Healthcare costs are rising at an unsustainable rate and by 2020 are projected to increase to 20% of the national gross domestic product [1]. The relative contribution of musculoskeletal diseases to these rising costs is significant [2], and are only projected to increase with an aging American population. As economic pressures mount, national and regional efforts in healthcare policy have focused on orthopedics and musculoskeletal care as a high yield field for cost containment and reform. New policies aim to incentivize value-based care [3]. Instead of the traditional fee-for-service, facilities are compensated for an “episode of care.” In this compensation strategy, insurers pay providers a single, fixed fee for a chronic or acute condition. The bundled payment covers the entire cost of treatment, from admission to discharge, and include any readmissions and complications within a fixed time period. This strategy is aimed to monetarily incentivize facilities to minimize healthcare waste and patient risk. In this system, facilities earn a greater share of the payment with decreases in complications and costs but may also incur financial losses with high readmission rates. All reduction in cost, so long as quality is maintained or increased, translates into improved financial outcomes for the institution [5].

A challenge to orthopedic surgeons in the efforts for cost containment is to understand the source for widespread cost variations. Recent studies demonstrated a nearly 4 times greater readmission cost burden in total joint arthroplasty (TJA) in patients with extreme co-morbidities compared to those with minimal co-morbidities [6]. In this study, we use the publicly available Hospital Inpatient Cost Transparency database, part of the Statewide Planning and Research Cooperative System (SPARCS), to study the effect of patient severity of illness on cost of 172,738 TJAs performed in New York state hospitals from 2009 to 2011.

Methods

We obtained data from the New York State Department of Health (NYSDOH) Web site’s Hospital Inpatient Cost Transparency database [7]. The NYSDOH calculated the costs displayed in the document using the Cost-to-Charge Ratio (CCR) methodology in the SPARCS database, a comprehensive data reporting system by the New York State Department of Health that collects patient characteristics, diagnoses, treatments, services, and charges for every hospital discharge in the state. CCR links hospital charge data to previously estimated costs for each hospital or hospital group published by the Center for Medicare and Medicaid Services [8].

We identified hospital-reported mean yearly average costs after a primary Diagnosis Related Group (DRG) of TKA or THA in New York State between calendar years 2009 and 2011. These are stratified by All Patient Refined-DRG (APR-DRG) severity of Illness and include the volume of discharges within each hospital’s APR-DRG severity of illness for each year. APR-DRG is a classification system employed to stratify patients according to their reason of admission, severity of illness and risk of mortality. It is a widely used proprietary algorithm designed by 3M to synthesize clinical information to then place patients in one of 4 severity of illness categories—minor, moderate, major and extreme [9,10]. We grouped the hospitals by regions; Capital District, Central New York, Long Island, New Rochelle, New York City, Buffalo and Rochester, as profiled by the Department of Health [11] and also...