**Detailed Methods**

After identifying mastectomy procedures during an inpatient hospitalization or as an outpatient in a hospital or ambulatory surgical center based on CPT and/or ICD-9-CM procedure codes, we implemented further measures to ensure that procedures were performed and to avoid overcounting procedures. We grouped mastectomy procedures coded in a 7-day window as a single procedure. For mastectomy procedures without matching surgery dates on both provider (i.e., surgeon) and facility claims, Uniform Billing revenue codes for operating room services, pathology, breast reconstruction, and/or anesthesiology claims were used to identify the most likely surgery date (Appendix Table 1). We excluded procedures coded only by a provider in an outpatient surgery encounter, unless a facility claim was present with within +/- 1 day of the provider surgery date with additional evidence to verify the mastectomy (e.g., lack of coding for breast conserving surgery, operating room revenue codes).

Comorbidities were identified in the year before surgery, requiring coding in ≥ 1 inpatient facility hospitalization (including the mastectomy admission) and/or ≥ 2 provider or outpatient facility (excluding diagnostic) claims spaced at least 30 days apart. Only one outpatient claim was required to identify obesity, weight loss, drug abuse, alcohol abuse, and smoking, including diagnostic claims, since diagnostic workup is not required for those conditions. The readmission score was calculated as per the Healthcare Cost and Utilization Project website (<https://www.hcup-us.ahrq.gov/toolssoftware/comorbidity/comindex2012-2015.txt>).

**Calculation of Number Needed to Treat (NNT):**

The number needed to treat (NNT) with an anti-MSSA antibiotic was calculated as follows:

Absolute risk reduction (ARR) = (Control event rate) − (Experimental event rate)

ARR = (SSI rate in group with no post-discharge antibiotic) − (SSI rate in group with anti-MSSA post-discharge antibiotic)

NNT = 1/ARR

Thus, for the the women with mastectomy only :

ARR = 0.035793 − 0.026455 = 0.00933836 and the NNT = 1/0.009338 = 107.09

For the women with mastectomy plus immediate reconstruction:

ARR = 0.098987 − 0.078354 = 0.020633 and the NNT = 1/0.020633 = 48.47

**Appendix Table 1. Codes Used to Define the Mastectomy Cohort, Operative Factors, and Patient Comorbidities**

| **Variable** | **ICD-9-CM Procedure Codes** | **CPT Codes** | **ICD-9-CM Diagnosis Codes** | **Other Codes** |
| --- | --- | --- | --- | --- |
| Mastectomy | 85.33-85.48 | 19303-19307 |  |  |
| **Confirmatory codes for mastectomy and surgery dates** | | | | |
| Anesthesiology services |  | 00400, 00402, 00404, 00406 |  |  |
| Breast-Conserving Surgery | 85.20-85.23 | 19120-19126, 19160, 19162, 19301, 19302 |  |  |
| Operating room services |  |  |  | UB-04: 0201, 0360, 0361, 0369, 0370, 0379, 0490, 0499, 0963, 0964, 0975 |
| Pathology |  | 88305, 88307, 88309 |  |  |
| **Operative factors** | | | | |
| Flap reconstruction | 85.71-85.76 | 19361, 19364, 19367-19369 |  | HCPCS:S2066-S2068 |
| Implant reconstruction | 85.33, 85.35, 85.53, 85.54, 85.95 | 19325, 19340, 19342, 19357 |  |  |
| Central venous catheter insertion | 38.93, 86.06, 86.07 | 36556, 36558, 36561-36566, 36569, 36571-36585 |  |  |
| Concurrent lymph node procedure | 40.23, 40.3, 40.50, 40.51, 85.43-85.48 | 19305-19307, 38500, 38525, 38740, 38745, 38792 |  |  |
| Modified radical mastectomy | 85.43-85.48 | 19305-19307, 88309 |  |  |
| Hemorrhage | 39.98 |  | 998.11 |  |
| Hematoma |  |  | 998.12 |  |
| Dehiscence/necrosis |  |  | 875.0, 875.1, 879.0, 879.1, 998.32, 998.83 |  |
| **Patient comorbidities** | | | | |
| Anemia |  |  | 280.0-285.9 |  |
| Diabetes |  |  | 249.00-250.93, 648.0x, 775.1 | Prescription drugs: acarbose, acetohexamide, albiglutide, alogliptin, bromocriptine, canagliflozin,  chlorpropamide, dapagliflozin, dulaglutide, empagliflozin, exenatide,  gliclazide, glimepiride, glipizide, glucagon hydrochloride, glyburide, insulin, linagliptin,  liraglutide, metformin, miglitol, nateglinide, pioglitazone, pramlintide acetate,  repaglinide, rosiglitazone, saxagliptin, sitagliptin, tolazamide,  tolbutamide, troglitazone |
| Carcinoma *in situ* |  |  | 233.0 |  |
| Invasive breast cancer |  |  | 174.0-174.9 |  |
| Malnutrition |  |  | 262, 263.0-263.9 |  |
| Neoadjuvant chemotherapy | 99.25 | 96401, 96405-96549 |  | UB-04: 0331, 0332, 0335  HCPCS: J9000-J9999, Q0083-Q0085 |
| Obesity and obesity proxies (e.g., sleep apnea) |  |  | 112.3, 256.4, 278.00, 278.01, 278.03, 649.1x, 780.51, 780.53, 780.57, 793.91, V85.3, V85.4 |  |
| Smoking |  |  | 305.1, 649.00-649.04, V15.82 | Prescription drugs: nicotine, varenicline |
| Smoking proxies (e.g. lung cancer) |  |  | 162.2-162.9, 231.1, 410.00-413.9, 414.8, 414.9, 430-438, 491.20, 491.21, 496 |  |
| *Staphylococcus aureus* infection |  |  | 038.11, 041.11, 041.12, 482.41 |  |
| Ulcer colitis / Crohn’s disease |  |  | 555.0-556.9 |  |

**Appendix Table 2: Infection Diagnoses Used for Mastectomy Admission Exclusions**

|  |  |  |
| --- | --- | --- |
| **Description** | **ICD-9-CM Diagnosis Code** | **Timeframe** |
|  |  |  |
| Surgical site infection (SSI) | 996.69, 998.5x | 30 days prior to admission through 2 days post-discharge |
| Other site SSI | 324.x, 478.21-478.24, 478.29, 536.41, 730.0x–730.2x, 730.8x, 730.9x, 996.60–996.68 | 30 days prior to admission through 2 days post-discharge |
| Cellulitis/skin and soft tissue infection | 681.x, 682.x, 683, 684, 685.0, 686.x, 728.0, 728.86, 958.3, 997.62 | 14 days prior to admission through 2 days post-discharge |
| Pneumonia | 481, 482.xx, 483.x, 485, 486, 510.0, 510.9, 513.0, 997.31, 997.32 | 30 days prior to admission through 2 days post-discharge |
| Urinary tract, pyelonephritis, genitourinary infection | 590.0x, 590.1x, 590.2, 590.80, 590.9, 595.0, 598.0x, 599.0, 616.3, 616.4 | 14 days prior to admission through 2 days post-discharge |
| Gastrointestinal infection | 566, 567.1, 567.2x, 567.3x, 567.9, 569.5, 572.0 | 30 days prior to admission through 2 days post-discharge |
| Septicemia/sepsis/sterile site infection | 038.x, 320.x, 711.0x, 711.9x, 785.52, 790.7, 995.91, 995.92, 999.3x | 30 days prior to admission through 2 days post-discharge |
| Upper respiratory infection | 380.1x, 382.0x, 382.4, 382.9, 383.0x, 383.9, 461.x, 463, 466.0, 475, 491.1, 522.5, 528.3 | 14 days prior to admission through 2 days post-discharge |

**Appendix Table 3. Antibiotics Prescribed Post-Discharge as Prophylaxis after Mastectomy Dischargea**

|  |  |  |  |
| --- | --- | --- | --- |
| **Antibiotic** | **Antibiotic Category** | **Number (%) of Mastectomy Only with Post-Discharge Prescription** | **Number (%) of Mastectomy with Immediate Reconstruction with Post-Discharge Prescription** |
| Amoxicillin | anti-MSSA | 170 (5.94%) | 576 (3.01%) |
| Ampicillin | anti-MSSA | 3 (0.10%) | 7 (0.04%) |
| Cefaclor | anti-MSSA | 0 (0.00%) | 0 (0.00%) |
| Cefadroxil | anti-MSSA | 174 (6.08%) | 2,029 (10.59%) |
| Cefdinir | anti-MSSA | 8 (0.28%) | 24 (0.13%) |
| Cefixime | anti-MSSA | 0 (0.00%) | 2 (0.01%) |
| Cefpodoxime | anti-MSSA | 0 (0.00%) | 4 (0.02%) |
| Cefprozil | anti-MSSA | 2 (0.07%) | 21 (0.11%) |
| Cefuroxime | anti-MSSA | 18 (0.63%) | 186 (0.97%) |
| Cephalexin | anti-MSSA | 1,624 (56.76%) | 11,092 (57.89%) |
| Dicloxacillin | anti-MSSA | 9 (0.31%) | 19 (0.10%) |
| Clindamycin | anti-MRSA | 171 (5.98%) | 1,565 (8.17%) |
| Doxycycline | anti-MRSA | 97 (3.40%) | 675 (3.52%) |
| Linezolid | anti-MRSA | 4 (0.14%) | 2 (0.01%) |
| Minocycline | anti-MRSA | 20 (0.70%) | 223 (1.16%) |
| Trimethoprim/Sulfamethoxazole | anti-MRSA | 211 (7.38%) | 1,321 (6.89%) |
| Ciprofloxacin | quinolone | 228 (7.97%) | 795 (4.15%) |
| Levofloxacin | quinolone | 110 (3.84%) | 582 (3.04%) |
| Moxifloxacin | quinolone | 12 (0.42%) | 37 (0.19%) |

aWomen could have prescriptions for more than one antibiotic; therefore the totals by antibiotic category are larger than the numbers in Table 1.

**Appendix Table 4. Diagnosis and Procedure Codes Used to Define Surgical Site Infection after Mastectomy Discharge**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **ICD-9-CM Diagnosis Codesa** | **ICD-9-CM Procedure Codes** | **CPT Codes** |
| Surgical Site Infection | 998.51, 998.59 |  |  |
| Cellulitis + procedure to indicate wound openedb | 682.2, 682.3c, 682.9, 683c | 54.0, 54.3, 83.44, 83.45, 83.49, 85.0, 85.94, 85.96, 86.04, 86.09, 86.22 | 10060, 10061, 10140, 10180, 11000, 11001, 11005, 11008, 11040, 11041, 11042, 11043, 11044, 11045, 11046, 11047, 11971,19020, 19328, 20000, 20005, 38300, 38305, 97597, 97598, 97602 |
| Inflammatory disease of breast | 611.0 |  |  |
| Infection and inflammatory reaction due to other internal prosthetic device, implant and graft | 996.69 |  |  |

a Diagnostic claims, including laboratory and radiology, durable medical equipment, and other specialized claims (e.g., ambulance) were not used to identify SSI to minimize capture of diagnostic workup as an outcome.

bCellulitis was only considered an SSI if a procedure was coded on the same claim line.

cRequired coding for lymph node procedure during index mastectomy admission to be counted as an SSI (682.3 – cellulitis/abscess of axilla, 683 – acute lymphadenitis).

**Appendix Table 5. Results of Bivariate Analyses for Association of Patient and Operative Factors with Receipt of Prophylactic Post-Discharge Antibiotics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Mastectomy-only (n=13,975)** | | | **Mastectomy with immediate reconstruction (n=24,818)** | | |
|  | **# Receiving Prescription for Antibiotic (%) n=2,688** | **# Without Prescription for Antibiotic (%) n=11,287** | ***P*** | **# Receiving Prescription for Antibiotic (%) n=17,807** | **# Without Prescription for Antibiotic (%) n=7,011** | ***P*** |
|
| **Patient factors** |  |  |  |  |  |  |
| Age in years (median, IQR) | 54 (47, 60) | 55 (48, 60) | <.001 | 49 (43, 56) | 50 (44, 56) | <.001 |
| Patient residence, region |  |  | 0.212 |  |  | <.001 |
| Northeast | 349 (13.0%) | 1,310 (11.6%) |  | 3,550 (19.9%) | 1,078 (15.4%) |  |
| North Central | 650 (24.2%) | 2,771 (24.6%) |  | 4,080 (22.9%) | 1,665 (23.8%) |  |
| South | 1,152 (42.9%) | 4,846 (42.9%) |  | 6,775 (38.1%) | 3,090 (44.1%) |  |
| West | 537 (20.0%) | 2,360 (20.9%) |  | 3,402 (19.1%) | 1,178 (16.8%) |  |
| Rural residence (non-MSA) | 451 (16.8%) | 2,124 (18.8%) | 0.014 | 1,645 (9.2%) | 760 (10.8%) | <.001 |
| **Patient factors- comorbidities** |  |  |  |  |  |  |
| Readmission score (median, IQR) | 15 (12, 21) | 15 (3, 21) | <.001 | 15 (15, 21) | 15 (15, 21) | 0.499 |
| AIDS | 1 (0.0%) | 5 (0.0%) | 0.873 | 3 (0.0%) | 1 (0.0%) | 0.885 |
| Alcohol abuse | 8 (0.3%) | 74 (0.7%) | 0.029 | 87 (0.5%) | 37 (0.5%) | 0.694 |
| Anemia prior 30 days | 159 (5.9%) | 642 (5.7%) | 0.649 | 920 (5.2%) | 477 (6.8%) | <.001 |
| Chronic blood loss anemia | 5 (0.2%) | 18 (0.2%) | 0.760 | 33 (0.2%) | 24 (0.3%) | 0.020 |
| Chronic kidney disease | 23 (0.9%) | 83 (0.7%) | 0.518 | 55 (0.3%) | 24 (0.3%) | 0.674 |
| Chronic pulmonary disease | 169 (6.3%) | 706 (6.3%) | 0.951 | 1,045 (5.9%) | 430 (6.1%) | 0.427 |
| Coagulopathy | 19 (0.7%) | 91 (0.8%) | 0.600 | 123 (0.7%) | 53 (0.8%) | 0.582 |
| Congestive heart failure | 18 (0.7%) | 102 (0.9%) | 0.237 | 43 (0.2%) | 19 (0.3%) | 0.675 |
| Deficiency anemias | 119 (4.4%) | 463 (4.1%) | 0.448 | 642 (3.6%) | 282 (4.0%) | 0.118 |
| Depression | 145 (5.4%) | 579 (5.1%) | 0.578 | 1,165 (6.5%) | 514 (7.3%) | 0.026 |
| Diabetes | 396 (14.7%) | 1,494 (13.2%) | 0.042 | 1,120 (6.3%) | 455 (6.5%) | 0.560 |
| Drug abuse | 14 (0.5%) | 57 (0.5%) | 0.917 | 47 (0.3%) | 23 (0.3%) | 0.391 |
| Elevated triglycerides | 20 (0.7%) | 66 (0.6%) | 0.343 | 64 (0.4%) | 33 (0.5%) | 0.206 |
| Fluid and electrolyte disorders | 104 (3.9%) | 341 (3.0%) | 0.024 | 338 (1.9%) | 130 (1.9%) | 0.819 |
| Hypertension | 699 (26.0%) | 3,048 (27.0%) | 0.293 | 3,220 (18.1%) | 1,435 (20.5%) | <.001 |
| Hypothyroidism | 209 (7.8%) | 909 (8.1%) | 0.633 | 1,522 (8.6%) | 633 (9.0%) | 0.225 |
| Inpatient admission prior 30 days | 50 (1.9%) | 107 (1.0%) | <.001 | 64 (0.4%) | 40 (0.6%) | 0.020 |
| Liver disease | 21 (0.8%) | 93 (0.8%) | 0.825 | 82 (0.5%) | 31 (0.4%) | 0.847 |
| Lymphoma | 8 (0.3%) | 41 (0.4%) | 0.605 | 70 (0.4%) | 32 (0.5%) | 0.483 |
| Malnutrition | 11 (0.4%) | 39 (0.4%) | 0.619 | 29 (0.2%) | 14 (0.2%) | 0.530 |
| Neoadjuvant chemotherapy prior 60 days | 619 (23.0%) | 2,300 (20.4%) | 0.002 | 2,396 (13.5%) | 860 (12.3%) | 0.013 |
| Obesity | 378 (14.1%) | 1,518 (13.5%) | 0.404 | 1,628 (9.1%) | 724 (10.3%) | 0.004 |
| Other neurological disorders | 27 (1.0%) | 186 (1.7%) | 0.014 | 200 (1.1%) | 108 (1.5%) | 0.008 |
| Paralysis | 5 (0.2%) | 22 (0.2%) | 0.925 | 8 (0.0%) | 5 (0.1%) | 0.413 |
| Peripheral vascular disease | 12 (0.5%) | 73 (0.7%) | 0.230 | 40 (0.2%) | 19 (0.3%) | 0.500 |
| Psychoses | 101 (3.8%) | 360 (3.2%) | 0.138 | 623 (3.5%) | 213 (3.0%) | 0.070 |
| Pulmonary circulation disease | 13 (0.5%) | 67 (0.6%) | 0.497 | 38 (0.2%) | 31 (0.4%) | 0.002 |
| Rheumatoid arthritis/ collagen vascular | 56 (2.1%) | 243 (2.2%) | 0.823 | 305 (1.7%) | 111 (1.6%) | 0.474 |
| Smoking | 409 (15.2%) | 1,618 (14.3%) | 0.244 | 2,165 (12.2%) | 905 (12.9%) | 0.106 |
| Smoking proxies | 84 (3.1%) | 347 (3.1%) | 0.891 | 236 (1.3%) | 119 (1.7%) | 0.026 |
| *Staphylococcus aureus* infection | 20 (0.7%) | 27 (0.2%) | <.001 | 29 (0.2%) | 18 (0.3%) | 0.126 |
| prior year |
| Ulcer colitis /Crohn's disease | 17 (0.6%) | 73 (0.7%) | 0.934 | 164 (0.9%) | 58 (0.8%) | 0.480 |
| Valvular disease | 55 (2.1%) | 223 (2.0%) | 0.814 | 397 (2.2%) | 130 (1.9%) | 0.065 |
| Weight loss | 32 (1.2%) | 141 (1.3%) | 0.805 | 127 (0.7%) | 58 (0.8%) | 0.347 |
| **Operative factors** |  |  |  |  |  |  |
| Central venous catheter insertion during the mastectomy admission | 128 (4.8%) | 729 (6.5%) | 0.001 | 552 (3.1%) | 262 (3.7%) | 0.011 |
| Implant reconstruction |  |  |  | 16,221 (91.1%) | 5,534 (78.9%) | <.001 |
| Inpatient mastectomy | 1,125 (41.9%) | 4,108 (36.4%) | <.001 | 11,331 (63.6%) | 4,951 (70.6%) | <.001 |
| Length of stay |  |  | <.001 |  |  | <.001 |
| 0-1 day | 2,196 (81.7%) | 9,714 (86.1%) |  | 10,603 (59.5%) | 3,403 (48.5%) |  |
| 2-3 days | 430 (16.0%) | 1,428 (12.7%) |  | 5,822 (32.7%) | 2,475 (35.3%) |  |
| 4+ days | 62 (2.3%) | 145 (1.3%) |  | 1,382 (7.8%) | 1,133 (16.2%) |  |
| Modified radical mastectomy | 1,304 (48.5%) | 5,797 (51.4%) | 0.008 | 5,661 (31.8%) | 2,293 (32.7%) | 0.164 |
| Reason for mastectomy |  |  | <.001 |  |  | 0.018 |
| Cancer | 2,264 (84.2%) | 9,750 (86.4%) |  | 13,591 (76.3%) | 5,267 (75.1%) |  |
| DCIS | 262 (9.8%) | 1,142 (10.1%) |  | 2,909 (16.3%) | 1,157 (16.5%) |  |
| Prophylactic | 162 (6.0%) | 395 (3.5%) |  | 1,307 (7.3%) | 587 (8.4%) |  |
| Surgical complication during surgical admission | 89 (3.3%) | 242 (2.1%) | <.001 | 498 (2.8%) | 218 (3.1%) | 0.185 |
| Year of surgery |  |  | 0.993 |  |  | <.001 |
| 2010 | 572 (21.3%) | 2,404 (21.3%) |  | 2,768 (15.5%) | 1,288 (18.4%) |  |
| 2011 | 525 (19.5%) | 2,173 (19.3%) |  | 3,130 (17.6%) | 1,269 (18.1%) |  |
| 2012 | 569 (21.2%) | 2,378 (21.1%) |  | 3,639 (20.4%) | 1,527 (21.8%) |  |
| 2013 | 439 (16.3%) | 1,888 (16.7%) |  | 3,240 (18.2%) | 1,195 (17.0%) |  |
| 2014 | 405 (15.1%) | 1,720 (15.2%) |  | 3,477 (19.5%) | 1,199 (17.1%) |  |
| 2015 | 178 (6.6%) | 724 (6.4%) |  | 1,553 (8.7%) | 533 (7.6%) |  |

**Appendix Table 6. Results of Bivariate Analyses for Association of Patient and Operative Factors with Surgical Site Infection**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Mastectomy-only (n=13,975)** | | | **Mastectomy with immediate reconstruction (n=24,818)** | | |
|  | **# with SSI (%) n=490** | **# without SSI (%) n=13,485** | ***P*** | **# with SSI (%) n=2,173** | **# Without SSI (%) n=22,645** | ***P*** |
|
| Post-discharge prophylactic antibiotic use | 86 (17.6%) | 2,602 (19.3%) | 0.336 | 1,479 (68.1%) | 16,328 (72.1%) | <.001 |
| Antibiotic category |  |  | 0.031 |  |  | <.001 |
| Methicillin-resistant *Staphylococcus aureus* | 17 (3.5%) | 444 (3.3%) |  | 314 (14.5%) | 3,168 (14.0%) |  |
| Methicillin-susceptible *Staphylococcus*  *Aureus* | 50 (10.2%) | 1,840 (13.6%) |  | 1,015 (46.7%) | 11,939 (52.7%) |  |
| Quinolones | 19 (3.9%) | 318 (2.4%) |  | 150 (6.9%) | 1,221 (5.4%) |  |
| No antibiotic use | 404 (82.5%) | 10,883 (80.7%) |  | 694 (31.9%) | 6,317 (27.9%) |  |
| **Patient factors** |  |  |  |  |  |  |
| Age in years (median, IQR) | 56 (49, 61) | 55 (48, 60) | 0.002 | 51 (44, 57) | 50 (43, 56) | <.001 |
| Patient residence, region |  |  | 0.711 |  |  | 0.174 |
| Northeast | 59 (12.0%) | 1,600 (11.9%) |  | 375 (17.3%) | 4,253 (18.8%) |  |
| North Central | 126 (25.7%) | 3,295 (24.4%) |  | 528 (24.3%) | 5,217 (23.0%) |  |
| South | 198 (40.4%) | 5,800 (43.0%) |  | 884 (40.7%) | 8,981 (39.7%) |  |
| West | 107 (21.8%) | 2,790 (20.7%) |  | 386 (17.8%) | 4,194 (18.5%) |  |
| Rural residence (non-MSA) | 110 (22.4%) | 2,465 (18.3%) | 0.019 | 250 (11.5%) | 2,155 (9.5%) | 0.003 |
| **Patient factors- comorbidities** |  |  |  |  |  |  |
| Readmission score (median, IQR) | 15 (12, 24) | 15 (4, 21) | <.001 | 15 (15, 21) | 15 (15, 21) | <.001 |
| AIDS | 0 (0.0%) | 6 (0.0%) | 0.641 | 1 (0.1%) | 3 (0.0%) | 0.250 |
| Alcohol abuse | 2 (0.4%) | 80 (0.6%) | 0.598 | 12 (0.6%) | 112 (0.5%) | 0.716 |
| Anemia prior 30 days | 37 (7.6%) | 764 (5.7%) | 0.078 | 131 (6.0%) | 1,266 (5.6%) | 0.398 |
| Chronic blood loss anemia | 1 (0.2%) | 22 (0.2%) | 0.826 | 7 (0.3%) | 50 (0.2%) | 0.346 |
| Chronic kidney disease | 7 (1.4%) | 99 (0.7%) | 0.082 | 7 (0.3%) | 72 (0.3%) | 0.974 |
| Chronic pulmonary disease | 45 (9.2%) | 830 (6.2%) | 0.007 | 177 (8.2%) | 1,298 (5.7%) | <.001 |
| Coagulopathy | 6 (1.2%) | 104 (0.8%) | 0.265 | 16 (0.7%) | 160 (0.7%) | 0.875 |
| Congestive heart failure | 6 (1.2%) | 114 (0.9%) | 0.372 | 8 (0.4%) | 54 (0.2%) | 0.247 |
| Deficiency anemias | 22 (4.5%) | 560 (4.2%) | 0.714 | 91 (4.2%) | 833 (3.7%) | 0.231 |
| Depression | 43 (8.8%) | 681 (5.1%) | <.001 | 184 (8.5%) | 1,495 (6.6%) | <.001 |
| Diabetes | 127 (25.9%) | 1,763 (13.1%) | <.001 | 215 (9.9%) | 1,360 (6.0%) | <.001 |
| Drug abuse | 5 (1.0%) | 66 (0.5%) | 0.104 | 7 (0.3%) | 63 (0.3%) | 0.712 |
| Elevated triglycerides | 1 (0.2%) | 85 (0.6%) | 0.236 | 11 (0.5%) | 86 (0.4%) | 0.367 |
| Fluid and electrolyte disorders | 20 (4.1%) | 425 (3.2%) | 0.249 | 45 (2.1%) | 423 (1.9%) | 0.507 |
| Hypertension | 182 (37.1%) | 3,565 (26.4%) | <.001 | 545 (25.1%) | 4,110 (18.2%) | <.001 |
| Hypothyroidism | 59 (12.0%) | 1,059 (7.9%) | <.001 | 205 (9.4%) | 1,950 (8.6%) | 0.193 |
| Inpatient admission prior 30 days | 7 (1.4%) | 150 (1.1%) | 0.514 | 7 (0.3%) | 97 (0.4%) | 0.464 |
| Liver disease | 7 (1.4%) | 107 (0.8%) | 0.125 | 15 (0.7%) | 98 (0.4%) | 0.089 |
| Lymphoma | 0 (0.0%) | 49 (0.4%) | 0.181 | 9 (0.4%) | 93 (0.4%) | 0.981 |
| Malnutrition | 4 (0.8%) | 46 (0.3%) | 0.084 | 4 (0.2%) | 39 (0.2%) | 0.899 |
| Neoadjuvant chemotherapy prior 60 days | 102 (20.8%) | 2,817 (20.9%) | 0.969 | 247 (11.4%) | 3,009 (13.3%) | 0.011 |
| Obesity | 100 (20.4%) | 1,796 (13.3%) | <.001 | 348 (16.0%) | 2,004 (8.9%) | <.001 |
| Other neurological disorders | 8 (1.6%) | 205 (1.5%) | 0.842 | 37 (1.7%) | 271 (1.2%) | 0.042 |
| Paralysis | 3 (0.6%) | 24 (0.2%) | 0.032 | 2 (0.1%) | 11 (0.1%) | 0.398 |
| Peripheral vascular disease | 6 (1.2%) | 79 (0.6%) | 0.074 | 9 (0.4%) | 50 (0.2%) | 0.077 |
| Psychoses | 38 (7.8%) | 423 (3.1%) | <.001 | 114 (5.3%) | 722 (3.2%) | <.001 |
| Pulmonary circulation disease | 5 (1.0%) | 75 (0.6%) | 0.181 | 10 (0.5%) | 59 (0.3%) | 0.091 |
| Rheumatoid arthritis /collagen vascular | 17 (3.5%) | 282 (2.1%) | 0.038 | 49 (2.3%) | 367 (1.6%) | 0.028 |
| Smoking | 91 (18.6%) | 1,936 (14.4%) | 0.009 | 348 (16.0%) | 2,722 (12.0%) | <.001 |
| Smoking proxies | 30 (6.1%) | 401 (3.0%) | <.001 | 55 (2.5%) | 300 (1.3%) | <.001 |
| *Staphylococcus aureus* infection | 8 (1.6%) | 39 (0.3%) | <.001 | 7 (0.3%) | 40 (0.2%) | 0.136 |
| prior year |
| Ulcer colitis /Crohn's disease | 2 (0.4%) | 88 (0.7%) | 0.506 | 22 (1.0%) | 200 (0.9%) | 0.541 |
| Valvular disease | 10 (2.0%) | 268 (2.0%) | 0.934 | 55 (2.5%) | 472 (2.1%) | 0.168 |
| Weight loss | 13 (2.7%) | 160 (1.2%) | 0.004 | 17 (0.8%) | 168 (0.7%) | 0.834 |
| **Operative factors** |  |  |  |  |  |  |
| Central venous catheter insertion during the mastectomy admission | 45 (9.2%) | 812 (6.0%) | 0.004 | 92 (4.2%) | 722 (3.2%) | 0.009 |
| Implant reconstruction |  |  |  | 1,933 (89.0%) | 19,822 (87.5%) | 0.054 |
| Inpatient mastectomy | 221 (45.1%) | 5,012 (37.2%) | <.001 | 1,440 (66.3%) | 14,842 (65.5%) | 0.496 |
| Length of stay |  |  | <.001 |  |  | 0.035 |
| 0-1 day | 371 (75.7%) | 11,539 (85.6%) |  | 1,185 (54.5%) | 12,821 (56.6%) |  |
| 2-3 days | 105 (21.4%) | 1,753 (13.0%) |  | 736 (33.9%) | 7,561 (33.4%) |  |
| 4+ days | 14 (2.9%) | 193 (1.4%) |  | 252 (11.6%) | 2,263 (10.0%) |  |
| Modified radical mastectomy | 254 (51.8%) | 6,847 (50.8%) | 0.644 | 770 (35.4%) | 7,184 (31.7%) | <.001 |
| Reason for mastectomy |  |  | 0.959 |  |  | 0.960 |
| Cancer | 420 (85.7%) | 11,594 (86.0%) |  | 1,647 (75.8%) | 17,211 (76.0%) |  |
| DCIS | 51 (10.4%) | 1,353 (10.0%) |  | 357 (16.4%) | 3,709 (16.4%) |  |
| Prophylactic | 19 (3.9%) | 538 (4.0%) |  | 169 (7.8%) | 1,725 (7.6%) |  |
| Surgical complication during surgical admission | 16 (3.3%) | 315 (2.3%) | 0.184 | 74 (3.4%) | 642 (2.8%) | 0.129 |
| Year of surgery |  |  | 0.177 |  |  | 0.177 |
| 2010 | 110 (22.5%) | 2,866 (21.3%) |  | 393 (18.1%) | 3,663 (16.2%) |  |
| 2011 | 84 (17.1%) | 2,614 (19.4%) |  | 382 (17.6%) | 4,017 (17.7%) |  |
| 2012 | 94 (19.2%) | 2,853 (21.2%) |  | 427 (19.7%) | 4,739 (20.9%) |  |
| 2013 | 89 (18.2%) | 2,238 (16.6%) |  | 396 (18.2%) | 4,039 (17.8%) |  |
| 2014 | 70 (14.3%) | 2,055 (15.2%) |  | 408 (18.8%) | 4,268 (18.9%) |  |
| 2015 | 43 (8.8%) | 859 (6.4%) |  | 167 (7.7%) | 1,919 (8.5%) |  |