The Influence of Comorbidities on Hospital Costs and Length of Stay Following Total Knee Arthroplasty

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Introduction: Total knee arthroplasty (TKA) is one of most common orthopaedic procedures performed. Rising arthroplasty costs and utilization have piqued national attention and ushered new regulation. The purpose of this study was to examine the influence individual patient characteristics has on hospital charges and length of stay (LOS).

Methods: The 2009 National Inpatient Sample (HCUP-NIS) dataset was queried using ICD-9-CM codes to identify patients between ages 40 and 95 and undergoing elective TKA. We used weighted estimates of national procedure volume and patient comorbidities defined by the Agency for Healthcare Research and Quality (AHRQ) and identified them using standard methods described by Elixhauser. Generalized linear models, based on Poisson regression analysis, were used to estimate the influence of individual patient characteristics on hospital charges and (LOS).

Results: In 2009, 621,029 patients underwent TKA. Of these, 12.7% of TKA patients had no comorbidities while 32.5% had three or more. The most common conditions included hypertension (67.6%), diabetes (20.0%), and obesity (19.9%). Mean hospital costs were $47,370 and mean hospital LOS was 3.4 days. With incremental comorbidities, both hospital charges and length of stay increased (p < 0.01). Both marginal charges and LOS rose with inpatient mortality (+$29,876, 1.9 days), patients with metastatic disease (+$20,526, 1.8 days), minority race (+$10,958, 0.3 days), pulmonary-circulatory disorders (+$10,665, 1.4 days), electrolyte disturbances (+$6,014, 0.7 days), and more. Patients treated in the Midwest had lower hospital charges and LOS (-$498, -0.04 days).

Discussion: With incremental comorbidities, both hospital charges and length of stay increased. Hospital charges and length of stay after TKA rise dramatically with the multiply-comorbid patient. Most current reimbursement schemes fail to adequately adjust for these patient characteristics. As the payments for arthroplasty continue to decline, policy makers must focus on providing fair compensation and quality metrics to hospitals and surgeons treating the comorbid; otherwise, significant restrictions in access to care may occur.

Significance: Hospital charges and length of stay after TKA rise dramatically with the multiply-comorbid patient, and most current reimbursement schemes fail to adequately adjust for these patient characteristics. Policy makers must focus on providing fair compensation and quality metrics to hospitals and surgeons treating the comorbid.

Acknowledgments:

References:

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