**Appendix 7.** SF-36 MCS logistic LASSO before-surgery, full-model parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Intercept | 0.30 | | | |
| Feature | Imputed mean | Standardized mean | Standardized scale | Coefficient |
| BMI | 28.73 | 27.83 | 7.06 | -0.01 |
| Year of education | 16.26 | 16.00 | 5.00 | -0.01 |
| Baseline SF-36 PCS | 33.90 | 33.45 | 11.07 | -0.11 |
| Baseline SF-36 MCS | 51.16 | 53.46 | 17.64 | 2.50 |
| Baseline HOOS JR or KOOS JR score | 50.37 | 50.01 | 16.65 | -0.06 |
| Baseline HOOS or KOOS pain score | 48.08 | 47.22 | 20.83 | 0.00 |
| Baseline HOOS or KOOS symptom score | 52.22 | 51.47 | 24.08 | 0.05 |
| Baseline HOOS or KOOS sports/rec score | 27.06 | 25.00 | 27.50 | 0.14 |
| Baseline HOOS or KOOS QOL score | 24.75 | 25.00 | 25.00 | 0.10 |
| Baseline pain VAS (right) | 58.62 | 62.00 | 34.00 | -0.10 |
| Baseline pain VAS (left) | 60.90 | 60.90 | 1.00 | 0.00 |
| Baseline fatigue VAS | 38.82 | 38.00 | 57.00 | 0.11 |
| Baseline general health VAS | 35.58 | 34.00 | 38.00 | 0.01 |
| Baseline LEAS | 9.87 | 9.93 | 5.00 | -0.03 |
| Baseline WOMAC stiffness score | 45.66 | 50.00 | 37.50 | -0.07 |
| Baseline SF-36 physical functioning score | 29.34 | 27.57 | 10.52 | -0.11 |
| Baseline SF-36 general health score | 52.21 | 52.93 | 9.53 | -0.15 |
| Baseline SF-36 vitality score | 47.61 | 48.97 | 15.61 | 0.21 |
| Baseline SF-36 social functioning score | 41.76 | 40.49 | 16.36 | 0.40 |
| Baseline SF-36 role emotional score | 42.96 | 48.10 | 23.32 | 0.71 |
| Baseline EQ-5D score | 0.66 | 0.71 | 0.20 | -0.12 |
| Baseline expectations survey score | 80.65 | 80.65 | 17.11 | -0.07 |
| Knee patient (not hip patient) | - | - | - | 0.07 |
| Sex: male | - | - | - | 0.02 |
| Primary payor: commercial | - | - | - | 0.18 |
| Secondary payor: Blue Cross | - | - | - | -0.02 |
| Secondary payor: Medicaid | - | - | - | 0.33 |
| Laterality: left | - | - | - | 0.05 |
| Prior knee surgery (same-side) missing | - | - | - | -0.05 |
| Ever taken bisphosphonates | - | - | - | -0.07 |
| Ever had cortisone injection on operated joint | - | - | - | -0.01 |
| Ever had cortisone injection on operated joint missing | - | - | - | 0.01 |
| Heart disease (self-reported health problem) | - | - | - | -0.16 |
| High blood pressure (self-reported health problem) | - | - | - | -0.10 |
| High blood pressure (self-reported health problem) missing | - | - | - | 0.03 |
| Diabetes (self-reported health problem) | - | - | - | 0.05 |
| Diabetes (self-reported health problem) missing | - | - | - | 0.17 |
| Depression (self-reported health problem) | - | - | - | 1.10 |
| Osteoarthritis in nonoperative joint/s (self-reported health problem) | - | - | - | 0.06 |
| Back pain (self-reported health problem) | - | - | - | 0.03 |
| Rheumatoid arthritis (self-reported health problem) missing | - | - | - | 0.04 |
| Other (self-reported health problem) #3 missing | - | - | - | 0.27 |
| Doctor #107 | - | - | - | 0.00 |
| Doctor #108 | - | - | - | -0.07 |
| Doctor #109 | - | - | - | -0.02 |
| Doctor #104 | - | - | - | -0.02 |
| Doctor #105 | - | - | - | -0.10 |
| Doctor #110 | - | - | - | -0.02 |
| Doctor #111 | - | - | - | 0.00 |
| Surgeon #108 | - | - | - | -0.01 |
| Surgeon #112 | - | - | - | 0.07 |
| Surgeon #109 | - | - | - | 0.00 |
| Surgeon #104 | - | - | - | -0.07 |
| Surgeon #105 | - | - | - | 0.00 |
| Month of year of baseline survey: September | - | - | - | 0.09 |
| Month of year of baseline survey: December | - | - | - | 0.14 |
| Day of week of baseline survey: Thursday | - | - | - | -0.04 |
| Month of year of index surgery: May | - | - | - | -0.03 |
| Month of year of index surgery: July | - | - | - | 0.00 |
| Day of week of index surgery: Wednesday | - | - | - | -0.05 |
| Day of week of index surgery: Thursday | - | - | - | -0.09 |
| Day of week of index surgery: Friday | - | - | - | 0.02 |
| Attended presurgery class | - | - | - | -0.04 |
| Attended presurgery class missing | - | - | - | 0.03 |
| ASA score: 2 | - | - | - | -0.06 |

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; PCS = physical component score; SF-36 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; QOL = quality of life; LEAS = lower extremity activity scale; EQ-5D = 5-domain EuroQol quality of life survey.