**Impact of intravenous acetaminophen on postoperative pain management in open colectomies**

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**SUPPLEMENTARY DIGITAL MATERIAL**

Table A. Full P-values from manuscript Table 3; odds ratios for binary variables, for continuous outcomes exponentiated coefficients from the log model depicting % change compared to reference.

Table B. Full model coefficients from multivariable models depicted in manuscript Table 3 and Table 4; odds ratios for binary variables, for continuous outcomes exponentiated coefficients from the log model depicting % change compared to reference.

**Table A. Full P-values from manuscript Table 3; odds ratios for binary variables, for continuous outcomes exponentiated coefficients from the log model depicting % change compared to reference.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use of IV APAP >>>** | **DAY OF SURGERY** |  |  |   |
|  | **1 dose** |  | **>1 dose** |   |
|  | **OR (95% CI)** | **P-value** | **OR (95% CI)** | **P-value** |
| **CONTINUOUS OUTCOMES** |  |  |  |   |
| **Oral Morphine Equivalents** | -3.2% (-5.4; -1.0%) | <.0001 | -8.0% (-11.0; -4.9%) | <.0001 |
| **Length of Hospital Stay** | -7.8% (-9.2; -6.3%) | <.0001 | -10.4% (-12.5; -8.2%) | <.0001 |
| **Cost of Hospitalization** | -10.6% (-12.3; -8.9%) | <.0001 | -10.0% (-12.5; -7.4%) | <.0001 |
| **OPIOID RELATED ADVERSE EFFECTS** |  |  |   |
| **Respiratory** | 0.67 (0.61, 0.74) | <.0001 | 0.66 (0.57, 0.76) | <.0001 |
| **Gastrointestinal (excl. Ileus)** | 0.96 (0.80, 1.15) | >0.999 | 0.89 (0.68, 1.15) | >0.999 |
| **Ileus** | 0.99 (0.93, 1.05) | >0.999 | 0.93 (0.85, 1.02) | 0.3110 |
| **Central Nervous System** | 0.81 (0.69, 0.97) | 0.0080 | 0.83 (0.65, 1.06) | 0.3440 |
| **Genitourinary** | 0.95 (0.84, 1.08) | >0.999 | 1.04 (0.87, 1.24) | >0.999 |
| **Other\*\*** | 0.85 (0.71, 1.01) | 0.0900 | 0.85 (0.66, 1.10) | 0.7600 |
| **Use of Naloxone** | 0.91 (0.78, 1.06) | 0.7280 | 0.95 (0.77, 1.17) | >0.999 |
| **Use of IV APAP >>>** | **POSTOPERATIVE DAY 1** |   |   |
|   | **1 dose** |  | **>1 dose** |   |
|   | **OR (95% CI)** | **P-value** | **OR (95% CI)** | **P-value** |
| **CONTINUOUS OUTCOMES** |  |  |  |   |
| **Oral Morphine Equivalents** | -4.4% (-8.2; -0.4%) | 0.2300 | -12.4% (-15.2; -9.4%) | <.0001 |
| **Length of Hospital Stay** | -7.5% (-10.1; -4.7%) | <.0001 | -15.1% (-17.1; -13.1%) | <.0001 |
| **Cost of Hospitalization** | -3.6% (-6.9; -0.2%) | 0.0320 | -14.4% (-16.8; -12.0%) | <.0001 |
| **OPIOID RELATED ADVERSE EFFECTS** |  |  |   |
| **Respiratory** | 1.08 (0.93, 1.25) | >0.999 | 0.68 (0.60, 0.78) | <.0001 |
| **Gastrointestinal (excl. Ileus)** | 1.00 (0.73, 1.39) | >0.999 | 0.98 (0.75, 1.26) | >0.999 |
| **Ileus** | 0.83 (0.74, 0.93) | <.0001 | 0.76 (0.69, 0.83) | <.0001 |
| **Central Nervous System** | 1.06 (0.80, 1.39) | >0.999 | 0.78 (0.62, 0.98) | 0.0200 |
| **Genitourinary** | 0.99 (0.79, 1.23) | >0.999 | 1.01 (0.85, 1.20) | >0.999 |
| **Other\*\*** | 0.82 (0.59, 1.13) | 0.8020 | 0.85 (0.66, 1.09) | 0.6260 |
| **Use of Naloxone** | 1.12 (0.87, 1.44) | >0.999 | 0.91 (0.73, 1.12) | >0.999 |
| **Use of IV APAP >>>** | **POSTOPERATIVE DAY** ≥2 |   |   |
|   | **1 dose** |  | **>1 dose** |   |
|   | **OR (95% CI)** | **P-value** | **OR (95% CI)** | **P-value** |
| **CONTINUOUS OUTCOMES** |  |  |  |   |
| **Oral Morphine Equivalents** | 23.1% (17.9; 28.6%) | <.0001 | 33.7% (29.8; 37.7%) | <.0001 |
| **Length of Hospital Stay** | 20.3% (16.7; 24.1%) | <.0001 | 36.4% (33.5; 39.3%) | <.0001 |
| **Cost of Hospitalization** | 25.4% (20.9; 30.1%) | <.0001 | 37.8% (34.4; 41.3%) | <.0001 |
| **OPIOID RELATED ADVERSE EFFECTS** |  |  |   |
| **Respiratory** | 1.61 (1.39, 1.87) | <.0001 | 1.66 (1.50, 1.84) | <.0001 |
| **Gastrointestinal (excl. Ileus)** | 0.98 (0.69, 1.39) | >0.999 | 1.39 (1.12, 1.72) | <.0001 |
| **Ileus** | 1.33 (1.18, 1.49) | <.0001 | 1.71 (1.58, 1.84) | <.0001 |
| **Central Nervous System** | 1.55 (1.19, 2.01) | <.0001 | 1.75 (1.47, 2.09) | <.0001 |
| **Genitourinary** | 1.07 (0.85, 1.35) | >0.999 | 1.24 (1.07, 1.44) | <.0001 |
| **Other\*\*** | 1.35 (1.00, 1.82) | 0.0510 | 1.48 (1.21, 1.81) | <.0001 |
| **Use of Naloxone** | 1.17 (0.89, 1.54) | >0.999 | 1.23 (1.03, 1.48) | 0.0130 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use of Oral APAP >>>** | **DAY OF SURGERY** |  |   |   |
|  | **1 dose** |  | **>1 dose** |   |
|  | **OR (95% CI)** | **P-value** | **OR (95% CI)** | **P-value** |
| **CONTINUOUS OUTCOMES** |  |  |  |   |
| **Oral Morphine Equivalents** | 1.4% (-1.9; 4.9%) | >0.999 | -8.7% (-14.4; -2.7%) | <.0001 |
| **Length of Hospital Stay** | 2.5% (0.0; 5.0%) | 0.0430 | -4.1% (-8.3; 0.4%) | 0.1000 |
| **Cost of Hospitalization** | 4.3% (1.4; 7.4%) | <.0001 | 0.1% (-5.1; 5.7%) | >0.999 |
| **OPIOID RELATED ADVERSE EFFECTS** |  |  |   |
| **Respiratory** | 1.10 (0.98, 1.23) | 0.2560 | 0.96 (0.75, 1.24) | >0.999 |
| **Gastrointestinal (excl. Ileus)** | 0.98 (0.75, 1.28) | >0.999 | 1.12 (0.68, 1.84) | >0.999 |
| **Ileus** | 1.09 (0.99, 1.19) | 0.0940 | 1.00 (0.84, 1.18) | >0.999 |
| **Central Nervous System** | 0.96 (0.76, 1.20) | >0.999 | 0.86 (0.53, 1.38) | >0.999 |
| **Genitourinary** | 1.06 (0.88, 1.26) | >0.999 | 1.02 (0.73, 1.44) | >0.999 |
| **Other\*\*** | 1.23 (0.98, 1.54) | 0.1280 | 1.08 (0.67, 1.73) | >0.999 |
| **Use of Naloxone** | 0.96 (0.77, 1.19) | >0.999 | 1.64 (1.17, 2.30) | <.0001 |
| **Use of Oral APAP >>>** | **POSTOPERATIVE DAY 1** |   |   |
|   | **1 dose** |   | **>1 dose** |   |
|  | **OR (95% CI)** | **P-value** | **OR (95% CI)** | **P-value** |
| **CONTINUOUS OUTCOMES** |  |  |  |   |
| **Oral Morphine Equivalents** | -10.8% (-13.7; -7.8%) | <.0001 | -22.6% (-26.2; -18.9%) | <.0001 |
| **Length of Hospital Stay** | -12.2% (-14.3; -10.1%) | <.0001 | -28.4% (-30.8; -26.0%) | <.0001 |
| **Cost of Hospitalization** | -11.4% (-13.8; -8.8%) | <.0001 | -26.4% (-29.3; -23.4%) | <.0001 |
| **OPIOID RELATED ADVERSE EFFECTS** |  |  |   |
| **Respiratory** | 0.85 (0.76, 0.96) | 0.0020 | 0.55 (0.45, 0.67) | <.0001 |
| **Gastrointestinal (excl. Ileus)** | 0.90 (0.69, 1.18) | >0.999 | 0.78 (0.53, 1.15) | 0.6740 |
| **Ileus** | 0.89 (0.82, 0.98) | 0.0050 | 0.73 (0.65, 0.84) | <.0001 |
| **Central Nervous System** | 0.87 (0.69, 1.09) | 0.8660 | 0.48 (0.33, 0.70) | <.0001 |
| **Genitourinary** | 1.00 (0.83, 1.19) | >0.999 | 0.77 (0.59, 1.00) | 0.0430 |
| **Other\*\*** | 0.88 (0.69, 1.12) | >0.999 | 0.74 (0.51, 1.07) | 0.2100 |
| **Use of Naloxone** | 0.99 (0.81, 1.21) | >0.999 | 0.70 (0.51, 0.95) | 0.0090 |
| **Use of Oral APAP >>>** | **POSTOPERATIVE DAY** ≥2 |   |   |
|   | **1 dose** |  | **>1 dose** |   |
|  | **OR (95% CI)** | **P-value** | **OR (95% CI)** | **P-value** |
| **CONTINUOUS OUTCOMES** |  |  |  |   |
| **Oral Morphine Equivalents** | 12.6% (10.1; 15.2%) | <.0001 | 22.7% (20.3; 25.2%) | <.0001 |
| **Length of Hospital Stay** | 25.3% (23.3; 27.4%) | <.0001 | 57.6% (55.4; 59.9%) | <.0001 |
| **Cost of Hospitalization** | 24.7% (22.3; 27.2%) | <.0001 | 52.8% (50.2; 55.5%) | <.0001 |
| **OPIOID RELATED ADVERSE EFFECTS** |  |  |   |
| **Respiratory** | 1.30 (1.20, 1.40) | <.0001 | 1.58 (1.48, 1.69) | <.0001 |
| **Gastrointestinal (excl. Ileus)** | 1.24 (1.05, 1.48) | 0.0030 | 1.29 (1.11, 1.50) | <.0001 |
| **Ileus** | 1.28 (1.20, 1.36) | <.0001 | 1.56 (1.48, 1.64) | <.0001 |
| **Central Nervous System** | 1.32 (1.14, 1.52) | <.0001 | 1.88 (1.68, 2.11) | <.0001 |
| **Genitourinary** | 1.31 (1.17, 1.48) | <.0001 | 1.44 (1.30, 1.60) | <.0001 |
| **Other\*\*** | 1.21 (1.04, 1.41) | 0.0030 | 1.29 (1.13, 1.46) | <.0001 |
| **Use of Naloxone** | 1.33 (1.16, 1.52) | <.0001 | 1.54 (1.37, 1.72) | <.0001 |

Models adjusted for age, sex, race/ethnicity, insurance type, hospital location, bed size and teaching status, hospital-specific open colectomy volume, elective or emergent procedure, indication for colectomy and procedure type, year of procedure, anesthesia type, PCA, gabapentin/pregabalin, NSAID, COX-2 inhibitor and ketamine use, and Charlson comorbidities, history of substance use/abuse, pain conditions, psychiatric comorbidities, or opioid use disorder

\*"Other" includes postoperative bradycardia, rash or itching, fall from bed, or "drugs causing adverse effects with therapeutic use"

**Table B. Full model coefficients from multivariable models depicted in manuscript Table 3 and Table 4; odds ratios for binary variables, for continuous outcomes exponentiated coefficients from the log model depicting % change compared to reference.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Oral Morphine Equivalents\*\*** | **Length of Hospital Stay\*\*** | **Cost of Hospitalization\*\*** | **Respiratory Complications** | **Gastrointestinal Complications (excl. Ileus)** |
|  |  | **% Change** | **95% CI** | **% Change** | **95% CI** | **% Change** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** |
| **Age\*** |  | -1.07 | -1.13 | -1.01 | 0.25 | 0.21 | 0.29 | 0.21 | 0.16 | 0.26 | 1.02 | 1.02 | 1.02 | 1.00 | 1.00 | 1.01 |
| **Sex** | Female | -5.53 | -6.81 | -4.24 | -5.97 | -6.86 | -5.07 | -7.67 | -8.71 | -6.61 | 0.95 | 0.91 | 1.00 | 1.37 | 1.23 | 1.53 |
|  | Male (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Race** | White (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | Black | -2.68 | -4.97 | -0.32 | 10.19 | 8.36 | 12.04 | 6.28 | 4.17 | 8.43 | 1.00 | 0.92 | 1.08 | 0.97 | 0.80 | 1.17 |
|  | Hispanic | -9.16 | -21.74 | 5.45 | 2.07 | -8.14 | 13.42 | 5.72 | -6.71 | 19.82 | 0.81 | 0.48 | 1.37 | 2.07 | 0.85 | 5.03 |
|  | Other | -3.64 | -5.98 | -1.23 | 3.22 | 1.47 | 5.00 | 3.36 | 1.24 | 5.53 | 1.00 | 0.92 | 1.09 | 0.86 | 0.71 | 1.03 |
| **Insurance Type** | Commercial (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | Medicaid | 8.57 | 5.67 | 11.55 | 19.18 | 16.93 | 21.48 | 14.68 | 12.10 | 17.33 | 1.22 | 1.10 | 1.35 | 1.11 | 0.90 | 1.37 |
|  | Medicare | -1.29 | -3.16 | 0.62 | 11.69 | 10.20 | 13.20 | 11.87 | 10.09 | 13.69 | 1.26 | 1.17 | 1.35 | 1.07 | 0.92 | 1.25 |
|  | Uninsured | 6.53 | 2.79 | 10.40 | 5.42 | 2.79 | 8.11 | -0.48 | -3.44 | 2.56 | 0.96 | 0.83 | 1.11 | 1.10 | 0.83 | 1.47 |
|  | Unknown | 0.71 | -3.66 | 5.28 | 3.54 | 0.41 | 6.77 | 0.39 | -3.22 | 4.13 | 1.03 | 0.87 | 1.23 | 0.76 | 0.52 | 1.11 |
| **Hospital Location** | Rural | -5.23 | -17.26 | 8.54 | 1.88 | -3.44 | 7.50 | 2.83 | -8.62 | 15.71 | 0.86 | 0.68 | 1.09 | 0.91 | 0.69 | 1.20 |
|  | Urban (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Hospital Size** | Small (<300 beds) [ref] | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | Medium (300-499 beds) | -7.45 | -16.96 | 3.15 | 3.20 | -1.11 | 7.71 | 2.36 | -6.84 | 12.48 | 0.90 | 0.75 | 1.09 | 0.92 | 0.74 | 1.13 |
|  | Large (>500 beds) | 6.04 | -9.66 | 24.46 | 7.57 | 1.05 | 14.52 | 14.60 | -0.30 | 31.73 | 0.85 | 0.65 | 1.12 | 0.97 | 0.72 | 1.30 |
| **Hospital Teaching Status** | Non-Teaching | -5.90 | -14.69 | 3.79 | -2.07 | -5.78 | 1.78 | -8.70 | -16.16 | -0.58 | 1.08 | 0.91 | 1.28 | 0.91 | 0.76 | 1.10 |
|  | Teaching (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **# of Annual Procedures\*** |  | 0.01 | -0.10 | 0.13 | -0.02 | -0.07 | 0.02 | -0.09 | -0.19 | 0.01 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Admission Type** | Elective (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | Urgent/Emergency | 18.90 | 17.20 | 20.62 | 56.00 | 54.43 | 57.59 | 44.99 | 43.26 | 46.76 | 1.79 | 1.69 | 1.89 | 1.26 | 1.13 | 1.42 |
| **Indication for Colectomy** | Neoplasm | -22.84 | -28.51 | -16.72 | -4.16 | -9.19 | 1.14 | -10.62 | -16.18 | -4.69 | 0.79 | 0.62 | 1.02 | 1.10 | 0.64 | 1.88 |
|  | Diverticular Disease | -0.42 | -4.26 | 3.58 | -5.78 | -8.37 | -3.13 | -0.05 | -3.30 | 3.31 | 1.19 | 1.01 | 1.40 | 0.86 | 0.63 | 1.18 |
|  | Inflammatory Bowel Disease | 16.02 | 6.98 | 25.83 | 22.90 | 16.04 | 30.16 | 14.33 | 6.77 | 22.41 | 1.18 | 0.89 | 1.57 | 1.38 | 0.78 | 2.47 |
|  | Other | 5.26 | -2.49 | 13.61 | 13.97 | 7.98 | 20.29 | 20.12 | 12.64 | 28.11 | 1.44 | 1.12 | 1.85 | 1.37 | 0.80 | 2.35 |
| **Type of Procedure** | Right Hemicolectomy | 12.49 | 8.06 | 17.10 | 14.59 | 11.39 | 17.88 | 21.69 | 17.64 | 25.87 | 1.29 | 1.14 | 1.45 | 1.13 | 0.84 | 1.50 |
|  | Left Hemicolectomy | 24.94 | 20.00 | 30.10 | 24.21 | 20.73 | 27.80 | 37.26 | 32.67 | 42.01 | 1.56 | 1.38 | 1.75 | 1.20 | 0.90 | 1.61 |
|  | Resection of Transverse Colon | 20.45 | 15.60 | 25.52 | 23.64 | 20.11 | 27.29 | 34.23 | 29.65 | 38.96 | 1.52 | 1.34 | 1.72 | 1.23 | 0.91 | 1.65 |
|  | Sigmoidectomy | 14.76 | 10.23 | 19.47 | 14.30 | 11.10 | 17.59 | 21.07 | 17.05 | 25.23 | 1.21 | 1.07 | 1.36 | 1.13 | 0.85 | 1.51 |
|  | Other | 21.48 | 16.38 | 26.79 | 22.40 | 18.76 | 26.14 | 33.06 | 28.35 | 37.93 | 1.35 | 1.18 | 1.54 | 1.28 | 0.93 | 1.74 |
| **Year of Procedure** | 2011 (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | 2012 | -0.17 | -2.45 | 2.17 | -2.39 | -3.96 | -0.79 | -1.63 | -3.53 | 0.30 | 1.05 | 0.97 | 1.14 | 1.13 | 0.94 | 1.36 |
|  | 2013 | 0.33 | -2.03 | 2.75 | -3.57 | -5.17 | -1.95 | -2.12 | -4.06 | -0.13 | 0.99 | 0.92 | 1.08 | 1.15 | 0.95 | 1.39 |
|  | 2014 | 1.37 | -1.07 | 3.87 | -5.34 | -6.94 | -3.71 | -2.98 | -4.94 | -0.98 | 0.90 | 0.83 | 0.98 | 1.17 | 0.97 | 1.42 |
|  | 2015 | 3.85 | 1.33 | 6.43 | -7.56 | -9.14 | -5.96 | -2.02 | -4.01 | 0.01 | 0.76 | 0.70 | 0.83 | 1.11 | 0.92 | 1.35 |
|  | 2016 | -1.70 | -4.21 | 0.88 | -12.29 | -13.85 | -10.68 | -4.60 | -6.64 | -2.52 | 0.54 | 0.49 | 0.59 | 0.93 | 0.76 | 1.15 |
| **Type of Anesthesia** | General | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | General/Neuraxial | -0.51 | -4.90 | 4.09 | 3.79 | 0.54 | 7.14 | 0.97 | -2.80 | 4.88 | 0.83 | 0.69 | 0.99 | 1.04 | 0.74 | 1.46 |
|  | Unknown/Other | -2.74 | -5.99 | 0.61 | -3.71 | -5.85 | -1.52 | -8.33 | -10.93 | -5.65 | 0.88 | 0.78 | 0.98 | 0.77 | 0.63 | 0.95 |
| **PCA Use** |  | 32.83 | 30.34 | 35.36 | -4.00 | -5.28 | -2.71 | -11.56 | -12.97 | -10.13 | 0.62 | 0.58 | 0.67 | 1.09 | 0.95 | 1.26 |
| **IV APAP use Day/Doses** | Day of Surgery, 1 dose | -3.23 | -5.40 | -1.00 | -7.76 | -9.24 | -6.25 | -10.60 | -12.32 | -8.86 | 0.67 | 0.61 | 0.74 | 0.96 | 0.80 | 1.15 |
|  | Day of Surgery, >1 dose | -7.98 | -10.98 | -4.88 | -10.39 | -12.49 | -8.25 | -10.00 | -12.51 | -7.43 | 0.66 | 0.57 | 0.76 | 0.89 | 0.68 | 1.15 |
|  | Postoperative Day 1, 1 dose | -4.38 | -8.23 | -0.36 | -7.47 | -10.15 | -4.72 | -3.62 | -6.93 | -0.18 | 1.08 | 0.93 | 1.25 | 1.00 | 0.73 | 1.39 |
|  | Postoperative Day 1, >1 dose | -12.39 | -15.24 | -9.44 | -15.10 | -17.09 | -13.06 | -14.44 | -16.82 | -12.00 | 0.68 | 0.60 | 0.78 | 0.98 | 0.75 | 1.26 |
|  | Postoperative Day ≥2, 1 dose | 23.13 | 17.90 | 28.60 | 20.33 | 16.66 | 24.14 | 25.41 | 20.85 | 30.15 | 1.61 | 1.39 | 1.87 | 0.98 | 0.69 | 1.39 |
|  | Postoperative Day ≥2, >1 dose | 33.74 | 29.85 | 37.73 | 36.40 | 33.55 | 39.29 | 37.80 | 34.38 | 41.30 | 1.66 | 1.50 | 1.84 | 1.39 | 1.12 | 1.72 |
| **Oral APAP use Day/Doses** | Day of Surgery, 1 dose | 1.43 | -1.93 | 4.90 | 2.47 | 0.04 | 4.96 | 4.33 | 1.38 | 7.35 | 1.10 | 0.98 | 1.23 | 0.98 | 0.75 | 1.28 |
|  | Day of Surgery, >1 dose | -8.73 | -14.40 | -2.68 | -4.08 | -8.33 | 0.38 | 0.12 | -5.15 | 5.68 | 0.96 | 0.75 | 1.24 | 1.12 | 0.68 | 1.84 |
|  | Postoperative Day 1, 1 dose | -10.78 | -13.69 | -7.77 | -12.24 | -14.30 | -10.15 | -11.38 | -13.84 | -8.84 | 0.85 | 0.76 | 0.96 | 0.90 | 0.69 | 1.18 |
|  | Postoperative Day 1, >1 dose | -22.61 | -26.18 | -18.86 | -28.42 | -30.79 | -25.96 | -26.38 | -29.28 | -23.36 | 0.55 | 0.45 | 0.67 | 0.78 | 0.53 | 1.15 |
|  | Postoperative Day ≥2, 1 dose | 12.58 | 10.07 | 15.17 | 25.33 | 23.33 | 27.38 | 24.73 | 22.35 | 27.16 | 1.30 | 1.20 | 1.40 | 1.24 | 1.05 | 1.48 |
|  | Postoperative Day ≥2, >1 dose | 22.73 | 20.29 | 25.22 | 57.65 | 55.39 | 59.94 | 52.84 | 50.25 | 55.47 | 1.58 | 1.48 | 1.69 | 1.29 | 1.11 | 1.50 |
| **Gabapentin/Pregabalin** | Day of Surgery | -16.51 | -20.24 | -12.63 | -7.46 | -10.43 | -4.41 | -5.97 | -9.53 | -2.26 | 0.78 | 0.66 | 0.93 | 1.27 | 0.89 | 1.80 |
|  | Postoperative Day 1 and ≥2 | 22.14 | 17.94 | 26.49 | 8.91 | 6.21 | 11.67 | 8.32 | 5.13 | 11.61 | 1.18 | 1.05 | 1.33 | 0.83 | 0.63 | 1.10 |
| **NSAIDs** | Day of Surgery | -11.10 | -12.84 | -9.33 | -13.34 | -14.56 | -12.10 | -14.49 | -15.91 | -13.03 | 0.59 | 0.53 | 0.64 | 0.86 | 0.73 | 1.01 |
|  | Postoperative Day 1 and ≥2 | 5.38 | 3.61 | 7.19 | -0.51 | -1.71 | 0.70 | -4.80 | -6.16 | -3.41 | 0.75 | 0.70 | 0.80 | 1.28 | 1.12 | 1.46 |
| **COX-2 Inhibitors** | Day of Surgery | -15.80 | -22.40 | -8.66 | -18.14 | -22.75 | -13.24 | -13.13 | -18.93 | -6.92 | 0.46 | 0.27 | 0.78 | 0.82 | 0.40 | 1.68 |
|  | Postoperative Day 1 and ≥2 | -9.03 | -16.60 | -0.77 | -4.21 | -9.99 | 1.94 | -6.47 | -13.16 | 0.75 | 0.72 | 0.48 | 1.08 | 1.22 | 0.62 | 2.39 |
| **Ketamine** | Day of Surgery | 7.82 | 3.64 | 12.16 | -0.74 | -3.50 | 2.10 | 1.98 | -1.39 | 5.47 | 1.12 | 0.96 | 1.30 | 0.99 | 0.72 | 1.37 |
|  | Postoperative Day 1 and ≥2 | 36.42 | 26.97 | 46.57 | 49.95 | 42.43 | 57.85 | 67.53 | 57.59 | 78.09 | 1.49 | 1.21 | 1.84 | 0.61 | 0.30 | 1.21 |
| **Charlson Index\*** |  | 2.54 | 2.23 | 2.84 | 3.88 | 3.66 | 4.09 | 5.05 | 4.79 | 5.32 | 1.09 | 1.08 | 1.10 | 1.02 | 1.00 | 1.05 |
| **History of Substance Use/Abuse** |  | 13.07 | 11.07 | 15.11 | 2.58 | 1.29 | 3.88 | 3.57 | 2.03 | 5.14 | 1.32 | 1.24 | 1.40 | 1.08 | 0.94 | 1.24 |
| **Pain Conditions** |  | 13.73 | 11.52 | 16.00 | -0.27 | -1.64 | 1.11 | -2.55 | -4.14 | -0.93 | 0.93 | 0.87 | 0.99 | 1.26 | 1.09 | 1.46 |
| **Psychiatric Comorbidities** |  | 11.07 | 9.22 | 12.94 | 12.45 | 11.13 | 13.78 | 10.23 | 8.70 | 11.80 | 1.22 | 1.16 | 1.29 | 1.34 | 1.19 | 1.52 |
| **Opioid Abuse** |   | 35.72 | 23.87 | 48.69 | 8.64 | 1.90 | 15.82 | 7.64 | -0.29 | 16.20 | 1.08 | 0.82 | 1.44 | 1.00 | 0.54 | 1.85 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Ileus** | **CNS Complications** | **Genitourinary Complications** | **Other Complications** | **Use of Naloxone** |
|  |  | **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** |
| **Age\*** |  | 1.01 | 1.01 | 1.01 | 1.04 | 1.04 | 1.05 | 1.02 | 1.02 | 1.03 | 1.02 | 1.01 | 1.02 | 1.01 | 1.00 | 1.01 |
| **Sex** | Female | 0.71 | 0.69 | 0.74 | 0.73 | 0.67 | 0.80 | 0.46 | 0.43 | 0.50 | 0.95 | 0.86 | 1.04 | 1.13 | 1.04 | 1.23 |
|  | Male (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Race** | White (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | Black | 1.20 | 1.13 | 1.28 | 0.94 | 0.79 | 1.12 | 0.79 | 0.69 | 0.91 | 0.85 | 0.71 | 1.01 | 1.01 | 0.87 | 1.17 |
|  | Hispanic | 0.89 | 0.59 | 1.35 | 0.51 | 0.10 | 2.64 | 1.10 | 0.46 | 2.64 | 0.58 | 0.16 | 2.08 | 0.88 | 0.30 | 2.64 |
|  | Other | 0.98 | 0.92 | 1.05 | 0.95 | 0.81 | 1.11 | 0.87 | 0.77 | 0.99 | 0.93 | 0.79 | 1.09 | 1.18 | 1.02 | 1.36 |
| **Insurance Type** | Commercial (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | Medicaid | 1.07 | 0.99 | 1.15 | 1.54 | 1.22 | 1.94 | 1.04 | 0.88 | 1.24 | 1.05 | 0.85 | 1.29 | 1.22 | 1.03 | 1.45 |
|  | Medicare | 1.08 | 1.02 | 1.13 | 1.56 | 1.33 | 1.84 | 1.19 | 1.06 | 1.33 | 1.09 | 0.95 | 1.26 | 1.30 | 1.15 | 1.46 |
|  | Uninsured | 1.03 | 0.93 | 1.13 | 1.34 | 0.95 | 1.88 | 1.18 | 0.94 | 1.48 | 0.78 | 0.57 | 1.07 | 0.94 | 0.73 | 1.21 |
|  | Unknown | 1.00 | 0.89 | 1.12 | 1.48 | 1.05 | 2.10 | 1.18 | 0.92 | 1.51 | 0.84 | 0.58 | 1.21 | 1.03 | 0.76 | 1.38 |
| **Hospital Location** | Rural | 0.89 | 0.71 | 1.11 | 1.18 | 0.92 | 1.52 | 0.89 | 0.73 | 1.09 | 0.93 | 0.72 | 1.21 | 1.21 | 0.87 | 1.70 |
|  | Urban (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Hospital Size** | Small (<300 beds) [ref] | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | Medium (300-499 beds) | 0.89 | 0.75 | 1.07 | 0.93 | 0.76 | 1.14 | 0.93 | 0.80 | 1.09 | 0.91 | 0.75 | 1.11 | 1.15 | 0.88 | 1.50 |
|  | Large (>500 beds) | 0.93 | 0.72 | 1.21 | 0.93 | 0.70 | 1.24 | 0.91 | 0.73 | 1.13 | 0.93 | 0.70 | 1.24 | 1.15 | 0.78 | 1.71 |
| **Hospital Teaching Status** | Non-Teaching | 1.28 | 1.09 | 1.50 | 0.82 | 0.69 | 0.98 | 0.83 | 0.72 | 0.95 | 0.85 | 0.71 | 1.02 | 0.97 | 0.76 | 1.23 |
|  | Teaching (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **# of Annual Procedures\*** |  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Admission Type** | Elective (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | Urgent/Emergency | 1.07 | 1.03 | 1.12 | 1.65 | 1.49 | 1.84 | 0.98 | 0.91 | 1.06 | 0.86 | 0.78 | 0.95 | 0.92 | 0.84 | 1.00 |
| **Indication for Colectomy** | Neoplasm | 0.92 | 0.75 | 1.12 | 0.84 | 0.52 | 1.34 | 0.87 | 0.58 | 1.32 | 0.82 | 0.49 | 1.38 | 0.77 | 0.45 | 1.31 |
|  | Diverticular Disease | 0.95 | 0.86 | 1.06 | 0.96 | 0.69 | 1.35 | 0.79 | 0.62 | 1.00 | 0.80 | 0.60 | 1.06 | 0.86 | 0.67 | 1.11 |
|  | Inflammatory Bowel Disease | 1.12 | 0.91 | 1.39 | 1.18 | 0.69 | 2.04 | 1.07 | 0.68 | 1.67 | 1.26 | 0.72 | 2.19 | 0.82 | 0.47 | 1.44 |
|  | Other | 1.08 | 0.88 | 1.32 | 1.23 | 0.76 | 1.97 | 1.00 | 0.66 | 1.52 | 1.05 | 0.62 | 1.76 | 0.75 | 0.44 | 1.29 |
| **Type of Procedure** | Right Hemicolectomy | 1.30 | 1.18 | 1.44 | 1.40 | 1.12 | 1.76 | 1.18 | 0.96 | 1.43 | 1.18 | 0.93 | 1.49 | 1.14 | 0.90 | 1.43 |
|  | Left Hemicolectomy | 1.25 | 1.13 | 1.38 | 1.50 | 1.20 | 1.88 | 1.25 | 1.02 | 1.53 | 1.39 | 1.09 | 1.76 | 1.14 | 0.90 | 1.43 |
|  | Resection of Transverse Colon | 1.22 | 1.10 | 1.35 | 1.24 | 0.98 | 1.57 | 1.18 | 0.96 | 1.44 | 1.31 | 1.03 | 1.68 | 1.21 | 0.96 | 1.53 |
|  | Sigmoidectomy | 1.11 | 1.00 | 1.23 | 1.35 | 1.08 | 1.70 | 1.09 | 0.90 | 1.34 | 1.20 | 0.95 | 1.52 | 1.10 | 0.88 | 1.39 |
|  | Other | 1.21 | 1.08 | 1.34 | 1.51 | 1.18 | 1.93 | 1.21 | 0.97 | 1.49 | 1.14 | 0.87 | 1.48 | 1.15 | 0.90 | 1.47 |
| **Year of Procedure** | 2011 (ref) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | 2012 | 1.00 | 0.94 | 1.06 | 1.01 | 0.86 | 1.18 | 1.03 | 0.91 | 1.18 | 0.91 | 0.79 | 1.05 | 0.95 | 0.83 | 1.09 |
|  | 2013 | 0.98 | 0.92 | 1.04 | 0.95 | 0.81 | 1.12 | 1.09 | 0.95 | 1.24 | 0.80 | 0.69 | 0.93 | 0.75 | 0.65 | 0.87 |
|  | 2014 | 0.97 | 0.91 | 1.03 | 1.06 | 0.90 | 1.25 | 1.16 | 1.02 | 1.33 | 0.82 | 0.70 | 0.96 | 0.74 | 0.64 | 0.86 |
|  | 2015 | 0.87 | 0.82 | 0.93 | 1.01 | 0.86 | 1.19 | 1.17 | 1.02 | 1.33 | 0.65 | 0.55 | 0.77 | 0.70 | 0.61 | 0.82 |
|  | 2016 | 0.76 | 0.71 | 0.82 | 0.93 | 0.79 | 1.11 | 1.12 | 0.97 | 1.28 | 0.37 | 0.30 | 0.45 | 0.62 | 0.52 | 0.73 |
| **Type of Anesthesia** | General | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|  | General/Neuraxial | 1.10 | 0.98 | 1.24 | 0.97 | 0.72 | 1.32 | 1.03 | 0.82 | 1.31 | 1.22 | 0.92 | 1.63 | 1.44 | 1.13 | 1.83 |
|  | Unknown/Other | 0.85 | 0.77 | 0.92 | 0.86 | 0.71 | 1.02 | 0.96 | 0.83 | 1.10 | 1.13 | 0.95 | 1.34 | 0.98 | 0.82 | 1.17 |
| **PCA Use** |  | 1.15 | 1.09 | 1.21 | 0.78 | 0.68 | 0.89 | 1.09 | 0.98 | 1.20 | 1.05 | 0.92 | 1.19 | 1.16 | 1.03 | 1.29 |
| **IV APAP use Day/Doses** | Day of Surgery, 1 dose | 0.99 | 0.93 | 1.05 | 0.81 | 0.69 | 0.97 | 0.95 | 0.84 | 1.08 | 0.85 | 0.71 | 1.01 | 0.91 | 0.78 | 1.06 |
|  | Day of Surgery, >1 dose | 0.93 | 0.85 | 1.02 | 0.83 | 0.65 | 1.06 | 1.04 | 0.87 | 1.24 | 0.85 | 0.66 | 1.10 | 0.95 | 0.77 | 1.17 |
|  | Postoperative Day 1, 1 dose | 0.83 | 0.74 | 0.93 | 1.06 | 0.80 | 1.39 | 0.99 | 0.79 | 1.23 | 0.82 | 0.59 | 1.13 | 1.12 | 0.87 | 1.44 |
|  | Postoperative Day 1, >1 dose | 0.76 | 0.69 | 0.83 | 0.78 | 0.62 | 0.98 | 1.01 | 0.85 | 1.20 | 0.85 | 0.66 | 1.09 | 0.91 | 0.73 | 1.12 |
|  | Postoperative Day ≥2, 1 dose | 1.33 | 1.18 | 1.49 | 1.55 | 1.19 | 2.01 | 1.07 | 0.85 | 1.35 | 1.35 | 1.00 | 1.82 | 1.17 | 0.89 | 1.54 |
|  | Postoperative Day ≥2, >1 dose | 1.71 | 1.58 | 1.84 | 1.75 | 1.47 | 2.09 | 1.24 | 1.07 | 1.44 | 1.48 | 1.21 | 1.81 | 1.23 | 1.03 | 1.48 |
| **Oral APAP use Day/Doses** | Day of Surgery, 1 dose | 1.09 | 0.99 | 1.19 | 0.96 | 0.76 | 1.20 | 1.06 | 0.88 | 1.26 | 1.23 | 0.98 | 1.54 | 0.96 | 0.77 | 1.19 |
|  | Day of Surgery, >1 dose | 1.00 | 0.84 | 1.18 | 0.86 | 0.53 | 1.38 | 1.02 | 0.73 | 1.44 | 1.08 | 0.67 | 1.73 | 1.64 | 1.17 | 2.30 |
|  | Postoperative Day 1, 1 dose | 0.89 | 0.82 | 0.98 | 0.87 | 0.69 | 1.09 | 1.00 | 0.83 | 1.19 | 0.88 | 0.69 | 1.12 | 0.99 | 0.81 | 1.21 |
|  | Postoperative Day 1, >1 dose | 0.73 | 0.65 | 0.84 | 0.48 | 0.33 | 0.70 | 0.77 | 0.59 | 1.00 | 0.74 | 0.51 | 1.07 | 0.70 | 0.51 | 0.95 |
|  | Postoperative Day ≥2, 1 dose | 1.28 | 1.20 | 1.36 | 1.32 | 1.14 | 1.52 | 1.31 | 1.17 | 1.48 | 1.21 | 1.04 | 1.41 | 1.33 | 1.16 | 1.52 |
|  | Postoperative Day ≥2, >1 dose | 1.56 | 1.48 | 1.64 | 1.88 | 1.68 | 2.11 | 1.44 | 1.30 | 1.60 | 1.29 | 1.13 | 1.46 | 1.54 | 1.37 | 1.72 |
| **Gabapentin/Pregabalin** | Day of Surgery | 0.92 | 0.81 | 1.04 | 0.88 | 0.66 | 1.17 | 0.98 | 0.78 | 1.24 | 0.91 | 0.65 | 1.28 | 1.01 | 0.77 | 1.31 |
|  | Postoperative Day 1 and ≥2 | 1.04 | 0.95 | 1.14 | 1.45 | 1.19 | 1.76 | 1.21 | 1.02 | 1.45 | 1.10 | 0.87 | 1.40 | 1.22 | 1.00 | 1.49 |
| **NSAIDs** | Day of Surgery | 0.88 | 0.83 | 0.93 | 0.60 | 0.50 | 0.73 | 0.93 | 0.83 | 1.05 | 0.77 | 0.66 | 0.90 | 1.00 | 0.89 | 1.14 |
|  | Postoperative Day 1 and ≥2 | 1.20 | 1.15 | 1.26 | 0.99 | 0.87 | 1.12 | 1.10 | 1.00 | 1.22 | 0.98 | 0.87 | 1.11 | 1.07 | 0.96 | 1.19 |
| **COX-2 Inhibitors** | Day of Surgery | 0.86 | 0.67 | 1.10 | 0.83 | 0.38 | 1.79 | 1.15 | 0.75 | 1.75 | 0.49 | 0.20 | 1.19 | 0.75 | 0.43 | 1.31 |
|  | Postoperative Day 1 and ≥2 | 0.87 | 0.68 | 1.11 | 0.80 | 0.40 | 1.61 | 1.24 | 0.81 | 1.90 | 1.14 | 0.60 | 2.16 | 0.75 | 0.41 | 1.37 |
| **Ketamine** | Day of Surgery | 0.93 | 0.83 | 1.04 | 1.09 | 0.83 | 1.43 | 0.98 | 0.79 | 1.22 | 0.77 | 0.55 | 1.09 | 1.28 | 1.02 | 1.60 |
|  | Postoperative Day 1 and ≥2 | 1.23 | 1.02 | 1.48 | 1.37 | 0.95 | 1.97 | 0.94 | 0.64 | 1.37 | 1.14 | 0.70 | 1.85 | 1.50 | 1.05 | 2.14 |
| **Charlson Index\*** |  | 1.02 | 1.01 | 1.03 | 1.05 | 1.03 | 1.07 | 1.01 | 1.00 | 1.03 | 1.03 | 1.01 | 1.05 | 1.02 | 1.01 | 1.04 |
| **History of Substance Use/Abuse** |  | 1.08 | 1.03 | 1.13 | 1.38 | 1.23 | 1.56 | 0.92 | 0.83 | 1.01 | 1.42 | 1.26 | 1.60 | 1.05 | 0.94 | 1.18 |
| **Pain Conditions** |  | 1.08 | 1.02 | 1.13 | 1.06 | 0.94 | 1.20 | 1.13 | 1.02 | 1.26 | 1.01 | 0.88 | 1.15 | 0.94 | 0.83 | 1.06 |
| **Psychiatric Comorbidities** |  | 1.11 | 1.06 | 1.16 | 1.86 | 1.68 | 2.04 | 1.23 | 1.13 | 1.35 | 1.22 | 1.09 | 1.36 | 1.26 | 1.15 | 1.39 |
| **Opioid Abuse** |   | 0.94 | 0.74 | 1.19 | 1.38 | 0.88 | 2.18 | 1.33 | 0.85 | 2.08 | 1.03 | 0.57 | 1.85 | 1.27 | 0.77 | 2.08 |

\*variable entered into model as continuous

\*\*continuous outcomes; exponentiated coefficients from the log model depicting % change compared to reference.