

Supplemental Digital Content 6. Results from the sensitivity analyses including only hospitals with $\geq 95\%$ multimodal use. Multilevel regression models; odds ratios for opioid related adverse effects and for continuous outcomes exponentiated coefficients from the log model depicting % change compared to reference (= 'opioids only').

Multimodal Use [Reference = Opioids Only]			
HIP ARTHROPLASTIES	1 Mode	2 Modes	2+ Modes
OPIOID RELATED ADVERSE EFFECTS			
<i>Respiratory</i>	0.83 (0.63, 1.10)	0.76 (0.58, 1.00)*	0.69 (0.53, 0.92)*
<i>Gastrointestinal</i>	0.85 (0.66, 1.09)	0.77 (0.60, 0.98)*	0.75 (0.59, 0.96)*
<i>Genitourinary</i>	0.69 (0.55, 0.86)*	0.74 (0.59, 0.92)*	0.61 (0.49, 0.76)*
<i>Central Nervous System</i>	1.49 (0.98, 2.25)	1.18 (0.78, 1.79)	1.16 (0.76, 1.75)
<i>"Other"</i>	0.82 (0.61, 1.10)	0.74 (0.56, 0.99)*	0.65 (0.49, 0.87)*
RESOURCE UTILIZATION			
<i>Total Opioid Prescription</i>	-6.5% (-8.7; -4.2%)*	-16.6% (-18.5; -14.7%)*	-20.9% (-22.7; -19.0%)*
<i>Day 0 Opioid Prescription</i>	-4.6% (-7.0; -2.1%)*	-12.5% (-14.7; -10.3%)*	-15.8% (-17.9; -13.7%)*
<i>Day 1 Opioid Prescription</i>	-11.2% (-14.2; -8.1%)*	-20.6% (-23.2; -17.9%)*	-26.9% (-29.3; -24.4%)*
<i>Day 1+ Opioid Prescription</i>	-8.6% (-12.1; -4.9%)*	-17.1% (-20.2; -13.8%)*	-22.4% (-25.3; -19.3%)*
<i>Cost of Hospitalization</i>	-2.4% (-3.5; -1.3%)*	-4.8% (-5.8; -3.7%)*	-5.4% (-6.5; -4.4%)*
<i>Length of Stay</i>	-9.9% (-11.4; -8.5%)*	-15.7% (-17.1; -14.3%)*	-19.1% (-20.4; -17.8%)*
KNEE ARTHROPLASTIES			
OPIOID RELATED ADVERSE EFFECTS			
<i>Respiratory</i>	0.79 (0.68, 0.93)*	0.75 (0.65, 0.88)*	0.70 (0.60, 0.82)*
<i>Gastrointestinal</i>	0.89 (0.76, 1.04)	0.83 (0.71, 0.98)*	0.68 (0.58, 0.80)*
<i>Genitourinary</i>	0.77 (0.64, 0.92)*	0.80 (0.67, 0.95)*	0.73 (0.61, 0.86)*
<i>Central Nervous System</i>	0.76 (0.61, 0.96)*	0.70 (0.56, 0.88)*	0.70 (0.56, 0.88)*
<i>"Other"</i>	0.79 (0.66, 0.94)*	0.75 (0.63, 0.90)*	0.70 (0.58, 0.84)*
RESOURCE UTILIZATION			
<i>Total Opioid Prescription</i>	-1.7% (-3.1; -0.3%)*	-9.5% (-10.8; -8.2%)*	-10.5% (-11.7; -9.2%)*
<i>Day 0 Opioid Prescription</i>	-0.8% (-2.5; 0.9%)	-7.2% (-8.8; -5.7%)*	-5.5% (-7.1; -3.9%)*
<i>Day 1 Opioid Prescription</i>	-11.1% (-12.9; -9.2%)*	-18.8% (-20.4; -17.0%)*	-22.5% (-24.1; -20.9%)*
<i>Day 1+ Opioid Prescription</i>	-9.0% (-11.0; -6.9%)*	-14.6% (-16.4; -12.6%)*	-18.7% (-20.5; -16.8%)*
<i>Cost of Hospitalization</i>	-1.1% (-1.9; -0.4%)*	-2.4% (-3.1; -1.6%)*	-2.1% (-2.8; -1.4%)*
<i>Length of Stay</i>	-5.0% (-5.9; -4.2%)*	-8.5% (-9.2; -7.6%)*	-11.1% (-11.9; -10.4%)*

*P<0.05

Models adjusted for: age, sex, race/ethnicity, insurance type, hospital location, bed size and teaching status, hospital-specific hip/knee arthroplasty volume, year of procedure, anesthesia type, PCA use, individual Elixhauser comorbidities, history of substance use/abuse, pain conditions, psychiatric comorbidities, or opioid use disorder