

Hip Fracture Outcomes Dependent on Admission Day of the Week and Payer Source

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Introduction

Hip fractures pose a unique challenge due to the prevalence of pre-existing medical comorbidities and cognitive impairments among the geriatric population. Hip fractures cause substantial financial burden on the healthcare system with an estimated annual cost exceeding over 12 billion dollars. A significant contributing factor to these costs is prolonged hospitalizations, leading to longer lengths of stay and lower hospital reimbursements. We set to investigate whether the day of the week admission or payer source (Managed Medicaid vs Traditional Medicaid) impacted lengths of stays.

Methods

Database Generation

Patients aged at least 60 years old sustaining a hip fracture between January 1st, 2012, and December 31st, 2020, were retrospectively identified from Texas Harris Fort Worth Hospital and compiled into a geriatric hip fracture database.

To minimize bias and potential confounding variables, patients undergoing transfusion, ICU stays, and concomitant surgical procedures were excluded.

Charts were retrospectively reviewed to collect LOS, time from admission to incision (TTOR), day of the week (DOTW) of admission/surgery, day of the week of admission, AO/OTA fracture classification, surgical procedure, ASA, admission hemoglobin/hematocrit, intraoperative mortality, 30-day mortality, 1-year mortality, and comorbidities.

Statistical Approach

An analysis of variance (ANOVA) was utilized to assess the impact of day-of-the-week admission and payer source on length of stay. A chi-squared test was used to evaluate 7-day mortality, 30-day mortality, and one-year mortality. A t-test was used to evaluate length of stay comparing Managed Medicare / Medicare Advantage with traditional Medicare. The analysis was conducted through the statistical software SPSS.

Results

Table 1. Length of Stay Analysis for the Day of the Week Admission ANOVA

Day of the Week	N value	Average LOS (SD)	Percent of Total N values
Sunday	433	5.62 (3.22)	12.77%
Monday	482	5.72 (3.90)	14.21%
Tuesday	462	5.99 (3.27)	13.62%
Wednesday	490	6.33 (3.64)	14.45%
Thursday	521	5.88 (3.03)	15.36%
Friday	503	5.79 (3.30)	14.83%

Table 2. Time to OR Analysis for the Day of the Week ANOVA

Day of the Week	N value	Average Time to OR (SD)	Percent of Total N values
Sunday	427	32.19 (32.55)	12.67%
Monday	478	31.93 (26.02)	14.19%
Tuesday	460	31.04 (28.97)	13.65%
Wednesday	489	27.56 (20.33)	14.51%
Thursday	515	29.70 (23.91)	15.29%
Friday	500	30.69 (30.89)	14.84%
Saturday	500	30.74 (20.68)	14.84%
p-value	.13		

Table 3. Length of Stay Analysis for the Day of the Week Admission between Medicare and Managed Medicare t-test

Day of Week	Avg LOS Medicare (SD)	N Medicare	% of Total Medicare	Avg LOS Managed Medicare (SD)	N Managed Medicare	% of Total Managed Medicare	p-value
Sunday	5.54 (3.61)	224	12.08%	5.71 (2.73)	209	13.59%	0.57
Monday	5.39 (2.81)	259	13.97%	6.10 (4.85)	223	14.50%	0.06
Tuesday	5.78 (3.47)	242	13.05%	6.23 (3.03)	220	14.30%	0.14
Wednesday	6.04 (3.59)	278	14.99%	6.70 (3.67)	212	13.78%	0.05*
Thursday	5.40 (2.20)	284	15.32%	6.45 (3.71)	237	15.41%	<0.01*
Friday	5.74 (3.54)	291	15.70%	5.85 (2.96)	212	13.78%	0.72
Saturday	5.40 (2.88)	276	14.89%	6.04 (3.86)	225	14.63%	0.04*

Medical records of 3,733 patients were analyzed.

Significant difference in LOS across the week (p-value: 0.02). LOS on Wednesday was significantly longer than all other days except Tuesday.

No significant difference in time to the operating room based on admission day or mortality rates when comparing admission days or insurance groups.

Statistically significant differences in LOS when comparing patients with Medicare and Managed Medicare on Thursdays (p < 0.01), Wednesdays (p = 0.05), and Saturdays (p = 0.04), with Managed Medicare patients having longer stays.

Discussion

This study's retrospective analysis illuminates how admission day affects length of stay (LOS) for geriatric hip fracture patients, with Wednesdays resulting in the longest LOS, potentially due to weekend discharge practices. No mortality rate variances were noted. Managed Medicare patients often had longer LOS than traditional Medicare patients, particularly midweek and Saturdays, possibly due to administrative delays with insurance companies. The consistent clinical outcomes across patient groups suggest uniform care quality within the studied hospital, though broader studies are necessary for more general conclusions. Future research should investigate how post-operative rehabilitation and insurance-related administrative practices influence LOS to enhance healthcare delivery.

Limitations

This study has several limitations. Firstly, as a retrospective analysis, it is subject to inherent biases and data limitations present in the medical records.

The study was conducted at a single institution, which may limit the generalizability of the findings to other healthcare settings.