



## Hypoalbuminemia Predicts Joint Infection, Pneumonia, and Readmission after Total Joint Arthroplasty

Daniel D. Bohl, MD, MPH, Mary R. Shen, MS,  
**Erdan Kayupov, BS**, Craig J. Della Valle, MD

**Introduction:** Malnutrition is a potentially modifiable risk factor for complications following total joint arthroplasty (TJA). While prior studies have identified associations between malnutrition, delayed wound healing, and surgical site infection (SSI), few studies have investigated the relationship between malnutrition and other complications. The purpose of this study is to investigate the association between preoperative hypoalbuminemia, a marker for malnutrition, and complications during the 30 days following TJA.

**Methods:** Patients who underwent elective primary total hip and knee arthroplasty during 2011-2013 as part of the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) were identified. Only patients with preoperative serum albumin concentration were included. Outcomes were compared between patients with and without hypoalbuminemia (serum albumin concentration < 3.5g/dL). All associations were adjusted for demographic, comorbidity, and laboratory differences between populations.

**Results:** 49,603 patients were included. The prevalence of hypoalbuminemia was 4.0%. In comparison to patients with normal albumin concentration, patients with hypoalbuminemia had a higher risk for SSI (2.29% vs. 0.96%, adjusted relative risk [RR]=2.0,  $p<0.001$ ) and pneumonia (1.27% vs. 0.30%, adjusted RR=2.5,  $p<0.001$ ). Similarly, patients with hypoalbuminemia had a higher risk for occurrence of any complication (7.3% vs. 4.0%; adjusted RR=1.5,  $p<0.001$ ) and occurrence of a serious complication (2.1% vs. 1.2%; adjusted RR=1.4,  $p=0.042$ ). The rate of hospital readmission was higher for patients with hypoalbuminemia (6.3% vs. 3.5%; adjusted RR=1.4,  $p<0.001$ ).

**Conclusions:** The present study provides evidence that malnutrition is an independent risk factor for SSI, pneumonia, occurrence of any complications, and occurrence of serious complications following TJA. This study also demonstrates that malnutrition is independently associated with increased readmission. Future efforts should investigate methods of correcting nutritional deficiencies prior to TJA. If successful, such efforts could lead to substantial improvements in short-term outcomes for patients.