Older patients with Chronic Heart Failure

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Definition

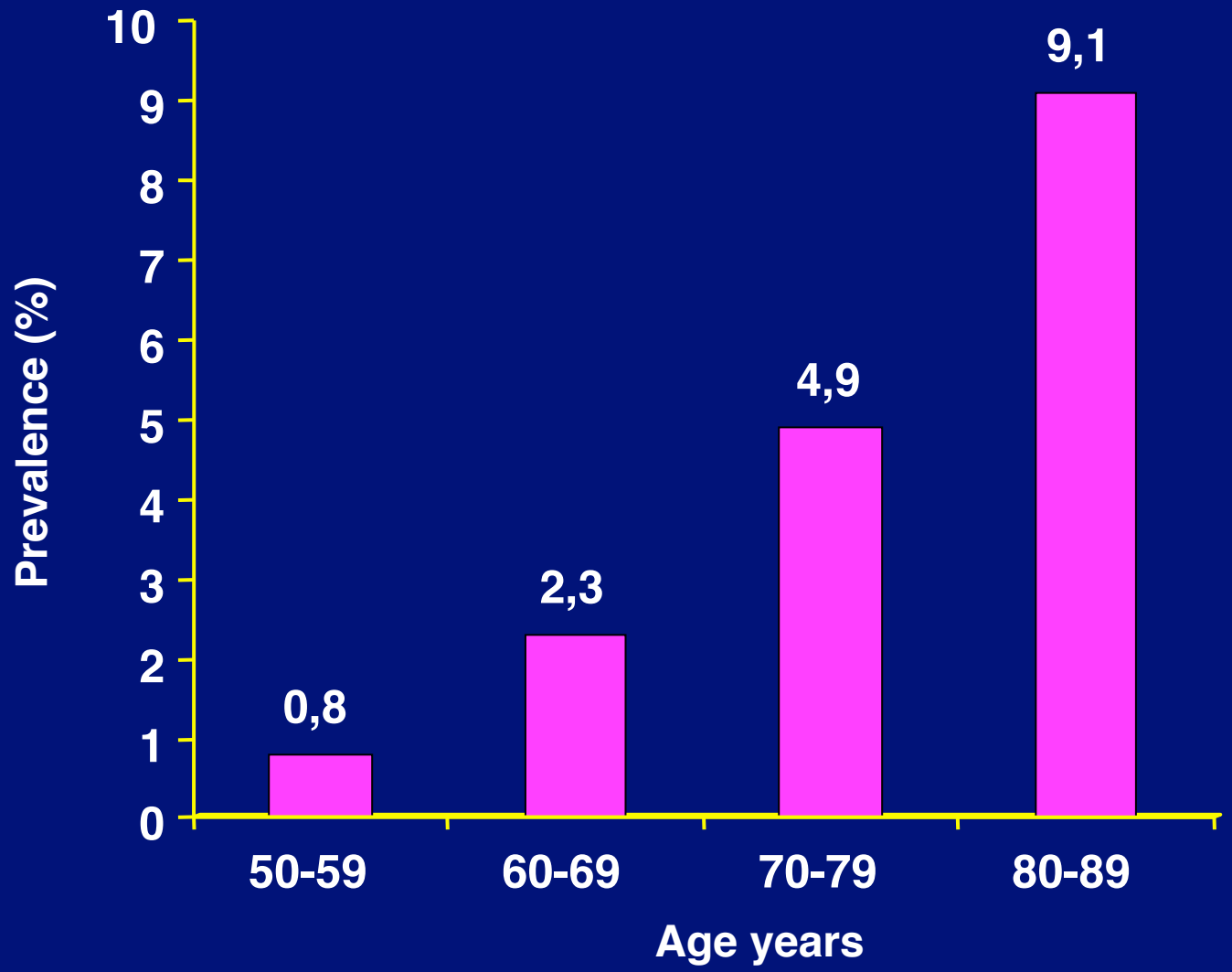
"Heart failure is a complex of symptoms - fatigue, shortness of breath and congestion – associated with insufficient tissue perfusion during exercise, and often fluid retention…

The main cause is the inability of the LV pump to adequately fill and/or empty."

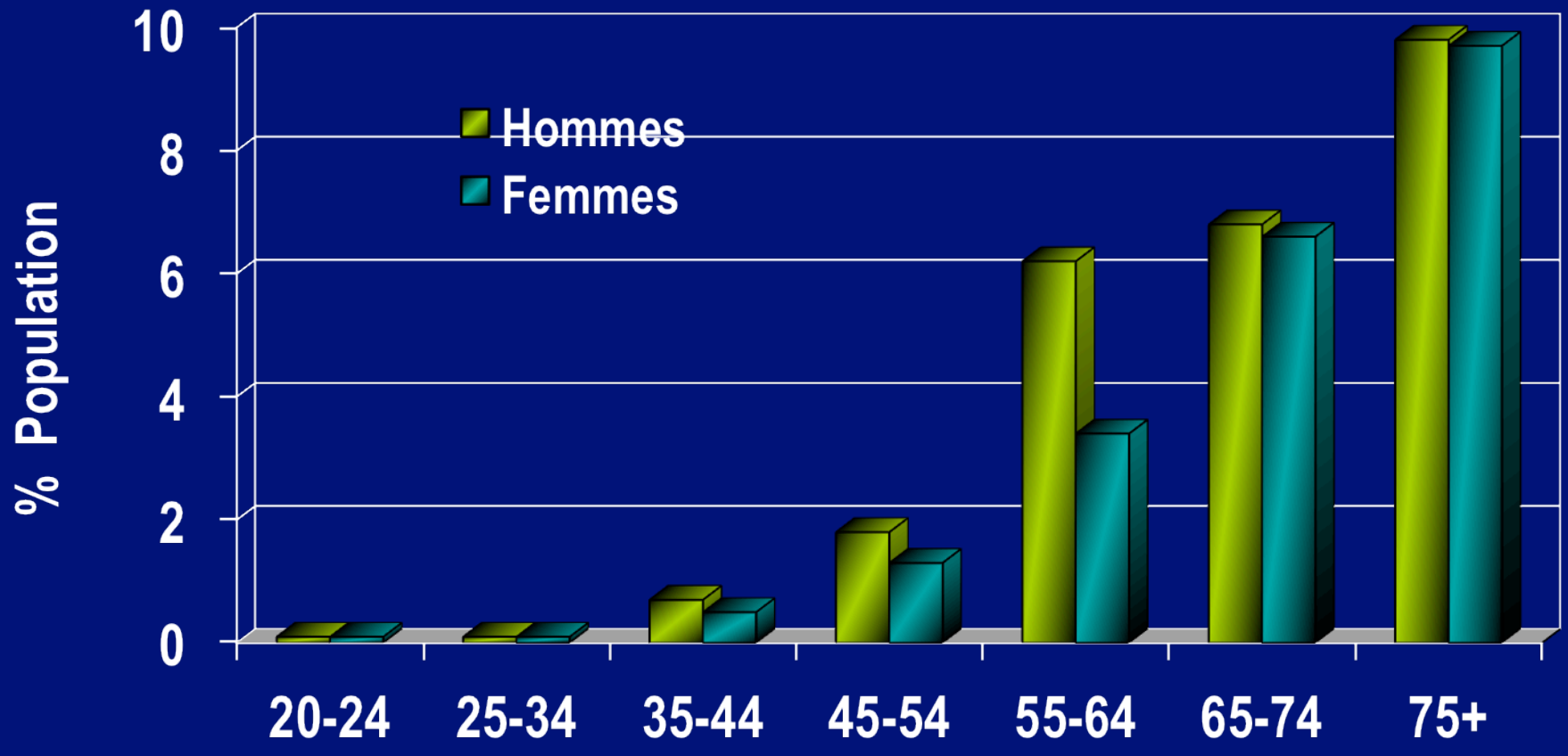
Cohn JN. *N. Engl J Med*. 1996;335:490-498.

Prevalence of heart failure in the Framingham study

Kannel et al : Am Heart J 1991; 121: 951



HF : Prevalence according to age and sex



Source: NHANES III (1988-94), CDC/NCHS and the American Heart Association

Congestive heart failure : 2 major Types

1- Low ejection fraction: EF<35%

2- Preserved ejection fraction: EF >50%

Moderate reduced EF: 35% - 50%

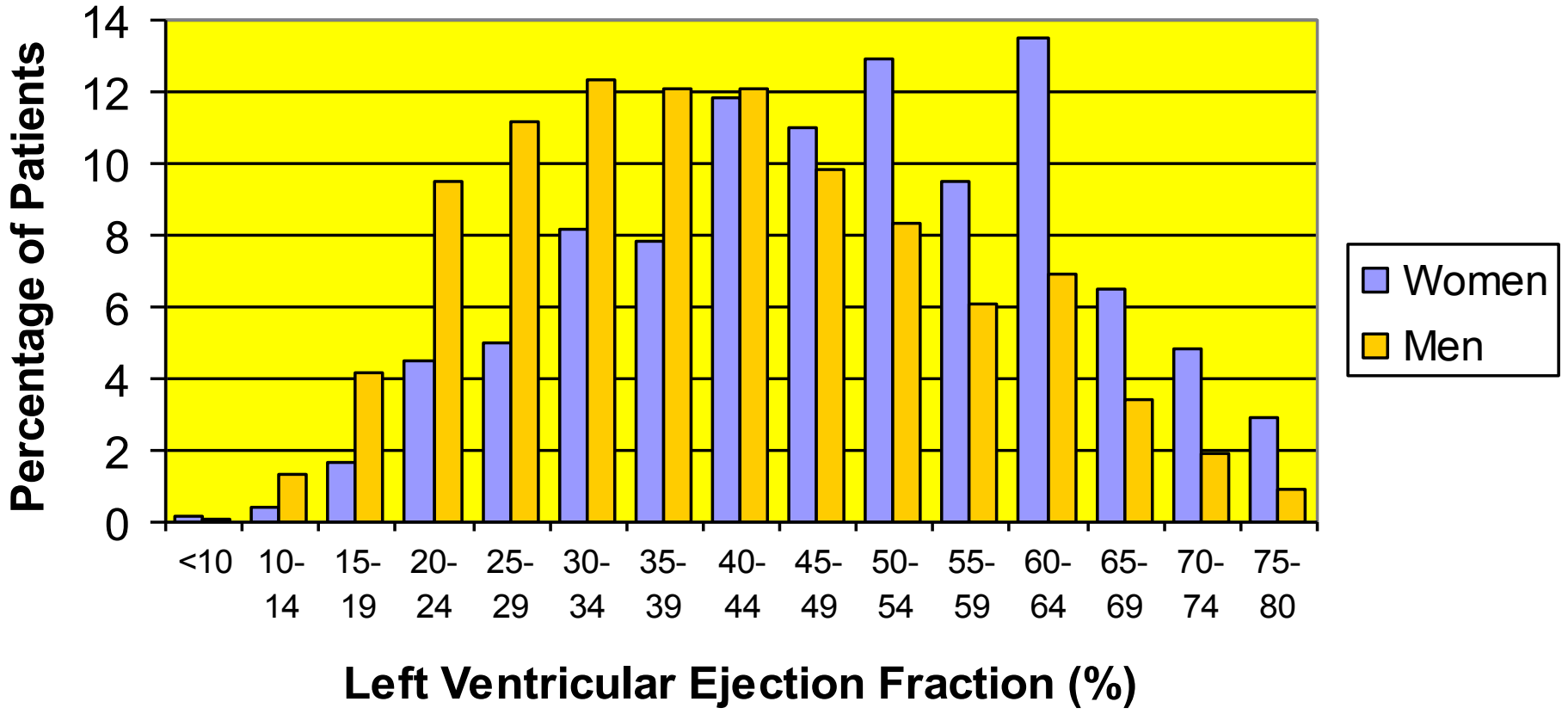
Question

Approximately what proportion of patients with clinical heart failure (HF) have HF with preserved EF (diastolic heart failure)?

A) 5%
B) 10%
C) 30%
D) 50%
E) >70%

Euro Heart Survey

Distribution of LVEF in 11,016 patients



Multivariate predictors of EF > 50%

Factors	OR	p value
age > 75y	1.46	0.01
female	2.62	0.0001
valvular HF	1.79	0.01
weight>72.7kg	1.39	0.04
history of HF	*0.60*	*0.0005*
ischemic HF	*0.69*	*0.04*
idiopathic HF	*0.47*	*0.02*

Philbin et al. Am J Med 2000; 109: 605-613.

HF with low EF: sexe & age

Age	45-54	55-64	65-74	≥ 75	Global
EF ≤ 50%					
All%	3	4,8	7,1	12,9	6
Men	5,1	7,4	10,6	22,8	10,2
Women	1	2,2	3,8	6,6	3,8
FE ≤ 40%					
All%	0,8	1,3	2,7	4,4	2
Men	1,7	1,9	4,7	7,9	3,6
Women	0	0,6	0,8	2,2	1

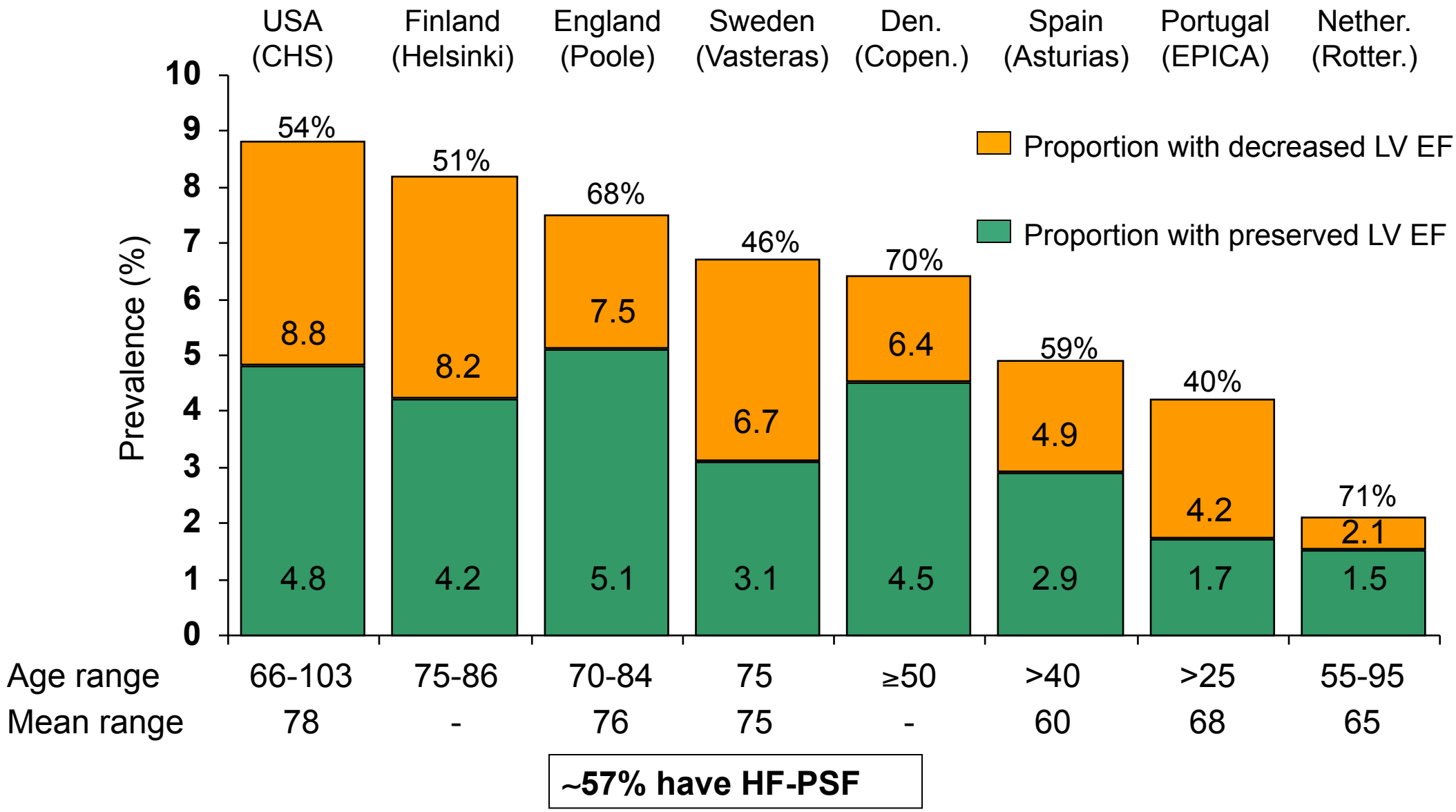
Redfield et al JAMA 2003

HF with preserved EF: sexe & age

Age	45-54	55-64	65-74	≥ 75	Global
Mild					
All%	4,8	13,2	34,2	52,8	20,8
Men	7,2	16	37,2	57	22,5
Women	2,4	10,4	31,6	50,3	19,4

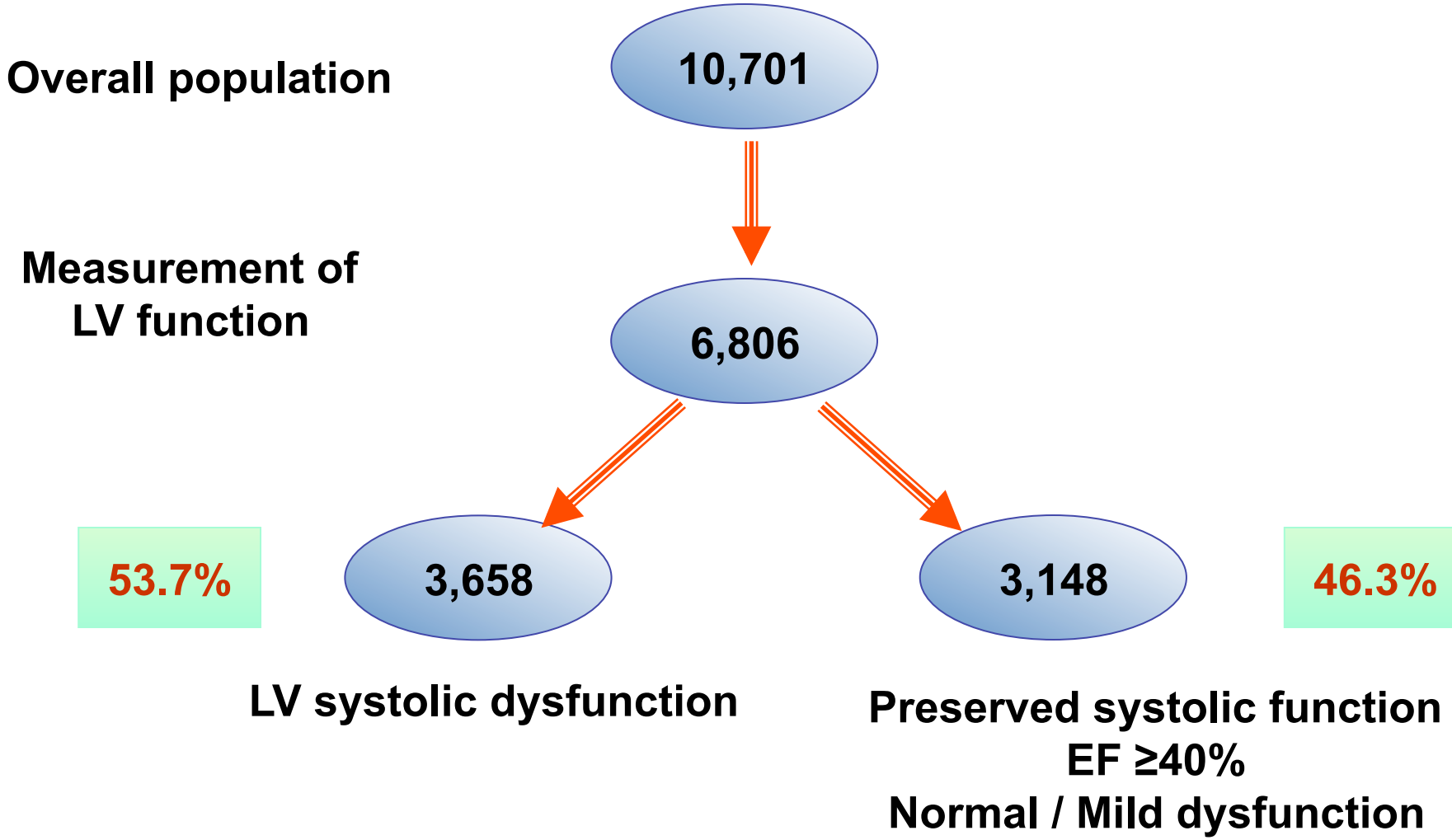
Redfield et al JAMA 2003

Prevalence of Heart Failure



~57% have HF-PSF

EURO Heart Failure Survey



Eur Heart J. 2004;25:1214

HF a severe condition

- Mortality
- Morbidity
- Quality of life
- Functional decline
- Hospital admissions

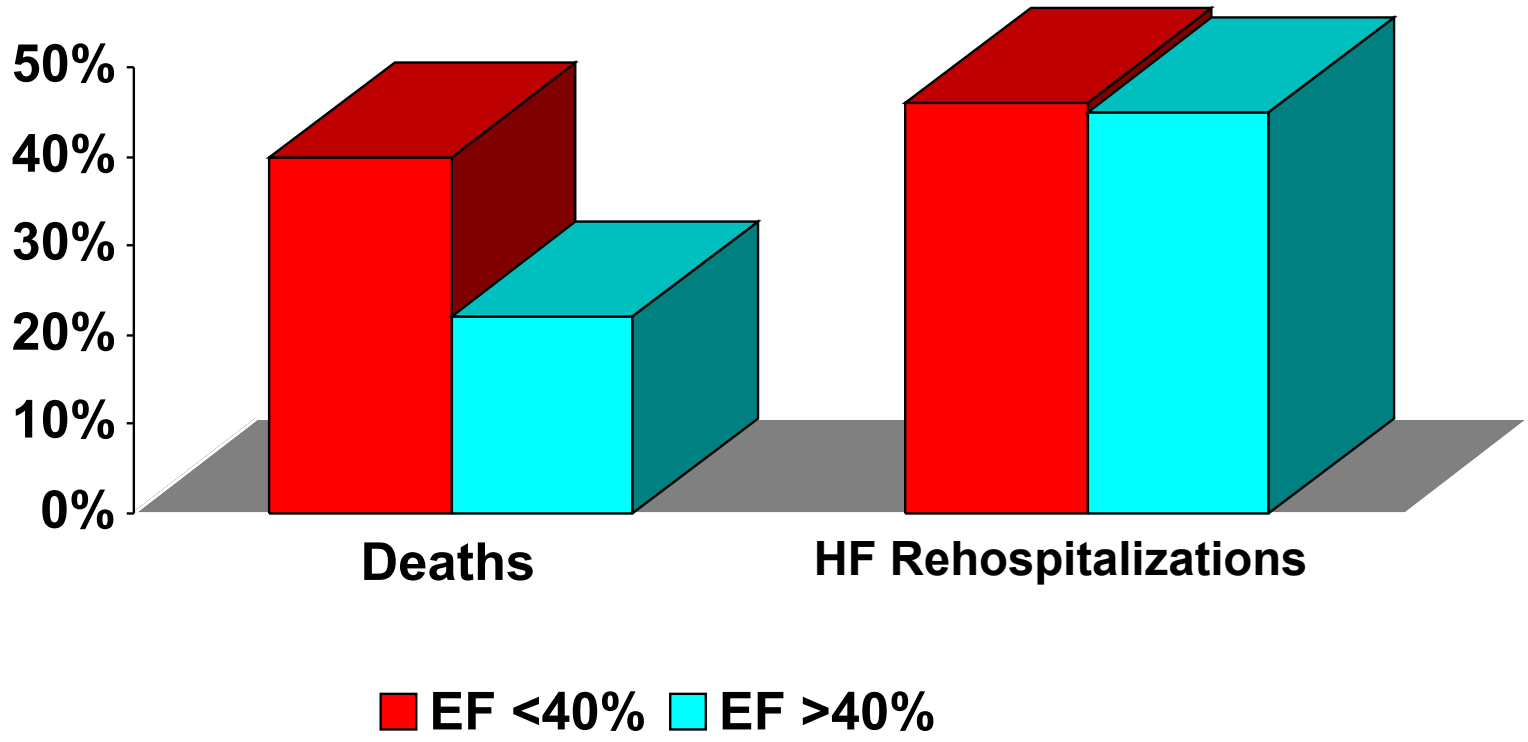
Question

Compared to heart failure with systolic LV dysfunction is the heart failure rehospitalization rate for heart failure with preserved systolic function (HF-PSF):

A) greater?
B) lesser?
C) the same?
D) HF-PEF patients never get hospitalized?

1-year Outcomes in CHF with Preserved EF

Dauterman et al: J Cardiac Failure 2001



Chronic Heart Failure is very often associated with several CV and other chronic diseases and risk factors :

- Hypetension (61%)
- CHD (56%)
- Atrial Fibrillation (30%)
- COPD (30%)
- diabetes (38%)

CHF exists at all ages but…

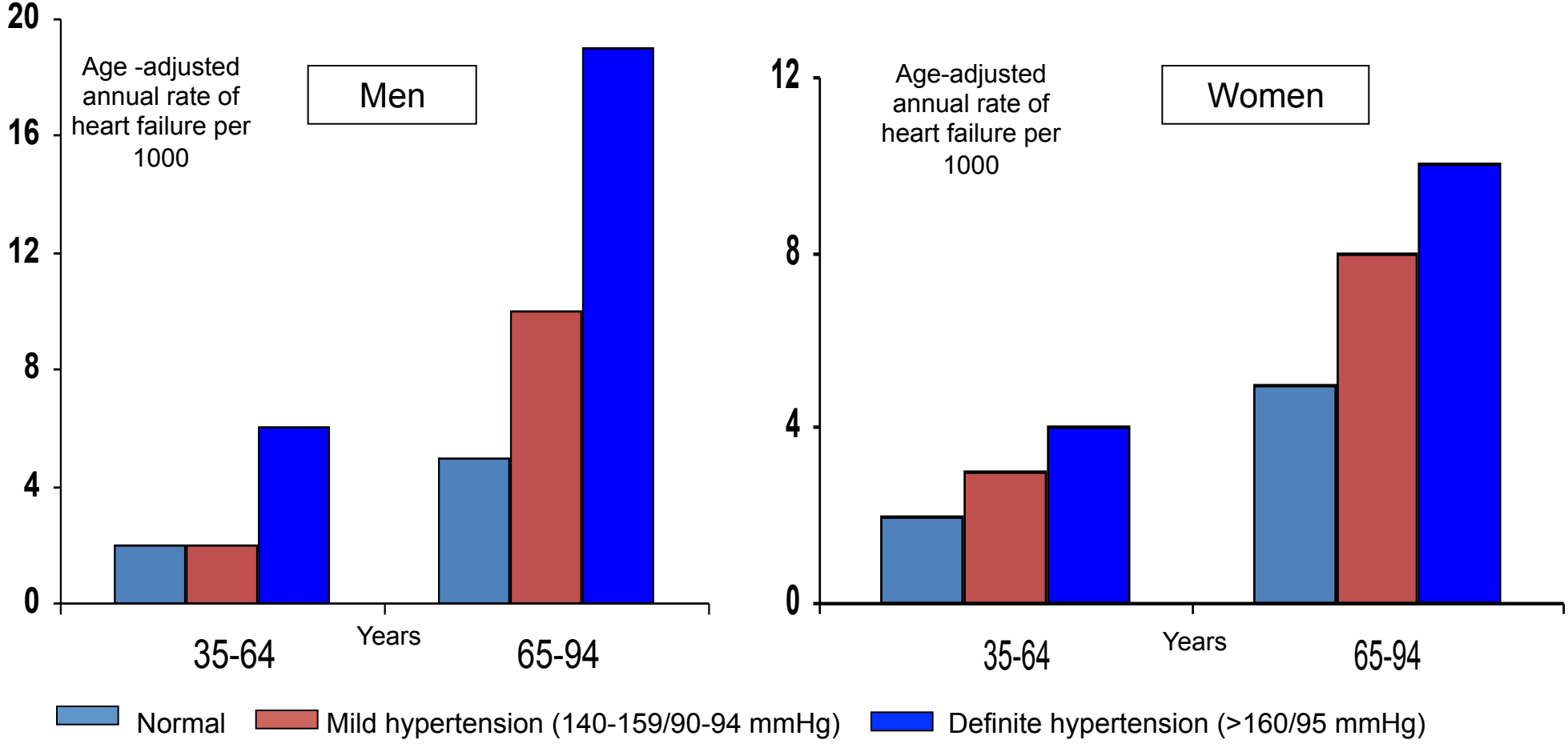
Table 1 Comparison of main features of heart failure in elderly patients vs. middle-aged patients

Feature	Elderly patients	Middle-aged patients
Prevalence	High	Low
Prevalent gender	Female	Male
Aetiology	Hypertension	Ischaemic heart disease
Systolic LV function	Normal	Reduced
Comorbidities	Common	Rare
Therapy	Empirical	Based on RCTs
Clinical trials	Few	Many

RCTs, randomised controlled trials.

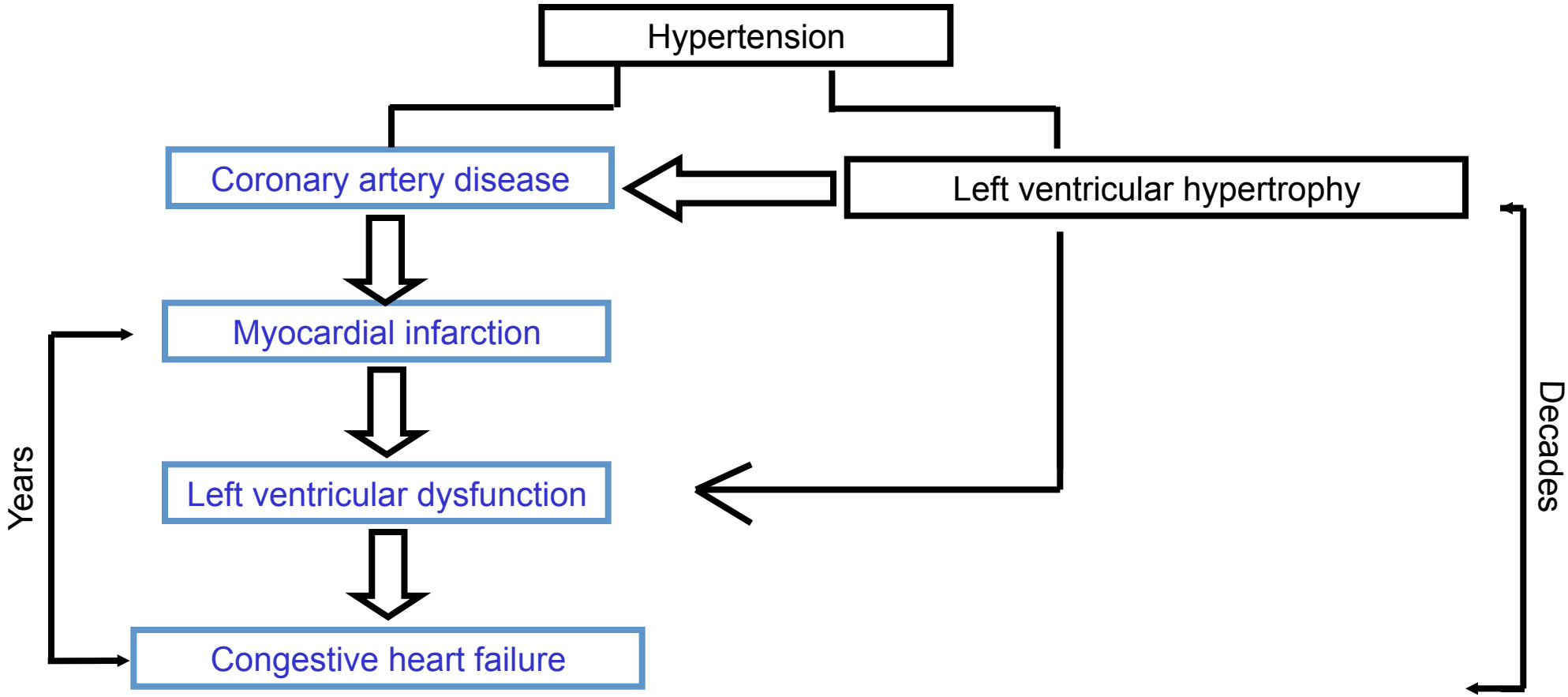
Imazio et al, Int J Clin Pract 2008;62:270-280

Effect of Hypertension on The Risk of HF During 30 Year Follow-up (Framingham)



Kannel WB, Belanger AJ. Am Heart J 1991, 121:951-957

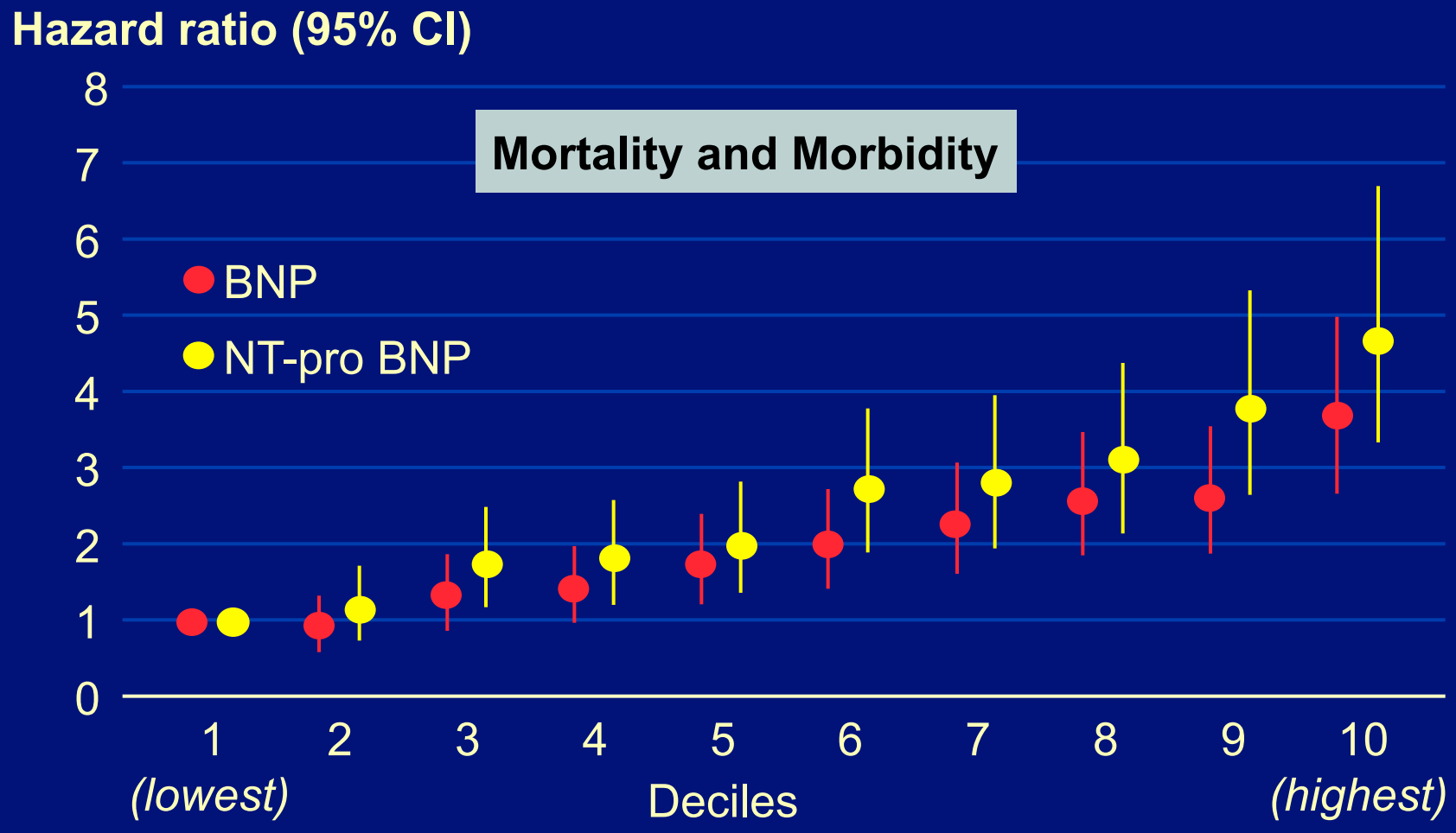
Relationship Between Development of Hypertension and Heart Failure



Route to congestive heart failure most common in patients aged <65 years

Route to congestive heart failure most common in patients aged <75 years

BNP and morbidity/mortality in patients with HF

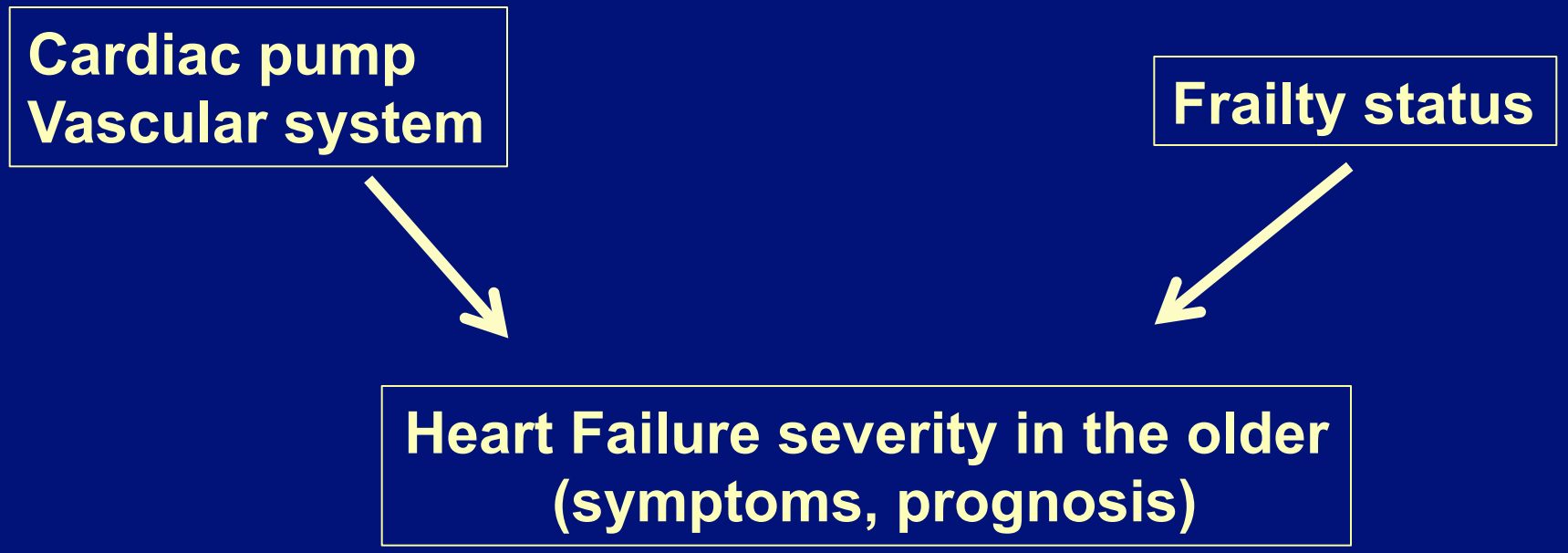


MASSON S et al. Clin Chem 2006; 52: 1528-1538

ESC Guidelines 2016

Table 12.3 Causes of elevated concentrations of natriuretic peptides[522–524]

Cardiac	Heart failure Acute coronary syndromes Pulmonary embolism Myocarditis Left ventricular hypertrophy Hypertrophic or restrictive cardiomyopathy Valvular heart disease Congenital heart disease Atrial and ventricular tachyarrhythmias Heart contusion Cardioversion, ICD shock Surgical procedures involving the heart Pulmonary hypertension
Non-cardiac	Advanced age Ischaemic stroke Subarachnoid haemorrhage Renal dysfunction Liver dysfunction (mainly liver cirrhosis with ascites) Paraneoplastic syndrome Chronic obstructive pulmonary disease Severe infections (including pneumonia and sepsis) Severe burns Anaemia Severe metabolic and hormone abnormalities (e.g. thyrotoxicosis, diabetic ketosis)


Cardiac pump
Vascular system
Frailty status
Heart Failure severity in the older
(symptoms, prognosis)

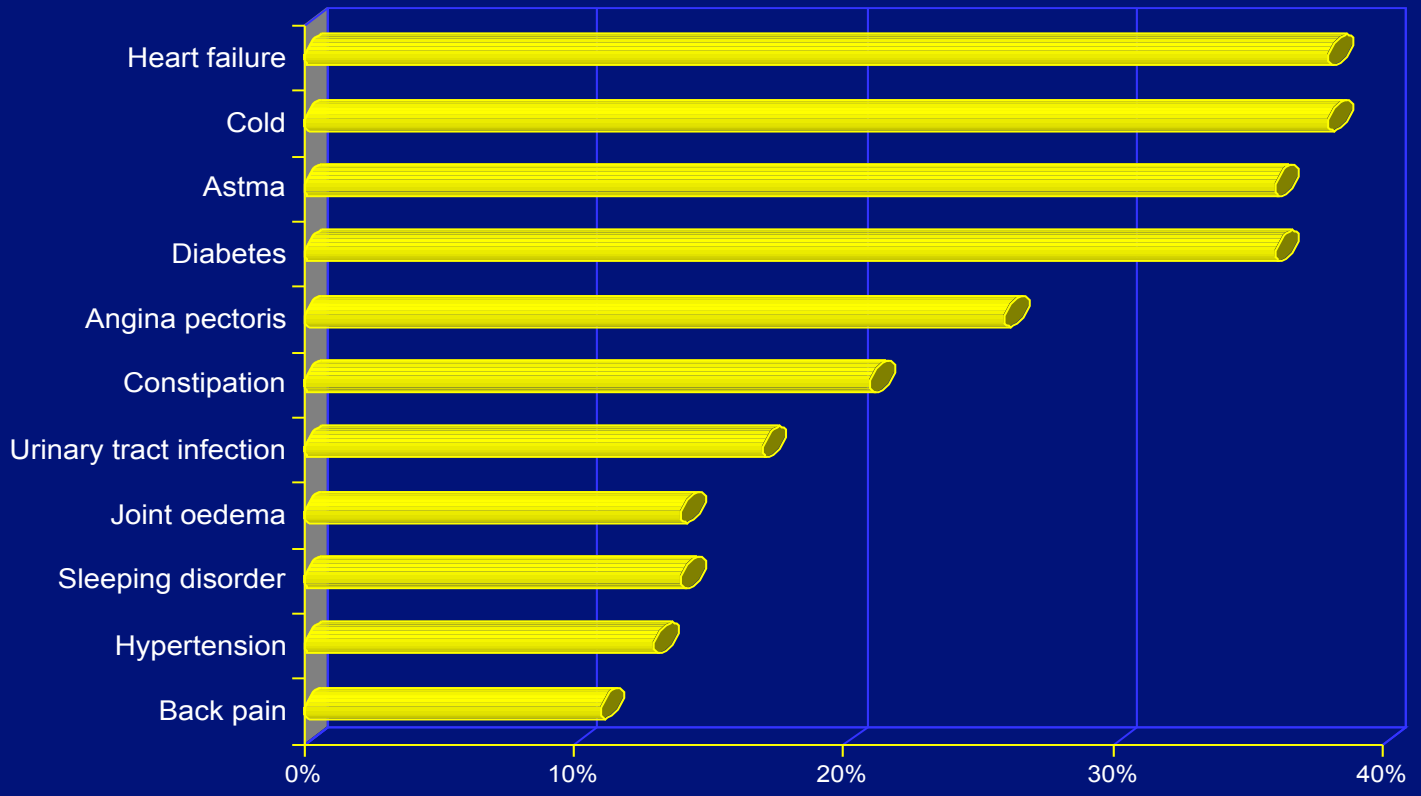
Association of cardiovascular disease with frailty. Newman AB et al. *J Gerontol* 2001; 56: 158-66.

- Cardiovascular Health Study,
- Observational study ≈ 5000 Americans ≥ 65 years, recruited in 1990.

Preexisting cardiovascular at the baseline exam	Not frail n=2289	Frail n=299	OR for frail relative to not frail
myocardial infarction n=447	7.4 %	15.4%✸	2.53 (1.74, 3.67)
angina n=879	14.5 %	30% ✸	2.51 (1.88, 3.35)
congestive heart failure n=181	**1.8 %**	**14 % ✸**	**7.51 (4.66, 12.12)**
transient ischemic attack n=81	1.4 %	1.7 %	1.21 (0.45, 3.32)
intermittent claudication n=109	1.5 %	4.7 % ✸	3.49 (1.78, 6.83)
Any CVD (n= 1047)	17.2 %	37.8 %✸	2.79 (2.13, 3.67)

CHF and polypharmacy

% of patients taking > 4 medications



Ned Tijdschr Geneeskd 1999; 143 : 93-97

Prognostic Implication of Frailty and Depressive Symptoms in an Outpatient Population With Heart Failure

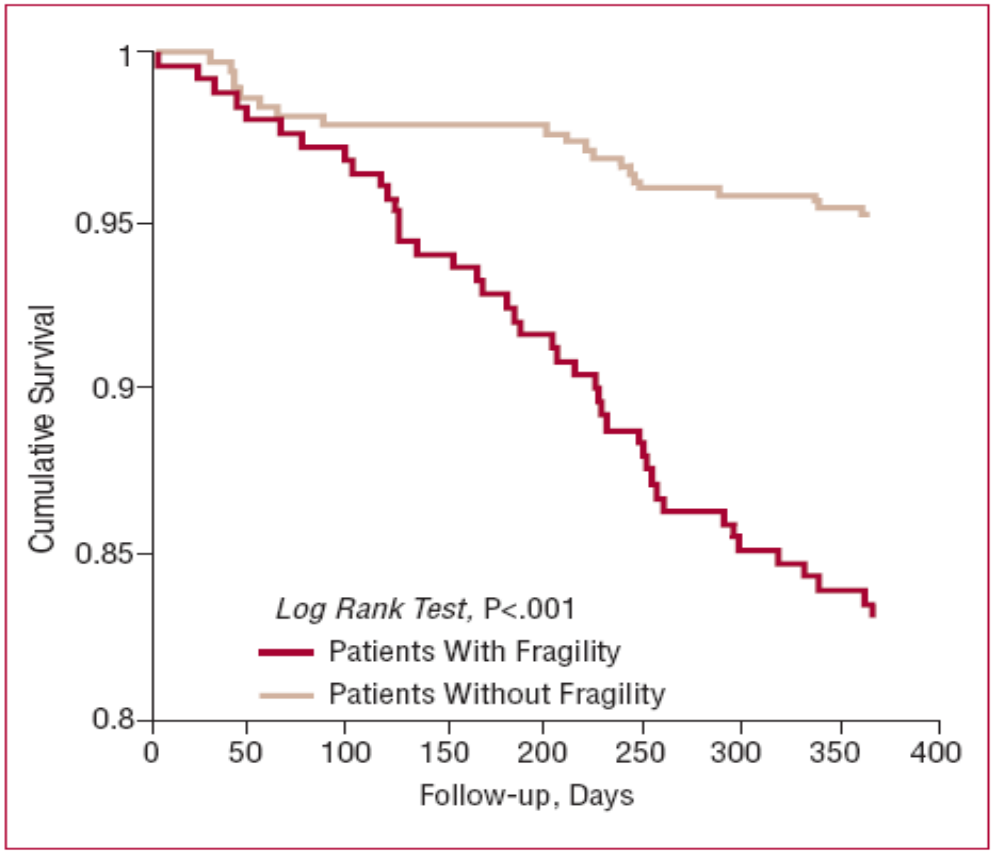


Figure 1. Survival Kaplan-Meier curves for patients with and without fragility.

- N=622
- Mean EF=30%
- Frailty: ADL, cognition, GDS, social
- Frailty also associated with rate of readmission: 20.5% vs 13.3 (p=.01)

Lupon et al, Rev Esp Cardiol 2008;61:835-42

Differences in clinical symptoms between younger and older adults with HF

YOUNGER

- Effort dyspnea
- Orthopnea
- Cough
- Tachycardia

OLDER

- Anorexia
- Fatigue
- Cognitive disorders
- Confusion
- Anxiety
- Nocturia

Therapeutic strategies HF

Diuretics (Furosemide): Independently of EF

Synptomatic treatment of volume overload for the amelioration of symptoms (e. g., dyspnea, edema) and in patients with compensated HF to maintain a stable state (i. e., “weight”).

Use the lowest possible doses to avoid hypovolemia and hyponatremia

Therapeutic strategies HF with low EF

Beta-blockers:

Trials in the elderly: SENIORS trial (Nebivolol;) CIBIS-ELD (Bisoprolol); MERIT-HF (Metoprolol):

Reduce mortality in older subjects as in youngers subjects

Therapeutic strategies HF with low EF

ACE inhibitors/Angiotensin receptor blocker

No specific trial in older people but in older subgroups of the studies the effect seems to be similar as in younger subjects

Anti-Aldosterone drugs:

Prespecified subgroup analyses both in the RALES and in the EMPHASIS-HF trial have shown that older HF patients benefit from treatment with an MRA to a similar extent as younger patients

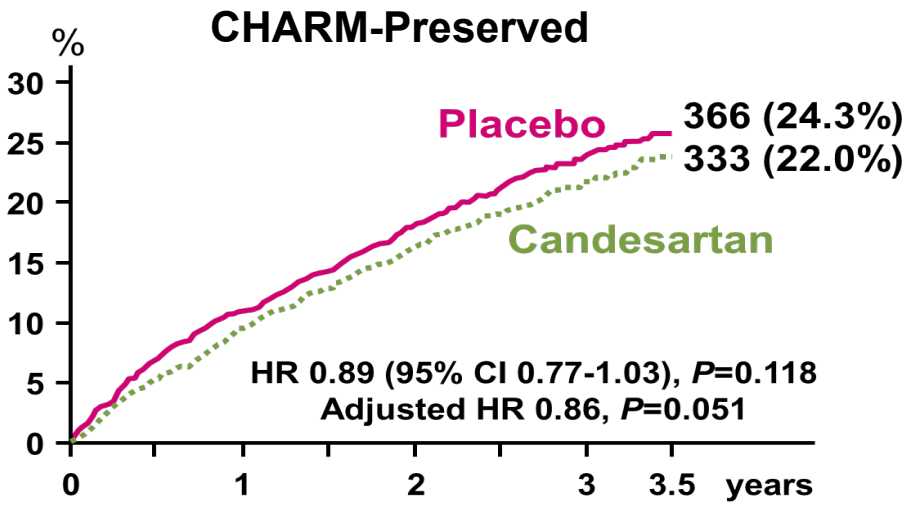
Treatment of HF in subjects with preserved ejection fraction

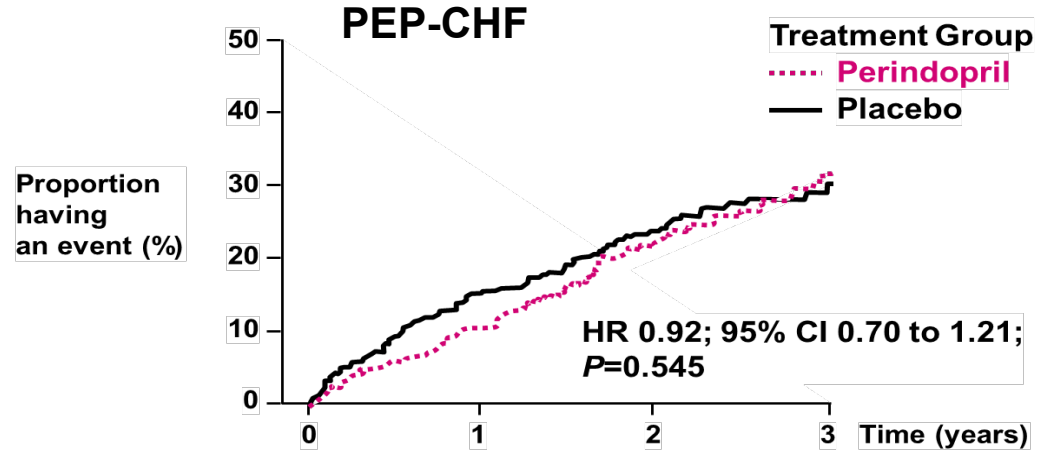
Question

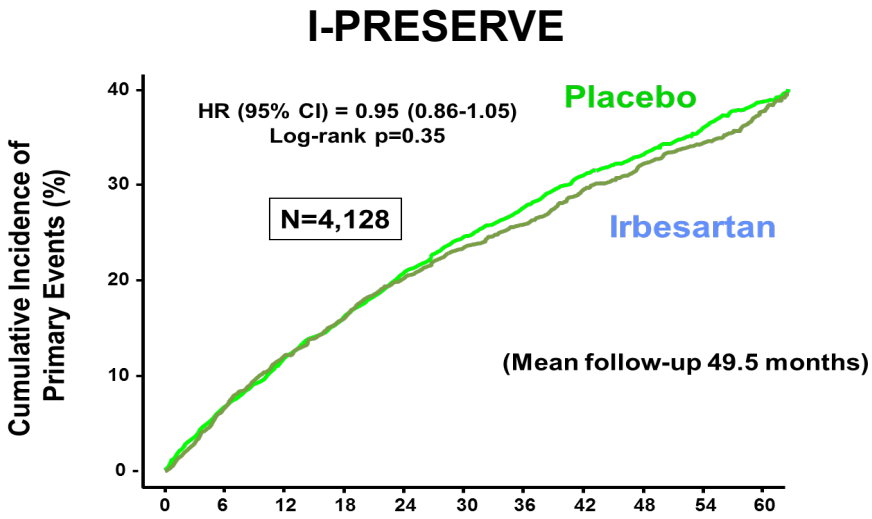
Heart failure with preserved systolic function is as prevalent as heart failure with LV systolic dysfunction. Which of the following therapies are evidence-based treatments for heart failure with preserved systolic function?

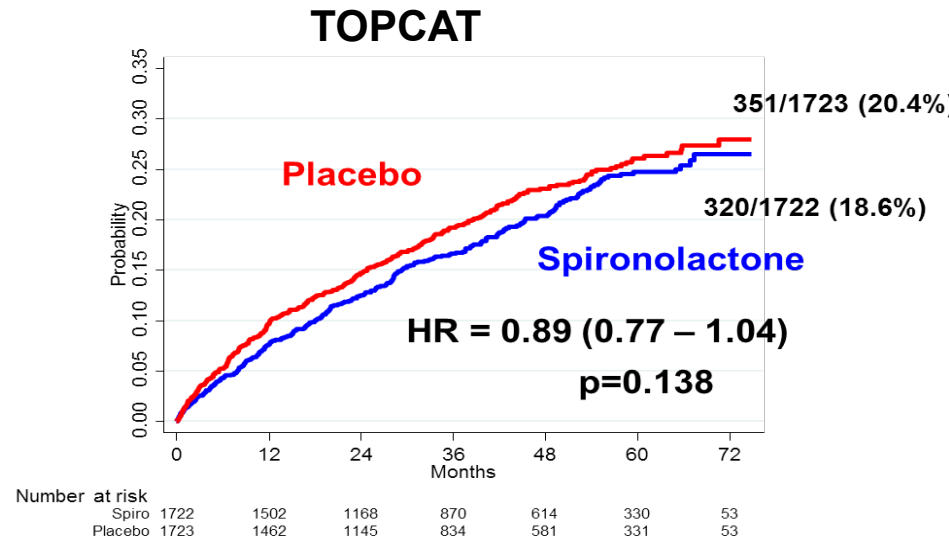
A) Calcium Channel blockers
B) Angiotensin converting enzyme inhibitors
C) Angiotensin II receptor antagonists
D) Beta-blockers
E) None of the above

Outcomes Trials in HFpEF

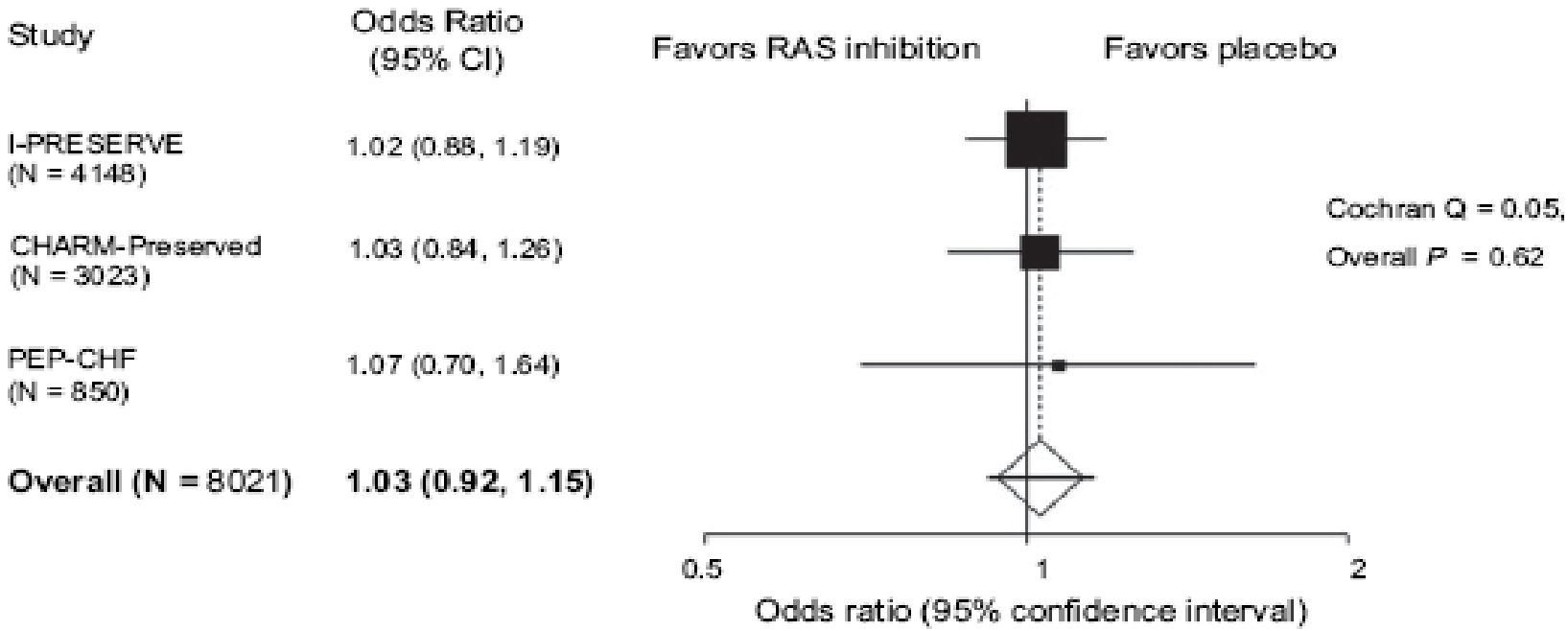








All-cause mortality in randomized controlled trials of renin-angiotensin system (RAS) inhibition in heart failure and preserved ejection fraction (HF-PEF).



Treating “diastolic heart failure”

The theory — hundreds of papers!

The evidence — virtually none!!

HF - preserved EF: The Meta-Analysis

Journal of Cardiac Failure Vol. 16 No. 3 2010

The Effect of Renin-Angiotensin System Inhibitors on Mortality and Heart Failure Hospitalization in Patients With Heart Failure and Preserved Ejection Fraction: A Systematic Review and Meta-Analysis

RAVI V. SHAH, MD,[1,3] AKSHAY S. DESAI, MD, MPH,[2,3] AND MICHAEL M. GIVERTZ, MD[2,3]

Boston, Massachusetts

Conclusions:

- Although RAS inhibition may be valuable in the management of comorbidities related to HF-pEF…

…RAS inhibition in HF-pEF is not associated with consistent reduction in HF hospitalization or mortality in this emerging cohort.

J Cardiac Fail 2010;16:260-267

Recommendations for treatment of patients with heart failure with preserved ejection fraction and heart failure with mid-range ejection fraction

Recommendations	Class [a]	Level [b]	Ref [c]
it is recommended to screen patients with HFpEF or HFmrEF for both cardiovascular and non-cardiovascular comorbidities, which, if present, should be treated provided safe and effective interventions exist to improve symptoms, well-being and/or prognosis.	I	C	
Diuretics are recommended in congested patients with HFpEF or HFmrEF in order to alleviate symptoms and signs.	I	B	178, 179

2016 ESC Guidelines. European Journal of Heart Failure (2016)18, 891–975

Table 14.3 Specific recommendations regarding monitoring and follow-up of the older adult with heart failure

Monitor frailty and seek and address reversible causes (cardiovascular and non-cardiovascular) of deterioration in frailty score.
Medication review: optimize doses of heart failure medication slowly and with frequent monitoring of clinical status. Reduce polypharmacy; number, doses and complexity of regime. Consider stopping medication without an immediate effect on symptom relief or quality of life (such as statin). Review the timing and dose of diuretic therapy to reduce risk of incontinence.
Consider need to refer to specialist care of the elderly team and to general practitioner and social worker, etc. for follow-up and support for the patient and his/her family.

2016 ESC Guidelines. European Journal of Heart Failure (2016)18, 891–975

Table 14.4 Patients with heart failure in whom end of life care should be considered

Progressive functional decline (physical and mental) and dependence in most activities of daily living.
Severe heart failure symptoms with poor quality of life despite optimal pharmacological and non-pharmacological therapies.
Frequent admissions to hospital or other serious episodes of decompensation despite optimal treatment.
Heart transplantation and mechanical circulatory support ruled out.
Cardiac cachexia.
Clinically judged to be close to end of life.

2016 ESC Guidelines. European Journal of Heart Failure (2016)18, 891–975

Table 14.5 Key components of palliative care service in patients with heart failure

Focus on improving or maintaining the quality of life of a patient and his/her family as well as possible until he/she dies.
Frequent assessment of symptoms (including dyspnoea and pain) resulting from advanced heart failure and other co-morbidities and focus on symptom relief.
Access for the patient and his/her family to psychological support and spiritual care according to need.
Advanced care planning, taking account of preferences for place of death and resuscitation (which may include deactivating devices, such as pacemaker and/or implantable cardioverter defibrillator).

2016 ESC Guidelines. European Journal of Heart Failure (2016)18, 891–975

Conclusions

In older adults suffering from heart failure with low EF, the drugs that have shown their efficacy (ACEI, beta blockers, furosemide and if necessary anti-aldosterone) should be used.

In patients with preserved EF the same drugs have not provided solid evidence of their efficacy.

In addition, comorbidities should be taken into account since they play a very important role in the symptomatology and the evolution of the disease

In patients with preserved EF, it is important to develop clinical research for new therapeutic approaches.