Supplementary Table 1. Overall cohort demographics and univariate analysis of risk factors and delirium. P-values listed are those of the logistic regression for individual risk factors. Values presented as frequency (%) unless otherwise noted; *values presented as mean / SD

| Demographic / clinical characteristics | No Delirium | Delirium | Total | Delirium Incidence | Univariate OR (95% CI) | p-value Log. Reg. |
|---------------------------------------|-------------|----------|-------|-------------------|------------------------|------------------|
| AGE GROUP                             |             |          |       |                   |                        | <0.001           |
| 18-45                                 | 31539 96.3% | 1195 3.7%| 32734 | 100.0%            |                        |                  |
| 45-65                                 | 12055 38.2% | 343 28.7%| 12398 | 37.9%             | 2.48 (1.74-2.74)       | <0.001           |
| 65-75                                 | 7075 22.4%  | 240 20.1%| 7315  | 22.3%             | 3.30 (2.05-3.30)       | <0.001           |
| >75                                   | 4887 15.5%  | 514 43.0%| 5401  | 16.5%             | 8.07 (6.49-10.05)      | <0.001           |
| ASA_SCORE Group                       |             |          |       |                   |                        | <0.001           |
| 1-2                                   | 11783 37.4% | 102 8.5% | 11885 | 36.3%             | 0.90 (0.66-1.24)       |                  |
| 3-4                                   | 19139 60.7% | 1060 88.7%| 20199 | 61.7%             | 5.20 (4.52-6.94)       | <0.001           |
| 5                                     | 131 0.4%    | 17 1.4%  | 148   | 0.5%              | 11.52 (6.07-23.83)     | <0.001           |
| PRIM_SURG_SERVICE                     |             |          |       |                   |                        | <0.001           |
| Obstetrics and Gynecology             | 1476 4.7%   | 7 0.6%   | 1483  | 4.5%              | 0.50 (0.30-0.83)       |                  |
| Cardiac Surgery                       | 1444 4.6%   | 48 4.0%  | 1492  | 4.6%              | 3.21 (1.64-6.29)       | <0.001           |
| Gastroenterology                      | 1259 4.0%   | 75 6.3%  | 1334  | 4.1%              | 5.62 (2.57-12.25)      | <0.001           |
| General Surgery                       | 5976 18.9%  | 150 12.6%| 6126  | 18.7%             | 2.40 (1.79-3.26)       | <0.001           |
| Liver Transplant                      | 771 2.4%    | 68 5.7%  | 839   | 2.6%              | 18.60 (8.50-40.69)     | <0.001           |
| Neurosurgery                          | 3142 10.0%  | 203 17.0%| 3345  | 10.2%             | 6.10 (3.77-9.78)       | <0.001           |
| Orthopaedics                          | 6825 21.6%  | 375 31.4%| 7200  | 22.0%             | 5.20 (3.30-8.02)       | <0.001           |
| Other                                 | 1053 3.3%   | 43 0.1%  | 1096  | 3.3%              | 3.90 (1.36-10.42)      | <0.001           |
| Otolaryngology                        | 2413 7.7%   | 41 3.4%  | 2454  | 7.5%              | 1.70 (1.06-2.72)       | 0.002            |
| Plastic Surgery                       | 979 3.1%    | 18 1.5%  | 997   | 3.0%              | 1.80 (1.61-9.32)       | 0.002            |
| Surgical Oncology                     | 637 2.0%    | 17 1.4%  | 654   | 2.0%              | 5.63 (2.32-13.64)      | <0.001           |
| CASE_TYPE      | 19656 | 62,3% | 294 | 24,6% | 19 950 | 60,9% | 1,5% | REF       | 0,001 | 6.66 (2.88-15.41) | <0.001 |
|---------------|-------|-------|-----|-------|--------|-------|------|-----------|-------|------------------|--------|
| Elective      | 343   | 1,1%  | 39  | 3,3%  | 382    | 1,2%  | 10,2%| 7.60 (5.35-10.80) | <0.001 |
| Critically Emergent | 2306 | 7,3%  | 182 | 15,2% | 2 488  | 7,6%  | 7,3% | 5.28 (4.36-6.38)  | <0.001 |
| Emergent      | 2886  | 9,2%  | 261 | 21,8% | 3 147  | 9,6%  | 8,3% | 6.05 (5.10-7.18)  | <0.001 |
| Inpatient     | 1226  | 3,9%  | 37  | 3,1%  | 1 263  | 3,9%  | 2,9% | 2.02 (1.43-2.85)  | <0.001 |
| Transplant    | 4310  | 13,7% | 348 | 29,1% | 4 658  | 14,2% | 7,5% | 5.40 (4.61-6.33)  | <0.001 |
| Urgent        | 15310 | 48,5% | 654 | 54,7% | 15 964 | 49%   | 4,1% | 0.78 (0.70-0.88)  | <0.001 |

### Anesthesia duration*  
244,1 149,9 243,1 167,7 1.00 (1.00-1.00) 0,835

### ANESTHESIA_TYPE  
0,584

| General       | 27422 | 86,9% | 1049 | 87,8% | 28 471 | 87%   | 3,7% | REF       | 0,001 | 1.25 (0.81-1.94)  | 0,313 |
|---------------|-------|-------|-----|-------|--------|-------|------|-----------|-------|------------------|--------|
| Epidural      | 366   | 1,2%  | 11  | 0,9%  | 377    | 1%    | 2,9% | 0.99 (0.47-2.07) | 0,967 |
| MAC           | 2650  | 8,4%  | 91  | 7,6%  | 2 741  | 8%    | 3,3% | 1.13 (0.70-1.82) | 0,632 |
| Regional Block| 145   | 0,5%  | 7   | 0,6%  | 152    | 0%    | 4,6% | 1.58 (0.66-3.79) | 0,304 |
| Spinal        | 688   | 2,2%  | 21  | 1,8%  | 709    | 2%    | 3,0% | 0.99 (0.47-2.07) | 0,967 |

### Male sex  
(ref=female)  
15310 48,5% 654 54,7% 15 964 49% 4,1% 0.78 (0.70-0.88) <0.001

### BMI  
18.5-29.99 21228 67,3% 841 70,4% 22 069 67% 3,8% REF 0,001
| < 18.5       | 1250  | 4,0%  | 107 | 9,0%  | 1 357  | 4%    | 7,9% | 2.16 (1.75-2.66) | <0.001 |
| 30-39.99     | 7189  | 22,8% | 202 | 16,9% | 7 391  | 23%   | 2,7% | 0.71 (0.61-0.83) | <0.001 |
| 40+          | 1571  | 5,0%  | 26  | 2,2%  | 1 597  | 5%    | 1,6% | 0.42 (0.28-0.62) | <0.001 |

### Positive SPICES Preoperatively  
30785 97,6% 1169 97,8% 31 954 98% 3,7% 1.10 (0.74-1.64) 0,633

### History of Tobacco Use  
1659 5,3% 74 6,2% 1 733 5% 4,3% 1.28 (1.00-1.63) 0,047

### History of Alcohol Use  
13976 44,3% 360 30,1% 14 336 44% 2,5% 0.58 (0.51-0.66) <0.001
| Condition                                      | Cases     | %     | Controls | %     | OR (95% CI)  | P-value |
|-----------------------------------------------|-----------|-------|----------|-------|--------------|---------|
| History of Depression                         | 7994      | 25.3% | 394      | 33.0% | 1.45 (1.28-1.64) | <0.001  |
| History of Anxiety                            | 5400      | 17.1% | 154      | 12.9% | 0.72 (0.60-0.85) | <0.001  |
| History of Obstructive Sleep Apnea            | 2839      | 9.0%  | 124      | 10.4% | 1.17 (0.97-1.42) | 0.104   |
| History of Diabetes                           | 8446      | 26.8% | 414      | 34.6% | 1.45 (1.28-1.64) | <0.001  |
| History of Congestive Heart Failure           | 2379      | 7.5%  | 197      | 16.5% | 2.42 (2.07-2.84) | <0.001  |
| History of Peripheral Vascular Disease        | 3314      | 10.5% | 222      | 18.6% | 1.94 (1.67-2.26) | <0.001  |
| History of COPD                               | 5564      | 17.6% | 255      | 21.3% | 1.27 (1.10-1.46) | 0.001   |
| PREOP_METS                                    |           |       |          |       |              |         |
| Excellent                                     | 2297      | 7.3%  | 19       | 1.6%  | 0.8%          | REF     |
| Good                                          | 11874     | 37.6% | 250      | 20.9% | 2.1%          | 2.55 (1.59-4.07) | <0.001  |
| Poor                                          | 2450      | 7.8%  | 225      | 18.8% | 8.4%          | 11.10 (6.93-17.79) | <0.001  |
| Unable to assess                              | 510       | 1.6%  | 56       | 4.7%  | 9.9%          | 13.28 (7.82-22.53) | <0.001  |
| Preoperative ejection fraction (n=4,309 , 339)*|           |       |          |       |              |         |
| Glomerular filtration Rate*                   | 62.6      | 12.60 | 63.6     | 13.90 | 1.01 (1.00-1.02) | 0.161   |
| Premedication with Midazolam                  | 16952     | 53.7% | 357      | 29.9% | 2.1%          | 0.37 (0.32-0.42) | <0.001  |
| Perioperative Precedex Use                    | 623       | 2.0%  | 22       | 1.8%  | 3.4%          | 0.93 (0.61-1.43) | 0.743   |
| Perioperative Ketamine Use                    | 0         | 0.0%  | 0        | 0.0%  | --            | --      |         |
| Postoperative Benzodiazepine use              | 4289      | 13.6% | 467      | 39.1% | 9.8%          | 4.08 (3.61-4.60) | <0.001  |
| Duration MAP<65*                              | 31.5      | 76.90 | 35.7     | 55.0  | 1.00 (1.00-1.01) | 0.111   |
| Duration MAP<55° | 5,5 | 21,0 | 7,8 | 24,0 | | 1.00 (1.00-1.01) | 0,001 |