# Atrial Fibrillation Research Review™

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## In this issue:



### Abbreviations used in this issue:

**AF** = atrial fibrillation; **CAD** = coronary artery disease; **CT** = computed tomography; **EF** = ejection fraction; **ESRD** = end-stage renal disease; **HF** = heart failure; **HR** = hazard ratio; **ICE** = intracardiac echocardiography; **LA** = left atrial; **MRI** = magnetic resonance imaging; **NOAC** = nonvitamin K oral anticoagulant; **RF** = radiofrequency

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# Welcome to the nineteenth issue of Atrial Fibrillation Research Review.

This issue covers important topics like performing LA catheter ablation procedures in patients with atrial arrhythmias receiving uninterrupted NOAC anticoagulation. Research from Taiwan has reported on the best anticoagulation strategy for patients with AF undergoing dialysis – antiplatelets or anticoagulants? Anticoagulation strategies for patients with postoperative AF are also covered.

I hope you find this issue stimulating reading, and I look forward to receiving your comments, feedback and suggestions.

Kind Regards,


**Dr Andrei Catanchin**

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## Comparison of safety of left atrial catheter ablation procedures for atrial arrhythmias under continuous anticoagulation with apixaban versus phenprocoumon

**Authors:** Kaess BM et al.


**Summary:** The safety of LA RF ablation for AF or atrial flutter among apixaban recipients was compared between 105 case patients and 210 matched phenprocoumon recipients undergoing the procedure. No significant difference was seen between apixaban and phenprocoumon recipients for the composite primary safety endpoint (bleeding, thromboembolic event or death; 10.5% vs. 12.3% [p=0.71]), major bleeding complications (1% vs. 0.5% [p>0.99]) or minor bleeding complications (9.5% vs. 11.9% [p=0.61]). No thromboembolic events or deaths occurred in either group.


**Comment:** This adds to the small but growing number of publications describing the safety and efficacy of uninterrupted anticoagulation with NOACs in the setting of AF ablation (i.e. taking the medication on the day of the procedure – in this case half dose). The lack of an effective reversal agent has discouraged most ablationists from this practice to date – although rare (less frequent than n [105 apixaban recipients] in this study), serious complications can arise. We eagerly await these agents, which will have a great impact on the logistics of these procedures (i.e. avoiding warfarin), as most of our ablation patients are now taking NOACs.


***Reference: Am J Cardiol 2015;115(1):47–51***

Abstract


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**Independent commentary by Dr Andrei Catanchin**, a cardiologist/electrophysiologist specialising in the management of AF and other arrhythmias in private practice in Melbourne. Dr Catanchin has a particular expertise in the management of AF and other rhythm disorders. In addition to practising general cardiology, he performs catheter ablation for AF and other arrhythmias, implants pacemakers and ICDs (defibrillators) and his research interests include alternatives to warfarin in AF management.

## Anti-platelet or anti-coagulant agent for the prevention of ischemic stroke in patients with end-stage renal disease and atrial fibrillation – a nation-wide database analyses

**Authors:** Chen J-J et al.

**Summary:** The risk of stroke according to anticoagulant/antiplatelet use was investigated in adults with nonvalvular AF and ESRD using Taiwanese health insurance ESRD claims data from 1622 antiplatelet recipients, 294 warfarin recipients and 2983 antiplatelet/warfarin nonrecipient controls. No differences were seen among antiplatelet recipients, warfarin recipients and controls for the incidences of ischaemic stroke or transient ischaemic attack during ~4 years of follow-up (6.2%, 5.1% and 6.6%, respectively); propensity matching and Cox regression analyses did not affect these findings in all patients or any subgroup.

**Comment:** This is a very large group of dialysis patients (almost all consecutive ESRD patients over 13 years in Taiwan), but the overall incidence of AF was lower than in previous reports. However, as in previous reports, no clear solution is posed to the issue of best antithrombotic therapy for dialysis patients with AF. Antiplatelet agents, warfarin or neither seemed to make a significant impact on stroke risk. We continue to make a risk-benefit analysis and take into consideration other factors (e.g. coronary disease, which might sway us toward antiplatelet agents).

***Reference: Int J Cardiol 2014;177(3):1008–11***
Abstract



## Presence and extent of coronary artery disease as predictor for AF recurrences after catheter ablation

**Authors:** Kornej J et al.

**Summary:** The relationships between CAD (stenosis ≥50% in the left main coronary artery and ≥70% in ≥1 major coronary artery) and rhythm outcomes after *de novo* LA AF catheter were explored in 1310 patients from the Leipzig Heart Center AF Ablation Registry. Significant CAD was evident in 152 patients, of whom 59%, 23% and 18% had one-, two- and three-vessel disease, respectively, and 47% had right coronary artery involvement. AF recurrence rates (early and late [≤1 week and 3–12 month postablation, respectively]) did not differ among patients with CAD, and neither location (right coronary artery versus others) nor CAD extent (single- versus multiple-vessel) was associated with postablation rhythm outcomes.

**Comment:** CAD is often cited as a cause of AF, although this is rarely the case outside the setting of acute ischaemia and is more often an association or indirect cause (e.g. via HF). In these patients with significant CAD (including multivessel disease and right coroanry artery disease), AF recurrence was similar in all groups including those without CAD. Importantly however, this is a retrospective analysis and active ischaemia was not ruled out.

***Reference: Int J Cardiol; Published online Dec 12, 2014***
Abstract

## Does isolation of the left atrial posterior wall improve clinical outcomes after radiofrequency catheter ablation for persistent atrial fibrillation?

**Authors:** Kim J-S et al.

**Summary:** Consecutive patients with persistent AF scheduled for linear ablation after circumferential pulmonary vein isolation were randomly allocated to posterior wall isolation (n=60) or a control group (n=60). No significant difference was seen between the intervention and control groups for LA volume, creatine kinase-MB level, troponin-T level or procedure time. Compared with the control group, the intervention group had significantly more frequent AF termination during RF catheter ablation (p=0.035) and a significantly reduced recurrence rate during 12 months of follow-up (16.7% vs. 36.7% [p=0.02]), with no difference in change in LA emptying fraction. A multivariate analysis revealed that smaller LA volume and additional posterior wall isolation were independently associated with outcome.

**Comment:** As with many AF ablation studies, the subject numbers here are only modest. Nevertheless, the results suggest better long-term results with additional ablation (i.e. electrical isolation of the posterior LA wall). Markers of acute atrial injury (biomarkers) were similar between the two groups. There was a small fall in LA volume at 1 year, but no significant change in atrial function (LA emptying fraction) in either group.

***Reference: Int J Cardiol; Published online Dec 11, 2014***
Abstract

## The long-term efficacy of cryoballoon vs. irrigated radiofrequency ablation for the treatment of atrial fibrillation

**Authors:** Cheng X et al.

**Summary:** This meta-analysis of three randomised controlled trials and eight retrospective trials (n=1216) found no significant difference between RF catheter ablation versus cryoballoon ablation for the proportion of AF-free participants at mean follow-up of 16.5 months (66.9% vs. 65.1% [p=0.87]), acute pulmonary vein isolation rate or fluoroscopy time. Cryoballoon ablation was associated with significantly shorter procedures. Transient phrenic nerve palsy, which resolved during follow-up, was seen in 5.4% of the cryoballoon ablation patients versus none in the RF catheter ablation group (p<0.00001), and the total complication rate did not differ significantly between the groups.

**Comment:** This large analysis shows overall equal efficacy between cryoballoon ablation and traditional RF ablation for AF. Only 10% had persistent AF. Reversible phrenic nerve injury is known to occur more frequently with balloon ablation; however, this complication also exists with RF ablation, but is often asymptomatic, not specifically tested for and therefore undetected.

***Reference: Int J Cardiol; Published online Dec 2, 2014***
Abstract

## Periprocedural imaging and outcomes after catheter ablation of atrial fibrillation

**Authors:** Steinberg BA et al.

**Summary:** This analysis of US Medicare claims for AF ablation in 11,525 patients reported on the periprocedural imaging techniques used. Significant variation was seen in the imaging modalities used in addition to electroanatomic mapping, with 53% of patients undergoing transoesophageal echocardiography, 67% ICE and 50% preprocedural CT/MRI. The use of imaging generally increased over the study period (2007–2009). Pre-ablation CT/MRI use was significantly associated with reduced stroke/transient ischaemic attack risk (adjusted HR 0.46 [95% CI 0.28–0.74; p=0.002]), whereas ICE was associated with fewer repeat ablations (0.59 [0.37–0.92; p=0.02]) but increased bleeding risk (1.76 [1.15–2.70; p=0.009]).

**Comment:** This interesting analysis shows the wide range of periprocedural imaging used by US AF ablationists (2007–2009). In Australia, most patients will undergo pre-ablation CT/MRI to delineate anatomy and provide data for integration into ablation mapping software; some operators also use this to exclude LA thrombus. Why CT/MRI was associated with lower cardiovascular events is unexplained. Transoesophageal echocardiography did not confer additional benefit, but would have excluded a small number of patients from ablation (if LA thrombus was demonstrated) – this specific issue was not studied. Finally, ICE (less often used in Australia) added bleeding risk but also efficacy at 6 months follow-up.

***Reference: Heart 2014;100(23):1871–7***
Abstract

## Electrophysiological study 6 months after Epicor™ high-intensity focused ultrasound atrial fibrillation ablation

**Authors:** Garcia R et al.

**Summary:** These researchers performed electrophysiological studies in 30 patients 6 months after they underwent high-intensity focused ultrasound AF ablation with the Epicor™ device during cardiac surgery; endovascular RF was delivered in case of conduction gaps. Ten participants had achieved complete or near-complete 'box' isolation and four had no visible lesion at the time of the electrophysiological study. With the use of this technology, 64% and 56% of participants with paroxysmal and persistent AF, respectively, were free of symptomatic atrial arrhythmia at 6 months follow-up, and the respective rates 12 months after a facultative percutaneous endocardial approach were 90% and 73%. Using the UltraCinch device sized <10 vs. ≥11 was associated with a significantly greater complete or near-complete box isolation rate at 6 months postsurgery (58% vs. 21% [p=0.05]).

**Comment:** Results of surgical epicardial AF ablation using this technique (and followed by further endocardial catheter ablation after 6 months if AF recurred) are not dissimilar to results from standard percutaneous ablation or other surgical ablation techniques. Note that this particular device is no longer used in Australia for reasons unrelated to efficacy or safety.

***Reference: J Interv Card Electrophysiol 2014;41(3):245–51***
Abstract

## Catheter ablation versus anti-arrhythmic drug therapy for the management of atrial fibrillation

**Authors:** Cheng X et al.

**Summary:** This meta-analysis of nine randomised controlled trials showed that compared with antiarrhythmic drugs, catheter ablation for AF was associated with significantly better efficacy (odds ratio 9.41 [95% CI 5.00–17.71; p<0.01]), with superior short- and long-term treatment success (10.84 [5.83–20.16; p<0.001] and 7.65 [1.97–29.73; p=0.03], respectively), and a trend for less adverse events (2.19 [0.99–4.85; p=0.05]).

**Comment:** This meta-analysis confirmed the findings of previous studies – AF ablation is substantially more effective than antiarrhythmic drugs for rhythm control. Comparison of adverse events is a little more difficult, because acute periprocedural complications, although rare and applicable over a short defined period, may be weighted differently to drug-induced complications (which may be equally severe and potentially life-threatening).

***Reference: J Interv Card Electrophysiol 2014;41(3):267–72***
Abstract

## History of atrial fibrillation as a risk factor in patients with heart failure and preserved ejection fraction

**Authors:** Oluleye OW et al.

**Summary:** These researchers analysed baseline characteristics and outcomes of participants with HF with preserved EF in the Irbesartan in Heart Failure with Preserved Ejection Fraction trial. Among participants with a history of AF at baseline (n=1209), 13.5% had a history of AF alone, while 16.2% had both a history and AF on ECG. No significant difference was seen between participants with versus without AF on baseline ECG for stroke risk. Compared with participants with no AF at baseline, those with AF at baseline had a significantly higher rate of stroke (fatal or nonfatal) over a median 53 months of follow-up (6.5% vs. 3.9%; HR 2.2 [95% CI 1.6–3.2; p<0.0001]).

**Comment:** The important finding here is that history of AF determines stroke risk, not the rhythm at any particular given time, which is why the decision to anticoagulate does not take into consideration the type of AF (i.e. paroxysmal or persistent) or symptoms. Remember also that the C in CHADSVASC covers clinical HF (irrespective of EF) as well as echocardiographic evidence of left ventricular systolic dysfunction.

***Reference: Circ Heart Fail 2014;7(6):960–6***
Abstract

## Perioperative atrial fibrillation and the long-term risk of ischemic stroke

**Authors:** Gialdini G et al.

**Summary:** These researchers reviewed retrospective US administrative claims data for 1,729,360 patients hospitalised for surgery and discharged alive and free of documented cerebrovascular disease or pre-existing AF between 2007 and 2011, with patients who underwent cardiac surgery analysed separately to those who underwent other surgery types. New-onset perioperative AF occurred during index hospitalisation in 24,711 patients, and postdischarge stroke was reported for 13,952 patients. The 1-year cumulative stroke rates after cardiac surgery were 0.99% for patients with perioperative AF and 0.83% for those without AF, and the respective rates after noncardiac surgery were 1.47% and 0.36%. A Cox proportional hazards analysis revealed that perioperative AF significantly increased the stroke risk after both cardiac and noncardiac surgery (respective HRs 1.3 [95% CI 1.1–1.6] and 2.0 [1.7–2.3]), and was significantly stronger after noncardiac surgery (p<0.001 for interaction).

**Comment:** AF following noncardiac surgery is a very common and important event/complication for which the subsequent antithrombotic management is unclear. The two principal AF management guidelines (ESC 2012 and AHA/ACC 2014) make no mention of this, and the bulk of the other published data relate to post-CABG (coronary artery bypass graft) AF. This study suggests a higher risk of subsequent stroke in patients with AF following noncardiac surgery but relies on accurate DRG coding and administrative data. A randomised trial is sorely needed.

***Reference: JAMA 2014;312(6):616–22***
Abstract

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