

Timing, Incidence, and Risk Factors Associated with Unplanned Postoperative Hospital Readmissions in the Orthopaedic Trauma Patient Population

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Background/Purpose: The Hospital Readmissions Reduction Program (HRRP), a provision within the Affordable Care Act, has started to enforce financial sanctions on hospitals with increased readmission rates for patients with certain medical conditions. Although recent policy initiatives have led to a dramatic increase in research on hospital readmissions, there are little data on this topic within the orthopaedic trauma patient population. The purpose of this study is to evaluate the timing, incidence, and risk factors associated with unplanned postoperative hospital readmissions in this patient population.

Methods: All patients who underwent operative treatment for orthopaedic injuries at a Level I trauma center over a 2-year period were retrospectively reviewed. A minimum 3-month postoperative follow-up was required for study inclusion. Patient demographics, primary insurance status, American Society of Anesthesiologists (ASA) physical status class, Charlson Comorbidity Index (CCI), Elixhauser Comorbidity Index, ISS, and a validated health literacy screening assessment were extracted from electronic medical records. In addition, specifics regarding the hospitalization such as ICU and ventilator status, incidence of multiple operative procedures, emergency department Glasgow Coma Scale, presence of a work-related injury, disposition, and the Surgical Apgar Score (SAS) were also collected. Records were reviewed for unplanned hospital readmissions within 1 year of surgery. Multivariable logistic regression analyses were used to examine associations between collected variables and hospital readmission.

Results: 2434 patients were eligible for the study and 1714 patients (70.4%) had at least 3-month follow-up. 458 patients (458/1714 = 26.2%) had unplanned readmissions at least once within a year following surgery, and 121 patients of these patients were readmitted multiple times in 1 year. Over a quarter of the readmissions (26.2%) occurred within the first 30 days (120 patients), and over 60% (284 patients) were readmitted within 90 days of discharge. Patients with multiple operative procedures (odds ratio [OR] = 1.6; $P < 0.001$), a lower SAS (OR = 0.85; $P < 0.001$), ASA class 3 (OR = 2.4; $P = 0.02$), ASA 4/5 (OR = 2.7; $p = 0.02$), and increased CCI (OR = 1.21, $P = 0.002$) were associated with readmission within 90 days. Risk factors for readmissions within 6 months were similar with the addition of patients with public insurance associated with readmission (OR = 1.35, $P = 0.02$).

Conclusion: The unplanned readmission rate within the orthopaedic trauma patient population is alarmingly high, with over a quarter (26.2%) occurring within 30 days, and the majority of readmissions (62.0%) occurring within 90 days of discharge. Identification of patients at increased risk is the first step in the development of targeted interventions that could reduce unplanned hospital readmissions within this population.