EURO VALVE Madrid

News from Valves Guidelines 2012: What's new and Why?

Primary Mitral Regurgitation

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European Heart Journal 2012 - doi:10.1093/eurheartj/ehs109
European Journal of Cardio-Thoracic Surgery 2012 - doi:10.1093/ejcts/ezs455

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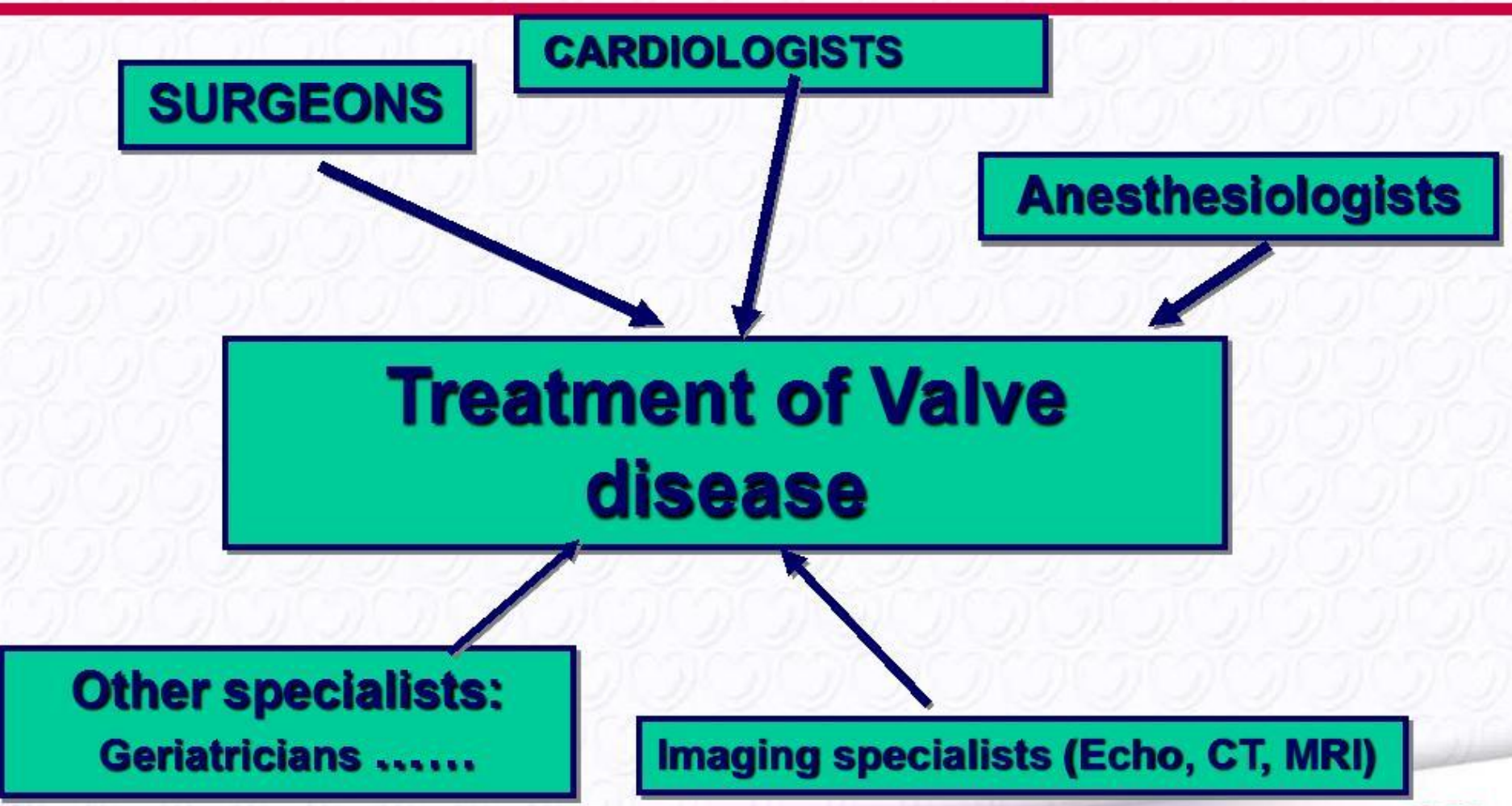
European Heart Journal 2012 - doi:10.1093/eurheartj/ehs109
European Journal of Cardio-Thoracic Surgery 2012 - doi:10.1093/ejcts/ezs455

The « Heart Team »



What is new in 2012?

- **The term primary replaces structural / organic**

European Heart Journal 2012 - doi:10.1093/eurheartj/ehs109
European Journal of Cardio-Thoracic Surgery 2012 - doi:10.1093/ejcts/ezs455

Echocardiographic criteria for the definition of severe MR: an integrative approach

Parameters	Severe
Qualitative	
Mitral valve morphology	Flail leaflet/ ruptured PMs
Colour flow MR jet **(should no longer be measured)**	Very large central jet or eccentric jet adhering, swirling and reaching the posterior LA wall
Flow convergence zone	Large
CW signal of MR jet	Dense/Triangular

Lancellotti et al, Eur J Echo 2010

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European Journal of Cardio-Thoracic Surgery 2012 - doi:10.1093/ejcts/ezs455

Echocardiographic criteria for the definition of severe MR: an integrative approach

Parameters	Severe
Semi-quantitative	
VC width (mm)	≥7 (>8 for biplane)
Pulmonary vein flow	Systolic flow reversal
Mitral inflow	E wave dominant (>1.5 m/s)
TVI mit/TVI Ao	≥1.4
Quantitative	
EROA (mm^2)	**≥ 40 for primary**
R Vol (ml)	**≥ 60 for primary**

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Lancellotti et al, Eur J Echo 2010

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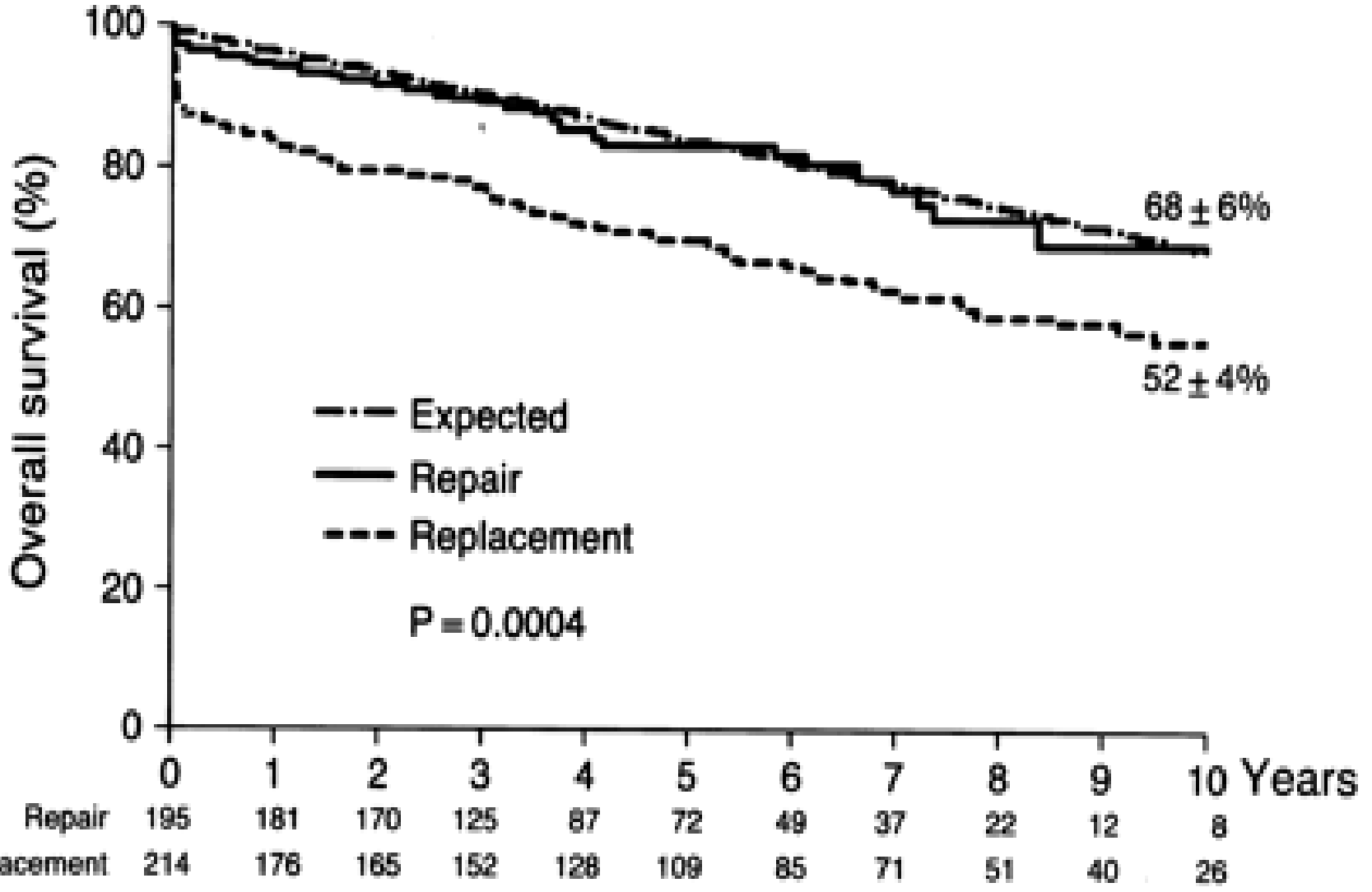
Indications for surgery in symptomatic primary MR

	Class	Level
Mitral valve repair should be the preferred technique when it is expected to be durable.	**I**	**C**
Surgery is indicated in symptomatic patients with LVEF > 30% and LVESD < 55 mm.	**I**	**B**
Surgery should be considered in patients with severe LV dysfunction (LVEF < 30% and/or LVESD > 55 mm) refractory to medical therapy with high likelihood of durable repair and low comorbidity.	**IIa**	**C**
Surgery may be considered in patients with severe LV dysfunction (LVEF < 30% and/or LVESD > 55 mm) refractory to medical therapy with low likelihood of durable repair and low comorbidity.	**IIb**	**C**

Survival after repair vs replacement



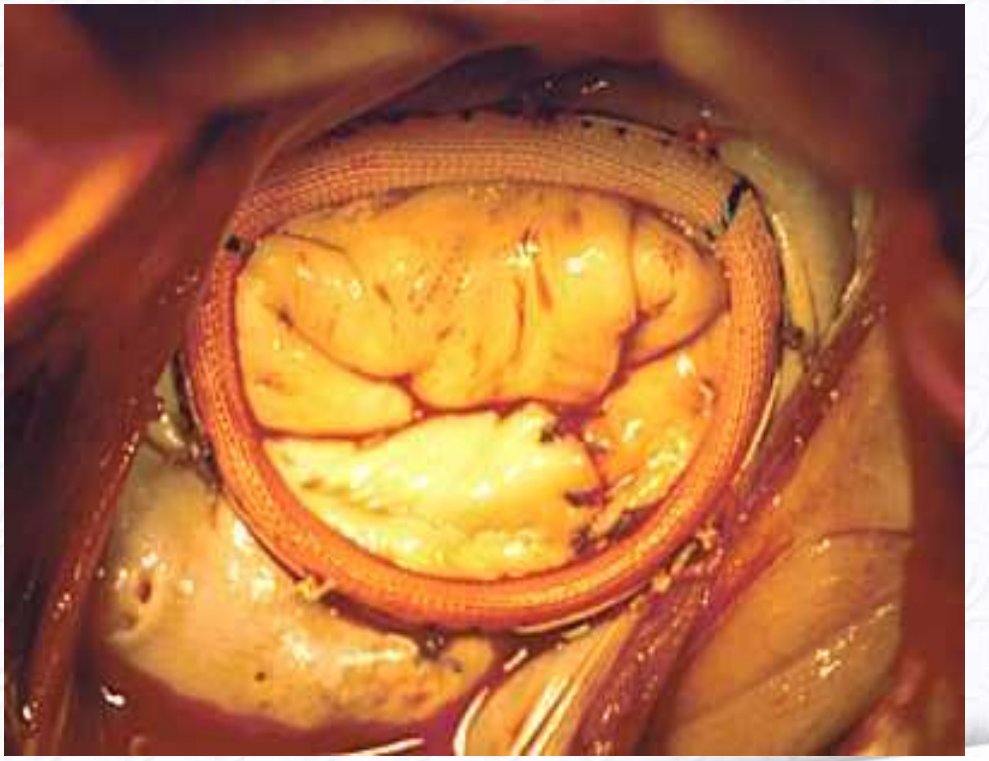
Operative mortality after surgery for MR

	EACTS (2010)	STS (2010)	UK (2004-2008)	Germany (2009)
Mitral valve repair, no CABG (%)	2.1 (3231)	1.6 (7293)	2 (3283)	2 (3335)
Mitral valve replacement, no CABG (%)	4.3 (6838)	6.0 (5448)	6.1 (3614)	7.8 (1855)
Mitral valve repair/replacement +CABG (%)	6.8/11.4 (2515/1612)	4.6/11.1 (4721/2427)	8.3/11.1 (2021/1337)	6.5/14.5 (1785/837)

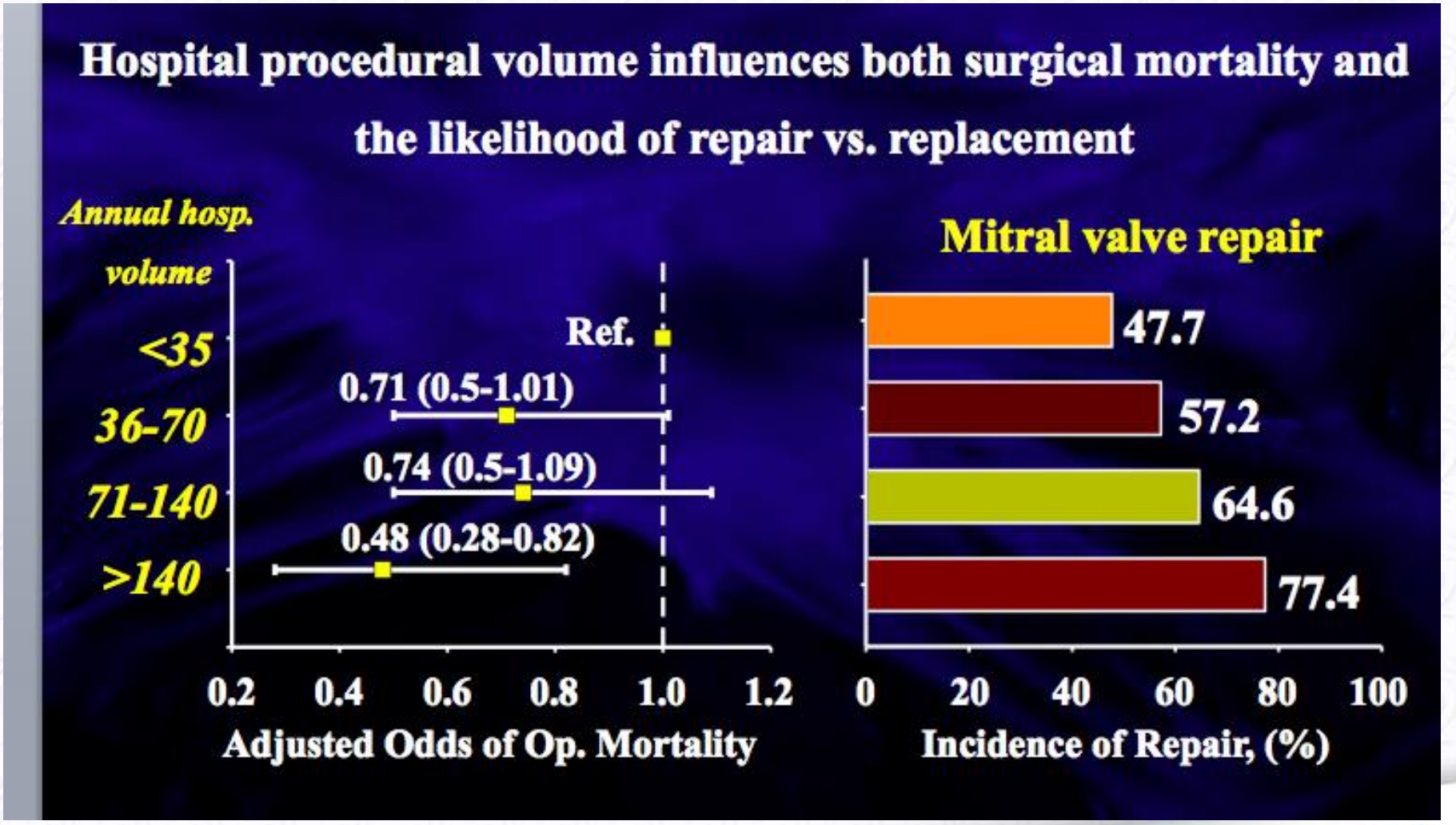
( ) = number of patients.

CABG = coronary artery bypass grafting; EACTS = European Association for Cardiothoracic Surgery (32); STS = Society of Thoracic Surgeons (USA). Mortality for STS includes first and redo interventions (33); UK=United Kingdom (34); Germany (35).

The valve and the surgeon



Volume rates and Mitral Valve Repair



STS Database: Gammie et al., Circ, 2007; Gammie et al., ATS, 2005.

Mitral Repair: We Must Do Better

- Many surgeons do not routinely repair mitral valves
- Non repair surgeons do not routinely cross refer
- Patients with predictable complex repair should undergo surgery in experienced repair centres with high repair rates and low operative mortality
- Lack of consistency in surgical repair in complex mitral valve morphology: rheumatic lesions, extensive valve prolapse, MR with leaflet calcification or extensive annulus calcification

Dedicated "MR teams" could change practice

Northrup. Heart 2006;92:939-944

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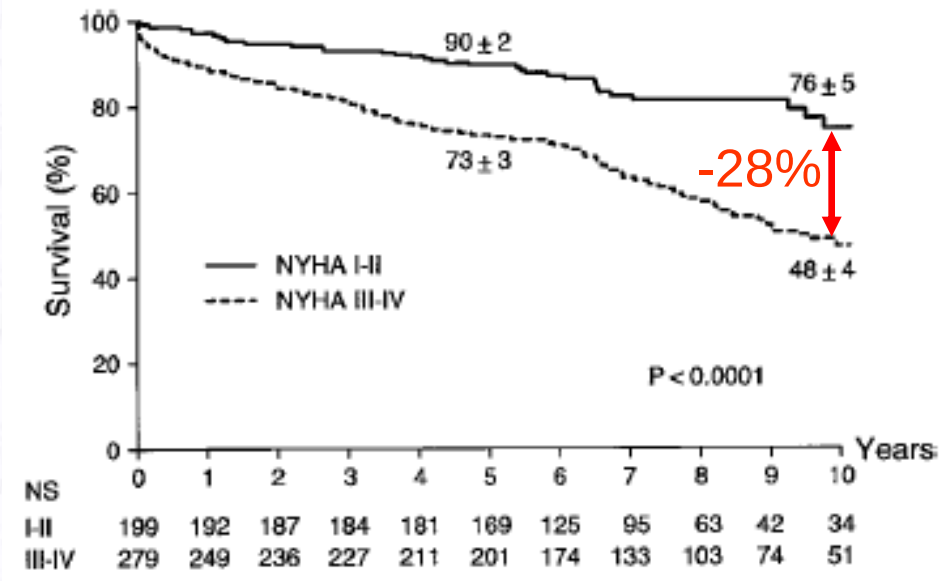
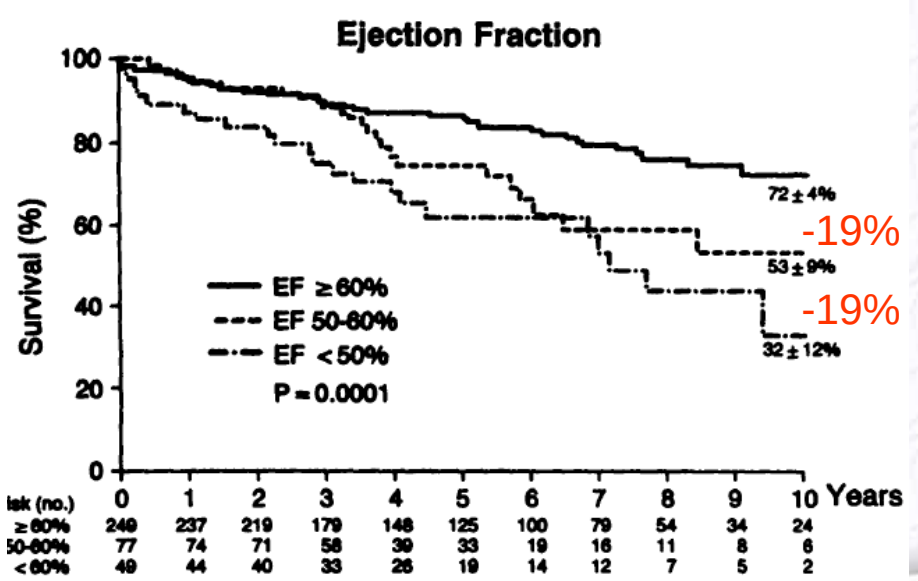
Surgery may be considered in patients with severe LV dysfunction (LVEF < 30% and/or LVESD > 55 mm) refractory to medical therapy with low likelihood of durable repair and low comorbidity.	IIb	C

Impact of symptoms and LV dysfunction following mitral surgery

Symptoms



LV dysfunction



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Enriquez-Sarano et al. Circulation, 90: 830-7; 1994

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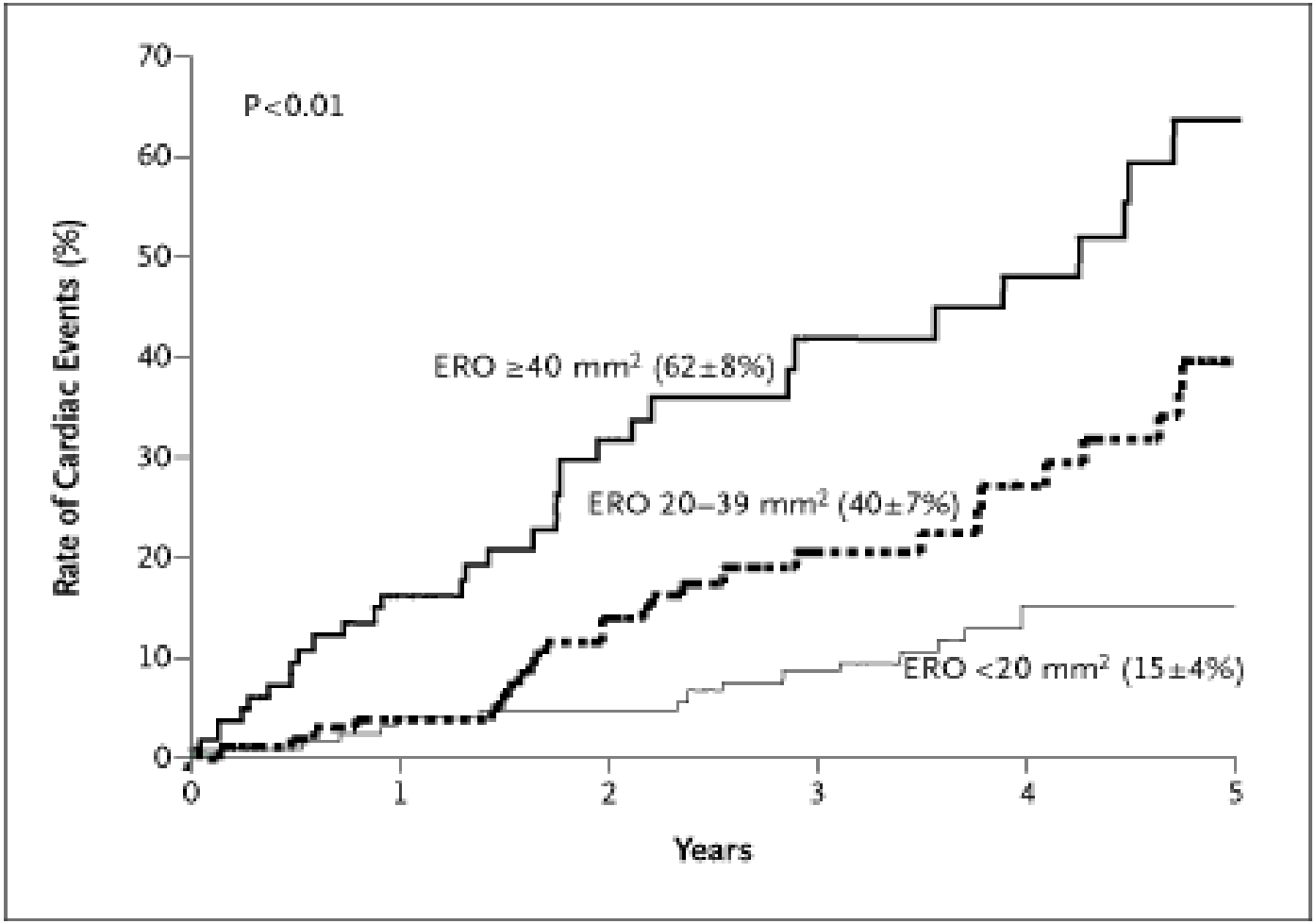
Indications for surgery in asymptomatic severe primary MR

	Class	Level
Surgery is indicated in asymptomatic patients with LV dysfunction (LVESD ≥ 45 mm and/or LVEF ≤ 60%).	I	C
Surgery should be considered in asymptomatic patients with preserved LV function and new onset of atrial fibrillation or pulmonary hypertension (SPAP at rest > 50 mmHg).	IIa	C
Surgery should be considered in asymptomatic patients with preserved LV function, high likelihood of durable repair, low surgical risk and flail leaflet and LVESD ≥ 40 mm (≥ 22 mm/m^2 BSA in patients of small stature).	IIa	C
Surgery may be considered in asymptomatic patients with preserved LV function, high likelihood of durable repair, low surgical risk, and: • left atrial dilatation (volume index ≥ 60 ml/m² BSA) and sinus rhythm, or • pulmonary hypertension on exercise (SPAP ≥ 60 mmHg at exercise)	IIb	C

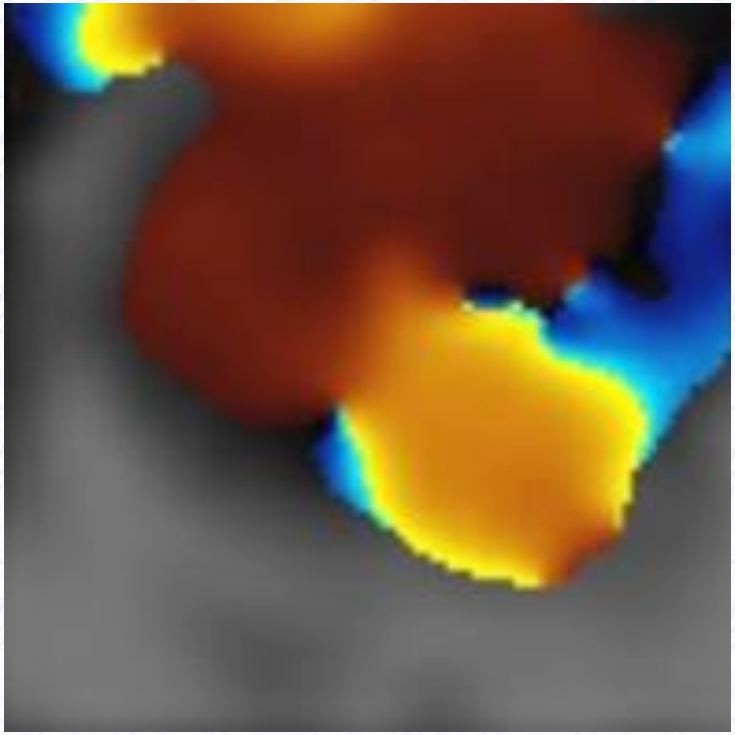
Impact of MR severity



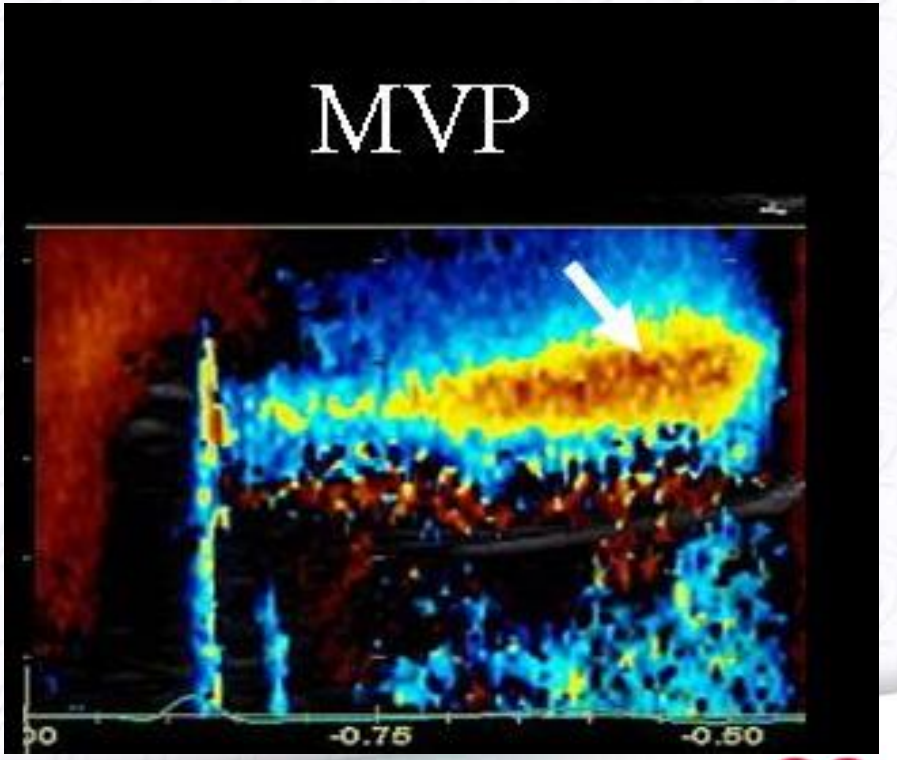
Enriquez-Sarano et al N Engl J Med 2005;352:875-83

Quantitative measurements

Hemispheric PISA



Dynamic changes



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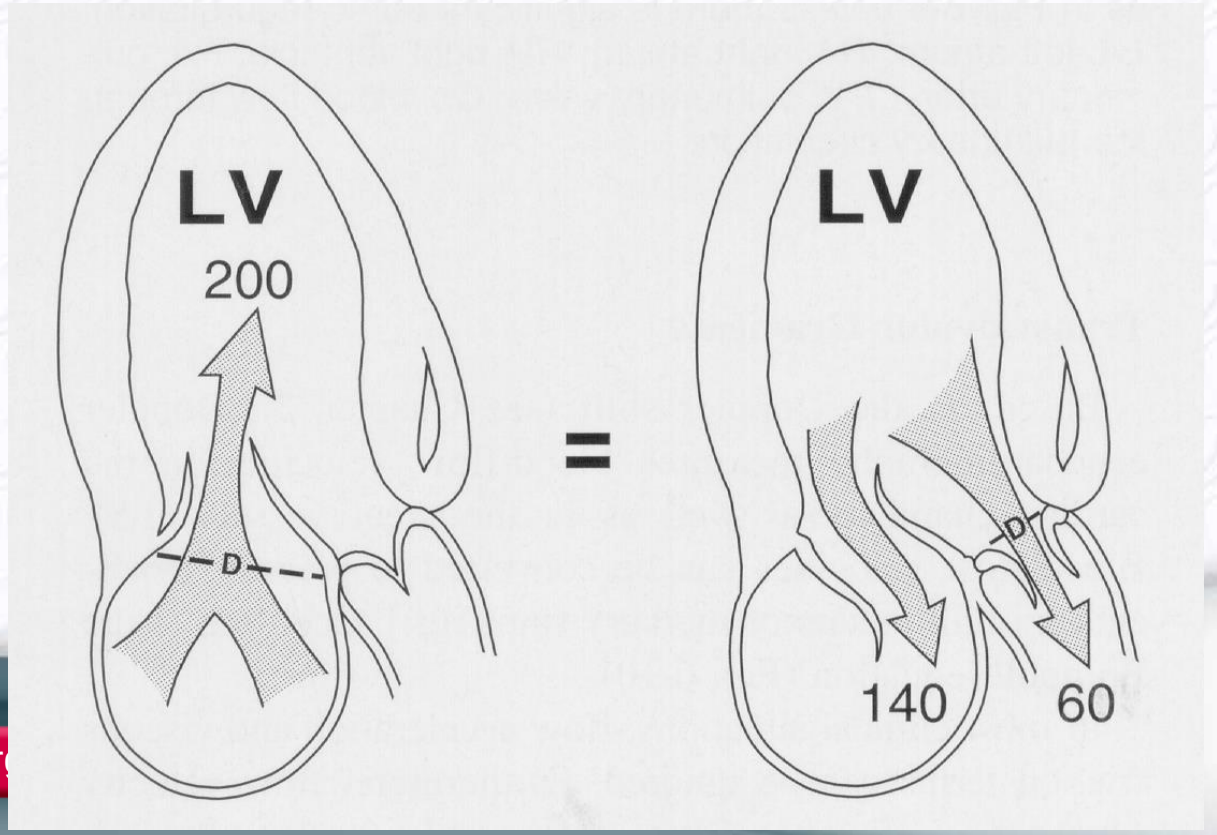
LV EDV = 250 ml LV ESV = 50 ml

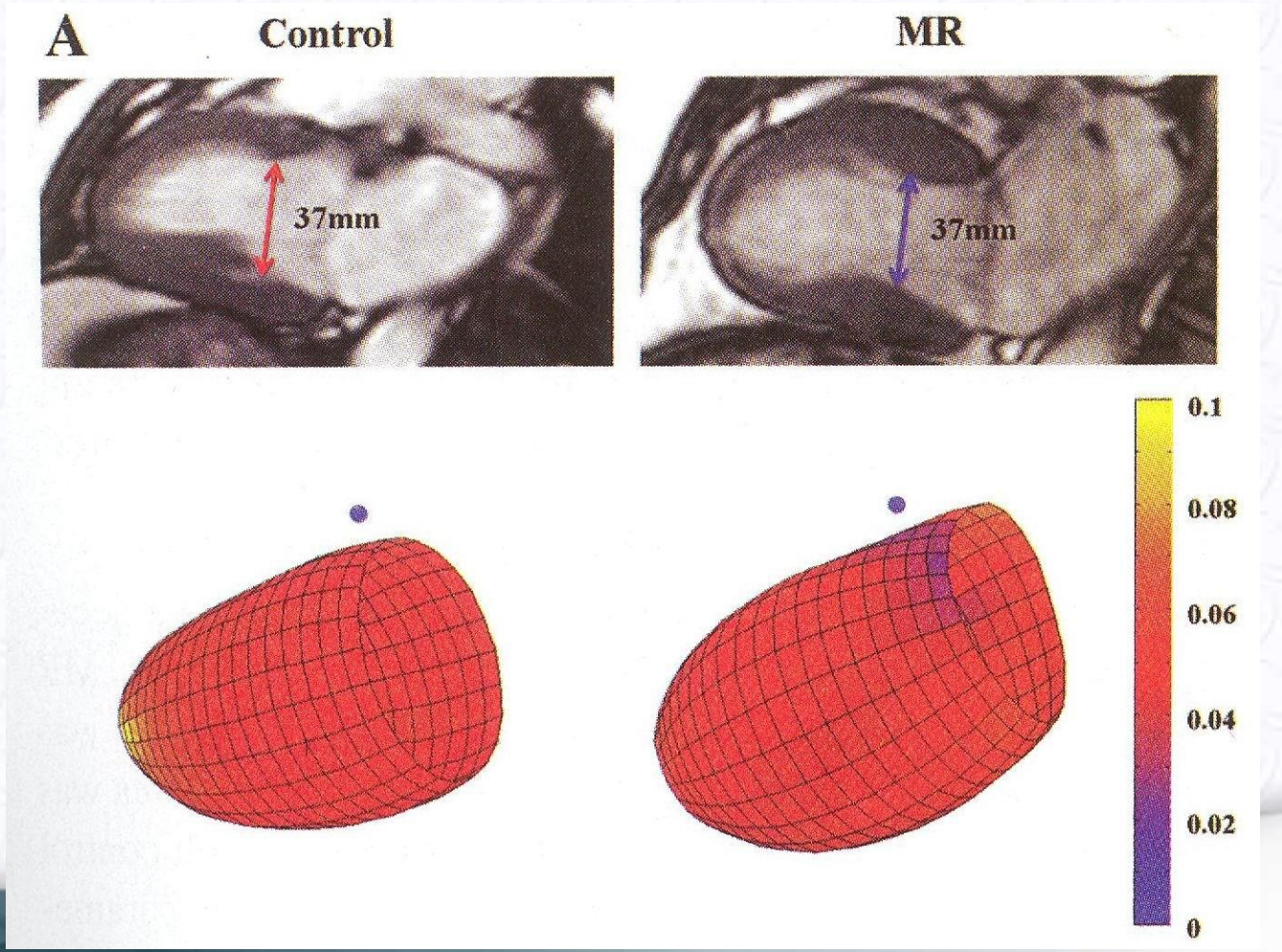
LV ejection fraction = 80%

Regurgitation fraction = 56%

Forward ejection fraction = 24%



LV Remodeling in primary MR



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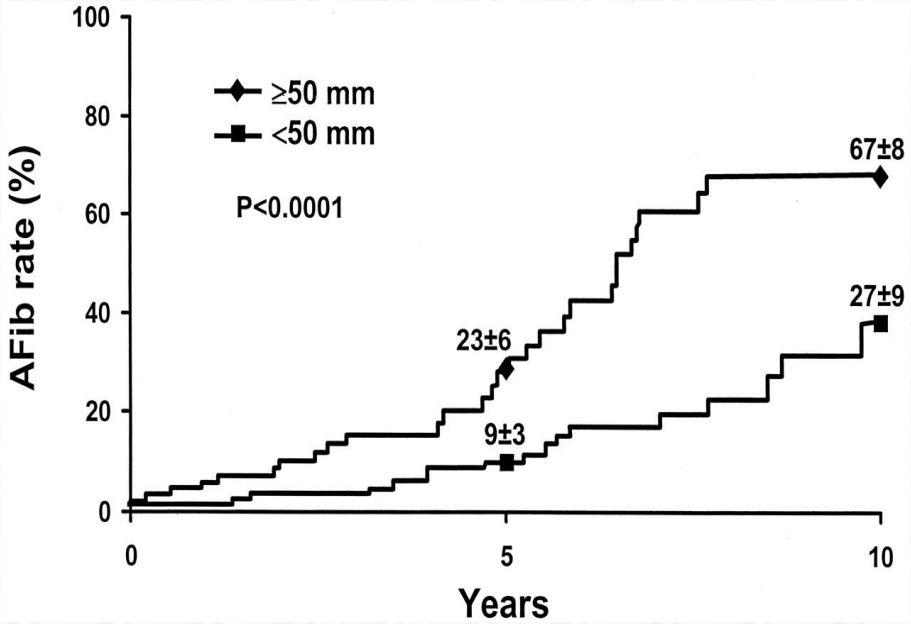
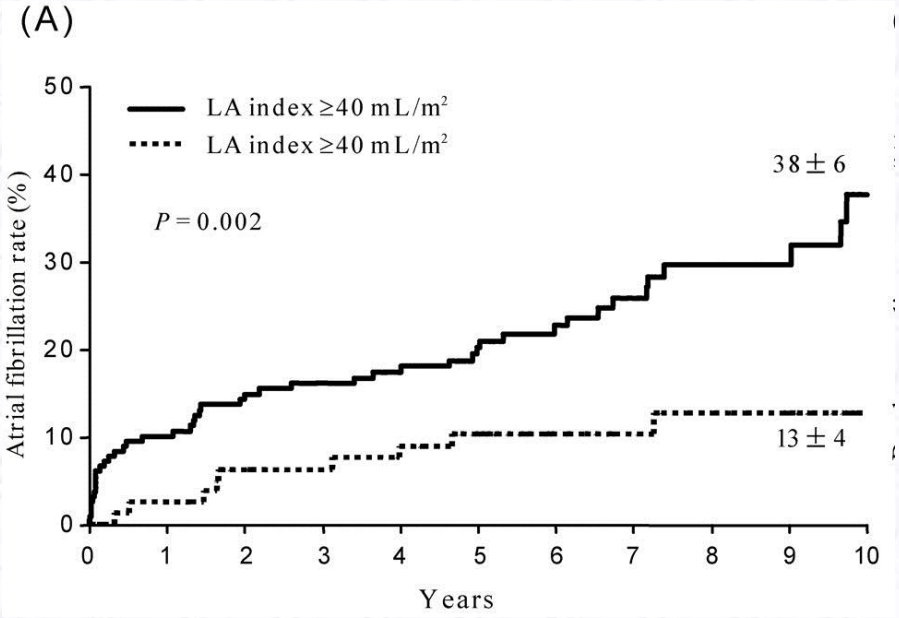
Incidence of AF in primary MR





Rate of AF also increases with age

Grigioni J Am Coll Cardiol 2002;40:84 *Messika-Zeitoun, EHJ 2007 28:1773*

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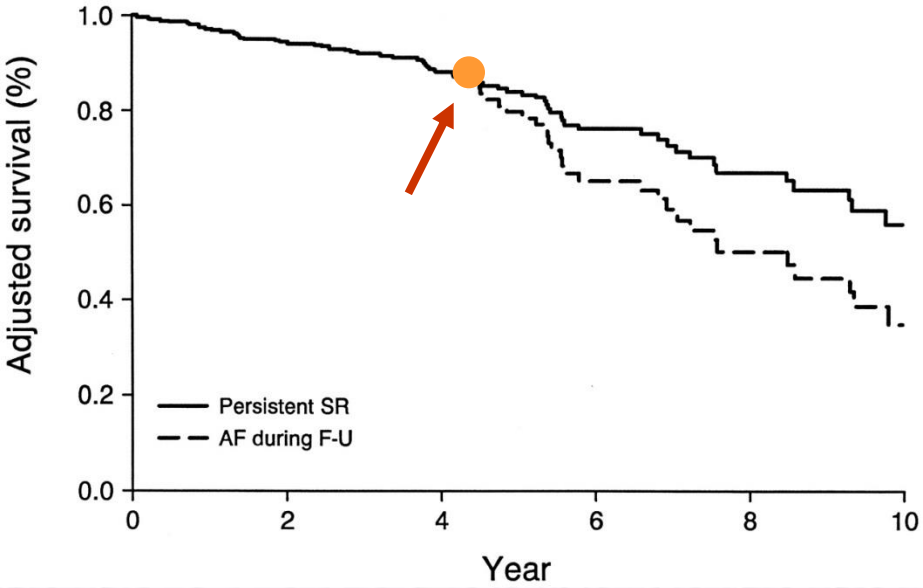
Survival of patients with flail leaflets and atrial fibrillation

Onset of AF is associated with CV morbidity

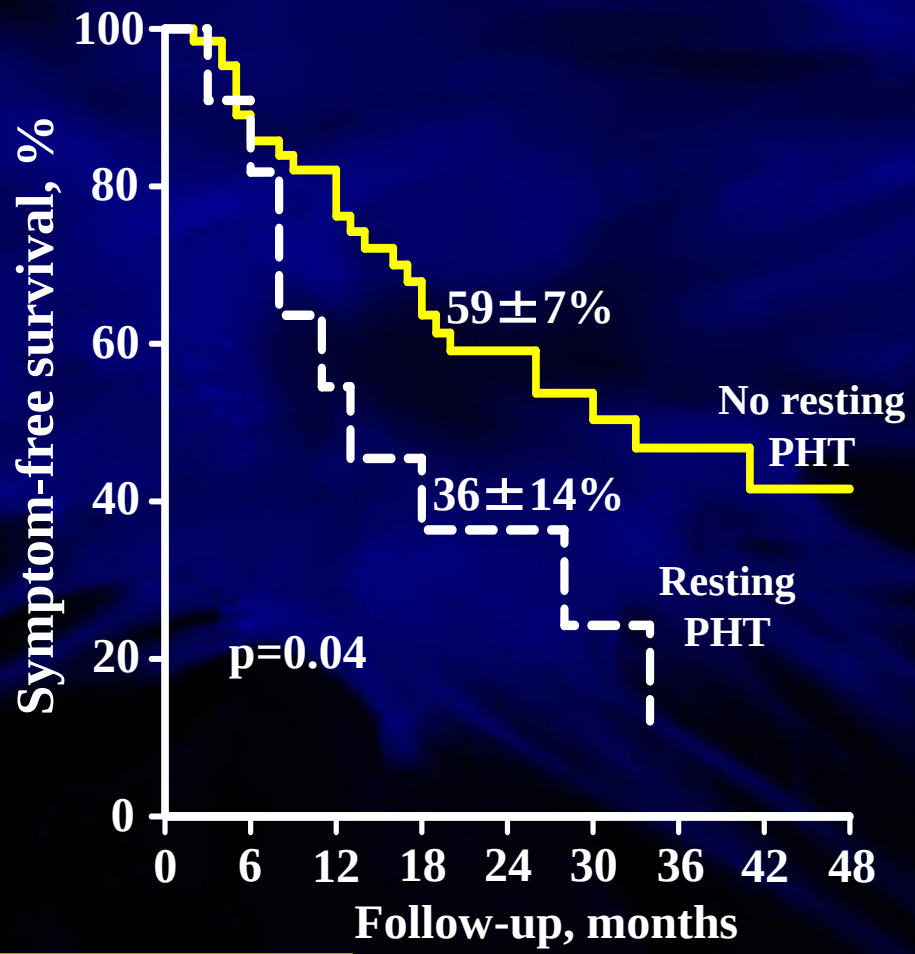


Onset of AF predicted death

Avierinos Circ 2002;106:1355

Grigioni J Am Coll Cardiol 2002;40:84

Pulmonary hypertension at rest



Adjusted HR=2.1, p=NS

Magne J, Lancellotti P, Piérard LA. Circulation, 2010, 122: 33-41

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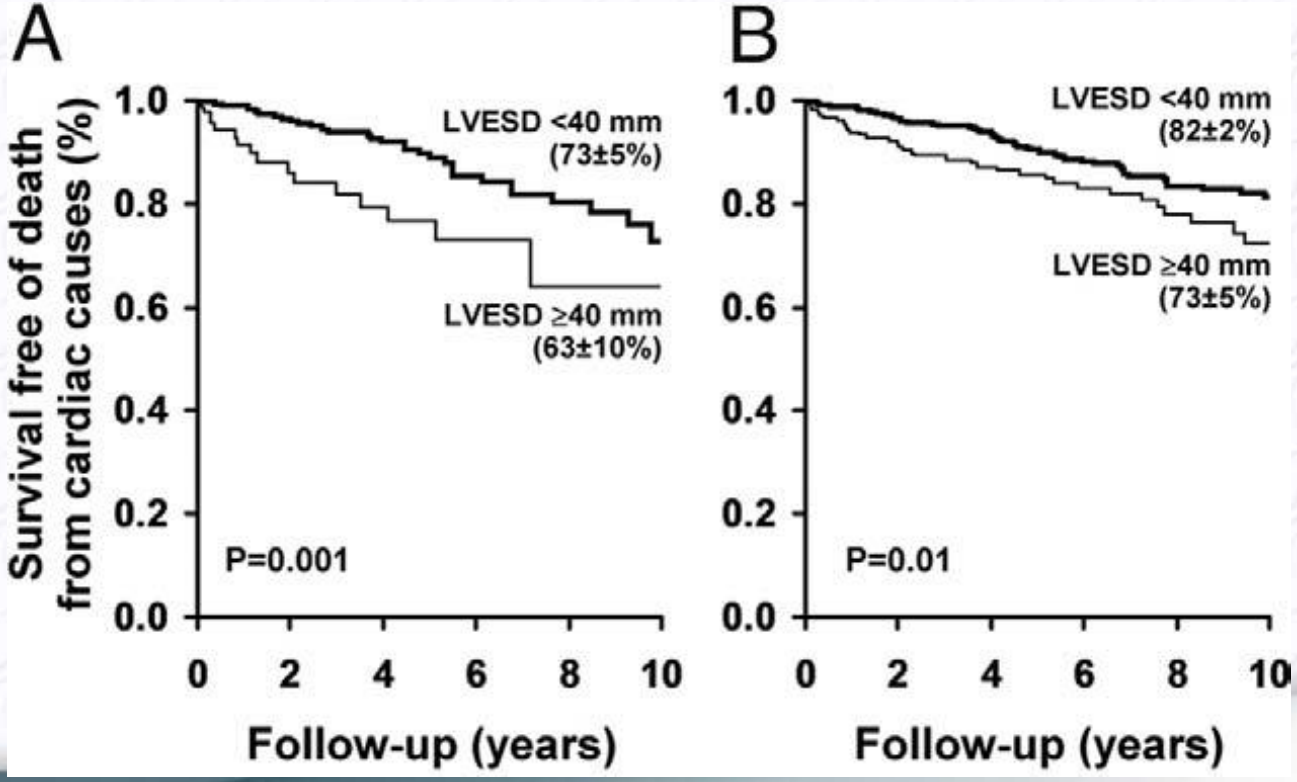
Impact of LV dimension on survival

MIDA registry

739 patients with flail leaflet, follow-up: 6.1±3.7 years

Conservative Management **Medical + Surgery**

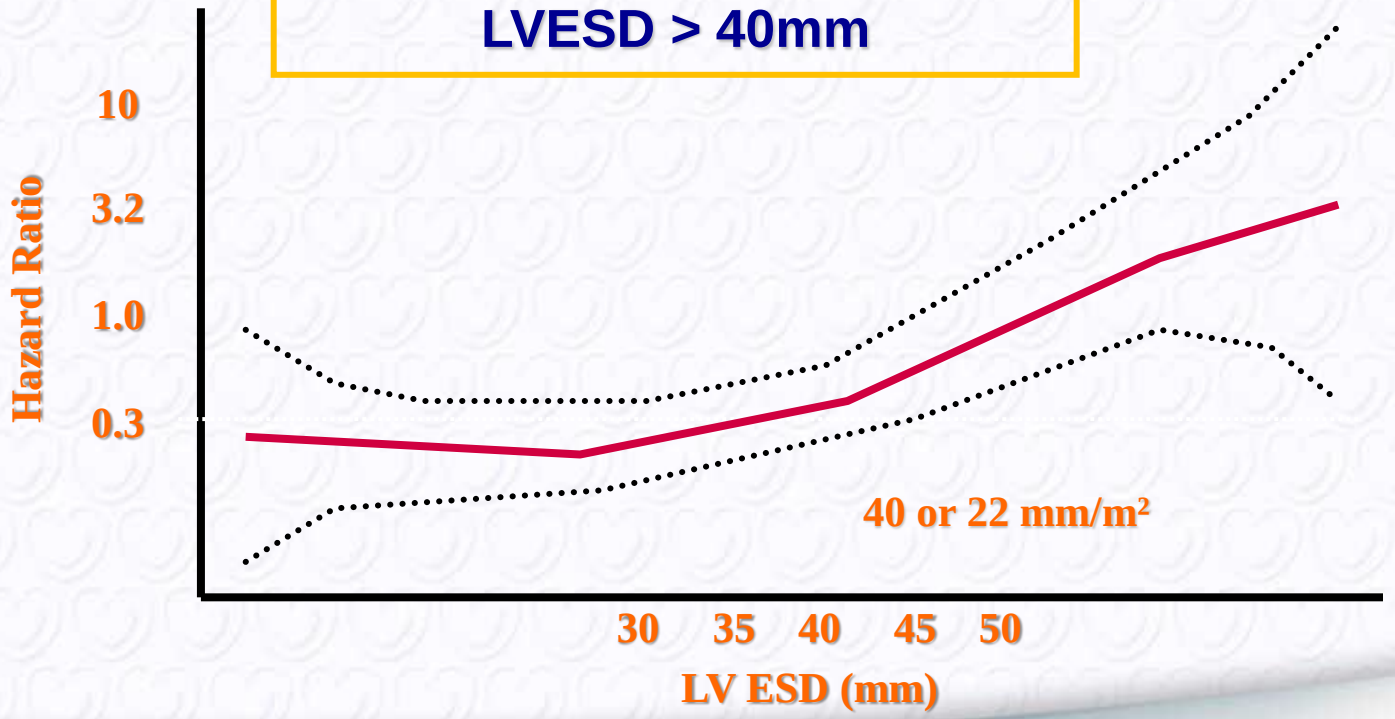


Tribouilloy et al. JACC, 2009;54:1961–8

Impact of LV Dilatation on Survival

MIDA registry

33% of asymptomatic pts with LVESD > 40mm



Tribouilloy et al. JACC, 2009;54:1961–8

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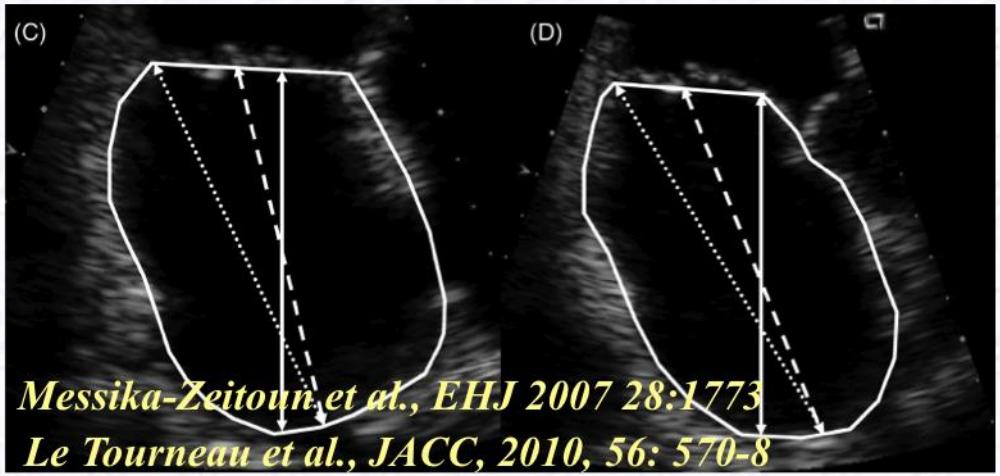
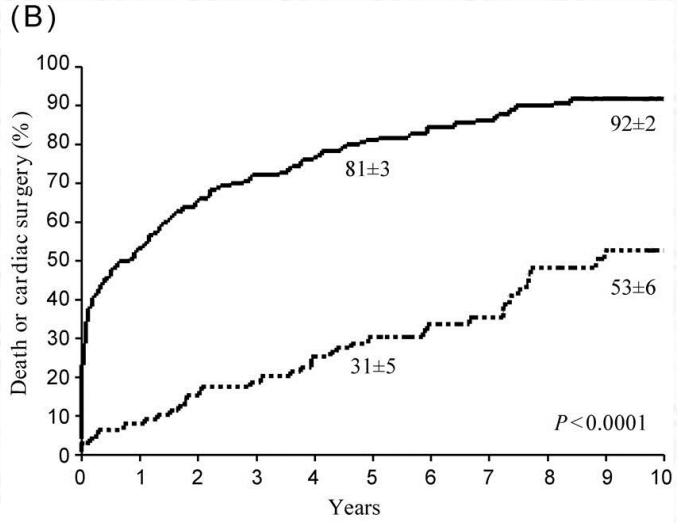
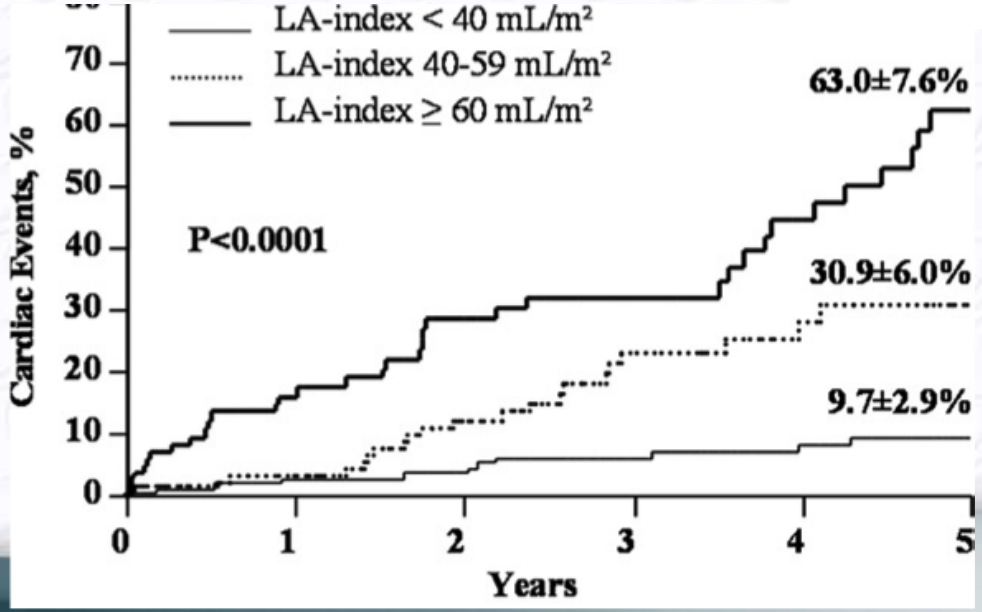
LA volume







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Le Tourneau et al JACC 2010;56:570-8

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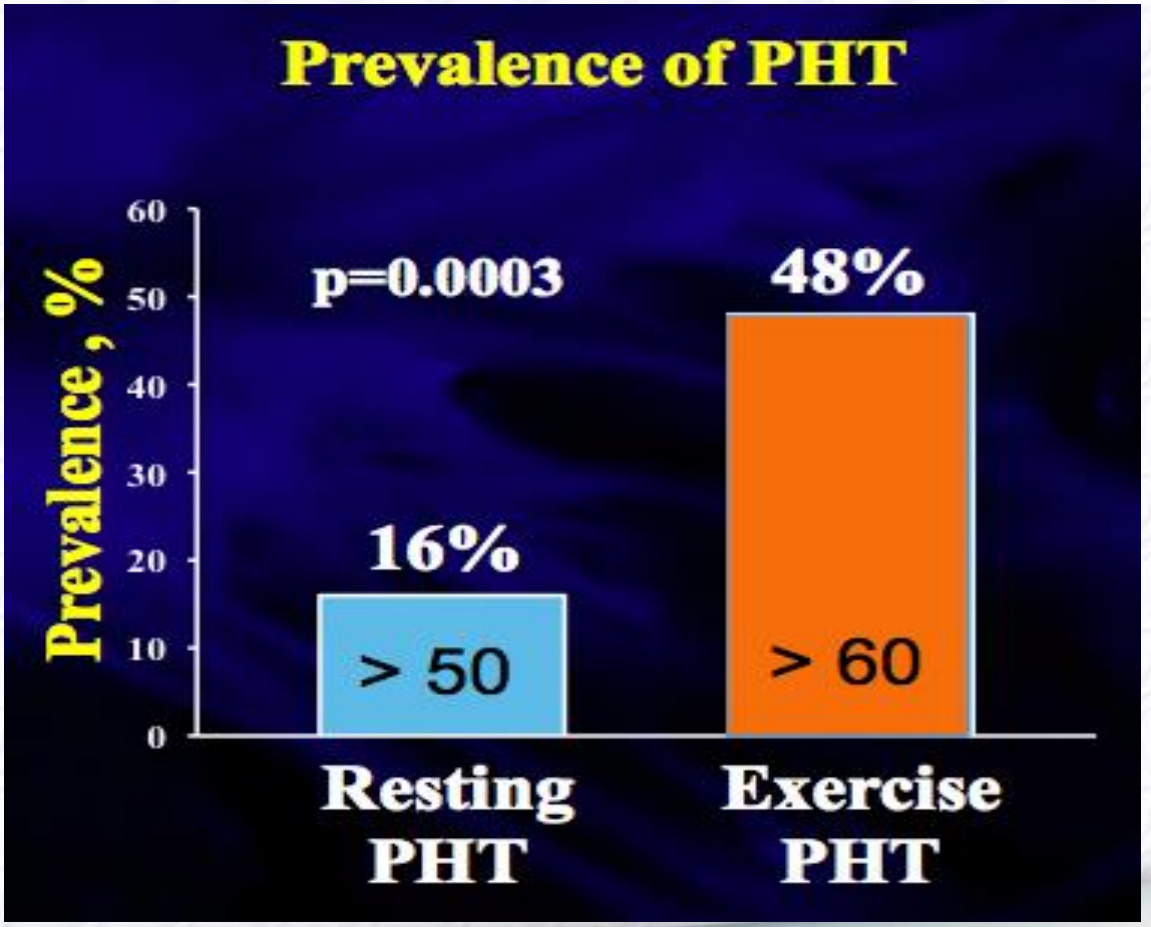
Prevalence of pulmonary hypertension at rest and at exercise in asymptomatic primary MR



Magne J, Lancellotti P, Piérard LA. Circulation, 2010, 122: 33-4.

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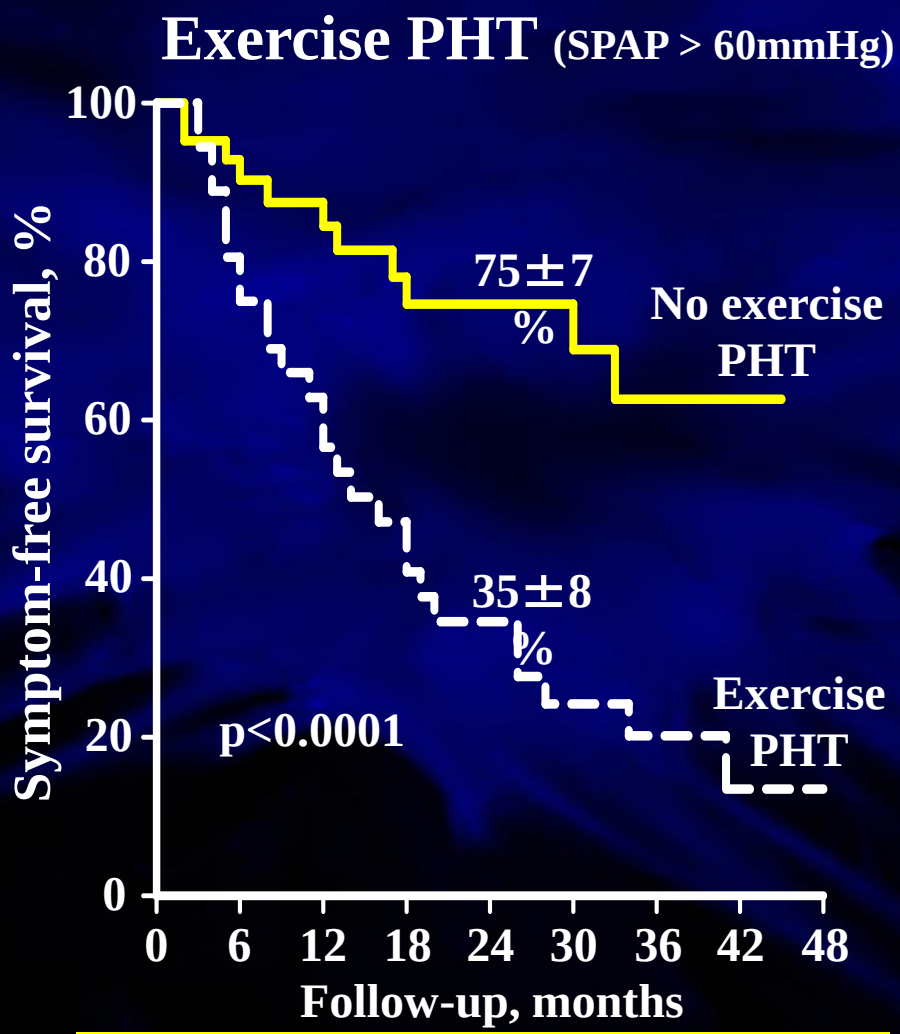
Exercise pulmonary hypertension

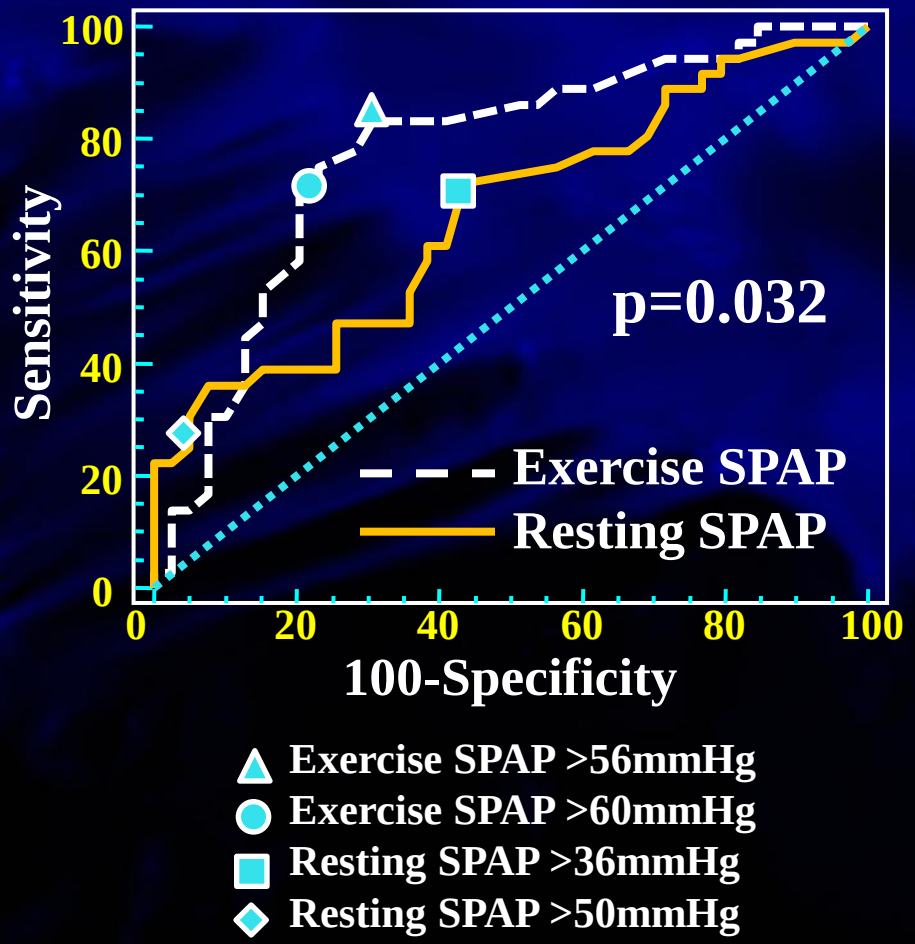


Adjusted HR=2.8, p=0.01

Magne J, Lancellotti P, Piérard LA. Circulation, 2010, 122: 33-41

PHT to predict the onset of symptoms

ROC curves



Prediction of symptoms

Variables	Sensi.	Specif.
Exercise SPAP >56mmHg	82	73
Exercise SPAP >60mmHg	71	78
Resting SPAP >36mmHg	72	56
Resting SPAP >50mmHg	25	95

AUC: 0.67 *vs.* 0.77
p=0.032

Summary: What is new?

- ESC + EACTS
- Important role of heart team
- Primary rather than structural
- New onset of atrial fibrillation: IIa
- LVESD ≥ 40 mm when flail leaflet: IIa
- LA volume ≥ 60 mL/m²: IIb
- SPAP ≥ 60 mmHg at exercise: IIb