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Insurance status influences emergent designation in surgical transfers

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ABSTRACT

Background: There is a perception among surgeons that hospitals disproportionately transfer unfavorably insured patients for emergency surgical care. Emergency medical condition (EMC) designation mandates referral center acceptance of patients for whom transfer is requested. We sought to understand whether unfavorably insured patients are more likely to be designated as EMCs.

Materials and methods: A retrospective cohort study was performed on patient transfers from a large network of acute care facilities to emergency surgery services at a tertiary referral center from 2009–2013. Insurance was categorized as favorable (commercial or Medicare) or unfavorable (Medicaid or uninsured). The primary outcome, transfer designation as EMC or non-EMC, was evaluated using multivariable logistic regression. A secondary analysis evaluated uninsured patients only.

Results: There were 1295 patient transfers in the study period. Twenty percent had unfavorable insurance. Favorably insured patients were older with fewer nonwhite, more comorbidities, greater illness severity, and more likely transferred for care continuity. More unfavorably insured patients were designated as EMCs (90% *versus* 84%, $P < 0.01$). In adjusted models, there was no association between unfavorable insurance and EMC transfer (odds ratio [OR], 1.61; 95% confidence interval [CI], 0.98–2.69). Uninsured patients were more likely to be designated as EMCs (OR, 2.27; CI, 1.08–4.77).

Conclusions: The finding that uninsured patients were more likely to be designated as EMCs suggests nonclinical variation that may be mitigated by clearer definitions and increased interfacility coordination to identify patients requiring transfer for EMCs.

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1. Introduction

Patient transfers between acute care hospitals comprise up to 30% of admissions to tertiary center acute care surgery services [1]. Transfers are typically performed to address a mismatch between patient needs and provider or facility capacities [2]. Recognition of the potential for patient selection by nonclinical factors such as ability to pay resulted in the creation of the Emergency Medical Treatment and Active Labor Act (EMTALA) in 1986, which mandated that capable facilities accept in transfer those patients presenting to an acute care facility emergency department whose needs exceed the capacity of the facility at which they are currently being treated [3]. Such patients are designated by referring providers as emergency medical conditions (EMCs), and referral center acceptance is required by law [4]. There is currently no coordinated infrastructure to define patient needs and facility capacities for nontrauma emergency surgical patients. As a result, these need–capacity mismatches are determined by referring facility providers on a case-by-case basis rather than in a uniform fashion. This lack of standardization permits variability in selection of transfer patients on both clinical and nonclinical factors.

Existing literature suggests notable variation in transfer rates based on insurance status, but is limited in the ability to adjust for clinical factors such as severity of illness, and does not differentiate reasons for transfer [5–14]. Furthermore, insurance status appears to be less influential in patient transfers from inpatient settings, to which EMTALA typically does not apply [5]. We suspect that EMC transfer designation is an important mechanism by which unfunded patients and those with unfavorable insurance are transferred at disproportionately higher rates as EMTALA-relevant cases. Therefore, we tested the hypothesis that unfavorably insured transfer patients are more likely to be designated as EMCs.

2. Materials and methods

A retrospective cohort study was performed on patient transfers from a large referral network of acute care hospital emergency departments to Vanderbilt University Medical Center (VUMC) from January 1, 2009–December 31, 2013. Adult patients admitted to the tertiary referral center's general surgery, thoracic surgery, urology, and vascular surgery services were included. Patients transferred from a nonacute care facility, including rehabilitation hospitals and long-term acute care facilities, were excluded (2% of cohort). Because EMTALA does not apply to inpatient transfers, patients who were admitted to the referring facility before transfer were excluded. Those patients who were transferred to the referral center but not admitted were also excluded because it was not possible to determine whether the transfer was for care by one of the included surgical services. The study was approved by Vanderbilt University's Human Research Protection Program and Institutional Review Board.

Data were collected from the tertiary referral center's administrative records, patient electronic medical records, and referring facility documentation. All patients for whom transfer was requested were reviewed by VUMC's Access Center, which coordinates interhospital transfers for our facility. Information collected by VUMC Access Center from providers requesting transfer included patient insurance status, transfer diagnosis, reason for transfer, and whether the referring provider declared the transfer to be an EMC or non-EMC. Administrative records, including VUMC Access Center records, are maintained in the institution's Enterprise Data Warehouse and include clinical and billing data for each patient encounter. Data obtained from referring facility records were abstracted via electronic medical records by a physician.

The primary exposure of patient insurance status was categorized as favorable or unfavorable using a previously published categorization scheme [12,13]. Individuals insured by a commercial, Medicare, or federal (VA/Tricare) payer were defined as having favorable insurance. Unfavorable insurance included Medicaid and uninsured patients. Information on individual patient insurance status was ascertained from VUMC Access Center records, which reflected the insurance status reported by the referring provider. For transfers for which VUMC Access Center documentation of insurance status was not available (<1%), the insurance status documented in the referral center's billing records was used instead. The primary outcome measure was referring provider designation of the transfer as an EMC *versus* non-EMC transfer.

The analysis was performed at the level of the patient transfer. Transfers for patients with favorable insurance were compared with those with unfavorable insurance for the outcome of EMC designation, adjusting for relevant confounders. Patient comorbidity and severity of illness at the time of transfer were measured by calculating Elixhauser comorbidity scores and acute physiology scores (APS) using previously published methods [15,16]. Comorbidities were identified from the referral center's administrative records based on International Classification of Disease-Ninth Revision codes for the index admission. APS relied on the first set of laboratory tests and vital signs performed on patient arrival to the referral center, as well as documentation of each patient's mental status on arrival according to the admitting service history and physical exam. Missing vital sign and basic laboratory values (3%) were coded as normal. Missing arterial blood gas values (76%) were also coded as normal, assuming that such tests would primarily be performed if there was clinical concern that they might be abnormal. This is consistent with assumptions made by the developers of the APS in handling missing values [16]. Patients with unknown race were excluded in the primary analysis, but the effect of excluded patients was investigated in sensitivity analyses.

Descriptive statistics were used to compare patient and transfer characteristics by insurance status using chi-squared tests for categorical variables and Student *t*-test or Wilcoxon rank-sum test for continuous variables, depending on their distributions. The unadjusted association between insurance status and transfer designation as EMC or non-EMC was evaluated using a chi-squared test. Other unadjusted bivariate comparisons between covariates and the primary outcome included chi-squared tests for categorical variables and simple logistic regression for continuous exposures. Referring