

Healthcare Resource Utilization and Costs before and after Catheter Ablation, and Rural Disparities



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INTRODUCTION

- Catheter ablation (CA) for atrial fibrillation (AF) has been shown its effectiveness and cost-effectiveness in prior studies.
- Rural disparities exist in AF.
- Whether CA for AF can help patients reduce healthcare resource utilization (HCRU) and cost burden is unknown, and rural disparities may exist.

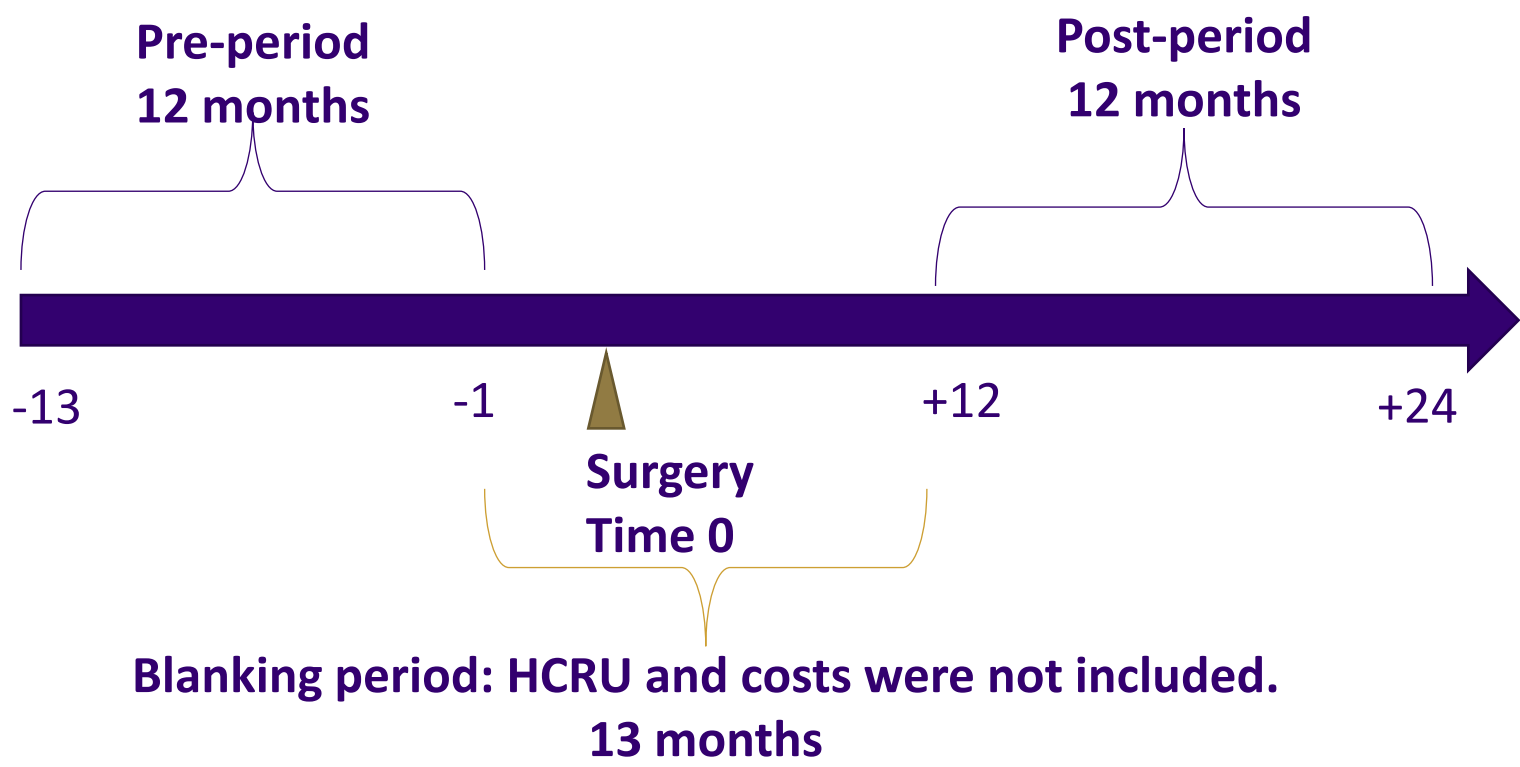
OBJECTIVE

- To assess the HCRU and costs change before and after CA for AF
- To assess rural disparities in the change

METHODS

- MarketScan Commercial Claims and Encounters Databases, and Medicare Supplemental and Coordination of Benefits Databases. 2014-2019
- Retrospective cohort study
- **Incident AF patients**
 - At least 2 AF diagnosis code in outpatient claims, or at least 1 AF diagnosis code in inpatient claims.
 - Exclude individuals with an AF diagnosis code 12 months prior to the index date.

- **CA patients**
 - Patients who underwent CA after AF diagnosis.
 - The surgery date was index date for CA.
 - Excluded individuals with a procedure code of CA 12 months prior to CA.
- **Outcomes**
 - HCRU and costs during pre and post periods.
 - Blanking period was to exclude costs of the surgery itself and repeated CA.



- **Analysis methods**
 - Paired T-test to compare changes in HCRU and costs before and after CA.
 - Linear regression to compare changes in HCRU/costs by rural status.
 - Outcome: Change in HCRU/cost after vs before CA.
 - Adjusting for age, gender, insurance type, health plans, Charlson Comorbidity Index.

MAIN RESULTS

- N=9638 patients with incident AF underwent CA for AF.
 - Mean age: 59 years (SD: 11.4)
 - 70.7% were male.
 - N=1436 (14.9%) had rural dwelling

Change in HCRU

	Mean	Lower	Upper
Outpatient visits	0.23	-0.41	0.87
Inpatient admission	-0.31	-0.34	-0.28
Inpatient length of stay	-0.72	-0.87	-0.57
Emergency room (ER) visits	-0.64	-0.71	-0.58
Medications	-0.28	-0.53	-0.03
Total 30-day supply	8.02	7.08	8.97

Change in total costs

	Mean	Lower	Upper
Outpatient services	-1454.9	-2216.4	-693.5
Inpatient services	-3129.3	-4113.6	-2145.0
All medications	907.3	630.6	1184.0
ER visits, in total	-1077.03	-1253.5	-900.51
Total change in total costs	-3677.0	-5090.6	-2263.3

Change in costs for patients

	Mean	Lower	Upper
Outpatient services	-289.9	-349.5	-230.4
Inpatient services	-279.9	-320.6	-239.3
All medications	50.0	31.0	69.0
ER visits, in total	-121.2	-145.4	-97.1
Total change in costs for patients	-519.9	-592.1	-447.7

Change in costs for payers

	Mean	Lower	Upper
Outpatient services	-1165.0	-1902.4	-427.6
Inpatient services	-2849.4	-3818.4	-1880.4
All medications	857.3	587.8	1126.9
ER visits, in total	-955.8	-1120.9	-790.6
Total change in costs for payers	-3157.1	-4539.8	-1774.3

Rural disparities in HCRU

	Mean	Lower	Upper
Outpatient visits	-1.59	-3.30	0.12
Inpatient admission	-0.05	-0.14	0.04
Inpatient length of stay	-0.13	-0.53	0.27
Emergency room (ER) visits	-0.18	-0.37	0.00
Medications	0.15	-0.66	0.95
Total 30-day supply	2.06	-0.80	4.93

Rural disparities in total costs

	Mean	Lower	Upper
Outpatient services	780.4	-1540.4	3101.2
Inpatient services	1280.8	-1511.4	4073.0
All medications	523.9	-289.2	1337.0
ER visits, in total	-333.3	-772.2	105.6
Total change in total costs	2585.1	-1618.0	6788.3

KEY FINDINGS

- Incident AF patients experienced significantly reduction in HCRU, after undergoing CA, suggesting the effectiveness of CA.
- Costs to payers and costs to patients decreased after CA for AF.
- Rural patients who underwent CA for AF did not significantly different change in HCRU and costs, compared to urban patients.

REFERENCES

1. Ganesan AN, Shipp NJ, Brooks AG, Kuklik P, Lau DH, Lim HS, et al. Long-term outcomes of catheter ablation of atrial fibrillation: a systematic review and meta-analysis. J Am Heart Assoc. 2013;2(2):e004549. Epub 20130318.
2. Chang AY, Kaiser D, Ullal A, Perino AC, Heidenreich PA, Turakhia MP. Evaluating the Cost-effectiveness of Catheter Ablation of Atrial Fibrillation. Arrhythm Electrophysiol Rev. 2014;3(3):177-83. Epub 20141129.
3. Adamson DM, Chang S, Hansen LG. WHITE PAPER. Health Research Data for the Real World: The MarketScan Databases 2006. Available from: <http://patientprivacyrights.org/wp-content/uploads/2011/06/Thomson-Medstat-white-paper.pdf>.
4. Rural-Urban Disparities in Health Care in Medicare. Centers for Medicare & Medicaid Services, 2020.
5. Hansen RN, Saour BM, Serafini B, Hannaford B, Kim L, Kohno T, et al. Opportunities and Barriers to Rural Telerobotic Surgical Health Care in 2021: Report and Research Agenda from a Stakeholder Workshop. Telemed J E Health. 2021.