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Clinical Factors Associated with Prescription of a Prosthetic Limb in Elderly Veterans

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Abstract

OBJECTIVES—To determine how advanced age influences prosthetic prescription.

DESIGN—Retrospective cohort analysis with theory-driven logistic regression models. A Post Amputation Quality-of-Life (PAQ) framework of outcomes was proposed and empirically tested.

SETTING—Veterans Affairs Medical Centers.

PARTICIPANTS—Two thousand three hundred seventy-five veterans with lower extremity amputations discharged between October 1, 2002, and September 30, 2003.

MEASUREMENTS—Prosthetic prescription within 1 year of amputation.

RESULTS—Patients younger than 76 were 4.5 times as likely to receive a prescription compared to those aged 86 and older (odds ratio = 4.51, 95% confidence interval = 1.36– 14.99) after controlling for sex, marital status, living circumstance before hospitalization, anatomical level, etiologies, comorbidities, medical acuity, and initial functional status. Patients admitted from extended care and patients with peripheral vascular disease, systemic sepsis, renal failure, congestive heart failure, psychoses, metastatic cancer, paralysis, or other neurological disorders were less likely to receive a prescription, as were patients who underwent procedures for acute central nervous system disorders, severe renal disease, or serious nutritional compromise. Veterans evaluated initially as more cognitively and physically able had higher likelihood of prosthetic prescription, and those with transtibial amputations had higher likelihood of prosthetic prescription than those with transfemoral amputations.

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CONCLUSION—Amputees aged 75 and older are less likely to receive a prosthetic limb prescription than younger individuals, even after controlling for comorbidities and functional status. Findings support the PAQ framework, in which contexts, etiologies, anatomic level, comorbidities, medical acuity, and initial function are determinants of outcome. Medical and functional conditions that adversely affect level of energy, ability to move independently, or ability to exercise judgment reduce the likelihood of prosthetic prescription.

Keywords

elderly; prosthesis; amputation

Amputation in older people continues to be a large problem in the United States. The number of lower extremity amputations is expected to increase to 58,000 per year by 2030,[1,2] and approximately 75% occur in persons aged 65 and older.[3] The proportion of amputees aged 85 and older has increased from 20% to 35% over the past 40 years, which is most likely due to the aging of the population.[1] Successful mobility, facilitated by prosthetic fitting, is a main concern after surgery.[4] Some studies show that clinicians are hesitant to prescribe devices for elderly patients,[5] and others demonstrate that, although elderly patients may have multiple comorbidities, fitting can be successful.[6,7] Age alone should not be the deciding factor in prosthetic prescription,[8–10] although careful selection of the geriatric patient is essential. One study suggests the following contraindications to training: cognitive dysfunction, severe neurological impairment, congestive heart failure (CHF), impaired energy tolerance from chronic obstructive pulmonary disease, and irreducible knee or hip contractures.[2]

Depending on the population studied, prosthetic fitting rates have ranged from 27% to 86%.[1,4,11–14] Younger patients and those undergoing transtibial amputations compared to older patients and those undergoing transfemoral amputations are more likely to receive a prosthesis.[1] Those with oncological metastases, wound healing problems,[14] and dementia and those receiving renal dialysis[2] tend not to perform well and are less likely to be fitted with a prosthetic limb.

A Post Amputation Quality-of-Life (PAQ) framework for organizing patient-related factors available from administrative records into clinically meaningful domains to predict patient outcomes and patterns of resource use was proposed and tested. The framework is intended to bridge the surgical episode with rehabilitation processes, capturing the full continuum of care. Linkable administrative datasets available within the Department of Veterans Affairs (VA) provide opportunities to study this population across settings. In this study, the PAQ framework, comprising six domains (sociodemographic contexts, etiologies for limb loss, anatomical level of the remaining limb, comorbidities less directly associated with limb loss, medical acuity according to hospital procedures, and functional status that measures performance of basic physical and cognitive activities of daily living) was used to explore the patient factors that appear to be determining the clinical decision to prescribe a prosthetic limb. The objective of this study was to determine the degree to which prosthetic prescription differs, according to age, after controlling for clinical differences based on the PAQ framework.

METHODS

The institutional review boards at the University of Pennsylvania, Philadelphia, Pennsylvania; the Samuel S. Stratton Veterans Affairs Medical Center (VAMC), Albany, New York; and the Kansas City VAMC, Kansas City, Missouri, approved this study.

Database Description

Analyses were conducted by merging seven VA administrative databases: Patient Treatment File (PTF) inpatient database, PTF bed section database, Outpatient Care File (OPC) database, PTF surgery database, PTF procedure database, National Prosthetics Patient Database (NPPD), and Functional Status and Outcomes Database (FSOD).

Data from the inpatient, bed section, and OPC databases, described previously,[15] were applied. The surgery database was used to obtain the amputation date and surgical procedures. The hospitalization associated with that amputation represented the "index surgical stay." The procedure database documented procedures occurring during the hospitalization.

The NPPD, developed by the Prosthetic and Sensory Aids Service Strategic Health Care Group, tracks durable medical equipment, orthoses, and prostheses prescribed and issued within the VA.[16] "Create date" identified the date the prosthesis was ordered and approximated time from amputation date to order date.

The FSOD provides the VA the ability to track outcomes across the continuum of rehabilitative care. It contains the Functional Independence Measure (FIM), which expresses cognitive and physical (motor) function. The FIM includes cognitive and motor FIM™ scores, comprising five and 13 items, respectively.[17] Each item includes seven performance levels, which are summed to produce motor and cognitive FIM scores, respectively. Higher values are associated with less-severe disabilities. Interrater reliability and internal consistency of the FIM have been previously reported.[18,19]

Variable Definition

Data from the inpatient, bed section, and OPC data sets were combined to define amputation etiological categories. The etiological categories were defined based on sets of related diagnostic codes, as reported previously.[15] The same data sets were used to identify Elixhauser comorbidities,[20] which consist of 31 distinct variables expressing each condition separately by combining sets of related diagnostic codes.

It was anticipated that evidence of active pulmonary, central nervous system (CNS), cardiac, or severe renal pathology; nutritional compromise; ongoing wound problems; mental status problems; or substance abuse during the hospitalization would be negative prognostic factors and reduce the likelihood of prosthetic prescription. The physician authors grouped procedural codes and treatments to reflect medical acuity in these areas (Table 1).

Study Sample

There were 2,912 amputation admission records to all VAMCs with acute discharge dates between October 1, 2002, and September 30, 2003. After 449 duplicate records were removed and 88 patients who had amputations that involved toes only (*International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) codes 84.11–84.12)[21] or who had a record of a previous lower extremity amputation within the 12 months preceding the index surgical admission were excluded, 2,375 admissions for transtibial, transfemoral, or hip disarticulation amputations (ICD-9-CM codes 84.10, 84.13–84.19, and 84.91)[21] remained. Patients with a record of a previous amputation within the preceding year were excluded, because they were considered to be a different population. They may have already been prescribed a prosthesis or received rehabilitation treatment previously. Of the 2,375 patients, 2,010 veterans had records in the NPPD. It was assumed that a prosthesis was not ordered for the remaining 365 patients after demonstrating that the majority (n =

244) had died or were discharged to extended care. Consequently, 2,375 veterans were used in the analyses, unless otherwise specified.

Development of Prediction Models

Prosthetic prescription within 1 year of amputation was the dichotomous outcome of all analyses. Initial analyses consisted of bivariate cross-tabulations, conducted using chi-square analyses, based on clinical hypotheses between each potential explanatory variable and prosthetic prescription. Variable selection for the multivariate models was theory-driven but informed by bivariate findings.

Logistic regression models were run, with prosthetic prescription regressed on each of the four domains. The models controlled for multiple variables simultaneously. The 95% confidence intervals (CIs) were computed around each odds ratio (OR).[22] The C-statistic corresponding to the area under the receiver operating characteristic curve was used to assess overall model predictive value.[23] The Hosmer-Lemeshow goodness-of-fit statistic was applied to test the data's fit to the model.[24] All analyses were performed using SAS version 9.1 (SAS Institute, Inc., Cary, NC). *P*-values were two-sided, with statistical significance at $P < .05$ unless otherwise noted.

Age was originally considered to be a continuous variable, although a nonlinear relationship was discovered between age and prosthesis prescription. Thus, age was entered as a series of segmented dummy variables (< 76, 76–85, and ≥86 (reference group)), as in similar studies.[1] Patients admitted from home (reference group) were compared with those admitted from other hospitals or extended care. The 16 patients with hip disarticulations were combined with transfemoral amputees to form one "above knee" category. This new combined category was selected as the reference group, consistent with other studies.[1] Non-linear associations were found between function and prosthetic prescription. Cognitive FIM was separated into four groups (scores 5–13 (reference group), 14–21, 22–28, and 29–35). Motor FIM was also divided into four categories (scores 13–32 (reference group), 33–52, 53–72, and 73– 91). Because only those patients who saw a rehabilitation professional had FIM scores, analyses including function was limited to 1,722 (72.5%) patients.

Four theory-driven domain-specific models and one parsimonious stepwise logistic regression model combining the domains were created. The objective of the domain-specific models was to establish validity of the PAQ framework by determining whether each distinct component predicted prosthetic prescription. Each domain-specific model was adjusted and controlled simultaneously for age, sex, marital status, living circumstance before hospitalization, and amputation level. The individual variables expressing the components of each domain were entered as fixed predictors. The first model addressed the effects of etiologies. The second analyzed comorbidities. The third evaluated medical acuity. The fourth focused on function. The individual domains were placed in separate models because of colinearity between diagnostic and procedural variables, and because functional status was available only for patients who saw rehabilitation specialists.

Once the PAQ framework was validated, a stepwise model was applied to identify the set of clinical factors that represented the strongest independent predictors. The stepwise regression was conducted through a series of four domain-specific forward-regression models (etiologies, comorbidities, medical acuity, and function), all adjusted and controlled for age, sex, marital status, living circumstance before hospitalization, and amputation level, and one backward regression model. Variables entered each forward model at $P = .25$. The variables significant in these forward selection models were then placed in one backward stepwise model and were removed at $P = .10$. The significant variables from the backward regression were presented as the strongest independent predictive factors from the PAQ framework. This model allowed the effect of age on prosthetic prescription to be isolated after removing the effects of clinical severity. To gain greater insight into age-related differences, statistical interactions between living circumstance before hospitalization and age and between amputation level and age were tested.

RESULTS

Six hundred twenty-nine of the 2,375 veterans with amputations (26.5%) had records of a prosthesis being ordered, and 73.5% did not. Only 7.0% of the 71 veterans aged 86 and older received a prescription for a prosthesis, compared with 31.2% (538) of those younger than 76. The average length of time ± standard deviation from surgery to prosthetic ordering date was 90.4 ± 66.2 days (range 0–337 days). Of those for whom a prosthesis was ordered, 503 (80.0%) had a transtibial, 125 (19.9%) had a transfemoral, and one (0.2%) had a hip disarticulation amputation ($P < .001$). Patients who received a prosthetic prescription had shorter medical and surgical intensive care unit stays (6.3 vs 9.3 days, $P = .03$) and shorter total lengths of stay (18.8 vs 22.2 days, $P = .04$). Overall, 98.9% were male.

Table 2 compares characteristics of patients who received a prosthetic prescription and the results of the domain-specific models. No significant interactions between living circumstance before hospitalization and age or between amputation level and age were found. The first domain-specific model focused on the influence of socio-demographic contexts, amputation level, and etiologies. Patients younger than 76 were more than four times as likely to receive a prosthetic prescription as patients aged 86 and older (OR = 4.56, 95% CI = 1.79–11.60). Veterans admitted from home were 1.5 times as likely to obtain a prescription as patients admitted from extended care. Patients with transfemoral amputations were more than three times as likely to receive a prosthetic prescription as those with transtibial amputations.

Adjusting for patient contexts and amputation level, patients with peripheral vascular disease (PVD) and patients with systemic sepsis were less likely to receive a prosthetic prescription.

The next model showed the effects of comorbidity, controlled for contexts and amputation level. Prostheses were less likely to be ordered for patients with renal failure, CHF, or psychoses. Veterans with metastatic cancer, paralysis, or other neurological disorders were less likely to obtain a prosthetic prescription.

The effects of medical acuity were adjusted for socio-demographic contexts and amputation level. Patients who underwent diagnostic procedures for acute CNS disorders, severe renal disease, or serious nutritional compromise were less likely to receive a prescription for a prosthesis.

An analysis of function, adjusted for contexts and amputation level, was conducted. Patients in the highest-functioning cognitive FIM category were 1.67 times as likely to receive a prosthetic prescription as patients in the lowest category. For motor FIM scores, veterans in the three highest-functioning categories were 1.82 to 2.62 times as likely to receive a prescription as patients in the most-disabled category. There was a nonlinear relationship for physical disability, with patients in one of the middle categories being the most likely to receive a prescription for a prosthetic limb.

Candidate variables for the parsimonious stepwise model included older age; higher amputation level; evidence of PVD, CHF, and paralysis; and low initial physical function, all of which were negative prognostic factors (Table 3). After controlling for clinical differences, patients younger than 76 were 4.51 times as likely to receive a prescription than those aged 86 and older (OR = 4.51, 95% CI = 1.36–14.99). The C-statistic was 0.73, and the Hosmer-Lemeshow goodness-of-fit *P*-value was .35, indicating that the null hypothesis of adequate model fit could not be rejected.

DISCUSSION

The PAQ framework is presented as a way to study the patient traits that appear to be driving the clinical decision to prescribe a prosthesis. The framework operates from data known at the time of veterans' lower extremity amputations. The domain-specific and parsimonious models provide empirical support for this framework. Sociodemographic contexts, etiologies, amputation level, comorbidities, medical acuity, and function all predict prosthetic prescription.

These findings demonstrate clear differences in prosthetic prescription according to age. Even after removing clinical differences, patients younger than 76 were more than four times as likely to receive a prescription for a limb as those who were older. Moreover, in a study limited to patients aged 65 and older, 73% used their prosthesis fulltime and as their main mode of locomotion.[9] These findings could encourage older patients who want to return to a less-constrictive lifestyle. In the current study, only 13 veterans aged 90 and older were found, and none received a prescription. Two 88-year-old patients received a prescription. Because diagnostic complexity was controlled for, the findings suggest that age may be a source of bias against prescription of a prosthesis.

The nonage-related predictors from the domain-specific models suggest that, at least at the population level, the clinical factors that drive clinician decision-making are reasonable. Patients admitted from extended care were probably dependent on others, making it unlikely they could learn to walk with a prosthetic limb. Perioperative sepsis indicates vulnerability to overwhelming infection and implies greater overall illness severity. Similarly, PVD leads to cumulative compromise and tissue ischemia, putting these patients at greater risk of failure to heal sufficiently to tolerate a prosthesis. The negative effect of CHF highlights the importance of sufficient endurance for patients to operate the limb. The use of a prosthesis takes more energy than normal biped ambulation: 40% to 100% more energy for patients with transtibial amputations and 90% to more than 200% more energy for patients with transfemoral amputations.[2,25] Paralysis and other neurological disorders, which impede movement and balance; psychoses, which affect judgment; renal failure and serious nutritional compromise, which lead to severe debility and affect wound healing; and metastatic cancer, which can precede mortality and pathologic fractures, all reduce the likelihood of prosthetic prescription. Patients with transtibial amputations were logically more likely to receive a prosthetic limb because of the markedly lower energy required for ambulation with presence of a knee joint than with its absence. There was more than a decade difference in median age between patients in and not in substance-abuse treatment programs (58 vs 69 years). This could be one explanation for the former's greater likelihood of receiving a limb.

The longer average intensive care unit and overall stays in those who did not receive a prescription for a prosthesis suggest more-severe illnesses. The significant procedures reflected patterns of organ impairment, similar to the co-morbidities, reinforcing the importance of neurological and cardiac function. Better performance of activities of daily living during the initial rehabilitation assessment would imply that the patient would be better mentally and physically able to operate the limb.

This study had several limitations. Certain results from the VA population may not be applicable to patients in non-VA settings. Veterans are predominately male, and it is unknown whether findings can be generalized to women. Race was not examined, because it was unknown for 858 (36.1%) veterans. Moreover, receipt of a prosthesis does not ensure use. In one study, 33% of recipients discarded their limbs after 1 year,[26] and in another, patients gave up using a prosthesis after having a fall.[27] Finally, some factors that might determine receipt of a prescription, including differentiation between unilateral and bilateral amputation and availability of caretakers, were not available in the administrative databases, representing a serious limitation. Future research should go beyond the clinical factors associated with prescription of a prosthesis to focus on successful prosthetic use and the perceived quality of life of patients with lower extremity amputations who receive prosthetic devices.

The domain-specific models detail the prognostic significance of specific types of information within the PAQ framework. In contrast, the parsimonious model identified a small set of traits across multiple domains of the PAQ framework that appeared to explain differences in referral patterns. The low rate of prescription of a prosthesis, particularly in older people, raises the question of what alternative rehabilitation services might be provided to enhance the lives of the majority of veterans who do not receive a prosthetic limb. Finally, the PAQ framework might serve to classify and study additional patient outcomes and patterns of resource use after amputation.

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Table 1

Classification of Procedures Used to Approximate Acuity

Procedures For	Patient Treatment File Procedure and Code
Active pulmonary pathology	Tracheotomy (31.1, 31.2–31.21, 31.29, 31.72–31.74, 96.55, 97.37); tracheoscopy (31.41–31.42); bronchoscopy (33.21, 33.23); fiber optic bronchoscopy (33.22); endoscopic bronchoscopy (33.24); open or closed biopsy of bronchus or lung (33.25–33.28); other diagnostic procedures on lung and bronchus (33.29); bronchial lavage (33.91–33.92)
Acute central nervous system	Computerized tomography of head or magnetic resonance imaging of brain (87.03, 88.91); arteriography of cerebral arteries (88.41); cerebral thermography (88.81); video telemetry or electroencephalographic (89.19); cerebral scan (92.11)
Mental health issues or substance abuse	Psychological evaluation and testing (94.01–94.09); psychological evaluation (94.11–94.19); psychiatric drug therapy (94.25); crisis intervention (94.35); alcohol, drug, and psychological testing (94.51–94.54, 94.59); alcohol and drug rehabilitation and detoxification (94.61–94.69)
Ongoing active cardiac pathology Invasive treatment Invasive testing Invasive monitoring Cardiac arrest	Insertion of coronary stent (36.0, 36.06–36.07); coronary artery angioplasty (36.03); intracoronary artery thrombolytic infusion (36.04); removal of coronary artery obstruction (36.09); cardiac catheterization (37.21–37.23); biopsy of heart and pericardium (37.24–37.25); diagnostic procedure on heart and pericardium (37.26–37.29); insertion, replacement, removal, and revision of pacemaker (37.80–37.89); angiocardiography (88.50–88.58); cardiac stress test, pacemaker, and defibrillator checks (89.41–89.49); circulatory monitoring (89.60–89.69); cardiovascular radioisotope (92.05); cardiopulmonary resuscitation (99.60–99.69)
Ongoing wound problems	Amputation stump revision (84.3); excisional and nonexcisional debridement of wound (86.22, 86.28); whirlpool treatment (93.32); wound irrigation (96.58–96.59)
Serious nutritional compromise	Percutaneous gastrostomy (43.11); feeding enterostomy (46.01, 46.31–46.39, 46.41); enteral nutrition (96.6); parenteral nutrition (99.15)
Severe renal disease	Hemodialysis (39.95)

Table 2

Unadjusted Characteristics and Domain-Specific Logistic Regression Models of the Likelihood of Receiving a Prescription for a Prosthesis (n = 629)

Characteristic	Received Prescription %	Odds Ratio (95% Confidence Interval)
Age		
<76	31.2	4.56 (1.79–11.60)[‡]
76–85	14.9	2.09 (0.81–5.44)
≥86 (reference)	7.0	1.0
Sex		
Male	26.6	2.15 (0.69–6.67)
Female (reference)	15.4	1.0
Marital status		
Married	25.4	0.92 (0.75–1.11)
Not married (reference)	27.4	1.0
Living circumstance before hospitalization		
Extended care	16.3	0.65 (0.46–0.93)[†]
Hospital	29.6	1.35 (0.81–2.28)
Home (reference)	27.7	1.0
Amputation level		
Transtibial	35.6	3.49 (2.77–4.40)[§]
Transfemoral (reference)	19.5	1.0
Etiology[//]		
Chronic osteomyelitis	31.2	1.03 (0.70–1.51)
Device infection	27.8	1.14 (0.84–1.55)
Diabetes mellitus type I	29.8	0.94 (0.73–1.21)
Diabetes mellitus type II	28.5	1.10 (0.88–1.38)
Local significant infection	25.8	0.86 (0.67–1.11)
Previous amputation complication[*]	30.5	1.10 (0.78–1.53)
Problems with peripheral circulation	25.2	0.73 (0.55–0.98)[†]
Skin breakdown	26.2	0.89 (0.72–1.10)
Systemic sepsis	17.6	0.50 (0.35–0.71)[‡]
Trauma	33.7	1.20 (0.92–1.58)
Elixhauser comorbidities‖		
Acquired immunodeficiency syndrome	23.5	0.56 (0.17–1.82)
Alcohol abuse	40.8	1.61 (1.07–2.44)[†]
Arrhythmias	19.9	0.95 (0.71–1.28)
Chronic blood loss anemias	11.1	0.41 (0.16–1.09)
Chronic pulmonary diseases	22.4	0.91 (0.70–1.18)
Coagulopathy	18.3	0.67 (0.39–1.15)
Congestive heart failure	20.8	0.67 (0.52–0.87)[‡]
Deficiency anemias	26.6	1.13 (0.88–1.46)

Characteristic	Received Prescription %	Odds Ratio (95% Confidence Interval)
Depression	31.8	1.17 (0.83–1.63)
Diabetes mellitus	26.2	0.94 (0.75–1.18)
Diabetes mellitus with chronic complication	29.1	0.99 (0.79–1.22)
Drug abuse	46.3	1.64 (0.89–3.01)
Fluid and electrolyte disturbances	21.5	0.81 (0.62–1.06)
Hypertension	27.3	1.12 (0.91–1.38)
Hypertension with complication	38.5	1.88 (0.56–6.31)
Hypothyroidism	28.1	1.28 (0.77–2.15)
Liver disease	33.3	1.08 (0.65–1.80)
Lymphoma	11.1	0.61 (0.07–5.46)
Metastatic cancer	9.4	0.29 (0.08–0.99)[†]
Other neurological disorders	8.3	0.28 (0.12–0.67)[‡]
Paralysis	5.4	0.16 (0.06–0.41) [‡]
Peptic ulcer disease with bleeding	28.6	0.80 (0.36–1.74)
Peripheral vascular disease	24.9	0.84 (0.67–1.05)
Psychoses	21.3	0.61 (0.40–0.93)[†]
Pulmonary circulation diseases	11.8	0.40 (0.09–1.89)
Renal failure	22.4	0.75 (0.57–0.99)[†]
Rheumatoid arthritis	18.8	0.61 (0.24–1.57)
Solid tumor without metastasis	26.5	1.18 (0.80–1.73)
Valvular diseases	23.4	1.15 (0.70–1.88)
Weight loss	17.4	0.67 (0.39–1.15)
Medical acuity		
Active pulmonary pathology	17.2	0.91 (0.32–2.56)
Acute central nervous system	15.4	0.59 (0.39–0.90)[†]
Mental health issues or substance abuse	18.8	0.71 (0.28–1.81)
Ongoing active cardiac pathology	22.8	0.88 (0.64–1.20)
Ongoing wound problems	24.8	0.84 (0.55–1.28)
Serious nutritional compromise	10.7	0.51 (0.27–0.94)[†]
Severe renal disease	18.8	0.54 (0.37–0.79)[‡]
Initial FIM score		
Cognitive		
5–13 (reference)	12.3	1.0
14–21	21.1	1.30 (0.74–2.30)
22–28	27.6	1.63 (0.99–2.70)
29–35	37.4	1.67 (1.03–2.70)[†]
Motor		
13–32 (reference)	16.8	1.0
33–52	34.4	1.82 (1.34–2.47)[‡]
53–72	45.6	2.62 (1.88–3.65)[§]

Characteristic	Received Prescription %	Odds Ratio (95% Confidence Interval)
73–91	42.6	2.18 (1.36–3.50)‡

Note: Etiologies, comorbidities, medical acuity, and initial functional status were studied in separate domain-specific models controlling for age, sex, marital status, living circumstance before hospitalization, and amputation level. N = 2,374 for sociodemographics, etiologies, comorbidities, and medical acuity regression models because one patient was missing living circumstance before hospitalization. N = 1,722 for initial functional status because the Functional Independence Measure (FIM) was measured only for veterans with amputations who were seen in rehabilitation services.

*Amputations that likely occurred more than a year earlier.

P < †.05; ‡.01; §.001.

‖Congenital deformity, lower extremity cancer, and obesity were not included in analyses because of low prevalence.

Table 3

Likelihood of Receiving a Prescription for a Prosthetic Limb Regressed on Sociodemographic Contexts, Amputation Level, Contributing Etiologies, Elixhauser Comorbidities, Medical Acuity, and Initial Functional Status

Variable	Odds Ratio	95% Confidence Interval
Age (reference:≥ 86)		
<76	4.51	1.36–14.99 *
76–85	2.43	0.72–8.24
Amputation (reference: transfemoral) level transtibial	2.43	1.88–3.15 ‡
Etiology		
Problems with peripheral circulation	0.64	0.47–0.88 †
Systemic sepsis	0.67	0.44–1.01
Elixhauser comorbidities		
Chronic blood loss anemias	0.38	0.13–1.13
Congestive heart failure	0.73	0.55–0.97 *
Drug abuse	2.04	1.06–3.94 *
Metastatic cancer	0.27	0.06–1.23
Other neurological disorders	0.42	0.17–1.04
Paralysis	0.18	0.06–0.50 †
Medical acuity: Severe renal disease	0.67	0.43–1.05
Initial motor Functional Independence		
Measure (reference 13–32)		
33–52	2.01	1.51–2.67 ‡
53–72	2.71	2.02–3.65 ‡
73–91	2.10	1.34–3.31 †

Note: Variables included in the final parsimonious model were significant in the domain-specific stepwise regression models.

C-statistic = 0.73; Hosmer-Lemeshow *P*-value = .35.

P < * .05; † .01; ‡ .001.