**Suppl 2.**

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| Table 1. General Characteristics and Initial Bivariate Analysis |
| Characteristic | Overall | Morbidity | Mortality |
|  | N (%) | No, N (%) | Yes, N (%) | OR (95% CI) | P value | No, N (%) | Yes, N (%) | OR (95% CI) | P value |
| Total | 1,206,119(100) | 1,108,013 (91.9) | 98,106 (8.1) | --- | --- | 1,199,185 (99.4) | 6,810 (0.6) | --- | --- |
| Age (cont.) | 57.9±19.02 | 57.3±18.97 | 64.4±18.36 | --- | <.001 | 57.8±75.26 | 75.2±13.9 | --- | <.001 |
| Age (cat) |  |  |  |  |  |  |  |  |  |
| Under 65 | 712,444 (59.7) | 668,660 (93,9) | 43,784 (6.1) | REF | --- | 710,965 (99.8) | 1,437 (0.2) | REF | --- |
| 65 to 74 | 222,687 (17.0) | 202,400 (90.9) | 20,287 (9.1) | 1.53 (1.50,1.55) | <.001 | 221,442 (99.5) | 1,213 (0.5) | 2.71 (2.51,2.92) | <.001 |
| 75 to 84 | 177,264 (14.9) | 155,966 (88.0) | 212,98 (12.0) | 2.08 (2.05,2.12) | <.001 | 175,219 (98.9) | 2,011 (1.1) | 5.67 (5.30,6.07) | <.001 |
| 85+ | 81,147 (6.8) | 68,476 (84.4) | 12,671 (15.6) | 2.82 (2.76,2.88) | <.001 | 78,983 (97.4) | 2,148 (2.6) | 13.45 (12.58,14.39) | <.001 |
| Sex |  |  |  |  |  |  |  |  |  |
| Male  | 423,563 (36.6) | 379,621 (89.6) | 43,942 (10.4) | REF | --- | 420,138 (99.2) | 3,375 (0.8) | REF | --- |
| Female  | 732,987 (63.4) | 679,264 (92.7) | 53,723 (7.3) | 0.68 (0.67,0.69) | <.001 | 729,489 (99.5) | 3426 (0.5) | 0.58 (0.55, 0.61) | <.001 |
| Race |  |  |  |  |  |  |  |  |  |
| White | 730,987 (67.0) | 670,271 (91.7) | 60,687 (8.3) | REF | --- | 726,446 (99.4) | 4,433 (0.6) | REF | --- |
| Black  | 60,231 (5.5) | 53,304 (88.5) | 6,927 (11.5) | 1.43 (1.39,1.47) | <.001 | 59,774 (99.3) | 451 (0.7) | 1.23 (1.12,1.36) | <.001 |
| Hispanic  | 223,297 (20.5) | 204,878 (91.8) | 18,419 (8.2) | 0.99 (0.97,1.01) | 0.420 | 222,133 (99.5) | 1136 (0.5) | 0.83 (0.78, 0.89) | <.001 |
| Asian/Pacific Islander | 51,497 (5.3) | 51,497 (89.1) | 6,330 (10.9) | 1.35 (1.32,1.39) | <.001 | 57,402(99.8) | 424 (0.7) | 1.21 (1.09, 1.33) | 0.003 |
| Native American | 863 (0.1) | 772 (89.1) | 91 (10.5) | 1.30 (1.04,1.60) | <.001 | 860 (99.8) | 2 (0.2) | 0.38 (0.09, 1.52) | 0.173 |
| Other | 17,903 (1.6) | 16,180 (90.4) | 1,723 (9.6) | 1.17 (1.11,1.23) | <.001 | 17,780 (99.3) | 121 (0.7) | 1.11 (0.93, 1.33) | 0.238 |
| Missing  | 115,040 (9.5) |  |  |  |  |  |  |  |  |
| Procedure |  |  |  |  |  |  |  |  |  |
| Hemicolectomy | 37,539 (3.1) | 23,270 (62.0) | 14.269 (38.0) | REF | --- | 35,945 (95.8) | 1,592 (4.2) | REF | --- |
| Appendectomy | 125,326 (10.4) | 117,419 (93.7) | 7,907 (6.3) | 0.11 (0.10,0.11) | <.001 | 125,202 (99.9) | 121 (0.1) | 0.02 (0.01,0.02) | <.001 |
| Cholecystectomy | 162,685 (13.5) | 148,494 (91.3) | 14,191 (8.7) | 0.15 (0.15,0.16) | <.001 | 92,603 (93.8) | 2,104 (6.2) | 0.12 (0.11,0.13) | <.001 |
| Hip replacement  | 155,314 (12.9) | 145,316 (93.6) | 9,998 (6.4) | 0.11 (0.10,0.11) | <.001 | 161,813 (99.5) | 865 (0.5) | 0.13 (0.012,0.14) | <.001 |
| Knee replacement | 210,422 (17.4) | 203,209 (96.6) | 7,213 (3.4) | 0.05 (0.05, 0.06) | <.001 | 210,244 (99.9) | 147 (0.1) | 0.01 (0.01,0.02) | <.001 |
| Treatment of fracture | 92,599 (7.7) | 82,578 (89.2) | 10,021 (10.8) | 0.19 (0.19, 0.20) | <.001 | 91,194 (98.5) | 1,389 (1.5) | 0.34 (0.32,0.37) | <.001 |
| Amputation of lower extremity | 37,821 (3.1) | 27,798 (73.5) | 10,023 (26.5) | 0.58 (0.57, 0.60) | <.001 | 36,756 (97.2) | 1,057 (2.8) | 0.64 (0.60,0.70) | <.001 |
| Laminectomy | 81,089 (6.7) | 77,078 (95.1) | 4,011 (4.9) | 0.08 (0.08,0.09) | <.001 | 80,878 (99.7) | 208 (0.3) | 0.05 (0.05,0.06) | <.001 |
| Spine fusion | 130,960 (10.9) | 118,249 (90.3) | 12,711 (9.7) | 0.17 (0.17,0.18) | <.001 | 130,562 (99.7) | 385 (0.3) | 0.06 (0.06,0.07) | <.001 |
| Hysterectomy | 172,364 (14.3) | 164,602 (95.5) | 7,762 (4.5) | 0.07 (0.07,0.08) | <.001 | 172,241 (99.9) | 120 (0.1) | 0.01 (0.01,0.02) | <.001 |
| Admission |  |  |  |  |  |  |  |  |  |
| Elective | 796,895 (66.1) | 735,268 (92.2) | 47,047 (7.8) | REF | --- | 794,992 (99.7) | 1,826 (0.3) | REF | --- |
| Emergency  | 409,162 (33.9) | 358,109 (87.5) | 51,053 (12.5) | 2.44 (2.41,2.48) | <.001 | 404,132 (98.8) | 4,984 (1.2) | 7.04 (6.63, 7.48) | <.001 |
| Length of stay (Cont.) | 4.09±3.55 | 3.24±2.17 | 13.11±13.82 | --- | <.001 | 3.97±4.91 | 16.02±20.17 |  | <.001 |
| Van Walraven (cont.) | 1.32±4.9 | 0.94±4.38 | 5.56±7.73 |  | <.001 | 1.26±4.80 | 12.65±8.50 |  | <.001 |
| Van Walraven (cat.) |  |  |  |  |  |  |  |  |  |
| <5 | 990,324 (82.1) | 938,845 (94.8) | 51,479 (2.7) | REF | <.001 | 989,090 (82) | 1,154(16.9) | REF | <.001 |
| 5-14 | 181,616 (15.1) | 148,775 (81.9) | 32,841 (18.1) | 4.02(3.96,4.08) | <.001 | 178,631 (98.4) | 2,955(1.6) | 14.17 (13.24, 15.18) | <.001 |
|  >14 | 34,179 (2.8) | 20,393 (59.7) | 13,786 (40.3) | 12.32 (12.04, 12.62) | <.001 | 31,464 (92.1) | 2,701(7.9) | 73.57 (68.61,78.89) | <.001 |
| Perioperative stroke |  |  |  |  |  |  |  |  |  |
| No | 1,204,380 (99.86) | 1,107,194 (91.1%) | 97,186 (8.1%) | REF | --- | 1,197,777 (99.5) | 6,481 (0.5) | REF | --- |
| Yes | 1,739 (0.14) | 819 (47.1) | 920 (52.9%) | 12.79 (11.64, 14.06) | <.001 | 1,408 (81.1%) | 329 (18.9) | 43.18 (38.20, 48.81) | <.001 |
| Cardiovascular |  |  |  |  |  |  |  |  |  |
| No | 1,196,100 (99.2) | --- | --- | --- | --- | 1,190,026 (99.5) | 6,074 (0.5%) | REF | --- |
| Yes | 9,895 (0.80) | --- | --- | --- | --- | 9,159 (92.6) | 736 (7.40) | 15.77 (14.54,17.04) | <.001 |
| Pulmonary Comp. |  |  |  |  |  |  |  |  |  |
| No | 1,193,163 (98.9) | --- | --- | --- | --- | 1,187,657 (99.5) | 5,506 (0.5) | REF | --- |
| Yes | 12,832 (1.1) | --- | --- | --- | --- | 11,528 (89.9) | 1,304 (10.2) | 24.39 (22.90,25.98) | <.001 |
| Gastrointestinal comp. |  |  |  |  |  |  |  |  |  |
| No | 1,172,580 (97.2) | --- | --- | --- | --- | 1,166,871 (99.5) | 5,709 (0.5) | REF | --- |
| Yes | 33,415 (2.8) | --- | --- | --- | --- | 32,314 (96.7) | 1,101 (3.3) | 6.96 (6.52,7.43) | <.001 |
| Post-operative infection |  |  |  |  |  |  |  |  |  |
| No | 1,186,138 (98.3) | --- | --- | --- | --- | 1,180,067 (99.5) | 5,955 (0.5) | REF | --- |
| Yes | 6,846 (0.5) | --- | --- | --- | --- | 19,118 (95.7) | 855 (4.3) | 8.86 (8.23,9.53) | <.001 |
| Wound comp. |  |  |  |  |  |  |  |  |  |
| No  | 1,199,149 (99.5) | --- | --- | --- | --- | 1,192,724 (99.5) | 6425 (0.5) | REF | --- |
| Yes | 6,846 (0.5) | --- | --- | --- | --- | 6,461 (94.4) | 385 (5.7) | 11.06 (9.95,12.29) | <.001 |
| Renal comp. |  |  |  |  |  |  |  |  |  |
| No | 1,200,336 (99.5) | --- | --- | --- | --- | 1,193,637 (99.4) | 6,699 (0.6) | REF | --- |
| Yes | 5,659 (0.5) | --- | --- | --- | --- | 5,548 (98.0) | 111 (2.0) | 3.56 (2.95,4.30) | <.001 |