**ONLINE SUPPLEMENTAL SUBMISSION**

*Staphylococcus aureus* infections after Elective Surgeries in Pediatric Patients

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**Supplement Table 1. Pediatric Patient, Visit, and Hospital Characteristics at the Index Surgical Visit among Patients with MRSA vs. MSSA infections within 180-day Post Surgery**

|  |
| --- |
| ***S. aureus* Infection within 180-Days**  |
|  |   | **Inpatient Surgical Discharges** | **Outpatient Surgical Discharges** |
|  | **MRSA** | **MSSA** | *p-values* | **MRSA** | **MSSA** | *p-values* |
|  |  | (N=81) | (N=132) |  | (N=70) | (N=110) |  |
| **Patient Characteristics** |
| Age (years) | N | 81 |   | 132 |   | 0.8149 | 70 |   | 110 |   | 0.2038 |
|   | Mean-Std Dev | 8.2 | ±6.39 | 7.98 | ±6.45 |   | 7.74 | ±6.31 | 8.97 | ±6.30 |   |
| Gender | Male | 44 | 54.3% | 64 | 48.5% | 0.4082 | 52 | 74.3% | 77 | 70.0% | 0.5339 |
|   | Female | 37 | 45.7% | 68 | 51.5% |   | 18 | 25.7% | 33 | 30.0% |   |
| Race/Ethnicity | White | 58 | 71.6% | 72 | 54.5% | 0.0693 | 44 | 62.9% | 71 | 64.5% | 0.1684 |
|   | African American | 9 | 11.1% | 23 | 17.4% |   | 20 | 28.6% | 20 | 18.2% |   |
|   | Hispanic | 2 | 2.5% | 2 | 1.5% |   | 1 | 1.4% | 1 | 0.9% |   |
|   | Other | 12 | 14.8% | 35 | 26.5% |   | 5 | 7.1% | 18 | 16.4% |   |
| **Feudtner Comorbidities**  |   |   |   |   |   |   |   |   |   |   |   |
| Neurologic and Neuromuscular |   | 28 | 34.6% | 36 | 27.3% | 0.2596 | 2 | 2.9% | 13 | 11.8% | 0.0340 |
| Premature and Neonatal |   | 4 | 4.9% | 10 | 7.6% | 0.4508 | 2 | 2.9% | 3 | 2.7% | 0.9588 |
| Malignancy |   | 8 | 9.9% | 12 | 9.1% | 0.8487 | 0 | 0.0% | 6 | 5.5% | 0.0469 |
| Other Congenial or Genetic Defect |   | 23 | 28.4% | 39 | 29.5% | 0.8576 | 4 | 5.7% | 11 | 10.0% | 0.3105 |
| Metabolic |   | 8 | 9.9% | 13 | 9.8% | 0.9947 | 1 | 1.4% | 9 | 8.2% | 0.0538 |
| Hematologic or immunologic |   | 5 | 6.2% | 9 | 6.8% | 0.8536 | 0 | 0.0% | 5 | 4.5% | 0.0704 |
| Gastrointestinal |   | 27 | 33.3% | 38 | 28.8% | 0.4843 | 3 | 4.3% | 16 | 14.5% | 0.0290 |
| Renal and Urologic |   | 13 | 16.0% | 27 | 20.5% | 0.4242 | 5 | 7.1% | 11 | 10.0% | 0.5114 |
| Respiratory |   | 28 | 34.6% | 39 | 29.5% | 0.4435 | 9 | 12.9% | 21 | 19.1% | 0.2739 |
| Cardiovascular |   | 12 | 14.8% | 29 | 22.0% | 0.1985 | 5 | 7.1% | 16 | 14.5% | 0.1315 |
| Solid Organ/Bone Marrow Transplantation |   | 0 | 0.0% | 3 | 2.3% | 0.1718 | 0 | 0.0% | 0 | 0.0% |   |
| Technology Dependence |   | 41 | 50.6% | 71 | 53.8% | 0.6528 | 7 | 10.0% | 24 | 21.8% | 0.0406 |
| **Visit Characteristics** |
| Admission Source | Home | 80 | 98.8% | 130 | 98.5% | 0.8660 | 70 | 100.0% | 110 | 100.0% |   |
|   | Other | 1 | 1.2% | 2 | 1.5% |   | 0 | 0.0% | 0 | 0.0% |   |
| Discharge Status | Home | 62 | 76.5% | 96 | 72.7% | 0.4125 | 70 | 100.0% | 109 | 99.1% | 0.4237 |
|   | Expired | 0 | 0.0% | 0 | 0.0% |   | 0 | 0.0% | 0 | 0.0% |   |
|   | SNF,ICF or Long Term Care | 0 | 0.0% | 0 | 0.0% |   | 0 | 0.0% | 0 | 0.0% |   |
|   | Transferred | 2 | 2.5% | 1 | 0.8% |   | 0 | 0.0% | 0 | 0.0% |   |
|   | Other | 17 | 21.0% | 35 | 26.5% |   | 0 | 0.0% | 1 | 0.9% |   |
| Primary Payer | Commercial | 25 | 30.9% | 52 | 39.4% | 0.4774 | 25 | 35.7% | 42 | 38.2% | 0.1863 |
|   | Medicare | 2 | 2.5% | 1 | 0.8% |   | 3 | 4.3% | 0 | 0.0% |   |
|   | Medicaid | 50 | 61.7% | 74 | 56.1% |   | 39 | 55.7% | 63 | 57.3% |   |
|   | Other Payor | 4 | 4.9% | 5 | 3.8% |   | 3 | 4.3% | 5 | 4.5% |   |
| **Hospital Characteristics** |
| Population Served | Rural | 1 | 1.2% | 2 | 1.5% | 0.8660 | 7 | 10.0% | 13 | 11.8% | 0.7051 |
|   | Urban | 80 | 98.8% | 130 | 98.5% |   | 63 | 90.0% | 97 | 88.2% |   |
| Teaching Status | Teaching | 70 | 86.4% | 122 | 92.4% | 0.1536 | 52 | 74.3% | 78 | 70.9% | 0.6220 |
|   | Non-Teaching | 11 | 13.6% | 10 | 7.6% |   | 18 | 25.7% | 32 | 29.1% |   |
| Geographic Region | Midwest | 4 | 4.9% | 11 | 8.3% | 0.3932 | 6 | 8.6% | 11 | 10.0% | 0.1865 |
|   | Northeast | 20 | 24.7% | 43 | 32.6% |   | 10 | 14.3% | 10 | 9.1% |   |
|   | South | 55 | 67.9% | 76 | 57.6% |   | 52 | 74.3% | 77 | 70.0% |   |
|   | West | 2 | 2.5% | 2 | 1.5% |   | 2 | 2.9% | 12 | 10.9% |   |
| Hospital Beds | < 100 | 0 | 0.0% | 0 | 0.0% | 0.0301 | 3 | 4.3% | 3 | 2.7% | 0.8668 |
|   | 100-199 | 3 | 3.7% | 1 | 0.8% |   | 5 | 7.1% | 7 | 6.4% |   |
|   | 200-299 | 18 | 22.2% | 18 | 13.6% |   | 11 | 15.7% | 17 | 15.5% |   |
|   | 300-499 | 20 | 24.7% | 55 | 41.7% |   | 11 | 15.7% | 24 | 21.8% |   |
|   | >500 | 40 | 49.4% | 58 | 43.9% |   | 40 | 57.1% | 59 | 53.6% |   |

**Supplement Table 2. Inpatient surgeries performed during elective admissions and incident 180-Day *S. aureus* infections - Premier Healthcare Database (PHD, 2010-2015) and estimated U.S. national volumes from National Inpatient Survey (NIS, 2014)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Surgery** | **PHD - Surgical Discharges****2010-2015** | **PHD - *S. aureus* Infections****2010-2015** | ***S. aureus* Infection 180-day Incidence** |  | **Estimated US Surgical Discharges (NIS 2014)** | **% Elective (PHD)** | **Estimated US Elective Discharges****(2014)** | **Estimated US *S. aureus* Infections****(2014)** |
| **Inpatient Surgery** | **N** | **N** | **%** | **N** | **%** | **N** | **N** |
| **# Unique Discharges** | 11874 | 213 | 1.79% | 517005 | 40.42% | 208960 | 3,946 |
| Abdominal Aortic Aneurysm Repair  | 6 | 0 | 0.00% | 1260 | 41.75% | 526 | 0 |
| Abdominal hysterectomy | 1 | 0 | 0.00% | 80 | 66.25% | 53 | 0 |
| Adrenal | 15 | 1 | 6.67% | 585 | 59.49% | 348 | 23 |
| Appendix Surgery  | 329 | 0 | 0.00% | 54485 | 7.50% | 4085 | 0 |
| Arthroplasty, other joint  | 1 | 0 | 0.00% | 0 | 0.00% | NA | NA |
| Bile duct, liver or pancreatic surgery  | 21 | 0 | 0.00% | 1310 | 39.24% | 514 | 0 |
| Bladder | 121 | 3 | 2.48% | 3550 | 56.96% | 2022 | 50 |
| Blood Vessel  | 44 | 1 | 2.27% | 20385 | 41.32% | 8423 | 191 |
| Breast Surgery  | 15 | 0 | 0.00% | 195 | 53.33% | 104 | 0 |
| Bunion | 3 | 0 | 0.00% | 210 | 82.38% | 173 | 0 |
| Cardiac Surgery  | 169 | 1 | 0.59% | 24380 | 73.28% | 17865 | 106 |
| Cesarean section | 1225 | 15 | 1.22% | 13040 | 48.63% | 6341 | 78 |
| Colon surgery  | 288 | 10 | 3.47% | 9080 | 35.86% | 3256 | 113 |
| Craniotomy | 250 | 7 | 2.80% | 16645 | 51.74% | 8612 | 241 |
| Ear Operations | 58 | 1 | 1.72% | 3515 | 26.91% | 946 | 16 |
| Esophagus  | 9 | 0 | 0.00% | 980 | 30.92% | 303 | 0 |
| Exploratory laparotomy  | 102 | 2 | 1.96% | 20750 | 21.14% | 4387 | 86 |
| Eyelid/conjunctiva  | 5 | 0 | 0.00% | 2625 | 16.27% | 427 | 0 |
| Facial bone/mandible | 195 | 1 | 0.51% | 9185 | 68.13% | 6258 | 32 |
| Fusion, other joint | 27 | 0 | 0.00% | 800 | 86.63% | 693 | 0 |
| Gallbladder surgery  | 178 | 1 | 0.56% | 5770 | 23.85% | 1376 | 8 |
| Gastric Surgery  | 110 | 1 | 0.91% | 2740 | 47.99% | 1315 | 12 |
| Herniorrhaphy  | 140 | 1 | 0.71% | 4615 | 25.27% | 1166 | 8 |
| Hip prosthesis - Primary | 54 | 0 | 0.00% | 335 | 79.40% | 266 | 0 |
| Hip prosthesis-Revision | 7 | 0 | 0.00% | NA | NA | NA | NA |
| Kidney surgery | 370 | 2 | 0.54% | 4790 | 75.11% | 3598 | 19 |
| Kidney transplant  | 10 | 0 | 0.00% | 735 | 32.11% | 236 | 0 |
| Knee prosthesis | 2 | 0 | 0.00% | 110 | 100.00% | 110 | 0 |
| Knee prosthesis-Revision  | 1 | 0 | 0.00% | 105 | 100.00% | 105 | 0 |
| Laminectomy  | 93 | 1 | 1.08% | 4900 | 76.08% | 3728 | 40 |
| Limb Amputation  | 18 | 0 | 0.00% | 1390 | 14.60% | 203 | 0 |
| Lymph node  | 25 | 0 | 0.00% | 1975 | 46.28% | 914 | 0 |
| Mouth/pharynx  | 64 | 1 | 1.56% | 1320 | 62.20% | 821 | 13 |
| Multiple body systems  | 1505 | 33 | 2.19% | NA | NA | NA | NA |
| Neck minor  | 145 | 8 | 5.52% | 4525 | 50.45% | 2283 | 126 |
| Neck surgery | 22 | 0 | 0.00% | NA | NA | NA | NA |
| Nose  | 36 | 0 | 0.00% | 2495 | 65.09% | 1624 | 0 |
| Not stand-alone procedure | 177 | 7 | 3.95% | 52445 | 34.41% | 18047 | 714 |
| Open Reduction of Fracture | 394 | 5 | 1.27% | 32455 | 9.92% | 3219 | 41 |
| Osteotomy  | 1381 | 21 | 1.52% | 53905 | 67.38% | 36323 | 552 |
| Other vascular bypass  | 8 | 0 | 0.00% | 1615 | 78.33% | 1265 | 0 |
| Ovarian surgery  | 134 | 0 | 0.00% | 3635 | 28.36% | 1031 | 0 |
| Ovary/fallopian tube/cervix  | 30 | 2 | 6.67% | 600 | 31.83% | 191 | 13 |
| Pacemaker Surgery  | 14 | 0 | 0.00% | 2560 | 54.88% | 1405 | 0 |
| Penis  | 20 | 2 | 10.00% | 1660 | 26.87% | 446 | 45 |
| Peripheral vascular bypass surgery  | 1 | 1 | 100.00% | NA | NA | NA | NA |
| Peripheral/cranial nerve | 16 | 0 | 0.00% | 2760 | 45.80% | 1264 | 0 |
| Plastic/flap | 28 | 1 | 3.57% | 2495 | 48.14% | 1201 | 43 |
| Plastic/hand  | 11 | 0 | 0.00% | 1425 | 15.23% | 217 | 0 |
| Plastic/hand-limb reattachment  | 6 | 0 | 0.00% | 260 | 22.69% | 59 | 0 |
| Plastic/other site (non-hand)  | 272 | 7 | 2.57% | 19715 | 46.87% | 9241 | 238 |
| Plastic/skin graft | 135 | 1 | 0.74% | 14175 | 25.44% | 3606 | 27 |
| Prostate/testis  | 87 | 2 | 2.30% | 3480 | 27.84% | 969 | 22 |
| Rectal surgery | 217 | 1 | 0.46% | 2105 | 53.68% | 1130 | 5 |
| Shunt  | 9 | 0 | 0.00% | 435 | 52.41% | 228 | 0 |
| Shunt for dialysis | 1 | 0 | 0.00% | NA | NA | NA | NA |
| Skull  | 298 | 8 | 2.68% | 8920 | 66.93% | 5970 | 160 |
| Small bowel surgery  | 133 | 1 | 0.75% | 14550 | 18.93% | 2755 | 21 |
| Spinal fusion - Primary | 566 | 17 | 3.00% | 13130 | 84.31% | 11070 | 332 |
| Spinal fusion - Refusion | 16 | 0 | 0.00% | 465 | 90.11% | 419 | 0 |
| Spine  | 293 | 7 | 2.39% | 9205 | 70.74% | 6512 | 156 |
| Spleen Surgery  | 87 | 2 | 2.30% | 1080 | 43.24% | 467 | 11 |
| Stomach/intestines  | 477 | 8 | 1.68% | 14015 | 23.86% | 3344 | 56 |
| Thoracic surgery  | 324 | 8 | 2.47% | 550 | 36.00% | 198 | 5 |
| Thymus  | 12 | 0 | 0.00% | 790 | 61.14% | 483 | 0 |
| Thyroid and/or parathyroid surgery  | 60 | 1 | 1.67% | 1250 | 64.00% | 800 | 13 |
| Ureter/urethra | 473 | 3 | 0.63% | 7170 | 76.22% | 5465 | 35 |
| uterus | 8 | 0 | 0.00% | 470 | 34.47% | 162 | 0 |
| Vagina  | 4 | 0 | 0.00% | NA | NA | NA | NA |
| Varicose veins  | 1 | 0 | 0.00% | NA | NA | NA | NA |
| Vascular  | 168 | 7 | 4.17% | 7670 | 39.04% | 2994 | 125 |
| Ventricular shunt  | 333 | 11 | 3.30% | 21360 | 24.17% | 5162 | 171 |
| Vulva/perineum | 16 | 0 | 0.00% | 1790 | 13.02% | 233 | 0 |

**Supplemental Table 3: 180-day *S. aureus* incidence among outpatient surgeries – Premier Healthcare Database microbiology reporting hospitals, July 1, 2010-June 30, 2015\***

|  |  |  |  |
| --- | --- | --- | --- |
| **Outpatient Surgery** | **Surgical Discharges (N)** | ***S. aureus* Infections (N)** | ***S. aureus* 180-Day Incidence (%)** |
| **Total discharges** | 50698 | 180 | 0.36% |
| Abdominal aortic aneurysm repair | NA | NA | NA |
| Abdominal hysterectomy | 3 | 0 | 0.00% |
| Adrenal | 1 | 0 | 0.00% |
| Appendix  | 413 | 0 | 0.00% |
| Arthroplasty, other joint | 1 | 0 | 0.00% |
| Bile duct, liver or pancreatic  | 9 | 0 | 0.00% |
| Bladder | 50 | 0 | 0.00% |
| Blood Vessel | 26 | 1 | 3.85% |
| Breast  | 1007 | 1 | 0.10% |
| Bunion | 473 | 3 | 0.63% |
| Cardiac  | 8 | 0 | 0.00% |
| Cesarean section | NA | NA | NA |
| Circ assist device  | 1 | 0 | 0.00% |
| Colon  | 19 | 0 | 0.00% |
| Craniotomy | 11 | 0 | 0.00% |
| Ear | 2292 | 9 | 0.39% |
| Endarterectomy | 2 | 0 | 0.00% |
| Esophagus  | 2 | 0 | 0.00% |
| Exploratory laparotomy  | 267 | 5 | 1.87% |
| Eyelid/conjunctiva  | 1309 | 2 | 0.15% |
| Facial bone/mandible  | 386 | 0 | 0.00% |
| Fusion, other joint | 150 | 0 | 0.00% |
| Gallbladder  | 1454 | 2 | 0.14% |
| Gastric  | 160 | 4 | 2.50% |
| Herniorrhaphy  | 5038 | 13 | 0.26% |
| Hip prosthesis | 1 | 0 | 0.00% |
| Hip prosthesis-Revision | NA | NA | NA |
| Kidney surgery  | 15 | 0 | 0.00% |
| Kidney transplant  | NA | NA | NA |
| Knee prosthesis  | 1 | 0 | 0.00% |
| Knee prosthesis-Revision  | NA | NA | NA |
| Laminectomy  | 111 | 0 | 0.00% |
| Limb Amputation  | 145 | 1 | 0.69% |
| Lymph node  | 329 | 4 | 1.22% |
| Mouth/pharynx  | 419 | 1 | 0.24% |
| Multiple body systems | 1712 | 5 | 0.29% |
| Neck minor  | 257 | 0 | 0.00% |
| Neck other | 191 | 0 | 0.00% |
| Nose | 574 | 2 | 0.35% |
| Open Reduction of Fracture  | 5911 | 17 | 0.29% |
| Osteotomy | 11434 | 33 | 0.29% |
| Other/unclassified procedures | 645 | 10 | 1.55% |
| Other vascular bypass  | NA | NA | NA |
| Ovarian surgery  | 521 | 1 | 0.19% |
| Ovary/fallopian tube/cervix  | 6 | 0 | 0.00% |
| Pacemaker Surgery  | 26 | 0 | 0.00% |
| PAD Repair  | 1 | 0 | 0.00% |
| Penis | 3490 | 9 | 0.26% |
| Peripheral vascular bypass  | NA | NA | NA |
| Peripheral/cranial nerve | 224 | 2 | 0.89% |
| Plastic/flap | 386 | 4 | 1.04% |
| Plastic/hand | 1328 | 4 | 0.30% |
| Plastic/hand-limb reattachment | 4 | 0 | 0.00% |
| Plastic/other site (non-hand)  | 1648 | 6 | 0.36% |
| Plastic/skin graft  | 1880 | 8 | 0.43% |
| Prostate surgery  | 134 | 1 | 0.75% |
| Prostate/testis  | 3466 | 16 | 0.46% |
| Rectal surgery  | 101 | 0 | 0.00% |
| Shunt- other | 1 | 0 | 0.00% |
| Shunt for dialysis  | 20 | 1 | 5.00% |
| Skull | 19 | 0 | 0.00% |
| Small bowel surgery | 21 | 0 | 0.00% |
| Spinal fusion – Primary | 9 | 0 | 0.00% |
| Spinal fusion – Refusion | NA | NA | NA |
| Spine | 73 | 2 | 2.74% |
| Spleen  | 17 | 0 | 0.00% |
| Stomach/intestines | 13 | 0 | 0.00% |
| Thoracic  | 44 | 1 | 2.27% |
| Thymus  | NA | NA | NA |
| Thyroid and/or parathyroid  | 291 | 1 | 0.34% |
| Ureter/urethra  | 1714 | 6 | 0.35% |
| Uterus | 7 | 0 | 0.00% |
| Vagina | 1 | 0 | 0.00% |
| Vaginal support procedure  | 4 | 0 | 0.00% |
| Varicose veins | 7 | 0 | 0.00% |
| Vascular | 173 | 4 | 2.31% |
| Ventricular shunt | 38 | 1 | 2.63% |
| Vulva/perineum  | 204 | 0 | 0.00% |

**Supplemental Table 4: Number and percent of inpatient surgical discharges, number of *S. aureus* infections, and percent incidence at 180-days by age group - Premier Healthcare Database July 1, 2010-June 30, 2015**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Surgical Discharges** | ***S. aureus* Infections** | ***S. aureus* 180-day Incidence** | **Surgical** **Discharges** | ***S. aureus* Infections** | ***S. aureus*** **180-day Incidence** | **Surgical Discharges** | ***S. aureus* Infections** | ***S. aureus* 180-day Incidence** |
|  | **< 2 years** | **2-9 years** | **10-17 years** |
| **Inpatient Surgery** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** |
| *# Unique Discharges* | 2279 | 100.00 | 63 | 2.76 | 2939 | 100.00 | 51 | 1.74 | 6656 | 100.00 | 99 | 1.49 |
| Abdominal Aortic Aneurysm Repair | 3 | 0.13 | 0 | 0.00 | 3 | 0.10 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Abdominal hysterectomy | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.02 | 0 | 0.00 |
| Adrenal | 3 | 0.13 | 0 | 0.00 | 8 | 0.27 | 1 | 12.50 | 4 | 0.06 | 0 | 0.00 |
| Appendix Surgery | 3 | 0.13 | 0 | 0.00 | 105 | 3.57 | 0 | 0.00 | 221 | 3.32 | 0 | 0.00 |
| Arthroplasty, other joint | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.02 | 0 | 0.00 |
| Bile duct, liver or pancreatic surgery | 5 | 0.22 | 0 | 0.00 | 7 | 0.24 | 0 | 0.00 | 9 | 0.14 | 0 | 0.00 |
| Bladder | 35 | 1.54 | 1 | 2.86 | 51 | 1.74 | 1 | 1.96 | 35 | 0.53 | 1 | 2.86 |
| Blood Vessel | 23 | 1.01 | 1 | 4.35 | 11 | 0.37 | 0 | 0.00 | 10 | 0.15 | 0 | 0.00 |
| Breast Surgery | 0 | 0.00 | 0 | 0.00 | 1 | 0.03 | 0 | 0.00 | 14 | 0.21 | 0 | 0.00 |
| Bunion | 0 | 0.00 | 0 | 0.00 | 1 | 0.03 | 0 | 0.00 | 2 | 0.03 | 0 | 0.00 |
| Cardiac Surgery | 71 | 3.12 | 1 | 1.41 | 70 | 2.38 | 0 | 0.00 | 28 | 0.42 | 0 | 0.00 |
| Cesarean section | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1225 | 18.40 | 15 | 1.22 |
| Colon surgery | 126 | 5.53 | 5 | 3.97 | 57 | 1.94 | 2 | 3.51 | 105 | 1.58 | 3 | 2.86 |
| Craniotomy | 40 | 1.76 | 3 | 7.50 | 69 | 2.35 | 1 | 1.45 | 141 | 2.12 | 3 | 2.13 |
| Ear Operations | 10 | 0.44 | 1 | 10.00 | 29 | 0.99 | 0 | 0.00 | 19 | 0.29 | 0 | 0.00 |
| Esophagus | 1 | 0.04 | 0 | 0.00 | 6 | 0.20 | 0 | 0.00 | 2 | 0.03 | 0 | 0.00 |
| Exploratory laparotomy | 23 | 1.01 | 1 | 4.35 | 29 | 0.99 | 0 | 0.00 | 50 | 0.75 | 1 | 2.00 |
| Eyelid/conjunctiva | 1 | 0.04 | 0 | 0.00 | 1 | 0.03 | 0 | 0.00 | 3 | 0.05 | 0 | 0.00 |
| Facial bone/mandible | 6 | 0.26 | 1 | 16.67 | 14 | 0.48 | 0 | 0.00 | 175 | 2.63 | 0 | 0.00 |
| Fusion, other joint | 0 | 0.00 | 0 | 0.00 | 8 | 0.27 | 0 | 0.00 | 19 | 0.29 | 0 | 0.00 |
| Gallbladder surgery | 5 | 0.22 | 0 | 0.00 | 17 | 0.58 | 0 | 0.00 | 156 | 2.34 | 1 | 0.64 |
| Gastric Surgery | 24 | 1.05 | 0 | 0.00 | 36 | 1.22 | 1 | 2.78 | 50 | 0.75 | 0 | 0.00 |
| Herniorrhaphy | 124 | 5.44 | 1 | 0.81 | 8 | 0.27 | 0 | 0.00 | 8 | 0.12 | 0 | 0.00 |
| Hip prosthesis | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 54 | 0.81 | 0 | 0.00 |
| Hip prosthesis-Revision | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 7 | 0.11 | 0 | 0.00 |
| Kidney surgery | 133 | 5.84 | 1 | 0.75 | 134 | 4.56 | 0 | 0.00 | 103 | 1.55 | 1 | 0.97 |
| Kidney transplant | 0 | 0.00 | 0 | 0.00 | 2 | 0.07 | 0 | 0.00 | 8 | 0.12 | 0 | 0.00 |
| Knee prosthesis | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 2 | 0.03 | 0 | 0.00 |
| Knee prosthesis-Revision | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.02 | 0 | 0.00 |
| Laminectomy | 13 | 0.57 | 1 | 7.69 | 23 | 0.78 | 0 | 0.00 | 57 | 0.86 | 0 | 0.00 |
| Limb Amputation | 5 | 0.22 | 0 | 0.00 | 5 | 0.17 | 0 | 0.00 | 8 | 0.12 | 0 | 0.00 |
| Lymph node | 5 | 0.22 | 0 | 0.00 | 11 | 0.37 | 0 | 0.00 | 9 | 0.14 | 0 | 0.00 |
| Mouth/pharynx | 4 | 0.18 | 1 | 25.00 | 35 | 1.19 | 0 | 0.00 | 25 | 0.38 | 0 | 0.00 |
| Multiple body systems | 175 | 7.68 | 11 | 6.29 | 473 | 16.09 | 7 | 1.48 | 857 | 12.88 | 15 | 1.75 |
| Neck minor | 71 | 3.12 | 5 | 7.04 | 50 | 1.70 | 0 | 0.00 | 24 | 0.36 | 3 | 12.50 |
| Neck surgery | 8 | 0.35 | 0 | 0.00 | 9 | 0.31 | 0 | 0.00 | 5 | 0.08 | 0 | 0.00 |
| Nose | 23 | 1.01 | 0 | 0.00 | 10 | 0.34 | 0 | 0.00 | 3 | 0.05 | 0 | 0.00 |
| Open Reduction of Fracture | 13 | 0.57 | 1 | 7.69 | 101 | 3.44 | 0 | 0.00 | 280 | 4.21 | 4 | 1.43 |
| Osteotomy  | 32 | 1.40 | 1 | 3.13 | 424 | 14.03 | 6 | 1.42 | 925 | 13.90 | 14 | 1.51 |
| Other unclassified procedures | 45 | 1.97 | 2 | 4.44 | 73 | 2.48 | 2 | 2.74 | 59 | 0.89 | 3 | 5.08 |
| Other vascular bypass | 7 | 0.31 | 0 | 0.00 | 1 | 0.03 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Ovarian surgery | 9 | 0.39 | 0 | 0.00 | 7 | 0.24 | 0 | 0.00 | 118 | 1.77 | 0 | 0.00 |
| Ovary/fallopian tube/cervix | 2 | 0.09 | 0 | 0.00 | 1 | 0.03 | 0 | 0.00 | 27 | 0.41 | 2 | 7.41 |
| Pacemaker Surgery | 4 | 0.18 | 0 | 0.00 | 4 | 0.14 | 0 | 0.00 | 6 | 0.09 | 0 | 0.00 |
| Penis | 14 | 0.61 | 2 | 14.29 | 4 | 0.14 | 0 | 0.00 | 2 | 0.03 | 0 | 0.00 |
| Peripheral vascular bypass surgery | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.02 | 1 | 100.00 |
| Peripheral/cranial nerve | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 16 | 0.24 | 0 | 0.00 |
| Plastic/flap | 3 | 0.13 | 0 | 0.00 | 6 | 0.20 | 0 | 0.00 | 19 | 0.29 | 1 | 5.26 |
| Plastic/hand | 0 | 0.00 | 0 | 0.00 | 6 | 0.20 | 0 | 0.00 | 5 | 0.08 | 0 | 0.00 |
| Plastic/hand-limb reattachment | 0 | 0.00 | 0 | 0.00 | 1 | 0.03 | 0 | 0.00 | 5 | 0.08 | 0 | 0.00 |
| Plastic/other site (non-hand) | 52 | 2.28 | 1 | 1.92 | 101 | 3.44 | 5 | 4.95 | 119 | 1.79 | 1 | 0.84 |
| Plastic/skin graft | 23 | 1.01 | 0 | 0.00 | 40 | 1.36 | 0 | 0.00 | 72 | 1.08 | 1 | 1.39 |
| Prostate/testis | 48 | 2.11 | 2 | 4.17 | 24 | 0.82 | 0 | 0.00 | 15 | 0.23 | 0 | 0.00 |
| Rectal surgery | 50 | 2.19 | 1 | 2.00 | 10 | 0.34 | 0 | 0.00 | 157 | 2.36 | 0 | 0.00 |
| Shunt | 0 | 0.00 | 0 | 0.00 | 2 | 0.07 | 0 | 0.00 | 7 | 0.11 | 0 | 0.00 |
| Shunt for dialysis | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.02 | 0 | 0.00 |
| Skull | 174 | 7.63 | 4 | 2.30 | 60 | 2.04 | 4 | 6.67 | 64 | 0.96 | 0 | 0.00 |
| Small bowel surgery | 53 | 2.33 | 0 | 0.00 | 33 | 1.12 | 0 | 0.00 | 47 | 0.71 | 1 | 2.13 |
| Spinal fusion - Primary | 2 | 0.09 | 0 | 0.00 | 24 | 0.82 | 4 | 16.67 | 540 | 8.11 | 13 | 2.41 |
| Spinal fusion - Refusion | 0 | 0.00 | 0 | 0.00 | 4 | 0.14 | 0 | 0.00 | 12 | 0.18 | 0 | 0.00 |
| Spine - other | 143 | 6.27 | 1 | 0.70 | 79 | 2.69 | 4 | 5.06 | 71 | 1.07 | 2 | 2.82 |
| Spleen Surgery | 1 | 0.04 | 0 | 0.00 | 52 | 1.77 | 0 | 0.00 | 34 | 0.51 | 2 | 5.88 |
| Stomach/intestines | 291 | 12.77 | 6 | 2.06 | 109 | 3.71 | 1 | 0.92 | 77 | 1.16 | 1 | 1.30 |
| Thoracic surgery | 71 | 3.12 | 1 | 1.41 | 43 | 1.46 | 3 | 6.98 | 210 | 3.16 | 4 | 1.90 |
| Thymus | 1 | 0.04 | 0 | 0.00 | 3 | 0.10 | 0 | 0.00 | 8 | 0.12 | 0 | 0.00 |
| Thyroid and/or parathyroid surgery | 2 | 0.09 | 0 | 0.00 | 18 | 0.61 | 0 | 0.00 | 40 | 0.60 | 1 | 2.50 |
| Ureter/urethra | 129 | 5.66 | 1 | 0.78 | 258 | 8.78 | 1 | 0.39 | 86 | 1.29 | 1 | 1.16 |
| Uterus | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 8 | 0.12 | 0 | 0.00 |
| Vagina | 2 | 0.09 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 2 | 0.03 | 0 | 0.00 |
| Varicose veins | 0 | 0.00 | 0 | 0.00 | 1 | 0.03 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Vascular | 13 | 0.57 | 3 | 23.08 | 70 | 2.38 | 3 | 4.29 | 85 | 1.28 | 1 | 1.18 |
| Ventricular shunt | 151 | 6.63 | 3 | 1.99 | 92 | 3.13 | 5 | 5.43 | 90 | 1.35 | 3 | 3.33 |
| Vulva/perineum | 4 | 0.18 | 0 | 0.00 | 5 | 0.17 | 0 | 0.00 | 7 | 0.11 | 0 | 0.00 |

**Supplemental Table 5. Number and percent of outpatient surgical discharges, number of *S. aureus* infections, and percent incidence at 180-days by age group - Premier Healthcare Database July 1, 2010-June 30, 2015**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Surgical Discharges** | ***S. aureus* Infections** | ***S. aureus* 180-day Incidence** | **Surgical** **Discharges** | ***S. aureus* Infections** | ***S. aureus*** **180-day Incidence** | **Surgical Discharges** | **S. aureus Infections** | **S. aureus 180-day Incidence** |
|  | **< 2 years** | **2-9 years** | **10-17 years** |
| **Outpatient Surgery** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** |
| *# Unique Discharges* | 7377 | 100.00 | 42 | 0.57 | 13807 | 100.00 | 50 | 0.36 | 29514 | 100.00 | 88 | 0.30 |
| Abdominal hysterectomy | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 3 | 0.01 | 0 | 0.00 |
| Adrenal | 0 | 0.00 | 0 | 0.00 | 1 | 0.01 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Appendix Surgery | 3 | 0.04 | 0 | 0.00 | 64 | 0.46 | 0 | 0.00 | 346 | 1.17 | 0 | 0.00 |
| Arthroplasty, other joint | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.00 | 0 | 0.00 |
| Bile duct, liver or pancreatic surgery | 2 | 0.03 | 0 | 0.00 | 1 | 0.01 | 0 | 0.00 | 6 | 0.02 | 0 | 0.00 |
| Bladder | 15 | 0.20 | 0 | 0.00 | 22 | 0.16 | 0 | 0.00 | 13 | 0.04 | 0 | 0.00 |
| Blood Vessel | 6 | 0.08 | 0 | 0.00 | 11 | 0.08 | 1 | 9.09 | 9 | 0.03 | 0 | 0.00 |
| Breast Surgery | 5 | 0.07 | 0 | 0.00 | 9 | 0.07 | 0 | 0.00 | 993 | 3.36 | 1 | 0.10 |
| Bunion | 0 | 0.00 | 0 | 0.00 | 14 | 0.10 | 0 | 0.00 | 459 | 1.56 | 3 | 0.65 |
| Cardiac Surgery | 1 | 0.01 | 0 | 0.00 | 3 | 0.02 | 0 | 0.00 | 4 | 0.01 | 0 | 0.00 |
| Circ assist device | 0 | 0.00 | 0 | 0.00 | 1 | 0.01 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Colon surgery | 1 | 0.01 | 0 | 0.00 | 11 | 0.08 | 0 | 0.00 | 7 | 0.02 | 0 | 0.00 |
| Craniotomy | 2 | 0.03 | 0 | 0.00 | 3 | 0.02 | 0 | 0.00 | 6 | 0.02 | 0 | 0.00 |
| Ear Operations | 266 | 3.61 | 1 | 0.38 | 1045 | 7.57 | 4 | 0.38 | 981 | 3.32 | 4 | 0.41 |
| Endarterectomy | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 2 | 0.01 | 0 | 0.00 |
| Esophagus | 0 | 0.00 | 0 | 0.00 | 1 | 0.01 | 0 | 0.00 | 1 | 0.00 | 0 | 0.00 |
| Exploratory laparotomy | 64 | 0.87 | 2 | 3.13 | 85 | 0.62 | 1 | 1.18 | 118 | 0.40 | 2 | 1.69 |
| Eyelid/conjunctiva | 198 | 2.68 | 0 | 0.00 | 719 | 5.21 | 1 | 0.14 | 392 | 1.33 | 1 | 0.26 |
| Facial bone/mandible | 5 | 0.07 | 0 | 0.00 | 47 | 0.34 | 0 | 0.00 | 334 | 1.13 | 0 | 0.00 |
| Fusion, other joint | 0 | 0.00 | 0 | 0.00 | 22 | 0.16 | 0 | 0.00 | 128 | 0.43 | 0 | 0.00 |
| Gallbladder surgery | 2 | 0.03 | 0 | 0.00 | 39 | 0.28 | 0 | 0.00 | 1413 | 4.79 | 2 | 0.14 |
| Gastric Surgery | 56 | 0.76 | 4 | 7.14 | 83 | 0.60 | 0 | 0.00 | 21 | 0.07 | 0 | 0.00 |
| Herniorrhaphy | 1314 | 17.81 | 7 | 0.53 | 2726 | 19.74 | 5 | 0.18 | 998 | 3.38 | 1 | 0.10 |
| Hip prosthesis | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.00 | 0 | 0.00 |
| Kidney surgery | 6 | 0.08 | 0 | 0.00 | 2 | 0.01 | 0 | 0.00 | 7 | 0.02 | 0 | 0.00 |
| Knee prosthesis | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.00 | 0 | 0.00 |
| Laminectomy | 7 | 0.09 | 0 | 0.00 | 21 | 0.15 | 0 | 0.00 | 83 | 0.28 | 0 | 0.00 |
| Limb Amputation | 74 | 1.00 | 1 | 1.35 | 39 | 0.28 | 0 | 0.00 | 32 | 0.11 | 0 | 0.00 |
| Lymph node | 38 | 0.52 | 0 | 0.00 | 140 | 1.01 | 1 | 0.71 | 151 | 0.51 | 3 | 1.99 |
| Mouth/pharynx | 101 | 1.37 | 0 | 0.00 | 176 | 1.27 | 0 | 0.00 | 142 | 0.48 | 1 | 0.70 |
| Multiple body systems | 154 | 2.09 | 2 | 1.30 | 298 | 2.16 | 1 | 0.34 | 1260 | 4.27 | 2 | 0.16 |
| Neck minor | 55 | 0.75 | 0 | 0.00 | 143 | 1.04 | 0 | 0.00 | 59 | 0.20 | 0 | 0.00 |
| Neck surgery | 62 | 0.84 | 0 | 0.00 | 105 | 0.76 | 0 | 0.00 | 24 | 0.08 | 0 | 0.00 |
| Nose | 25 | 0.34 | 0 | 0.00 | 125 | 0.91 | 0 | 0.00 | 424 | 1.44 | 2 | 0.47 |
| Open Reduction of Fracture | 29 | 0.39 | 0 | 0.00 | 1102 | 7.98 | 4 | 0.36 | 4780 | 16.20 | 13 | 0.27 |
| Osteotomy  | 69 | 0.94 | 1 | 1.45 | 1012 | 7.33 | 5 | 0.49 | 10353 | 35.08 | 27 | 0.26 |
| Other/unclassified procedures | 106 | 1.44 | 1 | 0.94 | 236 | 1.71 | 6 | 2.54 | 303 | 1.03 | 3 | 0.99 |
| Ovarian surgery | 6 | 0.08 | 0 | 0.00 | 13 | 0.09 | 0 | 0.00 | 502 | 1.70 | 1 | 0.20 |
| Ovary/fallopian tube/cervix | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 6 | 0.02 | 0 | 0.00 |
| PAD Repair | 0 | 0.00 | 0 | 0.00 | 1 | 0.01 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Pacemaker Surgery | 0 | 0.00 | 0 | 0.00 | 4 | 0.03 | 0 | 0.00 | 22 | 0.07 | 0 | 0.00 |
| Penis | 2150 | 29.14 | 6 | 0.28 | 1027 | 7.44 | 2 | 0.19 | 313 | 1.06 | 1 | 0.32 |
| Peripheral/cranial nerve | 2 | 0.03 | 0 | 0.00 | 15 | 0.11 | 1 | 6.67 | 207 | 0.70 | 1 | 0.48 |
| Plastic/flap | 42 | 0.57 | 0 | 0.00 | 130 | 0.94 | 2 | 1.54 | 214 | 0.73 | 2 | 0.93 |
| Plastic/hand | 100 | 1.36 | 0 | 0.00 | 408 | 2.96 | 2 | 0.49 | 820 | 2.78 | 2 | 0.24 |
| Plastic/hand-limb reattachment | 1 | 0.01 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 3 | 0.01 | 0 | 0.00 |
| Plastic/other site (non-hand) | 262 | 3.55 | 1 | 0.38 | 543 | 3.93 | 2 | 0.37 | 843 | 2.86 | 3 | 0.36 |
| Plastic/skin graft | 149 | 2.02 | 2 | 1.34 | 753 | 5.45 | 1 | 0.13 | 978 | 3.31 | 5 | 0.51 |
| Prostate surgery | 64 | 0.87 | 0 | 0.00 | 45 | 0.33 | 1 | 2.22 | 25 | 0.08 | 0 | 0.00 |
| Prostate/testis | 1126 | 15.26 | 10 | 0.89 | 1448 | 10.49 | 5 | 0.35 | 892 | 3.02 | 1 | 0.11 |
| Rectal surgery | 43 | 0.58 | 0 | 0.00 | 46 | 0.33 | 0 | 0.00 | 12 | 0.04 | 0 | 0.00 |
| Shunt | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.00 | 0 | 0.00 |
| Shunt for dialysis | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 20 | 0.07 | 1 | 5.00 |
| Skull | 4 | 0.05 | 0 | 0.00 | 3 | 0.02 | 0 | 0.00 | 12 | 0.04 | 0 | 0.00 |
| Small bowel surgery | 2 | 0.03 | 0 | 0.00 | 9 | 0.07 | 0 | 0.00 | 10 | 0.03 | 0 | 0.00 |
| Spinal fusion - Primary | 0 | 0.00 | 0 | 0.00 | 1 | 0.01 | 0 | 0.00 | 8 | 0.03 | 0 | 0.00 |
| Spine - other | 0 | 0.00 | 0 | 0.00 | 22 | 0.16 | 2 | 9.09 | 51 | 0.17 | 0 | 0.00 |
| Spleen Surgery | 4 | 0.05 | 0 | 0.00 | 6 | 0.04 | 0 | 0.00 | 7 | 0.02 | 0 | 0.00 |
| Stomach/intestines | 5 | 0.07 | 0 | 0.00 | 5 | 0.04 | 0 | 0.00 | 3 | 0.01 | 0 | 0.00 |
| Thoracic surgery | 3 | 0.04 | 0 | 0.00 | 4 | 0.03 | 0 | 0.00 | 37 | 0.13 | 1 | 2.70 |
| Thyroid and/or parathyroid surgery | 23 | 0.31 | 0 | 0.00 | 136 | 0.99 | 0 | 0.00 | 132 | 0.45 | 1 | 0.76 |
| Ureter/urethra | 666 | 9.03 | 3 | 0.45 | 748 | 5.42 | 1 | 0.13 | 300 | 1.02 | 2 | 0.67 |
| Uterus | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 7 | 0.02 | 0 | 0.00 |
| Vagina | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.00 | 0 | 0.00 |
| Vaginal support procedure | 0 | 0.00 | 0 | 0.00 | 2 | 0.01 | 0 | 0.00 | 2 | 0.01 | 0 | 0.00 |
| Varicose veins | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 7 | 0.02 | 0 | 0.00 |
| Vascular | 20 | 0.27 | 1 | 5.00 | 66 | 0.48 | 2 | 3.03 | 87 | 0.29 | 1 | 1.15 |
| Ventricular shunt | 10 | 0.14 | 0 | 0.00 | 9 | 0.07 | 0 | 0.00 | 19 | 0.06 | 1 | 5.26 |
| Vulva/perineum | 29 | 0.39 | 0 | 0.00 | 57 | 0.41 | 0 | 0.00 | 118 | 0.40 | 0 | 0.00 |