospital in another city, their records were still in-

cluded in the analysis. Records were excluded for those patients who were homeless, but did not visit an Albuquerque area hospital during the calendar year.

Results

The HIDD datasets for 2010–2012 included 209,144, 228,485, and 199,370 records per year, respectively. In 2010, there were 741 records that indicated the patient was homeless, representing 368 unique patients. In 2011, there were 582 records indicating a homeless status, representing 253 patients, and in 2012 there were 745 records indicating a homeless status, representing 317 unique homeless patients. In all three years, males were proportionately higher in number (ranging from 68.3%-71.7% of the homeless population). The overall mean age over the three year time period was 43.8 years. The predominant race/ethnicity was White followed by Hispanic patients. The predominant admitting primary diagnoses for homeless patients were neuro-psychiatric conditions, followed by digestive diseases and then alcohol and drug related conditions. The average length of stay ranged from 8.0-9.0 days over the three year period. The majority of the patients had a routine discharge, followed by a discharge to another general hospital, skilled nursing facility, or institution. The third most common discharge status among homeless patients was leaving against medical advice (AMA).

Roughly, one third of the homeless patients experienced a 30-day readmission as an inpatient during the three year time period (Table 1). Approximately 45 percent of patients had multiple inpatient admissions each year, with some patients being admitted more than 10 times in one calendar year (2 percent of patients). A few patients were admitted more than 20 times in one year. Patients who were admitted to the hospital in excess of 10 times per year were treated for cardiovascular conditions, respiratory distress, poisonings, and neuro-psychiatric conditions. The average 30-day readmission rate among Bernalillo County residents was 12.3% over the three year time period.

In unadjusted analyses, factors significantly associated with an increased odds of a 30-day readmission included age, gender, certain primary diagnoses, and the number of admissions per patient (Table 2). Females were less likely to have a 30-day readmission compared to males, and all age groups above 19 years of age had an increased odds of a 30-day readmission. With each additional admission by a homeless patient, the odds of a 30-day readmission increased. Patients who suffered from a respiratory ailment, injury, or cardiovascular ailment were less likely to be readmitted compared to patients with a neuro-psychiatric condition. In adjusted analyses, only age, number of admissions, and patients with a primary diagnosis of a neuro-psychotic condition still remained significantly positively associated with a 30-day readmission.

Most readmissions occurred early after discharge, with two-thirds of the readmissions occurring within 10 days of discharge (66.3%). Of the readmissions that occurred within six days of their previous admission, homeless patients were previously discharged routinely 45.0% of the time, previously discharged AMA 13.9% of the time, and previously discharged to another facility 37.6% of the time.

Discussion

In this analysis, we found that homeless patients, who visited an Albuquerque area hospital at least once during the reporting year, had a high 30-day readmission rate. This rate was higher than the estimated national readmission rate and the rate observed among Bernalillo County residents. From 2007–2010, the Centers for Medicare and Medicaid Services (CMS) estimated a 30-day readmission rate of roughly one in five beneficiaries (~20%). This rate has remained relatively unchanged from 2007–2010. With a readmission rate of approximately 19 percent, CMS estimated the cost of these readmissions to be around $17 billion.[8] The majority of the readmissions in this current study occurred within 10 days of discharge. The leading primary diagnosis of homeless patients was neuro-psychiatric disorders.

The work by the New Mexico Coalition to End Homelessness has shown that families with children are living in Albuquerque area shelters. According to Grant, et al.,[9] these children are the most vulnerable as homelessness is associated with multiple stressors, including loss of property, disruption of school and community relationships, and dramatic changes in family routine. These children are also

less likely to receive preventive health care services, like routine vaccinations. Homelessness affects all age groups, but the youngest may incur the largest loss as homelessness is hard to overcome and children are relying on the adults in their life for guidance.

Limitations in this analysis included a retrospective analysis of a transient population. This analysis most likely underestimates the true homeless population utilizing hospitals in the Albuquerque area. The use of the HIDD dataset limits the potential patient population in that a patient must remain in the hospital for 24 hours to be considered an inpatient. If a homeless patient came through the Emergency Department, was treated and released in under 24 hours, then they would not be captured in this analysis.

Recommendations

In this three year, city centric study, the 30-day inpatient readmission rate among patients who identified as homeless was 30.1 percent. Given the high readmission rate observed in this study and the work conducted by prior researchers with a similar population, hospitals need to take appropriate steps to identify this population as they come through their doors and create a suitable discharge plan for this population to prevent costly readmissions. Readmissions also highlight possible issues around quality of care for the entire episode of care. Research on the costs of readmissions have shown that these costs are quite high, and for this population, most of these costs are either being paid from state funds or charitable funds from the hospital. The current process releases homeless patients back to the streets or shelters (routine discharge) and it is unknown if follow-up care is provided. Readmission rates are a direct means of capturing and measuring quality, which will become an increasingly important means of measuring hospital quality in the future.

References

1. National Alliance to End Homelessness. The state of homelessness in America 2014. . 2014; 4.
2. New Mexico Coalition to End Homelessness. 2013 point in time count results. . 2013.
3. Bassuk EL, DeCandia CJ, Beach CA, Berman F. America's youngest outcasts: A report card on child homelessness. . 2014.
4. Doran KM, Ragins KT, Iacomacci AL, Cunningham A, Jubanyik KJ, Jenq GY. The revolving hospital door: Hospital readmissions among patients who are homeless. *Med Care*. 2013; 51(9):767-773.
5. Salit SA, Kuhn EM, Hartz AJ, Vu JM, Mosso AL. Hospitalization costs associated with homelessness in new york city. *N Engl J Med*. 1998; 338(24):1734-1740.
6. Hwang SW, Weaver J, Aubry T, Hoch JS. Hospital costs and length of stay among homeless patients admitted to medical, surgical, and psychiatric services. *Med Care*. 2011; 49(4):350-354.
7. Kushel MB, Vittinghoff E, Haas JS. Factors associated with the health care utilization of homeless persons. *JAMA*. 2001; 285(2):200-206.
8. Centers for Medicare & Medicaid Services. National medicare readmission findings: Recent data and trends. 2012.
9. Grant R, Gracy D, Goldsmith G, Shapiro A, Redlener IE. Twenty-five years of child and family homelessness: Where are we now? *Am J Public Health*. 2013; 103 Suppl 2:e1-10.

Table 1. 30-Day Readmission Rates by Year, Bernalillo County, 2010–2012

Calendar Year	Number of Patients with a 30-Day Readmission	Total Number of Patients	% of Patients with a 30-Day Readmission
Homeless Population			
2010	107	368	29.1
2011	82	253	32.4
2012	93	317	29.3
Overall*	256	850	30.1
Number of Records	720	2,068	34.8
All Bernalillo County Residents			
Overall*	17,798	144,710†	12.3

*Overall combines all 3 years.
+ Total number of patients.

The New Mexico Epidemiology Report

Michael G. Landen, M.D., M.P.H.
State Epidemiologist & Editor

The New Mexico Epidemiology Report
(ISSN No. 87504642) is published monthly
by the
Epidemiology and Response Division
New Mexico Department of Health
1190 St. Francis Dr.
P.O. Box 26110, Santa Fe, NM 87502

24-Hour Emergency Number:
(505) 827-0006
www.health.state.nm.us

Table 2. Patient Hospitalization Characteristics and Odds of 30-Day Readmission, Bernalillo County, 2010–2012 (N= 2,001 records)

Patient Characteristics	**Unadjusted OR (95% CI)**	**Adjusted OR (95% CI)**
Gender		
Male	Ref.	Ref.
Female	0.65 (0.46-0.93)*	0.77 (0.58-1.03)**
Age Groups (Years)		
0-19	Ref.	Ref.
20-29	3.90 (1.18-12.98)*	2.52 (0.90-7.07)**
30-39	4.66 (1.44-15.07)*	2.89 (1.05-7.97)*
40-49	4.26 (1.33-13.65)*	2.65 (0.97-7.28)**
50-59	4.54 (1.42-14.48)*	2.68 (0.98-7.35)**
60+	5.69 (1.66-19.58)*	3.23 (1.11-9.37)*
Race/Ethnicity		
White	Ref.	Ref.
Black	0.99 (0.54-1.82)	0.94 (0.59-1.52)
Native American	0.78 (0.46-1.33)	0.77 (0.52-1.17)
Hispanic	0.84 (0.58-1.22)	0.79 (0.59-1.06)
Other	0.60 (0.31-1.17)	0.82 (0.48-1.40)

Hospitalization Characteristics (*Readmissions*)	**Unadjusted OR (95% CI)**	**Adjusted OR (95% CI)**
Number of Admissions	1.38 (1.31-1.43)*	1.37 (1.31-1.43)*
Length of Stay (LOS)	1.00 (0.99-1.00)	1.00 (0.99-1.00)
Diagnosis Category		
Neuro-Psychiatric Condition	Ref.	Ref.
Digestive Disease	0.92 (0.59-1.44)	0.89 (0.59-1.35)
Alcohol/Drug Related Disease	0.72 (0.44-1.19)	0.76 (0.48-1.20)
Respiratory Disease	0.48 (0.27-0.84)*	0.49 (0.29-0.83)*
Injury	0.48 (0.25-0.89)*	0.62 (0.35-1.10)**
Cardiovascular Disease	0.48 (0.27-0.84)*	0.62 (0.37-1.03)**
Poisoning	0.92 (0.52-1.63)	0.75 (0.42-1.32)
Other	0.98 (0.70-1.37)	1.03 (0.76-1.40)
Discharge Status		
Routine Discharge	0.83 (0.64-1.08)	1.02 (0.58-1.80)
Discharge—AMA	1.44 (0.98-2.13)	1.79 (0.93-3.44)**
Discharge - Specialty Facility[β]	0.98 (0.69-1.38)	1.18 (0.63-2.22)

[β] Facilities include: Skilled Nursing, Intermediate Care, Rehabilitation, and Psychiatric. * $P \leq 0.05$ **$P \leq 0.10$