

# CASE STUDY



## Foundation Regional Data Warehouse

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### **Trauma Patient Readmissions: Why do they come back for more?**

The main objective of this study was to characterize 1-year readmission patterns of trauma patients throughout the Dallas-Fort Worth area, originally admitted to an urban, Level 1 Trauma center.

**Background:** Unplanned hospital readmissions are a frequent challenge and have been associated with increased health care costs as well as increased risk for morbidity. Patients who accrue disproportionately large numbers of emergency department visits and hospital admissions are known as “superutilizers.” While superutilizers have been identified in populations of patients with mental health disorders, substance abuse, diabetes, and cardiovascular diagnoses, little data exist to examine the phenomenon of superutilizers among patients with traumatic injuries. Identifying the characteristics of such superutilizers in the year following their initial injury is a significant step toward reducing the estimated lifetime cost of trauma, \$406 billion in the United States in 2000.

**Methods:** Data of patients from the hospital’s trauma registry between 2011 and 2012 were matched to data from the Dallas-Fort Worth Hospital Council Education and Research Foundation’s (DFWHC) Data Initiative in order to obtain patient readmissions data. The DFWHC Regional Enterprise Master Patient Index (REMPI) was used to track patient encounters and readmissions across all hospitals in Dallas-Fort Worth. Demographic information was summarized between patients with and without readmissions using descriptive statistics, and comparisons were performed using t tests or Wilcoxon tests for continuous data and W2 tests for categorical data. For the purposes of this study, superutilizers are defined as those patients who were readmitted three or more times after their index trauma admission. Binary logistic regression was used to determine the most significant predictors of three or more readmissions.

**Results:** Of 2,411 trauma patients admitted to BUMC between 2011 and 2012, 21% were readmitted within one year of discharge. The patients noted as superutilizers made up 3% of the patients in the study. The mean cost of treatment for a patient with no readmissions was \$53,792, the mean cost of treatment for a patient who was a non-superutilizer patient with readmission was

\$75,333, and the mean cost of treatment for a patient who was a superutilizer was \$101,385 (Table 1). Patients with Medicaid insurance were nearly 3 times more likely to be superutilizers than patients with other payment methods.

Table 1. Demographic and Injury Related Data for Superutilizers Versus Non-superutilizers				Table 1. Demographic and Injury Related Data for Superutilizers Versus Non-superutilizers			
	Non-superutilizers N=371	Superutilizers N=63	p		Non-superutilizers N=371	Superutilizers N=63	p
Primary payer			0.7616				0.7616
Private insurance	111 (30%)	16 (25%)		Private insurance	111 (30%)	16 (25%)	
Public insurance	17 (48%)	32 (52%)		Public insurance	17 (48%)	32 (52%)	
Uninsured	83 (22%)	15 (24%)		Uninsured	83 (22%)	15 (24%)	
Charges, mean (SD)	\$75,333 (\$145,748)	\$101,385 (\$139,522)	0.0070	Charges, mean (SD)	\$75,333 (\$145,748)	\$101,385 (\$139,522)	0.0070
Readmission	212 (57%)	210 (33%)	0.0010	Readmission	212 (57%)	210 (33%)	0.0010
30-day	83 (22%)	12 (19%)		30-day	83 (22%)	12 (19%)	
60-day	11 (3%)	22 (35%)		60-day	11 (3%)	22 (35%)	
90-day	111 (30%)	16 (25%)		90-day	111 (30%)	16 (25%)	

Of the patients in the study, 6% readmitted within 30 days of discharge, and 57% of all patients readmitted to BUMC. Non-superutilizers that readmitted within 30 days (n = 113) were most frequently readmitted for orthopedic complications and fractures (24.8%), major respiratory dysfunction (14.2%), subdural hematoma (12.4%), and septicemia (8.0%) (Table 2). Superutilizers that readmitted within 30 days (n = 29) were most frequently readmitted for major respiratory dysfunction (24.1%), major gastrointestinal dysfunction (17.2%), septicemia (13.8%), and orthopedic complications and fractures (13.8%) (Table 2).

**Conclusions:** The data analysis showed that superutilizer trauma patients are distinguished by complications including comorbid disease (diabetes and congestive heart failure), weight loss, septicemia, Medicaid, and past recidivism. To curb spending, it is imperative that interventions be developed and targeted toward those at high risk of superutilization of health care resources. The results of this study strongly support continuation of longitudinal readmission research in trauma patients conducted in multicenter settings.

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