

Admission Floor and its Relation to Length of Stay in Patients with Hip Fracture

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Admission Floor and its Relation to Length of Stay in Patients with Hip Fracture

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INTRODUCTION

- With the geriatric population set to double by 2030 and life expectancy continuing to increase, prevalence of hip fractures will rise.^{3,4}
- 30% of geriatric patients die within one year following their hip fracture, likely due to associated comorbidities.⁶
- Hip fractures represent 14% of geriatric fractures but account for 72% of total costs of geriatric orthopedic care.²
- Due to economic burden and poor patient prognoses, orthogeriatric models of co-care and hip fracture pathways were developed.⁴
- Previous studies have identified various factors that contribute to increasing morbidity, mortality, and economic burden.^{3,5}
- Length of stay (LOS) is directly correlated with cost in the hip fracture patient population.¹
- There is increased interest in identifying factors that contribute to increased LOS and addressing these issues earlier during hospitalization to decrease LOS.
- Through optimizing the care models and hip fracture pathways of healthcare systems, patient outcomes can be improved and hospitalization cost can be reduced.

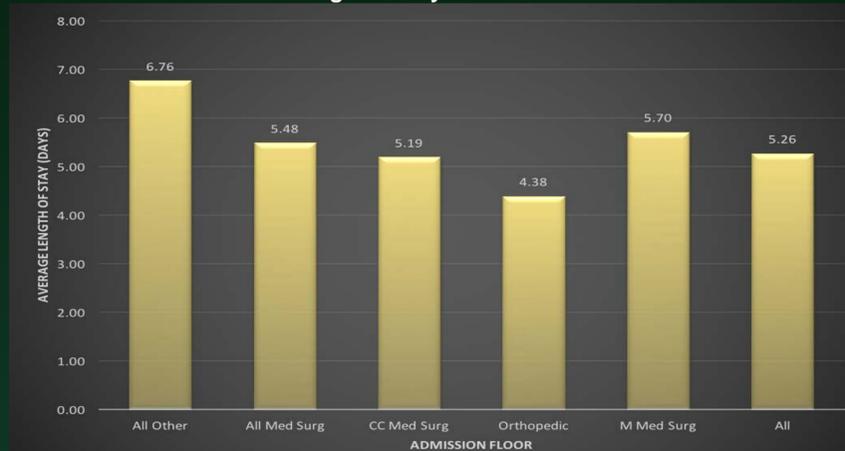
METHODS

- Performed literature review with LVHN Library Services researching how admission floor for patients with hip fx relates to outcomes, costs, length of stay, and other factors
- Performed a retrospective review of patients treated at Lehigh Valley Health Network for hip fracture from 8/2015-5/2016
- 470 cases were identified. 118 met inclusion criteria for this study.
- Specific data pertaining to our query was extracted from Epic EHMR.
- Inclusion Criteria: Patients 55 and older who sustained a hip fracture after falling from ground level height
- Exclusion Criteria: Injury occurring via mechanism other than ground level fall (i.e. motor vehicle accidents, blunt trauma from other object) and periprosthetic fractures
- The following variables were compared in relation to LOS:
 - Gender
 - Age
 - Fracture type
 - BMI
 - ASA Score
 - Admission day
 - Delay to surgery
 - Length of surgery
 - Time to mobilization
 - Admission Floor

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Average LOS by Admission Floor



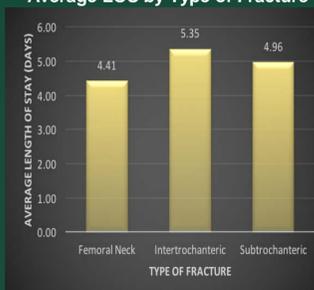
Floor	Avg LOS (days)	Avg ASA	Avg time to mobilization (days)	Avg Length of Surgery (mins)	Avg delay to surgery (hours)	Avg BMI	Avg Age	# of patients (years)	% of patients
All other	6.76	3.25	1.54	0:41	42.68	22.58	86.13	16	13.56
CC Med Surg	5.19	3.12	1.44	0:35	22.24	24.48	82.88	26	22.03
Orthopaedic	4.38	3.02	1.49	0:40	18.34	24.81	83.69	42	35.59
Muhl Med Surg	5.70	3.24	1.26	0:37	29.63	26.57	81.59	34	28.81
All	5.26	3.14	1.44	0:38	25.75	24.99	83.24	118	100

Table 1: Variables in relation to Admission Floor

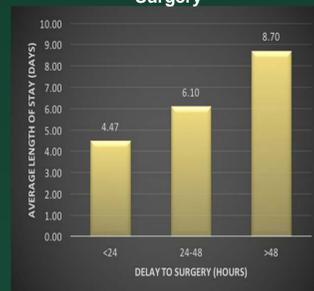
Table 2: Variables in relation to LOS

Variable	% of patients	LOS
Gender		
Male	24.6	6.73
Female	75.4	4.78
Age		
55-64	5.1	7.67
65-74	9.3	4.54
75-84	34.7	5.15
85-94	45.8	5.23
>95	5.08	4.63
Fracture Type		
Femoral Neck	10.9	4.41
Intertrochanteric	82.4	5.35
Subtrochanteric	6.7	4.96
BMI		
<18.5	10.2	4.70
18.5-24.9	46.6	5.24
25.0-29.9	26.1	5.33
>29.9	17.0	5.70
ASA Score		
1	0	-
2	8.6	4.05
3	69.0	5.13
4	22.4	6.23

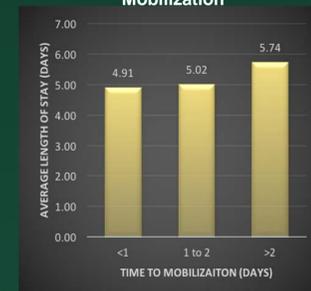
Average LOS by Type of Fracture



Average LOS by Delay to Surgery



Average LOS by Time to Mobilization



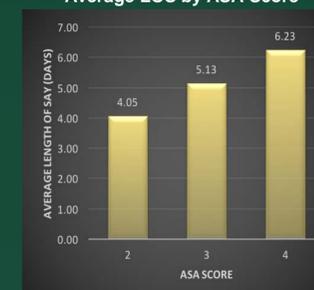
Average LOS by Admission Day



Table 2 Continued

Admission Day	% of patients	LOS
Sunday	11.9	4.03
Monday	16.9	5.63
Tuesday	9.3	4.13
Wednesday	15.3	6.80
Thursday	18.6	5.54
Friday	13.6	4.95
Saturday	14.4	4.88
Delay to Surgery		
<24	63.6	4.47
24-48	28.8	6.10
>48	8.7	7.63
Length of Surgery		
<0:35	58.3	5.29
0:36m-1h	30.4	5.38
>1h	11.3	4.70
Time to mobilization		
<1 day	45.7	4.91
1-2 days	37.1	5.02
>2 days	17.1	5.74

Average LOS by ASA Score



RESULTS

- Average patient was 83.24 years old, 75% of which were female.
- Overall average length of stay (LOS) for all patients in study was 5.26 days.
- Dedicated orthopedic floor (CC7K) had lower LOS (4.38 days) compared to medicine floors (5.48 days).
- Admission on Sunday correlated with the shortest LOS; Wednesday correlated with the longest LOS for patients, with nearly a 3 day gap between the two.
- Increased ASA score resulted in greater LOS, and an average score of ~3 was consistent across floors.
- Longer procedure times in the operating room correlated with decreased LOS.
- Delay to surgery resulted in a longer LOS for patients overall; certain admission floors had a longer average delay to surgery.

DISCUSSION

- Other studies have shown differences in LOS for patients admitted to orthopedic versus medicine services.
- Overall, LOS in LVHN hip fracture population was slightly shorter (5.26) when compared to other large hip fracture studies (6.99, 6.5, 8.9, 5.7, 4.6).
- Factors in this study found to decrease LOS by at least one day include admission to orthopedic floor, shorter time to surgery, admission day, lower ASA score, male gender, and lower BMI.
- Total daily hospital cost for managing one hip fracture patient averages ~\$4,500; identifying factors that increase LOS allows health systems to target areas for improvement and cost saving.
- Results from this study can be used to implement change in LVHN's current hip fracture pathway.
- Difference in length of stay could be due to greater specialization of care with more direct experience with hip fractures on the orthopedic floor.
- Longer LOS for patients admitted on Wednesday could be due to less discharge planning during weekends; patients admitted on Sundays had less than average LOS, which could be explained by greater resources for discharge planning during the week.
- The decreased LOS in patients admitted to a dedicated orthopedic floor could be due to various factors and will require further statistical analysis.

REFERENCES

- Castelli A, Daidone S, Jacobs R, Kasteridis P, Street AD. The Determinants of Costs and Length of Stay for Hip Fracture Patients. *PLoS One*. 2015;10(7):e0133545-e0133545.
- Kates, S. L. (2016). Hip fracture programs: are they effective? *Injury, 47 Suppl 1*, S25-27. doi:10.1016/S0020-1383(16)30006-7
- Garcia AE, Bonnaig JV, Yoneda ZT, et al. Patient variables which may predict length of stay and hospital costs in elderly patients with hip fracture. *J Orthop Trauma*. 2012;26(11):620-623.
- Chuang, C. H., Pinkowsky, G. J., Hollenbeck, C. S., & Armstrong, A. D. (2010). Medicine versus orthopaedic service for hospital management of hip fractures. *Clinical Orthopaedics And Related Research, 468*(8), 2218-2223. doi:10.1007/s11999-010-1290-z
- Greenberg, S. E., VanHouten, J. P., Lakomkin, N., Ehrenfeld, J., Jahangir, A. A., Boyce, R. H., . . . Sethi, M. K. (2016). Does Admission to Medicine or Orthopaedics Impact a Geriatric Hip Patient's Hospital Length of Stay? *J Orthop Trauma, 30*(2), 95-99. doi:10.1097/BOT.0000000000000440
- Parker M, Johansen A. Hip Fracture. *Clinical Review. BMJ*. 2006;333:27-30. doi: 10.1136/bmj.333.7557.27.