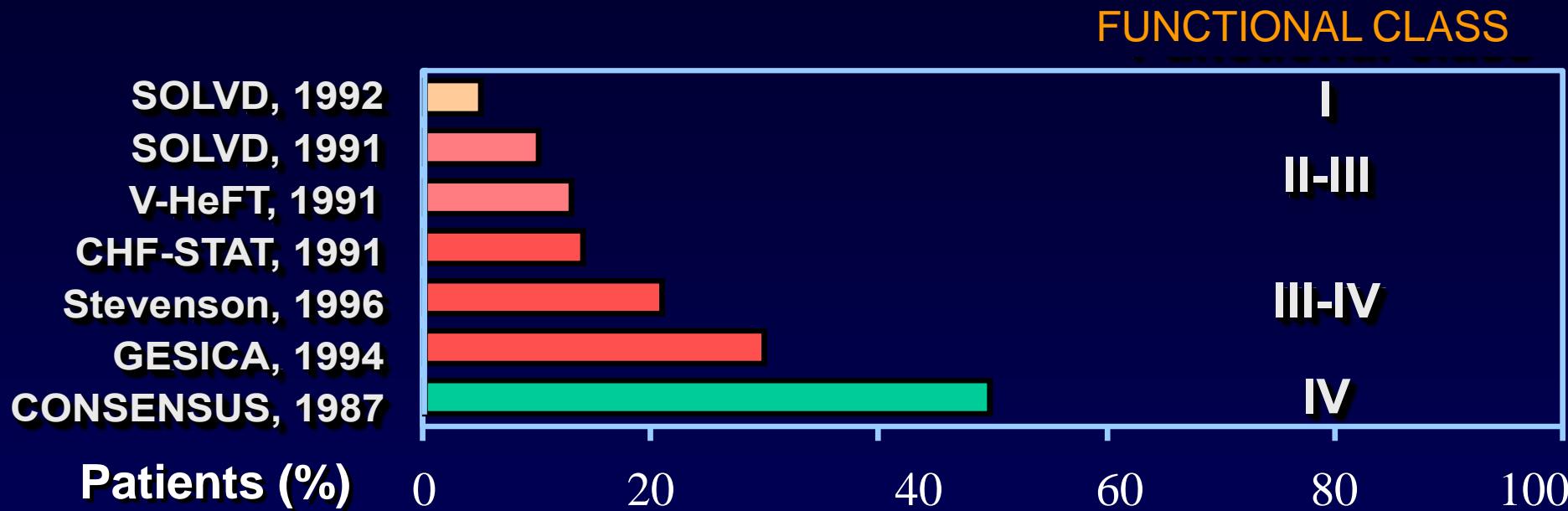


XỬ TRÍ RUNG NHĨ
Ở BỆNH NHÂN SUY TIM

TS. NGUYỄN THỊ THU HOÀI
VIỆN TIM MẠCH QUỐC GIA VIỆT NAM



RUNG NHĨ VÀ SUY TIM

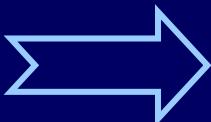


European Survey of Primary Care Physicians

- 15 countries
- 1,363 physicians
- 11,062 pt
- 1999-2000

Symptoms

Moderate → severe
41%

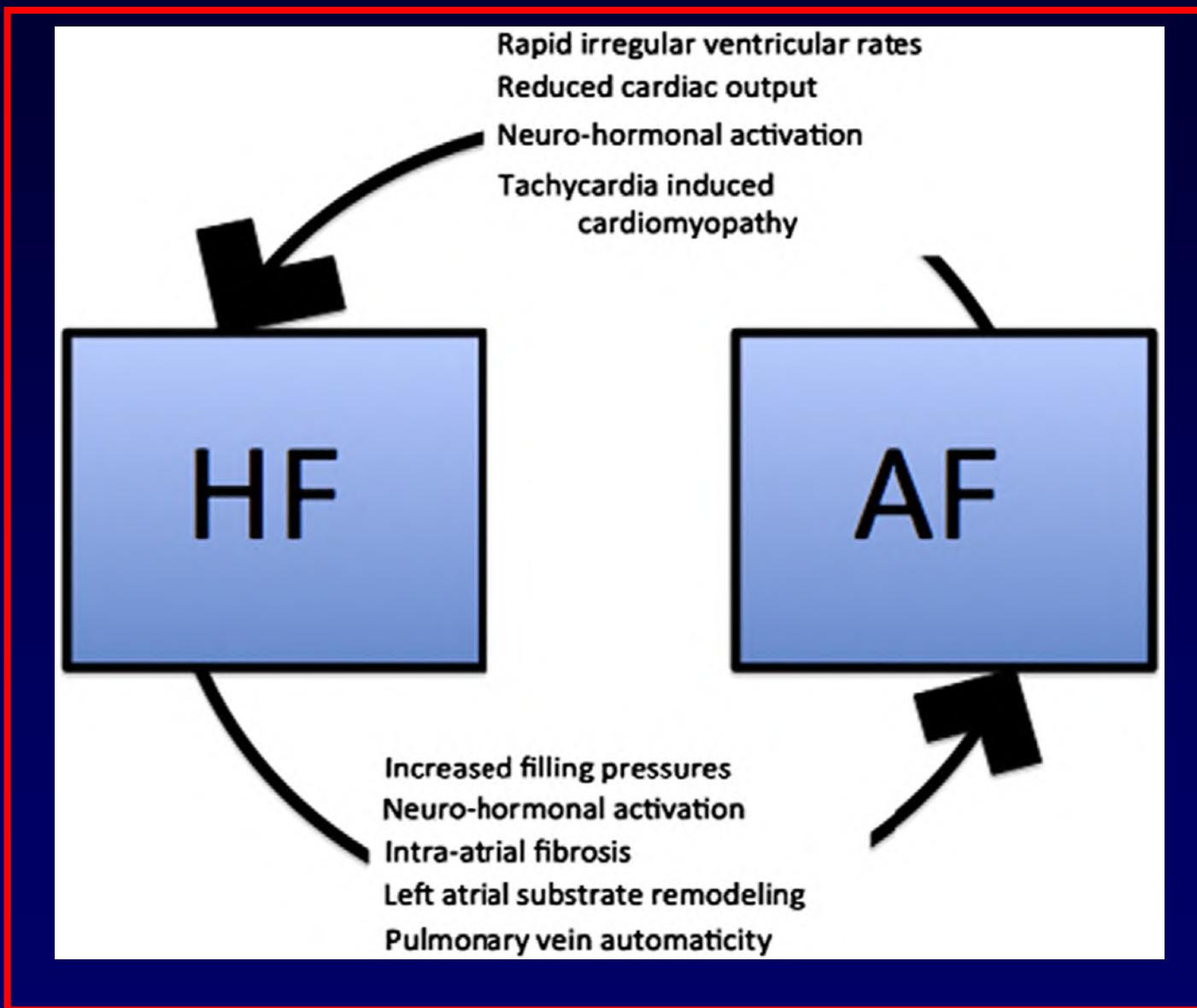


A fibrillation
22%

Stevenson W

Cleland J: Lancet, 2002

The interrelated pathophysiology of AF and HF



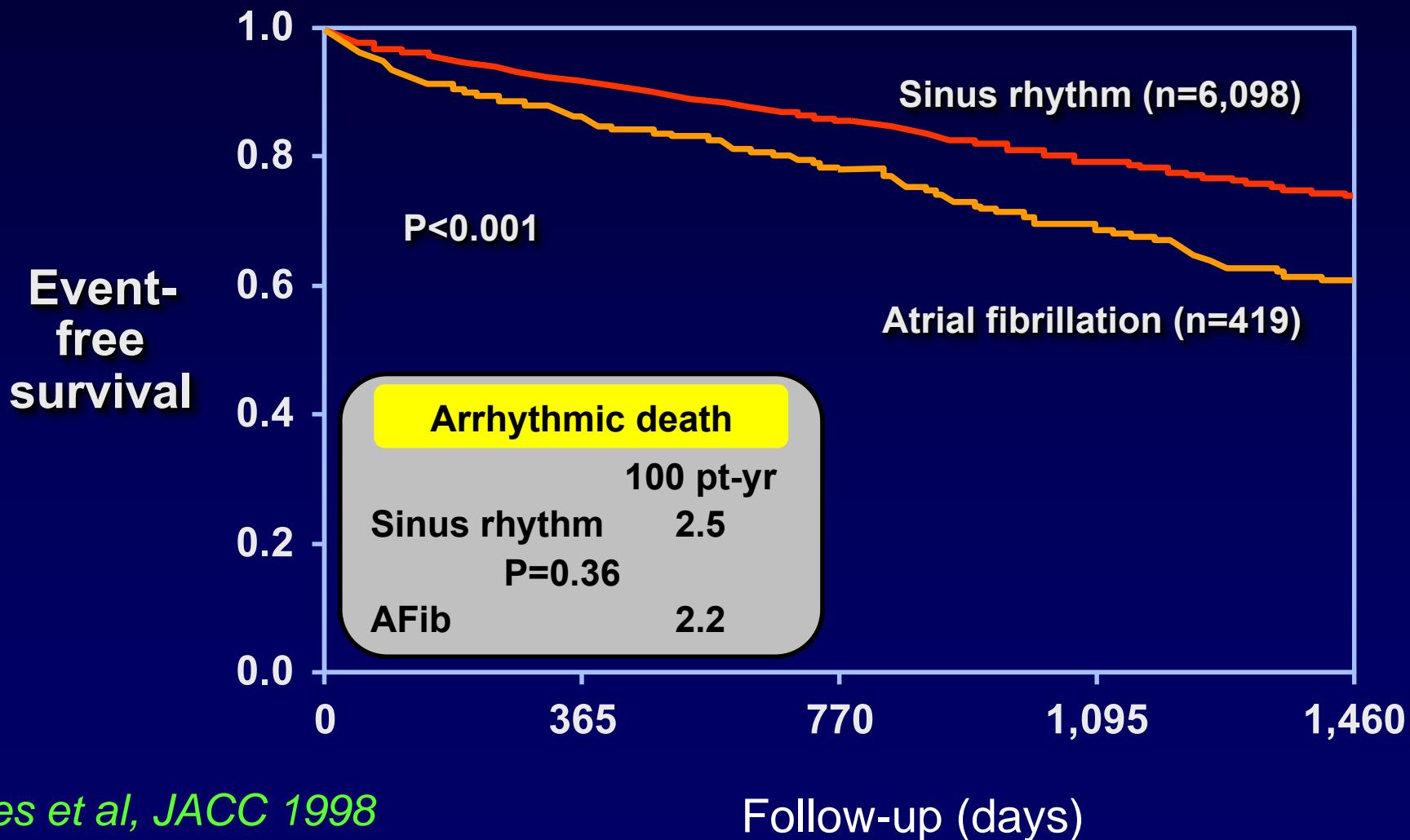
CÂU HỎI LÂM SÀNG

1. Có chuyển nhịp hay không?
2. Có sử dụng các thuốc chống loại nhịp tim hay không?
3. Kiểm soát tần số thất?
4. Xử trí suy tim ứ huyết?
5. Sử dụng các thuốc chống đông như thế nào?

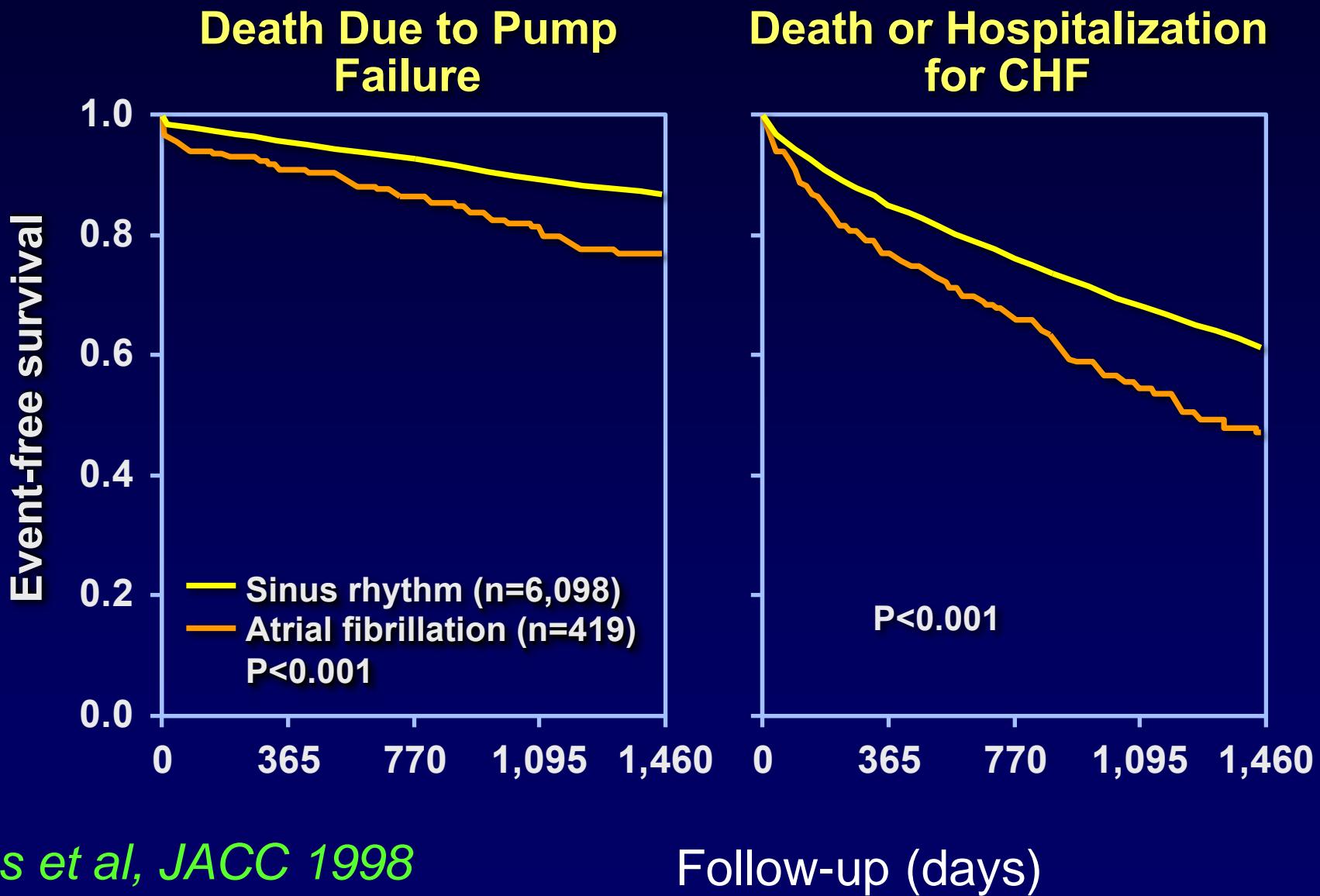
Does AF increase mortality in HF?

AF and all-cause mortality in LV dysfunction

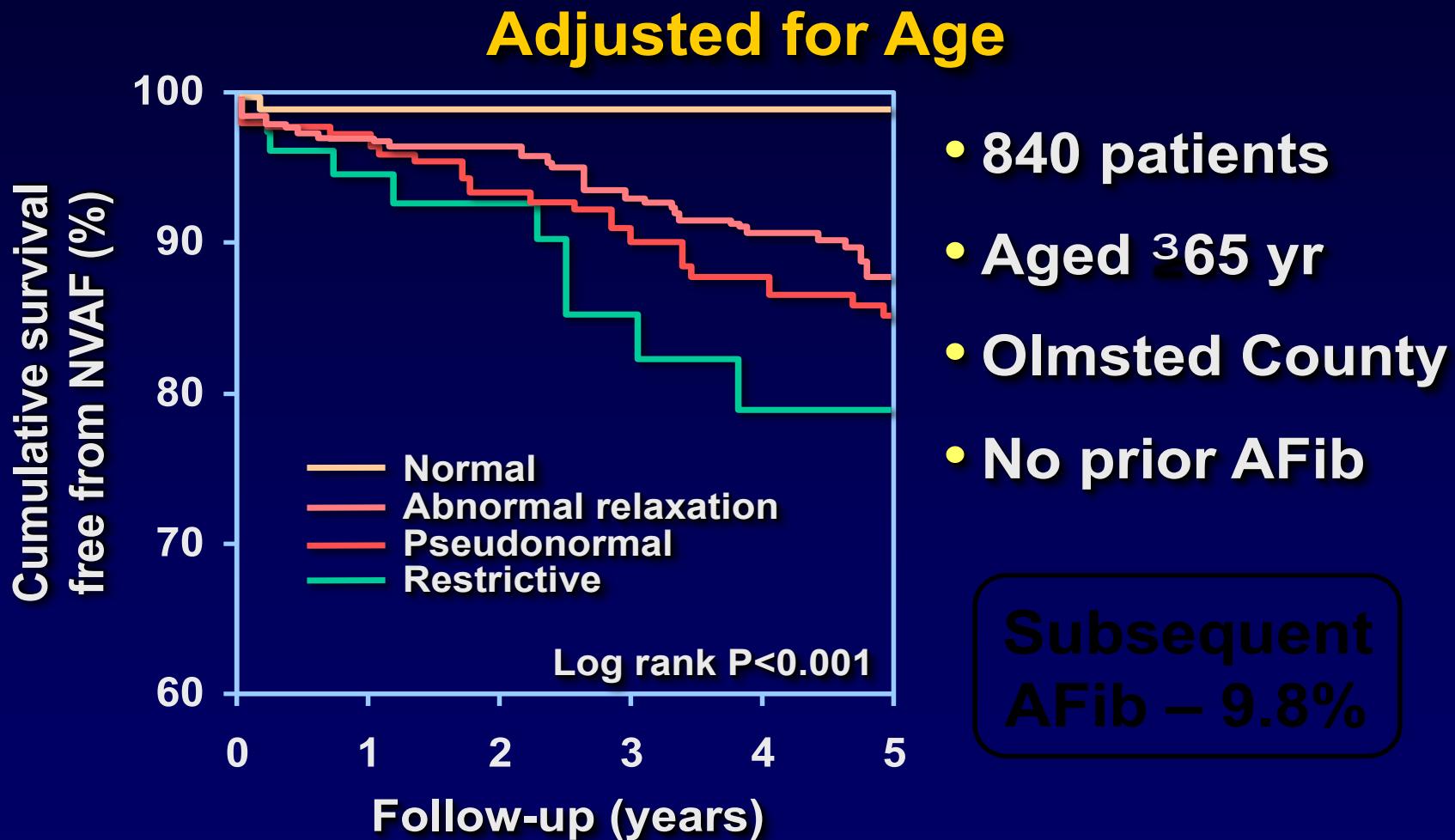
SOLVD Trials



Late Outcomes - SOLVD Trials

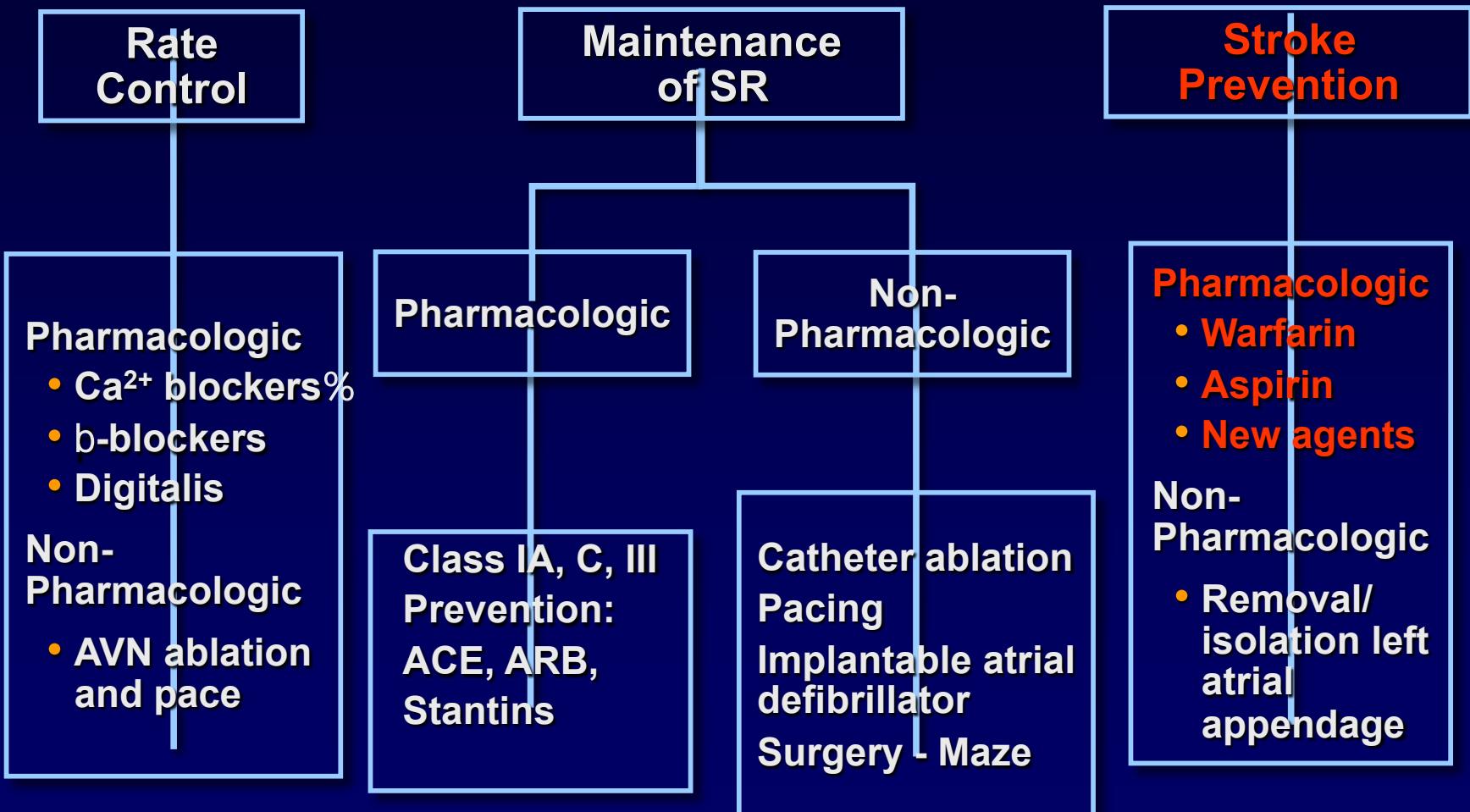


DIASTOLIC DYSFUNCTION AND DEVELOPMENT OF AF



Tsang T, JACC 2002

AF treatment options



Rate or Rhythm Control??

Rate Control vs. Rhythm Control

	Rate Control	Rhythm Control	P Value
AFFIRM ³⁷			
Death	25.9%	26.7%	.08
Major adverse events	32.7%	32%	NS
RACE ³⁸			
Death	7%	6.8%	NS
Major adverse events	17.2%	22.6%	NS
HOT CAFE ³⁹			
Death	1%	2.9%	NS
Major adverse events	8%	31%	.05
STAF ⁴⁰			
Death	8%	4%	NS
Major adverse events	10%	9%	NS

Nghiên cứu AF-CHF

- 1,376 pt: 682 to rhythm control
694 to rate control
- Deaths: 31.8% vs 32.9%, rhythm vs rate (NS)
CV deaths ≈ 80% of all cause of deaths, p = 0.59
- 2nd endpoints: Overall survival, stroke, worsening HF and composite of all 2nd endpoints (all NS)
- Hospitalization higher in rhythm control groups 46% vs 39% (p = 0.006)

Rate control in AF

Principles

Do not rely on resting heart rate

Average 24-hr rate on ambulatory monitor ($\pm 80/\text{min}$)

- Assess
 - Treadmill
 - 6-minute walk

- Therapy
 - Digoxin alone is ineffective unless preexisting conduction disease

AVN ablation
+ PPM

Beta blockers

Verapamil/
Diltiazem

Amiodarone

Beta blockers

- ✓ US Carvedilol Heart Failure Trials Program:

- Retrospective analysis
- 136 patients with concomitant CHF and AF
- EF improved in patients treated with carvedilol (from 23 to 33% with carvedilol and from 24 to 27% with placebo, $p < 0.001$).
- A reduction in the combined end point of death or CHF hospitalization: 19% in patients treated with placebo and 7% in patients on carvedilol, $p < 0.05$.

- ✓ The MERIT-HF study:

3991 patients with CHF NYHA classes II–IV and $EF < 40\%$. Metoprolol significantly reduced the risk of death or heart transplantation by 32% compared with placebo.

Non-dihydropyridine calcium channel antagonists (Verapamil/Diltiazem)

Because of their negative inotropic effects, calcium channel antagonists are in general regarded as inappropriate in CHF patients.

DIGITALIS

- ✓ Digoxin to control heart rate during rest in CHF and AF: recommended by the ACC/AHA/ESC guidelines for the management of AF and the CHF.
- ✓ Enhances vagal tone ->less effective at controlling the ventricular rate in exercise or increased sympathetic activity.

DIGITALIS

- ✓ In patients with CHF and AF, digoxin + beta-blocker (carvedilol) ↓ symptoms, ↑ ventricular function -> better ventricular rate control than either agent alone (*Khan 2003*)
- ✓ Adequate rate control at rest and exertion (AFFIRM trial) was achieved with digoxin alone in 54% at 1 year vs. 81% with a beta-blocker (with or w/o digoxin) in patients with CHF symptoms or EF <40%.
- ✓ Beta-blocker + digoxin: allow ↓ the dose of each drug. This may be advantageous with respect to their possible adverse effects.

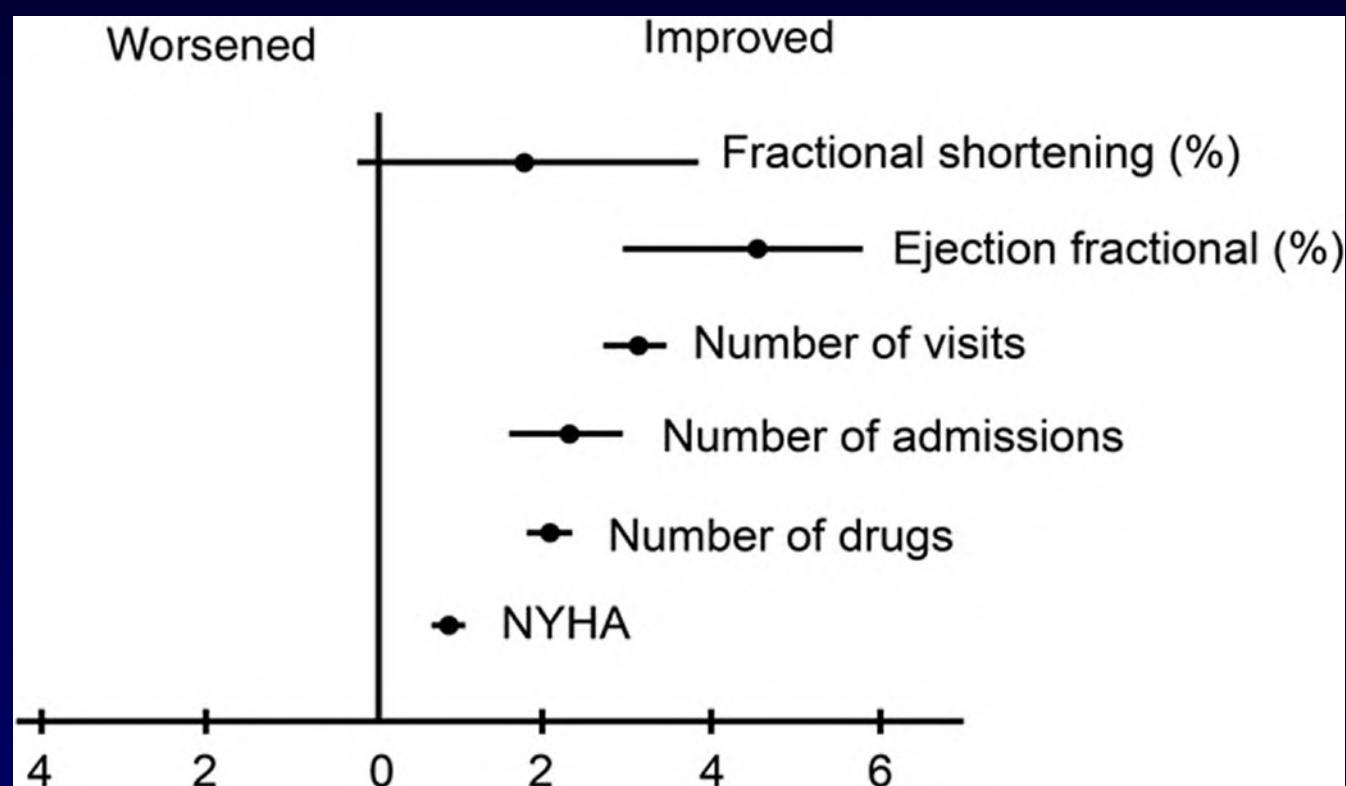
Amiodarone

- ✓ The use of amiodarone in CHF patients to control heart rate during AF is regarded a second-line treatment according to the guidelines.
- ✓ Singh SN (1995): Rate of sudden death and mortality with amiodarone: not increased in 674 patients with CHF and an EF < 40%.
- ✓ Because of its possible adverse effects, it is recommended only when other measures are unsuccessful or contraindicated.

AVN ablation and ventricular pacing

- ✓ Atrioventricular (AV) nodal ablation and ventricular pacing is a very efficient way to control heart rate.
- ✓ Patients with symptoms due to tachyarrhythmia or with tachycardiomycopathy most likely benefit from this therapeutic option.

AVN ablation and ventricular pacing

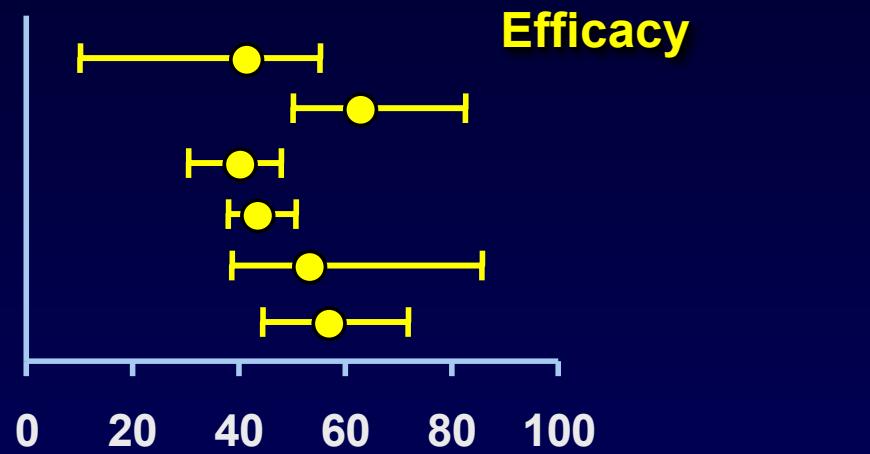


1181 patients with symptomatic, medically refractory AF who underwent AV node ablation and pacing. Effects on left ventricular function, healthcare use, and NYHA functional classification $p < 0.001$. *From Wood et al, Circulation 2000*

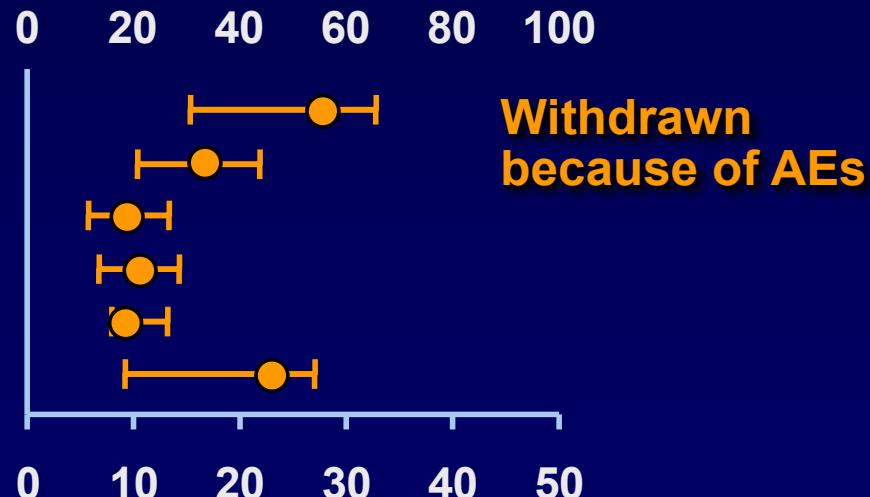
Pharmacologic therapies for maintaining sinus rhythm

Can we achieve efficacy without toxicity

	Studies	No.
Quinidine	11	638
Flecainide	3	215
Propafenone	5	1,253
Sotalol	3	275
Amiodarone	4	163
Dofetilide	3	



	Studies	No.
Quinidine	3	182
Flecainide	5	428
Dofetilide	3	
Propafenone	5	1,253
Sotalol	4	438
Amiodarone	4	1,671



Maintenance of sinus rhythm after cardioversion of AF in patients with chronic HF

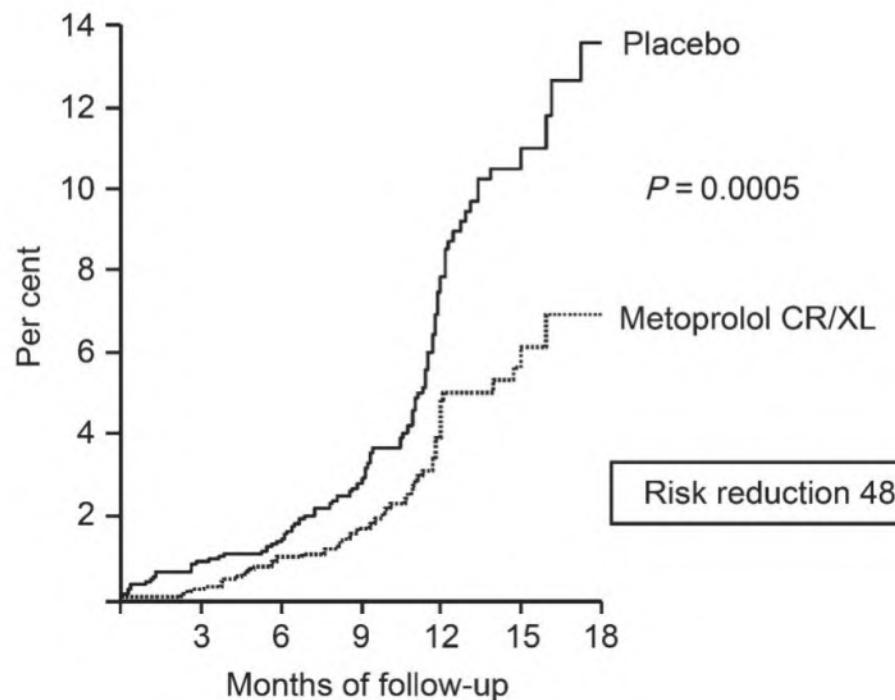
Beta blocker

- ✓ Treating HF with beta blockers: reduce atrial load, facilitate reversed atrial remodelling.
- ✓ Chronic treatment with a beta-blocker is associated with a prolongation of the atrial action potential ->increase atrial wavelength -> exert anti-fibrillatory effects.
- ✓ Beta blocker reduces new onset of AF.
- ✓ COPERNICUS, CAPRICORN, MERIT-HF: carvedilol, metoprolol
- ✓ Plewan A et al (2001): bisoprolol, sotalol

Maintenance of sinus rhythm after cardioversion of AF in patients with chronic HF

Beta blocker

Newly diagnosed AF with metoprolol



Maintenance of sinus rhythm after cardioversion of AF in patients with chronic HF

Amiodarone and dofetilide

- ✓ CHF: ↑ risk of ventricular arrhythmias and sudden death.
- ✓ Amiodarone and dofetilide: the only anti-arrhythmic agents recommended by the current guidelines for maintenance of sinus rhythm in patients with AF and CHF.
- ✓ DIAMOND study: Dofetilide was effective in converting to and maintaining sinus rhythm, safe, did negative inotropic effects, did not affect mortality.
- ✓ However: dofetilide has its narrow therapeutic window, torsade de pointes occurred in 4.8%.
- ✓ CHF-STAT trial: Amiodarone was effective in converting to and stabilizing sinus rhythm, safe.
- ✓ Side effect of amiodarone: marked bradycardia-> limits long-term use

Maintenance of sinus rhythm after cardioversion of AF in patients with chronic HF

Sotalol

- ✓ SWORD trial: the class III effect (as exerted by d-sotalol) was associated with ↑ mortality in patients with EF < 40% after myocardial infarction.
- ✓ Retrospective analysis (22 clinical trials): 3135 patients received oral D, L-sotalol, CHF was a predictor of torsade de pointes ventricular tachyarrhythmia.
- ✓ D, L-sotalol should be avoided in patients with CHF.

Non-pharmacological options

Catheter ablation:

- ✓ Reasonable alternative to pharmacological therapy in symptomatic patients with little or no LA enlargement.
- ✓ However: limited data, complex procedure.
- ✓ Not generally recommended in AF with CHF.

Non-pharmacological options

Surgery (Cox-Maze procedure):

- ✓ Restoration of sinus rhythm during long-term follow-up (3 months to 8 years): achieved in more than 90% without anti-arrhythmic medication.
- ✓ Restoring atrial contraction: 21% to 100%
- ✓ In patients with CHF: no prospective data
- ✓ Should be indicated individually for patients with valvular or CABG surgery.

Electrical Cardioversion

- ✓ In symptomatic AF, electrical cardioversion can be performed and sinus rhythm may be stabilized with beta-blockers.
- ✓ BB drugs can reduce the occurrence of AF in patients with CHF. Adequate HF (with RAAS blockers...) ↑ the chance to maintain sinus rhythm and should be optimized before cardioversion.
- ✓ Amiodarone is safe and effective, if loaded before electrical cardioversion.
- ✓ In severe HF and hemodynamic deterioration associated with AF, intravenous amiodarone and immediate electrical cardioversion may stabilize the patient.

Heart Failure Therapy In Patient with AF

- ✓ Renin - Angiotensin - Aldosterone system blocker.
- ✓ Diuretic and salt restriction.
- ✓ Biventricular pacing.

Beta-blocker in AF and HF

- ✓ Evidence suggests that BB can reduce the incidence of AF in HF patients.
- ✓ Do not seem to be as effective in preventing major adverse CV outcomes in AF patients with chronic HFrEF.

Stroke Prevention in AF and HF

Why is stroke an issue in heart failure?

HF is a prothrombotic state:

- ✓ Stasis
- ✓ Abnormalities in endothelial integrity
- ✓ Abnormalities in clotting and platelet indices, inflammation.

Assessing Risk

CHA₂DS₂-VASc Risk Scoring System

Risk Factor	Points	Annual Risk Score for Stroke Based on CHA ₂ DS ₂ -VASc Score
Congestive heart failure/LV dysfunction*	+1	Score of 1 1.3%
Hypertension	+1	Score of 2 2.2%
Age ≥ 75 years	+2	Score of 3 3.2%
Diabetes	+1	Score of 4 4.0%
Stroke/TIA/thromboembolism	+2	Score of 5 6.7%
Vascular disease (MI, aortic plaque, PAD)†	+1	Score of 6 9.8%
Age 65-74 years	+1	Score of 7 9.6%
Sex category (female)	+1	Score of 8 6.7%
Maximum score	9	Score of 9 15.2%

*LV ejection fraction ≤ 40%; †Including prior revascularization, amputation due to PAD, or angiographic evidence of PAD

LV = left ventricular; MI = myocardial infarction; PAD = peripheral artery disease

Camm AJ, et al. *Eur Heart J.* 2010;31(19):2369-2429.
Lip GY, et al. *Chest.* 2010;137(2):263–272.

Pivotal Warfarin- Controlled trials

Stroke Prevention in AF

Warfarin vs Placebo
2,900 Patients

NOACs vs Warfarin
71,683 Patients

6 Trials of Warfarin
vs Placebo 1989-1993^a

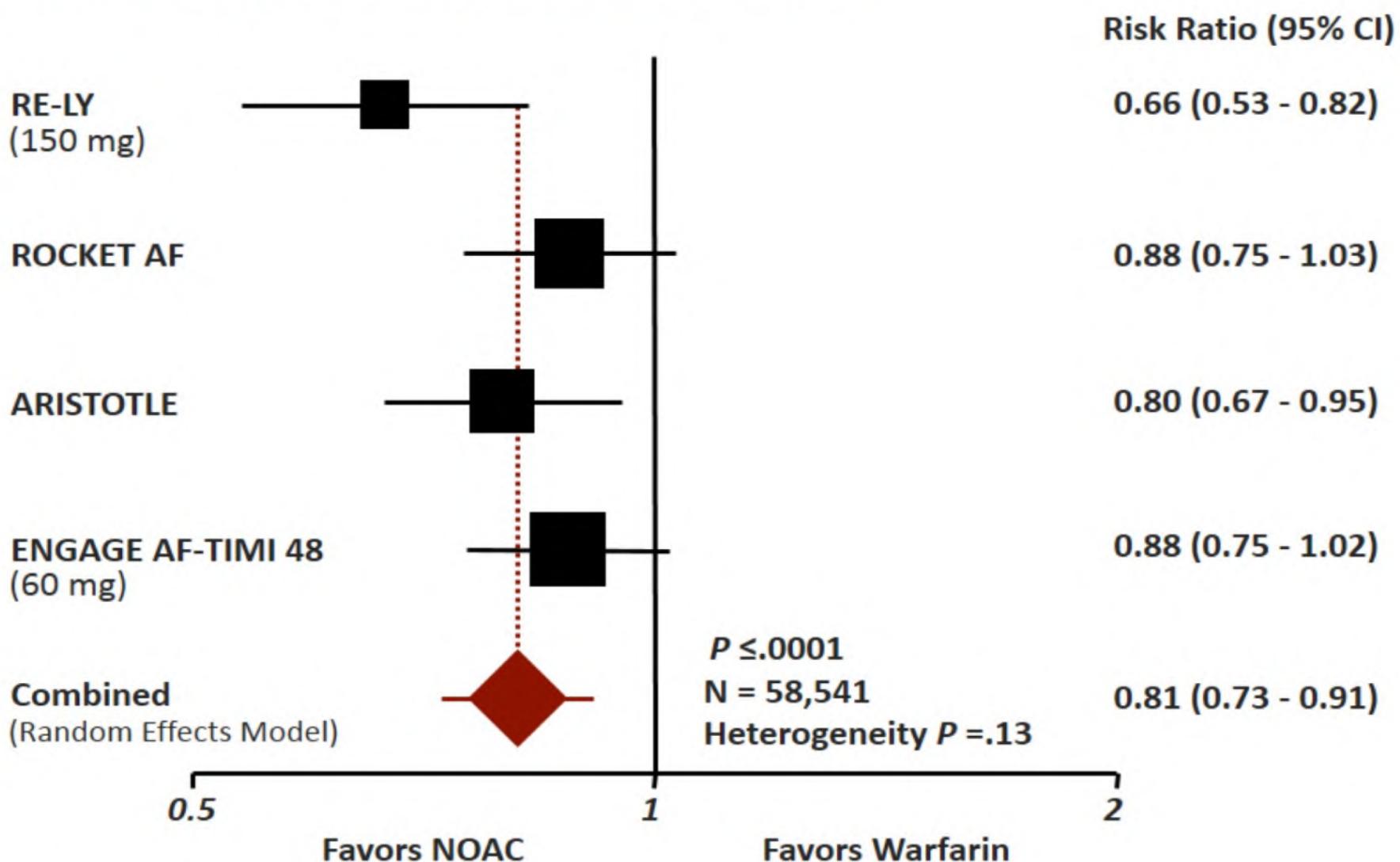
ROCKET AF^c
(Rivaroxaban)
2011

ENGAGE AF-TIMI 48^e
(Edoxaban)
2013

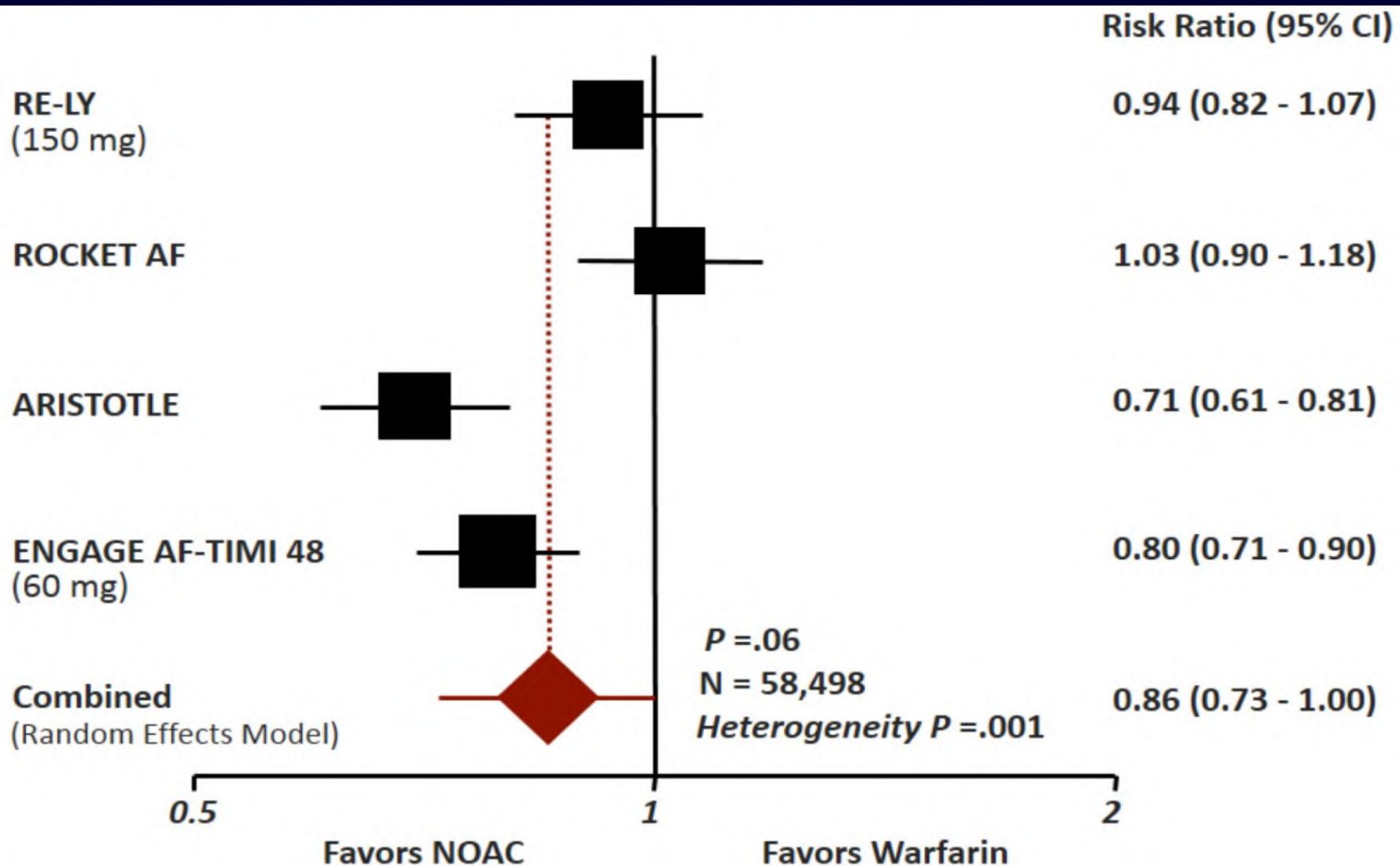


a. Hart RG, et al. *Ann Intern Med* 2007;146:857-67^[14]; b. Connolly SJ, et al. *N Engl J Med*. 2009;361:1139-51^[15]; c. Patel MR, et al. *N Engl J Med*. 2011;365:883-91^[16]; d. Granger CB, et al. *N Engl J Med*. 2011;365:981-92^[17]; e. Giuliano RP, et al. *N Engl J Med*. 2013;369:2093-2104.^[18]

ALL NOACS: Stroke or SEE

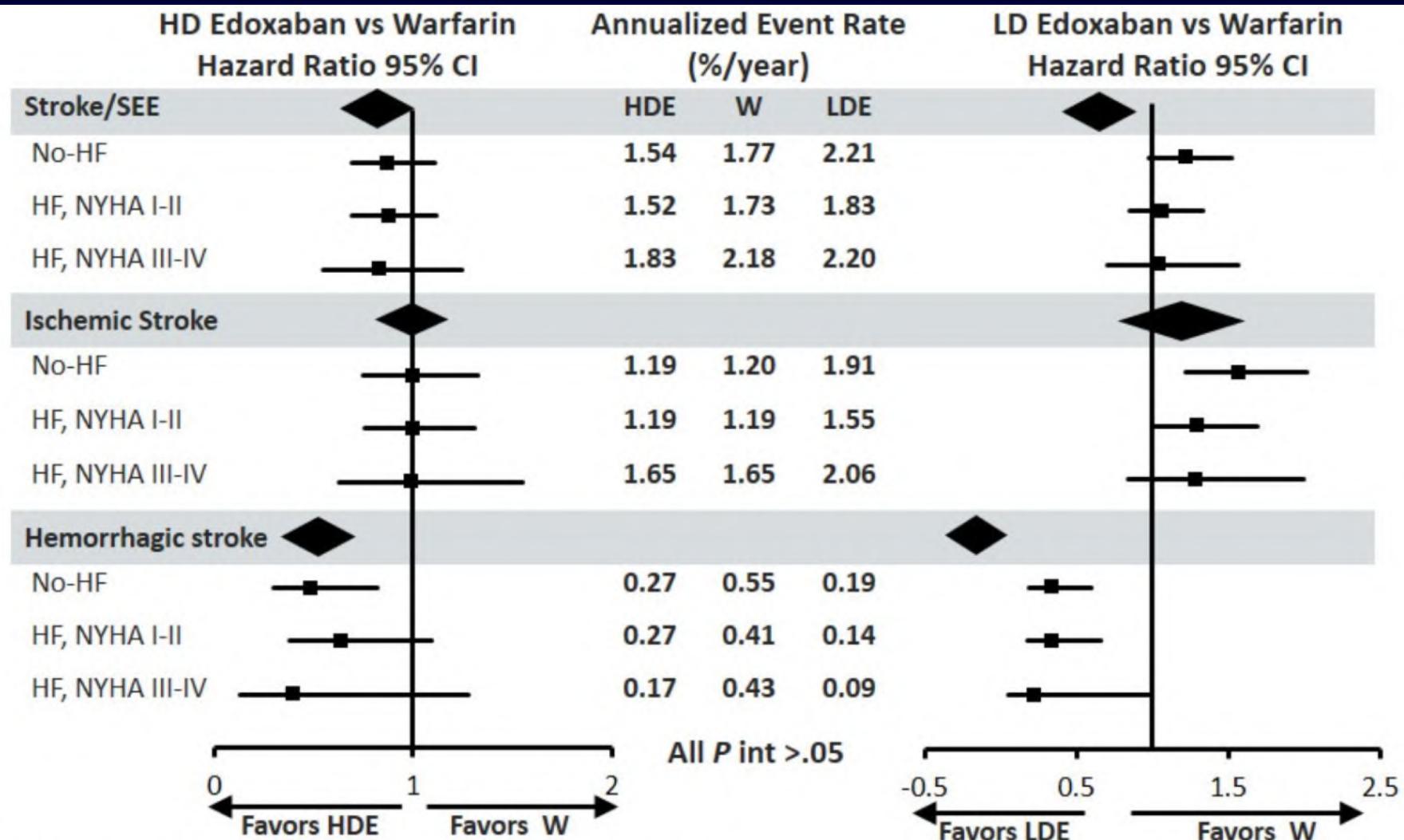


ALL NOACS: Major bleeding



ENGAGE-AF TIMI 48

Stroke/SEE in HF patients



SUMMARY

- ✓ Concomitant AF and HF: poor prognosis, ↑ hospitalization, adversely affect mortality. HF can cause AF, and vice versa.
- ✓ Restoration of sinus rhythm with anti-arrhythmic drugs can be effective in alleviating symptoms, but has failed to show a mortality benefit over rate control.
- ✓ For rate control, beta-blockers and digoxin can be used safely, and amiodarone is second choice.
- ✓ So far, with beta-blockers, a reduction in mortality has not been shown in patients with AF and CHF, prospective trials are needed.
- ✓ If these measures are ineffective, AVN ablation and ventricular pacing is an effective way to control heart rate. Biventricular pacing is superior to right ventricular pacing.

SUMMARY

- ✓ The existence of symptoms when the patient is in AF is the primary indication for rhythm restoration over rate control.
- ✓ Current anti-arrhythmic drugs continue to have limited efficacy in sinus rhythm promotion, and catheter-based AF ablation has been shown to be superior to anti-arrhythmic drugs in maintaining sinus rhythm.
- ✓ In patients scheduled for open-heart surgery for other reasons, a Cox-Maze procedure may be considered.
- ✓ Novel risk characterization schemes and OACs are now accessible, and knowledge of their utility and limitations is necessary to optimize the care for patients with both AF and HF.



XIN CHÂN THÀNH CẢM ƠN