

WhitePaper

Readmissions in North Texas:

A Comprehensive Overview of Statistics,
Demographics and Charges to Identify Disparities

A research summary from the Dallas-Fort Worth Hospital Council Foundation



Dedicated to
Dr. Ron J. Anderson,
DFWHC Foundation
Board Member, who
originally supervised and
mentored the study

www.dfwhcfoundation.org

Principal Investigator and Corresponding Author
Dr. Sushma Sharma
Director Public and Population Health
ssharma@dfwhcfoundation.org

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READMISSIONS IN NORTH TEXAS: A COMPREHENSIVE OVERVIEW OF STATISTICS, DEMOGRAPHICS AND CHARGES TO IDENTIFY DISPARITIES

Sushma Sharma*, Fadeke Ogunyankin, Greg Shelton, Kristin Jenkins
Dallas-Fort-Worth Hospital Council Research and Education Foundation

*Principal Investigator and Corresponding Author:

Dr. Sushma Sharma,
Director Public and Population Health,
DFWHC Research & Education Foundation,
250 Decker Drive, Irving 75062, TX

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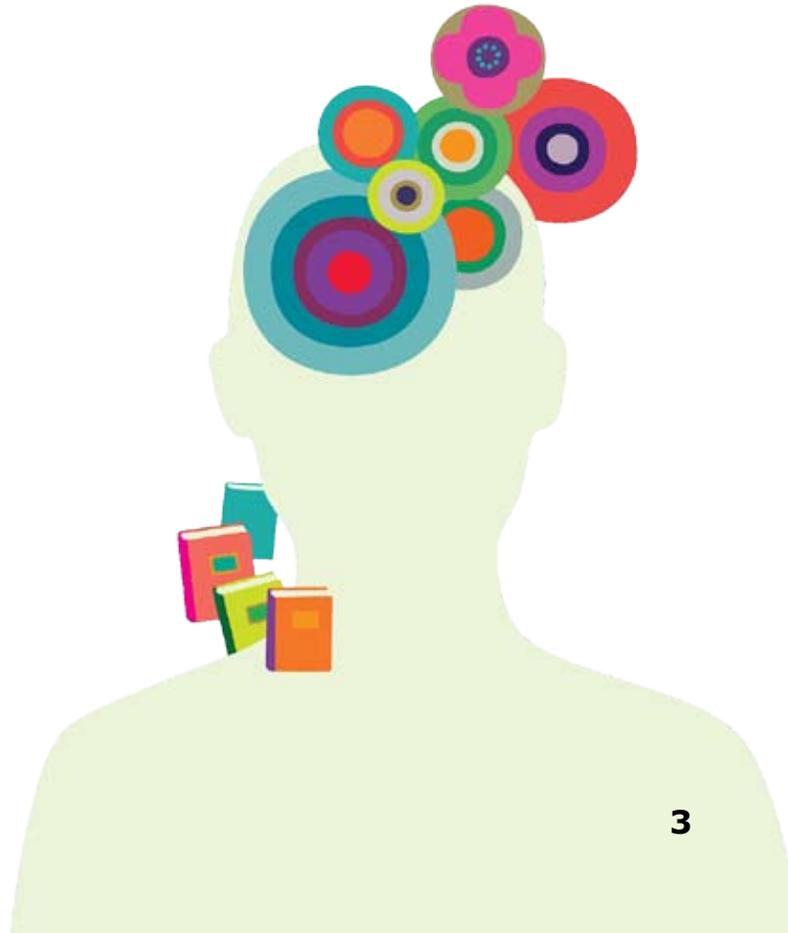


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GLOSSARY OF TERMS

Readmission: Based on Centers for Medicare & Medicaid Services (CMS), a patient who is discharged from the hospital (Index Hospitalization) and is readmitted for any diagnosis within 30 days of discharge, and did not die in the hospital, discharged against medical advice, transferred to another acute care facility, transferred to rehabilitation and/or are either on admission or a readmission not both.⁵

Index Hospitalization: This is the first admission to a hospital within the study period that does not have a prior index hospitalization within the previous 30 days, to be considered in a 30-day readmission analysis. All analyses are limited to discharges from general and specialty acute care hospitals. The following criteria were applied to determine index hospitalizations: 1) age greater than 18 years; 2) patient admitted to any of the 77 hospitals within the Foundation warehouse; 3) has a valid regional master patient index (REMPI) ID; 4) is not a patient who left against medical advice; 5) is alive at time of discharge; 6) is not discharged to hospice; 7) is not transferred and 8) is not a hospitalization that was contiguous with a transferred hospitalization.⁶

30 day Time Frame: The measures assess unplanned readmissions within a 30-day period from the date of discharge from an index admission. This standard time period is necessary so that the outcome for each patient is measured uniformly.

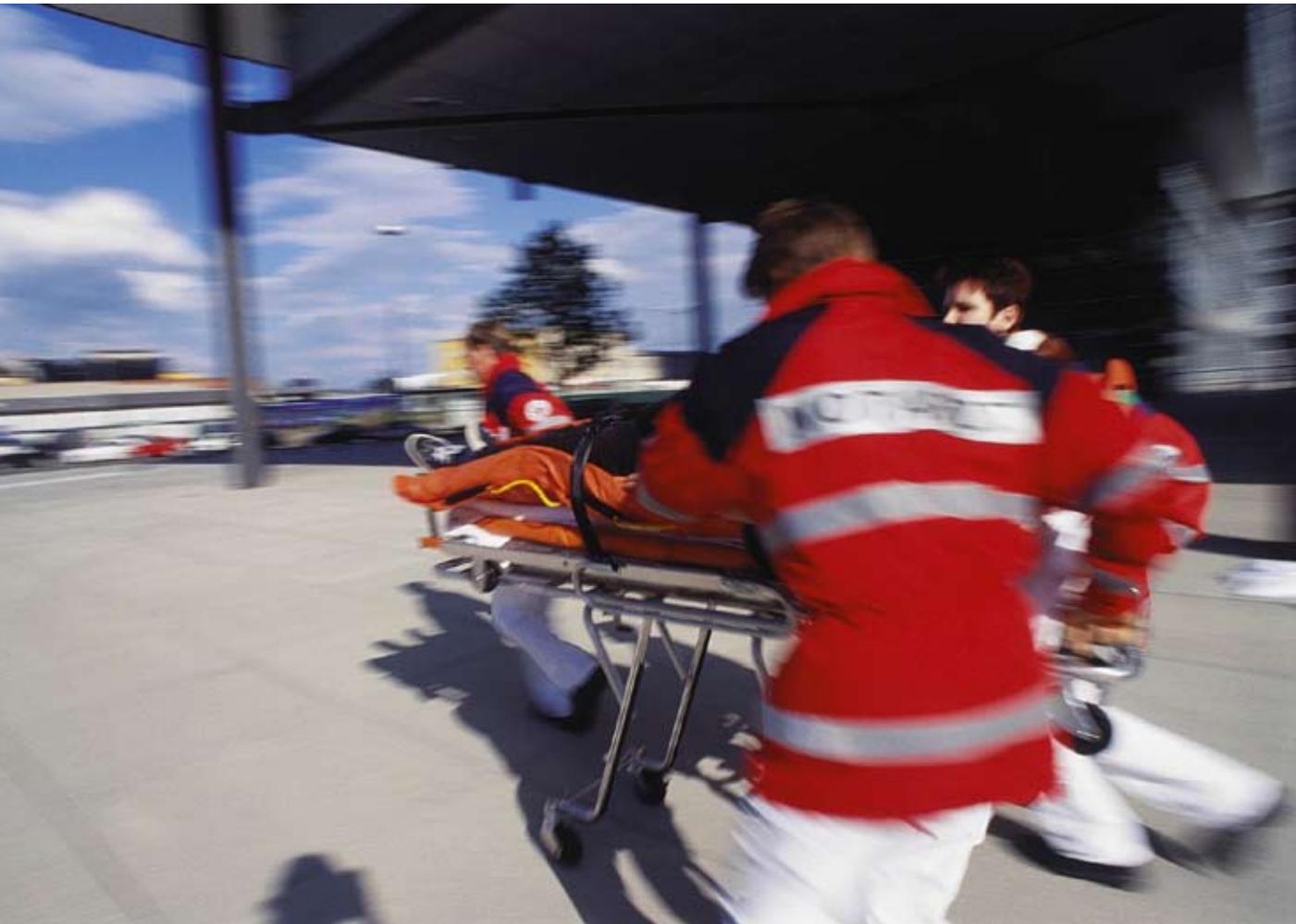
Multiple Readmissions: If a patient has more than one unplanned admission within 30 days of discharge from the index admission, only the first one is counted as a readmission. The measure looks for a dichotomous yes or no outcome of whether each admitted patient has an unplanned readmission within 30 days. However, if the first readmission after discharge is planned, then no readmission is considered in the outcome, regardless of whether a subsequent unplanned readmission takes place because it would be unfair to attribute the unplanned readmission back to the care received during the index admission.

Uninsured: The uninsured are patients that were either self-pay or had an unknown payment source in the claims data that is submitted by the hospitals. These are average costs and do not include those that left without medical advice, transferred to another facility or died in the hospital. Readmissions are calculated with these records to more accurately represent the overall average.⁵

30-day Readmission Rate: The 30-day readmission rate is defined as the number of index hospital stays with any readmission within 30 days of being discharged alive divided by the total number of index hospitalizations. No more than one readmission is counted within the 30-day window, but a patient can have multiple index hospitalizations within the study period.

A patient can have another index admission if they are admitted after the 30 day period of their last discharge.⁵

Length of Stay (LOS): LOS is the number of days spent in the hospital and is the difference between the admission date and the discharge date. This report gives the LOS for the Index Hospitalization and the LOS for the readmission. Again, those that left against medical advice, died in the hospital or were transferred to another facility were not counted or represented in the LOS calculation⁵. Readmissions are calculated with these records to more accurately represent the overall average.⁵



EXECUTIVE SUMMARY

With the entire health care industry moving towards enhanced quality and performance reporting, reducing hospital readmission rates has become one of the top priorities. Approximately 20% of Medicare beneficiaries are readmitted within 30 days of discharge, and these potentially avoidable readmissions have been estimated to cost the American public >\$15 billion per year. The Hospital Readmissions Reduction Program (HRRP) was added as part of the Social Security Act of the Affordable Care Act in 2010.^{1, 3} This program is based on CMS' premise that readmission within 30 days of discharge is a marker for poor quality of care and often money being spent needlessly. This program was enacted by Congress in October, 2010 to include a penalty that reduces Medicare payments in 2013 to hospitals that had above-average readmission rates from July 1, 2008, through June 30, 2011.² From 2013, hospitals are paying a penalties for having a patient who readmits within 30 days for pneumonia, heart attack or congestive heart failure. The penalty is computed based on readmission rates for the most recent three years of data available; therefore, the 2013 penalties were based on data for 2009, 2010, and 2011.²

In North Texas and especially in the Dallas-Fort Worth (DFW) region, the health industry is facing a huge challenge with diversity as DFW is one of the fastest growing areas in the nation.¹³ The DFW region is rapidly diversifying with increasing population and changing demographics.¹⁴ Historically, DFW's population has diversified as it has grown in size, especially over the last few decades. Over one million new people moved to this area during the past 10 years. In addition, a total of 239 languages are spoken in this area and for 43.20% of the population English is not their primary language.

Additionally, this region includes a high number of uninsured people – representing a socioeconomic diversity. According to the US census bureau.¹⁵ State of Texas has the highest number of uninsured people (24.6%) in the United States. In Dallas County, 33.1% of residents are uninsured, and about 19% of the population is below the poverty level.¹⁶ These numbers do not include the un-documented/ unauthorized immigrant population in the area. The State of Texas has a higher number of un-documented/ unauthorized immigrant residents as compared to other states in the United States.¹⁶

Invariably, when diversity becomes overwhelming, disparities increase. Several disparities other than “poor quality of care” have been attributed to higher readmission rate i.e. economic, social, cultural, ethnic, racial, age, gender, literacy issues and limited access to out of hospital healthcare have been identified as underlying disparities associated with higher readmissions.^{6, 8, 9, 10} Healthcare providers across the region are trying to address these disparities by embracing strategic diversity management. But identification and elimination of the health care related disparities becomes challenging due to the unavailability of an

integrated database, lack of data sharing capability between different stakeholders and regulatory restrictions related to information exchange etc. These barriers restrict healthcare providers from doing more focused and targeted efforts to address specific disparities. The DFWHC Foundation has a comprehensive regional patient data registry that is capable of providing information regarding readmissions characteristics, charges and demographic of the patients across the hospitals from the North Texas region.

DFWHC Foundation conducted this study, recognizing the need to investigate the hospital readmissions and the underlying disparities in the North Texas region.

OBJECTIVES AND KEY FINDINGS:

1: Financial burden (Charges) for “within 30 day readmissions” in North Texas during 2010-2013

Total Charges increased from \$ 3,047,003,509 in 2010 to \$ 3,695,969,090 in 2013. The increase in charges were also consistent with the top index condition i.e. heart disease from \$ 453,872,546 in 2010 to \$557,149,410 in 2013.

2: Hospital Readmissions trend in North Texas for the past 4 years 2010-2013

The decrease in readmission rate from 2010 to 2013 was statistically significant ($p < 0.0001$). Readmission rates for 2010, 2011, 2012 and 2013 were 54.4%, 49.64%, 42.37% and 29.05% respectively.

3: Top 10 conditions (Index Hospitalization) for Readmissions within 30 days during 2010-2013

For 2013 top ten conditions for readmissions were: Heart Disease, Diseases of the urinary system, Complications of device or procedure, Bacterial Infections, Respiratory Infections, Complications mainly related to pregnancy, Diabetes mellitus with complications, Chronic obstructive pulmonary disease and bronchiectasis, Lower gastrointestinal disorders, Cerebrovascular disease (for 2010, 2011 and 2012 please see the results section).

4: Most frequent reasons for Readmissions within 30 days for the top 10 conditions during 2010-2013

For the top index condition i.e. heart disease: Diseases of the heart, Diseases of the urinary system, Complications of device or procedure, Respiratory infections, Bacterial infection, Hypertension, Cerebrovascular disease, Respiratory failure; insufficiency; arrest, Chronic obstructive pulmonary disease and bronchiectasis, Fluid and electrolyte disorders, others (for other index conditions please see the results section).

5: Disparities associated with Readmissions within 30 days with regards to:

Gender: Rates for index hospitalizations and for readmissions were higher for females than males for all four years.

Age: Patients at the age of 65 and older were almost twice as likely to be readmitted as patients aged 18-44 years.

Race: Whites had the highest 30-dy readmission rate than all other races (data not adjusted for population). In 2013, 68.46% were Whites, 20.89% were Blacks, 1.6% were Asians and 9.04% were others.

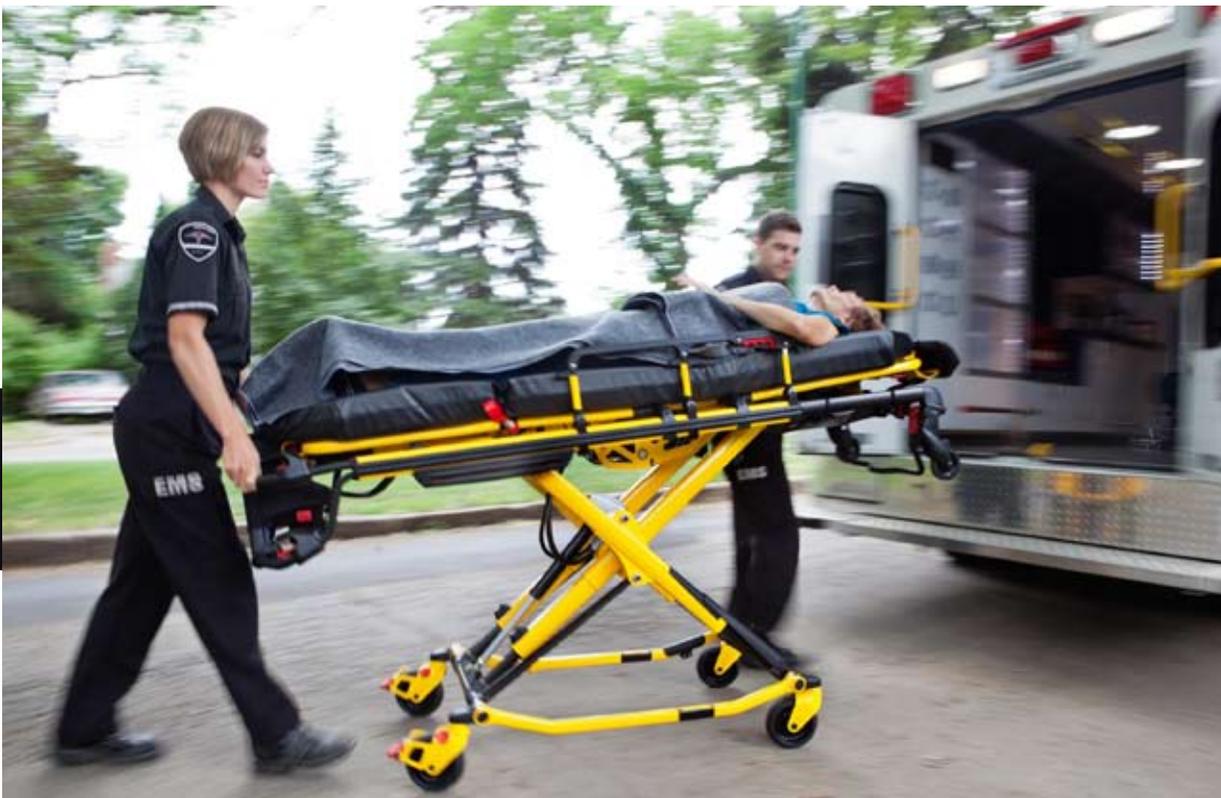
Ethnicity: Non-Hispanic patients had higher 30-day readmission rates than Hispanic or Latino patients (86.84% vs 12.55% in 2013).

Economic (Payer Group): Medicare had the highest 30-day readmission rate than all of the other payers. Readmission rates were lowest in the uninsured and Medicaid category. In 2013, 44.37% Medicare, 34.17% insured, 8.89% Medicaid and 12.57% uninsured patients were readmitted.

Length of Stay in hospital: In 2013, 1.47% spent less than 1 day for their index hospitalization, while 25.95% spent 1-2days; 37.52% spent 3-5days; 17.02% spent 6-8days; 11.51% spent 9-14days and 6.54% stayed 15 or more days.

Location/facility of post hospital discharge: Patients who were discharged to home had 20% higher 30 day readmission rate as compare to other locations.

6: Associations between patient characteristics (Age, Gender, Race, Ethnicity, Payer, Length of Stay, Discharge location Status) and Readmissions within 30 Days for top 5 conditions: Significant associations explain the contributing disparities associated with top 5 conditions for 30 day readmissions.



INTRODUCTION

Economic Burden of Readmission

Readmissions not only suggest quality problems but it is proposed to be expensive. It has been estimated that readmissions are responsible for a substantial proportion of expenditures for inpatient hospital care.^{4,5} In 2008 18% of all Medicare patients were readmitted within 30 days of discharge and Medicare surmised that \$15 billion worth of care was potentially avoidable.^{5,6}

According to the Report to the Congress: Medicare and the Health care Delivery System, it was stated that the benefit of reducing readmission rates as it pertains to the Medicare program can be quantified and has two parts. One part is the spending ascribed to readmissions that are avoidable while the second part is the revenue from penalties on hospitals with excessive readmission rates.²

Findings suggest that any revenue obtained from penalties on hospitals with excessive readmission rates was far less substantial than the spending on avoidable readmissions.² This report on Medicare and the Health care Delivery System shows that, under the current policy, penalties of about \$300 million will accrue in 2013, whereas potential savings from reducing avoidable readmissions by even 10 percent would achieve savings of \$1 billion or more.⁷ Deductively, the good outcome for the patient, that is, avoiding unnecessary readmissions, is the best financial outcome for the Medicare program.

Hospital Readmissions Reduction Program

Hospital Readmissions Reduction program was added as part of the Social Security Act of the Affordable Care Act in 2010.^{1,3} This program that requires the Centers for Medicare and Medicaid Services (CMS) to reduce payments to IPPS (Inpatient Prospective Payment Systems) hospitals with excess readmissions is effective for discharges beginning on October 1, 2012.¹ Based on the Hospital Readmission Reduction Program, CMS adopted readmission measures for the applicable conditions of Acute Myocardial Infarction (AMI), Heart Failure (HF) and Pneumonia (PN).¹

In the fiscal year 2015, the program will be expanded to include admission of patients with acute exacerbation of chronic obstructive pulmonary disease (COPD), patients admitted for elective total hip arthroplasty, total knee Arthroplasty, coronary artery bypass graft surgery, percutaneous transluminal coronary angioplasty, and other vascular conditions.^{1,3} Consequent upon the Hospital Readmissions Reduction Program, readmission within 30 days of discharge was considered by CMS as a marker for poor quality of care and money being spent needlessly.

Penalties and Impact of Penalties on Readmission

Readmission Reduction program enacted by Congress in October, 2010 includes a penalty that

reduces Medicare payments in 2013 to hospitals that had above-average readmission rates from July 1, 2008, through June 30, 2011.² From 2013, hospitals are paying penalties for having a patient that readmits within 30 days for pneumonia, heart attack or congestive heart failure. The penalty is computed based on readmission rates for the most recent three years of data available; therefore, the 2013 penalties were based on data for 2009, 2010, and 2011.²

The first round of financial penalties for high-risk-adjusted 30-day readmission rates for congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and pneumonia was assessed to hospitals in October 2012.¹³ Studies shows that hospitals were penalized \$125000 in this first year, an amount projected to triple by 2014.¹³

Subsequent upon penalty, report shows that there was a small decline in risk-adjusted readmission rates, with the condition-adjusted readmission rate declining by roughly 0.7 percentage points from 2009 to 2011.² CMS also reported further improvements in readmission rate from 2011 to 2012.²

However, according to the Agency for Health Care Research and Quality that “Reducing repeat care visits is a key strategy for improving the quality of healthcare, while reducing the cost of care.”¹⁴ Therefore, policy makers should become aware of the possible causes for these readmissions so they can make responsible informed decisions regarding how to assist the patient and the hospital in reducing hospital readmissions as awareness of some possible solutions for lowering 30-day readmissions are broadened.

Reasons for Readmission and Patterns of Hospital Readmission

There have been many speculations regarding the reasons for readmissions other than Medicare’s “poor quality.” Many issues including medical, social, and economical factors influence whether or not a patient gets readmitted to the hospital with the potential to avoid each of these factors varying between patients.⁸

Hospital Readmission has been attributed to many factors ranging from the premature release of a patient, poor transition of care between different providers and care settings, discharge of patients to inappropriate settings, patients’ lack of understanding of discharge instructions and patient reasons.⁶ A bridge in communication, lack of information exchange between inpatient and community-based providers, medical error⁷ are some of the systems factors leading to unplanned readmissions.⁶

Social factors can be important determinants of health outcomes. Patient factors such as race, ethnicity, education i.e. health literacy, income, and payer have been found to be related to readmission risk in various studies.⁹

The median income of the county in which the hospital is located, safety-net hospital status,

and predominantly minority patient mix have also been found to be related to which hospitals are at greater risk of readmissions penalties.^{9, 10}

Literature shows that 30-day readmission rates for ST segment elevation myocardial infarction were 68 percent higher in the United States than the average for European countries from 2006 through 2008.¹¹ Also, elderly black Medicare patients were more likely to be readmitted than elderly white patients for acute myocardial infarction, congestive heart failure, and pneumonia.^{10, 12} The disparities were attributed to race, as well as to the site where care was provided.^{10, 12} The study reveals that patients discharged from minority-serving hospitals had a 23% higher odds of readmission than patients discharged from non–minority-serving hospitals.¹²

Diversity and Disparity in DFW region

The healthcare industry in North Texas and especially in the Dallas-Fort Worth (DFW) region is facing a huge challenge with diversity as DFW is one of the fastest growing areas in the nation .¹³ The DFW region in North Texas is rapidly diversifying with increasing population and changing demographics.¹⁴ Historically, DFW’s population was predominantly white (non-Hispanic whites made up 82.8% of the population in 1930) but it has diversified as it has grown in size, especially over the last few decades. A report published by DFW international 13 in 2010 highlighted the diversification of the population in the DFW area as 30.10% whites, 43.10% Latino, 23.00% African American and 2.40% Asian residents. This report also suggested that approximately 26.10% of the residents in Dallas were new Americans (foreign-born population). Over one million new people moved to this area during the past 10 years. In addition, a total of 239 languages are spoken in this area and for 43.20% of the population English is not their primary language.¹³ These facts describe the diversity related to race, ethnicity, culture and language etc.

Additionally, this region includes a high number of uninsured people – representing a socioeconomic diversity. According to the US census bureau.¹⁵ The State of Texas has the highest number of uninsured people (24.6%) in the United States. In Dallas County, 33.1% of residents are uninsured, and about 19% of the population is below the poverty level.¹⁶ These numbers do not include the un-documented/ unauthorized immigrant population in the area. The State of Texas has a higher number of un-documented/ unauthorized immigrant residents as compared to other states in the United States.¹⁶

DFWHC Foundation has a comprehensive regional patient data registry that is capable of providing information regarding readmissions characteristics, charges and demographic of the patients from North Texas region. DFWHC Foundation conducted this study to investigate the hospital readmissions and underlying disparities in the North Texas region.

OBJECTIVES

1. Financial burden (Charges) for “within 30 day readmissions” in North Texas during 2010-2013
2. Hospital Readmissions trend in North Texas for the past 4 years 2010-2013
3. Top 10 conditions (Index Hospitalization) for Readmissions within 30 days during 2010-2013
4. Most frequent reasons for Readmissions within 30 days for the top 10 conditions during 2010-2013
5. Disparities associated with Readmissions within 30 days with regards to:
 - Gender**
 - Age**
 - Race**
 - Ethnicity**
 - Economic (Payer Group)**
 - Length of Stay in hospital**
 - Location/facility of post hospital discharge**
6. Associations between patient characteristics (Age, Gender, Race, Ethnicity, Payer, Length of Stay, Discharge location Status) and Readmissions within 30 Days for top 5 conditions.



METHODS

The Dallas-Fort-Worth Hospital Council Foundation (DFWHC Foundation) securely houses the combined data warehouse created in 1999 by North Texas hospital systems which contains information for over 9.8 million regional patients and their more than 38 million hospital encounters. This warehouse collects claims data from 95% of the hospitals in North Texas. The claims records reveal patient's demographic data, payer type, twenty five diagnosis and surgical/testing procedure codes, charges, Current Procedural Terminology (CPT) codes, severity of disease as well as other information. With the regional enterprise master patient index (REMPI), the Foundation assigns a unique ID to all patients, allowing the foundation researchers to track any patient over time by hospital and by payer.

For the study, the readmissions data from DFWHC Foundation's data warehouse for 2010-2013 were extracted. Only inpatients data and patients 18 years of age and older was analyzed. Patients that were admitted as an inpatient to the hospital or were discharged to a designated Cancer Center or Children's Hospital or a Federal Hospital were excluded. Also excluded were patients discharged to home under care of home, expired patients, still patients that are expected to return for outpatient services, patients that left against medical advice or discontinued care and unknown patients.

For race and ethnicity, our dataset uses the standard classification used by Texas Health Care Information Collection (THCIC) and the United States Census Bureau: Income, Poverty, and Health Insurance Coverage, 2012. This classification categorizes race as black/white or Caucasian / Asian or Pacific Islander/ American Indian/Eskimo/Aleut/others and ethnicity as Hispanic or Latino/ Not Hispanic or Latino.

This research study was approved by North Texas Health Information and Quality Collaborative (NTHIQC) who approve the research methodology and the patient/hospital confidentiality protection for all research projects conducted by the DFWHC Foundation.

Data was analyzed and tables' generated using SAS software (9.3version). Disparities associated with hospital readmissions in North Texas with regards to gender, age, payer status (uninsured, Medicaid, Medicare and insured), race (black, white/Caucasian, all others), ethnicity (Hispanic or Latino and Not Hispanic or Latino, discharge location (Home, Transferred, Hospice) and length of stay were shown. Chi Square of Independence Test was used for bivariate analysis/associations between Readmissions and specific demographic variables for the top five conditions (Index hospitalization). P values, Odds ratio (OR), and 95% confidence interval were reported with $P < 0.05$ considered statistically significant.



RESULTS

Table 1: Total charges for readmissions in North Texas in 2010-2013

Readmission charges	2010	2011	2012	2013
Total	\$ 3,047,003,509.00	\$ 3,370,863,448.00	\$ 3,578,050,115.00	\$ 3,695,969,090.00
Insured	\$ 1,098,809,927.00	\$ 1,180,127,772.00	\$ 1,315,007,158.00	\$ 1,349,492,886.00
Medicaid	\$ 332,957,052.00	\$ 308,055,176.00	\$ 346,051,453.00	\$ 297,974,272.00
Medicare	\$ 1,306,657,404.00	\$ 1,530,120,039.00	\$ 1,564,407,650.00	\$ 1,608,692,394.00
Uninsured	\$ 308,579,126.00	\$ 352,560,462.00	\$ 352,583,855.00	\$ 439,809,538.00
Charges for the Top Ten Condition (Index Hospitalization) for Readmissions in 2010-2013				
Diseases of the heart	\$ 453,872,546.00	\$ 507,243,890.00	\$ 535,960,895.00	\$ 557,149,410.00
Diseases of the urinary system	\$ 117,204,826.00	\$ 138,157,327.00	\$ 147,051,157.00	\$ 144,952,949.00
Complications due to device or procedures	\$ 209,308,652.00	\$ 243,080,424.00	\$ 270,947,926.00	\$ 256,070,924.00
Bacterial Infections	\$ 170,381,008.00	\$ 201,689,557.00	\$ 226,173,331.00	\$ 277,795,153.00
Respiratory infections	\$ 103,320,690.00	\$ 106,260,065.00	\$ 105,805,084.00	\$ 114,649,952.00
Complications mainly related to pregnancy	\$ 39,389,916.12	\$ 39,963,466.86	\$ 42,713,482.29	\$ 44,145,647.12
Diabetes mellitus with complications		\$ 86,931,791.58	\$ 86,245,050.15	\$ 83,105,197.10
Lower gastrointestinal disorders	\$ 89,133,538.65	\$ 89,986,074.08	\$ 96,783,461.55	\$ 99,693,717.68
Chronic obstructive pulmonary disease and bronchiectasis	\$ 66,332,691.25	\$ 64,281,689.47	\$ 72,872,556.54	\$ 68,144,157.00
Cerebrovascular disease	\$ 87,950,258.53	\$ 91,705,350.25	\$ 94,337,014.43	\$ 103,919,653.00
Indications for care in pregnancy; labor; and delivery	\$ 8,865,272.82			

- There was an increase in the charges being filed for readmissions by hospitals in the North Texas region from 2010-2013.
- The increase in charges was also consistent with the top index condition (that is heart disease) that had the highest number of readmissions for the years 2010-2013. This trend might be attributed to increasing cost of health care generally.

Table 2: examines differences between hospitalizations followed by a readmission and those not followed by a readmission. Total hospitalizations are categorized as medical or surgical index admission. Information is about the index hospitalization, not the readmission. More information regarding the readmission information is available in Table 4.

Table 2A. Hospitalizations not followed by Readmissions within 30 Days by Type of Hospitalization for 2010-2013												
All Index Hospitalizations					Was the index hospitalization followed by a Readmission?							
Type of Index Hospitalization	Total Number of Index Hospital Stays				Number of Index Hospital Stays				NO			
									Average Length of Stay for the Index Stay			
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Total Cases	508126	511484	500584	512832	231718	257562	288510	363857	4.01	3.98	3.99	4.21
Medical	334102	337418	334059	343232	133493	150655	174837	229201	3.84	3.74	3.76	3.95
Surgical	173458	172760	162093	162607	98020	106295	111444	130128	4.26	4.32	4.34	4.62
**	566	1306	4432	6993	205	612	2229	4528	3.18	4.55	5.03	5.49

Table 2B. Hospitalizations followed by Readmissions within 30 Days by Type of Hospitalization for 2010-2013																
All Index Hospitalizations					Was the index hospitalization followed by a Readmission?											
Type of Index Hospitalization	Total Number of Index Hospital Stays				Number of Readmissions				YES				Average Length of Stay for the Index Hospitalization			
									Percent of Total Index Hospital stays with a readmission							
	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013	2010	2011	2012	2013
Total Cases	508126	511484	500584	512832	276408	253922	212074	148975	54.4	49.64	42.37	29.05	5.2	5.31	5.47	5.85
Medical	334102	337418	334059	343232	200609	186763	159222	114031	60.04	55.35	47.66	33.22	4.77	4.8	4.96	5.22
Surgical	173458	172760	162093	162607	75438	66465	50649	32479	43.49	38.47	31.25	19.97	6.36	6.74	7.01	7.99
**	566	1306	4432	6993	361	694	2203	2465	63.78	53.14	49.71	35.25	4.02	6.74	6.63	6.95

Table 2C. Change in Readmission Rate from 2010-2013				
Year	N	P value	OR	95%C.I
2010-2011	1019610	<.0001	0.8265	0.8201-0.8329
2011-2012	1012068	<.0001	0.7456	0.7398-0.7515
2012-2013	1013416	<.0001	0.557	0.5524-0.5616

- Readmission rates for 2010, 2011, 2012 and 2013 were 54.4%, 49.64%, 42.37% and 29.05% respectively.
- The decrease in readmission rate from 2010 to 2013 was statistically significant ($p < 0.0001$).
- Overall patients who later readmitted spent 1.19, 1.33, 1.48, and 1.64 more days for their index hospitalization in 2010, 2011, 2012 and 2013 respectively than those who did not readmit.
- Medical patients who later readmitted spent 0.93, 1.06, 1.2, and 1.27 more days for their index hospitalization in 2010, 2011, 2012 and 2013 respectively than those patients who did not readmit.
- Surgical patients who later readmitted spent 2.1, 2.42, 2.67 and 3.37 more days in 2010, 2011, 2012 and 2013 respectively than those who did not readmit.
- Patients were more likely to readmit without undergoing a surgical procedure over the course of the four years (16.5%, 16.88%, 16.41%, and 13.25% greater chance) respectively.

Table 3 describes the top ten conditions that account for the largest number of readmissions within 30 days of discharge in 2013. Each of these conditions is also categorized into medical and surgical groups based on whether the index hospitalization involved an operating room procedure. This information relates to the original hospitalization, not the readmission. The readmission information is available in Table 4. The surgery may not be related to the reason for the hospitalization.

Table3. Top 10 conditions (Index Hospitalization) for Readmissions within 30 days in 2013						
All Index Hospitalization		Was the Index Hospitalization followed by a Readmission within 30 days				
		No		Yes		
Principle Reason for Readmission	Total Number of Index Hospital Stays	Patients with No Readmission	Average LOS - No Readmission	Readmission Cases	Percent that Readmitted	Average LOS for Patients who Readmitted
Diseases of the heart	51,167	32,409	5.07	18,758	36.67%	6.02
**	143	109	6.28	34	0.066%	5.82
Medical	35,245	20,986	3.44	14,259	27.87%	4.36
Surgical	15,779	11,314	5.49	4,465	8.73%	7.89
Diseases of the urinary system	22,090	13,671	4.14	8,419	38.11%	5.00
**	21	13	4.15	8	0.036%	2.88
Medical	19,268	11,688	3.99	7,580	34.31%	4.83
Surgical	2,801	1,970	4.27	831	3.76%	7.29
Complications of device or procedure	18,352	10,842	5.81	7,510	40.92%	7.80
**	1,852	1,086	6.35	766	4.17%	9.36
Medical	7,595	4,157	4.99	3,438	18.73%	5.69
Surgical	8,905	5,599	6.08	3,306	18.01%	8.34
Bacterial infection	17,908	11,364	10.04	6,544	36.54%	12.43
Medical	15,263	9,792	6.37	5,471	30.55%	7.96
Surgical	2,645	1,572	13.70	1,073	5.99%	16.90
Respiratory infections	15,549	9,739	5.51	5,810	37.37%	7.46
**	142	103	3.60	39	0.25%	4.69
Medical	14,741	9,224	4.41	5,517	35.48%	5.38
Surgical	666	412	8.52	254	1.63%	12.32
Complications mainly related to pregnancy	31,491	26,374	3.00	5,117	16.25%	3.85
**	25	23	1.70	2	0.006%	1.50
Medical	23,443	18,715	2.57	4,728	15.01%	3.52
Surgical	8,023	7,636	4.74	387	1.23%	6.54
Diabetes mellitus with complications	10,175	5,482	6.36	4,693	46.12%	6.92
Medical	7,746	4,140	3.61	3,606	35.44%	4.14
Surgical	2,429	1,342	9.11	1,087	10.68%	9.69
Chronic obstructive pulmonary disease and bronchiectasis	9,338	4,884	7.63	4,454	46.7%	8.04
Medical	9,120	4,783	4.06	4,337	46.44%	4.53
Surgical	218	101	11.19	117	1.25%	11.54
Lower gastrointestinal disorders	16,232	11,862	4.29	4,370	26.92%	7.16
Medical	9,227	6,078	3.88	3,149	19.4%	4.72
Surgical	7,005	5,784	4.70	1,221	7.52%	9.60
Cerebrovascular disease	14,219	10,206	4.76	4,013	28.22%	6.36
Medical	11,066	7,941	4.19	3,125	21.98%	5.00
Surgical	3,153	2,265	5.33	888	6.25%	7.71

**Cases not determined as medical or surgical.

- The condition with the highest number of readmissions was diseases of the heart with 51,167 Hospitalizations that were followed by 18758 readmissions in 2013. These patients admitting for heart disease also had the highest number of readmissions in 2010-2013.
- In 2013, patients initially treated for heart disease were readmitted within 30 days at a rate of 36.67% with an average length of stay of 6.02 days. Likewise, for heart disease patients who did not readmit their index length of stay average was 5.07 days.
- Patients who were initially treated for heart disease after surgery had a readmission rate of 8.73% as opposed to medical patients whose readmission rate was 27.87%.
- For the remaining nine conditions (Index Hospitalization) who made up the top ten conditions for the largest number of readmission, readmission rate range from 16.25% to 46.7%.

Table 4 below highlights the top ten conditions (Index Hospitalization) for patients who had a readmission within 30 days for 2010-2013.

Table 4: Top Ten Conditions (Index Hospitalization) for Patients who had a Readmission within 30 Days for 2010-2013			
2010	2011	2012	2013
Heart Disease	Heart Disease	Heart Disease	Heart Disease
Complications mainly related to pregnancy	Diseases of the urinary system	Diseases of the urinary system	Diseases of the urinary system
Diseases of the urinary system	Complications of device or procedure	Complications of device or procedure	Complications of device or procedure
Complications of device or procedure	Complications mainly related to pregnancy	Complications mainly related to pregnancy	Bacterial Infections
Respiratory Infections	Respiratory Infections	Respiratory Infections	Respiratory Infections
Lower gastrointestinal disorders	Bacterial infection	Bacterial infection	Complications mainly related to pregnancy
Chronic obstructive pulmonary disease and bronchiectasis	Lower gastrointestinal disorders	Lower gastrointestinal disorders	Diabetes mellitus with complications
Indications for care in pregnancy; labor; and delivery	Chronic obstructive pulmonary disease and bronchiectasis	Chronic obstructive pulmonary disease and bronchiectasis	Chronic obstructive pulmonary disease and bronchiectasis
Cerebrovascular disease	Cerebrovascular disease	Cerebrovascular disease	Lower gastrointestinal disorders
Bacterial infection	Diabetes mellitus with complications	Diabetes mellitus with complications	Cerebrovascular disease

Table 5 below explains the most frequent reasons for readmission within 30 days for each index admission in 2013.

Table 5. Most Frequent Reasons for Readmission within 30 days, 2013					
Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Diseases of the heart	Diseases of the heart	7,851	42%	15%	4.83
	Diseases of the urinary system	962	5%	2%	5.41
	Complications of device or procedure	768	4%	2%	6.80
	Respiratory infections	726	4%	1%	5.29
	Bacterial infection	688	4%	1%	6.65
	Hypertension	545	3%	1%	5.26
	Cerebrovascular disease	528	3%	1%	4.74
	Respiratory failure; insufficiency; arrest	453	2%	1%	6.43
	Chronic obstructive pulmonary disease and bronchiectasis	426	2%	1%	4.96
	Fluid and electrolyte disorders	341	2%	1%	5.72
	others	5,283	28%	10%	5.11
	Total	18,571	100%	36%	5.56
	Diseases of the urinary system	Diseases of the urinary system	1,859	22%	8%
Diseases of the heart		804	10%	4%	4.96
Bacterial infection		752	9%	3%	5.85
Complications of device or procedure		508	6%	2%	5.84
Respiratory infections		284	3%	1%	5.07
Hypertension		266	3%	1%	5.24
Diabetes mellitus with complications		236	3%	1%	4.54
Fluid and electrolyte disorders		230	3%	1%	5.37
Cerebrovascular disease		203	2%	1%	4.81
Fractures		193	2%	1%	4.39
others		2,967	36%	14%	4.64
Total		8,302	100%	38%	5.04
Complications of device or procedure		Complications of device or procedure	2,440	33%	13%
	Diseases of the heart	513	7%	3%	5.78
	Bacterial infection	456	6%	2%	8.47
	Diseases of the urinary system	409	6%	2%	6.61
	Respiratory infections	181	2%	1%	7.19
	Fluid and electrolyte disorders	180	2%	1%	7.14
	Symptoms; signs; and ill-defined conditions	169	2%	1%	7.65
	Lower gastrointestinal disorders	159	2%	1%	8.22
	Diabetes mellitus with complications	150	2%	1%	7.79
	Diseases of arteries; arterioles; and capillaries	120	2%	1%	6.71
	others	2,643	36%	14%	7.16
	Total	7,420	100%	41%	7.25
	Bacterial infection	Bacterial infection	1,309	20%	7%
Diseases of the urinary system		577	9%	3%	8.80
Diseases of the heart		498	8%	3%	8.62
Complications of device or procedure		426	7%	2%	12.02
Respiratory infections		338	5%	2%	8.18
Diabetes mellitus with complications		175	3%	1%	9.33
Respiratory failure		169	3%	1%	10.69
Lower gastrointestinal disorders		160	2%	1%	8.66
Chronic obstructive pulmonary disease and bronchiectasis		147	2%	1%	8.07
Skin and subcutaneous tissue infections		145	2%	1%	8.70
others		2,534	39%	14%	9.10
Total		6,478	100%	36%	9.25

Table 5. Most Frequent Reasons for Readmission within 30 days, 2013 Contd.

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission	
Respiratory infections	Respiratory infections	813	14%	5%	5.46	
	Diseases of the heart	746	13%	5%	5.60	
	Bacterial infection	472	8%	3%	6.04	
	Chronic obstructive pulmonary disease and bronchiectasis	391	7%	3%	5.56	
	Diseases of the urinary system	251	4%	2%	5.41	
	Respiratory failure	204	4%	1%	6.56	
	Complications of device or procedure	179	3%	1%	6.75	
	Aspiration pneumonitis	134	2%	1%	6.51	
	Cerebrovascular disease	128	2%	1%	4.87	
	Asthma	127	2%	1%	4.56	
	others	2,289	40%	15%	5.38	
	Total	5,734	100%	37%	5.70	
Complications mainly related to pregnancy	Complications mainly related to pregnancy	2,509	49%	8%	3.85	
	Indications for care in pregnancy; labor; and deliver	843	17%	3%	3.45	
	Other complications of birth;	616	12%	2%	3.83	
	Complications during labor	525	10%	2%	3.05	
	Normal pregnancy and/or delivery	162	3%	1%	3.80	
	Biliary tract disease	76	1%	0%	3.68	
	Diseases of the urinary system	36	1%	0%	6.36	
	Pancreatic disorders (not diabetes)	23	0%	0%	3.04	
	Lower gastrointestinal disorders	21	0%	0%	2.95	
	Abortion-related disorders	20	0%	0%	3.80	
	others	273	5%	1%	4.51	
	Total	5,104	100%	16%	3.85	
	Diabetes mellitus with complications	Diabetes mellitus with complications	2,060	44%	20%	4.43
		Diseases of the heart	302	7%	3%	5.89
Diseases of the urinary system		255	5%	3%	5.24	
Complications of device or procedure		235	5%	2%	8.33	
Bacterial infection		232	5%	2%	6.99	
Hypertension		106	2%	1%	6.58	
Skin and subcutaneous tissue infections		101	2%	1%	5.64	
Symptoms; signs; and ill-defined conditions		98	2%	1%	6.24	
Fluid and electrolyte disorders		95	2%	1%	5.08	
Respiratory infections		92	2%	1%	5.54	
others		1,069	23%	11%	5.51	
Total		4,645	100%	46%	5.95	
Chronic obstructive pulmonary disease and bronchiectasis	Chronic obstructive pulmonary disease and bronchiectasis	1,390	31%	15%	4.58	
	Diseases of the heart	528	12%	6%	4.65	
	Respiratory failure; insufficiency; arrest	356	8%	4%	4.99	
	Respiratory infections	349	8%	4%	5.03	
	Bacterial infection	220	5%	2%	5.20	
	Asthma	190	4%	2%	4.18	
	Diseases of the urinary system	123	3%	1%	4.48	
	Fractures	99	2%	1%	4.71	
	Fluid and electrolyte disorders	65	1%	1%	4.55	
	Cerebrovascular disease	52	1%	1%	4.92	
	others	1,041	24%	11%	4.40	
	Total	4,413	100%	47%	4.70	

Table 5. Most Frequent Reasons for Readmission within 30 days, 2013 Contd.

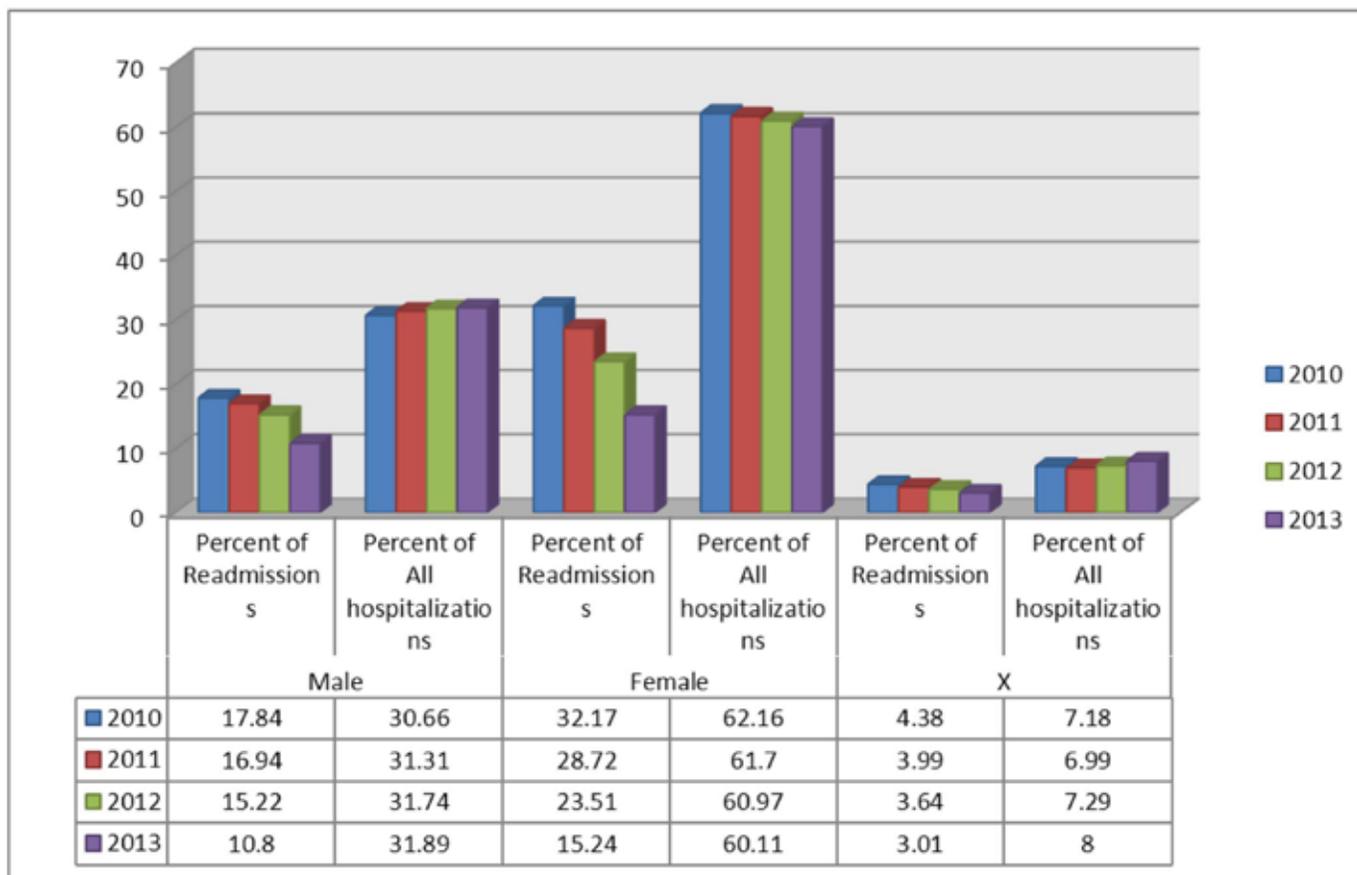
Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Lower gastrointestinal disorders	Lower gastrointestinal disorders	1,512	35%	9%	4.99
	Complications of device or procedure	340	8%	2%	8.28
	Diseases of the heart	255	6%	2%	5.87
	Other gastrointestinal disorders	203	5%	1%	7.98
	Bacterial infection	201	5%	1%	7.43
	Diseases of the urinary system	186	4%	1%	6.92
	Symptoms; signs; and ill-defined conditions	85	2%	1%	6.65
	Respiratory infections	82	2%	1%	6.34
	Intestinal infection	75	2%	0%	6.11
	Gastrointestinal hemorrhage	66	2%	0%	5.48
	others	1,311	30%	8%	5.83
	Total	4,316	100%	27%	6.53
	Cerebrovascular disease	Cerebrovascular disease	1,063	27%	8%
Diseases of the heart		503	13%	4%	4.93
Diseases of the urinary system		231	6%	2%	6.76
Bacterial infection		209	5%	1%	9.57
Complications of device or procedure		145	4%	1%	6.86
Diseases of arteries; arterioles; and capillaries		122	3%	1%	3.66
Fractures		111	3%	1%	4.30
Hypertension		106	3%	1%	5.42
Respiratory infections		91	2%	1%	5.42
Gastrointestinal hemorrhage		75	2%	1%	6.08
others		1,299	33%	9%	6.70
Total		3,955	100%	28%	5.82



DISPARITIES ASSOCIATED WITH HOSPITAL READMISSIONS

The patient characteristics for those who were readmitted within 30 days are shown on the following pages. Readmission rates are shown by gender, age group, payer, discharge location and length of stay.

Figure 1: Gender disparity in readmissions in North Texas

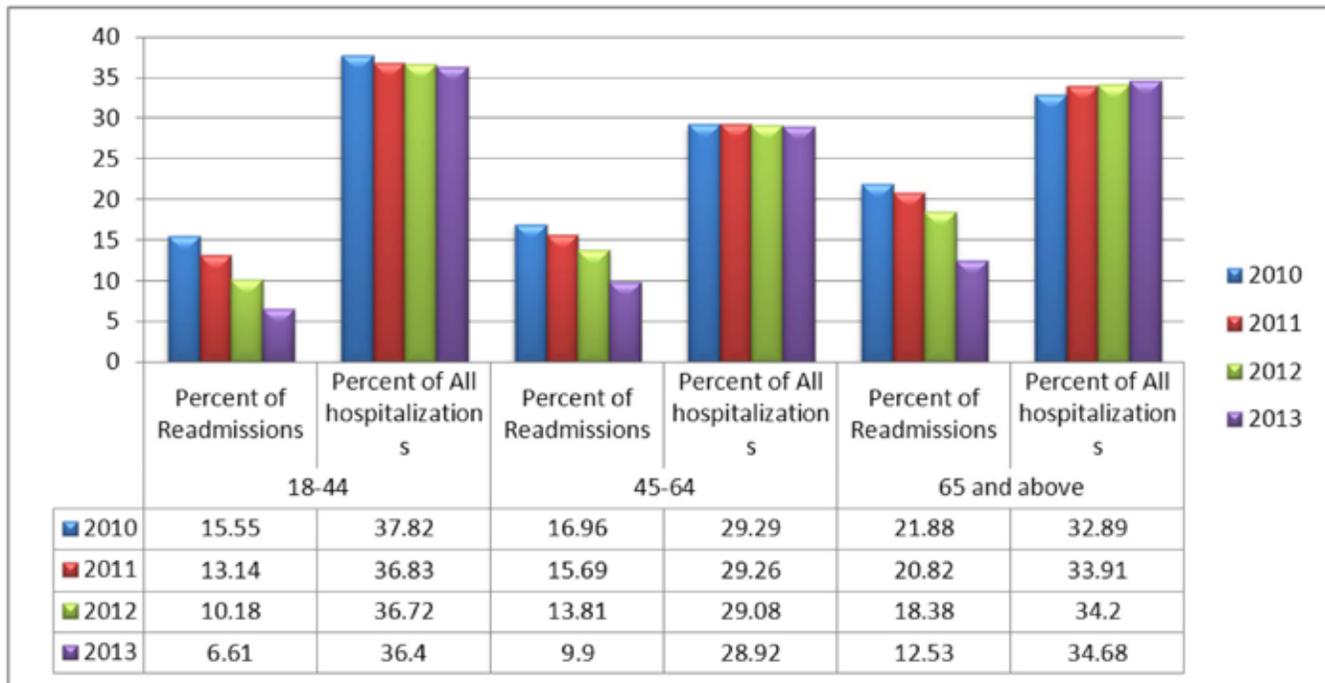


*The frequency on the figure above is the percentage of readmissions out of all hospitalizations.

* X signifies undefined gender classification.

- Rates for index hospitalizations and for readmissions were higher for females than males for all four years.
- Out of those that readmitted in 2010-2013 59.14%, 57.85%, 55.49%, and 52.46% were females, while 32.80%, 34.12%, 35.91% and 37.19% were males respectively. The undefined gender group X makes up 8.05%, 8.04%, 8.59% and 10.35% respectively for 2010-2013.

Figure 2: Age related disparity in readmissions in North Texas

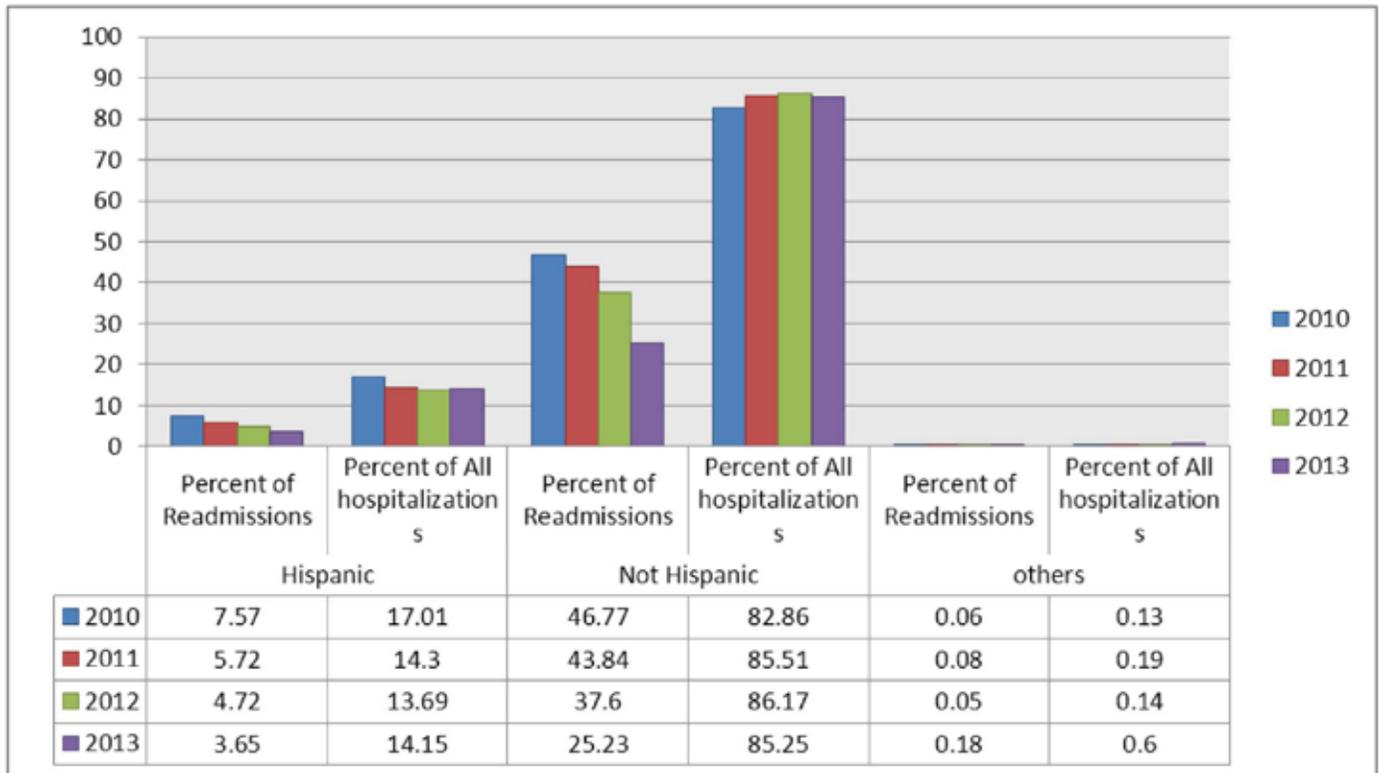


*The frequency on the figure above is the percentage of readmissions out of all hospitalizations.

- Readmission rates increased with the patient’s age.
- Patients at the age of 65 and older were almost twice as likely to be readmitted as patients aged 18-44 years.
- Out of those that readmitted in 2010-2013 respectively 28.59%, 26.46%, 24.03%, and 22.77% were in age group 18-44 years, while 31.18%, 31.61%, 32.59%, and 34.08% were 45-64 years and 40.23%, 41.93%, 43.39%, 43.15% were 65 years and above.



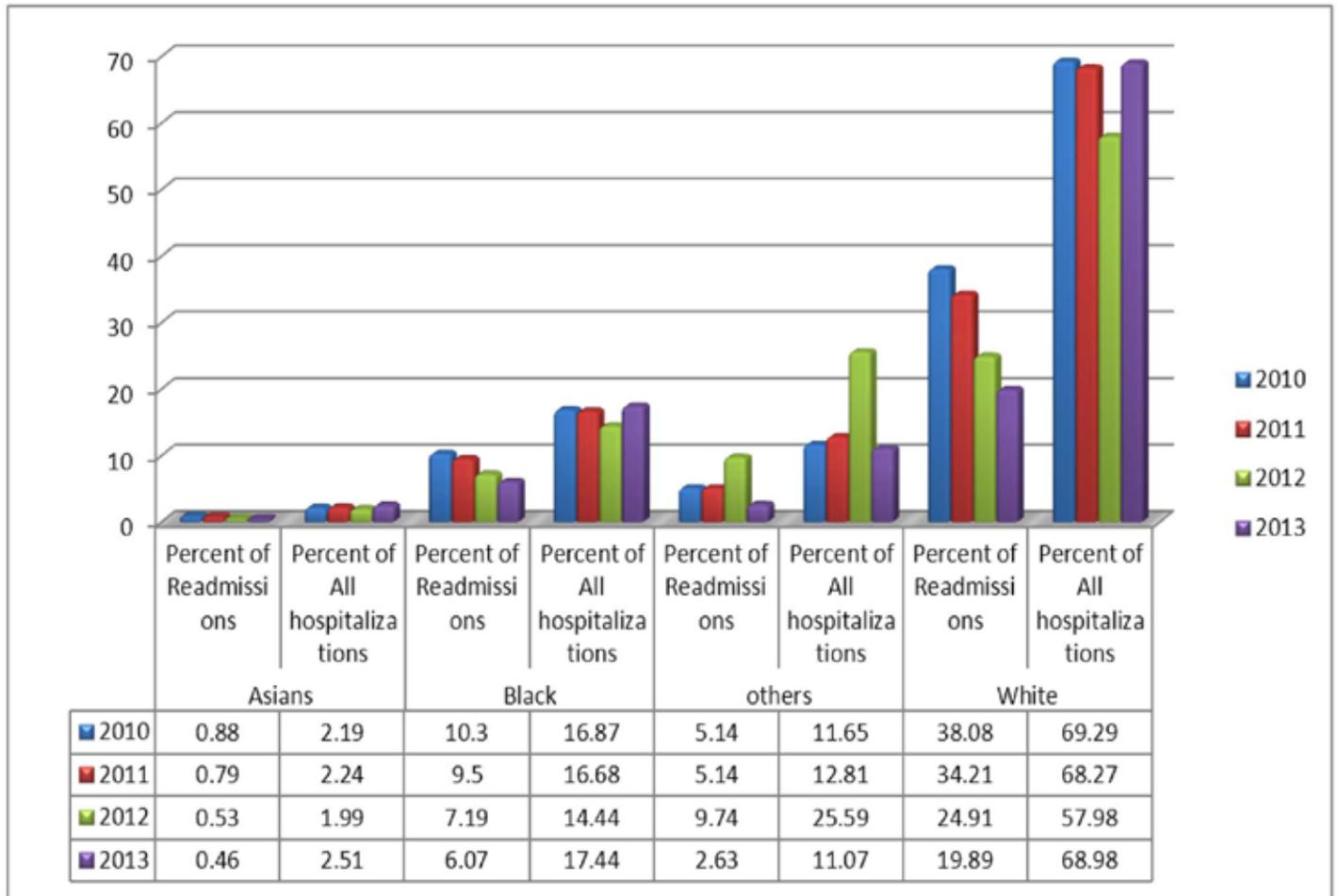
Figure 3: Ethnic disparity in readmissions in North Texas



***The frequency on the figure above is the percentage of readmissions out of all hospitalizations.**

- Non-Hispanic patients had higher 30-day readmission rates than Hispanic or Latino patients.
- Out of those that readmitted in 2010-2013 respectively, 13.91%, 11.53%, 11.14% and 12.55% were Hispanic or Latino patients, while 85.98%, 88.31%, 88.76%, and 86.84% were Non- Hispanic or Latino patients and other ethnic groups were 0.11%, 0.16%, 0.11%, and 0.61%.

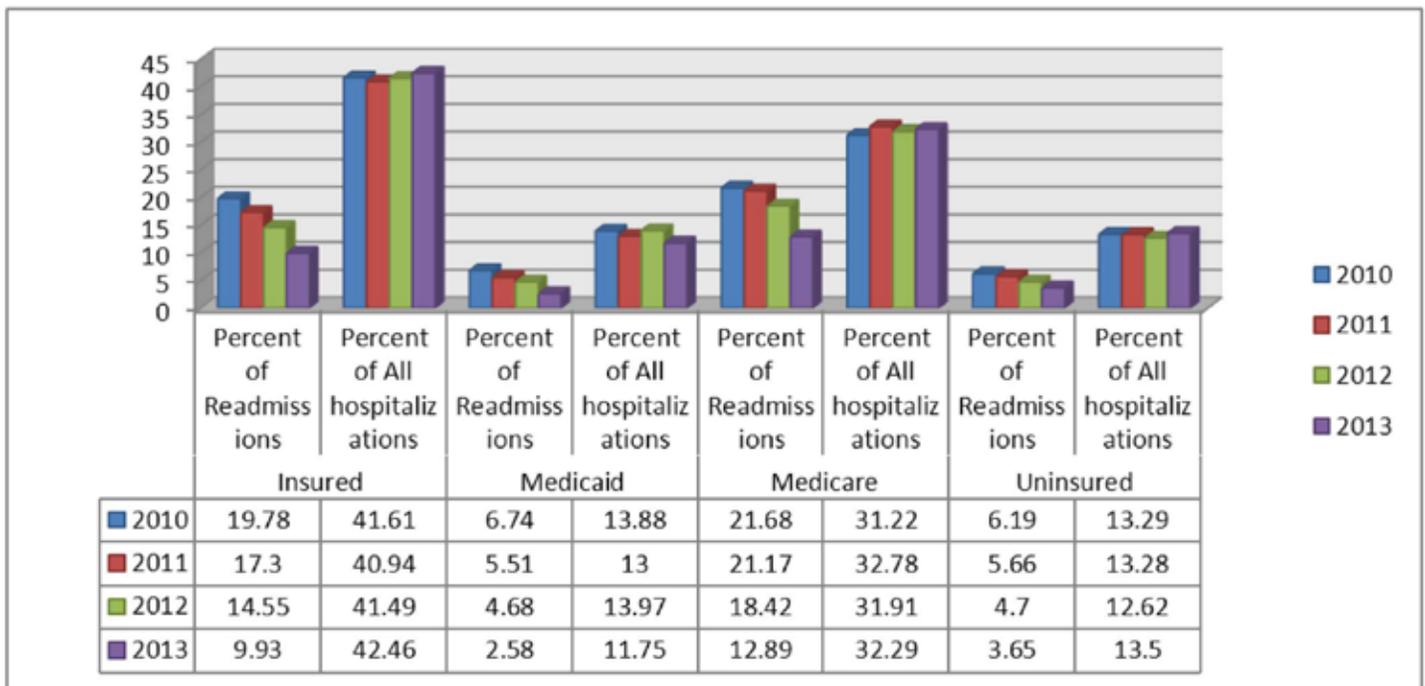
Figure 4: Racial disparity in readmissions in North Texas



***The frequency on the figure above is the percentage of readmissions out of all hospitalizations.**

- The chart shows that Whites had the highest 30-day readmission rate than all other races (data not adjusted for population).
- For the years 2010-2013 respectively, out of those that readmitted 1.61%, 1.59%, 1.26% and 1.6% were Asians, while 18.93%, 19.14%, 16.96% and 20.89% were Blacks.
- Majority of those that readmitted were whites i.e. 70.01%, 68.91%, 58.79% and 68.46% for the years 2010-2013 while other races were 9.45%, 10.35%, 22.99% and 9.04% for same range of years.

Figure 5: Economic disparity in readmissions in North Texas



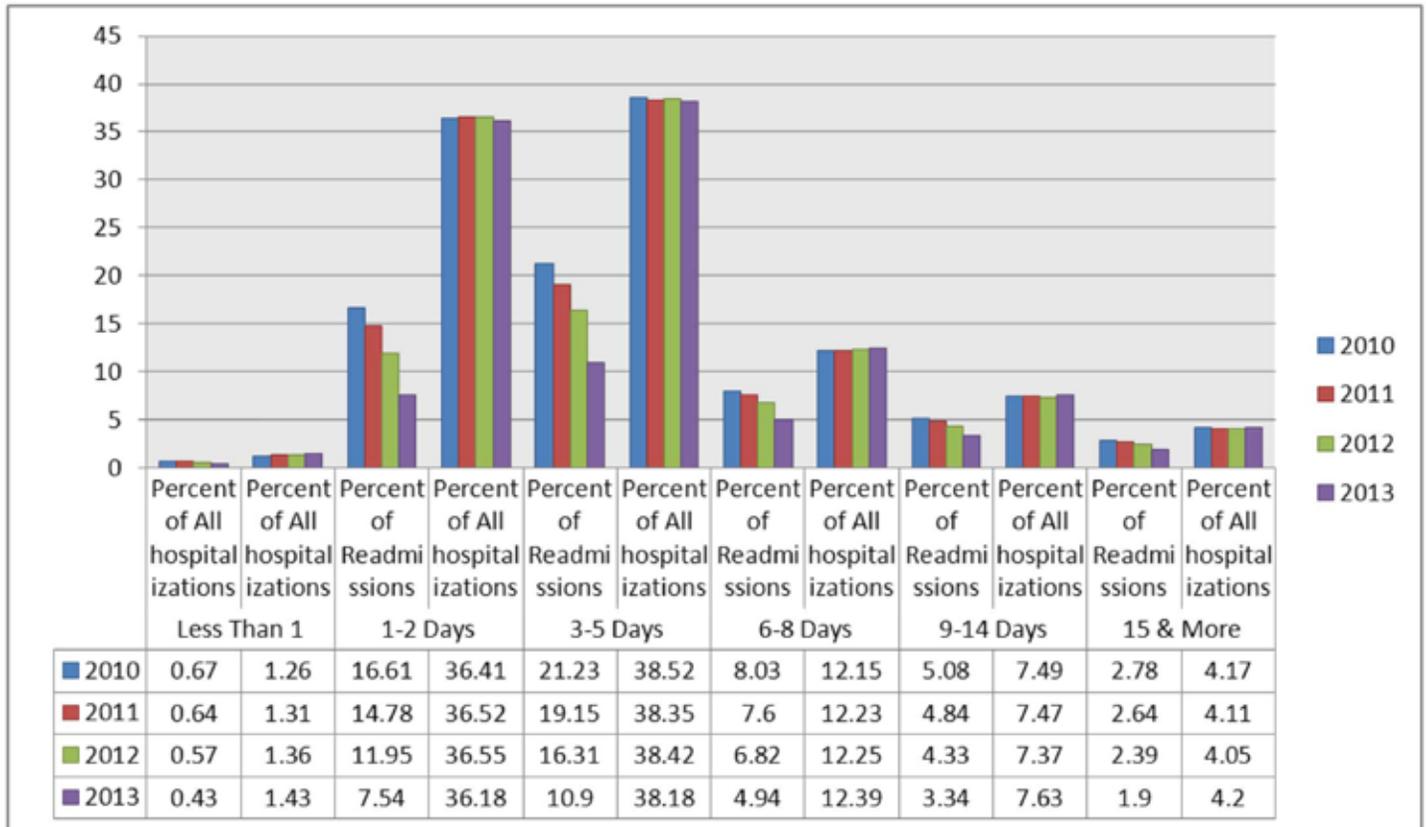
*The frequency on the figure above is the percentage of readmissions out of all hospitalizations.

- Medicare had the highest 30-day readmission rate than all of the other payers.
- Readmission rates were lowest in the uninsured and Medicaid category.
- For the years 2010-2013 respectively, insured patients were 36.37%, 34.84%, 34.35%, and 34.17%, while Medicaid patients were 12.39%, 11.11%, 11.06%, and 8.89% out of those that were readmitted.
- Likewise, of those that readmitted, Medicare patients constituted 39.86%, 42.65%, 43.49%, and 44.37% while the uninsured group was 11.37%, 11.41%, 11.10%, and 12.57% for the years 2010-2013 respectively.



Figure 6: Length of hospital stays disparity in readmissions in North Texas

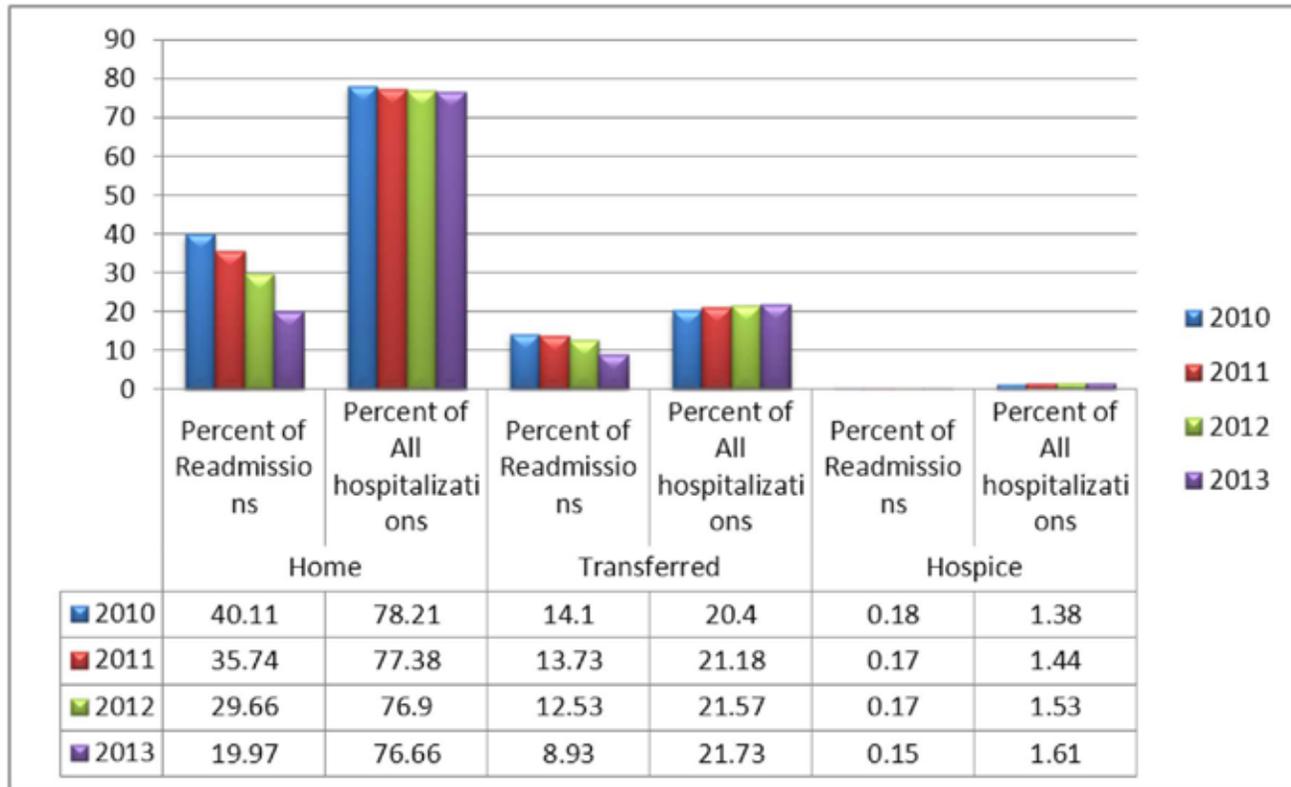
The following graph illustrates the 30-day readmission rate determined by length of stay groups for index hospitalizations.



*The frequency on the figure above is the percentage of readmissions out of all hospitalizations.

- A length of stay of less than 1 day indicates that the patient was admitted and discharged within the same day.
- Out of those who readmitted in 2010-2013, 1.24%, 1.30%, 1.35%, and 1.47% spent less than 1 day for their index hospitalization, while 30.53%, 29.76%, 28.20%, and 25.95% spent 1-2days; 39.02%, 38.57%, 38.49%, and 37.52% spent 3-5days; 14.75%, 15.30%, 16.09%, and 17.02% spent 6-8days; 9.34%, 9.75%, 10.22%, 11.51% spent 9-14days and length of stay of 15 or more days makes 5.11%, 5.31%, 5.65%, and 6.54% respectively.,

Figure 7: Post hospitalization discharge location disparity in readmissions in North Texas



*The frequency on the figure above is the percentage of readmissions out of all hospitalizations.

* Patients that were discharged/transferred were either sent to a critical access hospital (CAH), a Hospital-based Medicare Approved Swing Bed, a Medicare certified LTC, a nursing facility, a psychiatric hospital, a skilled nursing facility, an inpatient rehabilitation facility, an intermediate care facility, an organized home health care service or another type of Health care institution not defined.

- Patients who were readmitted within 30 days had 20% and above readmission rate, if they were discharged to home
- Out of those who readmitted in the years 2010-2013 respectively 73.74%, 72.00%, 70.02% and 68.74% were discharged home, while 0.34%, 0.35%, 0.40%, and 0.52% discharged to hospice and patients who were transferred the various centers were 25.92%, 25.92%, 29.58%, and 30.74% .



Table 6. Associations Between Patient characteristics (Age, Gender, Race, Ethnicity, Payer, Length of Stay, Discharge Status) and Readmissions within 30 Days in those that admitted for Heart Disease (Index Hospitalization) in the Year 2013

Top Five Index Hospitalization Demographics	Heart Disease			
	N	P value	OR	95% C.I
1. Age				
65 and above*				
45-64	46,865	<.0001	1.2338	1.1872-1.2822
18-44	32,406	<.0001	1.4186	1.3242-1.5196
2. Gender				
Female*				
Male	48,195	<.0001	0.859	.8277-.8916
Others (X)	25,904	<.0001	1.2725	1.1780-1.3746
3. Race				
White*				
Asians	36,923	0.1022	1.1285	.9761-1.3047
Blacks	45,322	<.0001	0.6559	.6262-.6869
Others	41,062	0.0122	1.0835	1.0176-1.1537
4. Ethnicity				
Not Hispanic*				
Hispanic	50,743	0.0772	0.949	.8954-1.0057
Others	45,733	0.1597	0.8646	.7058-1.0592
5. Payer				
Medicare*				
Medicaid	25,344	<.0001	0.5683	.5167-.6251
Uninsured	29,968	<.0001	0.6855	0.6468-0.7264
Insured	42,839	<.0001	1.6294	1.5653-1.6962
6. Length of Stay				
3-5 Days*				
Less Than one	19,127	<.0001	0.5465	.476-.6275
1-2 Days	36,555	<.0001	1.4951	1.4315-1.5615
6-8 Days	25,524	<.0001	1.1535	1.0920-1.2184
9-14 Days	22,299	<.0001	1.3225	1.2365-1.4144
15 & More	19,746	<.0001	0.6156	0.5575-0.6796
7. Discharge Status				
Home*				
Hosp	40,065	<.0001	0.2003	.1592-.2520
Tran	50,293	<.0001	1.8865	1.8077-1.9688

*Referent group



Table 7. Associations Between Patient characteristics (Age, Gender, Race, Ethnicity, Payer, Length of Stay, Discharge Status) and Readmissions within 30 Days in those that admitted for Diseases of the Urinary System (Index Hospitalization) in the Year 2013

Top Five Index Hospitalization	Diseases of the urinary system			
	N	P value	OR	95% C.I
Demographics				
1. Age				
65 and above*				
45-64	18,339	0.0013	1.1086	1.0409-1.1807
18-44	15,952	<.0001	1.4856	1.3742-1.6060
2. Gender				
Female*				
Male	20,949	0.1744	0.9611	0.9077-1.0177
Others (X)	13,833	0.0021	1.2123	1.0724-1.3704
3. Race				
White*				
Asians	16,089	0.009	1.3238	1.0719-1.6348
Blacks	19,580	<.0001	0.7797	0.7262-0.8372
Others	17,773	0.2907	1.0524	0.9572-1.1571
4. Ethnicity				
Not Hispanic^				
Hispanic*	21,956	0.0373	1.0907	1.0051-1.1835
Others	19,240	0.0933	0.7318	.5074-1.0554
5. Payer				
Medicare*				
Medicaid	11,580	0.018	0.8475	0.7388-0.9722
Uninsured	13,808	<.0001	0.6062	0.5567-0.6600
Insured	18,084	<.0001	1.4466	1.3602-1.5385
6. Length of Stay				
3-5 Days*				
Less Than one	9,659	0.0947	0.8295	0.666-1.0331
1-2 Days	16,380	<.0001	1.591	1.4892-1.6998
6-8 Days	12,427	<.0001	1.4173	1.3063-1.5377
9-14 Days	10,933	<.0001	1.5069	1.3562-1.6745
15 & More	9,871	<.0001	0.624	0.5272-0.7385
7. Discharge Status				
Home				
Hospice	15,100	<.0001	0.2517	0.1966-0.3221
Tran	21,482	<.0001	1.6036	1.5132-1.6995

*Referent group

Table 8. Associations Between Patient characteristics (Age, Gender, Race, Ethnicity, Payer, Length of Stay, Discharge Status) and Readmissions within 30 Days in those that admitted for Complications (Index Hospitalization) in the Year 2013

Top Five Index Hospitalization	Complications of device and procedure				
	N	X2	P value	OR	95% C.I
Demographics					
1. Age					
65 and above*					
45-64	14,602	3.9212	0.0477	0.9353	0.8754-0.9993
18-44	10,622	5.0578	0.0245	0.9114	0.8406-0.9882
2. Gender					
Female*					
Male	17,512	0.2611	0.6093	1.0159	0.9562-1.0793
Others (X)	10,352	30.6959	<.0001	1.488	1.2919-1.7139
3. Race					
White*					
Asians	13,448	2.1671	0.141	0.842	0.6695-1.0589
Blacks	16,222	50.3231	<.0001	0.7516	0.6945-0.8134
Others	14,968	21.7741	<.0001	0.7909	0.7166-0.8729
4. Ethnicity					
Not Hispanic^					
Hispanic*	18,249	24.3769	<.0001	0.7989	0.7307-0.8735
Others	16,131	3.688	0.0548	1.4587	.99-2.1492
5. Payer					
Medicare*					
Medicaid	9,000	27.4667	<.0001	0.7035	0.6165-0.8028
Uninsured	9,746	12.9848	0.0003	0.8241	0.7417-0.9156
Insured	15,610	162.17	<.0001	1.5191	1.4242-1.6202
6. Length of Stay					
3-5 Days*					
Less Than one	6,737	1.3329	0.2483	0.8469	0.6386-1.1232
1-2 Days	11,096	27.0518	<.0001	1.2334	1.1396-1.3349
6-8 Days	9,803	26.2016	<.0001	1.2487	1.1468-1.3596
9-14 Days	8,850	111.697	<.0001	1.6678	1.5162-1.8346
15 & More	7,934	120.035	<.0001	0.5266	0.469-0.5913
7. Discharge Status					
Home					
Hosp	11,694	43.2167	<.0001	0.2591	0.168-0.3996
Tran	18,181	82.6113	<.0001	1.3271	1.2485-1.4107

*Referent Group

Table 9. Associations Between Patient characteristics (Age, Gender, Race, Ethnicity, Payer, Length of Stay, Discharge Status) and Readmissions within 30 Days in those that admitted for Bacterial Infections (Index Hospitalization) in the Year 2013

Top Five Index Hospitalization	Bacterial Infections				
	N	X2	P value	OR	95% C.I
Demographics					
1. Age					
65 and above*					
45-64	14,792	2.3909	0.122	0.9479	0.8858-1.0144
18-44	12,023	56.5495	<.0001	1.3997	1.282-1.5283
2. Gender					
Female*					
Male	16,405	9.8595	0.0017	1.1079	1.0392-1.1811
Others (X)	10,553	16.3537	<.0001	1.2587	1.1257-1.4074
3. Race					
White*					
Asians	13,131	1.5059	0.2198	1.1401	0.9246-1.4057
Blacks	15,780	25.6707	<.0001	0.812	0.7491-0.8802
Others	14,445	9.6879	0.0019	1.1856	1.065-1.3199
4. Ethnicity					
Not Hispanic^					
Hispanic*	17,810	1.716	0.1902	1.0626	0.9703-1.1636
Others	15,566	1.0989	0.2945	0.7962	.5195-1.2203
5. Payer					
Medicare*					
Medicaid	9,446	5.6306	0.0176	0.8525	0.7471-0.9727
Uninsured	11,224	203.172	<.0001	0.5055	0.4598-0.5557
Insured	14,136	124.329	<.0001	1.4914	1.3900-1.3900
6. Length of Stay					
3-5 Days*					
Less Than one	6,376	4.8389	0.0278	0.3894	0.1629-0.9309
1-2 Days	8,308	78.6865	<.0001	1.7138	1.5202-1.9321
6-8 Days	10,346	50.7671	<.0001	1.3501	1.2429-1.4664
9-14 Days	9,648	146.765	<.0001	1.7039	1.5626-1.8580
15 & More	8,578	194.215	<.0001	0.5001	0.4533-0.5518
7. Discharge Status					
Home					
Hosp	10,514	314.758	<.0001	0.1289	0.099-0.1678
Tran	16,831	460.654	<.0001	1.9864	1.865-2.1156

*Referent group



Table 10. Associations Between Patient characteristics (Age, Gender, Race, Ethnicity, Payer, Length of Stay, Discharge Status) and Readmissions within 30 Days in those that admitted for Respiratory Infections (Index Hospitalization) in the Year 2013

Top Five Index Hospitalization	Respiratory Infections				
	N	X2	P value	OR	95% C.I
Demographics					
1. Age					
65 and above*					
45-64	13,273	7.3373	0.0068	1.1077	1.0287-1.1929
18-44	11,050	90.4942	<.0001	1.6226	1.4677-1.7937
2. Gender					
Female*					
Male	14,723	0.2295	0.6319	1.0166	0.9503-1.0876
Others (X)	9,224	0.233	0.6293	1.0369	0.8949-1.2015
3. Race					
White*					
Asians	11,704	3.4943	0.0616	1.262	0.9883-1.6116
Blacks	13,887	2.5895	0.1076	0.9295	0.8503-1.0161
Others	12,762	2.6138	0.1059	1.1018	0.9796-1.2394
4. Ethnicity					
Not Hispanic^					
Hispanic*	15,439	1.917	0.1662	1.0761	0.9700-1.1939
Others	13,808	0.1111	0.7389	1.0676	.7268-1.5682
5. Payer					
Medicare*					
Medicaid	8,482	3.4522	0.0632	0.8585	0.7307-1.0085
Uninsured	9,701	173.002	<.0001	0.4731	0.4225-0.5297
Insured	13,038	107.695	<.0001	1.4713	1.3676-1.5828
6. Length of Stay					
3-5 Days*					
Less Than one	6,732	12.6494	0.0004	0.4889	0.3269-0.7311
1-2 Days	10,626	86.815	<.0001	1.4955	1.3738-1.6280
6-8 Days	9,386	40.484	<.0001	1.3384	1.2233-1.4642
9-14 Days	8,084	71.4484	<.0001	1.625	1.4511-1.8198
15 & More	7,093	29.4347	<.0001	0.6062	0.5052-0.7275
7. Discharge Status					
Home					
Hosp	11,134	90.1962	<.0001	0.2367	0.1714-0.3267
Tran	15,156	313.355	<.0001	1.8962	1.7657-2.0364

*Referent group

DISCUSSION

Readmission Rate in the North Texas Region

This study provides the first detailed analysis of hospital readmissions in the North Texas Region based on the DFWHC Foundation's data warehouse. In the North Texas Region, readmission rates for 2010, 2011, 2012 and 2013 were 54.4%, 49.64%, 42.37% and 29.05% respectively (Table 1). Our results indicate a decrease in the readmission rate from 2010 to 2013 that was found to be statistically significant ($p < 0.0001$) (Table 2). This is consistent with other studies as literature shows that since the inception of the Hospital Readmissions Reduction program (HRRP) which requires the Centers for Medicare and Medicaid Services (CMS) to reduce payments to IPPS (Inpatient Prospective Payment Systems) hospitals with excess readmissions, hospitals have started taking deliberate actions to ensure the reduction in the rate of potentially avoidable readmissions.¹

Our results support reported findings by CMS fact sheet which indicates that the 30-day, all-cause readmission rate decreased in 2012 to 18.5 percent, after averaging 19 percent for the past five years.²² This decline is continuing into 2013 as readmissions rates have averaged less than 18 percent over the first eight months of the year, a figure that translates into about 130,000 fewer readmissions for Medicare beneficiaries.²² A couple of measures including those proposed by the Camden Group,²³ the Schnelle program,²⁴ the RED project and other similar projects have ensured that high readmission rate readmission which is considered to be a marker of poor quality of health by CMS was addressed, thus bringing about the trend in readmission found to be reducing.

The top ten conditions that accounted for the largest number of readmissions within 30 days of discharge in 2010-2013 are shown in Table 3. These top ten conditions relates to the original hospitalization, not the readmission. Our study shows that heart disease which is considered to be the leading cause of death with about 600,000 people dying of heart disease in the United States every year—that's 1 in every 4 deaths²⁵ tops this list of the top ten condition (index hospitalization) in those who were readmitted. In 2013, the most recent data for which analysis was done, patients that were admitted for heart disease had 51,167 Hospitalizations followed by 18,758 readmissions. For these patients who were initially treated for heart disease and got readmitted within 30 days, their readmission rate was 36.67% (Table 4).

Interestingly, this study shows that with a reduction in readmission rate, there was an increase in the charges being filed for readmissions by hospitals in the North Texas region from 2010-

2013 (Table 5). The increase in charges was also consistent with the top index condition (that is heart disease) that had the highest number of readmissions for the years 2010-2013. This trend might be attributed to increasing cost of health care generally. Previously reported findings estimated that Coronary heart disease, which is the most common type of heart disease killing nearly 380,000 people²⁶ annually alone costs the United States \$108.9 billion each year,²⁷ it is therefore of utmost importance that patients that readmitted with heart disease as index hospitalization be accessed critically and appropriate health care measures put in place to reduce such readmissions.

Disparities Associated with Hospital Readmissions

The disparities associated with hospital readmission within 30 days with regards to gender, age, Ethnicity, Race, payer, length of stay of index hospitalization and post hospitalization discharge location are shown in Figures 1- 7. It was found that the rates for index hospitalizations and for readmissions were higher for females than males for all four years (Figure 1). Out of those who readmitted in 2010-2013 59.14%, 57.85%, 55.49%, and 52.46% were females, while 32.80%, 34.12%, 35.91% and 37.19% were males respectively.

This study shows that readmission rates increased as patients gets older. Patients at the age of 65 and older were almost twice as likely to be readmitted as patients aged 18-44 years (Figure 2). As patients age, there is a more likelihood of developing chronic conditions that requires frequent hospital visits that will warrant being admitted into the hospital and thus eventual readmission. Also, out of those who readmitted in 2010-2013 respectively 28.59%, 26.46%, 24.03%, and 22.77% were in age group 18-44years, while 31.18%, 31.61%, 32.59%, and 34.08% were 45-64 years and 40.23%, 41.93%, 43.39%, 43.15% were 65 years and above. Not-Hispanic patients had higher 30-day readmission rates than Hispanic/ Latino patients (Figure 3). In 2010-2013 respectively, 13.91%, 11.53%, 11.14% and 12.55% were Hispanic/ Latino patients, while 85.98%, 88.31%, 88.76%, and 86.84% were Not- Hispanic/ Latino patients and other ethnic groups made 0.11%, 0.16%, 0.11%, and 0.61% out of those who readmitted. This statistics follows the usual trend of higher Not- Hispanic/ Hispanic ratio seen in the United States in general and in the State of Texas.²⁸

In a similar manner as shown in Figure 4, Whites had the highest 30-day readmission rate than all other races (data not adjusted for population). For the years 2010-2013 respectively, out of those that readmitted 1.61%, 1.59%, 1.26% and 1.6% were Asians, while 18.93%, 19.14%, 16.96% and 20.89% were Blacks. Majority of those who readmitted were whites and they made up 70.01%, 68.91%, 58.79% and 68.46% for the years 2010-2013 while other races were 9.45%, 10.35%, 22.99% and 9.04% for same range of years. This is consistent with the racial diversity found in the twelve counties that make up the North Texas Region.²⁹

It is however interesting to note that in the year 2012, the rate of hospitalization of the racial category “others” increased to 25.59% from the previous year with a rate of 12.81% (2011).

This could possibly be as a result of an influx of some minority racial group, as readmission was likewise impacted. It was found that out of those that readmitted others make up 23% in 2012 compared to the previous year with a value of 10.35%.

Economic disparity based on the payer group with relation to readmissions is also of note with Medicare patients having the highest 30-day readmission rate than all of the other payers and readmission rates being lowest in the uninsured and Medicaid category (Figure 5). Medicare patients having the highest readmission rate is one of the reasons why CMS started penalizing hospitals for high readmission rate since readmission within 30 days of discharge was considered as a marker for poor quality of care and money being spent needlessly. In 2008, 18% of all Medicare patients were readmitted within 30 days of discharge and Medicare surmised that \$15 billion worth of care was potentially avoidable.^{5,6} This pattern of economic disparity for the years 2010-2013 respectively shows that out of those that were readmitted, insured patients were 36.37%, 34.84%, 34.35%, and 34.17%, while Medicaid patients were 12.39%, 11.11%, 11.06%, and 8.89%. Likewise, of those that readmitted, Medicare patients constituted 39.86%, 42.65%, 43.49%, and 44.37% while the uninsured group 11.37%, 11.41%, 11.10%, and 12.57% for the years 2010-2013 respectively.

Length of stay that is how long a patient stays for their index hospitalization, of less than 1 day indicates that the patient was admitted and discharged within the same day (Figure 6). This study shows that out of those who readmitted in 2010-2013, less than 2% spent less than 1 day for their index hospitalization, while about 30% spent 1-2days; approximately 40% spent 3-5days; about 15-20% spent 6-8days; 9-12% spent 9-14days and length of stay of 15 or more days makes about 6%.

Discharge status indicates the discharge location from the hospital. Patients' readmissions within 30 days have 20% and above readmission rate, if they were discharged to home (Figure 7). Concerns about the care received at home should be considered to reduce readmissions. Out of those who readmitted in the years 2010-2013 respectively 73.74%, 72.00%, 70.02% and 68.74% were discharged home, while 0.34%, 0.35%, 0.40%, and 0.52% discharged to hospice and patients who were transferred the various centers make up 25.92%, 25.92%, 29.58%, and 30.74%

Association between patient characteristics and Readmissions within 30 Days in those that admitted for Heart Disease (Index Hospitalization) in the Year 2013

The associations between patient characteristics (Age, Gender, Race, Ethnicity, Payer group, Length of Stay, and Discharge location) and Readmissions within 30 Days for the top five conditions (Index Hospitalization) in 2013 are shown on Tables 6- 10. Heart Disease, Diseases of the Urinary Tract, Complications of device or procedure, Bacterial Infections and Respiratory Infections make up the top five conditions in 2013. However, Heart disease had the highest number of readmissions during 2010-2013.

For the patients who admitted for heart disease (index hospitalization), a statistically significant association was observed between age of patient, gender, payer group, length of stay for index hospitalization, discharged status and readmissions in 2013 (Table 6). Out of those who readmitted, using a referent age of 65 years and above, it was found that ages 45-64 years and 18-44 years had more odds (1.23, 1.42) respectively of being admitted with heart disease than ages 65 years and above. Likewise, males had lesser odds of being admitted for heart disease than females (OR – 0.86, 95% C.I 0.8277-0.8916).

According to the Center for Disease Control and Prevention Heart Disease Facts, heart disease is the leading cause of death for both men and women with more than half of the deaths due to heart disease in 2009 found in men.³⁰ Even though heart disease is sometimes thought of as a "man's disease," around the same number of women and men die each year of heart disease in the United States with only 54% of women recognizing that heart disease is their number one killer.^{31,32}

With respect to race, Blacks had lesser odds (OR 0.66, 95% C.I 0.6262-0.6869) of being admitted for heart disease than Whites. Even though the association between Asians, other tribes and readmissions was not statistically significant, they had more odds (1.13 and 1.08 respectively) of being admitted for heart disease than White patients. It is therefore important that more attention is paid to minority groups with hospital readmissions since they are at higher odds of developing heart disease as compared to the majority Whites racial category. The association between ethnicity and readmissions was however not statistically significant for those who were admitted for heart disease.

Patients who were admitted for heart disease in 2013, an economic disparity between payer (Medicaid, Medicare, Uninsured and Insured) and readmission was statistically significant (p-value <.0001). Insured patients had more odds (OR: 1.63, 95% C.I 1.5653-1.6962) of being admitted for heart disease than Medicare patients (referent group). It is presumed that patients with insurance coverage are more likely to be incur less cost from hospitalization, thus the tendency to take care of their health needs is more convenient as compared to those that need some form of bureaucracy to be covered or even the uninsured. For those readmitted patients who were originally admitted for heart disease (index hospitalization), using a referent of 3-5 days LOS, it was found that the longer the patients stays in the hospital (from day 1-14), the more the odds of being readmitted.

Interestingly, from day 15 and above, there was less odds (OR: 0.62, 95% C.I 0.5575-0.6796) of heart disease patient being readmitted as compared to those with a length of stay of 3-5 days. Post hospitalization discharge location (Home, Hospice, and Transferred) and readmission reveals a statistically significant association for those patients who were admitted with heart disease. Patients who were discharged/transferred to a critical access hospital (CAH), a Hospital-based Medicare Approved Swing Bed, a Medicare certified long term care, a nursing

facility, a psychiatric hospital, a skilled nursing facility, an inpatient rehabilitation facility, an intermediate care facility, an organized home health care service or another type of health care institution not defined had more odds (OR: 1.88, 95% C.I 1.8077-1.9688) of being readmitted for heart disease as compared to those who were discharged home.

Ways of reducing Readmission and Ongoing Projects

Not all 30-day readmissions are preventable. Many of them are planned and are part of some treatments. However, for unplanned readmissions, hospitals may be able to reduce readmissions by reducing the risk of infection in the hospital, paying closer attention to medication and ensuring that patients are discharged at an appropriate time according to the patient's condition. More importantly, understanding why health care disparities exist is a key step in reducing readmission.¹²

Research and the experience of individual hospitals suggest that hospitals can reduce the number of readmissions by providing better, safer care during the inpatient stay, attending to patient's medication needs at discharge, improving communication with patients before and after discharge, and improving communication with other providers.¹⁹

Reviewing practice patterns, for example, hospitals may consider keeping some patients an extra day to be more certain their condition has stabilized.¹⁹ Also, hospitals can provide comparative information to physicians about their readmission rates and encourage a dialogue between physicians with high readmission rates and those with low rates.¹⁹

Transitional care interventions and increased partnerships with community-based institutions have been proposed as ways of reducing readmission rates.^{9,20} Currently, there are many research projects going on to determine which programs will be the most effective at reducing readmissions. One such program is Project RED (Re-Engineered Discharge). RED uses a coaching technique to empower patients to take greater responsibility for their healthcare.

Another program uses nurses and practitioners to do follow up home visits and telephone calls to ensure that the patient is taking their medications, visiting their physicians in clinics and getting appropriate medical information.

Other programs look at transitions of care, better discharge instructions and intense post discharge care for those with the highest risk of readmission. Similar successful efforts have been reported by Amarasingham et al 2013 in reducing heart failure related readmissions in Dallas.²¹



CONCLUSION/FUTURE IMPLICATIONS

This research is the first effort to provide the comprehensive and in-depth information regarding Readmissions in North Texas. Study provides important information regarding readmissions and underlying disparities at regional level. The strength of this research is our comprehensive data registry which allowed us to analyze the data up to the patient level to identify the conditions and disparities associated with their hospital readmissions. These results have major significance in the realm of health care and public health. With the identification of the contributing disparities in the hospital readmissions, health care efforts and resources can be more efficiently targeted and focused from associated medical conditions to the disparities at the patient level for prevention and management of identified health conditions and disparities contributing towards the hospital readmissions. These results may guide hospitals in North Texas region for developing their future strategies to improve quality of care and to prepare for the upcoming challenges with ongoing new health care reforms and affordable care act.

In the future, we support improvements in health care data-sharing in order coordinate care between different health care providers outside the hospitals and, more importantly, to be able to perform case management post hospitalization to avoid the potential readmissions. In addition, healthcare policies and information protection laws i.e. HIPAA and PHI may need to be revised in order to facilitate the more personalized and targeted care to high risk patients and, for continuity of care and care management outside the hospital. This will not only reduce the “potentially avoidable readmissions” and the financial burden but even on humanitarian ground, it is the most ethical approach to provide sustainable and affordable healthcare to patients.

LIMITATIONS

Patients hospitalized during the last 30 days of 2013 did not have a full 30 days to readmit since the last date we have data for is December 31st 2013.

The DFWHC Foundation Hospital Encounter Data Warehouse captures approximately 91% of all Inpatient Hospital visits as compared to THCIC for the 13 County North Central Texas Area. Patients from all over Texas and surrounding states are also captured in the data but it is less likely that we would capture a readmission from outside of our primary catchment area.

The Foundation relies on the organization that submits the data to verify against their internal records. The DFWHC would only receive data if a bill was generated. If for some reason the organization saw a patient and did not generate a bill, then we would not receive the data.

Due to various reasons we sometimes get encounters without enough data to make a match (John or Jane Doe's). These could be readmissions for existing patients, but without enough identifying data, it is not possible to match.

Like other EMPI matching algorithms the DFWHC algorithm sometimes has difficulty with new born baby being matched to birthing mothers rather than getting their own new Patient ID Number after birth. This issue is usually localized to the birthing event.



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Appendix 1 – Planned procedure list

AHRQ Procedure CC	Procedure	Readmissions without an acute diagnosis or a complication of care		All readmissions	
		Number	Percent	Number	Percent
45	Percutaneous transluminal coronary angioplasty (PTCA)	23,085	12.74	37,115	12.84
84	Cholecystectomy and common duct exploration	15,405	8.5	17,868	6.18
Condition CCS 45	Maintenance chemotherapy	14,329	7.91	14,329	4.96
157	Amputation of lower extremity	13,131	7.25	19,085	6.60
51	Endarterectomy; vessel of head and neck	11,569	6.38	12,411	4.29
78	Colorectal resection	11,522	6.36	20,004	6.92
44	Coronary artery bypass graft (CABG)	11,119	6.14	13,311	4.61
152	Arthroplasty knee	10,475	5.78	13,959	4.83
113	Transurethral resection of prostate (TURP)	7,909	4.36	9,150	3.17
153	Hip replacement; total and partial	5,694	3.14	22,803	7.89
211	Therapeutic radiology for cancer treatment	5,422	2.99	7,479	2.59
158	Spinal fusion	5,383	2.97	7,176	2.48
48	Insertion; revision; replacement; removal of cardiac pacemaker or cardioverter/defibrillator	5,313	2.93	43,432	15.03
3	Laminectomy; excision intervertebral disc	5,172	2.85	6,541	2.26
36	Lobectomy or pneumonectomy	4,567	2.52	5,347	1.85
55	Peripheral vascular bypass	4,346	2.40	5,739	1.99
43	Heart valve procedures	4,133	2.28	4,863	1.68
52	Aortic resection; replacement or anastomosis	3,964	2.19	4,235	1.47
104	Nephrectomy; partial or complete	3,104	1.71	3,332	1.15
60	Embolectomy and endarterectomy of lower limbs	2,918	1.61	5,206	1.80
85	Inguinal and femoral hernia repair	2,387	1.32	2,785	0.96
124	Hysterectomy; abdominal and vaginal	2,143	1.18	2,223	0.77
167	Mastectomy	1,419	0.78	1,475	0.51
154	Arthroplasty other than hip or knee	1,189	0.66	2,570	0.89
74	Gastrectomy; partial and total	1,174	0.65	1,541	0.53
114	Open prostatectomy	1,035	0.57	1,069	0.37
119	Oophorectomy; unilateral and bilateral	1,005	0.55	1,275	0.44
10	Thyroidectomy; partial or complete	986	0.54	1,069	0.37
64	Bone marrow transplant	458	0.25	468	0.16
166	Lumpectomy; quadrantectomy of breast	322	0.18	471	0.16
105	Kidney transplant	240	0.13	245	0.08
176	Other organ transplantation	171	0.09	263	0.09
ICD-9 94.26, 94.27	Electroshock therapy	114	0.06	139	0.05
	Total				181,203

Appendix2. Top 10 conditions (Index Hospitalization) for Readmissions within 30 days in 2010, 2011 and 2012

Top Ten Conditions (Index Hospitalization) for Patients who had a Readmission within 30 Days, 2010					
All Index Hospitalization 2010		Was the Index Hospitalization followed by a Readmission within 30 days			
Principle Reason for Readmission	Total Number of Index Hospital Stays	No		Yes	
		Patients with No Readmission	Average LOS - No Readmission	Readmission Cases	Average LOS for Patients who Readmitted
Diseases of the heart	52037	18383	4.315	33654	5.18
Medical	35150	10917	3.42	24233	4.06
Surgical	16887	7466	5.21	9421	6.3
Complications mainly related to pregnancy	31514	17492	3.48	14022	4.48
**	8	6	2.83	2	5
Medical	23655	11942	2.54	11713	3.12
Surgical	7869	5562	5.07	2307	5.31
Diseases of the urinary system	20366	7198	3.86	13168	5.615
Medical	17553	5927	3.98	11626	4.65
Surgical	2813	1271	3.74	1542	6.58
Complications of device and procedures	18766	6030	5.455	12736	6.645
Medical	9239	2719	4.98	6520	5.88
Surgical	9527	3311	5.93	6216	7.41
Respiratory infections	15189	5254	6.61	9935	8.44
Medical	14446	4948	4.54	9498	5.32
Surgical	743	306	8.68	437	11.56
Lower gastrointestinal disorders	16698	8271	4.01	8427	6.53
Medical	8857	3244	3.81	5613	4.69
Surgical	7841	5027	4.21	2814	8.37
Chronic obstructive pulmonary disease and bronchiectasis	9875	1980	8.435	7895	8.21
Medical	9689	1932	4.18	7757	4.46
Surgical	186	48	12.69	138	11.96
Indications for care in pregnancy; labor; and delivery	27341	19878	2.83	7463	3.11
**	4	3	2.67	1	3
Medical	6017	3878	2.65	2139	2.95
Surgical	21320	15997	3.16	5323	3.38
Cerebrovascular disease	12980	5676	4.92	7304	5.13
Medical	9953	4363	4.25	5590	4.64
Surgical	3027	1313	5.59	1714	5.62
Bacterial infection	11224	4178	11.49	7046	12.53
Medical	9553	3566	7.23	5987	7.91
Surgical	1671	612	15.75	1059	17.15

Top Ten Conditions (Index Hospitalization) for Patients who had a Readmission within 30 Days, 2011

All Index Hospitalization 2011		Was the Index Hospitalization followed by a Readmission within 30 days			
		No		Yes	
Principle Reason for Readmission	Total Number of Index Hospital Stays	Patients with No Readmission	Average LOS - No Readmission	Readmission Cases	Average LOS for Patients who Readmitted
Diseases of the heart	51523	20779	4.71	30744	5.97
**	17	5	5.40	12	7.00
Medical	34814	12484	3.40	22330	4.10
Surgical	16692	8290	5.32	8402	6.80
Diseases of the urinary system	22595	8901	4.10	13694	4.48
**	6	5	4.40	1	2.00
Medical	19728	7463	3.82	12265	4.62
Surgical	2861	1433	4.08	1428	6.82
Complications of device and procedures	18967	6988	5.39	11979	7.60
**	454	196	5.55	258	9.24
Medical	8708	2869	4.94	5839	5.93
Surgical	9805	3923	5.69	5882	7.62
Complications mainly related to pregnancy	31780	20042	3.21	11738	3.15
**	4	2	2.00	2	1.00
Medical	23473	13587	2.57	9886	3.11
Surgical	8303	6453	5.07	1850	5.34
Respiratory infections	14755	5761	7.51	8994	6.05
**	1	-		1	1.00
Medical	14050	5449	4.53	8601	5.25
Surgical	704	312	10.49	392	11.90
Bacterial infection	13417	5546	10.42	7871	9.35
**	1	-		1	3.00
Medical	11459	4792	6.65	6667	7.89
Surgical	1957	754	14.18	1203	17.16
Lower gastrointestinal disorders	16408	8831	3.94	7577	6.88
Medical	8937	3709	3.77	5228	4.68
Surgical	7471	5122	4.10	2349	9.07
Chronic obstructive pulmonary disease and bronchiectasis	9639	2329	8.52	7310	7.64
Medical	9442	2260	4.08	7182	4.46
Surgical	197	69	12.96	128	10.82
Cerebrovascular disease	13876	6658	4.82	7218	5.44
Medical	10695	5118	4.16	5577	4.62
Surgical	3181	1540	5.48	1641	6.26
Diabetes mellitus with complications	9567	2840	6.67	6727	7.07
Medical	7380	2298	3.47	5082	3.97
Surgical	2187	542	9.86	1645	10.17

Top Ten Conditions (Index Hospitalization) for Patients who had a Readmission within 30 Days, 2012

All Index Hospitalization 2012		Was the Index Hospitalization followed by a Readmission within 30 days			
		No		Yes	
Principle Reason for Readmission	Total Number of Index Hospital Stays	Patients with No Readmission	Average LOS - No Readmission	Readmission Cases	Average LOS for Patients who Readmitted
Diseases of the heart	50859	24110	4.94	26749	5.70
**	94	50	6.36	44	6.11
Medical	34681	14778	3.30	19903	4.15
Surgical	16084	9282	5.15	6802	6.83
Diseases of the urinary system	22155	10099	3.85	12056	5.15
**	12	3	3.67	9	4.00
Medical	19316	8455	3.92	10861	4.63
Surgical	2827	1641	3.95	1186	6.83
Complications of device and procedures	18124	7836	5.57	10288	7.43
**	1353	551	6.07	802	8.30
Medical	7800	3072	4.86	4728	6.00
Surgical	8971	4213	5.77	4758	8.00
Complications mainly related to pregnancy	31053	22912	2.92	8141	3.65
**	19	15	1.27	4	1.75
Medical	22877	15704	2.56	7173	3.36
Surgical	8157	7193	4.93	964	5.83
Respiratory infections	14472	6785	6.07	7687	7.30
**	37	25	5.24	12	4.42
Medical	13780	6398	4.27	7382	5.29
Surgical	655	362	8.69	293	12.18
Bacterial infection	14880	7206	9.98	7674	12.10
Medical	12911	6299	6.41	6612	7.52
Surgical	1969	907	13.55	1062	16.68
Lower gastrointestinal disorders	16239	9712	4.07	6527	6.76
Medical	9145	4503	3.81	4642	4.59
Surgical	7094	5209	4.33	1885	8.92
Chronic obstructive pulmonary disease and bronchiectasis	9275	2910	7.52	6365	8.22
Medical	9078	2849	3.96	6229	4.44
Surgical	197	61	11.08	136	11.99
Cerebrovascular disease	13932	7771	4.57	6161	5.36
Medical	10852	6086	4.16	4766	4.63
Surgical	3080	1685	4.97	1395	6.09
Diabetes mellitus with complications	9533	3451	6.33	6082	7.06
Medical	7366	2735	3.53	4631	4.04
Surgical	2167	716	9.12	1451	10.08

Appendix3. Reasons for Readmissions within 30 days for index hospitalization in 2010-2012

A. Most Frequent Reasons for Readmission within 30 days, 2010

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Diseases of the heart	Diseases of the heart	13135	39%	25%	4.43
	Diseases of the Urinary System	1670	5%	3%	5.04
	Respiratory infections	1279	4%	2%	5.1
	Complications of device and procedures	1269	4%	2%	5.72
	Cerebrovascular disease	1235	4%	2%	4.41
	Bacterial infection	999	3%	2%	6.1
	Hypertension	915	3%	2%	4.7
	Chronic obstructive pulmonary disease and bronchiectasis	892	3%	2%	4.37
	Fractures	754	2%	1%	4.56
	Diseases of arteries; arterioles; and capillaries	628	2%	1%	4.76
	others	10603	32%	20%	4.73
Total	33379	100%	64%		
Complications mainly related to pregnancy	Complications mainly related to pregnancy	5653	41%	18%	3.43
	Indications for care in pregnancy; labor; and delivery	2846	20%	9%	3.73
	Complications during labor	1767	13%	6%	2.89
	Other complications of birth; puerperium affecting management of mother	1524	11%	5%	3.36
	Normal pregnancy and/or delivery	638	5%	2%	2.89
	Biliary tract disease	226	2%	1%	3.26
	Diseases of female genital organs	112	1%	0%	4.45
	Diseases of the urinary system	82	1%	0%	3.67
	Lower gastrointestinal disorders	80	1%	0%	3.21
	Mood disorders	66	0%	0%	4.32
	others	946	7%	3%	5.16
Total	13940		44%		
Diseases of the urinary system	Diseases of the urinary system	2806	21%	14%	4.75
	Diseases of the heart	1312	10%	6%	4.89
	Bacterial infection	929	7%	5%	5.39
	Complications of device and procedures	696	5%	3%	5.98
	Respiratory infections	506	4%	2%	5.06
	Fractures	410	3%	2%	4.22
	Fluid and electrolyte disorders	361	3%	2%	4.88
	Cerebrovascular disease	340	3%	2%	4.41
	Hypertension	332	3%	2%	5.1
	Diabetes mellitus with complications	328	3%	2%	4.8
	others	5042	39%	25%	4.58
Total	13062	100%	64%		
Complications	Complications of device and procedures	3448	27%	18%	7.03
	Diseases of the heart	1160	9%	6%	5.64
	Diseases of the urinary system	627	5%	3%	6.65
	Bacterial infection	547	4%	3%	7.87
	Respiratory infections	374	3%	2%	6.71
	Lower gastrointestinal disorders	368	3%	2%	6.53
	Symptoms; signs; and ill-defined conditions	273	2%	1%	6.95
	Diabetes mellitus with complications	268	2%	1%	7.01
	Non-traumatic joint disorders	255	2%	1%	4.76
	Fluid and electrolyte disorders	245	2%	1%	6.42
	others	5071	40%	27%	6.59
Total	12636	100%	68%		

A. Most Frequent Reasons for Readmission within 30 days, 2010 contd.

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Respiratory infections	Respiratory infections	1540	16%	10%	5.43
	Diseases of the heart	1216	12%	8%	5.35
	Chronic obstructive pulmonary disease and bronchiectasis	661	7%	4%	5.62
	Bacterial infection	567	6%	4%	6.15
	Diseases of the urinary system	519	5%	3%	5.77
	Complications of device and procedures	302	3%	2%	7.36
	Fractures	299	3%	2%	5.25
	Respiratory failure	264	3%	2%	6.79
	Asthma	255	3%	2%	4.89
	Cerebrovascular disease	247	3%	2%	4.71
	others	3963	40%	26%	5.3
	Total	9833	100%	65%	
Lower gastrointestinal disorders	Lower gastrointestinal disorders	2487	30%	15%	5.4
	Diseases of the heart	563	7%	3%	5.77
	Complications of device and procedures	512	6%	3%	8.13
	Diseases of the urinary system	366	4%	2%	6.97
	Other gastrointestinal disorders	343	4%	2%	9.11
	Bacterial infection	254	3%	2%	6.93
	Respiratory infections	228	3%	1%	6.37
	Symptoms; signs; and ill-defined conditions	206	2%	1%	5.45
	Fractures	178	2%	1%	5.44
	Abdominal hernia	170	2%	1%	6.04
	others	3076	37%	18%	5.59
		Total	8383	100%	50%
Chronic obstructive pulmonary disease and bronchiectasis [127.]	Chronic obstructive pulmonary disease and bronchiectasis	2698	34%	27%	4.51
	Diseases of the heart	860	11%	9%	4.43
	Respiratory infections	587	7%	6%	5
	Respiratory failure	524	7%	5%	5.2
	Asthma	381	5%	4%	4.57
	Bacterial infection	266	3%	3%	4.64
	Diseases of the urinary system	226	3%	2%	4.68
	Fractures	167	2%	2%	4.41
	Cerebrovascular disease	158	2%	2%	3.91
	Lower gastrointestinal disorders	116	1%	1%	4.59
	others	1856	24%	19%	4.4
	Total	7839	100%	80%	
Indications for care in pregnancy; labor; and delivery	Indications for care in pregnancy; labor; and delivery	3469	47%	13%	3.3
	Complications mainly related to pregnancy	1256	17%	5%	3.26
	Other complications of birth; puerperium affecting management of mother	733	10%	3%	3.44
	Complications during labor	438	6%	2%	2.82
	Biliary tract disease	219	3%	1%	2.84
	Normal pregnancy and/or delivery	163	2%	1%	2.8
	Diseases of female genital organs	114	2%	0%	2.97
	Diseases of the urinary system	88	1%	0%	2.98
	Lower gastrointestinal disorders	82	1%	0%	3.41
	Mood disorders	54	1%	0%	3.24
	others	772	10%	3%	3.23
		Total	7388	100%	27%

A. Most Frequent Reasons for Readmission within 30 days, 2010 contd.

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Cerebrovascular disease	Cerebrovascular disease	1590	22%	12%	4.32
	Diseases of the heart	986	14%	8%	4.2
	Diseases of the urinary system	471	7%	4%	5.16
	Bacterial infection	301	4%	2%	6.49
	Respiratory infections	253	4%	2%	4.72
	Diseases of arteries; arterioles; and capillaries	215	3%	2%	3.78
	Fractures	215	3%	2%	4.08
	Complications of device and procedures	180	2%	1%	5.73
	Hypertension	170	2%	1%	5.54
	Symptoms; signs; and ill-defined conditions	164	2%	1%	4.87
	others	2658	37%	21%	5.04
	Total	7203	100%	56%	
	Bacterial infection	Bacterial infection	1105	16%	10%
Diseases of the urinary system		763	11%	7%	8.69
Diseases of the heart		584	8%	5%	9.1
Respiratory infections		388	6%	3%	8.94
Complications of device and procedures		356	5%	3%	10.49
Diabetes mellitus with complications		203	3%	2%	9.62
Skin and subcutaneous tissue infections		180	3%	2%	8.03
Lower gastrointestinal disorders		172	2%	2%	8.12
Cerebrovascular disease		167	2%	1%	7.95
Fractures		160	2%	1%	8.14
others		2908	42%	26%	9.33
Total		6986	100%	63%	

B. Most Frequent Reasons for Readmission within 30 days, 2011

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Diseases of the heart	Diseases of the heart	12112	48%	26%	4.52
	Diseases of the urinary system	1550	6%	3%	5.38
	Respiratory infections	1150	5%	2%	4.87
	Complications of device and procedures	1097	4%	2%	6.11
	Cerebrovascular disease	1053	4%	2%	4.73
	Bacterial infection	1018	4%	2%	6.55
	Hypertension	824	3%	2%	4.69
	Chronic obstructive pulmonary disease and bronchiectasis	821	3%	2%	4.87
	Fractures	610	2%	1%	4.44
	Diseases of arteries; arterioles; and capillaries	586	2%	1%	5.27
	others	4559	18%	10%	4.71
	Total	25380	100%	55%	5.1
Diseases of the urinary system	Diseases of the urinary system	2929	22%	13%	4.69
	Diseases of the heart	1336	10%	6%	4.83
	Bacterial infection	1020	8%	5%	5.51
	Complications of device and procedures	644	5%	3%	6.14
	Respiratory infections	511	4%	2%	4.92
	Fractures	400	3%	2%	4.2
	Diabetes mellitus with complications	388	3%	2%	4.96
	Fluid and electrolyte disorders	378	3%	2%	4.83
	Cerebrovascular disease	356	3%	2%	4.42
	Hypertension	340	3%	2%	5.08
	others	5188	38%	23%	4.59
	Total	13490	100%	60%	4.92
Complications	Complications of device and procedures	3451	29%	18%	7.07
	Diseases of the heart	947	8%	5%	6.08
	Bacterial infection	571	5%	3%	8.37
	Diseases of the urinary system	562	5%	3%	6.69
	Respiratory infections	344	3%	2%	6.36
	Lower gastrointestinal disorders	311	3%	2%	6.95
	Symptoms; signs; and ill-defined conditions	286	2%	2%	7.86
	Non-traumatic joint disorders	254	2%	1%	4.65
	Diabetes mellitus with complications	244	2%	1%	7.87
	Diseases of arteries; arterioles; and capillaries	228	2%	1%	6.67
	others	4651	39%	25%	6.77
	Total	11849	100%	63%	6.85
Complications mainly related to pregnancy	Complications mainly related to pregnancy	4768	41%	15%	3.4
	Indications for care in pregnancy; labor; a	2254	19%	7%	3.49
	Complications during labor	1525	13%	5%	2.87
	Other complications of birth	1285	11%	4%	3.41
	Normal pregnancy and/or delivery	539	5%	2%	3.37
	Biliary tract disease	179	2%	1%	3.56
	Diseases of the urinary system	80	1%	0%	4.85
	Diseases of female genital organs	77	1%	0%	4
	Lower gastrointestinal disorders	68	1%	0%	4.59
	Mood disorders	56	0%	0%	3.05
	others	830	7%	3%	4.88
	Total	11661	100%	37%	3.77

B. Most Frequent Reasons for Readmission within 30 days, 2011 contd.

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Respiratory infections	Respiratory infections	1293	15%	9%	5.26
	Diseases of the heart	1122	13%	8%	5.52
	Chronic obstructive pulmonary disease and bronchiectasis	595	7%	4%	5.47
	Bacterial infection	551	6%	4%	5.85
	Diseases of the urinary system	463	5%	3%	5.67
	Respiratory failure	251	3%	2%	7.64
	Complications of device and procedures	247	3%	2%	6.19
	Fractures	238	3%	2%	5.11
	Asthma	229	3%	2%	4.91
	Aspiration pneumonitis; food/vomitus	206	2%	1%	6.17
	others	3676	41%	25%	5.17
	Total	8871	100%	61%	5.72
	Bacterial infection	Bacterial infection	1370	18%	10%
Diseases of the urinary system		759	10%	6%	8.51
Diseases of the heart		673	9%	5%	9.15
Complications of device and procedures		463	6%	3%	11.85
Respiratory infections		441	6%	3%	8.38
Diabetes mellitus with complications		224	3%	2%	9.43
Lower gastrointestinal disorders		200	3%	2%	9.36
Chronic obstructive pulmonary disease and bronchiectasis		185	2%	1%	7.31
Skin and subcutaneous tissue infections		184	2%	1%	8.41
Respiratory failure		179	2%	1%	10.96
others		3099	40%	23%	9
Total		7777	100%	58%	7.25
Lower gastrointestinal disorders		Lower gastrointestinal disorders	2313	31%	14%
	Complications of device and procedures	483	6%	3%	7.54
	Diseases of the heart	465	6%	3%	5.86
	Diseases of the urinary system	339	5%	2%	6.39
	Other gastrointestinal disorders	298	4%	2%	9.99
	Bacterial infection	243	3%	1%	7.89
	Respiratory infections	172	2%	1%	6.27
	Symptoms; signs; and ill-defined conditions	168	2%	1%	6.15
	Fractures	148	2%	1%	6.78
	Cerebrovascular disease	146	2%	1%	5.27
	others	2745	37%	17%	5.56
	Total	7520	100%	46%	6.63
	Chronic obstructive pulmonary disease and bronchiectasis	Chronic obstructive pulmonary disease and bronchiectasis	2364	33%	25%
Diseases of the heart		799	11%	8%	4.35
Respiratory infections		585	8%	6%	4.68
Respiratory failure		530	7%	6%	4.82
Asthma		337	5%	4%	4.49
Bacterial infection		305	4%	3%	5.09
Diseases of the urinary system		224	3%	2%	4.95
Fractures		138	2%	1%	4.59
Cerebrovascular disease		126	2%	1%	4.09
Skin and subcutaneous tissue infections		97	1%	1%	4.76
others		1722	24%	18%	4.82
Total		7227	100%	76%	4.65

B. Most Frequent Reasons for Readmission within 30 days, 2011 contd.

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Cerebrovascular disease	Cerebrovascular disease	1655	23%	12%	4.12
	Diseases of the heart	972	14%	7%	4.42
	Diseases of the urinary system	480	7%	3%	5.7
	Bacterial infection	320	4%	2%	6.82
	Diseases of arteries; arterioles; and capillaries	215	3%	2%	3.85
	Respiratory infections	214	3%	2%	4.68
	Fractures	205	3%	1%	4.8
	Complications of device and procedures	183	3%	1%	7.07
	Hypertension	161	2%	1%	4.91
	Other nervous system disorders	123	2%	1%	5.2
	others	2600	36%	19%	5.08
Total	7128	100%	52%	5.15	
Diabetes mellitus with complications	Diabetes mellitus with complications	2670	40%	28%	4.71
	Diseases of the heart	506	8%	5%	5.59
	Complications of device and procedures	368	6%	4%	8.87
	Diseases of the urinary system	361	5%	4%	5.07
	Bacterial infection	284	4%	3%	7.43
	Skin and subcutaneous tissue infections	181	3%	2%	5.57
	Respiratory infections	154	2%	2%	6.72
	Hypertension	152	2%	2%	6.2
	Symptoms; signs; and ill-defined conditions	135	2%	1%	6.34
	Cerebrovascular disease	133	2%	1%	5.31
	others	1718	26%	18%	5.6
	Total	6662	100%	70%	6.13

C. Most Frequent Reasons for Readmission within 30 days, 2012

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Diseases of the heart	Diseases of the heart	10519	40%	22%	4.46
	Diseases of the urinary system	1376	5%	3%	5.39
	Complications of device and procedures	1018	4%	2%	6.45
	Respiratory infections	977	4%	2%	4.94
	Bacterial infection	869	3%	2%	6.02
	Cerebrovascular disease	861	3%	2%	4.60
	Chronic obstructive pulmonary disease and bronchiectasis	733	3%	2%	4.67
	Hypertension	723	3%	2%	4.87
	Respiratory failure	493	2%	1%	6.16
	Diseases of arteries	460	2%	1%	5.03
	others	8005	31%	17%	4.62
	Total	26034	100%	56%	5.20
Diseases of the urinary system	Diseases of the urinary system	2555	22%	12%	4.73
	Diseases of the heart	1171	10%	6%	4.81
	Bacterial infection	944	8%	5%	5.32
	Complications of device and procedures	623	5%	3%	5.30
	Respiratory infections	430	4%	2%	4.61
	Diabetes mellitus with complications	332	3%	2%	4.93
	Fractures	332	3%	2%	4.63
	Fluid and electrolyte disorders	308	3%	1%	5.25
	Hypertension	292	2%	1%	4.96
	Cerebrovascular disease	282	2%	1%	4.70
	others	4432	38%	22%	4.36
	Total	11701	100%	57%	4.87
Complications	Complications of device and procedures	2885	29%	17%	7.23
	Diseases of the heart	799	8%	5%	6.02
	Bacterial infection	553	6%	3%	9.16
	Diseases of the urinary system	535	5%	3%	7.33
	Respiratory infections	305	3%	2%	6.22
	Lower gastrointestinal disorders	245	2%	1%	6.64
	Symptoms; signs; and ill-defined conditions	223	2%	1%	7.92
	Diabetes mellitus with complications	219	2%	1%	7.14
	Fluid and electrolyte disorders	205	2%	1%	7.34
	Diseases of arteries	196	2%	1%	6.34
	others	3870	39%	23%	6.56
	Total	10035	100%	59%	7.08
Complications mainly related to pregnancy	Complications mainly related to pregnancy	3678	46%	13%	3.63
	Indications for care in pregnancy	1408	18%	5%	3.51
	Other complications of birth	865	11%	3%	3.90
	Complications during labor	862	11%	3%	3.04
	Normal pregnancy and/or delivery	315	4%	1%	3.17
	Biliary tract disease	129	2%	0%	3.20
	Diseases of the urinary system	66	1%	0%	3.77
	Lower gastrointestinal disorders	51	1%	0%	3.55
	Miscellaneous mental disorders	49	1%	0%	3.39
	Bacterial infection	45	1%	0%	6.07
	others	575	7%	2%	6.77
	Total	8043	100%	29%	4.00

C. Most Frequent Reasons for Readmission within 30 days, 2012 contd.

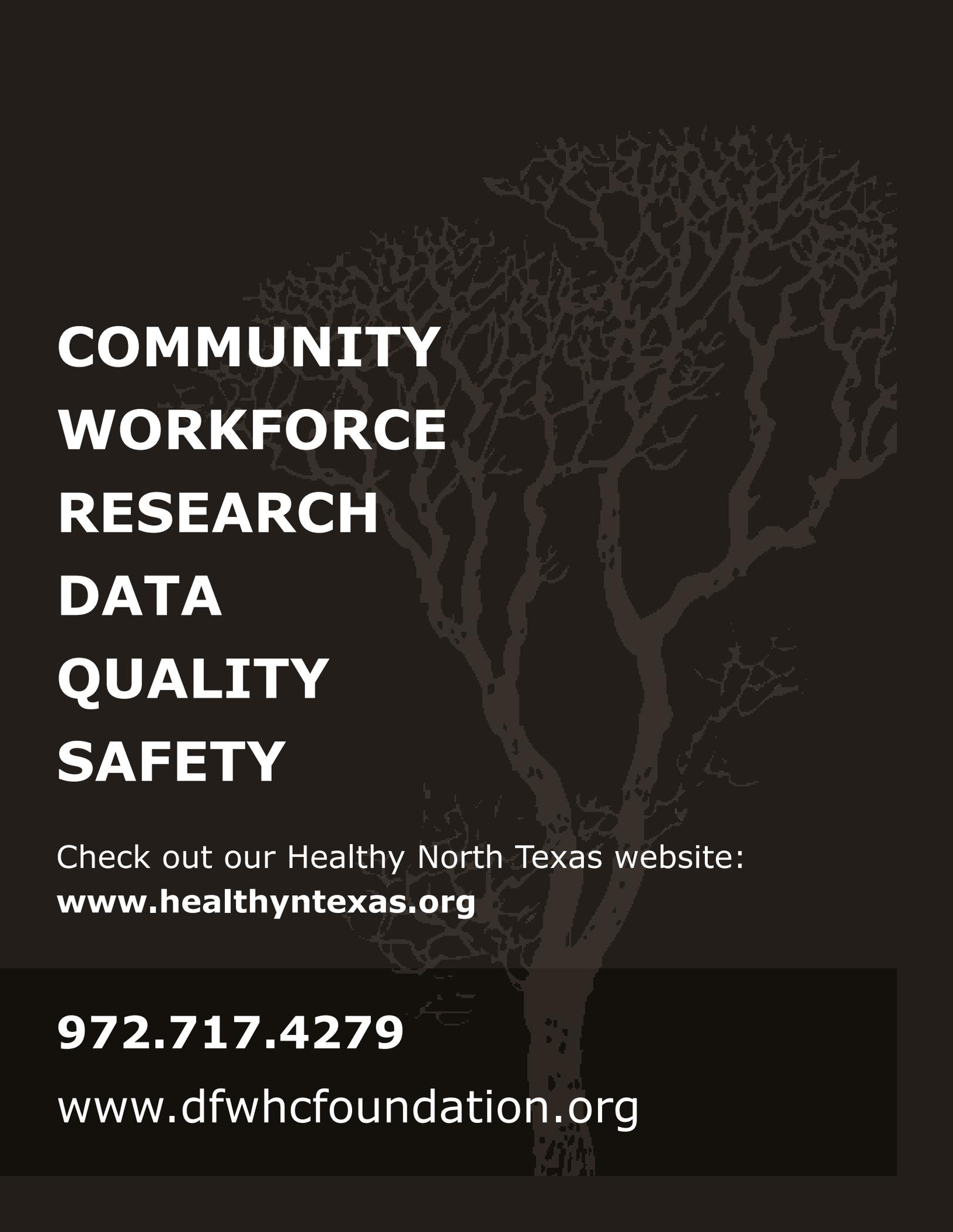
Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Respiratory infections	Respiratory infections	1131	15%	9%	5.42
	Diseases of the heart	938	13%	7%	5.44
	Bacterial infection	571	8%	4%	6.23
	Chronic obstructive pulmonary disease a	466	6%	4%	5.46
	Diseases of the urinary system	378	5%	3%	5.50
	Respiratory failure; insufficiency; arrest	262	4%	2%	6.35
	Complications of device and procedures	200	3%	2%	7.13
	Aspiration pneumonitis	168	2%	1%	5.83
	Cerebrovascular disease	167	2%	1%	4.86
	Fractures	161	2%	1%	5.43
	others	3028	41%	23%	5.36
	Total	7470	100%	56%	5.73
Bacterial infection	Bacterial infection	1340	18%	10%	9.54
	Diseases of the urinary system	740	10%	6%	8.30
	Diseases of the heart	572	8%	4%	8.65
	Respiratory infections	449	6%	3%	7.90
	Complications of device and procedures	435	6%	3%	10.87
	Chronic obstructive pulmonary disease and bronchiectasis	201	3%	2%	7.50
	Diabetes mellitus with complications	197	3%	2%	9.39
	Respiratory failure	187	3%	1%	11.96
	Lower gastrointestinal disorders	183	2%	1%	8.69
	Skin and subcutaneous tissue infections	174	2%	1%	7.60
	others	3000	40%	23%	8.35
	Total	7478	100%	57%	8.98
	Lower gastrointestinal disorders	Lower gastrointestinal disorders	2169	34%	14%
Complications of device and procedures		404	6%	3%	7.57
Diseases of the heart		391	6%	3%	5.65
Other gastrointestinal disorders		287	4%	2%	8.57
Diseases of the urinary system		275	4%	2%	6.97
Bacterial infection		213	3%	1%	8.60
Respiratory infections		149	2%	1%	5.62
Symptoms; signs; and ill-defined conditions		135	2%	1%	6.05
Abdominal hernia		130	2%	1%	5.99
Intestinal infection		112	2%	1%	6.22
others		2126	33%	14%	5.04
Total		6391	100%	42%	6.48
Chronic obstructive pulmonary disease and bronchiectasis [127.]	Chronic obstructive pulmonary disease and bronchiectasis	1989	32%	23%	4.49
	Diseases of the heart	702	11%	8%	4.46
	Respiratory infections	531	9%	6%	4.93
	Respiratory failure	499	8%	6%	4.95
	Bacterial infection	286	5%	3%	4.78
	Asthma	268	4%	3%	4.33
	Diseases of the urinary system	188	3%	2%	4.91
	Fractures	138	2%	2%	4.54
	Lower gastrointestinal disorders	89	1%	1%	4.47
	Cerebrovascular disease	88	1%	1%	4.11
	others	1445	23%	17%	4.45
	Total	6223	100%	73%	4.58

C. Most Frequent Reasons for Readmission within 30 days, 2012 contd.

Index Admission	Reason for Readmission	Readmission Cases	Percent of Readmission	Percent that Readmitted	Average LOS for Readmission
Cerebrovascular disease	Cerebrovascular disease	1460	25%	12%	4.25
	Diseases of the heart	781	13%	6%	4.55
	Diseases of the urinary system	375	6%	3%	5.84
	Bacterial infection	300	5%	2%	6.98
	Respiratory infections	194	3%	2%	5.14
	Diseases of arteries; arterioles; and c	179	3%	1%	4.21
	Fractures	177	3%	1%	4.60
	Complications of device and procedures	162	3%	1%	6.44
	Epilepsy; convulsions	138	2%	1%	6.23
	Hypertension	138	2%	1%	4.52
	others	2038	34%	16%	5.15
	Total	5942	100%	47%	5.26
Diabetes mellitus with complications	Diabetes mellitus with complications	2528	43%	29%	4.62
	Diseases of the heart	425	7%	5%	6.07
	Diseases of the urinary system	341	6%	4%	5.62
	Bacterial infection	297	5%	3%	6.98
	Complications of device and procedures	292	5%	3%	9.34
	Respiratory infections	132	2%	2%	5.43
	Hypertension	127	2%	1%	6.23
	Symptoms; signs; and ill-defined conditions	121	2%	1%	5.56
	Skin and subcutaneous tissue infections	119	2%	1%	5.44
	Cerebrovascular disease	103	2%	1%	5.19
	others	1430	24%	16%	5.90
	Total	5915	100%	68%	6.03



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¹ *The American Lawyer* | ² American Health Lawyers Association, *AHLA Connections*, June 2014 | ³ U.S. News & World Report
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