**Appendix 6.** SF-36 PCS logistic LASSO before-surgery full-model parameters

|  |  |
| --- | --- |
| Intercept | -0.54 |
| Feature | Imputed mean | Standardized mean | Standardized scale | Coefficient |
| BMI | 28.73 | 27.83 | 7.06 | 0.14 |
| Age | 64.43 | 65.00 | 15.00 | 0.25 |
| Years of education | 16.26 | 16.00 | 5.00 | -0.11 |
| Years of pain medication use | 1.86 | 1.86 | 1.36 | 0.00 |
| Number of procedures before index surgery date during inpatient stay | 0.00 | 0.00 | 1.00 | 0.00 |
| Baseline SF-36 PCS | 33.90 | 33.45 | 11.07 | 1.27 |
| Baseline SF-36 MCS | 51.16 | 53.46 | 17.64 | -0.01 |
| Baseline HOOS or KOOS pain score | 48.08 | 47.22 | 20.83 | 0.31 |
| Baseline HOOS or KOOS symptom score | 49.88 | 50.00 | 26.79 | 0.09 |
| Baseline HOOS or KOOS ADL score | 52.22 | 51.47 | 24.08 | -0.14 |
| Baseline HOOS or KOOS sports/rec score | 27.06 | 25.00 | 27.50 | -0.06 |
| Baseline HOOS or KOOS QOL score | 24.75 | 25.00 | 25.00 | 0.00 |
| Baseline pain VAS (right) | 58.62 | 62.00 | 34.00 | -0.07 |
| Baseline pain VAS (left) | 60.90 | 60.90 | 1.00 | 0.01 |
| Baseline general health VAS | 35.58 | 34.00 | 38.00 | 0.15 |
| Baseline LEAS | 9.87 | 9.93 | 5.00 | -0.20 |
| Baseline WOMAC pain score | 54.51 | 55.00 | 20.00 | -0.18 |
| Baseline WOMAC stiffness score | 45.66 | 50.00 | 37.50 | -0.04 |
| Baseline WOMAC function score | 52.28 | 51.47 | 23.53 | -0.02 |
| Baseline SF-36 role physical score | 34.59 | 34.81 | 14.69 | 0.06 |
| Baseline SF-36 bodily pain score | 36.65 | 37.18 | 12.26 | 0.24 |
| Baseline SF-36 general health score | 52.21 | 52.93 | 9.53 | -0.35 |
| Baseline SF-36 vitality score | 47.61 | 48.97 | 15.61 | -0.11 |
| Baseline SF-36 social functioning score | 41.76 | 40.49 | 16.36 | -0.23 |
| Baseline SF-36 role emotional score | 42.96 | 48.10 | 23.32 | -0.13 |
| Baseline EQ-5D score | 0.66 | 0.71 | 0.20 | -0.13 |
| Baseline expectations survey score | 80.65 | 80.65 | 17.11 | -0.20 |
| Knee patient (not hip patient) | - | - | - | 0.45 |
| Race: white | - | - | - | -0.05 |
| Sex: male | - | - | - | -0.22 |
| Laterality: simultaneous bilateral | - | - | - | -0.39 |
| Unilateral revision | - | - | - | 0.76 |
| Simultaneous bilateral (both primary) | - | - | - | -0.19 |
| Primary payor: commercial | - | - | - | 0.30 |
| Primary payor: other (not Blue Cross, Commercial, Medicare, nor Medicaid) | - | - | - | -0.08 |
| Secondary payor: Blue Cross | - | - | - | -0.15 |
| Secondary payor: Commercial | - | - | - | -0.22 |
| Laterality: left | - | - | - | -0.04 |
| Hispanic missing | - | - | - | 0.19 |
| Cohabitation: live with spouse or partner | - | - | - | -0.02 |
| Prior shoulder surgery (contralateral side) | - | - | - | 0.30 |
| Prior hip surgery (same side) | - | - | - | 0.19 |
| Prior hip surgery (contralateral side) | - | - | - | 0.05 |
| Prior knee surgery (same side) | - | - | - | 0.31 |
| Prior knee surgery (same side) missing | - | - | - | -0.01 |
| Prior spinal surgery | - | - | - | 0.24 |
| Prior spinal surgery missing | - | - | - | 0.06 |
| Ever taken bisphosphonates | - | - | - | -0.04 |
| Ever had cortisone injection on operated joint  | - | - | - | 0.13 |
| Heart disease (self-reported health problem) | - | - | - | 0.07 |
| Heart disease (self-reported health problem) missing | - | - | - | 0.18 |
| High blood pressure (self-reported health problem) | - | - | - | -0.05 |
| Lung disease (self-reported health problem) | - | - | - | 0.28 |
| Diabetes (self-reported health problem) | - | - | - | 0.13 |
| Ulcer/stomach disease (self-reported health problem) | - | - | - | 0.14 |
| Liver disease (self-reported health problem) | - | - | - | 0.03 |
| Anemia or blood disease (self-reported health problem) | - | - | - | 0.17 |
| Cancer (self-reported health problem) | - | - | - | 0.08 |
| Cancer (self-reported health problem) missing | - | - | - | 0.08 |
| Depression (self-reported health problem) | - | - | - | -0.14 |
| Osteoarthritis in nonoperative joint/s (self-reported health problem) | - | - | - | 0.11 |
| Osteoarthritis in nonoperative joint/s (self-reported health problem) missing | - | - | - | 0.03 |
| Back pain (self-reported health problem) | - | - | - | 0.47 |
| Back pain (self-reported health problem) missing | - | - | - | 0.14 |
| Rheumatoid arthritis (self-reported health problem) | - | - | - | 0.31 |
| Rheumatoid arthritis (self-reported health problem) missing | - | - | - | 0.03 |
| Other (self-reported health problem) #1 missing | - | - | - | -0.12 |
| Other (self-reported health problem) #2 missing | - | - | - | -0.14 |
| Other (self-reported health problem) #3 missing | - | - | - | -0.08 |
| Doctor #101 | - | - | - | 0.03 |
| Doctor #102 | - | - | - | 0.00 |
| Doctor #103 | - | - | - | -0.10 |
| Doctor #104 | - | - | - | -0.41 |
| Doctor #105 | - | - | - | 0.00 |
| Doctor #106 | - | - | - | -0.21 |
| Surgeon #101 | - | - | - | 0.05 |
| Surgeon #107 | - | - | - | 0.06 |
| Surgeon #102 | - | - | - | 0.00 |
| Surgeon #104 | - | - | - | -0.05 |
| Surgeon #105 | - | - | - | -0.42 |
| Surgeon #106 | - | - | - | -0.05 |
| Month of year of baseline survey: May | - | - | - | -0.02 |
| Month of year of baseline survey: July | - | - | - | -0.09 |
| Month of year of baseline survey: August | - | - | - | 0.11 |
| Month of year of baseline survey: November | - | - | - | 0.06 |
| Month of year of baseline survey: December | - | - | - | 0.04 |
| Day of week of baseline survey: Tuesday  | - | - | - | -0.03 |
| Day of week of baseline survey: Wednesday | - | - | - | -0.01 |
| Day of week of baseline survey: Thursday | - | - | - | 0.04 |
| Month of year of index surgery: February | - | - | - | 0.07 |
| Month of year of index surgery: June | - | - | - | 0.11 |
| Month of year of index surgery: September | - | - | - | 0.04 |
| Day of week of index surgery: Tuesday | - | - | - | -0.04 |
| Day of week of index surgery: Wednesday | - | - | - | -0.06 |
| Day of week of index surgery: Friday | - | - | - | 0.01 |
| Day of week of index surgery: Saturday | - | - | - | -0.02 |
| ASA score: 3 | - | - | - | 0.32 |

The outcome was coded so that 0 = (achieve MCID) and 1 = (did not achieve MCID); coefficients are the typical logistic coefficient estimates; all continuous features were imputed (if missing) and then standardized: first, if missing, the continuous variable was assigned the value in imputed mean; next, all continuous variables were standardized by subtracting the value in standardized mean and then dividing by the value in standardized scale; note that these values were derived from the original 80% training set; standardization scale was based on the 25th and 75th quantiles; LASSO = least absolute shrinkage and selection operator; MCID = minimally clinically important difference; ASA = American Society of Anesthesiologists; BMI = body mass index; PCS = physical component score; MCS = mental component score; HOOS = Hip Disability and Osteoarthritis Outcome Score; HOOS JR = Hip Disability and Osteoarthritis Outcome Score for joint replacement; KOOS = Knee Disability and Osteoarthritis Outcome Score; KOOS JR = Knee Disability and Osteoarthritis Outcome Score for joint replacement; ADL = activities of daily living; QOL = quality of life; LEAS = lower extremity activity scale; EQ-5D = 5-domain EuroQol quality of life survey.