

10 things to change in heart failure for primary care

Richard Hobbs
Professor and Head
Nuffield Department of Primary Care Health Sciences
University of Oxford, United Kingdom

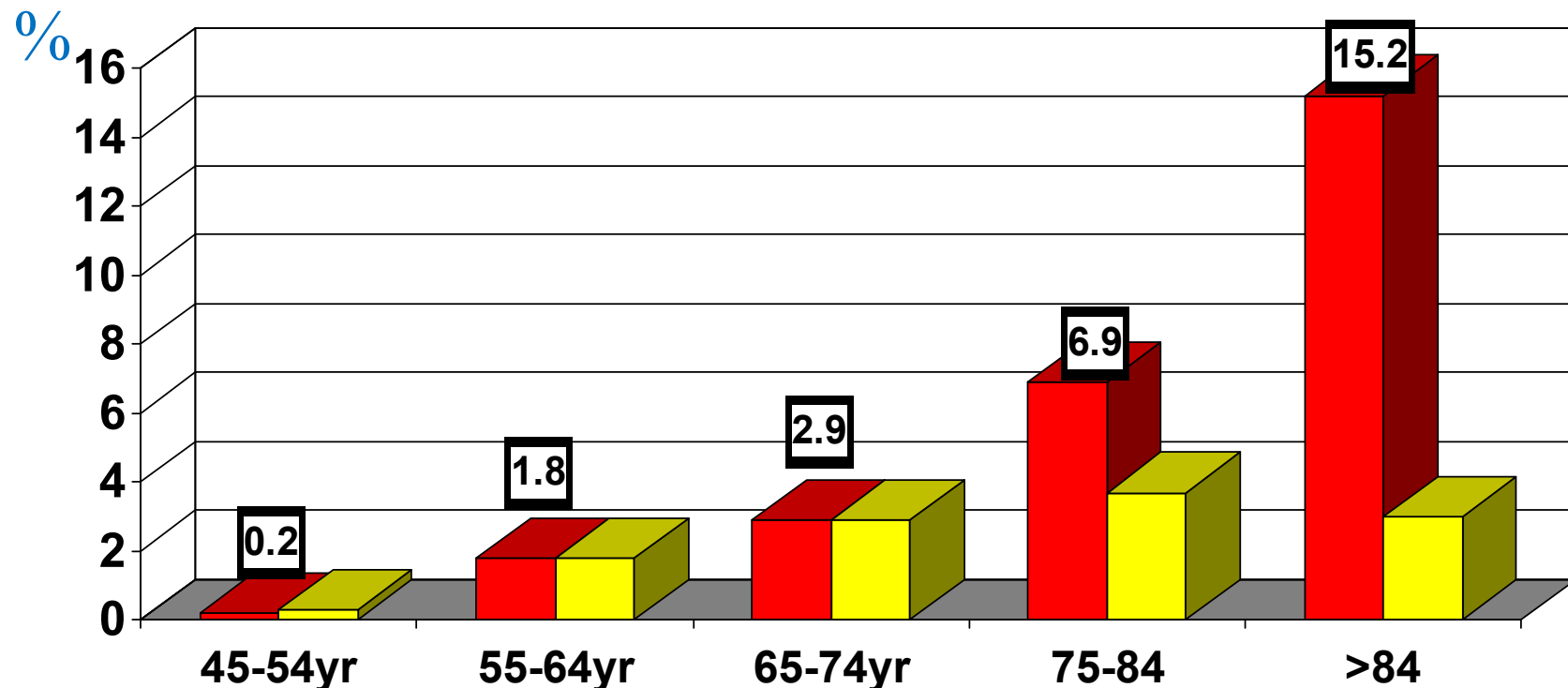
Disclosures for past 5 years
Occasional consulting or speaker panels: Amgen,
AstraZeneca, BMS, Bayer, Daiichi Sankyo, Novartis, Pfizer,
Roche Diagnostics, Takeda

1. Improve understanding of heart failure burden for primary care



Prevalence of LV Systolic Dysfunction & Heart Failure in ECHOES by age

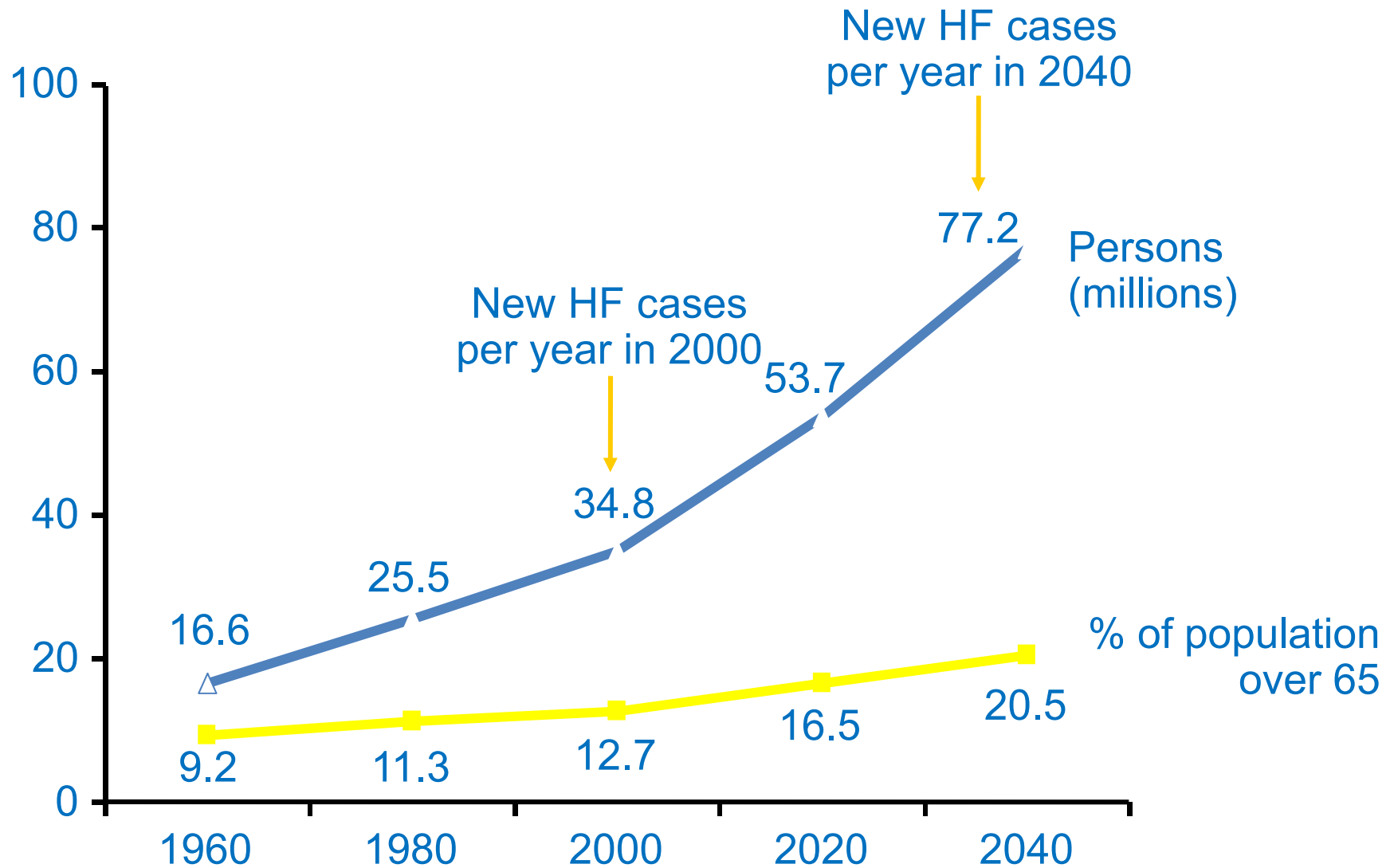
n = 3960



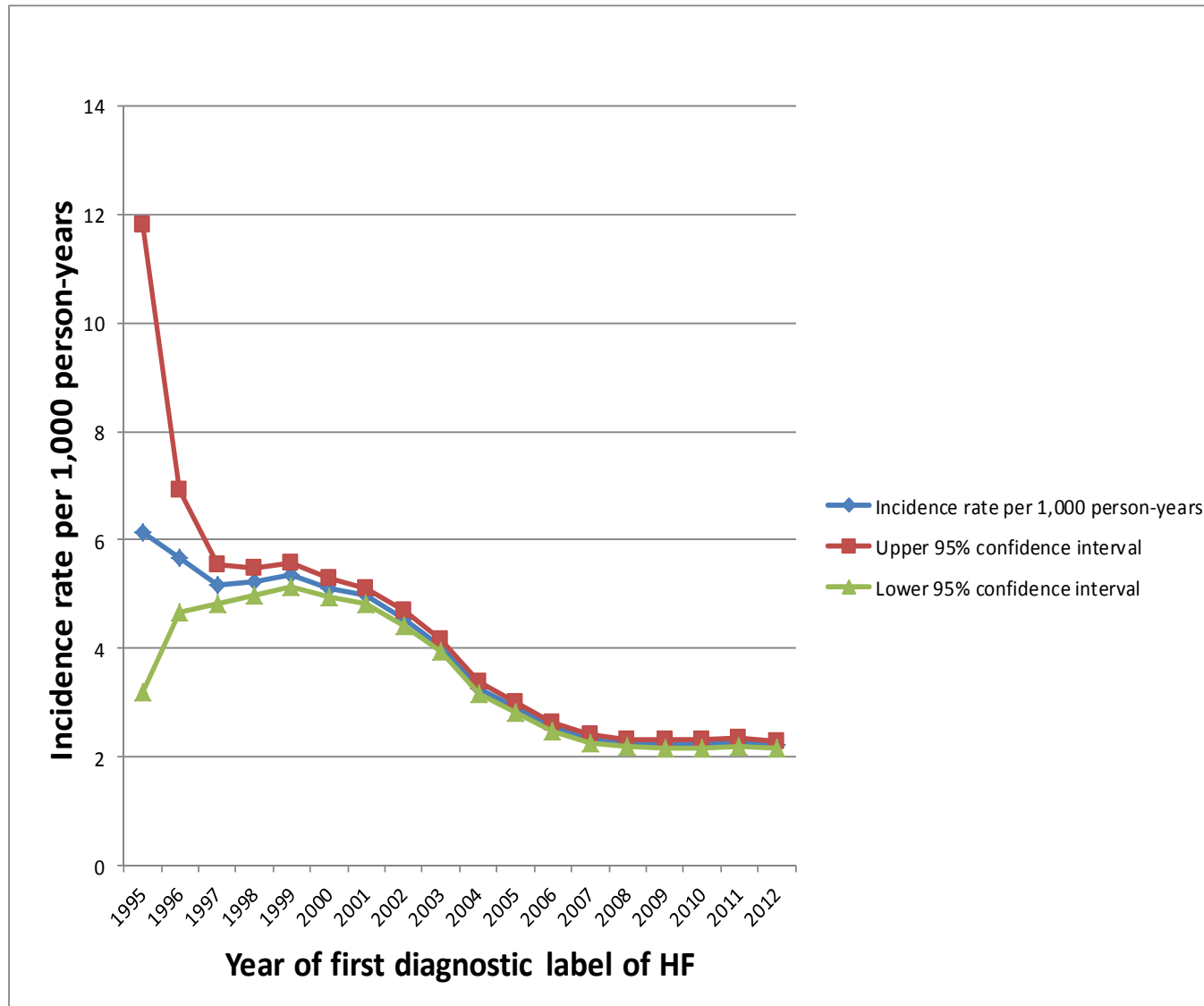
■ Heart Failure

■ LVSD

Changing Population Demographics & Effect on the Number of Persons with Heart Failure



UK HF incidence rates per 1,000 person-years



THIN dataset:

570 UK GP records
from 1.1.95 to
31.12.12

Participants:

2,730,738 patient
records, 55,255
with HF clinical
code.

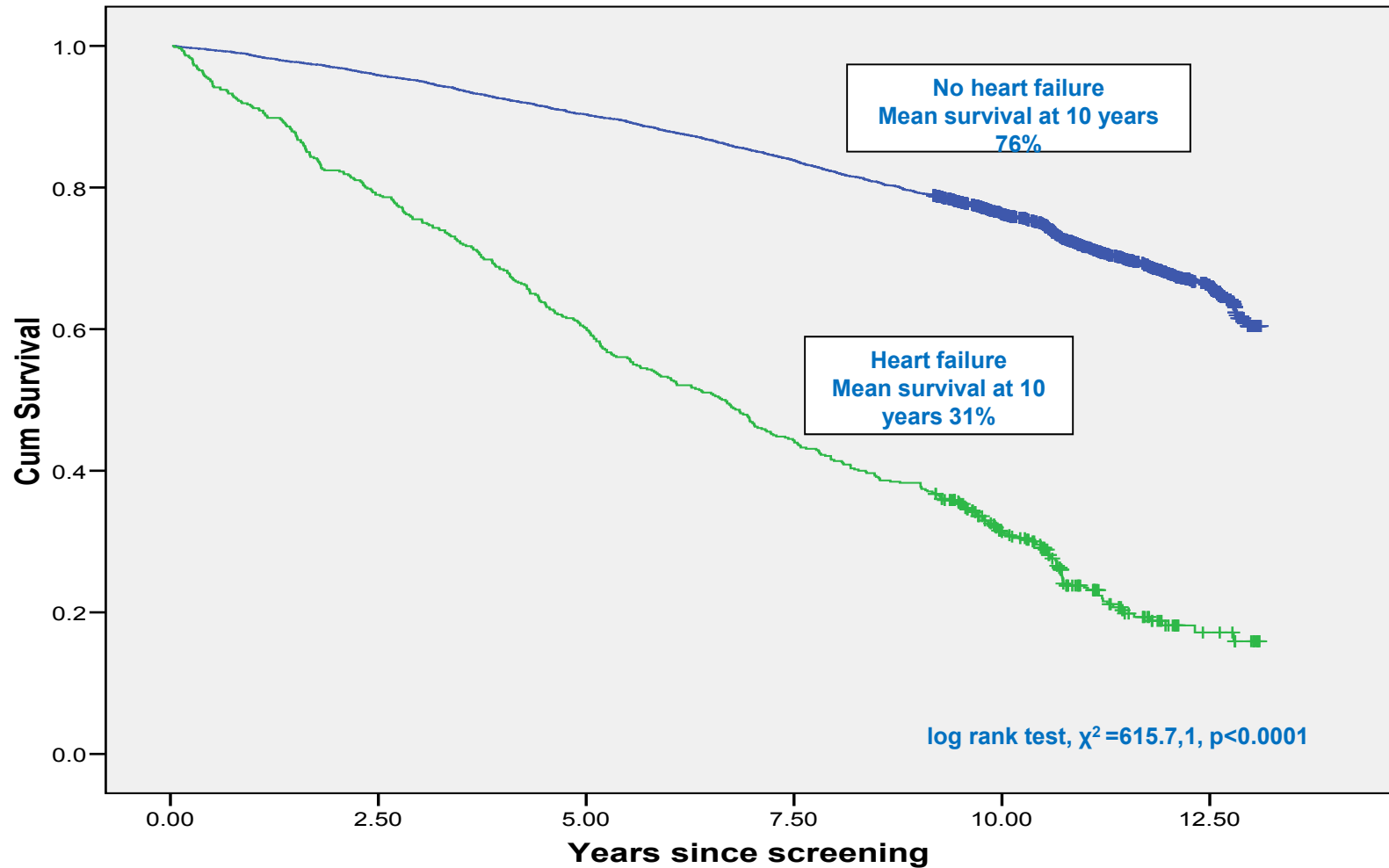
Patients age 45 or
over with a first
diagnostic label of
heart failure. Cases
matched by age, sex
and practice

*Incidence 2.2 per 1,000 person-yrs age >45
since 2006 in UK.*

*GP practice of 10,000 patients with ~4,000
patients >45 will see ~10 new HF cases per year.*

2. Improve understanding of heart failure impact on patients

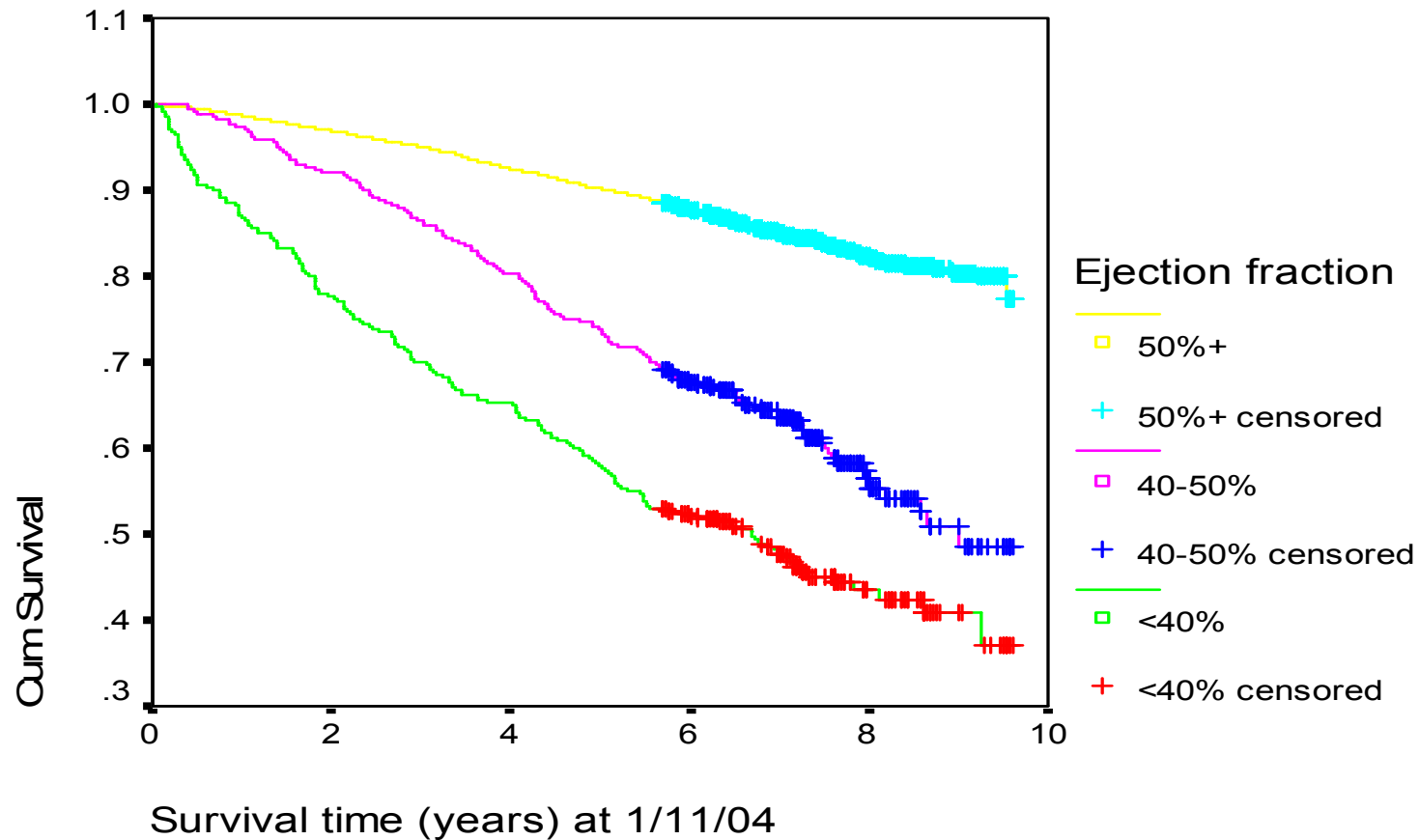
ECHOES 10 Year survival in heart failure



	At screening	5 years	10 years
No heart failure	5713	5096	4308
Heart failure	449	243	120

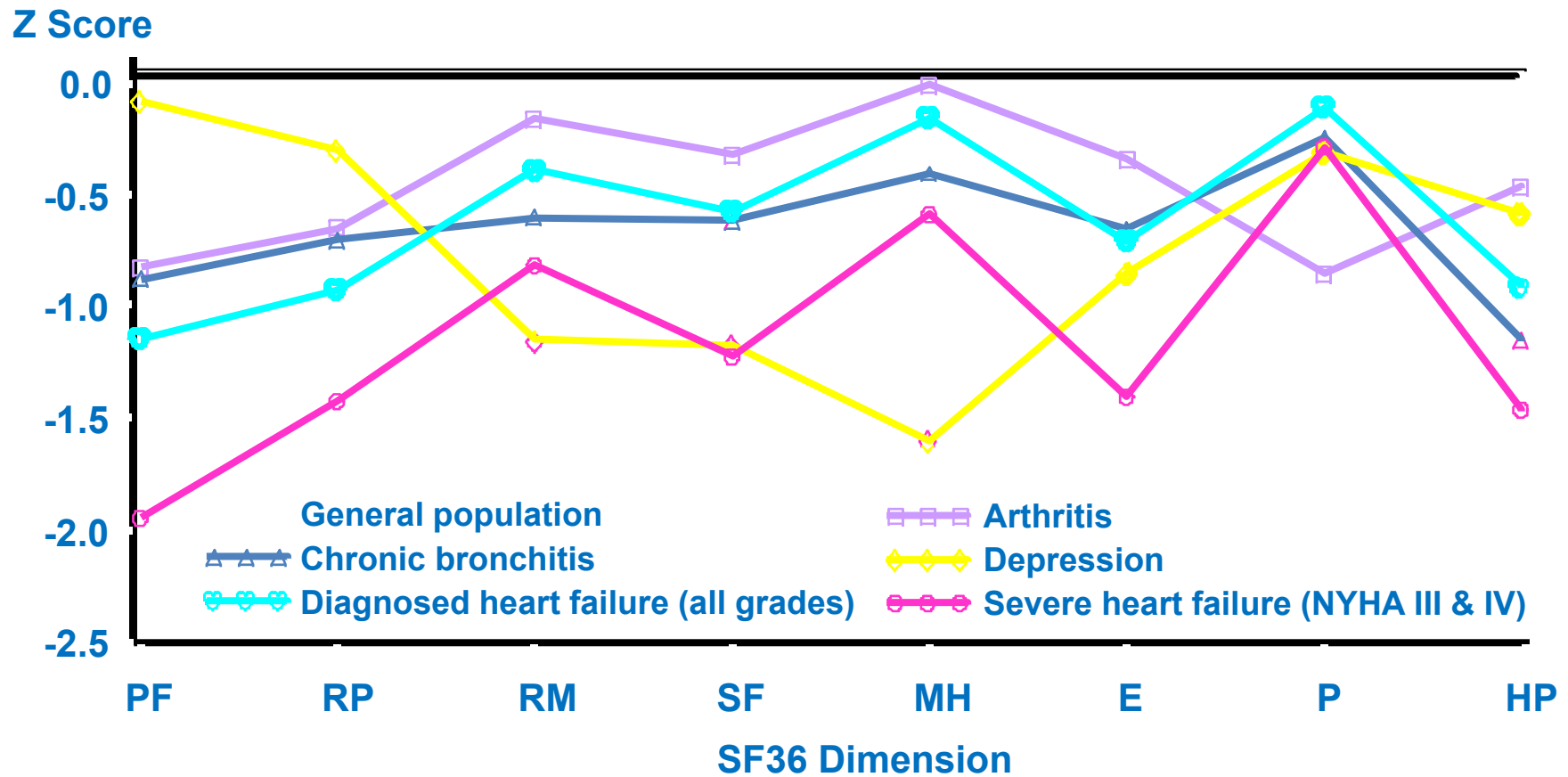
Taylor et al, HF 10 year mortality, BMJ in press
Hobbs et al, ECHOES 5 year mortality, EHJ, 2007

ECHOES: Kaplan Meier curves showing the effect of ejection fraction on survival



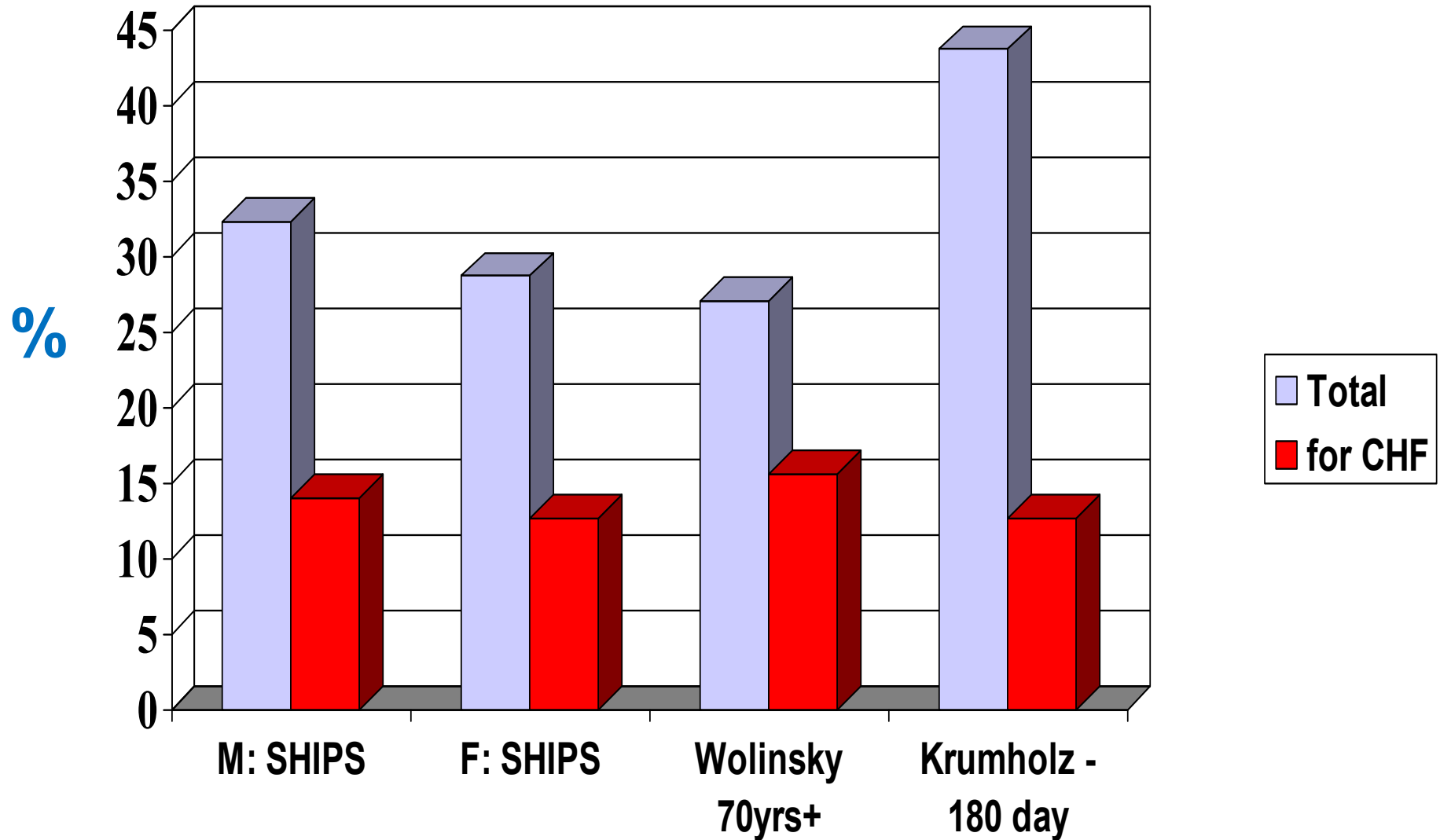
The survival improving significantly with increasing ejection fraction (log rank test for trend, $\chi^2 = 486.4, 1, p < 0.0001$).

Quality of life in heart failure compared with other chronic illnesses



3. Improve understanding of heart failure impact on health system costs

Early Re-Admissions for Heart Failure 90-day (180 day for Krumholz)



Question:
**Can we improve the diagnosis of HF
in primary care?**

Diagnosing HF: Symptoms

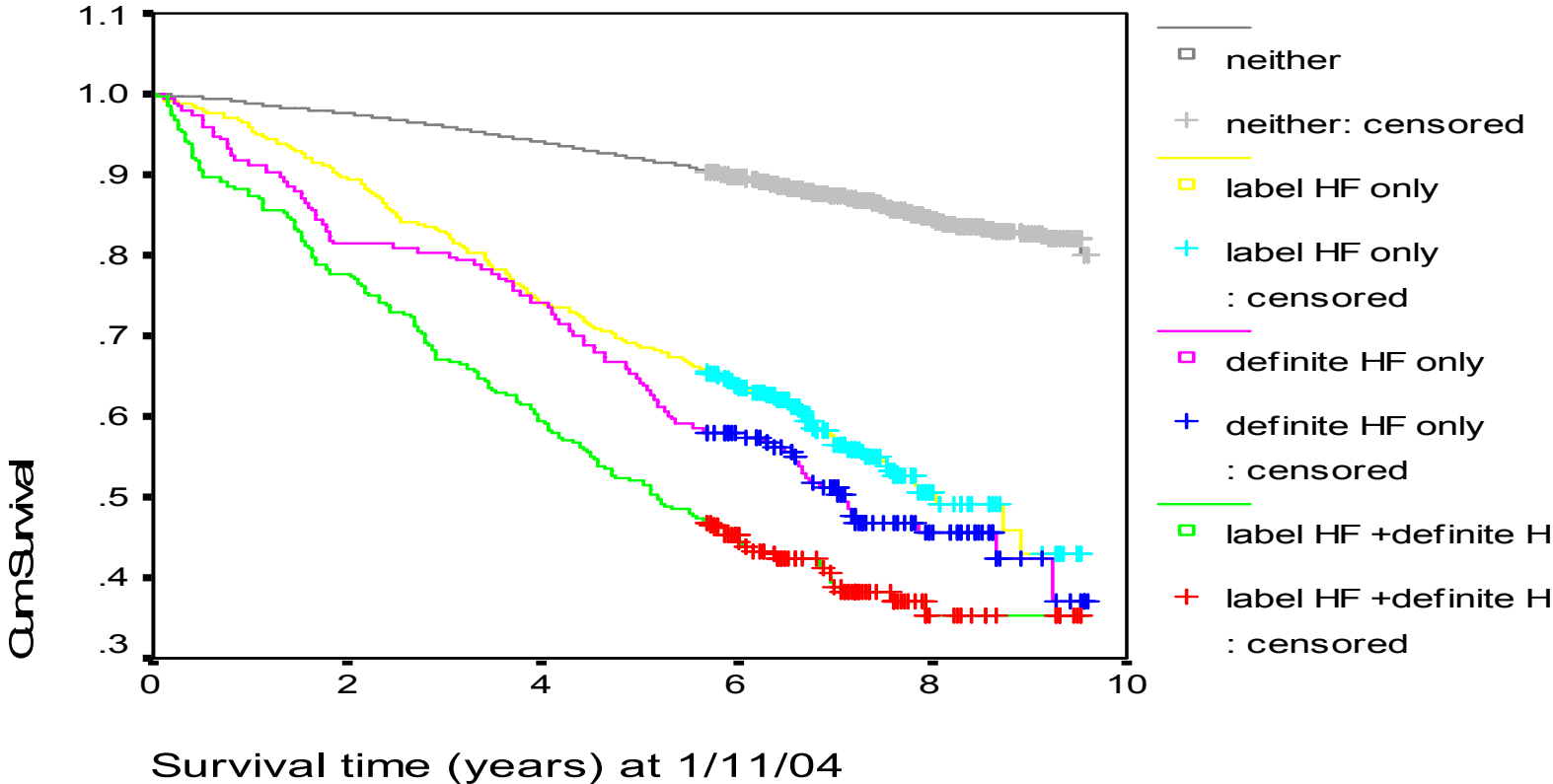
Think of HF (in patients aged 65 years or over) when

- breathlessness (with exercise)
- exercise intolerance/fatigue
- peripheral oedema

Dont exclude patients with COPD

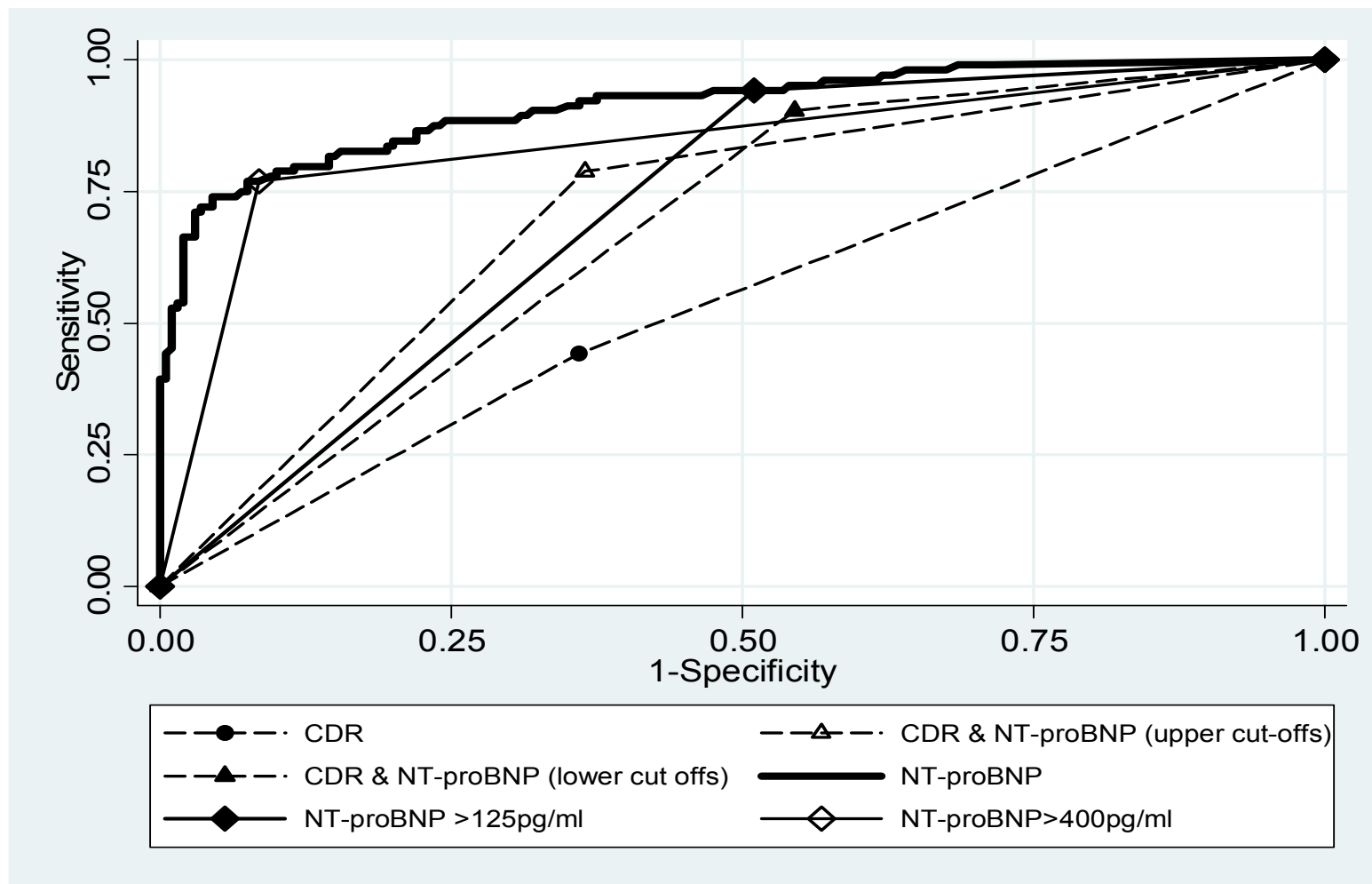
- orthopnoe/paroxysmal nocturnal dyspnoea
- nocturia (>2 a night)
- weight gain (>1-2 kg a week)
- confusion (very old)

Prognosis of patients with a GP label of HF, by those with or without a confirmed diagnosis



Log rank paired comparisons showed no difference between definite HF only vs previous label of HF only; $p=0.12$ (pink and yellow lines). Significant differences between all other pairs of survival curves (label & definite HF vs definite HF only $p=0.01$; other comparisons $p<0.0001$) ECHOES

ROC curves of MICE CDR & NT-proBNP for predicting heart failure in patients with recent onset symptoms



REFER trial

4. Provide open access to natriuretic peptide assays

5. Provide open access to echocardiography

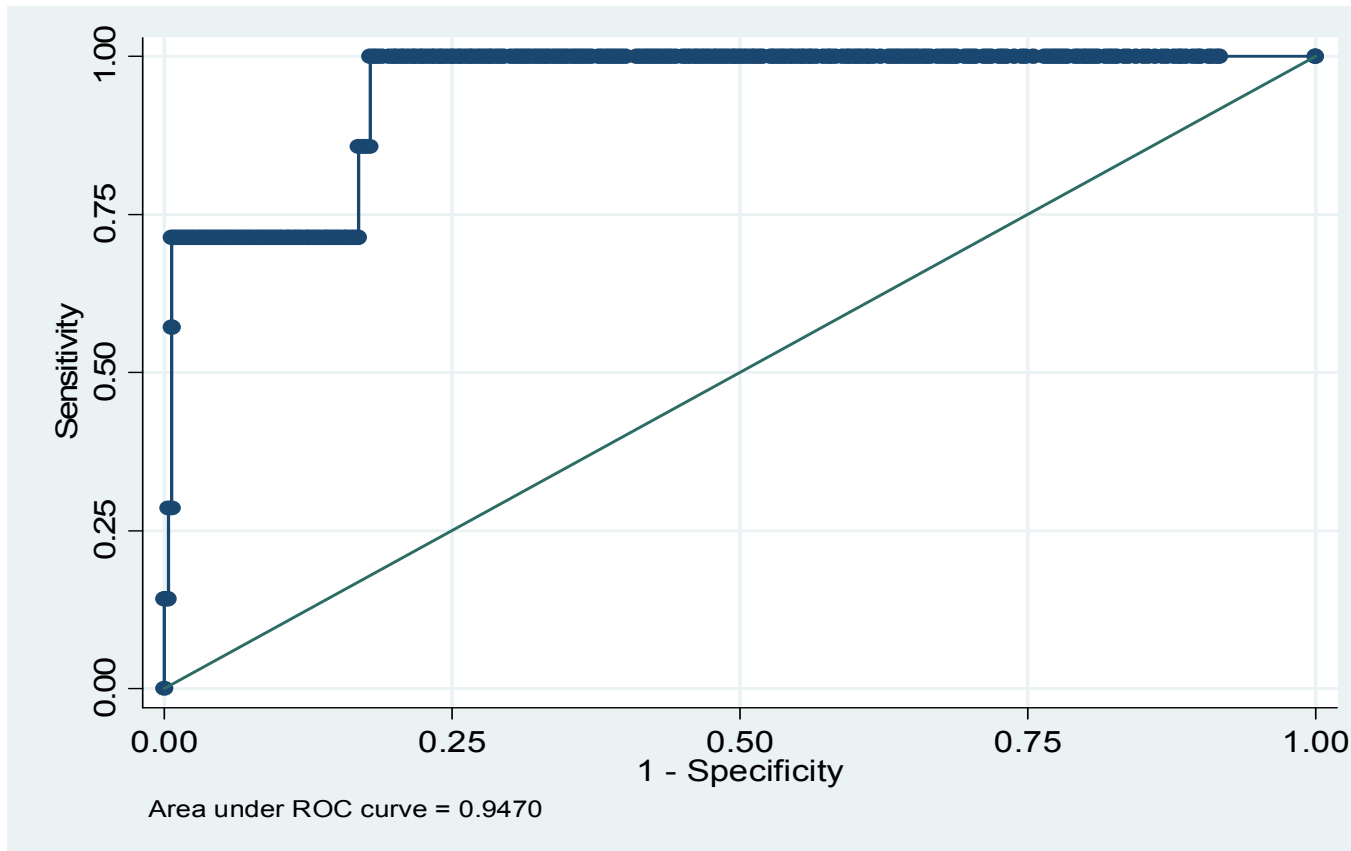
6. Consider specialist referral after diagnostic triage

Question:
**Should we screen for heart failure in
primary care?**

Logistic regression model of variables that predict heart failure in the ECHOES cohort

Variable	Odds Ratio (95% confidence interval)	P value
Previous label of HF	3.74 (1.45 to 9.69)	0.007
On diuretics	5.26 (1.70 to 16.31)	0.004
Diabetes	4.91 (1.66 to 14.51)	0.004
Hypertension	0.39 (0.16 to 0.97)	0.04
Angina	1.22 (0.99 to 5.00)	0.053
Myocardial infarction	1.61 (0.67 to 3.86)	0.29
NT-proBNP \geq 150 pg/ml	17.65 (4.91 to 63.48)	<0.001

Baseline NT-proBNP level and diagnosis of Heart Failure in the general population



Receiver operating characteristic curve showing effectiveness of baseline NT-proBNP in predicting diagnosis of heart failure at screening in the ECHOES **general population** cohort

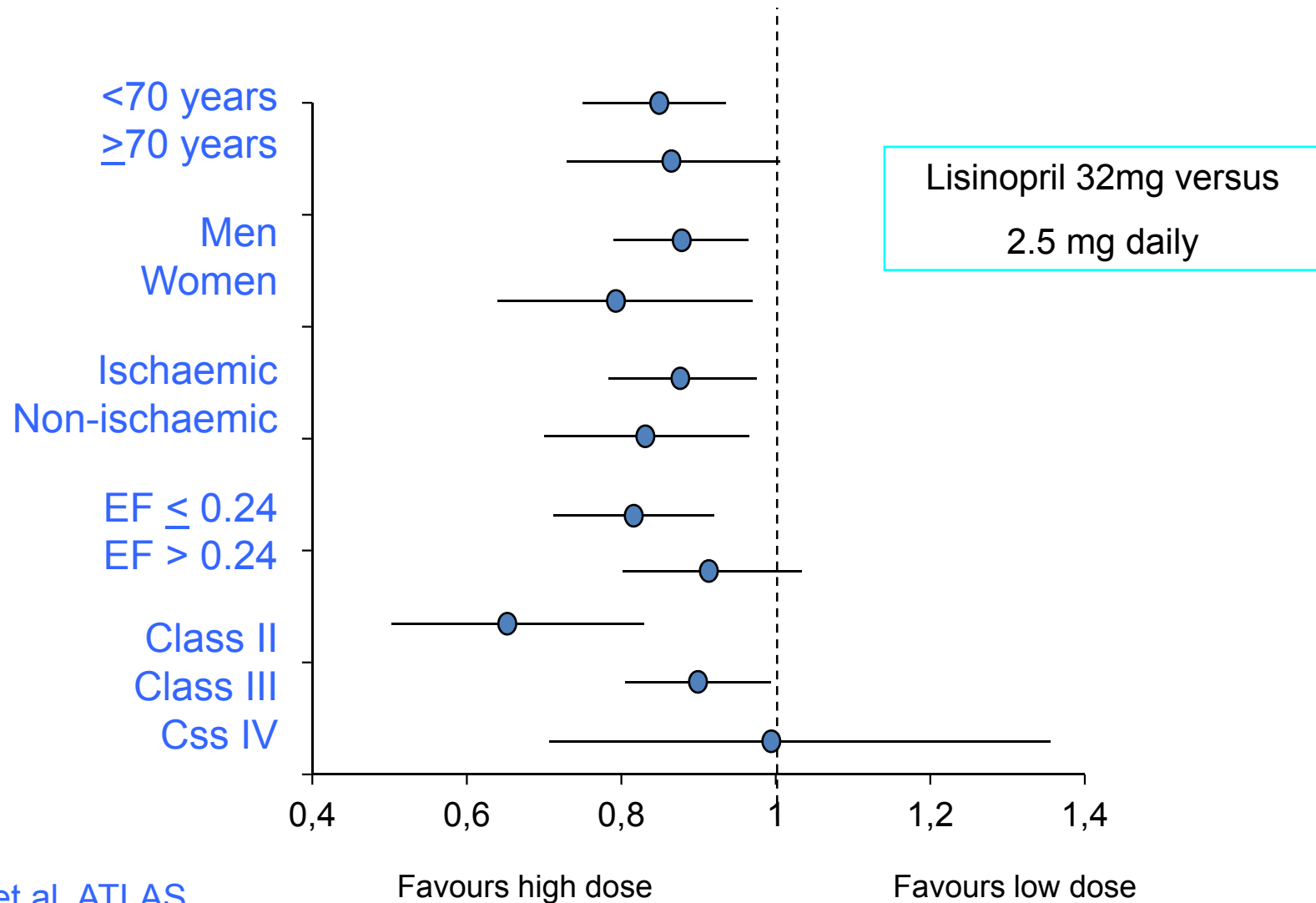
7. Get evidence on whether screening strategies work

Question:
**Can primary care target heart failure
management better?**

Meta-analysis of Studies With ACE-inhibitors in Heart Failure

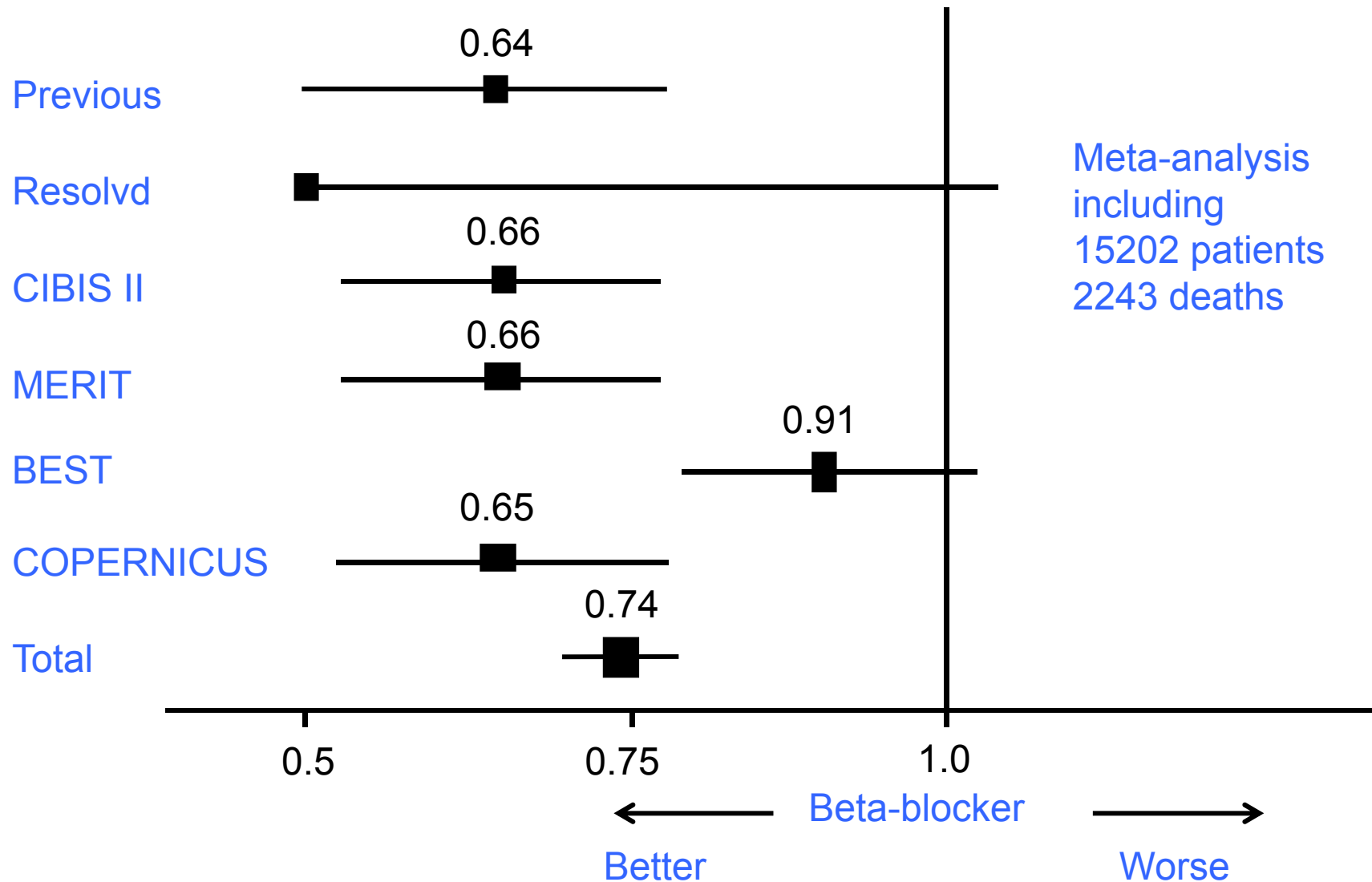
	Mortality	Hospitalizations for CHF
	OR (95% CI)	OR (95% CI)
SOLVD	0.82 (0.70-0.97)	0.68 (0.59-0.80)
CONSENSUS	0.56 (0.34-0.91)	0.89 (0.51-1.57)
Total (32 trials)	0.77 (0.67-0.88)	0.65 (0.57-0.74)

High dose ACEi better than low dose? ATLAS all cause death/hospitalisation



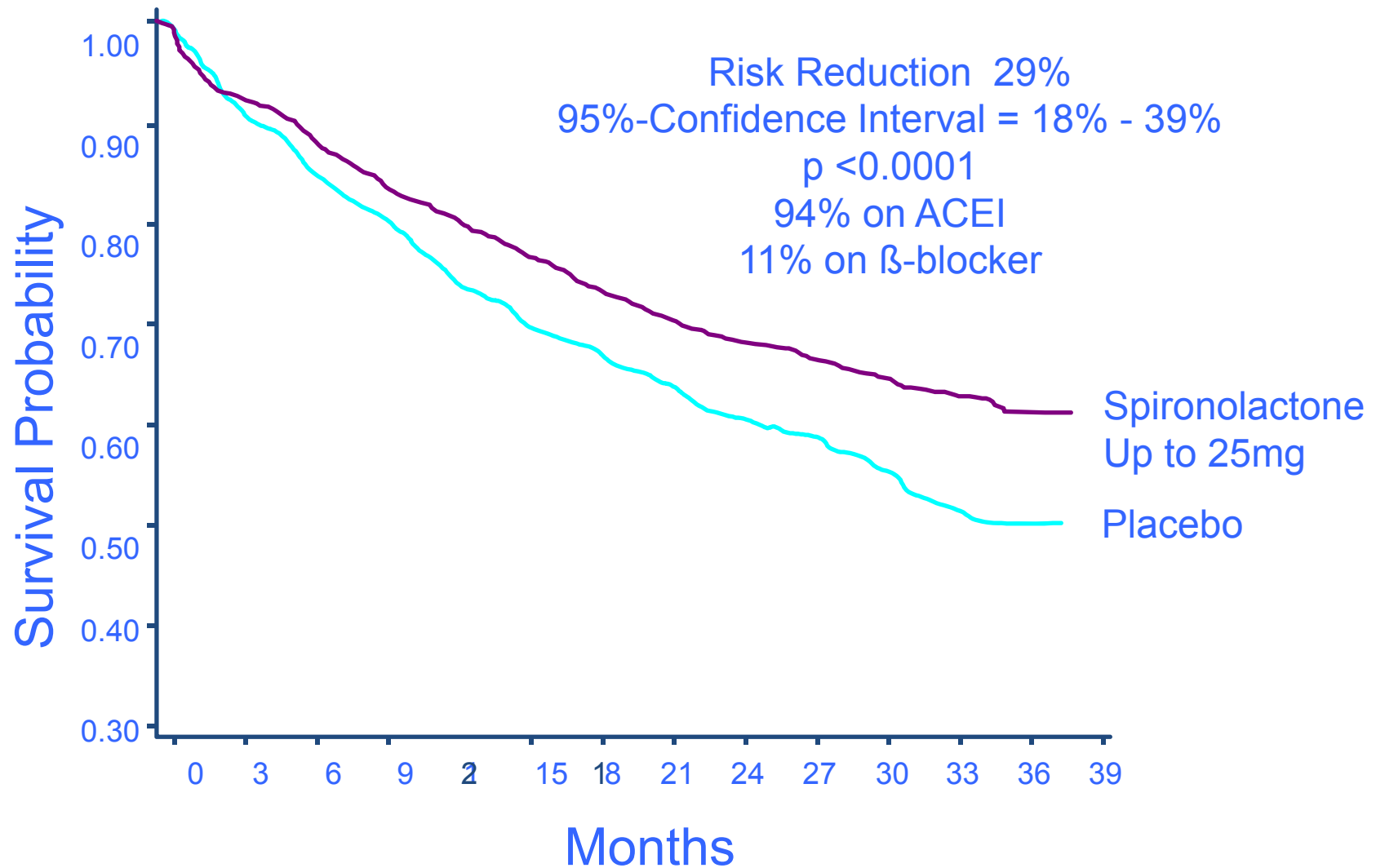
Packer et al, ATLAS
study, Lancet, 2000

Beta-blocker trials in heart failure effects on mortality



RALES - All cause mortality

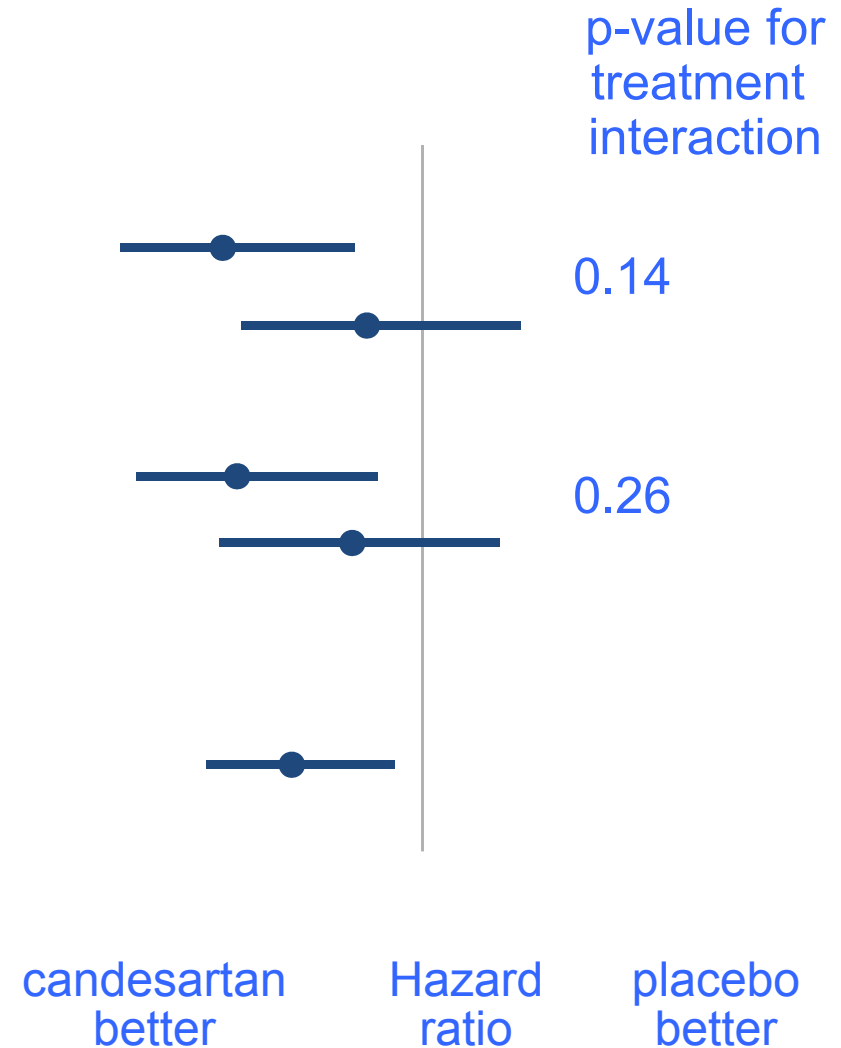
n = 1663, mainly grade IV HF



CHARM-Added trial

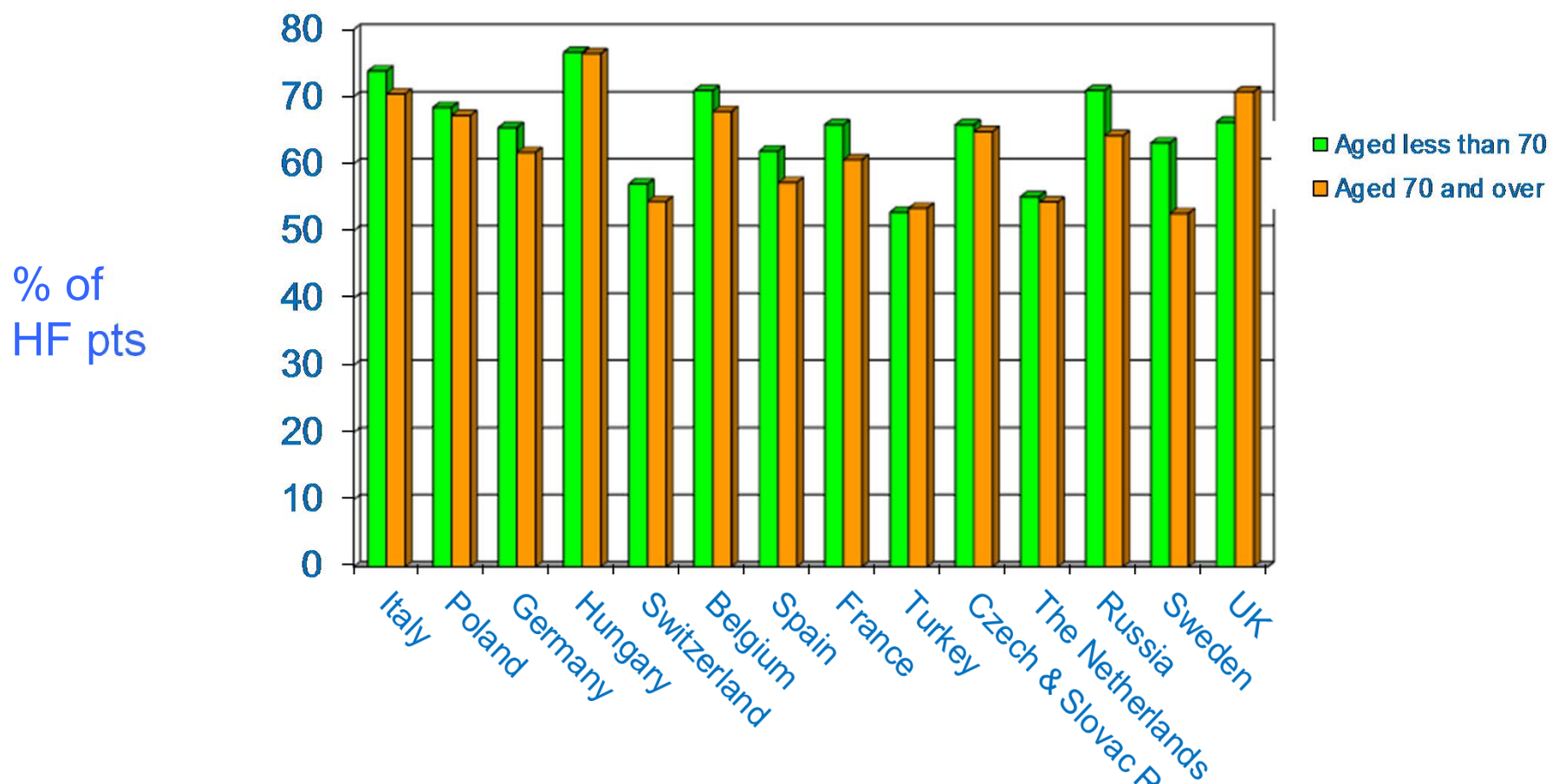
Prespecified subgroups, CV death or CHF hosp.

		Candesartan	Placebo
Beta-blocker	Yes	223/702	274/711
	No	260/574	264/561
Recom. dose of ACE inhib.	Yes	232/643	275/648
	No	251/633	263/624
All patients		483/1276	538/1272



Audited use of ACEi in Heart Failure by European primary care physicians

n = 1363 PCPs in 14 countries
n = 11062 case note reviews



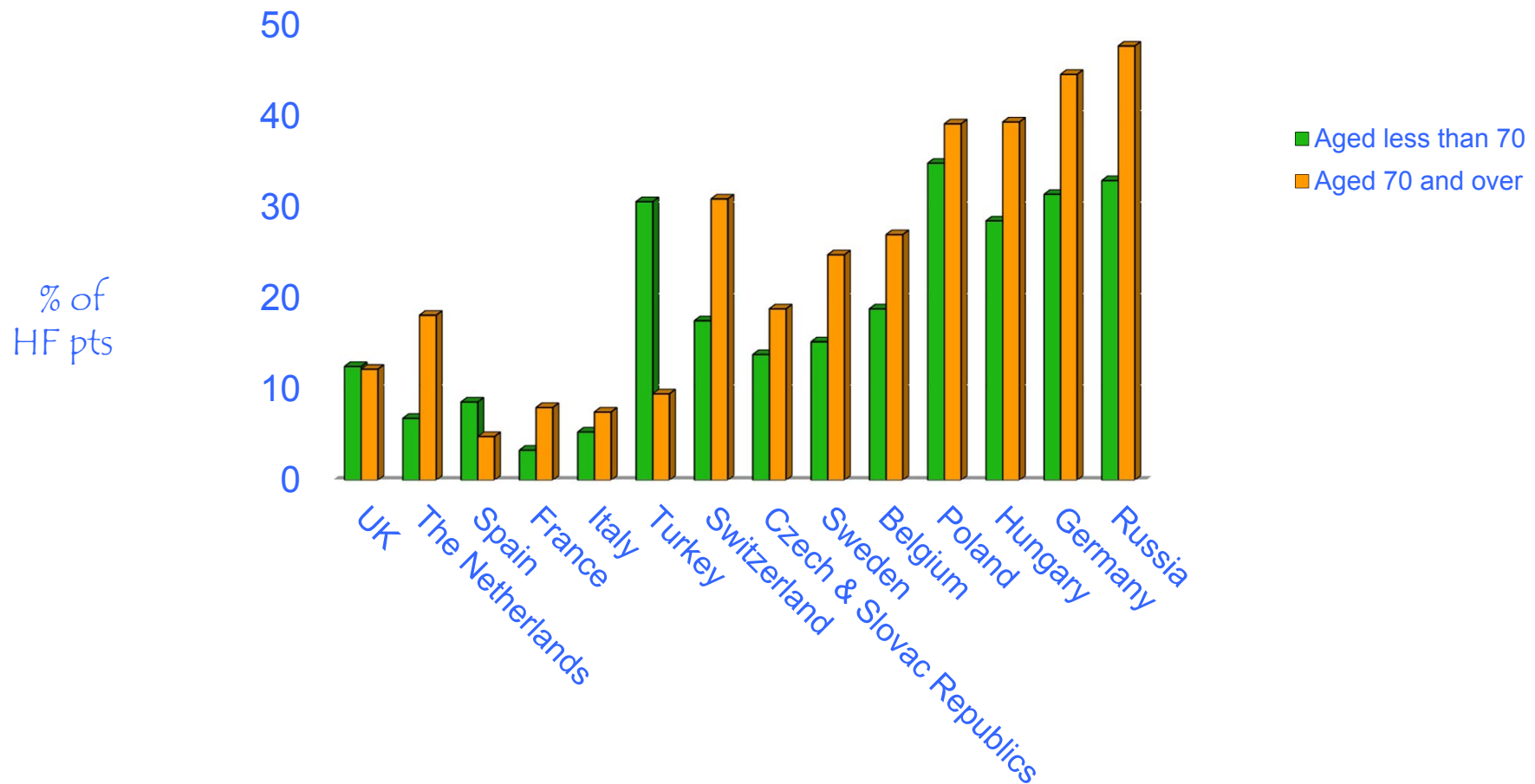
Cleland JG. IMPROVEMENT. *Lancet* 2002; 360: 1631-41

Hobbs FDR. IMPROVEMENT. *Eur J Heart Fail* 2005; 7 (5): 768-79

Audited use of BB in Heart Failure by European primary care physicians

n = 1363 PCPs in 14 countries

n = 11062 case note reviews



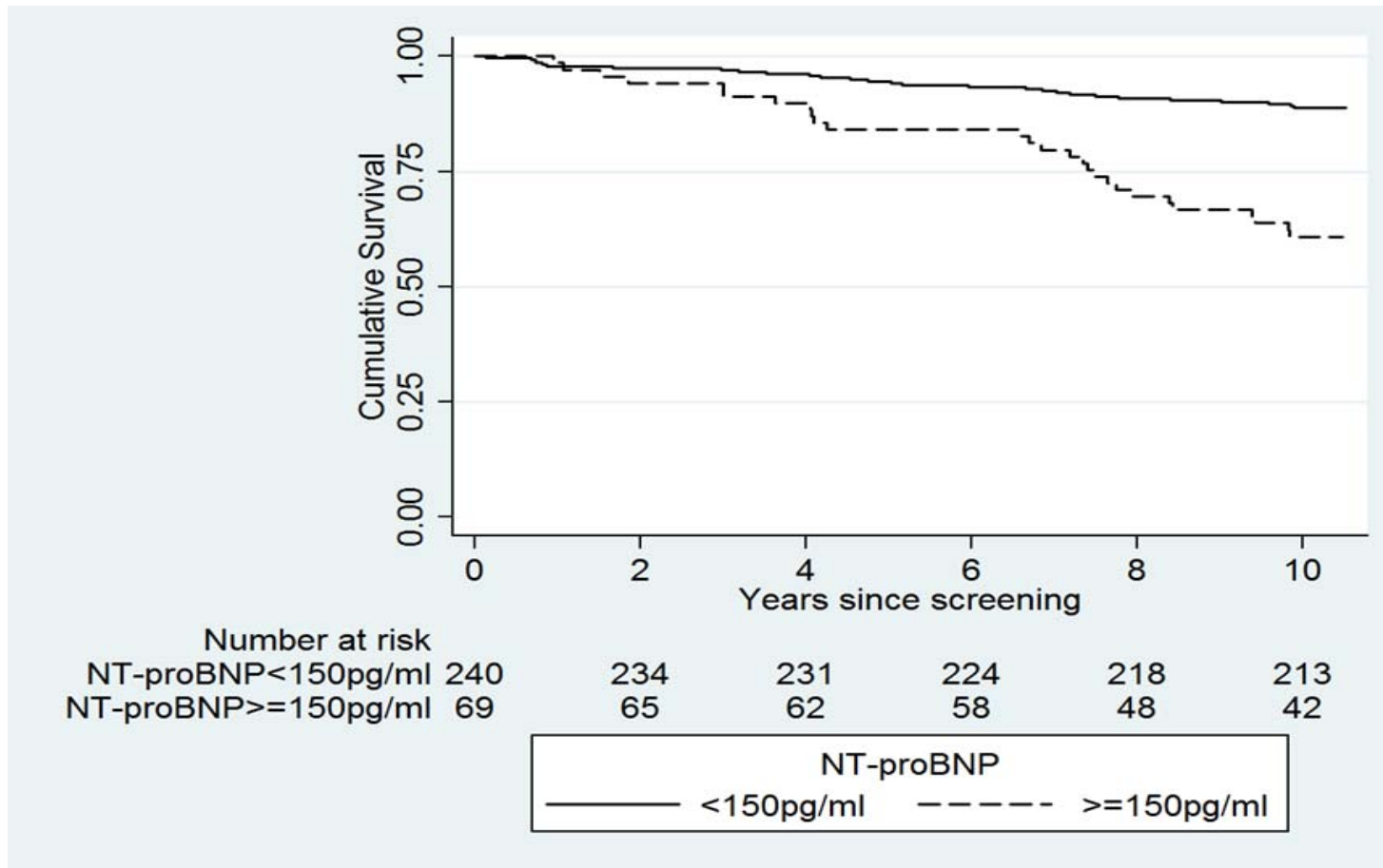
Cleland JG. IMPROVEMENT. *Lancet* 2002; 360: 1631-41
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8. Implement use of evidence-based medications better

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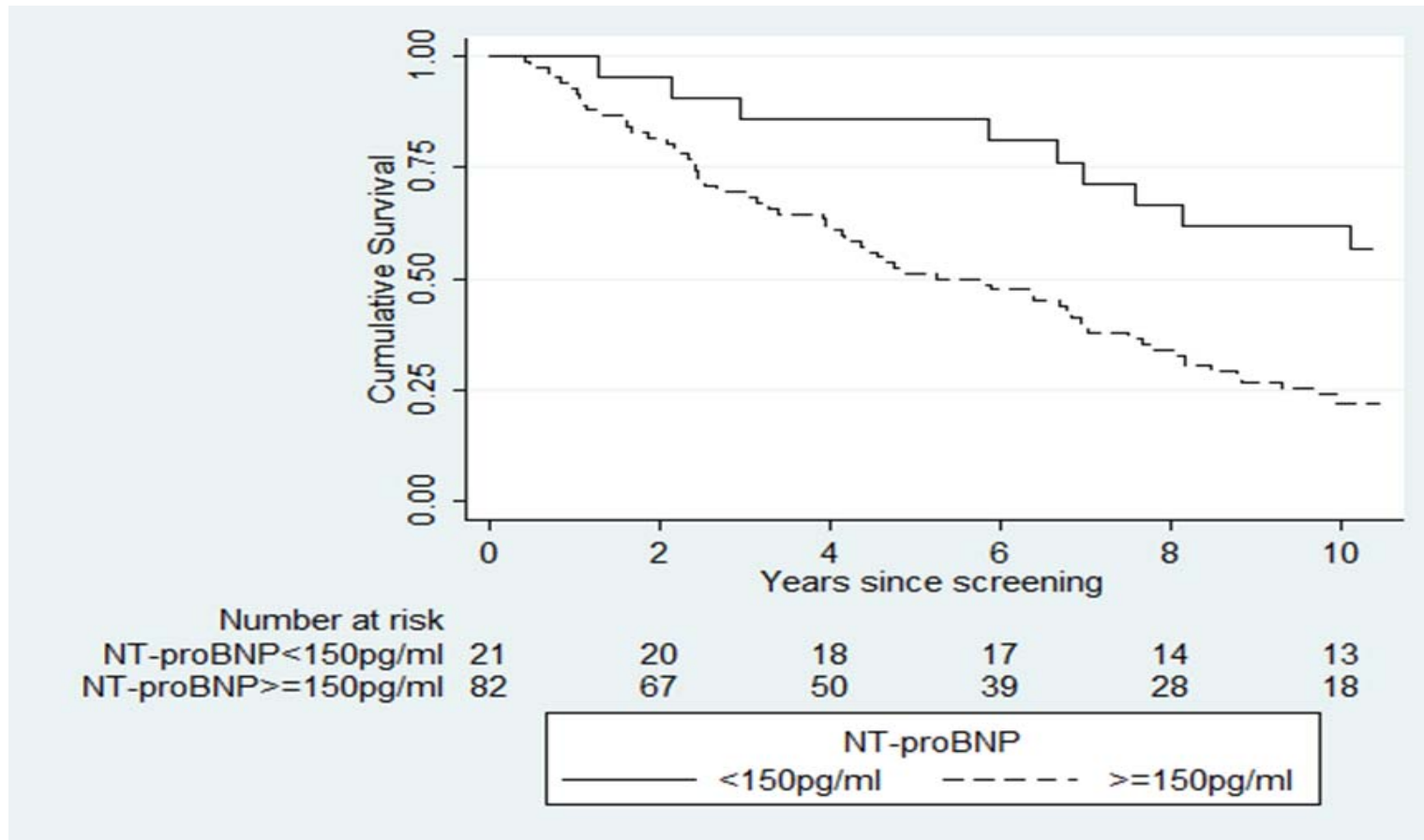
But how?

Baseline NT-proBNP level and prognosis in the general population



Kaplan-Meier curve showing NT-proBNP level and ten year survival for the ECHOES **general population** cohort

Baseline NT-proBNP level and prognosis in those with prior HF label

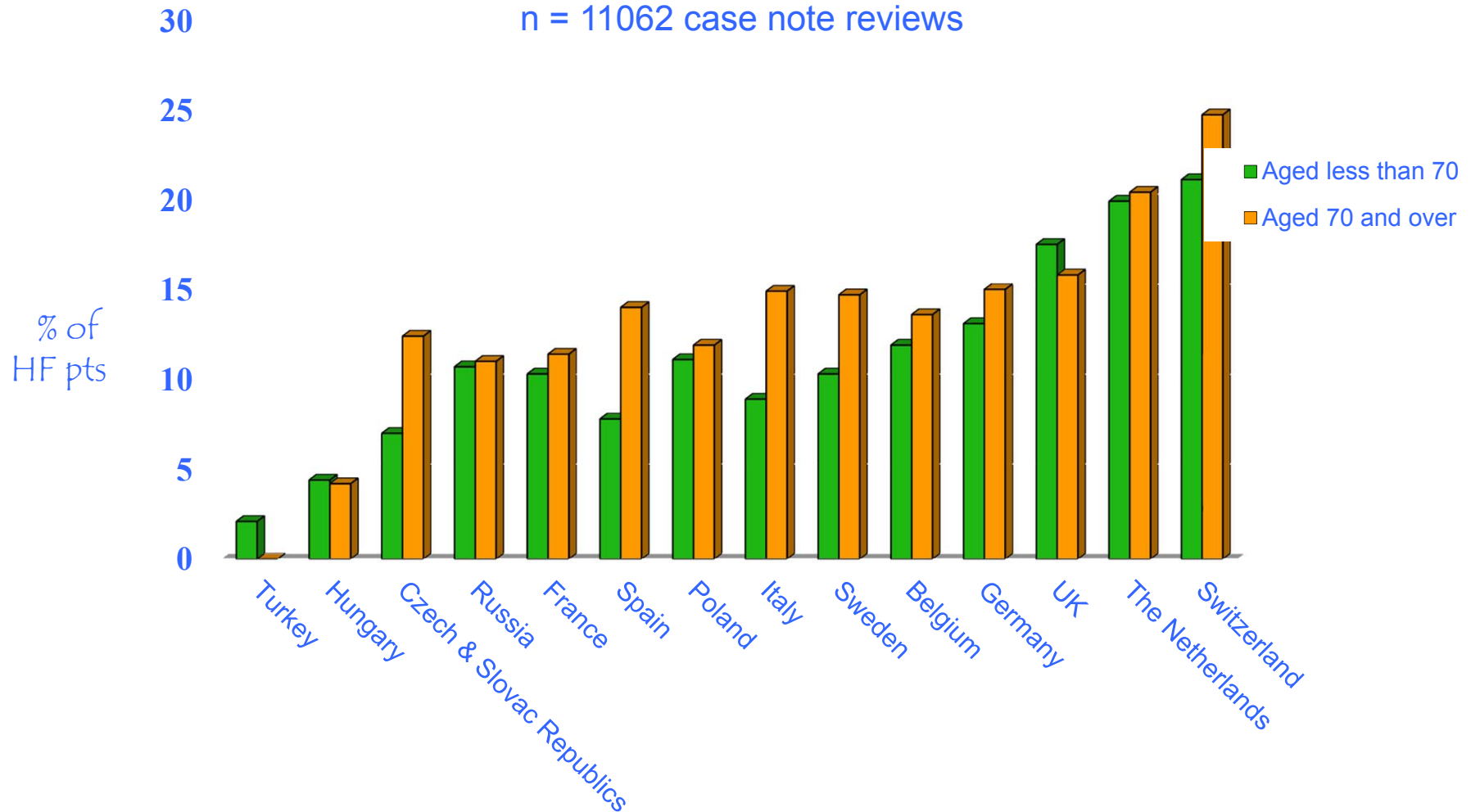


Kaplan-Meier curve showing NT-proBNP level and ten year survival for the label of the **ECHOES previous heart failure** cohort

9. Better identify higher risk heart failure patients using natriuretic peptides

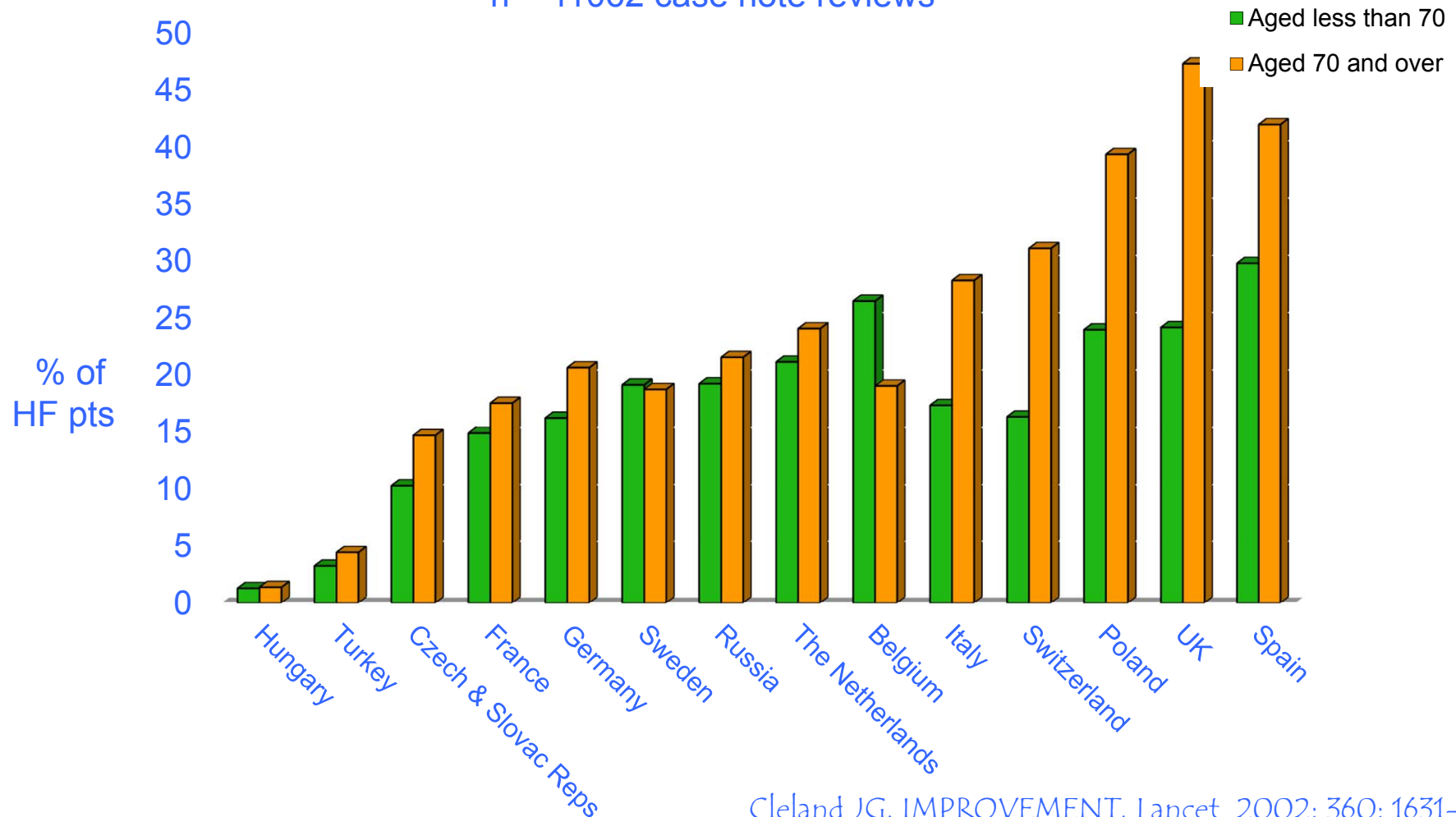
Audited withdrawal of ACEi in Heart Failure by European primary care physicians

n = 1363 PCPs in 14 countries
n = 11062 case note reviews



Audited withdrawal of BB in Heart Failure by European primary care physicians

n = 1363 PCPs in 14 countries
n = 11062 case note reviews



Cleland JG. IMPROVEMENT. *Lancet* 2002; 360: 1631-41
Hobbs FDR. IMPROVEMENT. *Eur J Heart Fail* 2005; 7 (5): 768-79

10. Develop more treatment options – its not just poor primary care physician performance

What does this all mean?

- HF is common and very burdensome
- HF is difficult to diagnose efficiently
- We need to trial screening strategies for HF
- HF management well elucidated but under-utilised
 - Stage HF better at diagnosis?
 - Target management outcomes better?
 - Important for health payers to reduce admissions
 - Mortality gains often modest, but QoL gains for patients under-emphasised
- More HF treatments needed