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Does Admission to Medicine or Orthopaedics Impact a Geriatric Hip Patient's Hospital Length of Stay?

Sarah E. Greenberg, BA, Jacob P. VanHouten, MS, Nikita Lakomkin, Jesse Ehrenfeld, MD, MPH, Amir Alex Jahangir, MD, MMHC, Robert H. Boyce, MD, William T. Obremksey, MD, MPH, MMHC, and Manish K. Sethi, MD

The Vanderbilt Orthopaedic Institute Center for Health Policy, Nashville, TN

Abstract

Objectives—The aim of our study was to determine the association between admitting service, medicine or orthopaedics, and length of stay (LOS) for a geriatric hip fracture patient.

Design—Retrospective.

Setting—Urban level 1 trauma center.

Patients/Participants—Six hundred fourteen geriatric hip fracture patients from 2000 to 2009.

Interventions—Orthopaedic surgery for geriatric hip fracture.

Main Outcome Measurements—Patient demographics, medical comorbidities, hospitalization length, and admitting service. Negative binomial regression used to determine association between LOS and admitting service.

Results—Six hundred fourteen geriatric hip fracture patients were included in the analysis, of whom 49.2% of patients ($n = 302$) were admitted to the orthopaedic service and 50.8% ($n = 312$) to the medicine service. The median LOS for patients admitted to orthopaedics was 4.5 days compared with 7 days for patients admitted to medicine ($P < 0.0001$). Readmission was also significantly higher for patients admitted to medicine ($n = 92$, 29.8%) than for those admitted to orthopaedics ($n = 70$, 23.1%). After controlling for important patient factors, it was determined that medicine patients are expected to stay about 1.5 times (incidence rate ratio: 1.48, $P < 0.0001$) longer in the hospital than orthopaedic patients.

Conclusions—This is the largest study to demonstrate that admission to the medicine service compared with the orthopaedic service increases a geriatric hip fractures patient's expected LOS. Since LOS is a major driver of cost as well as a measure of quality care, it is important to

Reprints: Manish K. Sethi, MD, The Vanderbilt Orthopaedic Institute Center for Health Policy, 1215 21st Avenue South, Suite 4200, Medical Center East, South Tower, Nashville, TN 37232 (manish.sethi@vanderbilt.edu).

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Ethical Review Committee Statement: This study was performed in accordance with the relevant regulations of the US Health Insurance Portability and Accountability Act (HIPAA) and the ethical standards of the 1964 Declaration of Helsinki. The protocol was approved by the Vanderbilt Institutional Review Board.

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understand the factors that lead to a longer hospital stay to better allocate hospital resources. Based on the results from our institution, orthopaedic surgeons should be aware that admission to medicine might increase a patient's expected LOS.

Keywords

admitting service; geriatric; hip fractures; length of stay; trauma

INTRODUCTION

In the United States, hip fractures represented approximately 250,000 hospitalizations for people aged 65 years in 2010, costing an estimated 10.3 to 15.2 billion dollars a year.¹⁻⁶ As the country ages at a rate that is unprecedented in history, the number of geriatric hip fractures is expected to rise drastically.^{2,7} It is predicted that the incidence of hip fractures will increase by 12.0% by 2030 and double by 2040, equaling \$47 billion in costs.^{2,8} Owing to this dramatic increase in the rate of hip fractures and high cost of treatment, the United States must find avenues to reduce health care spending while maintaining quality care in hip fracture patients.^{8,9} As the country transitions from a fee-for-service to a bundled payment system, it will be essential for physicians to identify the factors that drive increased costs.^{10,11}

Previous studies have demonstrated that the high health care costs for hip fracture patients are largely due to prolonged hospitalization or a longer length of stay (LOS).^{12,13} A study by Garcia et al,¹² for example, determined that higher American Society of Anesthesiologists (ASA) physical status is associated with increased health care expenses, which are directly driven by longer hospital LOS. Other studies have determined risk factors such as cerebral vascular disease and chronic renal insufficiency to be significantly associated with increased LOS for geriatric hip fracture patients.¹⁴ Although most studies have evaluated patient comorbidities and complications as risk factors, it is important to investigate the impact decisions made by the hospital, such as the admitting service, have on a patient's LOS. Depending on the institution, geriatric hip fracture patients may be admitted to the medicine or orthopaedic service, yet minimal research has been used to evaluate implications of these hospital protocols. The 2009 study by Chuang et al evaluated the impact of admitting service on patient outcomes and determined that LOS did not significantly vary between the medicine and orthopaedic service. However, owing to the same sample size, further research is needed to understand whether this is a generalizable conclusion.^{15,16}

The purpose of our study was to evaluate whether admission to the medicine or orthopaedic service significantly impacts the LOS for a geriatric hip fracture patient at a level 1 trauma center. Such research is essential as the United States shifts toward a bundled payment system where increased LOS can drive costs and directly affect hospital quality evaluations.

METHODS

A retrospective cohort of all patients over the age of 60 years presenting with a low-energy geriatric hip fracture at a level 1 trauma center from January 2000 to December 2009 were identified using Current Procedural Terminology (CPT) codes. The cohort included all

patients who underwent operative fixation of a hip fracture or hemiarthroplasty/total hip arthroplasty secondary to a hip fracture, including both femoral neck fractures and intertrochanteric fractures. Using CPT codes, 614 patients who received the interventions cephalomedullary nailing, closed reduction and percutaneous pinning, total hip arthroplasty, hemiarthroplasty, or open reduction internal fixation were recorded for analysis (CPT codes including 27130, 27130A, 27235, 27236, 27244, 27245, 27248, 27254, 27506, 27507, and 27509). By reviewing individual patient records, data were collected on patient demographics (age, race, sex, ASA status, tobacco use, alcohol use), medical comorbidities [myocardial infarction (MI), diabetes, hypertension, congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), metastatic disseminated cancer, liver disease, obesity, paralysis, pulmonary circulation disorders (PCD), peripheral vascular disease (PVD), renal failure, thyroid disease, and weight loss >10% in the last 6 months], type of surgical intervention, hospital LOS, and admitting service. LOS was defined as time from index admission until discharge.

Patients who met criteria were categorized into 2 cohorts based on admitting service: medicine or orthopaedics. Bivariate analyses using the χ^2 test and Wilcoxon–Mann–Whitney test were performed, when appropriate, to compare patient demographics, individual preoperative comorbidities, type of surgical interventions, and LOS between patients admitted to the medicine or orthopaedic service. The mean, median, and range of days for hospitalization were determined for both services.

To control for all confounding individual patient factors, a negative binomial regression model (NBM) and Poisson regression were used to evaluate the association between admitting service and hospital LOS after surgery. According to the study by Carter and Potts,¹⁷ a negative binomial regression, which is used to assess skewed data, is a successful model to evaluate LOS because of the naturally skewed distribution of the data. In this case, a linear regression model could not be applied because of the wide distribution of data points and the continuous nature of the variable.

The NBM controlled for the following variables collected from the patient's medical records: admitting service, type of surgical intervention, age, race, ASA score, smoking, alcohol use, history of MI, diabetes, hypertension, CHF, COPD, metastatic disseminated cancer, liver disease, obesity, paralysis, PCD, PVD, renal failure, thyroid disease, and weight loss. The results from the NBM are in the form of log ratios between the variable and reference, which is known as the incidence rate ratio (IRR). The IRR was calculated to determine the additional amount of time spent in the hospital and compared between the 2 services. To interpret these results, an IRR of 0.75, for example, means that a patient will stay 75% of the time compared with the reference patient.¹⁷

RESULTS

Six hundred fourteen geriatric hip fracture patients met criteria and were included in the analysis, of which 49.2% (n = 302) were admitted to the orthopaedic service and 50.8% (n = 312) were admitted to the medicine service. Table 1 demonstrates the demographics for patients admitted to both services. The median age for all patients was 79 years [interquartile

range (IQR): 70.3–86.0 years]. Patients admitted to orthopaedics (77.5 years, IQR: 70.0–85.0 years) were significantly younger than those admitted to medicine (81.0 years, IQR: 71.0–86.3 years) ($P = 0.014$). Medicine patients also were admitted with a significantly higher ASA status ($P < 0.0001$). 30.8% ($n = 96$) of the medicine patients were admitted with an ASA score of 4, whereas only 12.3% ($n = 37$) orthopaedic patients had an ASA score of 4. For both orthopaedics and medicine, a higher percentage of females than males were admitted for geriatric hip fractures. Race was not significantly different between the two cohorts ($P = 0.418$).

As shown in Table 2, preoperative comorbidities were evaluated for patients admitted to the medicine or orthopaedic service. Preoperative comorbid conditions such as MI, diabetes, hypertension, COPD, liver disease, metastatic disseminated cancer, obesity, paralysis, PCD, PVD, renal failure, and thyroid disease were not found to be significantly different for patients admitted to medicine or orthopaedics ($P < 0.05$). Smoking and alcohol abuse were also not significantly different for patients admitted to either service ($P = 0.183$ and $P = 0.077$, respectively). Patients admitted to the medicine service presented with a significantly higher rate of CHF ($P = 0.002$) and weight loss of $>10\%$ in the previous 6 months than for those admitted to orthopaedics ($P < 0.0001$).

The types of surgical intervention performed in the medicine cohort and orthopaedic cohort did not significantly vary ($P = 0.635$). In fact, as demonstrated in Table 3, both orthopaedic patients and medicine patients underwent similar surgical procedures. For example, 38.1% of orthopaedic and 38.5% of medicine patients had open reduction internal fixation performed.

Table 4 demonstrates the mean, median, and range LOS categorized by admitting service. Based on the univariate analysis, admission to medicine was associated with a significantly longer LOS than to orthopaedics for geriatric hip fracture patients ($P < 0.0001$). The average LOS for patients admitted to orthopaedics was 4.5 days compared with 7 days for patients admitted to medicine ($P < 0.0001$). For the entire cohort, the median LOS was 6 days. The IQR, which measures the range over the middle 50% of data, was found to be 4–8 days for the whole cohort.

After discharge, the rate of readmission to the hospital within 90 days was determined for both cohorts based on the initial chart review. Readmission was defined as admission to any hospital because of the same injury after initial discharge. Patients admitted to the medicine (29.8%, $n = 92$) cohort had a significantly higher rate of readmission than patients admitted to the orthopaedic (23.1%, $n = 70$) cohort ($P = 0.038$).

By comparing the models built using Poisson regression and negative binomial regression, it was revealed that the data was significantly overdispersed ($P = 8 \times 10^{-30}$), suggesting that the NBM more appropriately fit the data and should be used for analysis.

After controlling for all individual patient demographics, surgical intervention, and preoperative comorbidities, including ASA status, admitting service was found to be significantly associated with LOS ($P < 0.0001$) (see Appendix 1, Supplemental Digital

Content 1, <http://links.lww.com/BOT/A526>). As shown in Table 4, the IRR associated with admission to medicine was 1.48 (SE: 0.044). This demonstrates that geriatric hip fracture patients admitted to the medicine service were likely to stay approximately 50% longer than a patient admitted to orthopaedics even after controlling for increased ASA score and age of the medicine patients (Fig. 1). For example, if a patient with a geriatric hip fracture was admitted to orthopaedics for 2 days, the same patient would stay a total of 3 days if admitted to medicine based on these findings (see Appendix 2, Supplemental Digital Content 2, <http://links.lww.com/BOT/A527>).

DISCUSSION

To our knowledge, this is the largest study to evaluate admitting service as a risk factor for LOS for geriatric hip fracture patients and the first to demonstrate that admission to medicine drives increased LOS at our institution. Compared with orthopaedics, admission to the medicine service increased a patient's LOS by 1.50 times and led to a higher rate of readmission at our institution.

Previous studies have demonstrated that patient care and outcomes are impacted by the admitting service and hospital protocols. In a study by Somekh et al, the investigators evaluated the outcomes and care for patients with chest pain admitted to 1 of 3 services: a hospitalist unit served by internists, a private medicine attending service, or a cardiologist—run chest pain unit. They determined that regardless of risk factors, patients admitted to the chest pain unit had a shorter hospital LOS and received different diagnostic evaluations.¹⁸ Another study examining operative acute small bowel obstruction found that mortality was 27% for patients admitted to medicine, whereas it was only 2% for those admitted to a surgical service.¹⁹ LOS was also found to be significantly longer for patients admitted to medicine. After controlling for other confounding variables, there have been clear associations between patient outcomes and admitting service, thus demonstrating the impact hospital policy can have on patient care.

As hospitals continue to redefine admission guidelines, it is important to understand the types of patients admitted to each service. Our results were complemented by other studies that showed patients admitted to medicine presented with higher rates of specific preoperative comorbidities. A study by Chuang et al, investigating the rate of postoperative complications for 98 hip fracture patients admitted to either orthopaedics or medicine, determined that patients admitted to medicine were more likely to have a history of CHF. Our study similarly found history of CHF, in addition to weight loss, to be significantly different between the groups. ASA status was also determined to be higher for patients admitted to medicine. Similarly, both our study and the study by Chuang et al demonstrated that patients admitted to medicine or orthopaedics did not significantly vary by the subsequent surgical intervention performed. Nevertheless, Chuang et al¹⁶ found that patients admitted to medicine had a higher likelihood of presenting with COPD, dementia, coronary artery disease, end-stage renal failure, and a history of smoking. Our study, which used a larger cohort of patients, did not show significant differences for preoperative comorbidities such as COPD, renal failure, or smoking. Therefore, although the populations admitted to

medicine tended to have higher rates of comorbid diseases, there was much patient crossover between the two admitting services.

As our health care system shifts to focus on cost containment, it is essential that surgeons understand the impact of admitting geriatric hip fracture patients to different services. After controlling for patient demographics, preoperative comorbidities and surgical invention, hip fracture patients admitted to medicine are expected to stay 50% longer than patients admitted to orthopaedics. Chuang et al,¹⁶ on the contrary, found the median LOS for hip fracture patients admitted to the medicine and orthopaedic services to be similar. Unlike our study, Chuang et al did not control for ASA status and had a smaller sample size. The significant difference in the LOS based on admitting service determined by our results could be attributed to a longer time between admission and index surgery. For example, patients admitted to medicine may have required more stabilization before entering the operating room because of the higher rate of preoperative comorbidities.

At our institution, the orthopaedic surgery service is usually consulted by the emergency room physicians to provide an initial assessment and workup of the hip fracture. The patient is subsequently admitted as an inpatient to either the orthopaedic or internal medicine service, depending on immediate operative need and associated comorbidities. Generally, patients who have serious preoperative comorbidities or potential risk factors such as factor V deficiency are more likely to be admitted by the medicine service with subsequent consultation by orthopaedics. Conversely, patients who have had previous orthopaedic interventions or presented with fewer comorbidities are more likely to be admitted by the orthopaedic service. Access to specific laboratory or radiographic studies that are part of the preoperative workup does not differ between the services, however. Additionally, time for coordination between the services could be a factor for the increased LOS experienced by medicine patients. We also found that readmission rates were significantly higher for hip fracture patients admitted to medicine, which under a bundled payment system would not be reimbursed.

The approximate three-day difference in LOS between the admitting services highlights the importance of better integrating the medicine and orthopaedic departments. Based on our results, hospitals should improve coordinated care between the medicine and orthopaedic services. Huddleston et al²⁰ reported that by establishing a hospitalist–orthopaedic comanagement team for elective hip and knee arthroplasty, there were reduced overall complication rates. In a similar study, Phy et al²¹ determined that time to surgery and LOS decreased when hip fracture patients were admitted by an orthopaedic surgery service and comanaged by a hospitalist service. Other nontraditional methods to improve coordination between the admitting service and other services for elderly hip fracture patients include daily geriatric interventions, which would consist of a daily rehabilitation specialist, social worker, and geriatrician.²² As demonstrated by past studies, LOS, as well as secondary costs, could decrease through the establishment of multidisciplinary care teams.¹⁶ For geriatric hip fracture patients, admission to orthopaedics with close comanagement by the medicine service will allow for better coordination and therefore decrease unnecessary time spent in the hospital. Nevertheless, implementation of multidisciplinary care teams requires new hospital policies and resource allocation, which is not always possible at a given

institution. Lower-volume institutions without specialized programs may not benefit from new hospital policy.

Our study had limitations. When investigating the factors that increased LOS, postoperative complications for geriatric hip fracture patients admitted to medicine or orthopaedics were not evaluated. Postoperative complications could have impacted the LOS and rate of readmission for patients admitted to medicine and must be considered in future studies. The preoperative and postoperative patient factors could have also been impacted by the inclusion of subspecialties within the medicine service cohort. For example, cardiology was categorized as a medicine admitting service and could have influenced the higher rate of CHF. Time to surgery was also not evaluated for either admitting service. Similarly, the study was not able to account for any extended time necessary to receive preoperative screenings, such as echocardiograms, which may have impacted the LOS for medicine patients. Often the amount of time a patient must wait for a specific screening varies from case to case; however our institution aims to provide preoperative testing as soon as possible. Additionally, owing to the retrospective nature of the data and the use of chart reviews, confounding risk factors that were not included in the multivariate regression could have impacted the hospital LOS. For instance, functional status was not considered in this study where it has been in the previous studies.¹⁶ The study was also limited by the quality of the documentation in the patient's medical record, and it was assumed that the patient was free of any comorbidities not documented; however, missing patient information is a possibility. Furthermore, further analysis is needed to evaluate the direct costs associated with each increased LOS. Multicenter analysis is also needed to understand the association between admitting service and LOS for hospitals across the nation to provide a more generalizable conclusion.

As the country's health care transitions into a bundled payment system, it is essential for orthopaedic surgeons to understand the drivers of hospital fees for geriatric hip fracture patients. Clearly defining the risk factors for increased LOS is not only imperative for the financial stability of the institution but also essential for the health of the patients. Admission decisions, especially for geriatric hip fracture patients, should be made on a per-case basis; however, the results of our study suggest that hospitals should perhaps consider the risks associated with admission to different services when defining guidelines for physicians. A LOS predictive calculator can also be developed to help physicians estimate the time a patient should stay within the hospital. Prospective analysis is warranted to further evaluate admitting service as a risk factor for increased LOS and assess possible methods for improving admission standards and comanagement policies.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

1. National Hospital Discharge Survey (NHDS), National Center for Health Statistics. Available at: http://205.207.175.93/hdi/ReportFolders/ReportFolders.aspx?IF_ActivePath=P,18 Accessed February 1, 2015
2. Centers for Disease Control and Prevention. Hip Fractures Among Older Adults. 2015. Available at: <http://www.cdc.gov/HomeandRecreationalSafety/Falls/adulthipfx.html>. Accessed February 1, 2015
3. LaVelle, DG. Fractures of hip. In: Canale, ST., editor. Campbell's Operative Orthopaedics. 10th. Philadelphia, PA: Mosby; 2003. p. 2873-2938.
4. Huddleston JM, Whitford KJ. Medical care of elderly patients with hip fractures. Mayo Clin Proc. 2001; 76:295–298. [PubMed: 11243276]
5. Cummings SR, Rubin SM, Black D. The future of hip fractures in the United States. Numbers, costs, and potential effects of postmenopausal estrogen. Clin Orthop Relat Res. 1990; 252:163–166. [PubMed: 2302881]
6. Dy CJ, McCollister KE, Lubarsky DA, et al. An economic evaluation of a systems-based strategy to expedite surgical treatment of hip fractures. J Bone Joint Surg Am. 2011; 93:1326–1334. [PubMed: 21792499]
7. Centers for Disease Control and Prevention. The State of Aging and Health in America 2013. Atlanta, GA: Centers for Disease Control and Prevention, US Dept of Health and Human Services; 2013. Available at: <http://www.cdc.gov/aging/pdf/state-aging-health-in-america-2013.pdf> Accessed February 1, 2015.
8. Braithwaite RS, Col NF, Wong JB. Estimating hip fracture morbidity, mortality and costs. J Am Geriatr Soc. 2003; 51:364–370. [PubMed: 12588580]
9. Brauer CA, Coca-Perraillon M, Cutler DM, et al. Incidence and mortality of hip fractures in the United States. JAMA. 2009; 302:1573–1579. [PubMed: 19826027]
10. Bosco JA, Karkenny AJ, Hutzler LH, et al. Cost burden of 30-day readmissions following medicare total hip and knee arthroplasty. J Arthroplasty. 2014; 29:903–905. [PubMed: 24332969]
11. Birkmeyer JD, Gust C, Baser O, et al. Medicare payments for common inpatient procedures: implications for episode-based payment bundling. Health Serv Res. 2010; 45:1783–1795. [PubMed: 20698899]
12. 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; 26:620–623. [PubMed: 22832431]
13. Nikkel LE, Fox EJ, Black KP, et al. Impact of comorbidities on hospitalization costs following hip fracture. J Bone Joint Surg Am. 2012; 94:9–17. [PubMed: 22218377]
14. Brown CA, Olson S, Zura R. Predictors of length of hospital stay in elderly hip fracture patients. J Surg Orthopaedic Adv. 2013; 22:160–163.
15. Fierro, MP. Trends Alert—Costs of Chronic Diseases: what are States Facing?. The Council of state governments; Available at: <http://www.csg.org> Accessed February 19, 2015
16. Chuang CH, Pinkowsky GJ, Hollenbeak CS, et al. Medicine versus orthopaedic service for hospital management of hip fractures. Clin Orthopaedics Relat Res. 2010; 468:2218–2223.
17. Carter EM, Potts HW. Predicting length of stay from an electronic patient record system: a primary total knee replacement example. BMC Med Inform Decis Mak. 2014; 14:26. [PubMed: 24708853]
18. Somekh N, Rachko M, Husk G, et al. Differences in diagnostic evaluation and clinical outcomes in the care of patients with chest pain based on admitting service: the benefits of a dedicated chest pain unit. J Nucl Cardiol. 2008; 15:186–192. [PubMed: 18371589]
19. Schwab DP, Blackhurst DW, Sticca RP. Operative acute small bowel obstruction: admitting service impacts outcome. Am Surg. 2001; 67:1034–1038. [PubMed: 11730219]
20. Huddleston JM, Long KH, Naessens JM, et al. Medical and surgical comanagement after elective hip and knee arthroplasty: a randomized, controlled trial. Ann Intern Med. 2004; 141:28–38. [PubMed: 15238368]
21. Phy MP, Vanness DJ, Melton LJ, et al. Effects of a hospitalist model on elderly patients with hip fracture. Arch Intern Med. 2005; 165:796–801. [PubMed: 15824300]

22. Vidan M, Serra JA, Moreno C, et al. Efficacy of a comprehensive geriatric intervention in older patients hospitalized for hip fracture: a randomized, controlled trial. *J Am Geriatr Soc.* 2005; 53:1476–1482. [PubMed: 16137275]

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FIGURE 1.

Multivariate analysis of LOS for patients admitted to medicine versus orthopaedics.

Editor's note: A color image accompanies the online version of this article.

TABLE 1

Demographics Based on Admitting Service

	Orthopaedics (n = 302)	Medicine (n = 312)	P
Age, median (IQR)	77.5 (70.0–85.0)	81 (71.0–86.3)	0.01
Race, n (%)			0.42
White	254 (84.2)	266 (85.3)	
African American	20 (6.6)	25 (8.0)	
Other	4 (1.3)	1 (0.32)	
Unknown	24 (7.9)	20 (6.4)	
Sex, n (%)			0.004
Male	82 (27.2)	120 (38.5)	
Female	220 (72.8)	192 (61.5)	
ASA, n (%)			<0.0001
1	1 (0.33)	0 (0.0)	
2	44 (14.6)	14 (4.5)	
3	220 (72.8)	200 (64.1)	
4	37 (12.3)	96 (30.8)	
5	0 (0.0)	2 (0.64)	

TABLE 2

Preoperative Comorbidities and Surgical Intervention Based on Admitting Service

	Orthopaedics, n = 302 (49.2%)	Medicine, n = 312 (50.8%)	P
Preoperative comorbidities, n (%)			
Smoker	11 (3.6)	5 (1.6)	0.18
Alcohol	2 (0.7)	9 (2.9)	0.08
Diabetes	68 (22.5)	78 (25.0)	0.53
Hypertension	197 (65.2)	206 (66.0)	0.90
MI	8 (2.6)	6 (1.9)	0.74
CHF	39 (12.9)	71 (22.8)	0.002
COPD	58 (19.2)	80 (25.6)	0.07
Liver disease	6 (2.0)	13 (4.2)	0.18
Metastatic disseminated cancer	26 (8.6)	15 (4.8)	0.08
Obesity	11 (3.6)	7 (2.2)	0.43
Paralysis	0 (0.0)	4 (1.3)	0.14
PCD	7 (2.3)	15 (4.8)	0.15
PVD	17 (5.6)	27 (8.7)	0.19
Renal failure	24 (7.9)	37 (11.9)	0.14
Thyroid disease	46 (15.2)	56 (17.9)	0.43
Weight loss >10% in the last 6 mo	12 (4.0)	44 (14.1)	<0.0001

TABLE 3**Surgical Intervention Based on Admitting Service**

	Orthopaedics, n = 302 (49.2%)	Medicine, n = 312 (50.8%)	<i>P</i>
Surgical Intervention, n (%)			0.64
Arthroplasty	93 (30.8)	101 (32.4)	
Open reduction internal fixation	115 (38.1)	120 (38.5)	
Percutaneous	32 (10.6)	29 (9.3)	
Nail	42 (13.9)	40 (12.8)	
Other	20 (6.6)	22 (7.1)	

TABLE 4
LOS and Multivariate Analysis of LOS for Patients Admitted to Medicine Versus Orthopaedics

Service	Average LOS (d)	SD	Median LOS (d) *	IQR (d)	Range (d)	IRR *
Orthopaedics	5.2	2.7	4.5	4–6	1–26	1.00 (Ref)
Medicine	8.5	5.1	7.0	5–10	1–29	1.48

* $P < 0.0001$.