

# Summary

## Differences in Outcomes Among Patients with Atrial Fibrillation Undergoing Catheter Ablation with Versus without Intracardiac Echocardiography

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## RATIONALE

Intracardiac echocardiography (ICE) use can lead to early detection of complications and may improve patient outcomes via real-time visualization of catheter location and treatment area during catheter ablation (CA) for atrial fibrillation (AF). However, an assessment of long-term (12-month) effectiveness and safety endpoints in a large real-world sample of patients is lacking.

## OBJECTIVE

**Evaluate complications and healthcare use among patients with AF undergoing CA with versus without ICE use during CA procedures in a real-world setting.**

## METHODOLOGY

### DATA SOURCE:

2015-2020 IBM MARKETSCAN® DATABASE



A nationally representative medical and prescription drug insurance claims database for individuals in US with primary coverage through privately insured health plans in the US.

**Population:** Non-elderly adult patients between ages 18-64 years old undergoing first CA to treat AF. Patients were classified into ICE/non-ICE groups based on the presence or absence of ICE procedure codes.

**Analysis:** Patients were matched using 1:1 propensity score matching. Outcomes were assessed using a Cox proportional hazard model.

## RESULTS



- For safety endpoint assessment, 1,371 matched patients each in ICE cohort and non-ICE cohort were identified
- For 12-month healthcare utilization assessment, 1,250 matched patients in each study cohort were identified

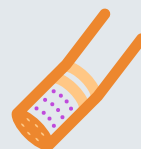
Compared to patients undergoing CA without ICE, the following improvements were reported for patients ablated when ICE was used during CA, based on hazard ratios (HR):



**↓50%**

**OVERALL RISK OF COMPLICATIONS**

(2.9% for ICE vs 5.8% for non-ICE, HR 0.50, p<0.001)



**↓36%**

**RISK OF 12M REPEAT ABLATION**

(7.4% for ICE vs 11.5% for no-ICE, HR 0.64, p=0.001)

No differences were observed between the cohorts in CV- or AF-related inpatient admissions, cardioversions, or healthcare utilization outcomes post-blanking 4-12-month period.

Always verify catheter tip location using fluoroscopy or IC signals and consult the CARTO® 3 System User Guide regarding recommendations for fluoroscopy use.

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Earley, M.J., Showkathali, R., Alzetani, M., Kistler, P.M., Gupta, D., Abrams, D.J., Horrocks, J.A., Harris, S.J., Sporton, S.C., and Schilling, R.J. (2006). Radiofrequency ablation of arrhythmias guided by non-fluoroscopic catheter location: a prospective randomized trial. *Eur Heart J* 27, 1223-1229

## CONCLUSIONS



- Among patients with AF, the use of ICE during an ablation procedure was associated with lower risk of complications and repeat ablation, compared to CA procedures performed without ICE.
- The results suggest that **ICE use is associated with significant clinical benefit of improved safety and effectiveness in AF ablation procedures.**

## LIMITATIONS

1. Since this study relied on administrative claims data, procedural details (including ablation strategy, use of mapping systems, type of ablation catheter used, and procedure or fluoroscopy time) were missing and could not be studied.
2. As hospital or provider identifiers are not included in the database studied, the authors could not control for the effect of volume in the analyses.
3. Given the database used does not include elderly individuals, the results may not be generalizable to elderly patients or non-elderly adult patients with non-private insurance .
4. Given the use of claims data, coding errors, missing data, and reporting bias may also be present and could have influenced study results.

## ARTICLES COMPARING HEALTHCARE UTILIZATION OF ICE VS NO-ICE GUIDED CA



- Goya M, Frame D, Gache L, *et al.* (2020). [The use of intracardiac echocardiography catheters in endocardial ablation of cardiac arrhythmia: Meta-analysis of efficiency, effectiveness, and safety outcomes.](#) *J. Cardiovasc. Electrophysiol.* 31(3): 664-673.
- Sha Q, Velleca M, Goldstein L, *et al.* (2020). [The Value of Intracardiac Echocardiography in Catheter Ablation of Cardiac Arrhythmias: Insights from Recent Clinical Studies.](#) *EMJ Cardiol.* 8[Suppl 3]:2-9.
- Field ME, Goldstein L, Lee SHY, *et al.* (2020). [Intracardiac echocardiography use and outcomes after catheter ablation of ventricular tachycardia.](#) *J. Comp. Eff. Res.* 9(5), 375-385.
- Bartel T, Müller S, Biviano A, *et al.* (2014). [Why is intracardiac echocardiography helpful? Benefits, costs, and how to learn.](#) *European Heart Journal.* 35(2), 69-76.

12M, 12 months; AF, atrial fibrillation; CA, catheter ablation; CV, cardiovascular; HR, hazard ratio; ICE, intracardiac echocardiography

**Important information:** Prior to use, refer to the instructions for use supplied with this device for indications, contraindications, side effects, warnings and precautions.

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