Safety of Catheter Ablation Therapy for Cardiac Arrhythmias in Congenital Heart Disease: An Analysis of the National Inpatient Sample (NIS) Database

Analysis for RCOP NIS Cardio6

Muhammad Saad

## Preamble:

* **Reference Papers:**
  + [Alhassan et al. 2023](https://www.ahajournals.org/doi/10.1161/JAHA.122.029339)
  + [Hosseini et al. 2017](https://linkinghub.elsevier.com/retrieve/pii/S2405500X17303924)
* **Study Objective**: Compare the safety and clinical outcomes of catheter ablation therapy for cardiac arrhythmias in patients with congenital heart disease (CHD) versus without CHD
* **Data Source**: Cross-sectional analysis of the National Inpatient Sample (NIS) from 2018 to 2020.
* **Patient Selection**: Included all inpatient admissions for patients aged 18 years or older who underwent catheter ablation with atrial fibrillation, atrial flutter, supraventricular tachycardia, or ventricular tachycardia as the primary diagnosis. Excluded patients who underwent pacemaker implantation, implantable cardioverter-defibrillator insertion, or open surgical ablation during the same hospitalization to avoid confounding effects from these procedures.
* **Catheter Ablation Categories**:
  + Catheter Ablation with CHD
  + Catheter Ablation without CHD
* **Primary Outcomes**:
  + In-hospital all-cause mortality
  + Length of stay (days)
  + Inflation-adjusted total charge ($)
* **Secondary Outcomes**:
  + Pericardial complications
  + Cardiac complications
  + Vascular complications
  + Respiratory complications
  + Gastrointestinal complications
  + Cerebrovascular infarction
  + Infections
* **Statistical Analysis**: Multiple logistic and linear regression models were used to evaluate independent associations of CHD with catheter ablation clinical outcomes, adjusting for:
  + Demographics: Age, sex, race, residential income, insurance type, hospital region, hospital bedsize, hospital location and teaching status, and admission type (elective vs. non-elective).
  + Medical History: Hypertension, obesity, obstructive sleep apnea, smoking status, diabetes mellitus, chronic pulmonary disease, chronic kidney disease, previous stroke or transient ischemic attack, peripheral vascular disease, previous implantable cardioverter-defibrillator (ICD) insertion, and previous pacemaker or cardiac resynchronization therapy (CRT) insertion.
  + Comorbidities: Charlson comorbidity index.
  + Ablation-Related Factors: Indication for Ablation
* **Software:** All analyses were performed using R Version 4.4.1 (R Foundation for Statistical Computing, Vienna, Austria)

## Baseline Table:

| **Characteristic** | **No CHD** N = 109,535 | **CHD** N = 2,370 | **p-value***1* | **Overall** N = 111,905 |
| --- | --- | --- | --- | --- |
| Age, y, Mean (SD) | 66 (13) | 59 (16) | <0.001 | 66 (13) |
| Sex, n (%) |  |  | 0.87 |  |
| Female | 42,575 (39) | 930 (39) |  | 43,505 (39) |
| Male | 66,955 (61) | 1,440 (61) |  | 68,395 (61) |
| Race, n (%) |  |  | 0.25 |  |
| White | 83,315 (77) | 1,845 (80) |  | 85,160 (77) |
| Asian or Pacific Islander | 1,955 (1.8) | 25 (1.1) |  | 1,980 (1.8) |
| Black | 11,690 (11) | 190 (8.2) |  | 11,880 (11) |
| Hispanic | 7,080 (6.6) | 190 (8.2) |  | 7,270 (6.6) |
| Native American | 420 (0.4) | 5 (0.2) |  | 425 (0.4) |
| Other | 3,240 (3.0) | 65 (2.8) |  | 3,305 (3.0) |
| Residential income, n (%) |  |  | 0.19 |  |
| $1 - $51,999 | 26,580 (25) | 500 (22) |  | 27,080 (25) |
| $52,000 - $65,999 | 26,985 (25) | 635 (27) |  | 27,620 (25) |
| $66,000 - $87,999 | 27,760 (26) | 555 (24) |  | 28,315 (26) |
| $88,000 or more | 26,545 (25) | 635 (27) |  | 27,180 (25) |
| Expected primary payer, n (%) |  |  | <0.001 |  |
| Private | 32,515 (30) | 915 (39) |  | 33,430 (30) |
| Medicaid | 7,900 (7.2) | 250 (11) |  | 8,150 (7.3) |
| Medicare | 66,080 (60) | 1,130 (48) |  | 67,210 (60) |
| Other | 3,000 (2.7) | 70 (3.0) |  | 3,070 (2.7) |
| Hospital region, n (%) |  |  | 0.011 |  |
| Midwest | 21,665 (20) | 545 (23) |  | 22,210 (20) |
| Northeast | 25,075 (23) | 615 (26) |  | 25,690 (23) |
| South | 47,435 (43) | 830 (35) |  | 48,265 (43) |
| West | 15,360 (14) | 380 (16) |  | 15,740 (14) |
| Hospital bedsize, n (%) |  |  | 0.94 |  |
| Large | 69,805 (64) | 1,530 (65) |  | 71,335 (64) |
| Medium | 28,245 (26) | 595 (25) |  | 28,840 (26) |
| Small | 11,485 (10) | 245 (10) |  | 11,730 (10) |
| Hospital location and teaching status, n (%) |  |  | 0.005 |  |
| Rural | 2,155 (2.0) | 75 (3.2) |  | 2,230 (2.0) |
| Urban, non-teaching | 11,615 (11) | 160 (6.8) |  | 11,775 (11) |
| Urban, teaching | 95,765 (87) | 2,135 (90) |  | 97,900 (87) |
| Admission type, n (%) |  |  | 0.26 |  |
| Elective | 37,620 (34) | 875 (37) |  | 38,495 (34) |
| Non-elective | 71,765 (66) | 1,495 (63) |  | 73,260 (66) |
| Charlson comorbidity index, Mean (SD) | 2.13 (1.96) | 1.92 (1.83) | 0.038 | 2.12 (1.96) |
| Indication for ablation, n (%) |  |  | <0.001 |  |
| Atrial Fibrillation | 52,475 (48) | 1,045 (44) |  | 53,520 (48) |
| Atrial Flutter | 27,335 (25) | 805 (34) |  | 28,140 (25) |
| Supraventricular Tachycardia | 16,195 (15) | 305 (13) |  | 16,500 (15) |
| Ventricular Tachycardia | 13,530 (12) | 215 (9.1) |  | 13,745 (12) |
| Hypertension, n (%) | 63,245 (58) | 1,215 (51) | 0.004 | 64,460 (58) |
| Obesity, n (%) | 28,690 (26) | 630 (27) | 0.85 | 29,320 (26) |
| Obstructive sleep apnea, n (%) | 22,755 (21) | 545 (23) | 0.25 | 23,300 (21) |
| Smoking status, n (%) | 9,190 (8.4) | 180 (7.6) | 0.53 | 9,370 (8.4) |
| Diabetes Mellitus, n (%) | 32,105 (29) | 620 (26) | 0.14 | 32,725 (29) |
| Chronic pulmonary disease, n (%) | 26,545 (24) | 470 (20) | 0.037 | 27,015 (24) |
| Chronic kidney disease, n (%) | 22,495 (21) | 345 (15) | 0.002 | 22,840 (20) |
| Previous stroke/TIA, n (%) | 10,035 (9.2) | 255 (11) | 0.23 | 10,290 (9.2) |
| Peripheral vascular disease, n (%) | 19,610 (18) | 345 (15) | 0.059 | 19,955 (18) |
| Previous ICD insertion, n (%) | 13,135 (12) | 210 (8.9) | 0.035 | 13,345 (12) |
| Previous PPM or CRT insertion, n (%) | 7,770 (7.1) | 115 (4.9) | 0.071 | 7,885 (7.0) |
| *1*Design-based KruskalWallis test; Pearson's X^2: Rao & Scott adjustment | | | | |

## Outcomes Table:

| **Characteristic** | **No CHD** N = 109,535 | **CHD** N = 2,370 | **p-value***1* | **Overall** N = 111,905 |
| --- | --- | --- | --- | --- |
| Death, n (%) | 840 (0.8) | 15 (0.6) | 0.74 | 855 (0.8) |
| Length of stay (days), Median (IQR) | 3.0 (2.0 – 5.0) | 3.0 (2.0 – 6.0) | 0.009 | 3.0 (2.0 – 5.0) |
| Adjusted total charges, Median (IQR) | 132,083 (93,461 – 195,123) | 138,056 (99,076 – 202,284) | 0.030 | 132,297 (93,544 – 195,245) |
| Pericardial Complications, n (%) |  |  | 0.77 |  |
| Acute pericarditis | 235 (5.0) | 10 (5.7) |  | 245 (5.0) |
| Cardiac Tamponade | 325 (6.9) | 20 (11) |  | 345 (7.0) |
| Hemopericardium | 430 (9.1) | 20 (11) |  | 450 (9.2) |
| Pericardial Effusion | 3,490 (74) | 120 (69) |  | 3,610 (74) |
| Pericardiocentesis | 255 (5.4) | 5 (2.9) |  | 260 (5.3) |
| Cardiac Complications, n (%) |  |  | 0.017 |  |
| Myocardial arrest | 30 (4.3) | 10 (20) |  | 40 (5.4) |
| Myocardial infarction | 355 (51) | 5 (10) |  | 360 (48) |
| Myocardial Injury | 20 (2.9) | 0 (0) |  | 20 (2.7) |
| Postcardiotomy syndrome | 10 (1.4) | 5 (10) |  | 15 (2.0) |
| Postprocedural heart failure | 55 (7.9) | 0 (0) |  | 55 (7.4) |
| Requiring open heart surgery | 225 (32) | 30 (60) |  | 255 (34) |
| Vascular Complications, n (%) |  |  | 0.71 |  |
| Accidental puncture | 390 (12) | 15 (21) |  | 405 (12) |
| Fistulas/aneurysms | 255 (7.9) | 0 (0) |  | 255 (7.8) |
| Hemo-transfusion | 1,250 (39) | 30 (43) |  | 1,280 (39) |
| Hemorrhage/hematoma | 1,125 (35) | 25 (36) |  | 1,150 (35) |
| Injury requiring surgical repair | 65 (2.0) | 0 (0) |  | 65 (2.0) |
| Vascular injury | 125 (3.9) | 0 (0) |  | 125 (3.8) |
| Respiratory Complications, n (%) |  |  | 0.26 |  |
| Diaphragmatic paralysis | 200 (26) | 10 (67) |  | 210 (27) |
| Pneumothorax/hemothorax | 195 (25) | 0 (0) |  | 195 (25) |
| Postoperative respiratory failure | 370 (48) | 5 (33) |  | 375 (48) |
| Gastrointestinal Complications, n (%) |  |  | 0.72 |  |
| Esophageal injury | 470 (97) | 20 (100) |  | 490 (97) |
| Esophageal perforation | 15 (3.1) | 0 (0) |  | 15 (3.0) |
| Intra-/postprocedural cerebrovascular infarction, n (%) | 170 (0.2) | 15 (0.6) | 0.012 | 185 (0.2) |
| Infections, n (%) | 60 (<0.1) | 0 (0) | 0.61 | 60 (<0.1) |
| *1*Pearson's X^2: Rao & Scott adjustment; Design-based KruskalWallis test | | | | |

## Multivariable Logistic Regression:

### All-Cause Mortality:

| **Characteristic** | **OR** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 1.12 (0.33 to 3.79) | 0.85 |
| Age, y | 1.02 (1.00 to 1.04) | 0.017 |
| Sex |  |  |
| Female | — |  |
| Male | 1.05 (0.72 to 1.54) | 0.79 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 0.46 (0.06 to 3.40) | 0.44 |
| Black | 0.83 (0.45 to 1.52) | 0.54 |
| Hispanic | 0.69 (0.31 to 1.55) | 0.37 |
| Native American | 0.00 (0.00 to 0.00) | <0.001 |
| Other | 1.77 (0.80 to 3.91) | 0.16 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 1.00 (0.65 to 1.53) | >0.99 |
| $66,000 - $87,999 | 0.93 (0.61 to 1.42) | 0.75 |
| $88,000 or more | 0.48 (0.28 to 0.83) | 0.008 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 2.44 (1.18 to 5.04) | 0.016 |
| Medicare | 1.56 (0.87 to 2.79) | 0.13 |
| Other | 2.48 (1.01 to 6.08) | 0.046 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 0.68 (0.40 to 1.13) | 0.14 |
| South | 0.94 (0.62 to 1.44) | 0.78 |
| West | 1.14 (0.66 to 1.96) | 0.63 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 0.86 (0.57 to 1.30) | 0.47 |
| Small | 0.74 (0.41 to 1.34) | 0.32 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 0.77 (0.24 to 2.45) | 0.66 |
| Urban, teaching | 0.93 (0.33 to 2.62) | 0.90 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 1.14 (0.75 to 1.72) | 0.54 |
| Charlson comorbidity index | 1.54 (1.41 to 1.68) | <0.001 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | 0.41 (0.24 to 0.72) | 0.002 |
| Supraventricular Tachycardia | 0.19 (0.07 to 0.52) | 0.002 |
| Ventricular Tachycardia | 4.64 (3.08 to 6.99) | <0.001 |
| Hypertension |  |  |
| No | — |  |
| Yes | 0.35 (0.22 to 0.55) | <0.001 |
| Obesity |  |  |
| No | — |  |
| Yes | 0.86 (0.56 to 1.34) | 0.51 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 0.64 (0.39 to 1.05) | 0.075 |
| Smoking status |  |  |
| No | — |  |
| Yes | 1.02 (0.53 to 1.93) | 0.96 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | 0.57 (0.38 to 0.86) | 0.007 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 0.83 (0.57 to 1.21) | 0.33 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | 0.41 (0.24 to 0.69) | <0.001 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | 0.42 (0.21 to 0.84) | 0.015 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | 1.14 (0.67 to 1.93) | 0.62 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | 0.33 (0.18 to 0.61) | <0.001 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | 0.60 (0.30 to 1.20) | 0.15 |
| *1*OR = Odds Ratio, CI = Confidence Interval | | |

### Pericardial Complications

| **Characteristic** | **OR** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 1.86 (1.28 to 2.69) | 0.001 |
| Age, y | 1.00 (0.99 to 1.01) | 0.96 |
| Sex |  |  |
| Female | — |  |
| Male | 0.65 (0.57 to 0.75) | <0.001 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 0.78 (0.45 to 1.35) | 0.37 |
| Black | 1.07 (0.84 to 1.37) | 0.59 |
| Hispanic | 1.04 (0.76 to 1.41) | 0.81 |
| Native American | 1.09 (0.34 to 3.52) | 0.88 |
| Other | 0.88 (0.57 to 1.38) | 0.59 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 1.13 (0.93 to 1.37) | 0.22 |
| $66,000 - $87,999 | 1.19 (0.99 to 1.44) | 0.069 |
| $88,000 or more | 1.12 (0.92 to 1.38) | 0.26 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 0.63 (0.44 to 0.91) | 0.012 |
| Medicare | 1.00 (0.83 to 1.21) | 0.98 |
| Other | 0.90 (0.57 to 1.43) | 0.67 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 0.74 (0.58 to 0.94) | 0.014 |
| South | 0.90 (0.74 to 1.10) | 0.29 |
| West | 0.92 (0.72 to 1.18) | 0.53 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 0.85 (0.71 to 1.02) | 0.073 |
| Small | 0.72 (0.56 to 0.94) | 0.014 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 1.87 (0.95 to 3.69) | 0.071 |
| Urban, teaching | 1.94 (1.01 to 3.72) | 0.047 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 0.47 (0.40 to 0.54) | <0.001 |
| Charlson comorbidity index | 1.04 (0.96 to 1.12) | 0.33 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | 0.75 (0.61 to 0.91) | 0.003 |
| Supraventricular Tachycardia | 0.57 (0.44 to 0.74) | <0.001 |
| Ventricular Tachycardia | 1.60 (1.28 to 2.00) | <0.001 |
| Hypertension |  |  |
| No | — |  |
| Yes | 1.03 (0.87 to 1.22) | 0.75 |
| Obesity |  |  |
| No | — |  |
| Yes | 0.78 (0.66 to 0.93) | 0.005 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 1.17 (1.0 to 1.39) | 0.058 |
| Smoking status |  |  |
| No | — |  |
| Yes | 0.96 (0.73 to 1.27) | 0.76 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | 0.74 (0.61 to 0.91) | 0.004 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 0.89 (0.74 to 1.07) | 0.22 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | 0.98 (0.73 to 1.33) | 0.92 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | 0.95 (0.75 to 1.21) | 0.69 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | 0.83 (0.61 to 1.13) | 0.23 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | 0.96 (0.67 to 1.37) | 0.82 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | 0.69 (0.51 to 0.92) | 0.012 |
| *1*OR = Odds Ratio, CI = Confidence Interval | | |

### Cardiac Complications

| **Characteristic** | **OR** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 3.72 (1.94 to 7.12) | <0.001 |
| Age, y | 1.01 (1.0 to 1.03) | 0.19 |
| Sex |  |  |
| Female | — |  |
| Male | 0.92 (0.64 to 1.31) | 0.64 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 1.81 (0.71 to 4.58) | 0.21 |
| Black | 1.22 (0.67 to 2.24) | 0.52 |
| Hispanic | 1.35 (0.70 to 2.58) | 0.37 |
| Native American | 0.00 (0.00 to 0.00) | <0.001 |
| Other | 1.11 (0.48 to 2.54) | 0.81 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 1.33 (0.77 to 2.31) | 0.30 |
| $66,000 - $87,999 | 1.38 (0.82 to 2.34) | 0.22 |
| $88,000 or more | 1.57 (0.90 to 2.74) | 0.11 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 0.72 (0.32 to 1.62) | 0.43 |
| Medicare | 0.73 (0.48 to 1.11) | 0.14 |
| Other | 0.92 (0.33 to 2.62) | 0.88 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 1.06 (0.62 to 1.80) | 0.83 |
| South | 1.07 (0.63 to 1.82) | 0.81 |
| West | 0.99 (0.53 to 1.83) | 0.97 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 0.62 (0.40 to 0.97) | 0.038 |
| Small | 0.33 (0.15 to 0.76) | 0.009 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 1.58 (0.18 to 13.6) | 0.68 |
| Urban, teaching | 3.03 (0.40 to 22.9) | 0.28 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 0.49 (0.34 to 0.70) | <0.001 |
| Charlson comorbidity index | 0.93 (0.80 to 1.08) | 0.34 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | 0.56 (0.35 to 0.91) | 0.020 |
| Supraventricular Tachycardia | 0.61 (0.31 to 1.18) | 0.14 |
| Ventricular Tachycardia | 1.60 (0.94 to 2.74) | 0.084 |
| Hypertension |  |  |
| No | — |  |
| Yes | 1.03 (0.66 to 1.61) | 0.90 |
| Obesity |  |  |
| No | — |  |
| Yes | 1.29 (0.88 to 1.91) | 0.20 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 0.65 (0.41 to 1.02) | 0.062 |
| Smoking status |  |  |
| No | — |  |
| Yes | 0.48 (0.17 to 1.31) | 0.15 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | 1.17 (0.73 to 1.87) | 0.51 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 0.65 (0.37 to 1.12) | 0.12 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | 1.10 (0.52 to 2.35) | 0.80 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | 0.79 (0.41 to 1.51) | 0.47 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | 0.55 (0.19 to 1.56) | 0.26 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | 1.60 (0.53 to 4.87) | 0.41 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | 0.90 (0.46 to 1.77) | 0.77 |
| *1*OR = Odds Ratio, CI = Confidence Interval | | |

### Vascular Complications

| **Characteristic** | **OR** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 1.08 (0.62 to 1.89) | 0.78 |
| Age, y | 1.01 (1.00 to 1.02) | 0.045 |
| Sex |  |  |
| Female | — |  |
| Male | 0.81 (0.68 to 0.96) | 0.015 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 1.15 (0.63 to 2.11) | 0.65 |
| Black | 1.10 (0.82 to 1.48) | 0.52 |
| Hispanic | 0.86 (0.58 to 1.26) | 0.42 |
| Native American | 1.06 (0.27 to 4.19) | 0.94 |
| Other | 1.44 (0.95 to 2.19) | 0.090 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 0.98 (0.78 to 1.24) | 0.87 |
| $66,000 - $87,999 | 1.03 (0.81 to 1.30) | 0.83 |
| $88,000 or more | 0.97 (0.76 to 1.24) | 0.80 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 1.07 (0.71 to 1.60) | 0.75 |
| Medicare | 1.19 (0.94 to 1.52) | 0.16 |
| Other | 0.55 (0.27 to 1.15) | 0.11 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 1.24 (0.95 to 1.62) | 0.11 |
| South | 1.12 (0.89 to 1.43) | 0.34 |
| West | 0.99 (0.72 to 1.36) | 0.96 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 0.95 (0.76 to 1.18) | 0.62 |
| Small | 0.84 (0.61 to 1.16) | 0.29 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 0.86 (0.42 to 1.79) | 0.70 |
| Urban, teaching | 0.99 (0.50 to 1.94) | 0.97 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 0.53 (0.44 to 0.64) | <0.001 |
| Charlson comorbidity index | 1.22 (1.14 to 1.32) | <0.001 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | 0.58 (0.44 to 0.76) | <0.001 |
| Supraventricular Tachycardia | 0.46 (0.33 to 0.65) | <0.001 |
| Ventricular Tachycardia | 2.29 (1.79 to 2.94) | <0.001 |
| Hypertension |  |  |
| No | — |  |
| Yes | 0.90 (0.73 to 1.11) | 0.32 |
| Obesity |  |  |
| No | — |  |
| Yes | 1.14 (0.94 to 1.38) | 0.18 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 1.09 (0.89 to 1.32) | 0.40 |
| Smoking status |  |  |
| No | — |  |
| Yes | 0.96 (0.68 to 1.35) | 0.80 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | 0.76 (0.60 to 0.95) | 0.015 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 0.89 (0.72 to 1.09) | 0.25 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | 0.80 (0.58 to 1.10) | 0.17 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | 0.61 (0.44 to 0.84) | 0.003 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | 0.96 (0.71 to 1.31) | 0.81 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | 0.50 (0.34 to 0.73) | <0.001 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | 0.81 (0.57 to 1.15) | 0.24 |
| *1*OR = Odds Ratio, CI = Confidence Interval | | |

### Respiratory Complications

| **Characteristic** | **OR** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 0.97 (0.31 to 3.07) | 0.96 |
| Age, y | 1.01 (0.99 to 1.03) | 0.36 |
| Sex |  |  |
| Female | — |  |
| Male | 1.13 (0.80 to 1.59) | 0.50 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 1.45 (0.45 to 4.67) | 0.54 |
| Black | 0.82 (0.41 to 1.62) | 0.56 |
| Hispanic | 1.69 (0.92 to 3.10) | 0.089 |
| Native American | 1.97 (0.27 to 14.1) | 0.50 |
| Other | 0.59 (0.14 to 2.47) | 0.47 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 0.99 (0.62 to 1.57) | 0.96 |
| $66,000 - $87,999 | 1.16 (0.73 to 1.84) | 0.52 |
| $88,000 or more | 0.90 (0.52 to 1.53) | 0.69 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 0.64 (0.27 to 1.53) | 0.32 |
| Medicare | 0.81 (0.51 to 1.29) | 0.38 |
| Other | 1.03 (0.39 to 2.68) | 0.96 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 0.51 (0.27 to 0.96) | 0.037 |
| South | 1.18 (0.77 to 1.81) | 0.45 |
| West | 1.41 (0.85 to 2.33) | 0.18 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 0.99 (0.67 to 1.44) | 0.94 |
| Small | 0.76 (0.39 to 1.45) | 0.40 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 1.13 (0.33 to 3.88) | 0.84 |
| Urban, teaching | 1.08 (0.34 to 3.40) | 0.89 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 0.44 (0.31 to 0.63) | <0.001 |
| Charlson comorbidity index | 1.38 (1.22 to 1.55) | <0.001 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | 0.58 (0.36 to 0.94) | 0.027 |
| Supraventricular Tachycardia | 0.23 (0.09 to 0.60) | 0.002 |
| Ventricular Tachycardia | 1.08 (0.61 to 1.93) | 0.78 |
| Hypertension |  |  |
| No | — |  |
| Yes | 0.72 (0.46 to 1.15) | 0.17 |
| Obesity |  |  |
| No | — |  |
| Yes | 1.32 (0.89 to 1.94) | 0.16 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 1.31 (0.90 to 1.92) | 0.16 |
| Smoking status |  |  |
| No | — |  |
| Yes | 0.67 (0.33 to 1.39) | 0.28 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | 0.50 (0.33 to 0.76) | 0.001 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 1.17 (0.80 to 1.70) | 0.42 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | 0.58 (0.31 to 1.09) | 0.089 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | 0.71 (0.38 to 1.33) | 0.29 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | 0.83 (0.44 to 1.54) | 0.55 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | 0.50 (0.21 to 1.16) | 0.11 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | 0.50 (0.23 to 1.10) | 0.083 |
| *1*OR = Odds Ratio, CI = Confidence Interval | | |

### Gastrointestinal Complications

| **Characteristic** | **OR** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 2.11 (0.74 to 6.01) | 0.16 |
| Age, y | 1.03 (1.01 to 1.06) | 0.012 |
| Sex |  |  |
| Female | — |  |
| Male | 0.80 (0.51 to 1.26) | 0.34 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 4.15 (1.76 to 9.82) | 0.001 |
| Black | 0.95 (0.46 to 1.96) | 0.89 |
| Hispanic | 0.74 (0.28 to 1.95) | 0.54 |
| Native American | 0.00 (0.00 to 0.00) | <0.001 |
| Other | 1.28 (0.41 to 4.03) | 0.67 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 1.03 (0.60 to 1.77) | 0.90 |
| $66,000 - $87,999 | 0.88 (0.48 to 1.60) | 0.67 |
| $88,000 or more | 0.99 (0.52 to 1.88) | 0.97 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 0.84 (0.31 to 2.27) | 0.72 |
| Medicare | 0.58 (0.34 to 1.02) | 0.057 |
| Other | 1.08 (0.31 to 3.76) | 0.90 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 0.67 (0.36 to 1.26) | 0.21 |
| South | 0.73 (0.42 to 1.26) | 0.26 |
| West | 0.76 (0.36 to 1.60) | 0.47 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 0.95 (0.58 to 1.58) | 0.85 |
| Small | 0.59 (0.21 to 1.65) | 0.31 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 1.24 (0.30 to 5.12) | 0.77 |
| Urban, teaching | 1.28 (0.34 to 4.80) | 0.71 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 0.96 (0.58 to 1.57) | 0.86 |
| Charlson comorbidity index | 1.37 (1.21 to 1.55) | <0.001 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | 1.08 (0.66 to 1.76) | 0.76 |
| Supraventricular Tachycardia | 0.78 (0.41 to 1.48) | 0.45 |
| Ventricular Tachycardia | 0.18 (0.04 to 0.79) | 0.023 |
| Hypertension |  |  |
| No | — |  |
| Yes | 1.54 (0.77 to 3.08) | 0.22 |
| Obesity |  |  |
| No | — |  |
| Yes | 0.89 (0.54 to 1.45) | 0.63 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 1.02 (0.59 to 1.78) | 0.94 |
| Smoking status |  |  |
| No | — |  |
| Yes | 1.53 (0.76 to 3.06) | 0.23 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | 0.63 (0.37 to 1.07) | 0.087 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 0.74 (0.44 to 1.23) | 0.24 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | 1.05 (0.48 to 2.26) | 0.91 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | 0.33 (0.12 to 0.91) | 0.032 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | 1.17 (0.62 to 2.23) | 0.62 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | 0.30 (0.09 to 0.99) | 0.049 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | 0.59 (0.26 to 1.36) | 0.22 |
| *1*OR = Odds Ratio, CI = Confidence Interval | | |

### Intra-/postprocedural cerebrovascular infarction

| **Characteristic** | **OR** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 4.11 (1.17 to 14.5) | 0.027 |
| Age, y | 1.02 (0.98 to 1.06) | 0.37 |
| Sex |  |  |
| Female | — |  |
| Male | 0.81 (0.39 to 1.67) | 0.56 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 3.52 (0.60 to 20.5) | 0.16 |
| Black | 1.26 (0.36 to 4.45) | 0.71 |
| Hispanic | 0.65 (0.09 to 4.49) | 0.66 |
| Native American | 16.7 (1.51 to 184) | 0.022 |
| Other | 0.00 (0.00 to 0.00) | <0.001 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 1.85 (0.50 to 6.86) | 0.35 |
| $66,000 - $87,999 | 2.98 (0.92 to 9.71) | 0.069 |
| $88,000 or more | 1.96 (0.52 to 7.30) | 0.32 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 4.30 (1.31 to 14.1) | 0.016 |
| Medicare | 0.85 (0.30 to 2.43) | 0.76 |
| Other | 0.00 (0.00 to 0.00) | <0.001 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 2.74 (0.92 to 8.16) | 0.071 |
| South | 1.15 (0.40 to 3.30) | 0.80 |
| West | 0.91 (0.26 to 3.20) | 0.88 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 0.34 (0.11 to 0.99) | 0.049 |
| Small | 0.46 (0.10 to 2.09) | 0.32 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 161,003,147 (19,651,927 to 1,319,057,056) | <0.001 |
| Urban, teaching | 96,396,295 (12,846,811 to 723,311,446) | <0.001 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 0.16 (0.06 to 0.41) | <0.001 |
| Charlson comorbidity index | 2.22 (1.95 to 2.53) | <0.001 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | 0.36 (0.13 to 1.02) | 0.054 |
| Supraventricular Tachycardia | 0.00 (0.00 to 0.00) | <0.001 |
| Ventricular Tachycardia | 0.60 (0.20 to 1.83) | 0.37 |
| Hypertension |  |  |
| No | — |  |
| Yes | 0.84 (0.38 to 1.88) | 0.68 |
| Obesity |  |  |
| No | — |  |
| Yes | 1.41 (0.64 to 3.10) | 0.39 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 0.51 (0.15 to 1.71) | 0.27 |
| Smoking status |  |  |
| No | — |  |
| Yes | 1.28 (0.41 to 4.04) | 0.67 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | 0.21 (0.07 to 0.60) | 0.004 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 0.10 (0.03 to 0.40) | 0.001 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | 0.10 (0.03 to 0.36) | <0.001 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | 1.18 (0.38 to 3.67) | 0.78 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | 0.39 (0.08 to 1.85) | 0.24 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | 0.90 (0.15 to 5.41) | 0.91 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | 0.25 (0.03 to 2.52) | 0.24 |
| *1*OR = Odds Ratio, CI = Confidence Interval | | |

### Infections

| **Characteristic** | **OR** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 0.00 (0.00 to 0.00) | <0.001 |
| Age, y | 0.97 (0.90 to 1.03) | 0.32 |
| Sex |  |  |
| Female | — |  |
| Male | 5.16 (0.85 to 31.5) | 0.075 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 0.00 (0.00 to 0.00) | <0.001 |
| Black | 3.22 (1.03 to 10.1) | 0.045 |
| Hispanic | 0.00 (0.00 to 0.00) | <0.001 |
| Native American | 0.00 (0.00 to 0.00) | <0.001 |
| Other | 6.81 (0.70 to 65.8) | 0.10 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 0.59 (0.13 to 2.81) | 0.51 |
| $66,000 - $87,999 | 1.35 (0.40 to 4.59) | 0.63 |
| $88,000 or more | 1.12 (0.19 to 6.49) | 0.90 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 0.00 (0.00 to 0.00) | <0.001 |
| Medicare | 8.62 (0.53 to 141) | 0.13 |
| Other | 0.00 (0.00 to 0.00) | <0.001 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 0.42 (0.03 to 5.34) | 0.51 |
| South | 1.89 (0.42 to 8.53) | 0.41 |
| West | 0.79 (0.09 to 6.71) | 0.83 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 0.31 (0.04 to 2.37) | 0.26 |
| Small | 0.68 (0.08 to 5.51) | 0.72 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 18,305,730 (1,456,664 to 230,045,959) | <0.001 |
| Urban, teaching | 23,028,712 (7,448,293 to 71,200,416) | <0.001 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 0.91 (0.33 to 2.50) | 0.85 |
| Charlson comorbidity index | 1.17 (0.83 to 1.65) | 0.36 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | 0.80 (0.17 to 3.69) | 0.77 |
| Supraventricular Tachycardia | 0.95 (0.14 to 6.40) | 0.96 |
| Ventricular Tachycardia | 6.97 (2.24 to 21.7) | <0.001 |
| Hypertension |  |  |
| No | — |  |
| Yes | 1.24 (0.10 to 15.7) | 0.87 |
| Obesity |  |  |
| No | — |  |
| Yes | 1.38 (0.31 to 6.19) | 0.67 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 0.84 (0.21 to 3.41) | 0.81 |
| Smoking status |  |  |
| No | — |  |
| Yes | 1.77 (0.43 to 7.34) | 0.43 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | 1.89 (0.62 to 5.79) | 0.26 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 0.75 (0.17 to 3.31) | 0.70 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | 1.43 (0.15 to 13.3) | 0.75 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | 0.00 (0.00 to 0.00) | <0.001 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | 0.84 (0.11 to 6.65) | 0.87 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | 0.25 (0.02 to 2.66) | 0.25 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | 1.43 (0.23 to 8.79) | 0.70 |
| *1*OR = Odds Ratio, CI = Confidence Interval | | |

## Multivariable Linear Regression:

### Length of Stay:

| **Characteristic** | **Beta** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 0.84 (0.30 to 1.4) | 0.002 |
| Age, y | 0.01 (0.01 to 0.02) | <0.001 |
| Sex |  |  |
| Female | — |  |
| Male | -0.21 (-0.32 to -0.09) | <0.001 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | -0.06 (-0.47 to 0.35) | 0.76 |
| Black | 0.48 (0.24 to 0.72) | <0.001 |
| Hispanic | -0.24 (-0.46 to -0.03) | 0.027 |
| Native American | 0.24 (-0.73 to 1.2) | 0.62 |
| Other | -0.05 (-0.56 to 0.46) | 0.85 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | -0.04 (-0.21 to 0.13) | 0.66 |
| $66,000 - $87,999 | -0.21 (-0.39 to -0.03) | 0.019 |
| $88,000 or more | -0.36 (-0.56 to -0.16) | <0.001 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 0.52 (0.27 to 0.77) | <0.001 |
| Medicare | 0.27 (0.09 to 0.44) | 0.003 |
| Other | 0.35 (-0.08 to 0.78) | 0.11 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | -0.28 (-0.52 to -0.04) | 0.021 |
| South | 0.14 (-0.03 to 0.32) | 0.10 |
| West | -0.17 (-0.39 to 0.04) | 0.11 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | -0.33 (-0.50 to -0.17) | <0.001 |
| Small | -0.40 (-0.59 to -0.21) | <0.001 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | -0.06 (-0.43 to 0.31) | 0.76 |
| Urban, teaching | 0.12 (-0.22 to 0.47) | 0.48 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | 1.9 (1.8 to 2.1) | <0.001 |
| Charlson comorbidity index | 0.71 (0.64 to 0.78) | <0.001 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | -0.42 (-0.59 to -0.26) | <0.001 |
| Supraventricular Tachycardia | -0.80 (-0.98 to -0.62) | <0.001 |
| Ventricular Tachycardia | 1.9 (1.6 to 2.2) | <0.001 |
| Hypertension |  |  |
| No | — |  |
| Yes | -0.29 (-0.44 to -0.14) | <0.001 |
| Obesity |  |  |
| No | — |  |
| Yes | 0.22 (0.09 to 0.35) | 0.001 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 0.04 (-0.11 to 0.18) | 0.60 |
| Smoking status |  |  |
| No | — |  |
| Yes | -0.02 (-0.25 to 0.21) | 0.87 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | -0.80 (-0.97 to -0.63) | <0.001 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | 0.05 (-0.13 to 0.22) | 0.60 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | -0.78 (-1.1 to -0.49) | <0.001 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | -0.31 (-0.50 to -0.11) | 0.002 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | -0.52 (-0.81 to -0.22) | <0.001 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | -0.83 (-1.2 to -0.46) | <0.001 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | -0.50 (-0.69 to -0.30) | <0.001 |
| *1*CI = Confidence Interval | | |

### Inflation Adjusted Total Charge:

| **Characteristic** | **Beta** **(95% CI)***1* | **p-value** |
| --- | --- | --- |
| Catheter Ablation categories |  |  |
| No CHD | — |  |
| CHD | 16,819 (1,853 to 31,785) | 0.028 |
| Age, y | -441 (-604 to -279) | <0.001 |
| Sex |  |  |
| Female | — |  |
| Male | 7,236 (4,278 to 10,193) | <0.001 |
| Race |  |  |
| White | — |  |
| Asian or Pacific Islander | 1,609 (-11,540 to 14,759) | 0.81 |
| Black | -12 (-6,609 to 6,585) | >0.99 |
| Hispanic | 10,441 (2,807 to 18,076) | 0.007 |
| Native American | 18,373 (-41,093 to 77,839) | 0.54 |
| Other | 10,409 (-6,064 to 26,882) | 0.22 |
| Residential income |  |  |
| $1 - $51,999 | — |  |
| $52,000 - $65,999 | 2,153 (-2,365 to 6,670) | 0.35 |
| $66,000 - $87,999 | 4,716 (-358 to 9,790) | 0.068 |
| $88,000 or more | 11,479 (3,900 to 19,058) | 0.003 |
| Expected primary payer |  |  |
| Private | — |  |
| Medicaid | 2,456 (-4,969 to 9,881) | 0.52 |
| Medicare | 8,896 (3,688 to 14,105) | <0.001 |
| Other | -1,462 (-10,206 to 7,282) | 0.74 |
| Hospital region |  |  |
| Midwest | — |  |
| Northeast | 31,997 (18,603 to 45,390) | <0.001 |
| South | 42,233 (34,842 to 49,625) | <0.001 |
| West | 46,836 (36,632 to 57,040) | <0.001 |
| Hospital bedsize |  |  |
| Large | — |  |
| Medium | 1,670 (-7,270 to 10,609) | 0.71 |
| Small | 7,939 (-3,199 to 19,076) | 0.16 |
| Hospital location and teaching status |  |  |
| Rural | — |  |
| Urban, non-teaching | 54,387 (40,079 to 68,694) | <0.001 |
| Urban, teaching | 52,075 (38,795 to 65,356) | <0.001 |
| Admission type |  |  |
| Elective | — |  |
| Non-elective | -4,097 (-9,968 to 1,775) | 0.17 |
| Charlson comorbidity index | 7,811 (6,008 to 9,613) | <0.001 |
| Ablation type |  |  |
| Atrial Fibrillation | — |  |
| Atrial Flutter | -29,037 (-33,517 to -24,558) | <0.001 |
| Supraventricular Tachycardia | -31,096 (-35,992 to -26,200) | <0.001 |
| Ventricular Tachycardia | 45,033 (32,826 to 57,239) | <0.001 |
| Hypertension |  |  |
| No | — |  |
| Yes | -1,615 (-6,026 to 2,796) | 0.47 |
| Obesity |  |  |
| No | — |  |
| Yes | 8,282 (3,955 to 12,610) | <0.001 |
| Obstructive sleep apnea |  |  |
| No | — |  |
| Yes | 883 (-3,273 to 5,040) | 0.68 |
| Smoking status |  |  |
| No | — |  |
| Yes | -11,304 (-17,256 to -5,352) | <0.001 |
| Diabetes Mellitus |  |  |
| No | — |  |
| Yes | -6,946 (-11,589 to -2,304) | 0.003 |
| Chronic pulmonary disease |  |  |
| No | — |  |
| Yes | -1,512 (-5,755 to 2,732) | 0.48 |
| Chronic kidney disease |  |  |
| No | — |  |
| Yes | -11,783 (-19,446 to -4,121) | 0.003 |
| Previous stroke/TIA |  |  |
| No | — |  |
| Yes | -3,610 (-8,812 to 1,593) | 0.17 |
| Peripheral vascular disease |  |  |
| No | — |  |
| Yes | -2,808 (-10,713 to 5,096) | 0.49 |
| Previous ICD insertion |  |  |
| No | — |  |
| Yes | -28,201 (-37,830 to -18,572) | <0.001 |
| Previous PPM or CRT insertion |  |  |
| No | — |  |
| Yes | -31,474 (-36,630 to -26,317) | <0.001 |
| *1*CI = Confidence Interval | | |