One-Year after Total Joint Arthroplasty: Patient-Reported Outcome Measure Thresholds using the Patient Acceptable Symptom State Question as an Anchor

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INTRODUCTION: Establishing “success” thresholds for postoperative HOOS JR and KOOS JR scores is critical to quantify surgical outcomes for patients, physicians, and increasingly payors (including Medicare) after total joint arthroplasty (TJA).

METHODS: We used data from patients who underwent total hip or knee arthroplasty from 6/25/2020-9/1/2021 at one large academic medical center and had completed both preoperative and 1-year postoperative HOOS JR or KOOS JR surveys, as well as a 1-year postoperative single-item Patient Acceptable Symptom State (PASS) survey asking “Do you consider that your current state is satisfactory? Yes or No". Using the PASS question as an anchor, we used receiver-operating characteristics (ROCs) to calculate the postoperative PROM score threshold (“PASS threshold”) that maximizes Youdin’s index (sensitivity+specificity-1) with respect to answering “Yes” on the PASS (separately for HOOS JR and KOOS JR). We similarly calculated minimally clinically important difference (MCID) thresholds based on changes in HOOS JR and KOOS JR scores between preoperative and postoperative surveys. We stratified results by age, sex, BMI, and baseline PROMIS-10.

RESULTS: Altogether, 784 hips and 682 knees were included. Among hips, 87.9% responded “yes” to the PASS anchor question, while among knees 78.6% responded “yes.” For the HOOS JR, the PASS threshold was 80.5 (95%CI:76.7-85.2) with an area under the ROC (AUROC) of 0.807; MCID was 22.6 (CI:17.5-30.9) with AUROC=0.751. For the KOOS JR, the PASS threshold was 70.7 (CI:65.9-73.3) with AUROC=0.837; MCID was 16.3 (CI:14.1-18.3) with AUROC=0.751. Stratified analyses indicated differences, particularly among subgroups for the KOOS JR.

DISCUSSION AND CONCLUSION: Our derived PASS and MCID thresholds for the HOOS JR and KOOS JR were similar to prior studies using different anchors and postoperative timepoints. These thresholds can be used to evaluate patient success after surgery and, with proper risk adjustment, to construct quality measures comparing aggregate success across hospitals and locations.