

Closing the Loop: How Insurance and Social Determinants Shape Post-Surgical Outcomes and Healthcare Costs

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OBJECTIVE

This study aims to assess the impact of insurance status and social determinants of health on postoperative outcomes and healthcare utilization among patients undergoing emergency general surgery.

To compare Medicaid and privately insured populations to assess differences in hospital length of stay, readmissions, and complications, and to identify disparities that contribute to higher costs and poorer outcomes in vulnerable groups.

INTRODUCTION

Medicaid remains an essential safety net in the United States, providing healthcare benefits to millions of low-income individuals and families. As of March 2025, approximately 78.4 million people are enrolled in Medicaid and the Children's Health Insurance Program (CHIP), representing a significant portion of the nation's population.¹

Prior research comparing medical outcomes of Medicare and Medicaid with private and uninsured patients has found higher readmission rates for Medicare and Medicaid patients.²

Limited research exists comparing such outcomes in **Emergency general surgery patients (EGS)**. EGS is associated with higher morbidity and mortality rates compared to elective surgery. The urgent and unplanned nature of these operations contributes to increased risk, which can be further exacerbated such social factors influencing their decisions.³

Prior research reported that 13% of patients undergoing EGS experienced unplanned 30-day readmissions, with infection being the most common cause.³ Notably, patients with public insurance (Medicaid or Medicare) or those underinsured accounted for 67% and 77% of readmissions, respectively.⁴

Including Medicare in a cohort leads us to comparing a usually younger patient population with older patients with more comorbidities, thus necessitating the need for additional research.

Despite prior work showing disparities, limited research directly compares Medicaid and commercially insured patients in **emergency surgery outcomes** while also accounting for social determinants such as transportation barriers, housing instability, and follow-up adherence.

Recent Medicaid policy changes, including eligibility redeterminations and coverage interruptions, may further disrupt continuity of care and worsen these disparities.

METHOD

A retrospective database of emergency department (ED) admissions at Beth Israel Deaconess Medical Center from 2008 to 2022 was queried to identify patients who underwent EGS procedures using ICD-9 & 10 codes. The following parameters were compared: **Demographic** (age, race, language), **Clinical** (length of stay, readmission, Post-Operative complications), and **Insurance** data were extracted. Statistical analysis was performed using the Chi-square test, sample t-tests with Satterthwaite correction for unequal variances.

RESULTS

A total of 6,816 patients undergoing EGS were identified, including 1492 (21.9%) Medicaid and 5,322 (78.1%) privately insured patients.

Medicaid patients had a significantly longer mean hospital stay (218.7 ± 361.7 hours) compared to privately insured patients (158.2 ± 247.1 hours), representing an approximate **2.5-day increase in length of stay** ($t=6.07$, $p<0.0001$)

White patients were predominantly privately insured (85.8% vs. 14.2%, $p<0.001$), while patients identifying as other races were more likely to have Medicaid (38.6% vs 61.4%, $p<0.0001$).

English-speaking patients were primarily privately insured (81.6% vs. 18.4%), whereas **non-English speakers** were more likely to have Medicaid (66.9% vs. 33.1%, $p<0.0001$).

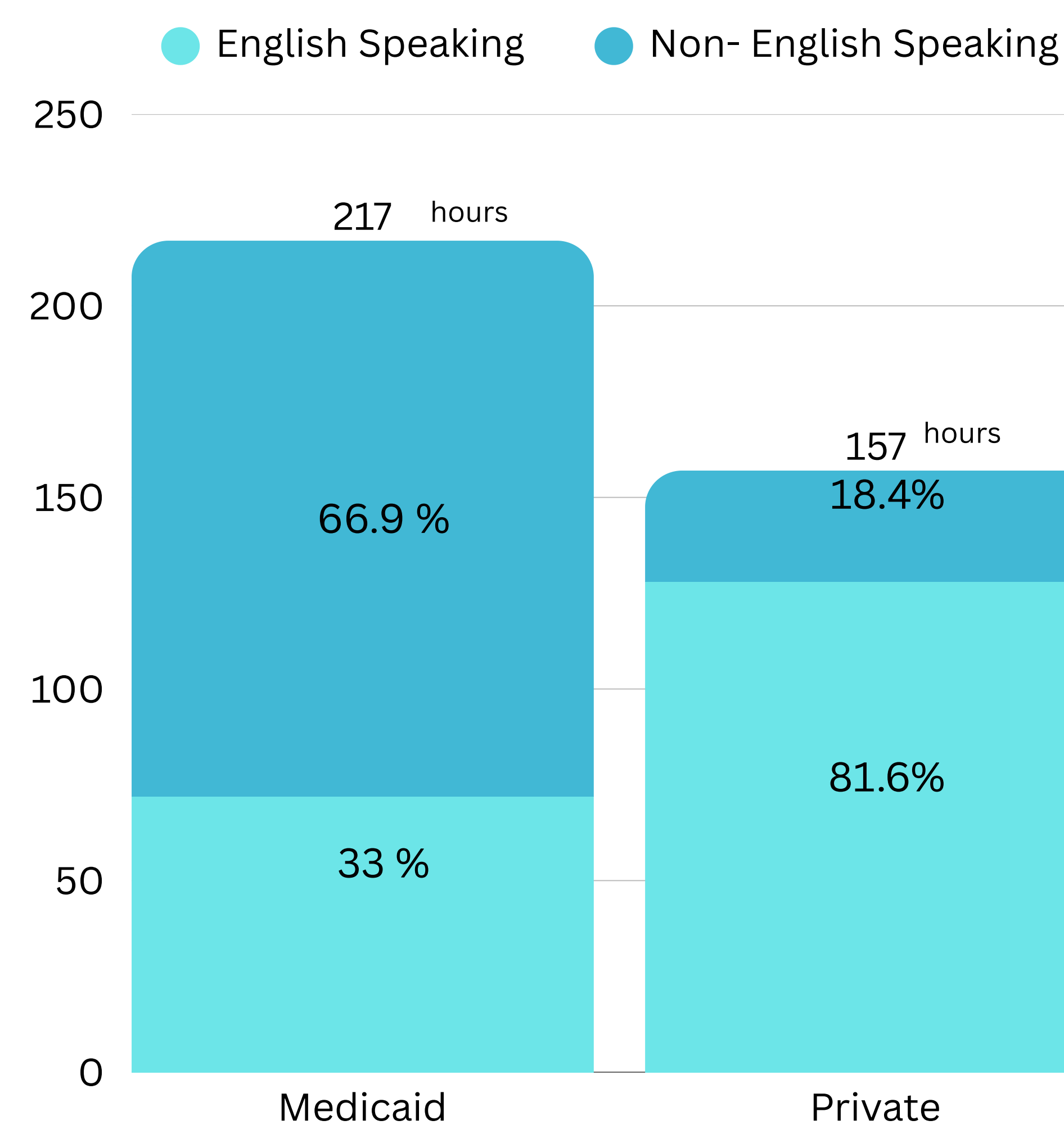


Figure 1: Length of Hospital stay based on insurance status

DISCUSSION

Alignment with prior literature:

- Medicaid or self-pay patients were significantly more likely to leave the hospital against medical advice compared to privately insured patients.³
- Patients who left AMA were more likely to be younger, male, publicly insured (Medicaid or Medicare) or self-pay, and from lower-income households, with additional risk associated with substance use and psychiatric disorders, highlighting the intersection of insurance, social factors, and adverse surgical outcomes.³
- Medicaid patients **utilize more resources from the hospital**, which can present in the form of language barriers, lost to follow-up, and barriers to discharge.
- Readmission rates are key quality metrics** in EGS, reflecting both patient outcomes and system performance. Centers for Medicare & Medicaid Services (CMS) increasingly uses readmission rates as benchmarks for hospital quality and reimbursement, underscoring their importance.⁶
- Analyses of Medicaid claims and other population data show a **higher prevalence of chronic conditions and multimorbidity in Medicaid populations**, which independently increases perioperative risk and is associated with higher readmission rates. These elevated baseline risks interact with acute surgical stress to raise the likelihood of complications.⁷
- Incorporating insurance status and social determinants into **risk stratification may help quality improvement programs better identify high-risk patients** and design more equitable perioperative care pathways.

- Recent **Medicaid redeterminations and coverage interruptions disrupt continuity of care**, leading to delayed follow-up, more complications, and higher readmissions. Hospitals face increased uncompensated care and persistently low Medicaid reimbursement, creating financial strain. To offset losses, many hospitals cost-shift to private insurers, raising system-wide healthcare costs.
- For hospitals, lower Medicaid reimbursement and higher uncompensated care will intensify financial strain, especially among safety-net providers, and may accelerate **cost-shifting to privately insured patients**.⁹

CONCLUSION

Medicaid patients experienced significantly longer hospital stays and higher resource utilization compared to privately insured patients, despite similar postoperative complication rates.

Findings suggest that factors beyond surgical complications - such as insurance-related barriers, social determinants of health, and continuity of care - play a major role in driving prolonged hospitalizations. Further research should include larger, multi-center studies with detailed breakdowns of **social factors such as ethnicity, primary language, and ZIP code-level socioeconomic status**.

Future studies should also stratify outcomes by **specific comorbidities** and identify which postoperative complications are most prevalent within vulnerable populations to better guide targeted interventions and policy improvements.

REFERENCES

