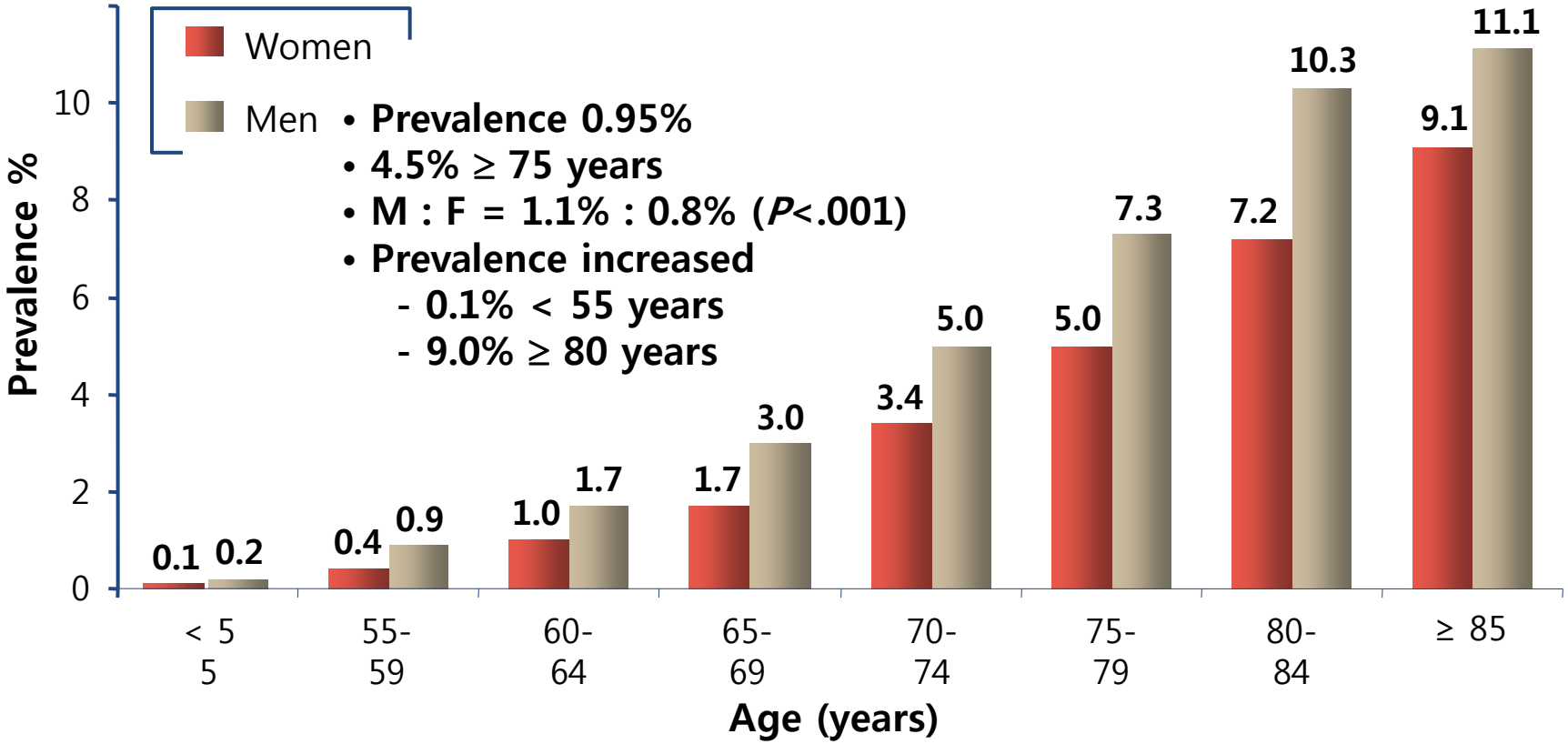
AF
Multi-Disciplinary Approach as a Systemic Disease

원광대학교병원 권역 심뇌혈관질환센터

김 남 호

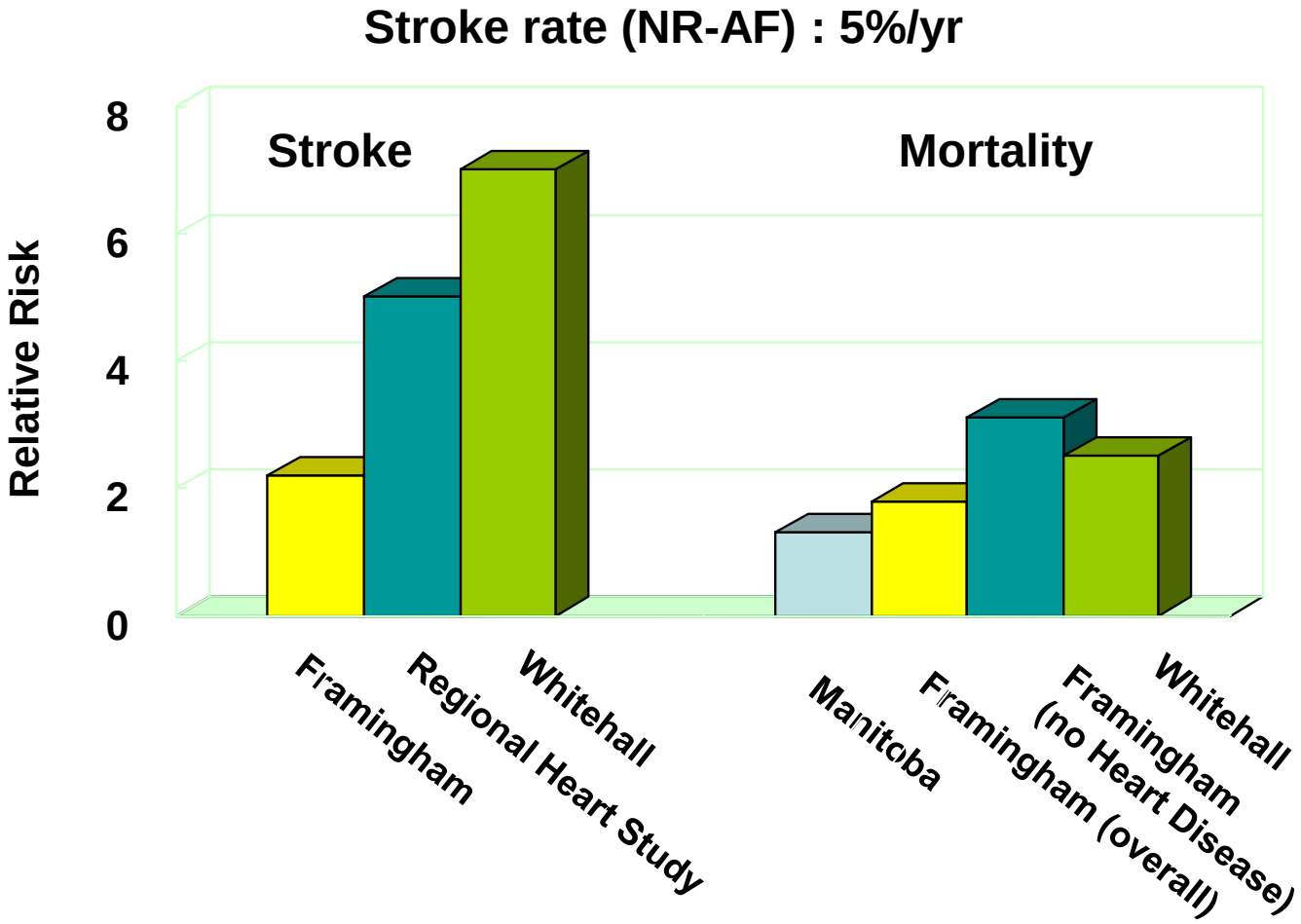
AF 유병률



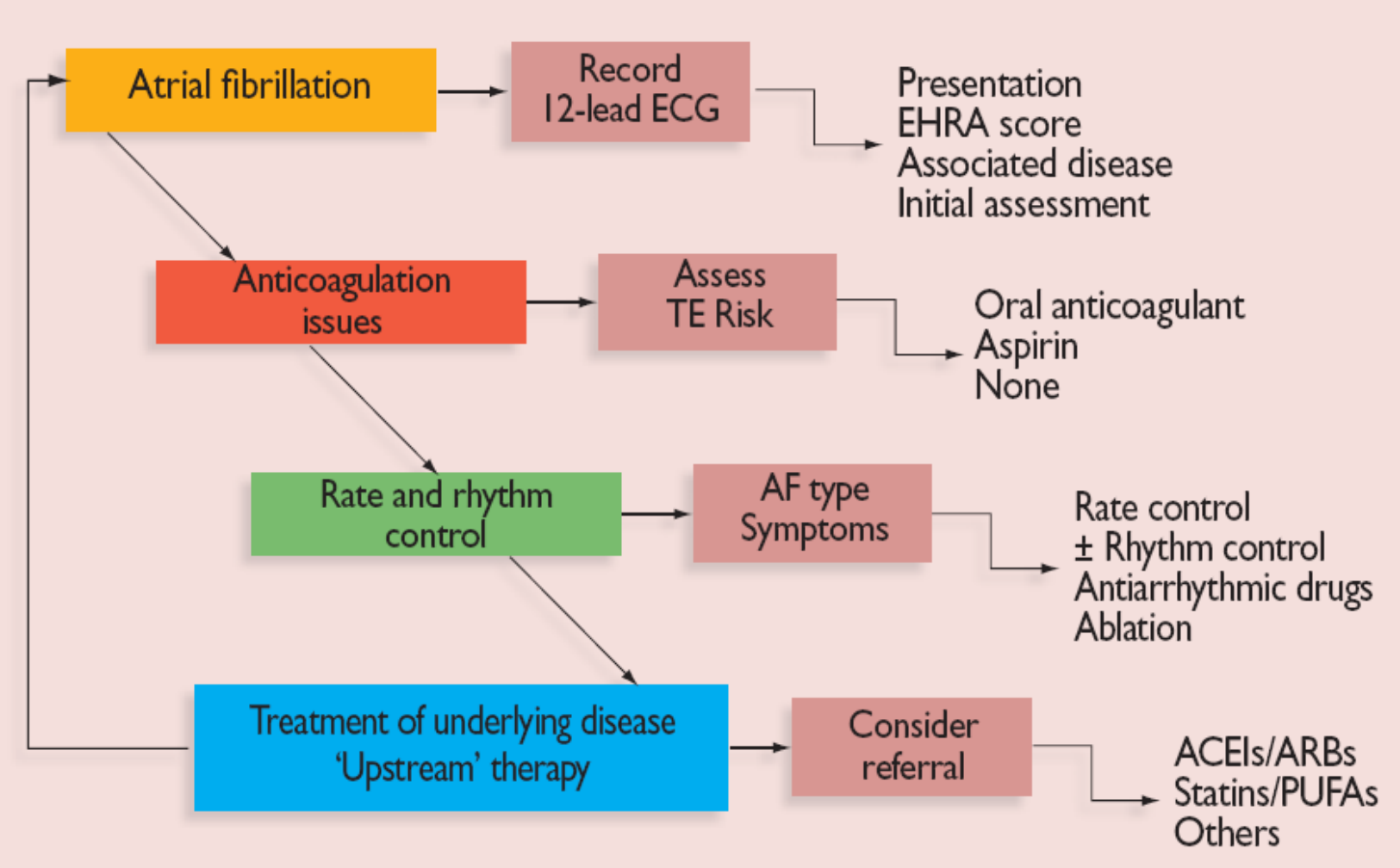
* EU 2001, US 2006, both cited in 2006 guidelines

1. Go AS. *et al. JAMA* 2001;285:2370-2375. 2. Fuster V, *et al. J Am Coll Cardiol*. 2006;38:1231-1265.
3. Lloyd-Jones DM, et al. Circulation 2004;110:1042-46.

Relative Risk of Stroke and Mortality in Patients with/without AF



AF의 치료

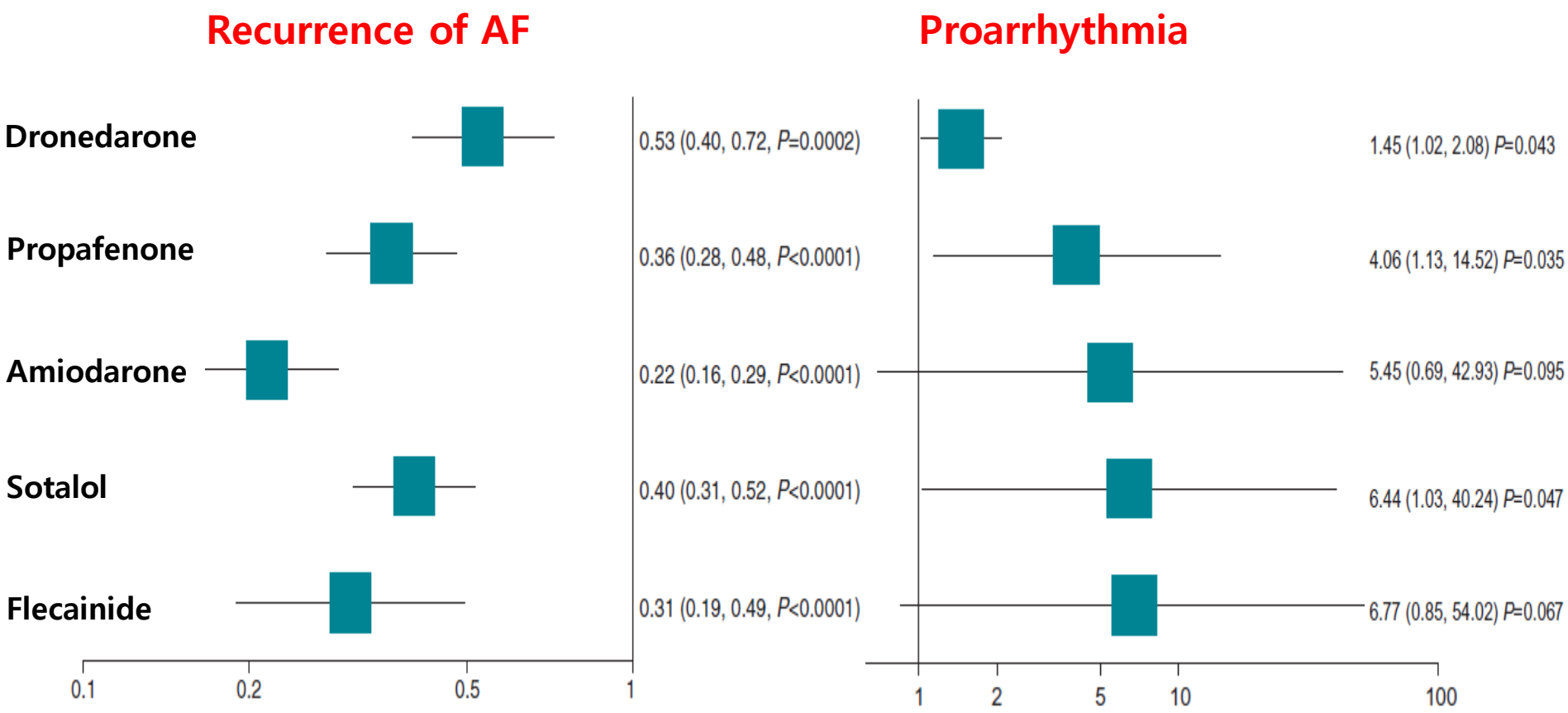


2010 ESC Guideline. Europace 2010;12:1360-1420

AF 최신 치료

- 최신 약물의 개발
  - 항부정맥제
  - 항응고제
- 전극도자절제술의 발전
  - 발작성 심방세동 (class I, LOE A)
  - 지속성 심방세동 (class IIa, LOE A)

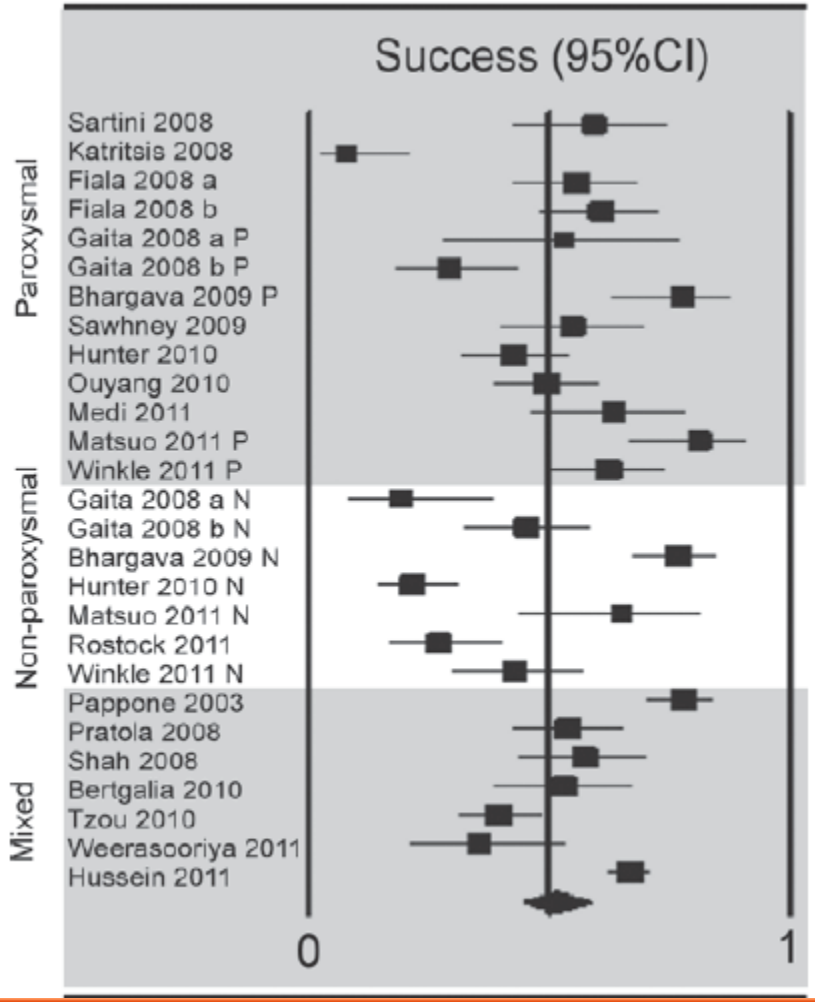
항부정맥



Freemantle N, et al. 2011 Europace

고주파 전극도자 절제술

Late Single Procedure Success > 3 years



Paroxysmal AF
54.1% (95% CI: 44.4-63.4%)
I^2 = 79.1%

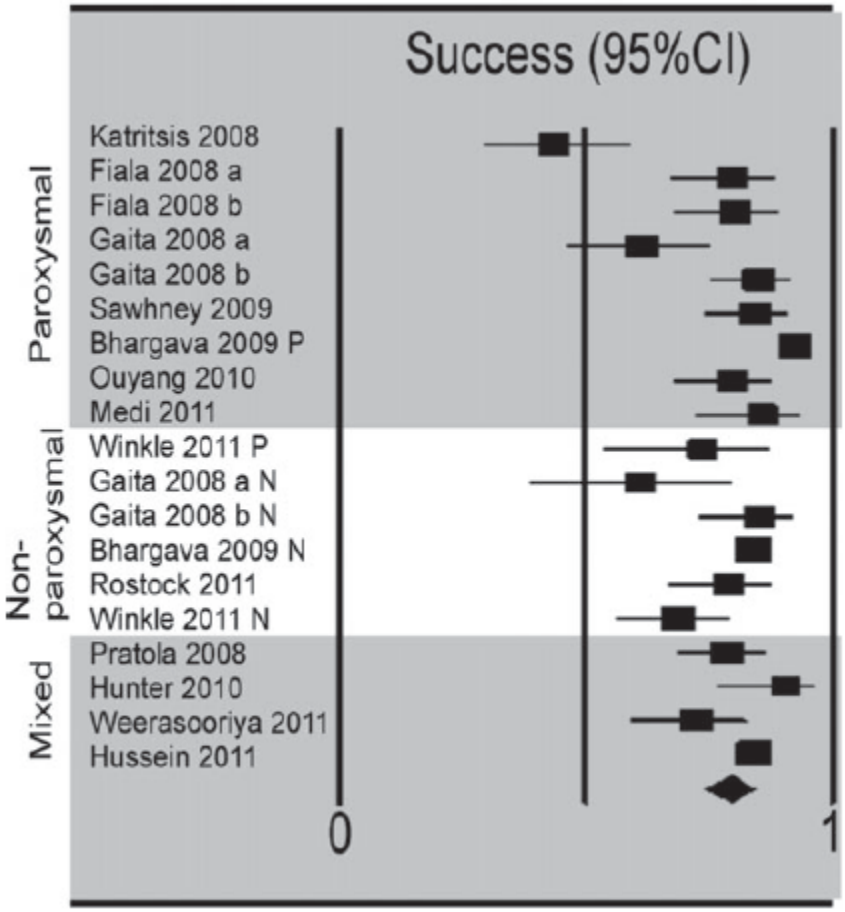
Non-paroxysmal AF
41.8% (95% CI: 25.2-60.5%)
I^2 = 83.7%

Overall success
53.1% (95% CI: 46.2-60.0%)
I^2 = 87.6%

Ganesan AN, et al. 2013 J Am Heart Assoc

고주파 전극도자 절제술

Late Multi-procedure Procedure Success > 3 years



Paroxysmal AF
79.0% (95% CI: 67.6-87.1%)
I^2 = 89.8%

Non-paroxysmal AF
77.8% (95% CI: 68.7-84.9%)
I^2 = 71.9%

Overall success
79.8% (95% CI: 75.0-83.8%)
I^2 = 83.9%

Ganesan AN, et al. 2013 J Am Heart Assoc

Major Complications

Type of Complication	No. of Patients	Rate, %
Death	25	0.15
Tamponade	213	1.31
Pneumothorax	15	0.09
Hemothorax	4	0.02
Sepsis, abscesses, or endocarditis	2	0.01
Permanent diaphragmatic paralysis	28	0.17
Total femoral pseudoaneurysm	152	0.93
Total artero-venous fistulae	88	0.54
Valve damage/requiring surgery	11/7	0.07
Atrium-esophageal fistulae	6	0,04
Stroke	37	0.23
Transient ischemic attack	115	0.71
PV stenosis requiring intervention	48	0.29
Total	741	4.54

Updated World Survey, Cappato R, et al. Circ EP 2010;3;32-38

AF 치료의 한계점

- 약물 및 전극도자 절제술
  - Limited efficacy
  - Significant side effects

Questions ?

심방세동의 병인을 잘 이해하고 있는가?

심방세동의 치료에 대한 접근이 올바른가?

AF 원인

Endocrine

- Hyperthyroidism
- Pheochromocytoma
- DM

Autonomic

- Vagal mediated AF
- Adrenergically induced AF

Genetic Factors, Age, Sex

Life style

- Obesity
- Sleep apnea
- Alcohol

Idiopathic

- Lone AF

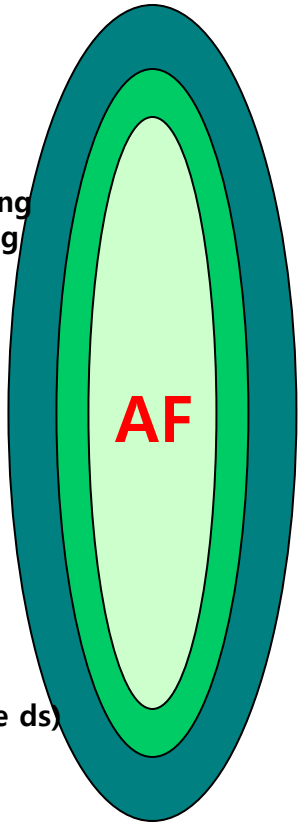
Atrial Factors

- Structural remodeling
- Electrical remodeling

Heart Diseases

- VHD (esp, mitral valve ds)
- HF
- CAD
- HT (w LVH)
- Etc., HCM, DCM

Inflammation



Upstream Therapy

- **To prevent or delay myocardial remodeling associated with hypertension, heart failure, or inflammation (e.g. after cardiac surgery) may deter the development of new AF (primary prevention) or once established, its rate of recurrence or progression to permanent AF (secondary prevention).**

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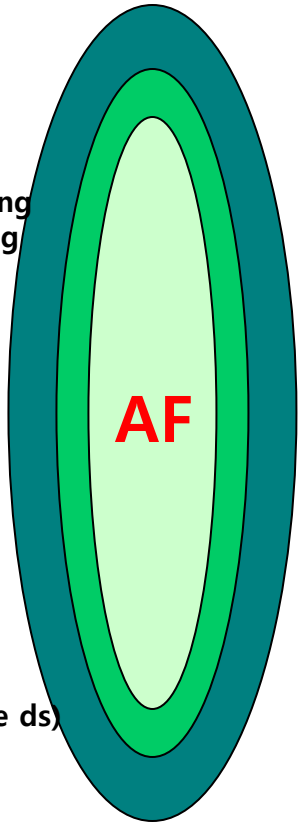
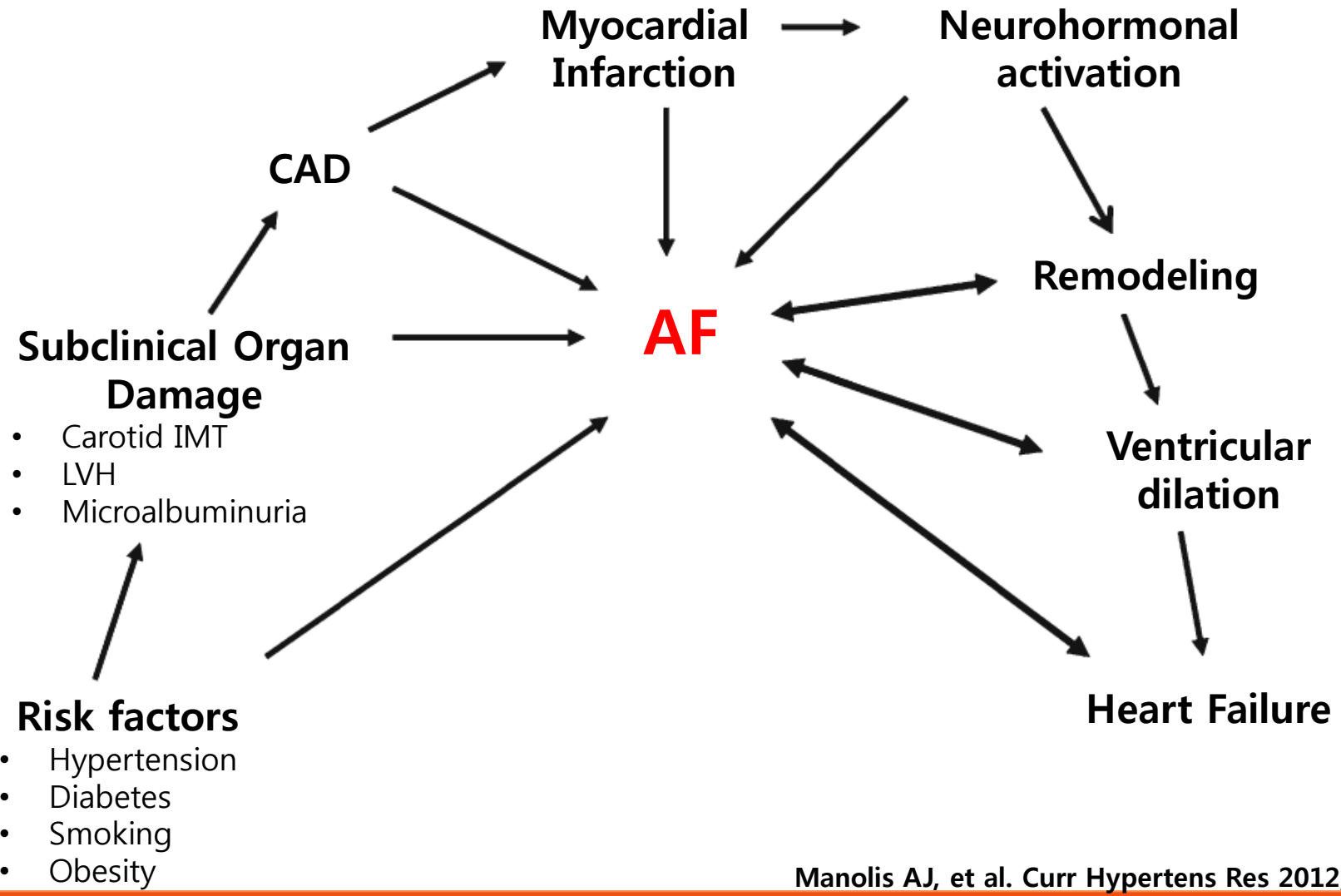
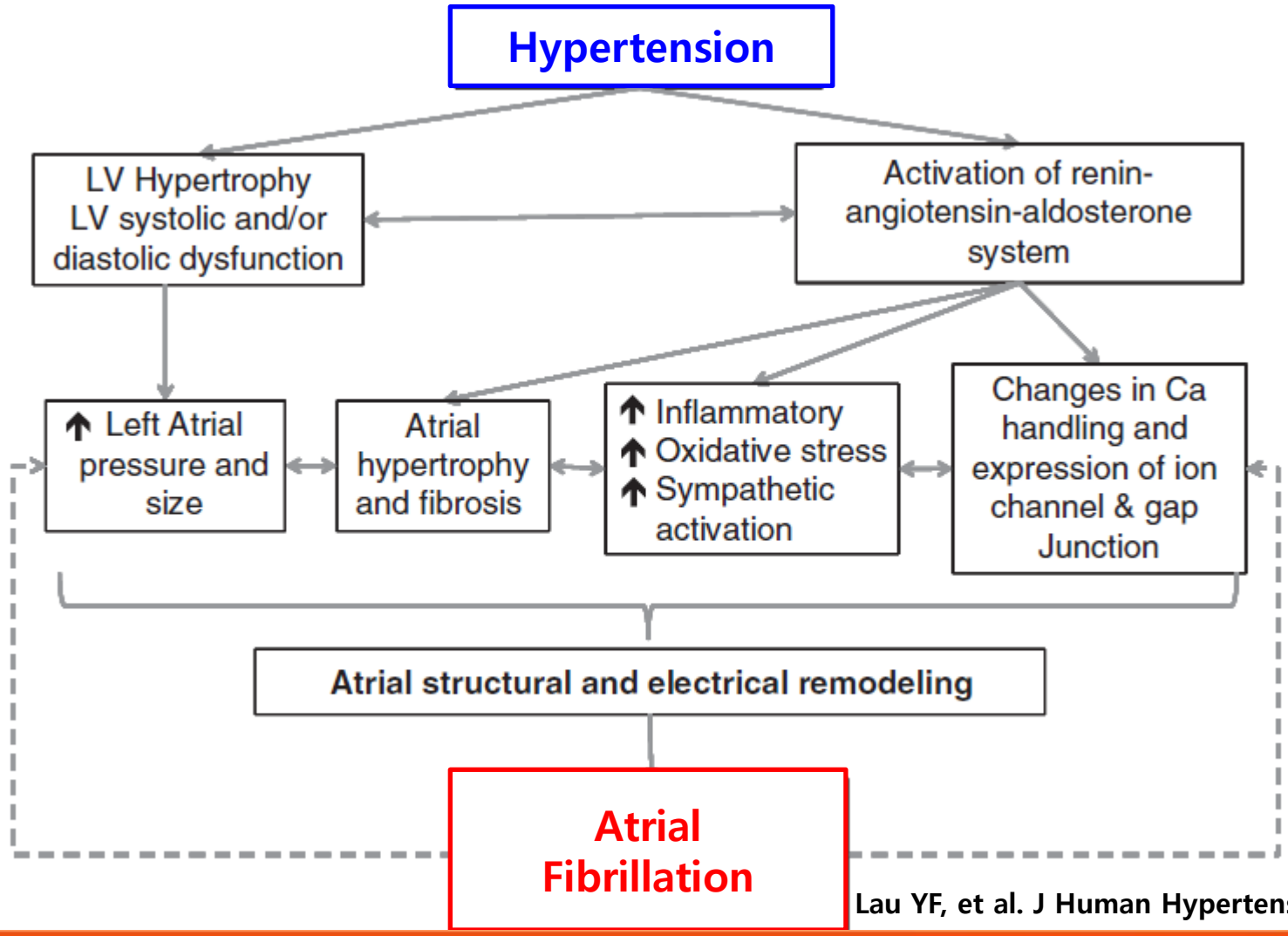


AF and Cardiovascular Continuum



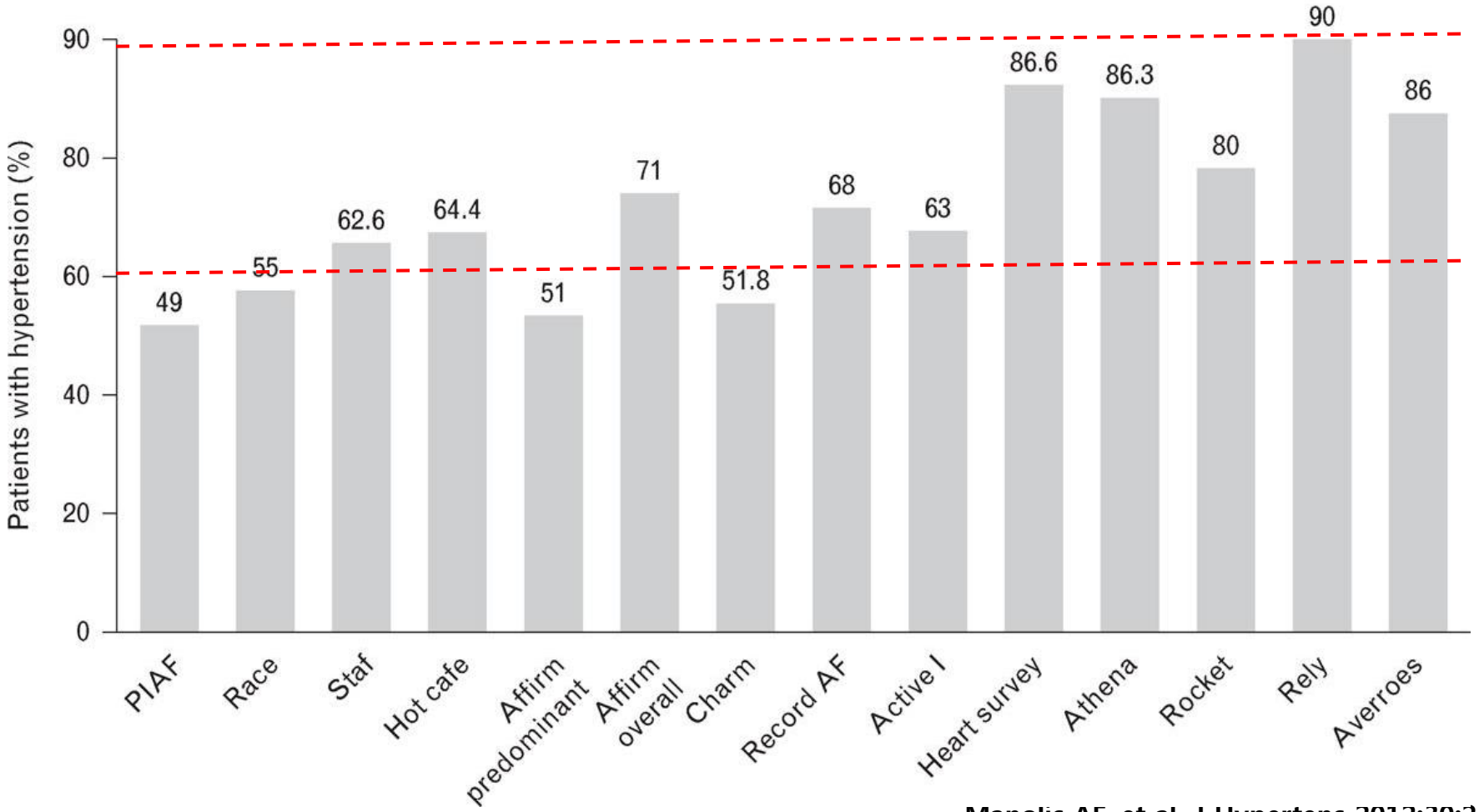
Manolis AJ, et al. Curr Hypertens Res 2012;14:350

Hypertension



Lau YF, et al. J Human Hypertens 2012;26:563

Prevalence of Hypertension in AF Trials



Manolis AF, et al. J Hypertens 2012;30:239

Hypertension

Framingham Study – 38 year F/U

Risk Factors	Age-Adjusted OR		Risk Factor–Adjusted OR	
	Men	Women	Men	Women
Cigarettes	1.0	1.4†	1.1	1.4
Diabetes	1.7‡	2.1§	1.4†	1.6‡
ECG–LVH	3.0§	3.8§	1.4	1.3
Hypertension	1.8§	1.7§	1.5‡	1.4†
BMI	1.03	1.02	—	—
Alcohol	1.01	0.95	—	—

BMI = body mass index; ECG–LVH = echocardiographic left ventricular hypertrophy; OR = odds ratio.

*2-year pooled logistic regression; †$p < 0.05$; ‡$p < 0.01$; §$p < 0.001$.

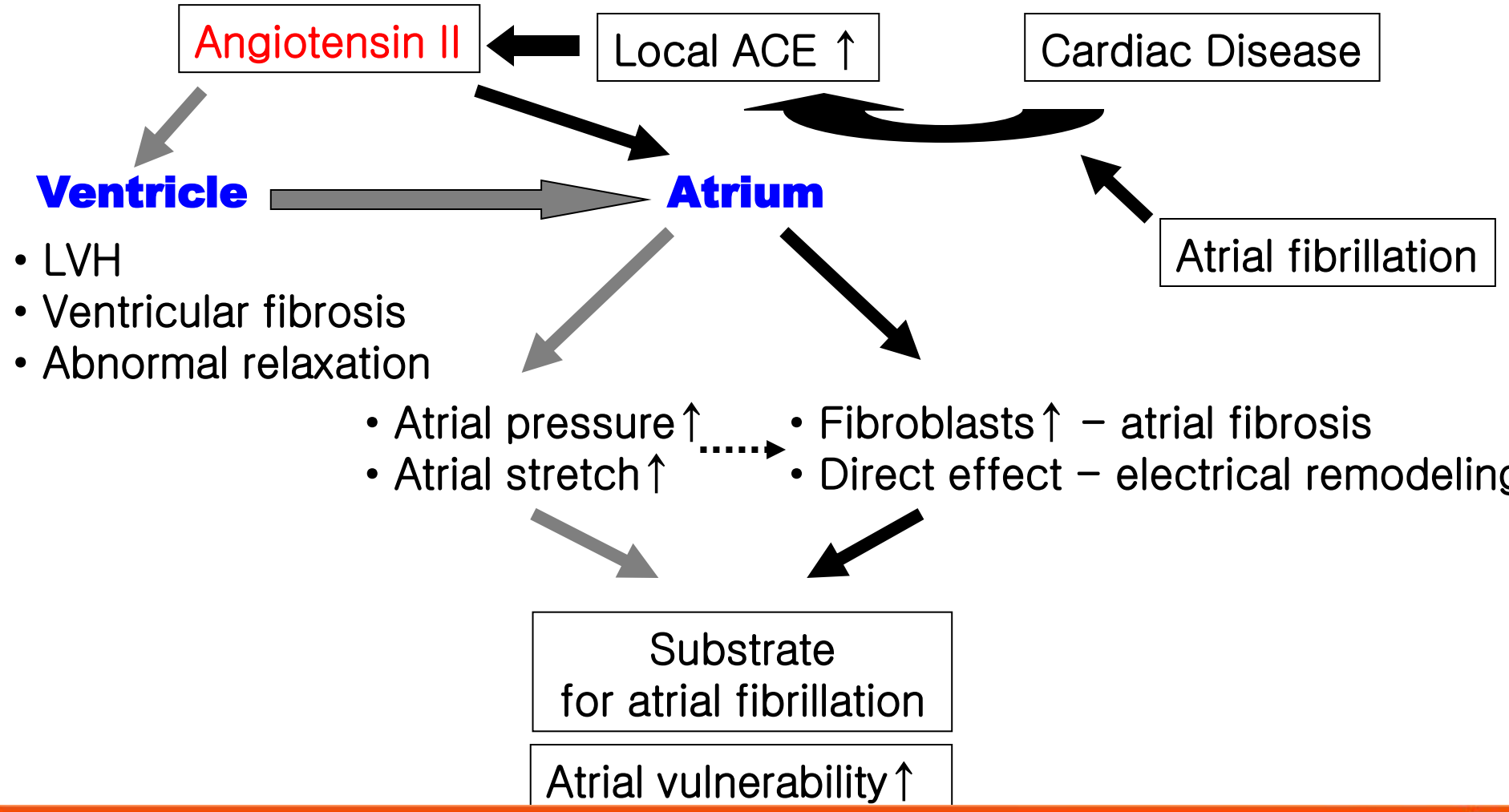
Adapted from *JAMA*.[7]

Kannel WB, et al. Am J Cardiol 1998;82:2N

HT and AF

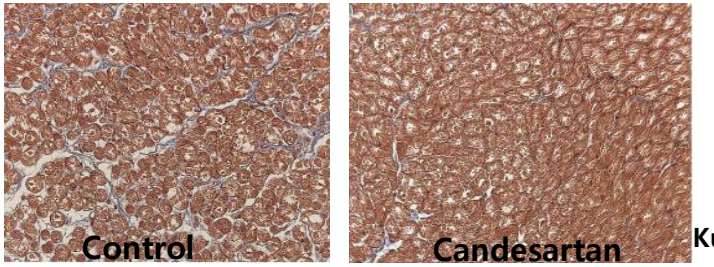
- **Therapeutic target?**
  - **RAAS inhibitor**

Direct and Indirect Atrial Actions of Angiotensin II



Inhibitors of RAAS

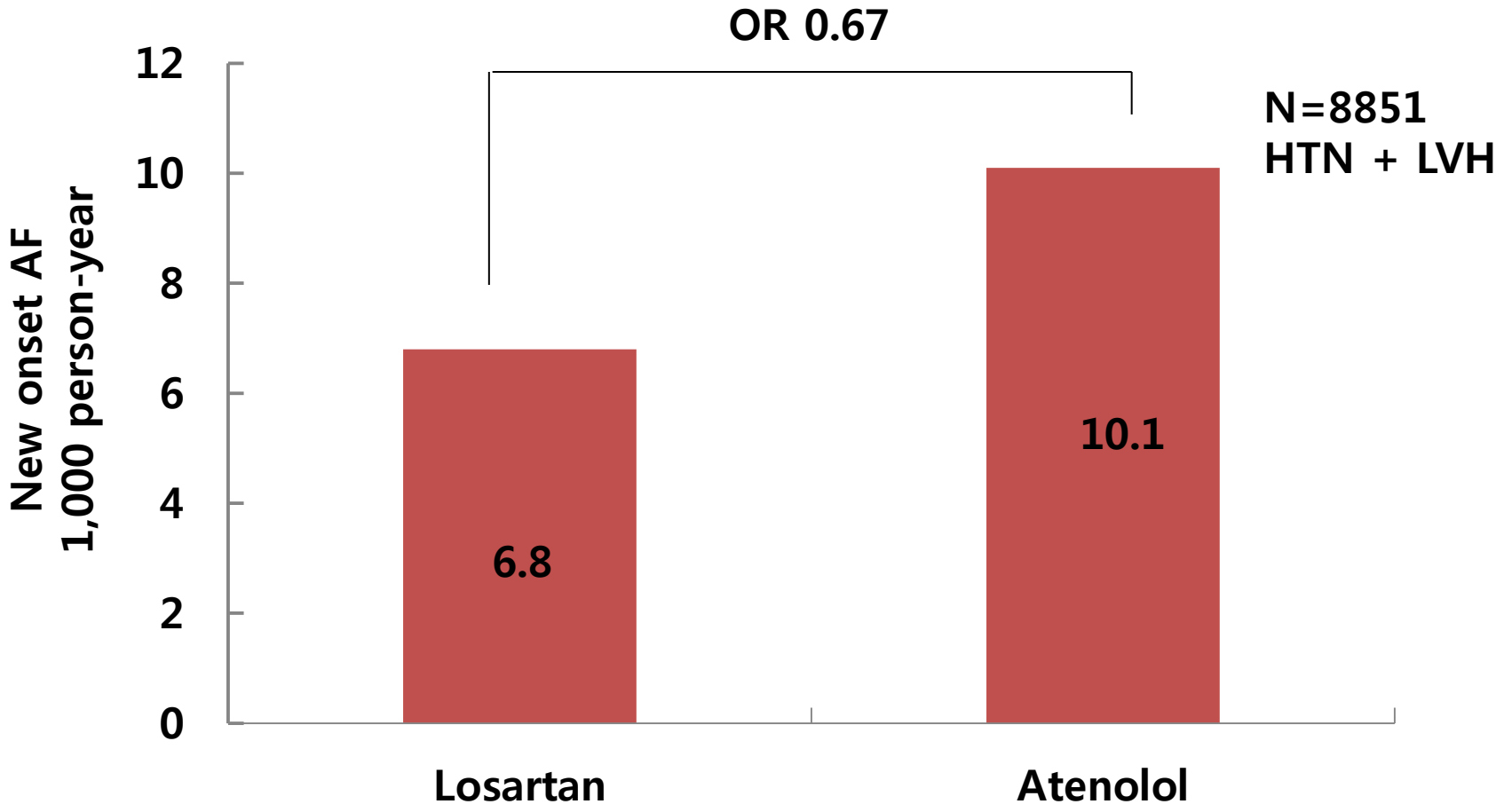
- Treatment of hypertension
- Reduce morbidity and mortality in patients with HF or systolic dysfunction after MI
- Prevent the development or recurrence of AF
  - Prevention of LA dilation
  - Prevention of atrial fibrosis



Kumagai et al. JACC 2003

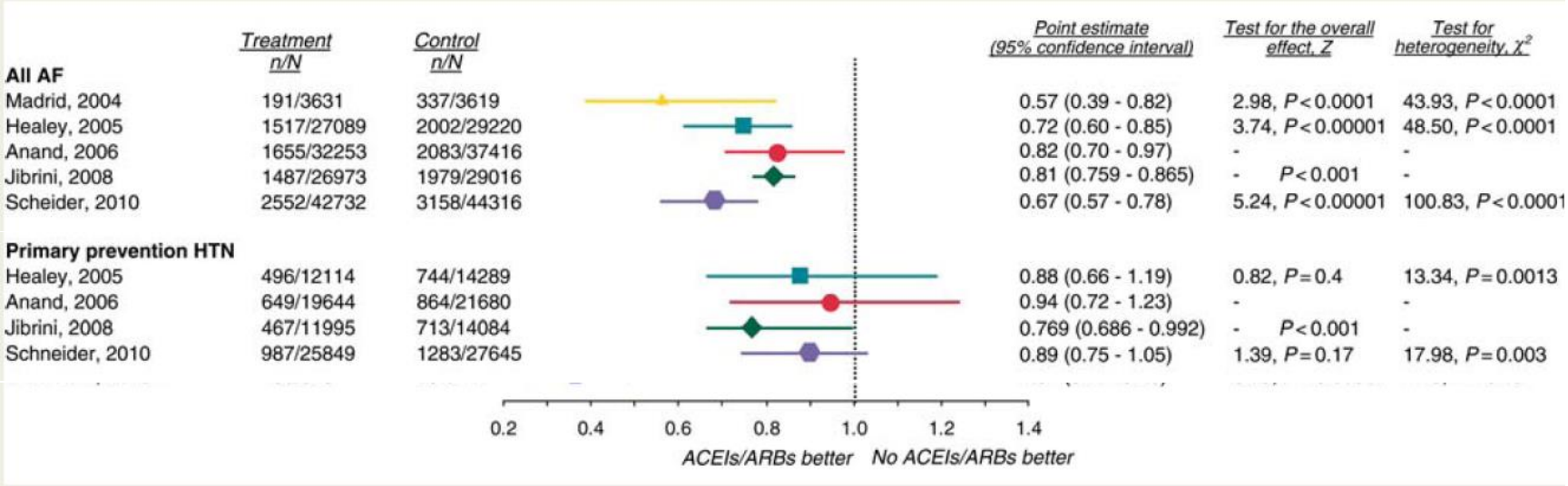
  - Slow of conduction velocity

Hypertension



Wachtell et al. J Am Coll Cardiol 2005

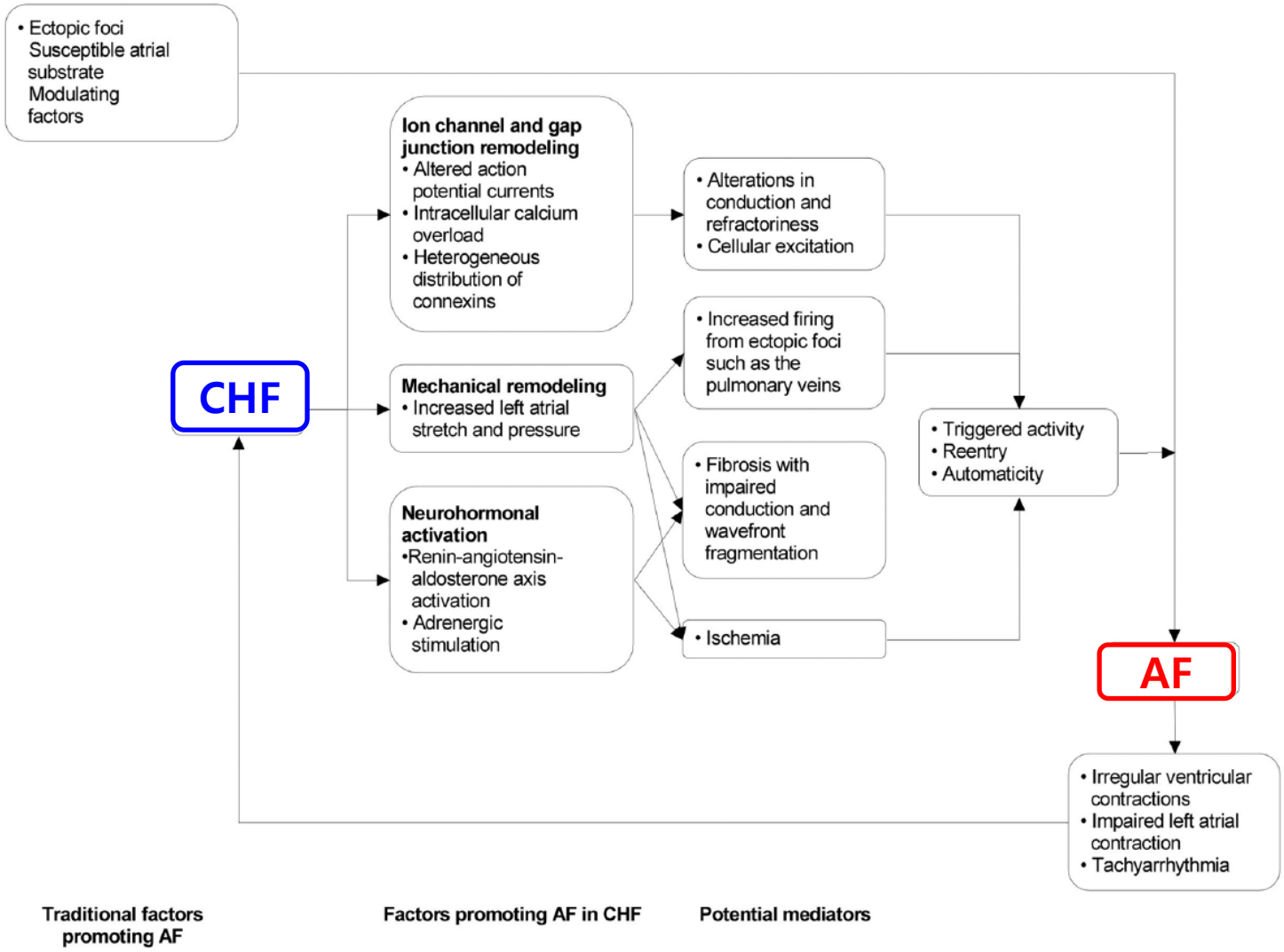
Inhibitors of RAAS
-Primary Prevention-



ESC guidelines on management of AF recognize the potential of RAAS inhibitors for primary prevention of AF in patients with hypertension, particularly with LVH (class IIa, LOE B)

Savelieva I, et al. Europace 2011;13:308

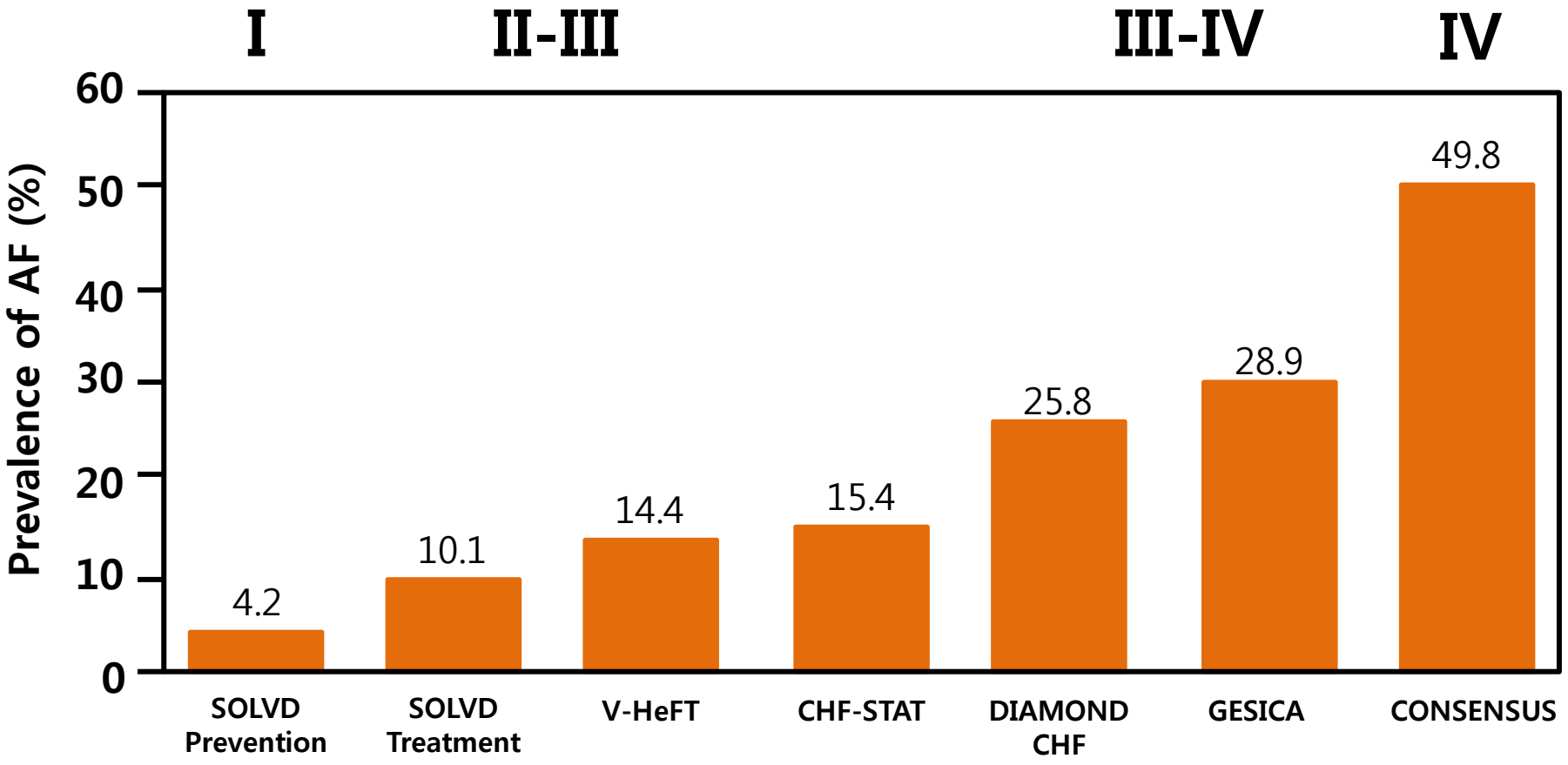
Heart Failure



Lubitz SA, et al. Heart Fail Clin 2010;6:187

Heart Failure

New York Heart Association Functional Class



Maisel WH and Stevenson LW. Am J Cardiol 2003;91:2D

Heart Failure

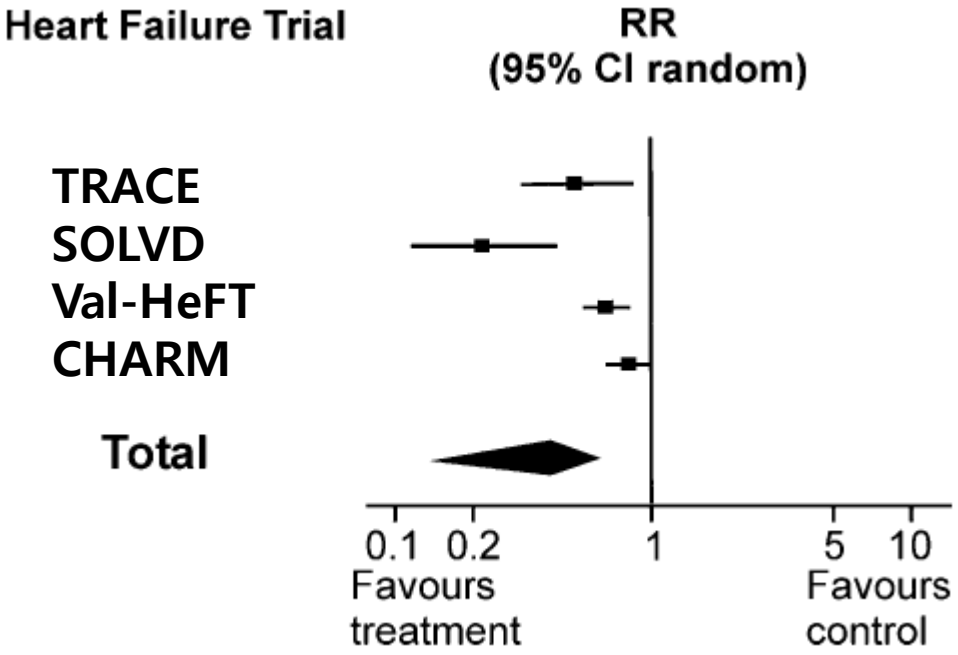
Framingham Study – 38 year F/U

Cardiac Conditions	Age-Adjusted Odds Ratio		Risk Factor–Adjusted Odds Ratio	
	Men	Women	Men	Women
MI	2.2*	2.4*	1.4†	1.2
Heart failure	6.1‡	8.1‡	4.5‡	5.9‡
Valve disease	2.2‡	3.6‡	1.8*	3.4‡

MI = myocardial infarction.
*p <0.01.
†p <0.05.
‡p <0.001.
Adapted from *JAMA*.[7]

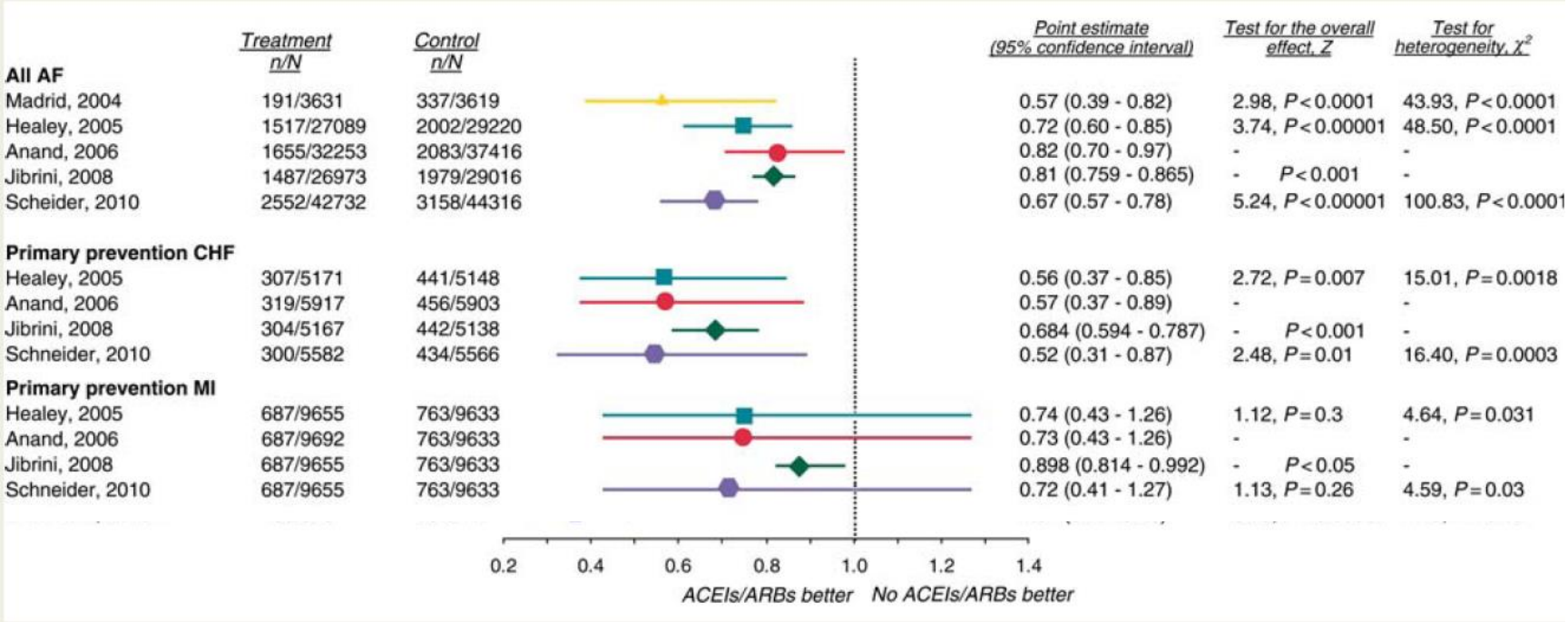
Kannel WB, et al. Am J Cardiol 1998;82:2N

Heart Failure and RAAS Block



Caldwell JC and Mamas MA. Heart Fail Res 2012;17:27

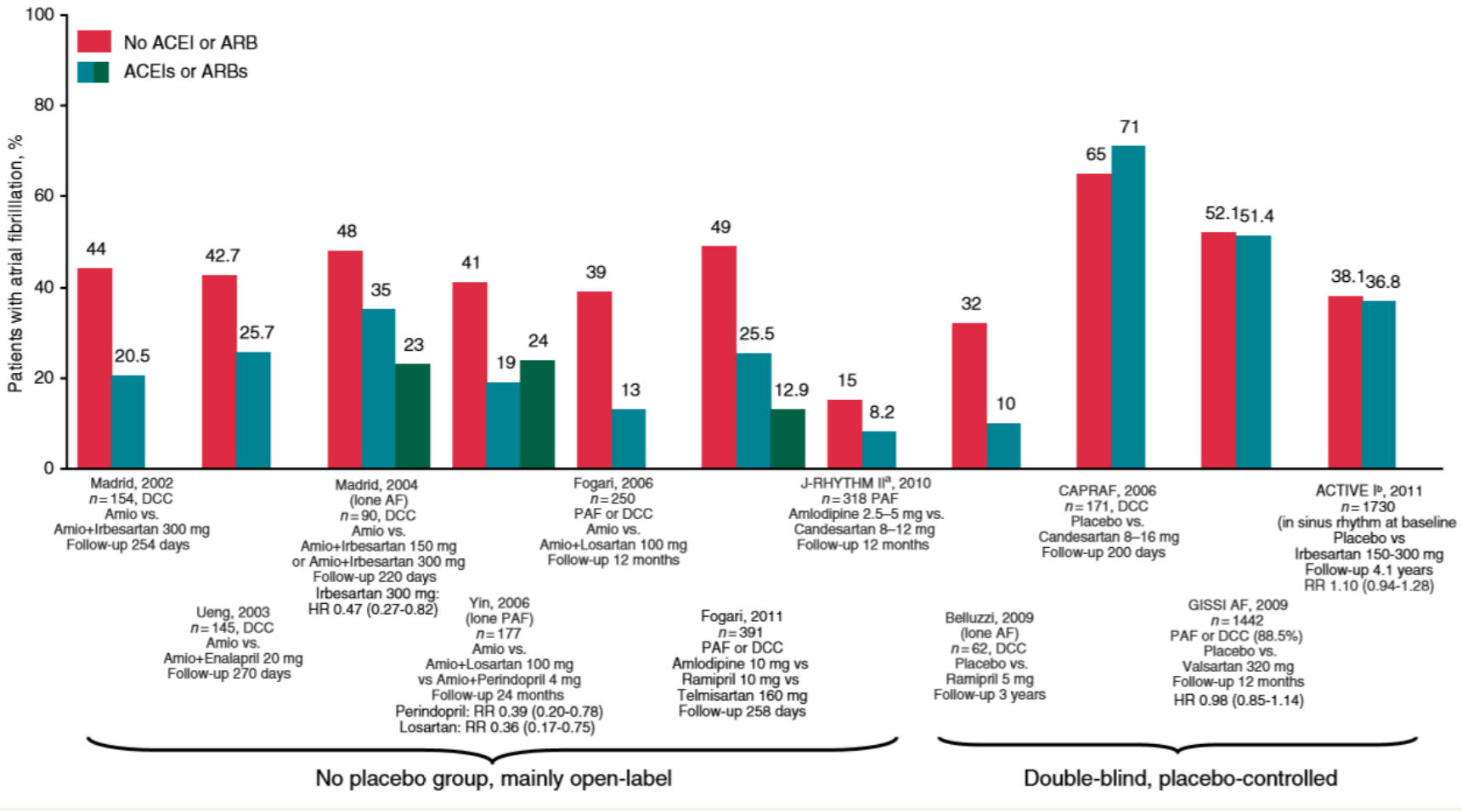
Inhibitors of RAAS
-Primary Prevention-



Four meta-analysis have shown that risk of new-onset AF in patients with CHF was reduced by 30-48%, suggesting that ACEIs and ARBs may be effective in primary prevention of AF in this clinical setting.

Savelieva I, et al. Europace 2011;13:308

Inhibitors of RAAS
-Secondary Prevention-



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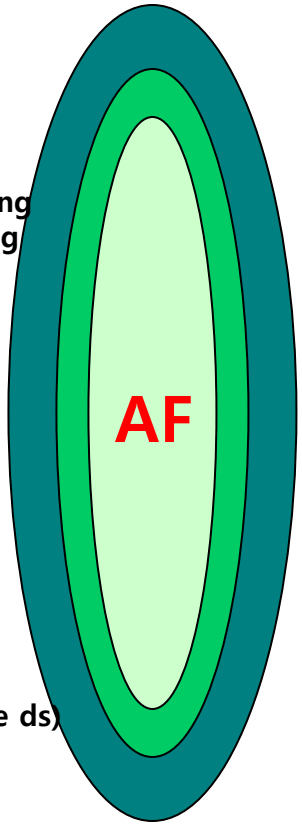
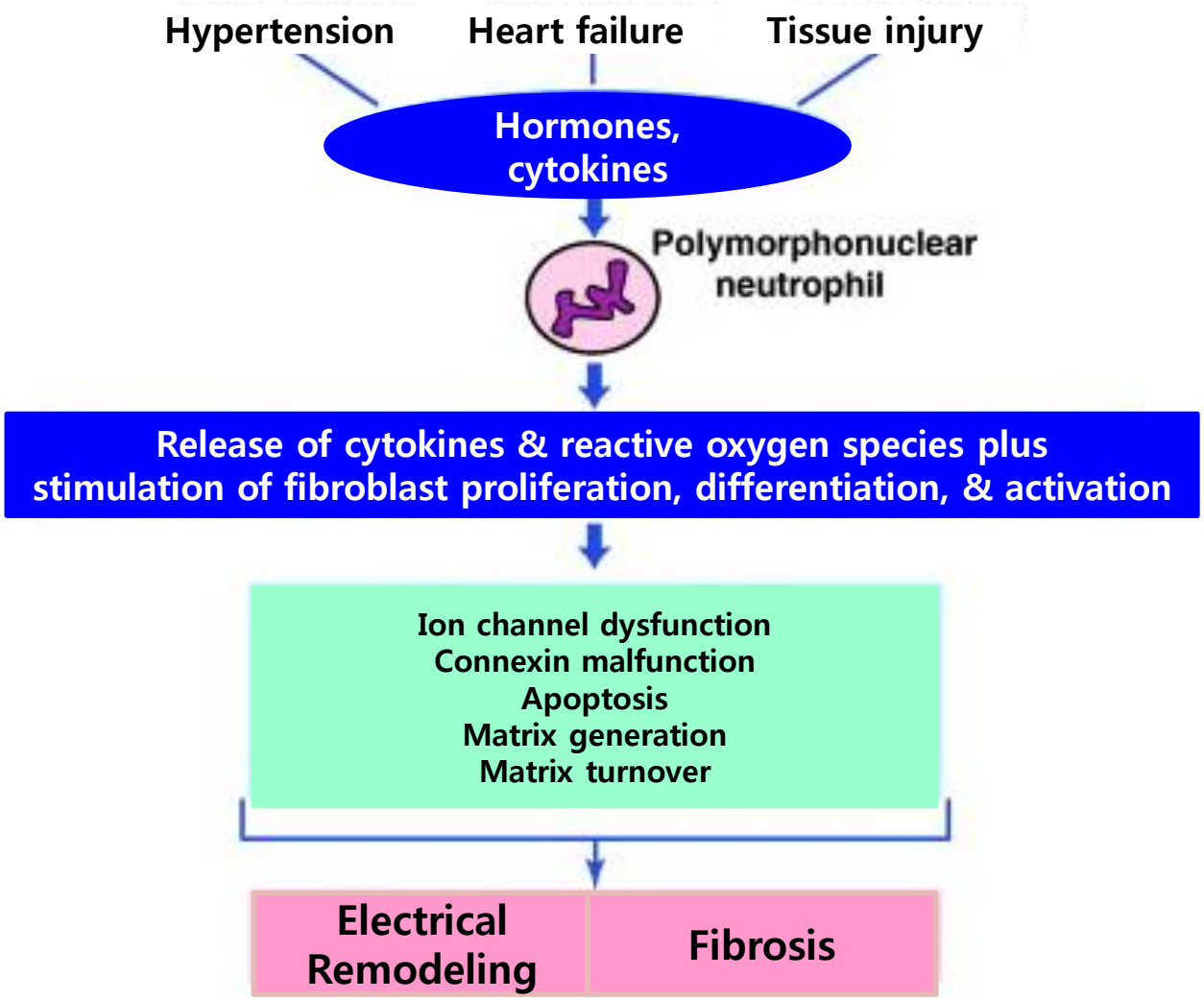
Inflammation

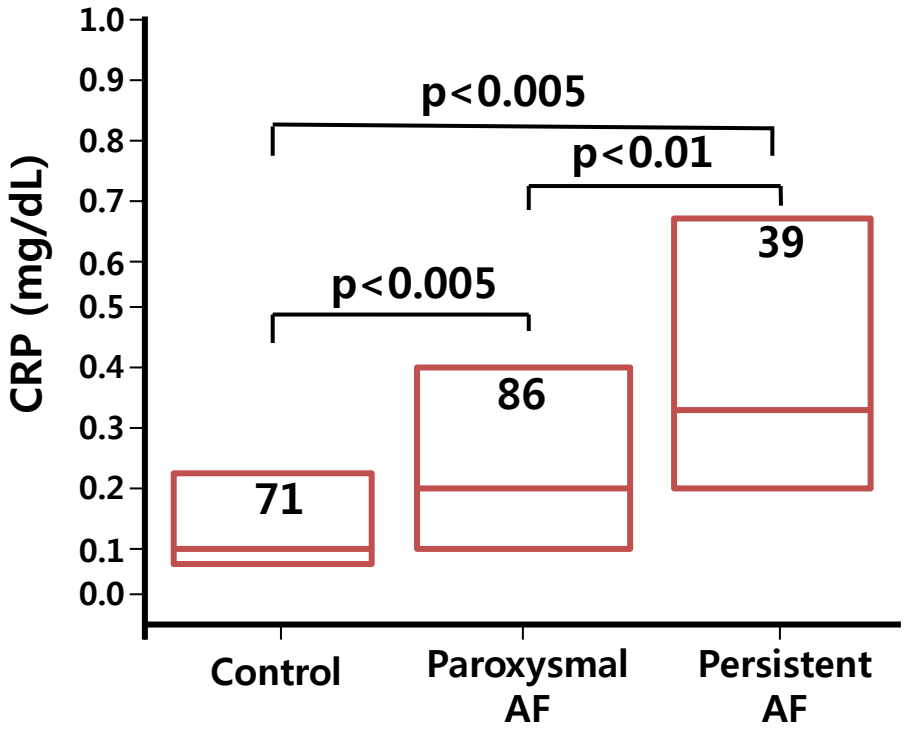


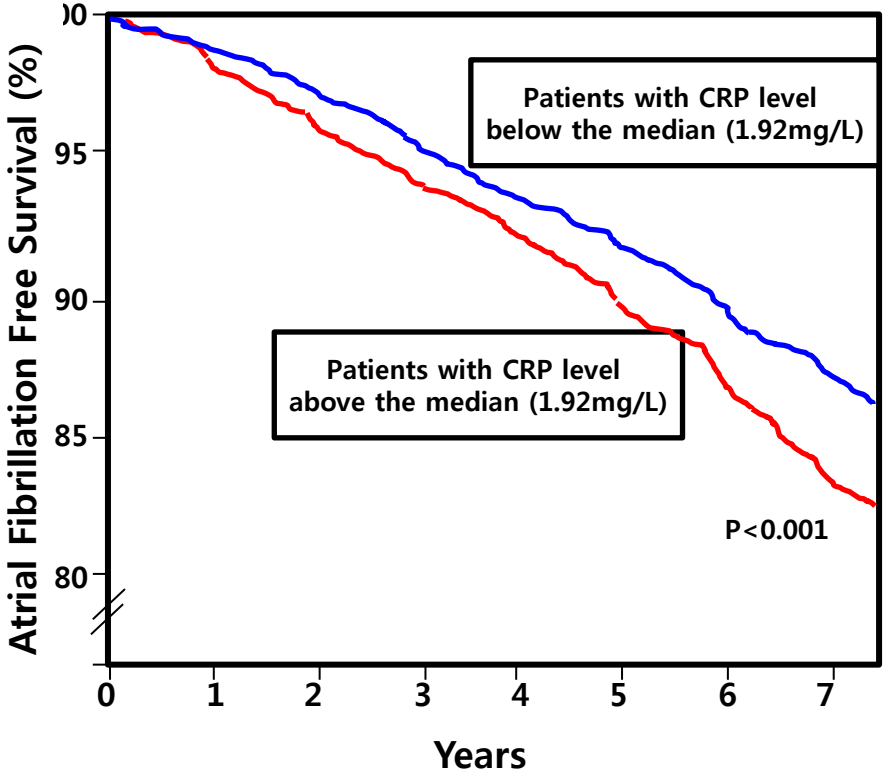
Inflammation



Friedrichs K, et al. Trends Mol Med 2011:17:556

Inflammation

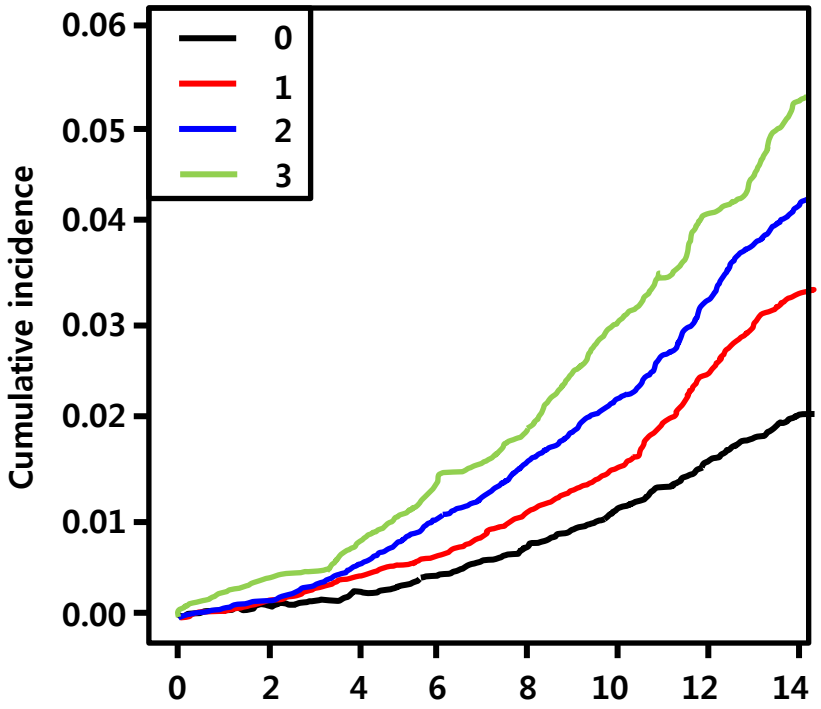




Chung MK, et al. Circulation 2001:104:2886

Aviles RJ, et al. Circulation 2003:108:3006

Inflammation



Inflammation markers
- hsCRP
- sICAM-1
- Fibrinogen

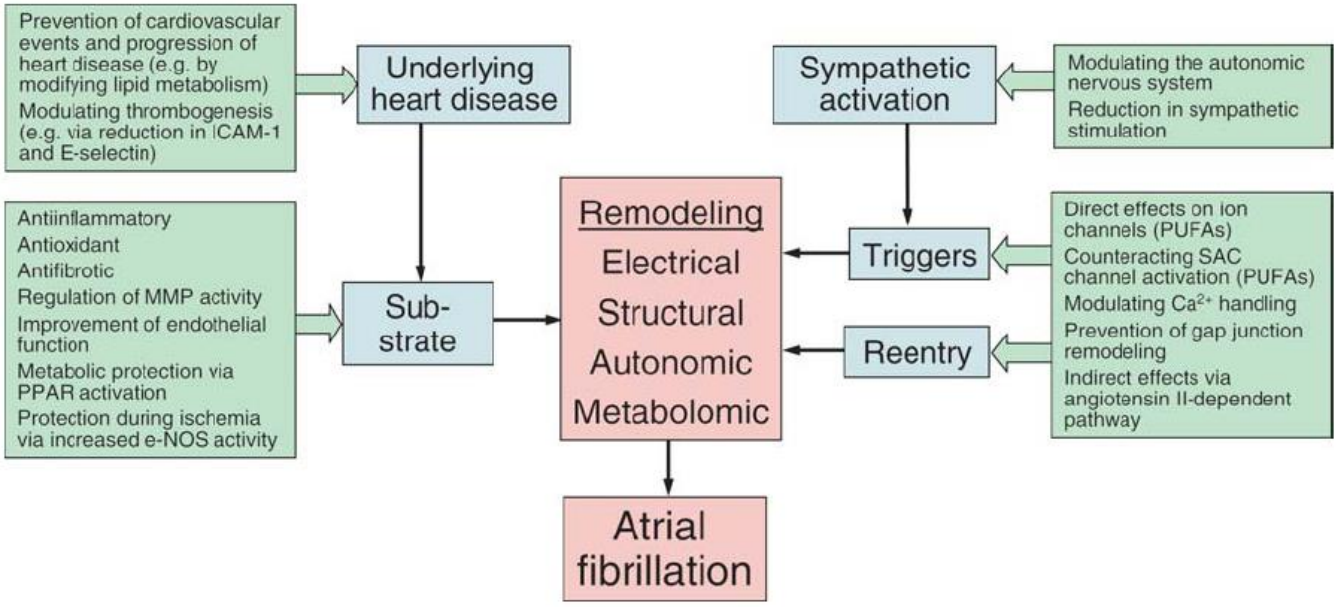
Subject
- Women's Health Study
- 24,734
- 14.4 years

In this large-scale prospective study among women without a history of cardiovascular disease, markers of systemic inflammation were significantly related to AF even after controlling for traditional risk factors

Conen D, et al. Eur Heart J 2010;31:1730

Inflammation

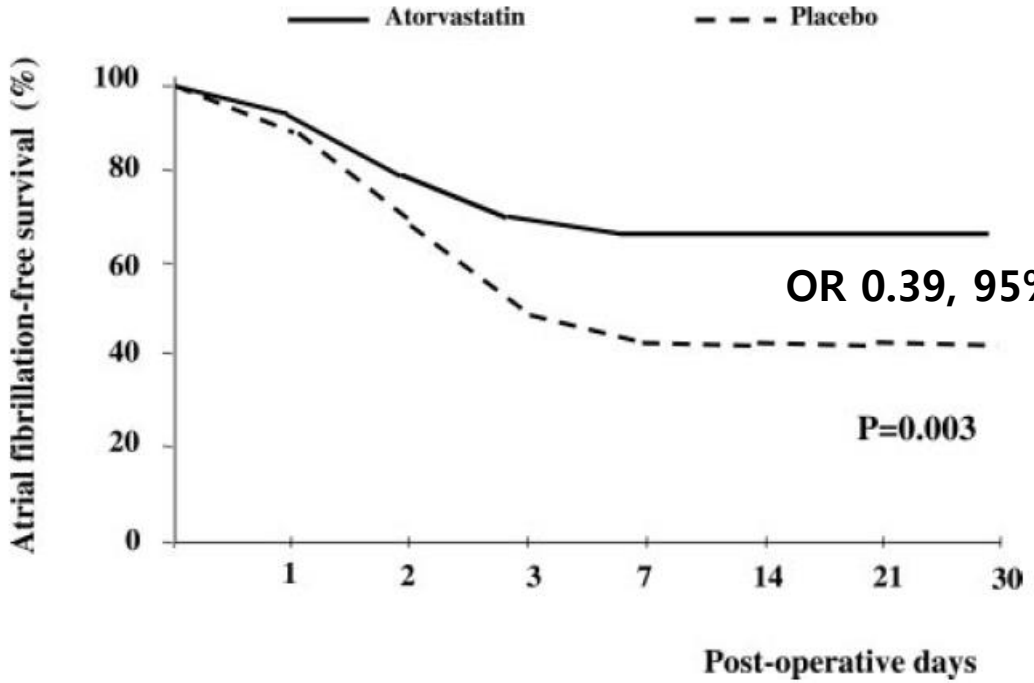
- **A new therapeutic target?**
  - **Statin**
  - **PUFA**



Savelieva I, et al. Naunyn Schmiedebergs Arch Pharmacol 2010;381:1

Post-operative AF

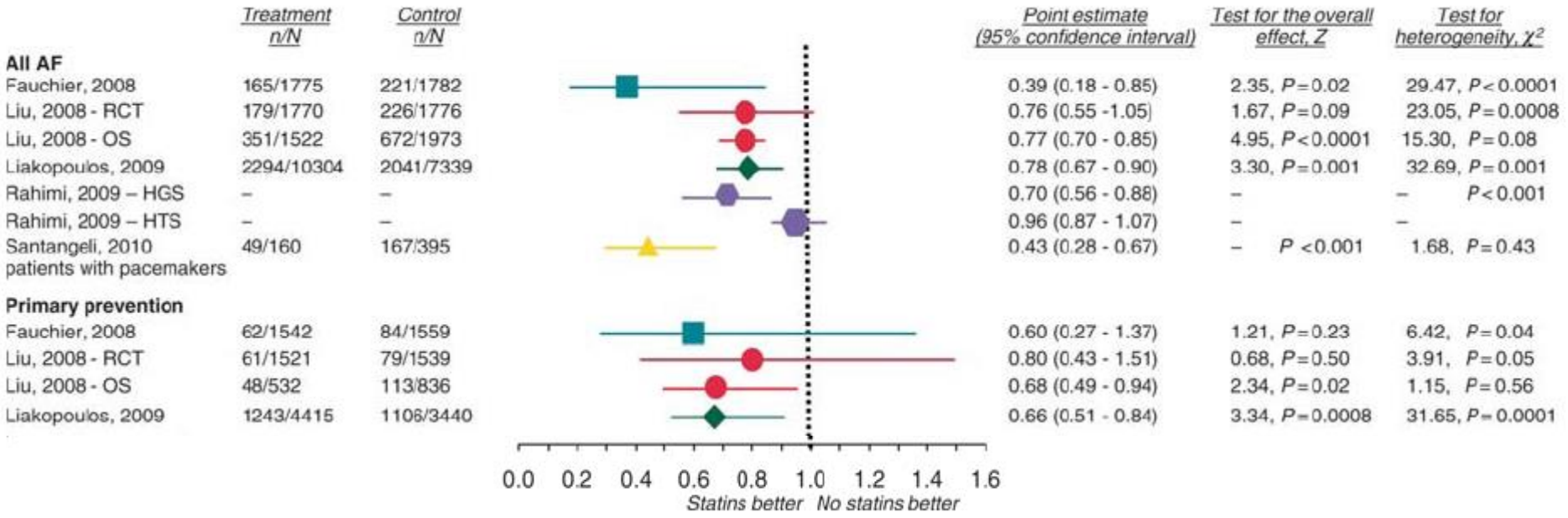
ARMYDA-3



Treatment with atorvastatin 40 mg/d, initiated 7 days before surgery, significantly reduces the incidence of postoperative AF after elective cardiac surgery with cardiopulmonary bypass and shortens hospital stay.

Patti G, et al. Circulation 2006;114:1455

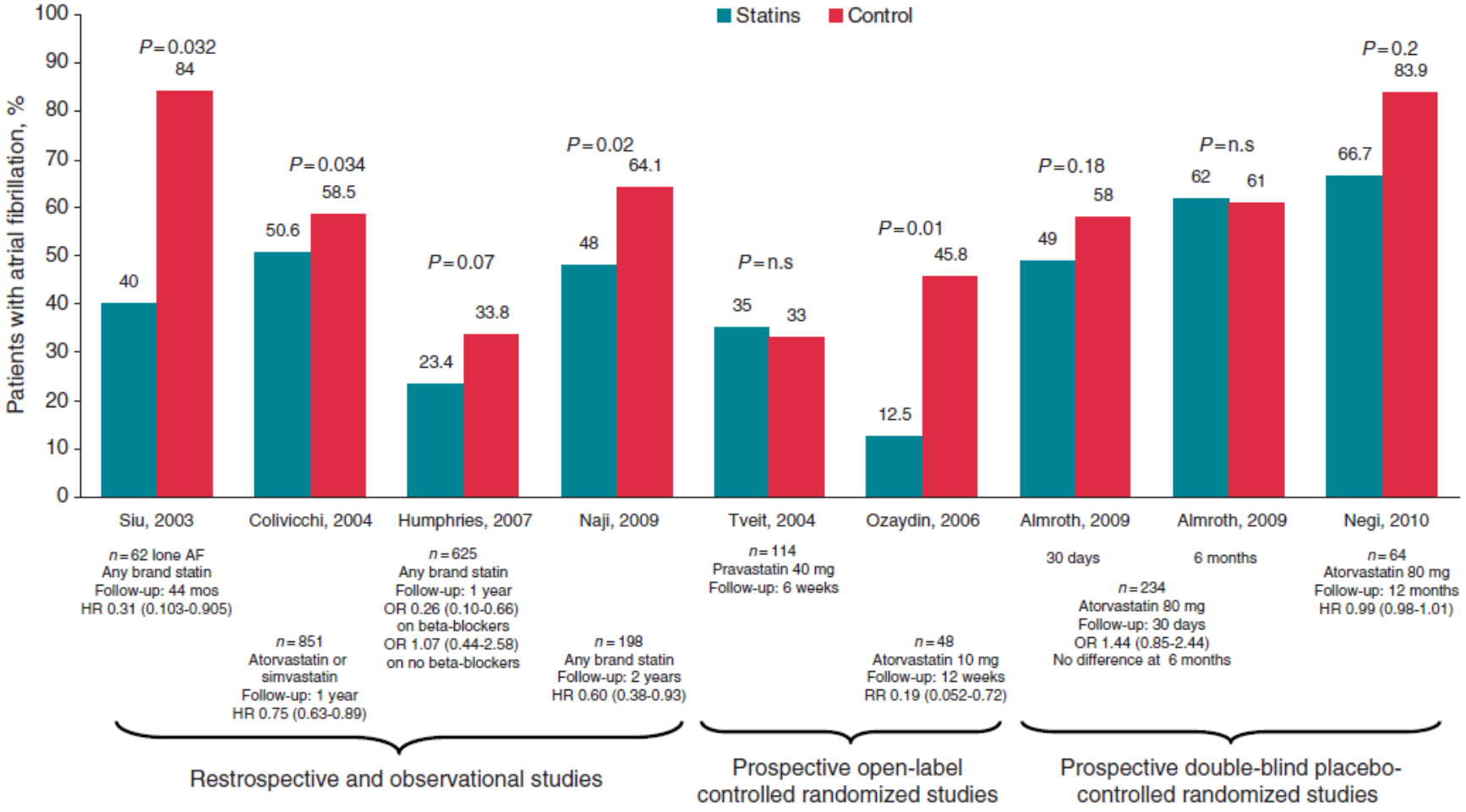
Statins
–Primary Prevention-



The value of statins for primary prevention of AF has not been sufficiently demonstrated, except perhaps for patients undergoing cardiac surgery.
ESC guideline : CHF(IIb, LOE B), Post-operative AF prevention(IIa, LOE B)

Savelieva I, et al. Naunyn Schmiedebergs Arch Pharmacol 2010;381:1

Statins
-Secondary Prevention-



Statins
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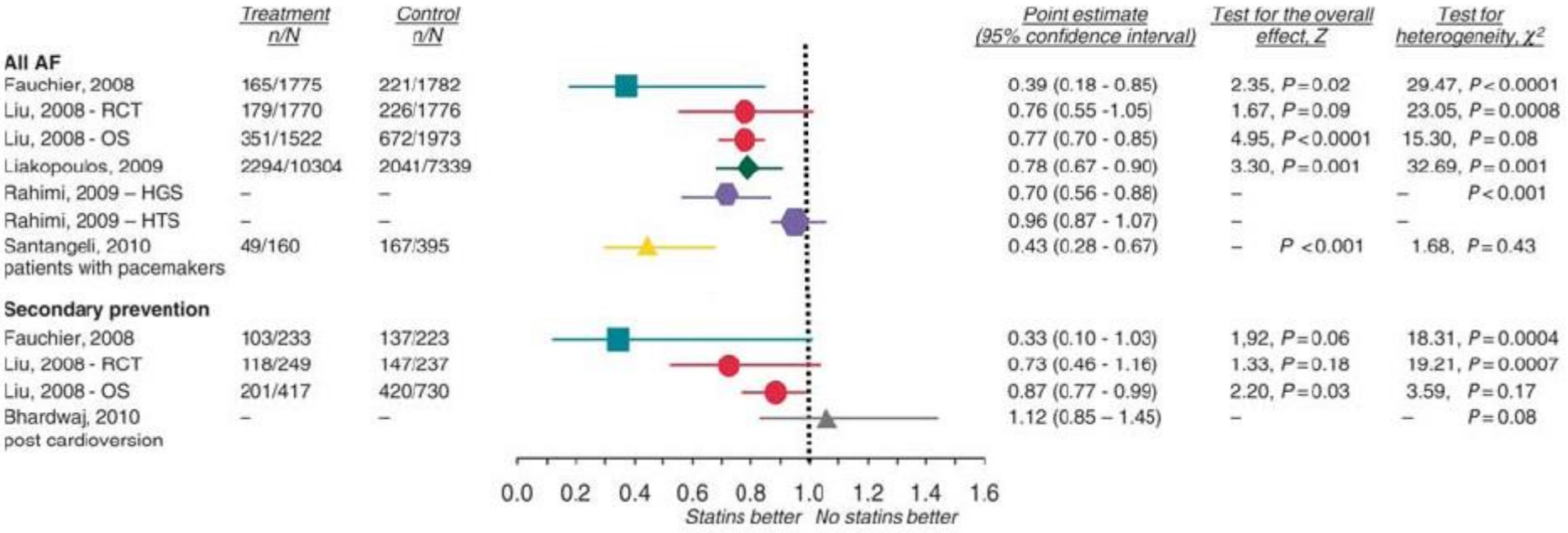
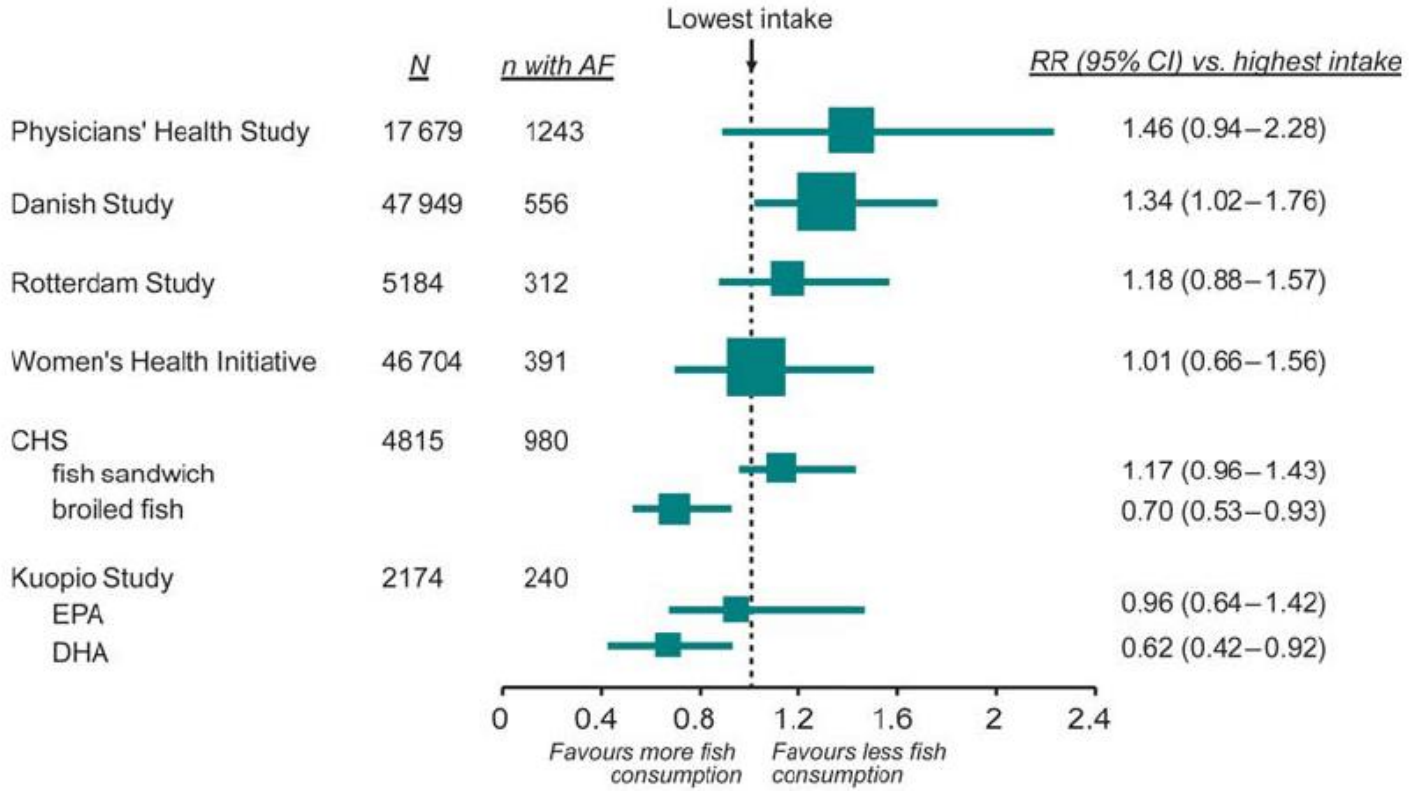


Meta-analysis of four RCTs showed no benefit from the use of statins on the recurrent of AF after cardioversion.

Polyunsaturated Fatty Acids



Although the theoretical background and experimental evidence suggest the antiarrhythmic effect of PUFAs in AF, proof efficacy in large-scale trials has so far been absent. Thus, the role of PUFAs in prophylaxis of AF remains controversial.

Savelieva I, et al. Naunyn Schmiedebergs Arch Pharmacol 2010;381:1

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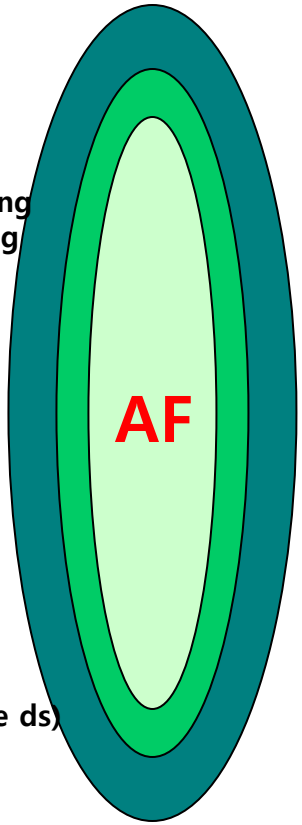
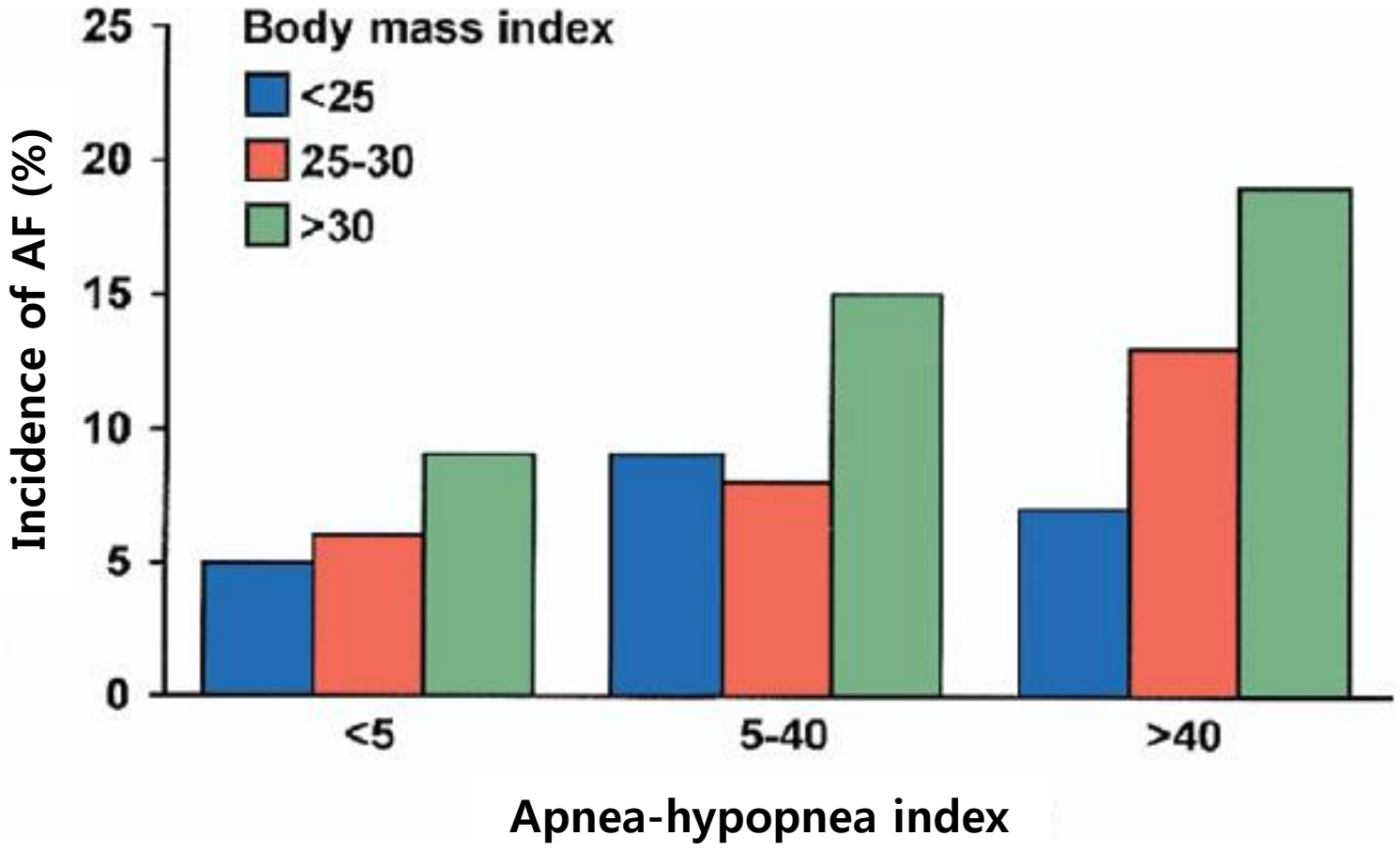
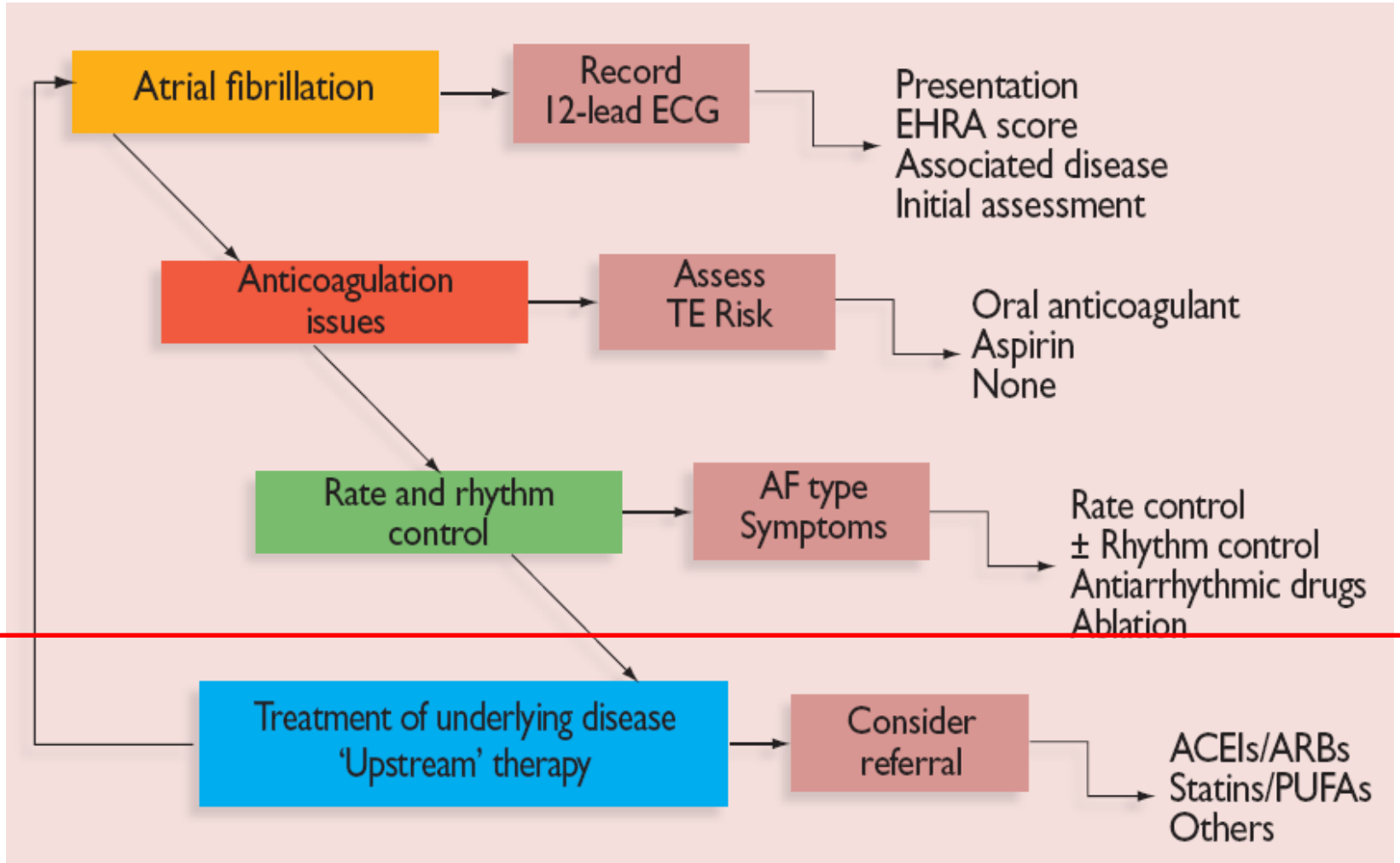


Obesity and Sleep Apnea



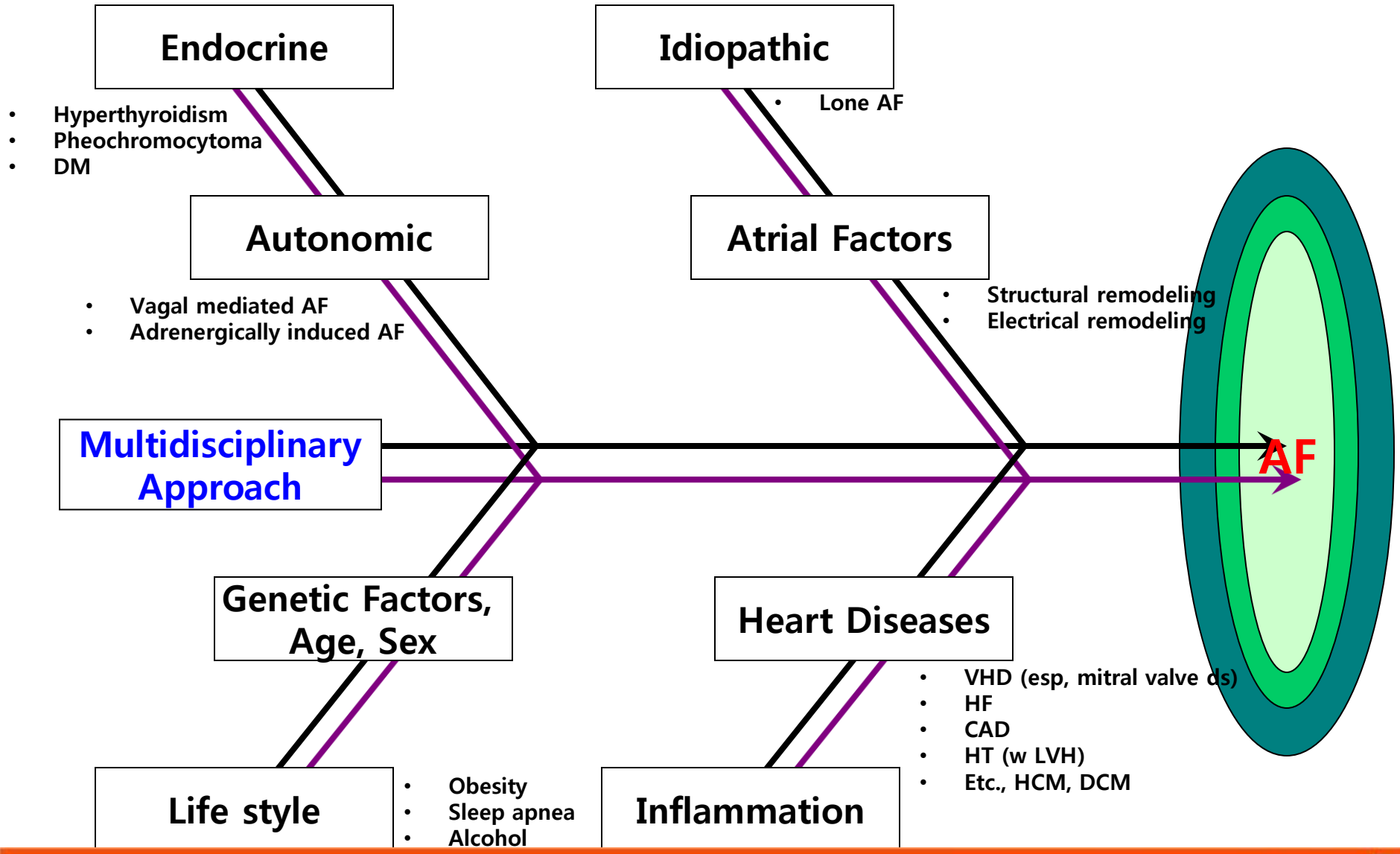
Gami AS, et al. J Am Coll Cardiol 2007:49:565

AF 치료



2010 ESC Guideline. Europace 2010;12:1360-1420

Conclusion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Joy
Fun
2013년
Experience
Moon
Kim
부정맥연구회
더욱 발전할 수 있기를
Nyun
Impression
Hwang
Passion
Rhee
Jeong