



UNIVERSITY OF OTTAWA
HEART INSTITUTE
INSTITUT DE CARDIOLOGIE
DE L'UNIVERSITÉ D'OTTAWA

PULMONARY VEIN ISOLATION VS. ABLATE AND PACE FOR ATRIAL FIBRILLATION: PVI IT IS

GIRISH M NAIR MBBS, MSC, FRCPC, FHRS

ASSOCIATE PROFESSOR

ARRHYTHMIA SERVICE

DIVISION OF CARDIOLOGY, UNIVERSITY OF OTTAWA HEART INSTITUTE

OTTAWA, ON CANADA

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Disclosures

- Honoraria and research grants from St. Jude Medical and Medtronic Inc.
- I perform both PVI and AV node ablation with pacemaker implantation



Outline/Objectives

- Make a case for Pulmonary vein isolation as first line treatment for paroxysmal, symptomatic AF
- Convince the audience and my good friend Dr. Jeff Healey that AV node ablation and pacing should be used as a last resort for the management of paroxysmal, symptomatic AF



AF is Heterogeneous

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January *et al.*
Executive Summary: AHA/ACC/HRS Atrial Fibrillation Guideline

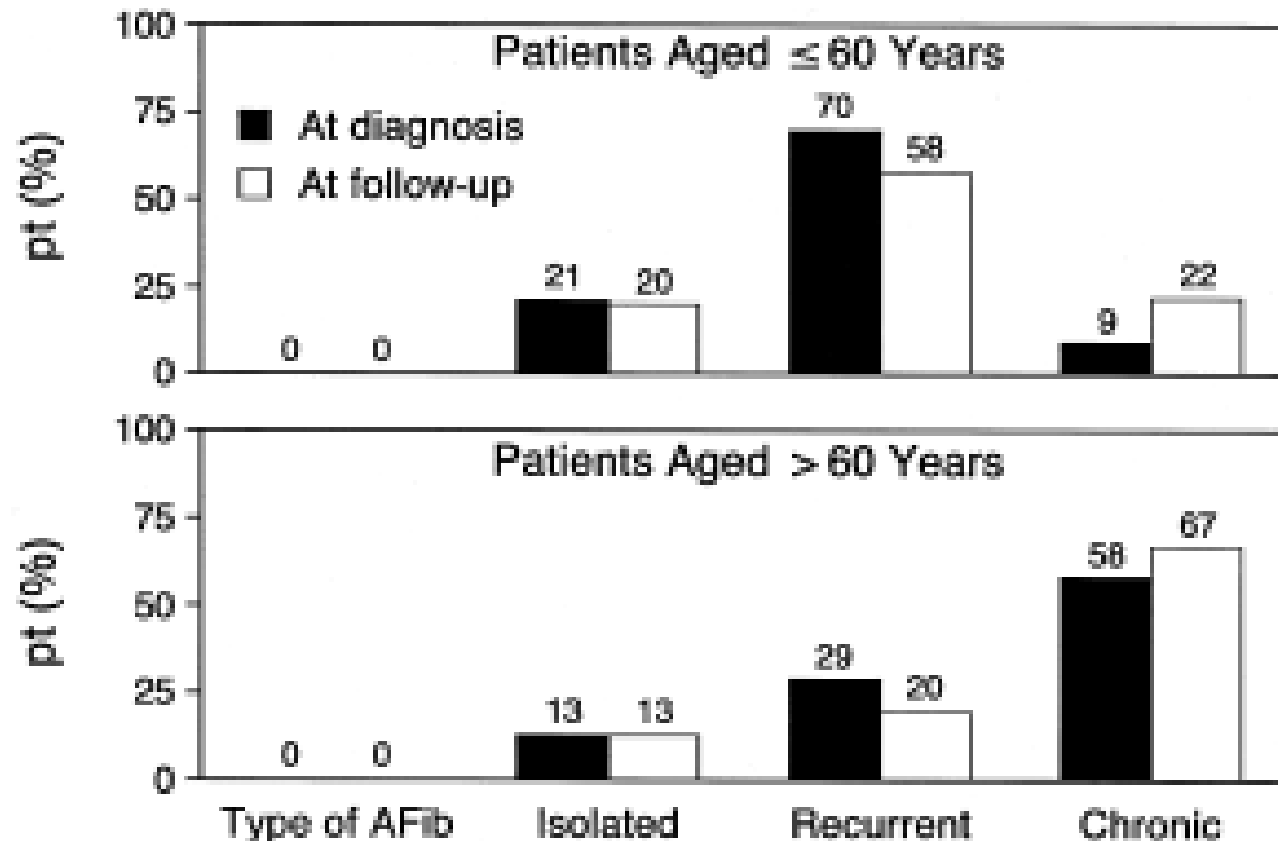
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TABLE 3 Definitions of AF: A Simplified Scheme

Term	Definition
Paroxysmal AF	<ul style="list-style-type: none">• AF that terminates spontaneously or with intervention within 7 d of onset.• Episodes may recur with variable frequency.
Persistent AF	<ul style="list-style-type: none">• Continuous AF that is sustained >7 d.
Long-standing persistent AF	<ul style="list-style-type: none">• Continuous AF >12 mo in duration.
Permanent AF	<ul style="list-style-type: none">• The term "permanent AF" is used when the patient and clinician make a joint decision to stop further attempts to restore and/or maintain sinus rhythm.• Acceptance of AF represents a therapeutic attitude on the part of the patient and clinician rather than an inherent pathophysiological attribute of AF.• Acceptance of AF may change as symptoms, efficacy of therapeutic interventions, and patient and clinician preferences evolve.
Nonvalvular AF	<ul style="list-style-type: none">• AF in the absence of rheumatic mitral stenosis, a mechanical or bioprosthetic heart valve, or mitral valve repair.

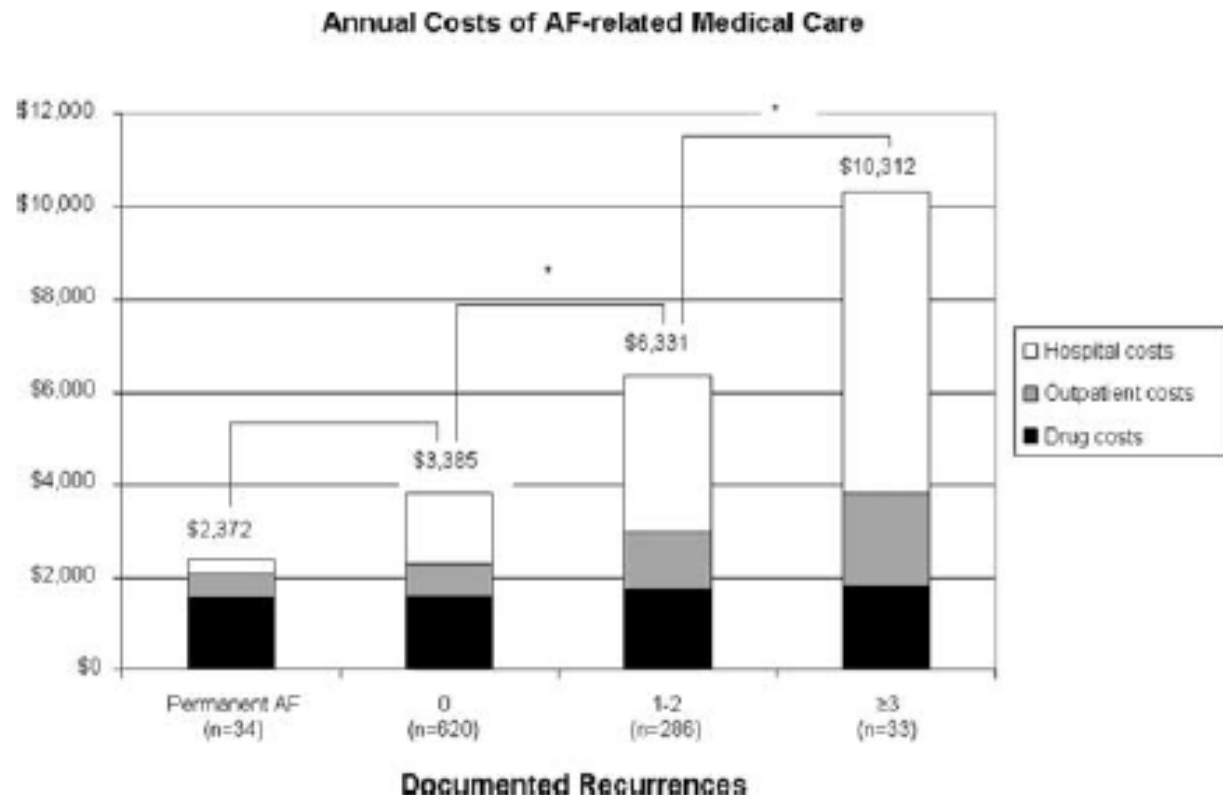
AF indicates atrial fibrillation.

Paroxysmal AF Affects Younger Subjects



High Burden Symptomatic AF

Burden on Health Care

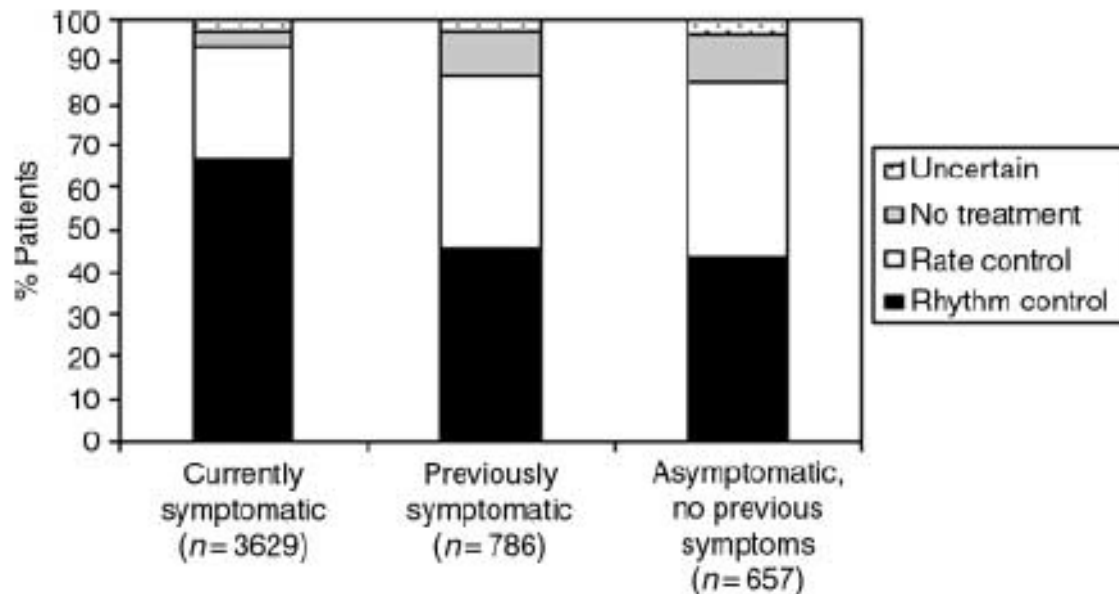


- Patients with AF who are managed with cardioversion and pharmacotherapy incur AF- and cardiovascular-related healthcare costs of \$4,000-5,000 per year.
- Hospital care makes up the largest and most variable component of overall costs



Symptomatic Subjects Need Rhythm Control

Previous interventions				
Pharmacological conversion	106 (11)	733 (49)	435 (37)	291 (19)
Electrical cardioversion	39 (4)	388 (26)	436 (38)	324 (21)
Catheter ablation	0 (0)	78 (5)	45 (4)	24 (2)
Pacemaker implantation	19 (2)	88 (6)	51 (4)	145 (9)
ICD implantation	4 (0)	23 (2)	11 (1)	18 (1)
Surgery for AF	2 (2)	12 (1)	9 (1)	6 (0)
Miscellaneous				
Clinical trial	96 (10)	229 (15)	136 (12)	163 (11)



Dr. Healey is Going to Tell You...!

5.4. Antiarrhythmic Drugs to Maintain Sinus Rhythm

CLASS I

1. Before initiating antiarrhythmic drug therapy, treatment of precipitating or reversible causes of AF is recommended.
(*Level of Evidence: C*)
2. The following antiarrhythmic drugs are recommended in patients with AF to maintain sinus rhythm, depending on underlying heart disease and comorbidities (*Level of Evidence: A*):
 - a. Amiodarone (129-132)
 - b. Dofetilide (124,128)
 - c. Dronedarone (133-135)
 - d. Flecainide (130,136)
 - e. Propafenone (130,137-140)
 - f. Sotalol (130,138,141)

Dr Healey is Also Going to Show You Results From - MANTRA

NEW ENGL J MED
We compared radiofrequency ablation with antiarrhythmic drug therapy as first-line treatment in patients with paroxysmal atrial fibrillation.

The Ablators did not use Pulmonary Vein Isolation as an endpoint for ablation and used non-irrigated catheters for ablation.

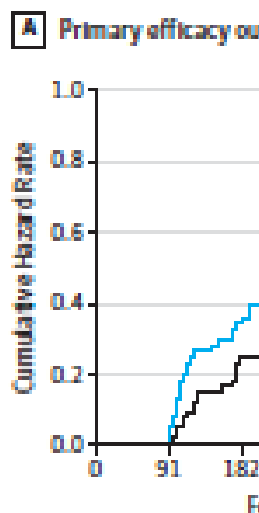
Almost a sham procedure!

support the current guideline recommending antiarrhythmic drugs as first-line treatment in most patients with paroxysmal atrial fibrillation.⁶⁻⁸



Then Dr. Healey Conducted The RAAFT Trial

Figure 2. Kaplan-Meier Curves of Time to Tachyarrhythmias (B)



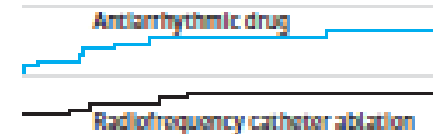
No. at risk			
Antiarrhythmic drug	61	61	35
Radiofrequency catheter ablation	66	66	46

Tachyarrhythmias include atrial fibrillation, t

^a When comparing the change in the EQ5D Tariff score from baseline to 12 months in the ablation group $P = .03$ and in the antiarrhythmic drug group $P = .22$ (1 is the highest possible and 0 is the worst possible quality-of-life score). When comparing the change in the EQ5D visual analog score from baseline to 12 months in the ablation group, $P = .002$ and in the antiarrhythmic drug group $P = .02$ (0 is the worst imaginable and 100 best imaginable health state for the visual analog score).

ence of Symptomatic Atrial

symptomatic atrial tachyarrhythmias



HR, 0.56, 95% CI, 0.33-0.95, $P = .03$

Time Since Randomization, d

28	25	24	24	18
38	36	34	33	23



AV Node Ablation Last Resort

TABLE 3 Summary of Recommendations for Rate Control

Recommendations	COR	LOE	References
Control ventricular rate using a beta blocker or nondihydropyridine calcium channel antagonist for paroxysmal, persistent, or permanent AF	I	B	(93-95)
IV beta blocker or nondihydropyridine calcium channel blocker is recommended to slow ventricular heart rate in the acute setting in patients without pre-excitation. In hemodynamically unstable patients, electrical cardioversion is indicated	I	B	(96-99)
For AF, assess heart rate control during exertion, adjusting pharmacological treatment as necessary	I	C	N/A
A heart rate control (resting heart rate <80 bpm) strategy is reasonable for symptomatic management of AF	IIa	B	(95,100)
IV amiodarone can be useful for rate control in critically ill patients without pre-excitation	IIa	B	(101-103)
AV nodal ablation with permanent ventricular pacing is reasonable when pharmacological therapy is inadequate and rhythm control is not achievable	IIa	B	(104-106)
A lenient rate-control strategy (resting heart rate <110 bpm) may be reasonable when patients remain asymptomatic and LV systolic function is preserved	IIb	B	(100)
Oral amiodarone may be useful for ventricular rate control when other measures are unsuccessful or contraindicated	IIb	C	N/A
AV nodal ablation should not be performed without prior attempts to achieve rate control with medications	III: Harm	C	N/A
Nondihydropyridine calcium channel antagonists should not be used in decompensated HF	III: Harm	C	N/A
With pre-excitation and AF, digoxin, nondihydropyridine calcium channel antagonists, or amiodarone should not be administered	III: Harm	B	(107)
Dronedarone should not be used to control ventricular rate with permanent AF	III: Harm	B	(108,109)

AF indicates atrial fibrillation; AV, atrioventricular; bpm, beats per minute; COR, Class of Recommendation; HF, heart failure; IV, intravenous; LOE, Level of Evidence; LV, left

Algorithm for Rate vs Rhythm Control for Patients With Symptomatic AF



Table 2. Balance of benefit to risk for catheter ablation in patients with symptomatic atrial fibrillation

	Long-standing*	Persistent	Paroxysmal
First line	—	—	+
Failed first drug	—	+	++
Failed second drug	+	++	+++
Failed multiple drugs	++	+++	+++

+ Indicates balance of benefit to risk in favour of catheter ablation.

* Ongoing symptomatic atrial fibrillation \geq 1 year.



Figure 3. Approach to rate and/or rhythm control of atrial fibrillation (AF) in patients presenting with symptomatic AF. QOL, quality of life.



HR

5.6. AF Cat

CLASS I

1. AF catheter ablation is recommended in patients with symptomatic paroxysmal AF refractory to antiarrhythmic drug therapy.

CLASS IIa

1. AF catheter ablation should be considered in patients with symptomatic paroxysmal AF who cannot be controlled by antiarrhythmic drug therapy.

CLASS III: HARM

1. AF catheter ablation should not be performed in patients who cannot be controlled by antiarrhythmic drug therapy and after the procedure.
2. AF catheter ablation should not be performed with the aim of preventing stroke.

Recommendations for left atrial ablation

Recommendations	Class ^a	Level ^b	Ref ^c
Catheter ablation of symptomatic paroxysmal AF is recommended in patients who have symptomatic recurrences of AF on antiarrhythmic drug therapy (amiodarone, dronedarone, flecainide, propafenone, sotalol) and who prefer further rhythm control therapy, when performed by an electrophysiologist who has received appropriate training and is performing the procedure in an experienced centre.	I	A	192, 193
Catheter ablation of AF should target isolation of the pulmonary veins.	IIa	A	170, 172, 192, 194
Catheter ablation of AF should be considered as first-line therapy in selected patients with symptomatic paroxysmal AF as an alternative to antiarrhythmic drug therapy, considering patient choice, benefit, and risk.	IIa	B	156–158
When catheter ablation of AF is planned, continuation of oral anticoagulation with a VKA should be considered during the procedure, maintaining an INR close to 2.0.	IIa	B	170, 181–184
When AF recurs within the first 6 weeks after catheter ablation, a watch-and-wait rhythm control therapy should be considered.	IIa	B	195

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A Typical Healey Patient!



CONCLUSIONS

- The TREATMENT OF CHOICE for symptomatic subjects with Paroxysmal AF, especially those who have failed an antiarrhythmic medication (Class I/III), is CATHETER ABLATION
- The aim is to reduce AF burden and symptoms and not cure AF
- Subjects will need two or more procedures (10-20%) and have to accept a small risk of serious complications
- I sincerely hope Dr. Healey practices what he preaches and doesn't put his patients on Amiodarone or burn their AV nodes!

THANK YOU