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Modifiable Risk Factors on Primary Joint Arthroplasty Increase 90-Day Cost of Care

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Introduction: Complications, hospital readmission, and need for further surgery are associated with risk factors in demographics and health status. A subset of these conditions has the opportunity to be positively altered before surgery and has been categorized as modifiable risk factors: anemia, malnutrition, obesity, diabetes, narcotic use, and tobacco use. Published reports to date focus on individual factors, and no report has evaluated their relative financial impact. This study determined the prevalence of these modifiable risk factors across a five-hospital network during a two-year period and compared relative impact on the primary arthroplasty 90-day cost of care.

Methods: An EMR query of 6968 lower extremity joint replacement procedures under DRG 469/470 performed in 2014-2015 was reviewed and total 90-day charges were calculated. The case mean was compared to charges for patients with modifiable risk factors: anemia (Hgb<10), malnutrition (albumin<3.4), obesity (BMI>45), uncontrolled diabetes (random glucose >180 or A1C>8), narcotic use (prescription filled), and tobacco use (documented within 30 days before surgery). Length of stay, emergency room visits, and hospital readmission were compared.

Results: Mean 90-day charges for DRG 469/470 were \$36,647. Risk factors were associated with a significant increase in 90-day charges: anemia (+\$ 15,869/126 patients), malnutrition (+\$9,270/592 patients), obesity (+\$2,048/445 patients), diabetes (+\$5,074/291 patients), narcotic use (+\$1,801/1943 patients), and tobacco use (+\$2,034/1882 patients). ICU admission rate, ED visits, and hospital readmission were significantly higher for patients with each risk factor. LOS was higher in patients with anemia, malnutrition, diabetes, and tobacco use. When separated by elective versus fracture admission, 90-day charges were significantly higher for each risk factor. **Conclusions:** Every modifiable risk factor was associated with increased 90-day charges. Anemia and uncontrolled diabetes had large increased charges but were present in fewer patients. Narcotic and tobacco use had smaller increased charges but were present in a greater number of patients. Malnutrition had a large increase in charges for a relatively high percentage of patients. All modifiable risk factors had significantly higher hospital LOS (except obesity and narcotic use), ED visits, and readmissions. This analysis gives relative comparison and direction to our hospital network as we approach patient care under new payment models.



Notes