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Operative Times in Primary Total Hip Arthroplasty Will Remain Stable Up to the Year 2027

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Introduction: Operative time represents a significant portion of intraservice time in total joint arthroplasty. Intraservice time is a primary factor when considering valuation of Current Procedural Terminology (CPT) codes. Recently, the Centers for Medicare and Medicaid (CMS) have announced the decision to review "potentially misvalued" CPT codes, including those for primary total hip arthroplasty (THA). Although recent studies have suggested that THA operative times have remained stable in recent years, there has been an absence of information regarding how operative times are expected to change in the future. Therefore, the purpose of our analysis was to produce two- and ten-year prediction models developed from contemporary operative time data.

Methods: Utilizing the American College of Surgeons National Surgical Quality Improvement (ACS-NSQIP) patient database, all primary THA procedures performed between January 1, 2008 and December 31, 2017 were identified. Our final cohort consisted of 85,808 THA patients. Autocorrelation-fit significance was determined using Box-Ljung lack of fit tests. Time series stationarity was evaluated using augmented Dickey-Fuller tests. After adjusting non-stationary time series for seasonality-dependent changes, 2-year and 10-year operative times were predicted using autoregressive integrated moving average (ARIMA) forecasting models.

Results: Operative time for ASA Class 2 will remain stable (p=0.8269) and is projected to fall within 1 minute of the previously calculated weighted mean. Similarly, ASA Class 3 projections will remain stable (p=0.2385), falling within 3 minutes of the previously calculated weighted mean.

Conclusions: We found that operative time will remain within 3 minutes of the most recently reported mean up to the year 2027. Therefore, our findings do not support lowering physician compensation based on this metric. Future analyses should evaluate if operative times adjust considering the changing patient demographics and alternative reimbursement models.

Notes