**Supplemental Table S6**

**Adjusted relative hazard of ceasing opioid utilization among geriatric patients undergoing spinal surgery for degenerative spine disease-related diagnoses – sensitivity analysis using 90-day gap between prescriptions for continuous use**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Hazard Ratio** | **95% Confidence Interval** |
| Surgery (Days 1-179 Post-Op)1 |  |  |
| ACDF | Reference | Reference |
| PCF | 0.86 | 0.77 – 0.97 |
| 360o Cervical Fusion | 0.93 | 0.74 – 1.18 |
| Lumbar Microdiscectomy | 0.66 | 0.52 – 0.84 |
| Lumbar Laminectomy | 0.81 | 0.77 – 0.86 |
| Lumbar Fusion, Posterior Approach | 0.67 | 0.60 – 0.74 |
| Lumbar Fusion, Anterior Approach | 1.03 | 0.95 – 1.10 |
| 360o Lumbar Fusion | 1.06 | 0.99 – 1.13 |
| Surgery (Days 180-365 Post-Op)1 |  |  |
| ACDF | Reference | Reference |
| PCF | 0.64 | 0.37 – 1.10 |
| 360o Cervical Fusion | 1.48 | 0.68 – 3.26 |
| Lumbar Microdiscectomy | 0.80 | 0.32 – 1.98 |
| Lumbar Laminectomy | 0.88 | 0.66 – 1.18 |
| Lumbar Fusion, Posterior Approach | 1.05 | 0.70 – 1.57 |
| Lumbar Fusion, Anterior Approach | 1.11 | 0.78 – 1.59 |
| 360o Lumbar Fusion | 0.84 | 0.60 – 1.17 |
| Sex |  |  |
| Male | Reference | Reference |
| Female | 0.94 | 0.91 – 0.98 |
| Race |  |  |
| White | Reference | Reference |
| Black | 1.33 | 1.12 – 1.57 |
| Asian | 1.00 | 0.90 – 1.12 |
| Hispanic | 1.08 | 0.87 – 1.33 |
| American Indian/Alaska Native | 1.24 | 0.88 – 1.76 |
| Other | 1.20 | 1.00 – 1.44 |
| Unknown | 1.39 | 1.00 – 1.94 |
| Age Group |  |  |
| <70 | Reference | Reference |
| 70-74 | 1.03 | 0.98 – 1.08 |
| 75-79 | 1.14 | 1.08 – 1.20 |
| 80+ | 1.23 | 1.16 – 1.31 |
| Region |  |  |
| WE | Reference | Reference |
| MW | 1.03 | 0.96 – 1.10 |
| NE | 1.08 | 1.00 – 1.17 |
| SO | 1.00 | 0.93 – 1.06 |
| Surgeon Specialty |  |  |
| Neurosurgery | Reference | Reference |
| Other | 1.03 | 0.99 – 1.07 |
| Charlson Comorbidity Index |  |  |
| 0 | Reference | Reference |
| 1 | 1.00 | 0.95 – 1.04 |
| 2 | 0.93 | 0.88 – 0.99 |
| 3+ | 0.97 | 0.92 – 1.03 |
| Benzodiazepine Use2 | 0.92 | 0.87 – 0.98 |
| Alcohol Abuse2 | 0.88 | 0.71 – 1.09 |
| Drug Abuse2 | 0.91 | 0.76 – 1.09 |
| Anxiety2 | 0.90 | 0.85 – 0.95 |
| Depression2 | 0.94 | 0.89 – 0.99 |
| History of Cancer2 | 0.94 | 0.86 – 1.03 |
| Active cancer treatment before surgery2 | 1.02 | 0.91 – 1.15 |
| Active cancer treatment after surgery3 | 0.86 | 0.75 – 0.98 |
| Medicaid eligible at surgery | 0.83 | 0.76 – 0.91 |
| Quarters with Preoperative Opioid Use4 |  |  |
| No Use | Reference | Reference |
| 1 Quarter | 0.79 | 0.75 – 0.82 |
| 2 Quarters | 0.64 | 0.61 – 0.68 |
| 3 Quarters | 0.43 | 0.40 – 0.46 |
| 4 Quarters | 0.18 | 0.17 – 0.20 |
| Procedure Year |  |  |
| 2008 | Reference | Reference |
| 2009 | 0.97 | 0.90 – 1.05 |
| 2010 | 0.93 | 0.86 – 1.01 |
| 2011 | 0.96 | 0.89 – 1.04 |
| 2012 | 0.98 | 0.90 – 1.05 |
| 2013 | 1.03 | 0.96 – 1.11 |
| 2014 | 1.03 | 0.96 – 1.11 |
| Urban/Rural |  |  |
| Rural | Reference | Reference |
| Metro | 1.02 | 0.92 – 1.14 |
| Urban, Non-metro | 0.96 | 0.86 – 1.07 |

1All hazards ratios were calculated over the at-risk period, which was defined as one year post-operatively for this study except in the case of surgery type because it did not meet the proportional hazards assumption when the at-risk period was considered the year following surgery.

2Measured in the 12 months prior to surgery

3Measured in the 12 months following surgery

4Measured in days 5-365 prior to surgery

*ACDF, anterior cervical discectomy and fusion; PCF, posterior cervical fusion*