Does Atrial Fibrillation Ablation Reduce Cardioembolic Stroke

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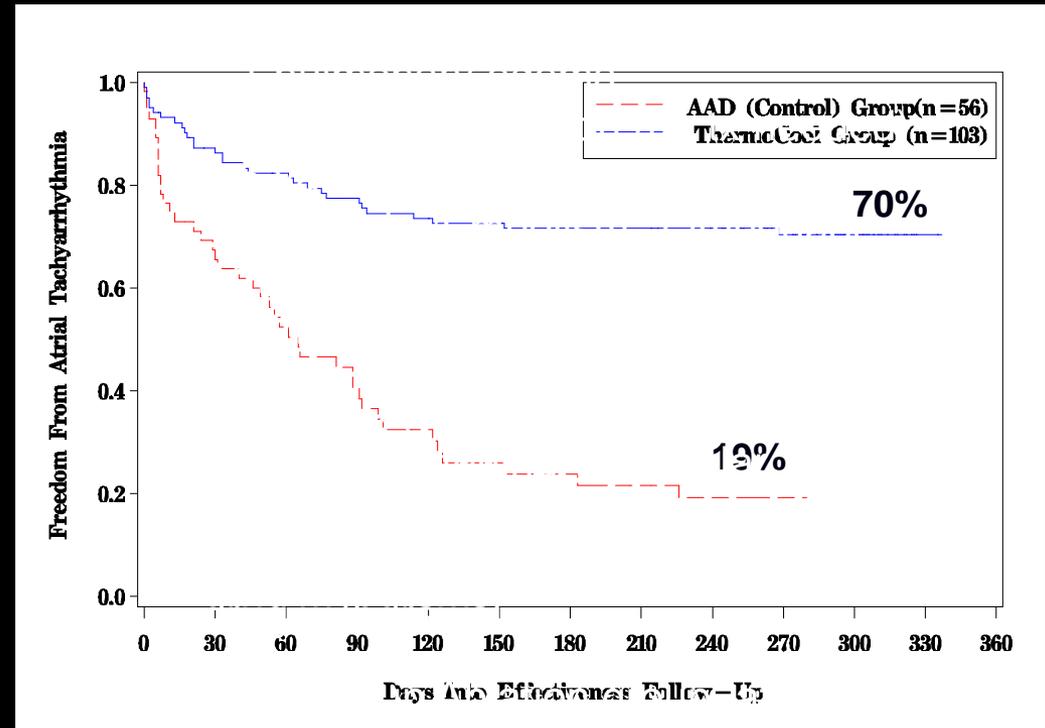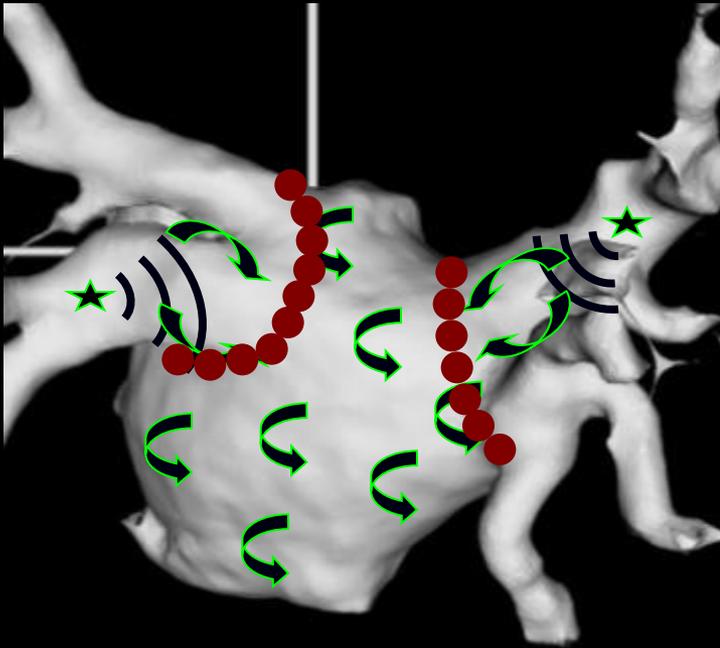**The Mount Sinai Hospital**

Disclosures

- Grant support / Consultant:
  - Boston Scientific Inc, Coherex Medical Inc, Sentreheart Inc, St Jude Medical Inc

- I will be discussing the use of non-FDA approved catheter-based devices.

Paroxysmal AF: Catheter Ablation

- Ablation Group (n=103)
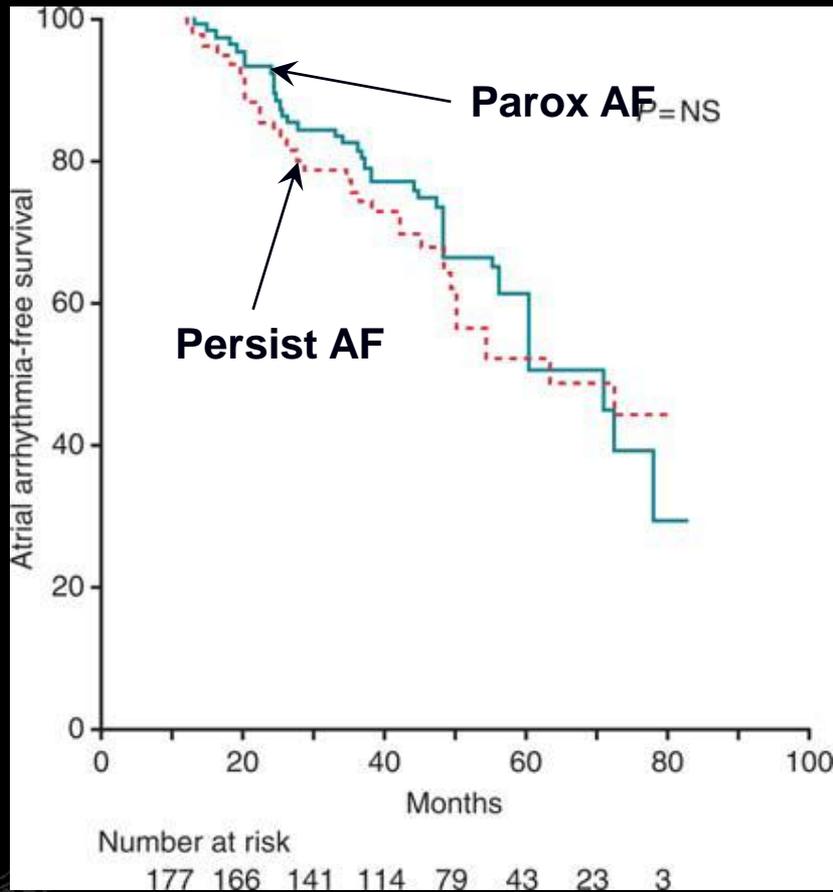
days, due to acute MI.

Wilber et al, *JAMA*, 2010

Ablation *vs* AADs: 1 yr Success

Study	AADs Success Rate	Ablation Success Rate	2nd Ablations	Still on AADs
A4	23%	89%	80%	0%
Thermocool IDE	17%	63%	13%	7%
STOP-AF	7%	70%	19%	12%
CABANA Pilot	38%	61%	21%	28%

Long-term Outcome after PVI: Late Recurrence

Bertaglia E et al. Europace: **12:181, 2010**
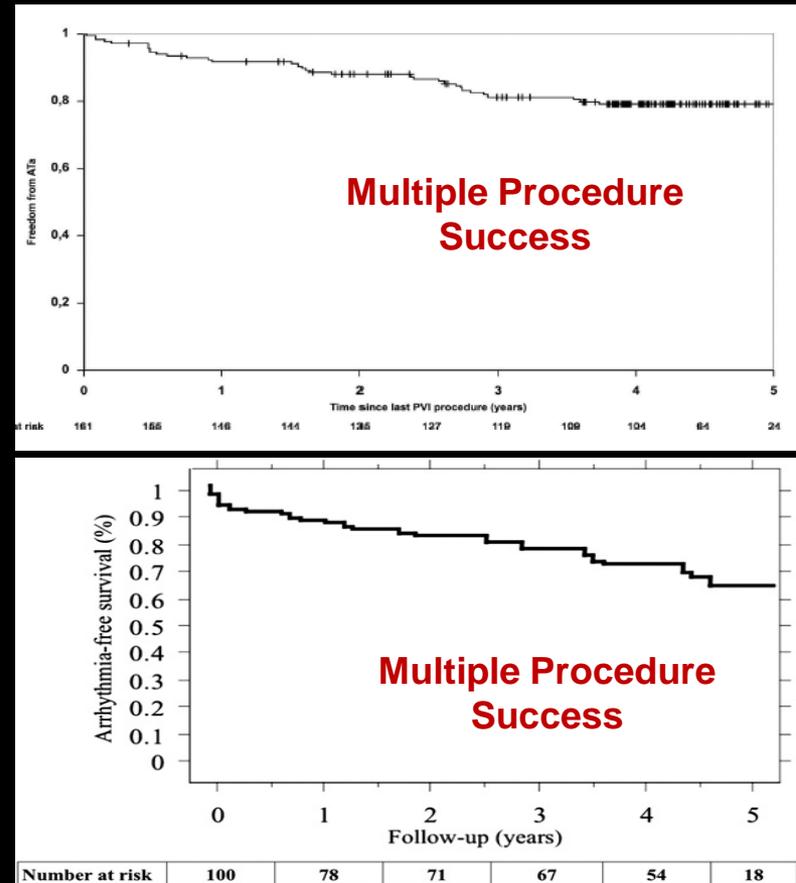
Ouyang F et al. Circulation **122:2368, 2010**
Weerasooriya R et al. JACC **57:160, 2011**

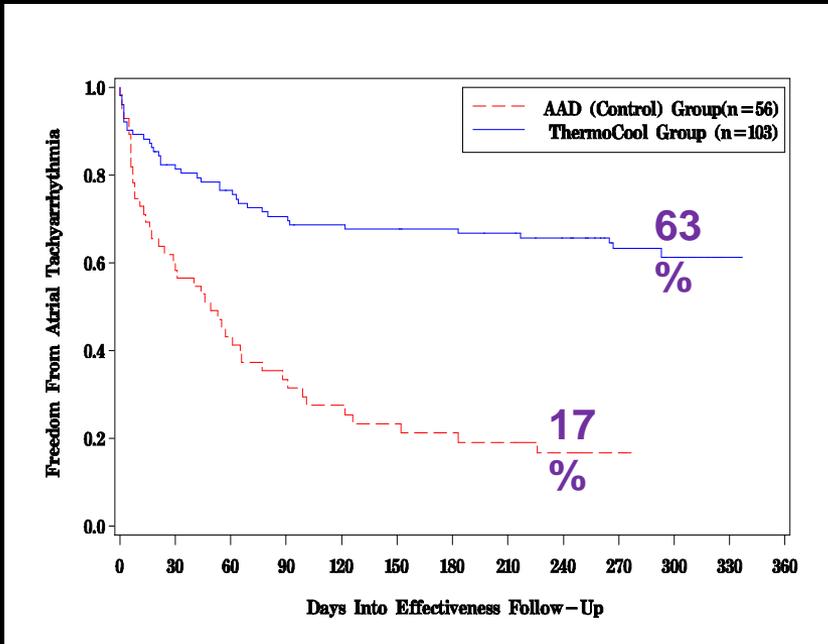# Does this mean AF ablation doesn't work, and so should not be performed?
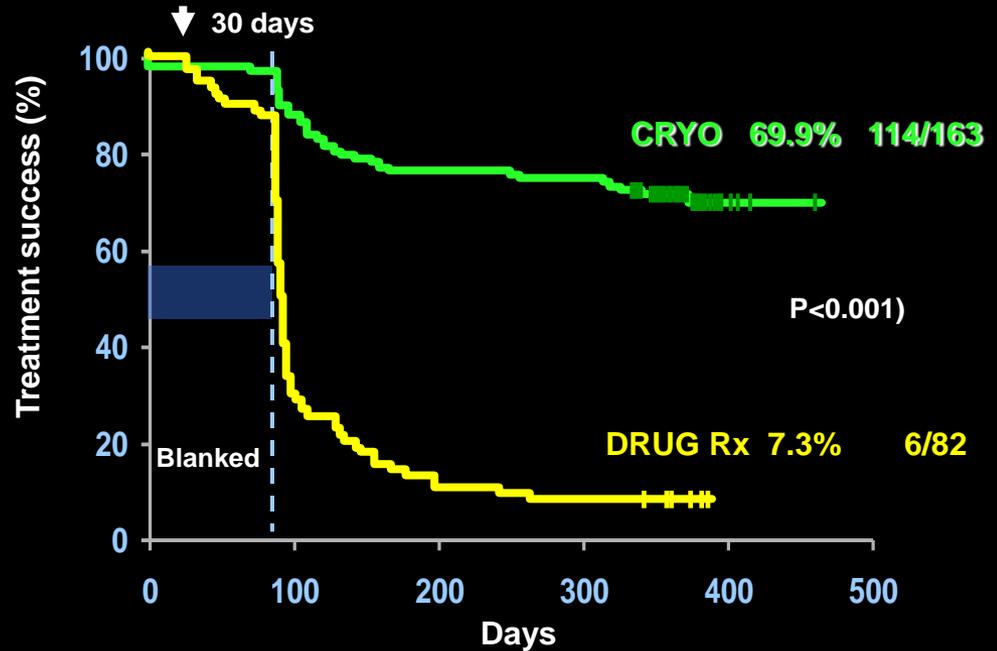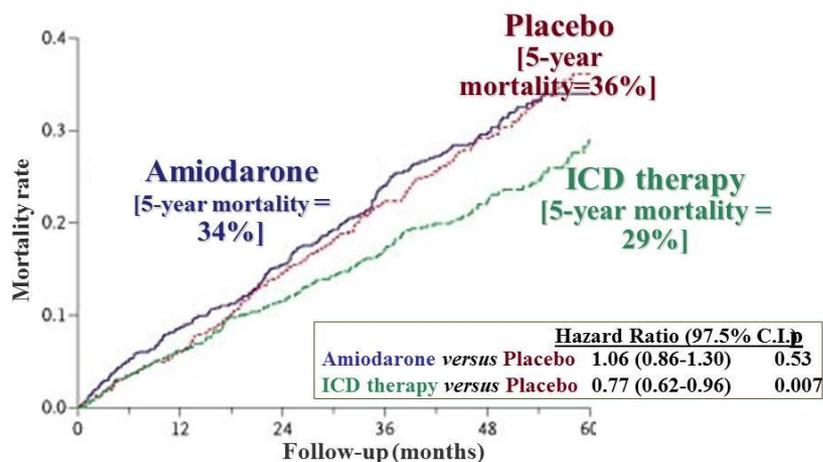
Ablation *vs* Medications

Wilber et al, *JAMA*, 2010

Packer et al, *ACC,* 2010

Device Therapy for SCD and CHF

SCD-HeFT Outcomes:
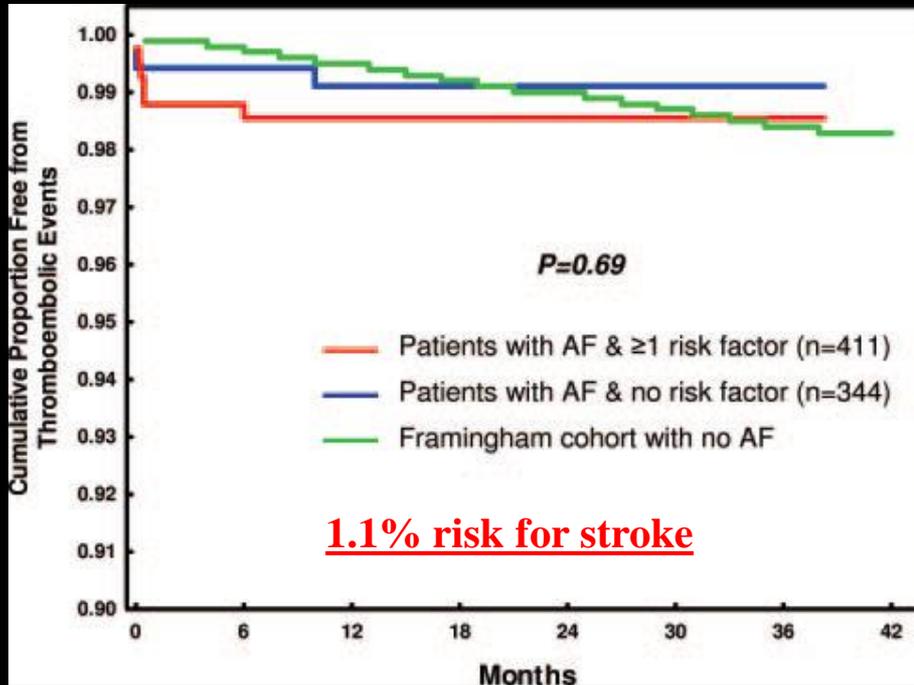**Kaplan-Meier Estimates of All-Cause Mortality**

Placebo [5-year mortality=36%]

Amiodarone [5-year mortality = 34%]

ICD therapy [5-year mortality = 29%]

	Hazard Ratio (97.5% C.I.)	p
Amiodarone *versus* Placebo	1.06 (0.86-1.30)	0.53
ICD therapy *versus* Placebo	0.77 (0.62-0.96)	0.007

Bardy et al, *NEJM*, 2005

Death or Any Hospitalization, IV Rx >4hrs

12 month event rate reductions:
CRT = by 18.6%
CRT-D = by 19.3%

p = .005, CRT-D vs. OPT
p = .015, CRT vs. OPT

12 month OPT Event Rate (1-y) = 67.7%

CRT-D
CRT
OPT
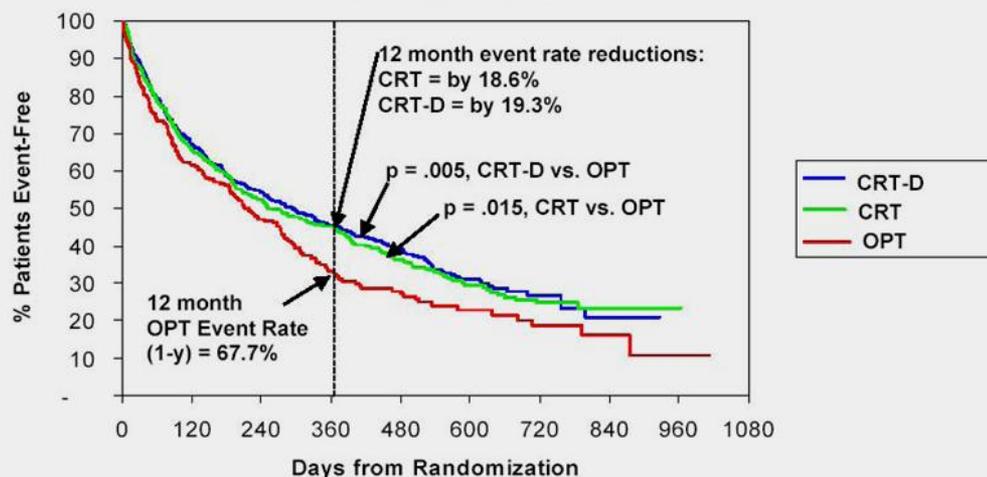
Bristow et al, *NEJM*, 350:2140 (2004)

Stroke Risk After Catheter Ablation?

1.1% risk for stroke

Oral et al, *Circulation*, 2006

0.4% annual risk for stroke
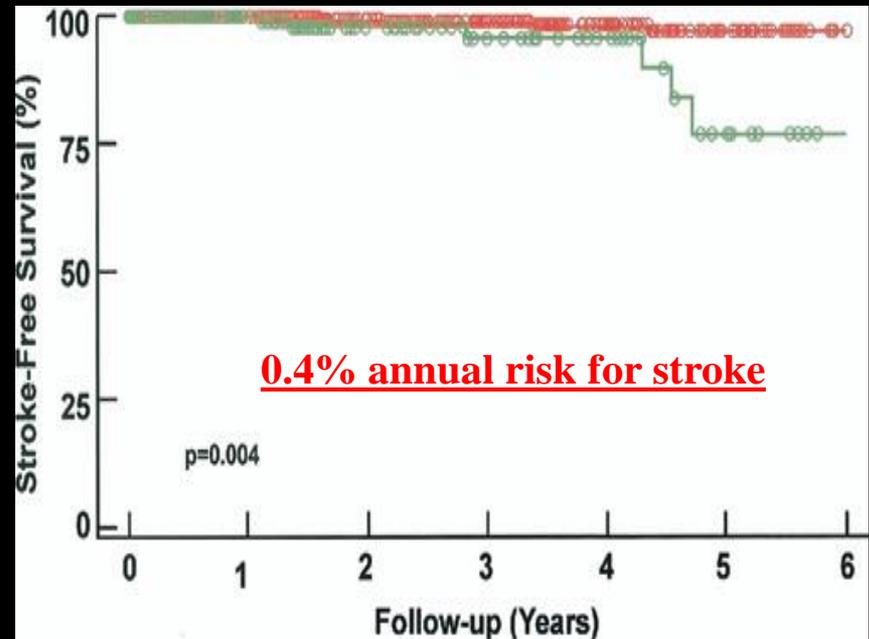
Nademanee et al, *JACC*, 2008

Stroke Risk After Catheter Ablation?
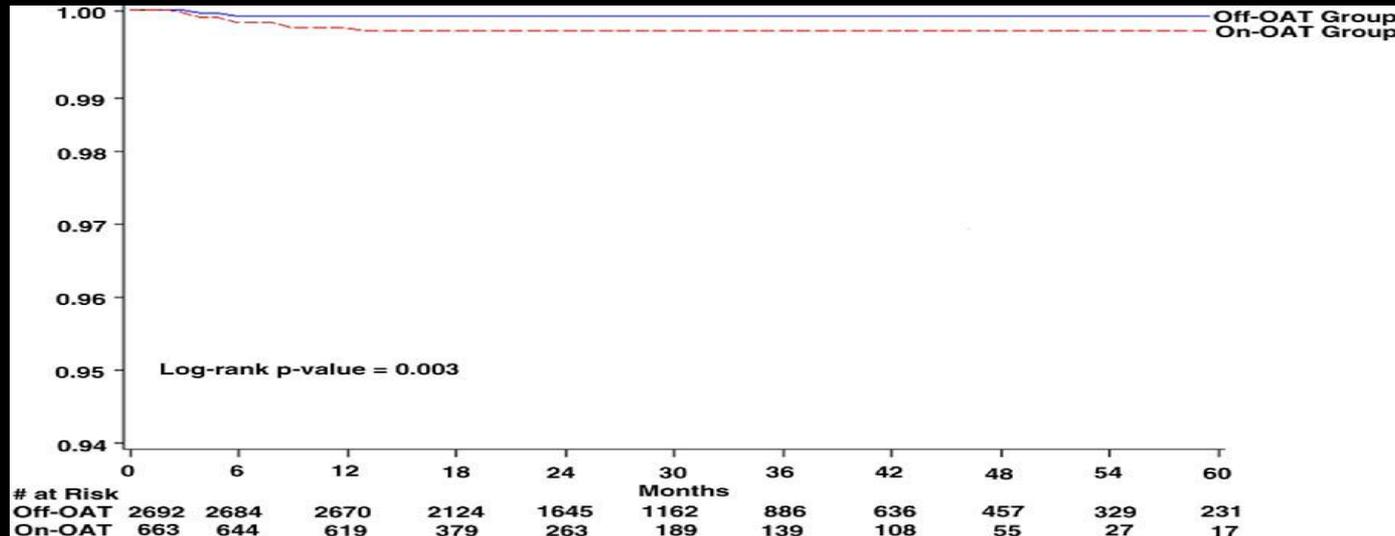
	CHADS$_2$ = 0		CHADS$_2$ = 1		CHADS$_2$ ≥2	
	Off-OAT	On-OAT	Off-OAT	On-OAT	Off-OAT	On-OAT
Patients, n	1,622	155	723	261	347	247
TE, n (%)	1 (0.06)	0	1 (0.14)	1 (0.38)	0	2 (0.81)
Major hemorrhage, n (%)	0	1 (0.64)	1 (0.14)	2 (0.8)	0	10 (4)

Themistoclakis et al, *JACC*, 2010

Stroke Risk After Catheter Ablation?

- 4,212 consecutive patients who underwent AF ablation
- 16,848 age/gender matched controls with AF (no ablation)
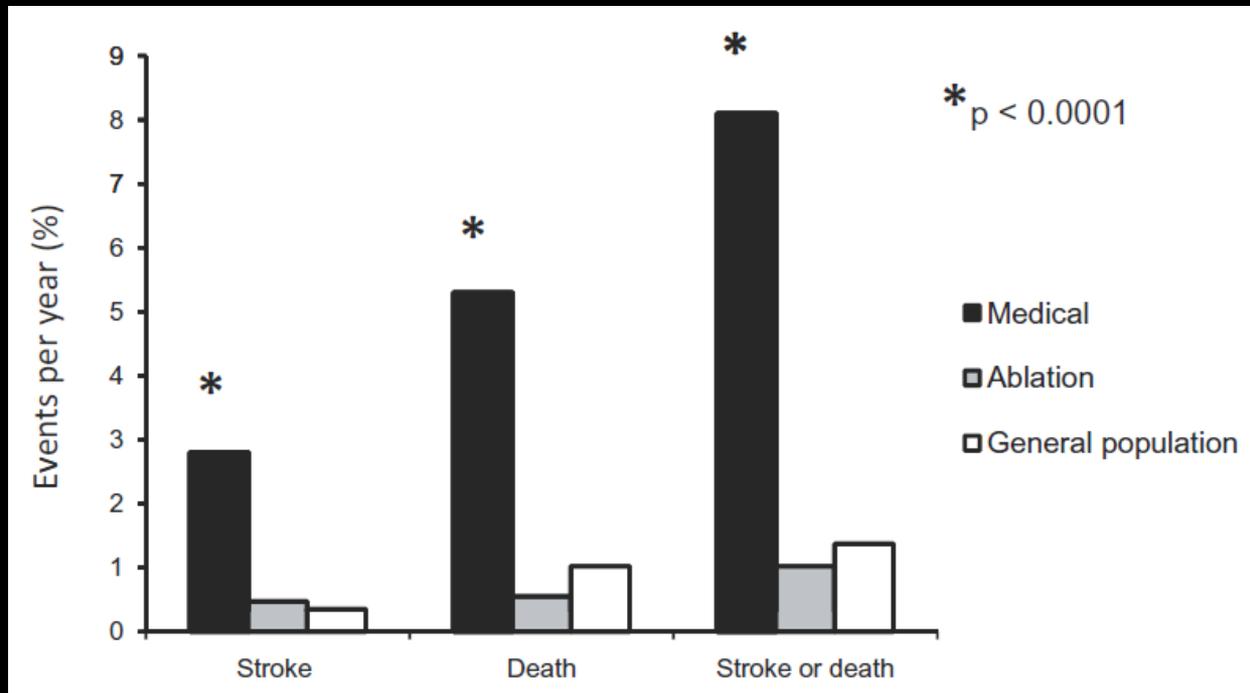- 16,848 age/gender matched controls without AF
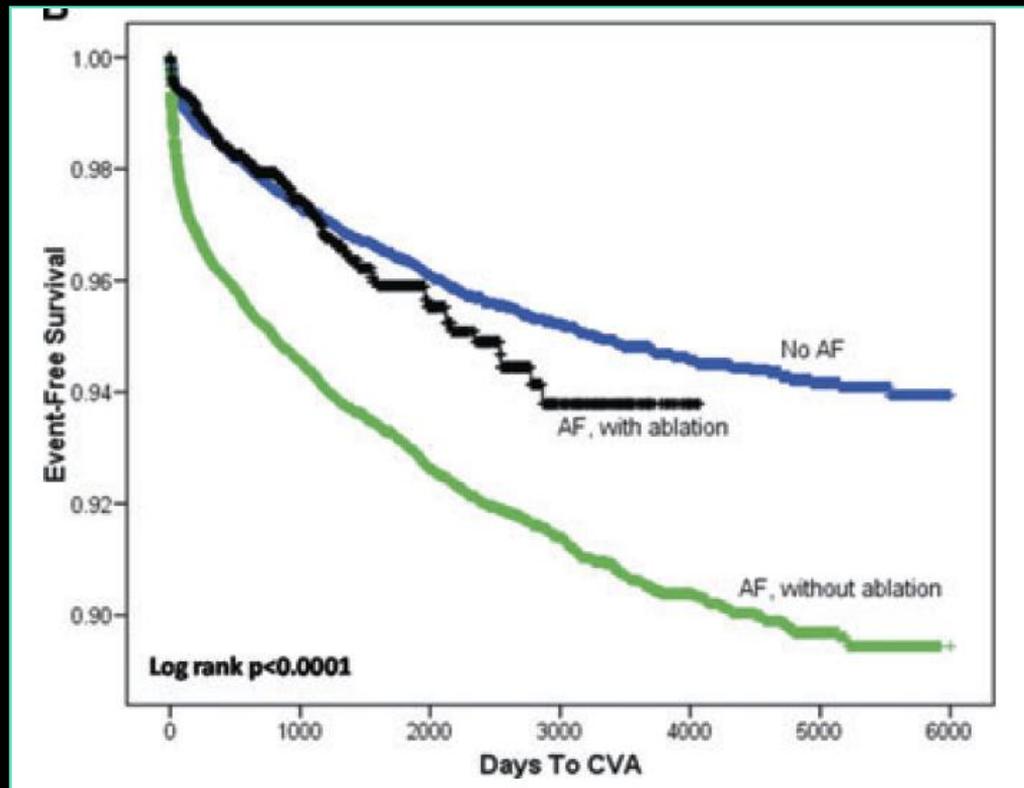
Stroke Risk After Catheter Ablation?

- International 7-center registry of 1273 pts undergoing AF ablation
- Rates of stroke/death compared to:
  - ➢ Medically-treated patients from the Euro Heart Survey
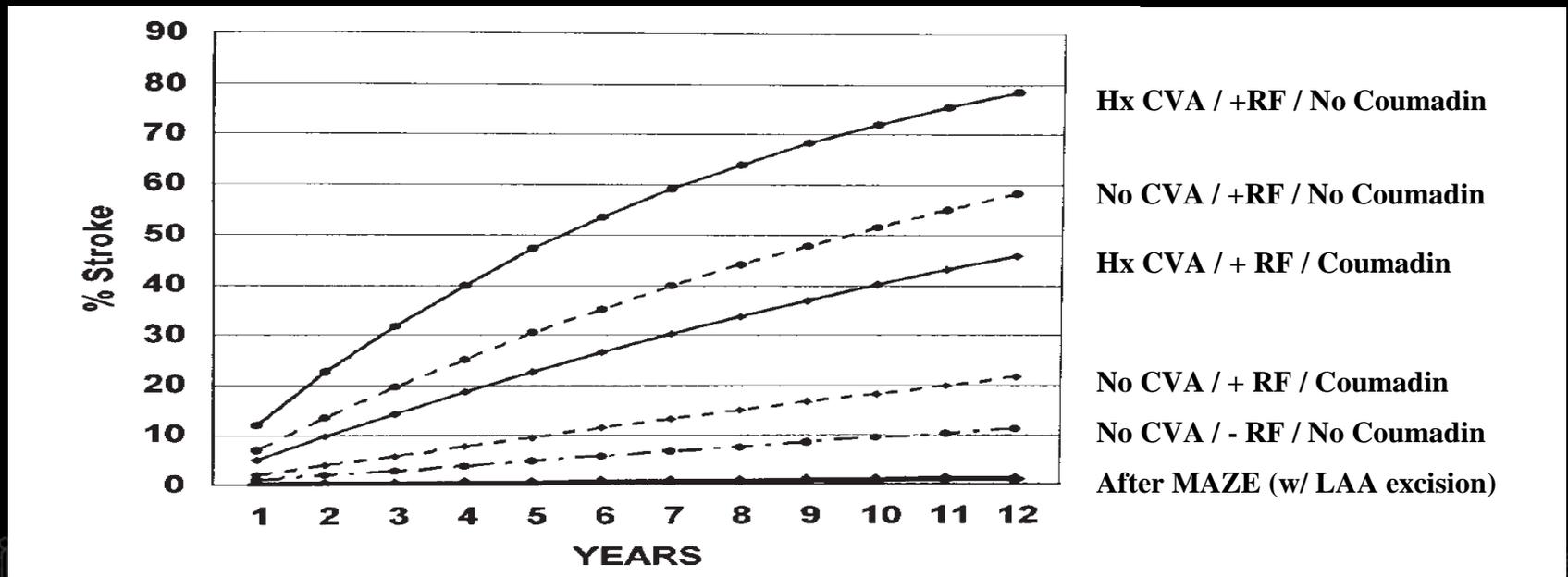 - ➢ Hypothetical cohort without AF
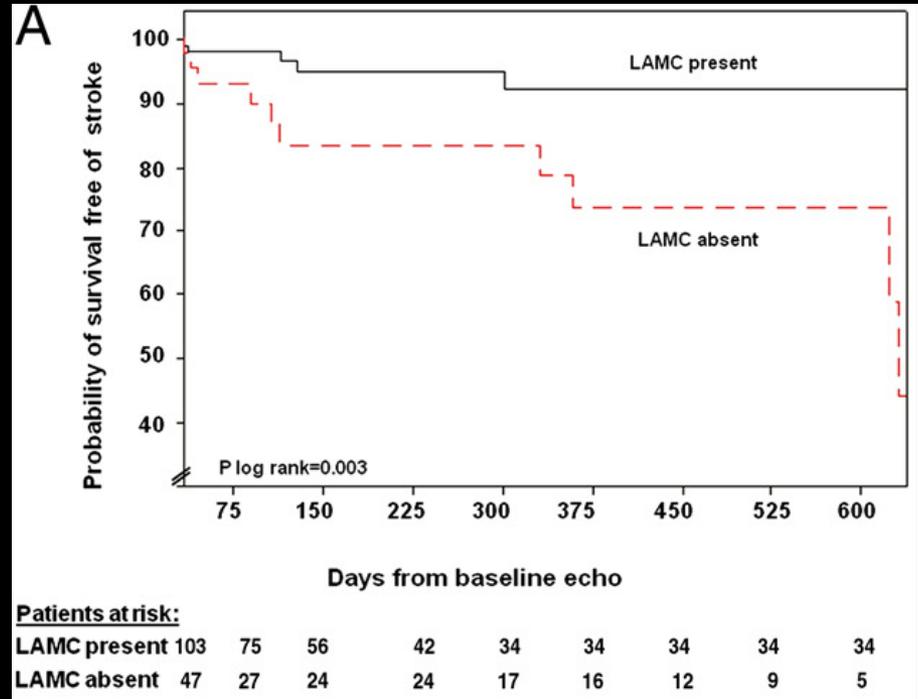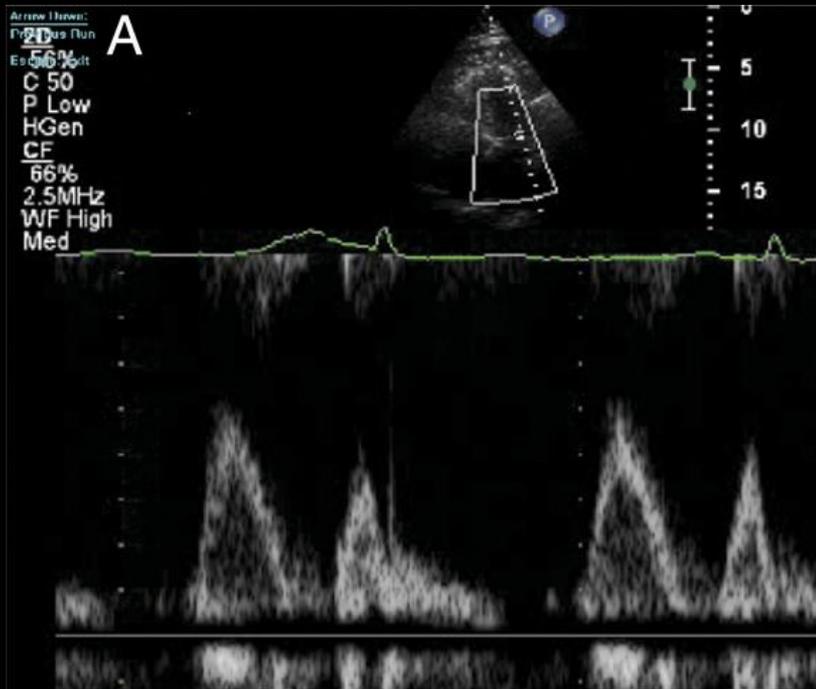

Hunter et al, *Heart* 98:48, 2011

Stroke Incidence After MAZE

- Long-term outcome after after MAZE surgery
- 265 patients followed for up to 11.5 years
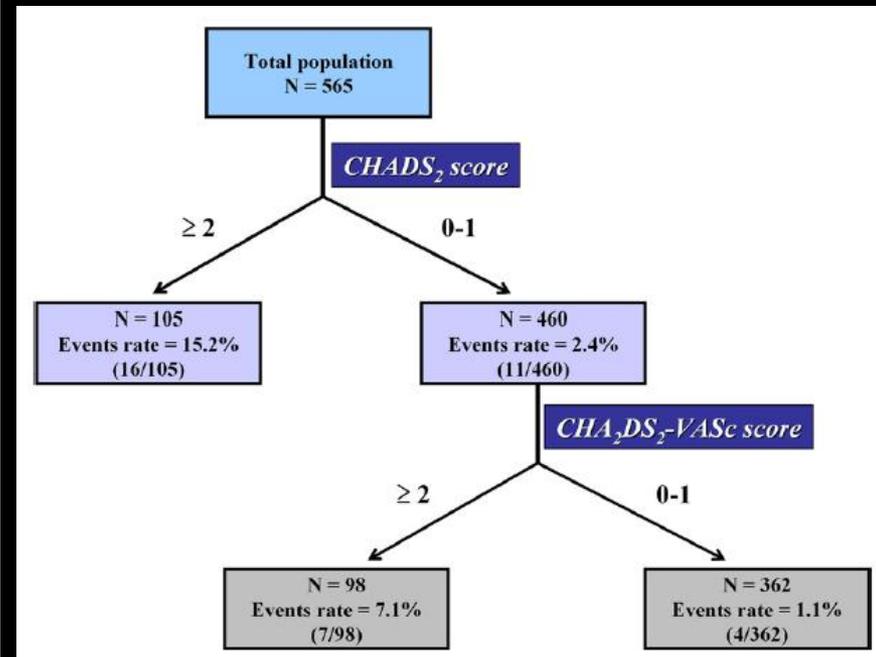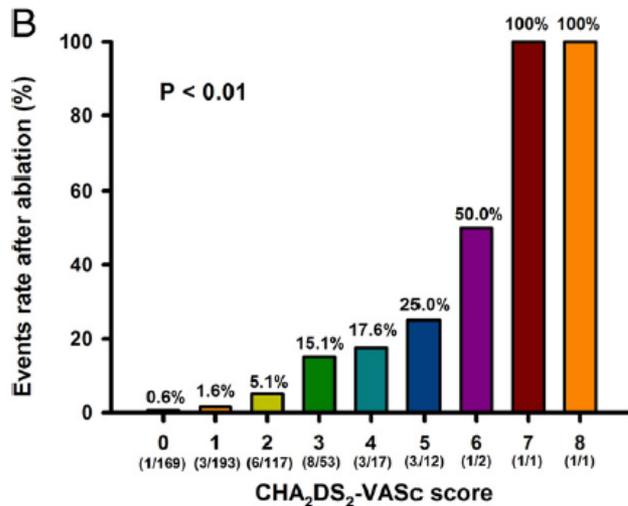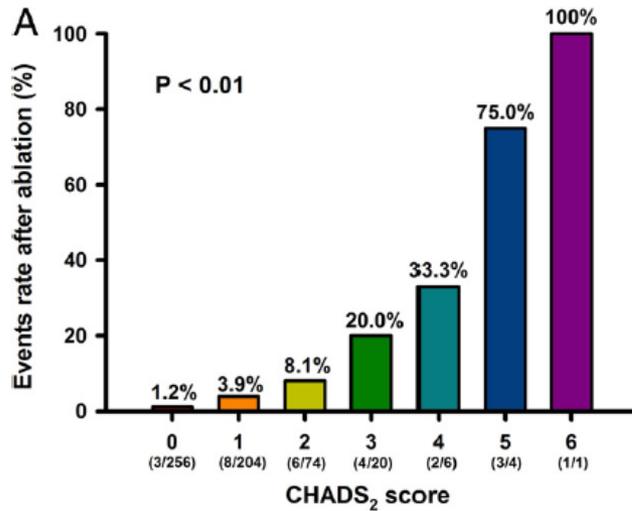- 19% had a prior CVA/TIA

Cox et al *J Thorac Cardiovasc Surg* 1999; 118:833.

Stroke Incidence After MAZE

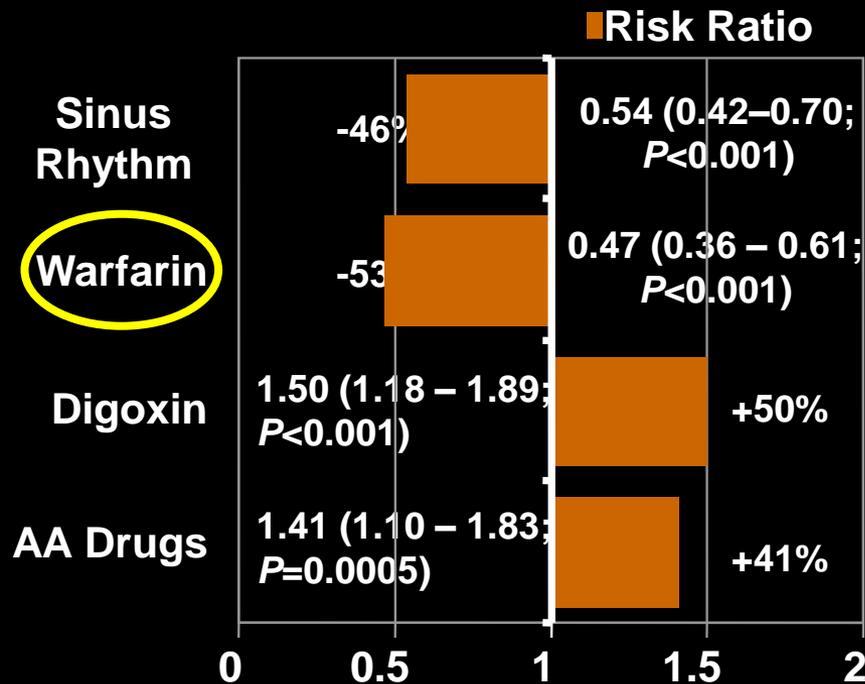Buber, et al *J Am Coll Cardiol* 2011; 58:1614–21.

Post-Ablation Use of CHADS$_2$ & CHA$_2$DS$_2$-VASC

Rhythm Management as Stroke Prophylaxis?

Risk Ratio

Sinus Rhythm	-46% 0.54 (0.42–0.70; *P*<0.001)
Warfarin	-53 0.47 (0.36 – 0.61; *P*<0.001)
Digoxin	1.50 (1.18 – 1.89; *P*<0.001) +50%
AA Drugs	1.41 (1.10 – 1.83; *P*=0.0005) +41%

*Other significant factors in model: age, CAD, CHF, smoking, stroke/TIA, normal LVEF, MR.

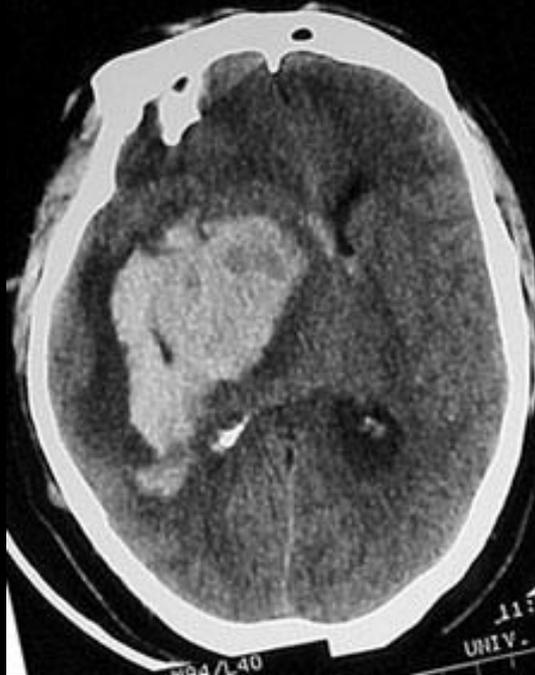The AFFIRM Investigators. *Circulation.* 2004;109:1509-1513.

2006 ACC/AHA/ACC Guidelines

1. Warfarin is recommended for all patients for at least 2 months after an AF ablation procedure.

2. Decisions regarding the use of Warfarin more than 2 months after ablation should be based on the patient's risk factors for stroke and not on the presence or type of AF.

3. Discontinuation of Warfarin therapy post-ablation is generally not recommended in patients who have a $CHADS_2$ score 2.

- AF Catheter Ablation works to prevent symptoms

- We are not yet confident enough over the long-term to ensure no AF recurrence → Trials are underway

- Treat for stroke prophylaxis based on baseline risk

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