Advances in the management of heart failure: Update 2017

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Disclosures

- Grants: ALARM investigator received research grants by Abbott US and Orion Pharma
- Horonaria: received horonaria for advisory boards and lectures from Novartis, Pfizer, Menarini and Servier
- Journals: Associate Editor of EJHF
- ESC HF Guidelines: Member of task force

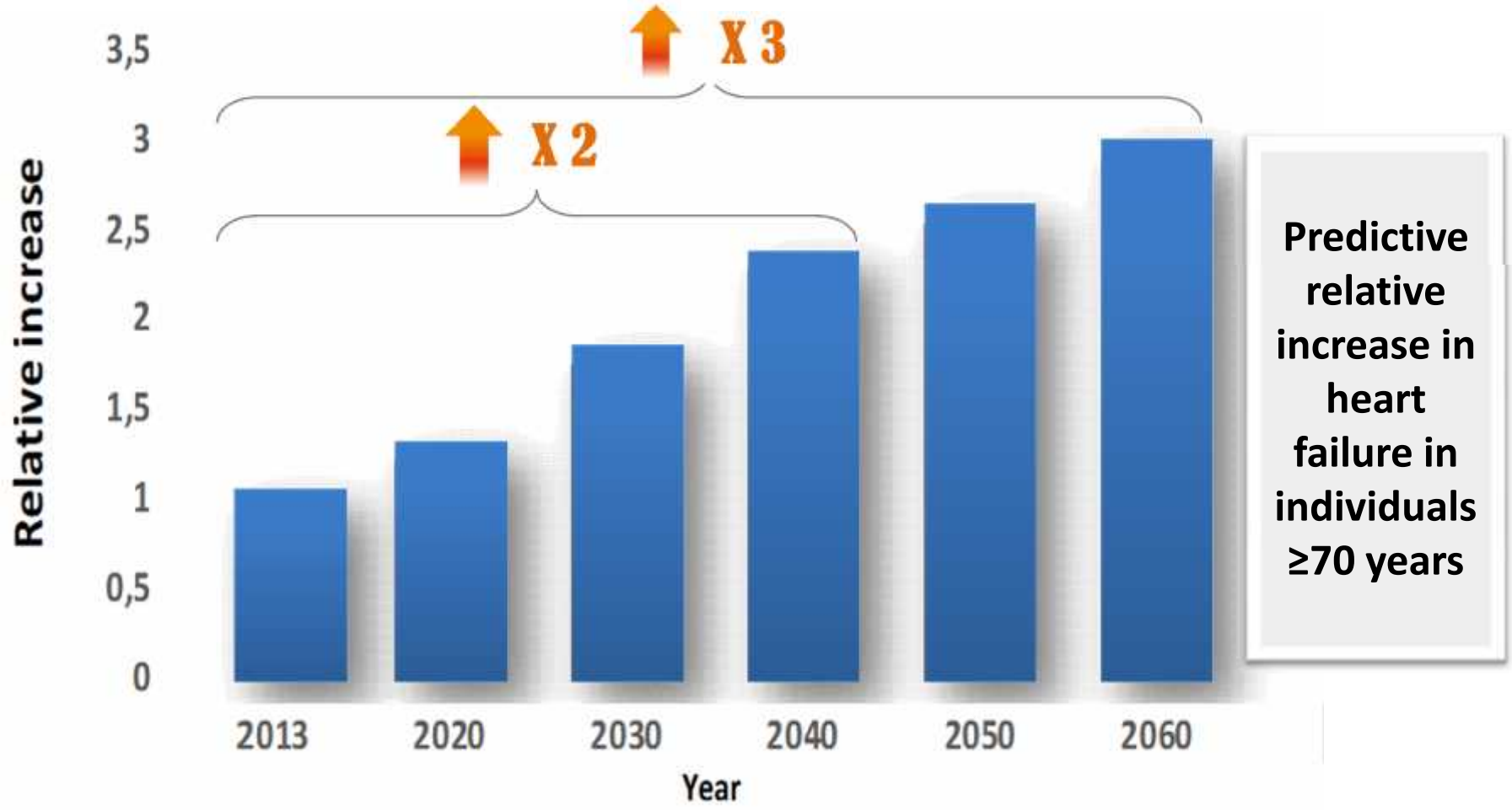
Burden of HF

Heart failure has been singled out as an emerging epidemic, which could be the result of increased incidence and/or increased aging and survival leading to increased prevalence

- **26 million** people with HF worldwide
- **6.5 million** people with HF in Europe
- **600 000** new HF cases per year in Europe
- **1 in 5** adults over 40 years will have HF in their lifetime
- **1 in 5** HF patients die within 1 year

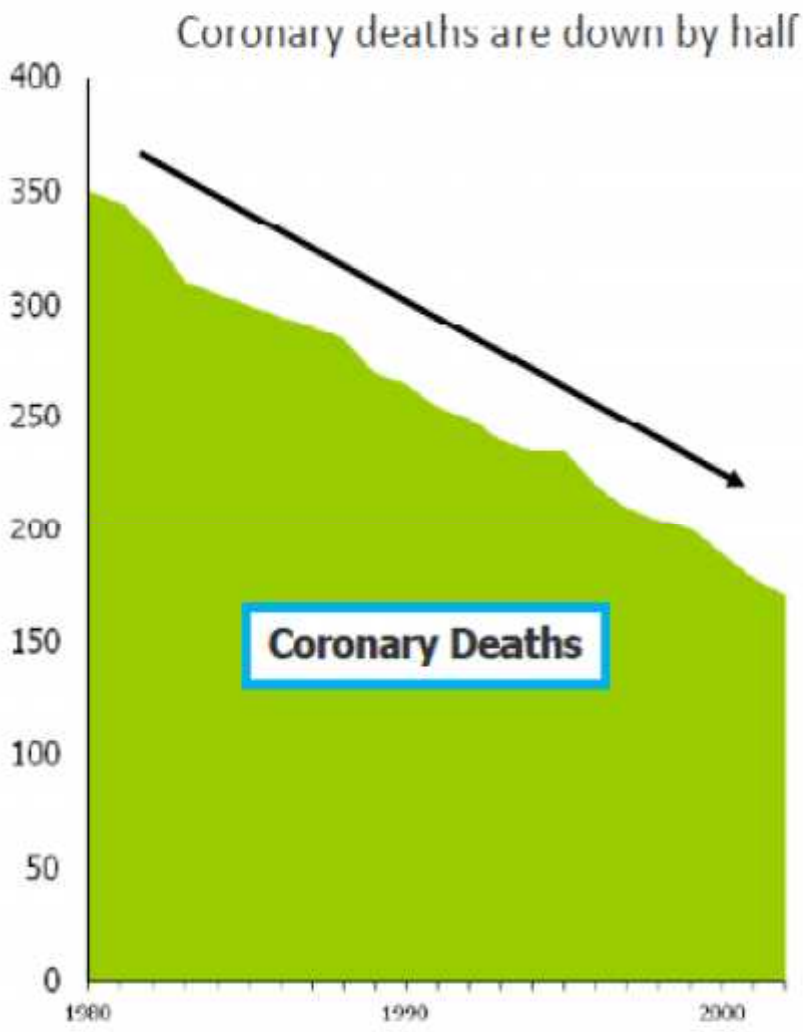
López-Sendón J. http://www.medicographia.com/2012/02/the-heart-failure-epidemic/

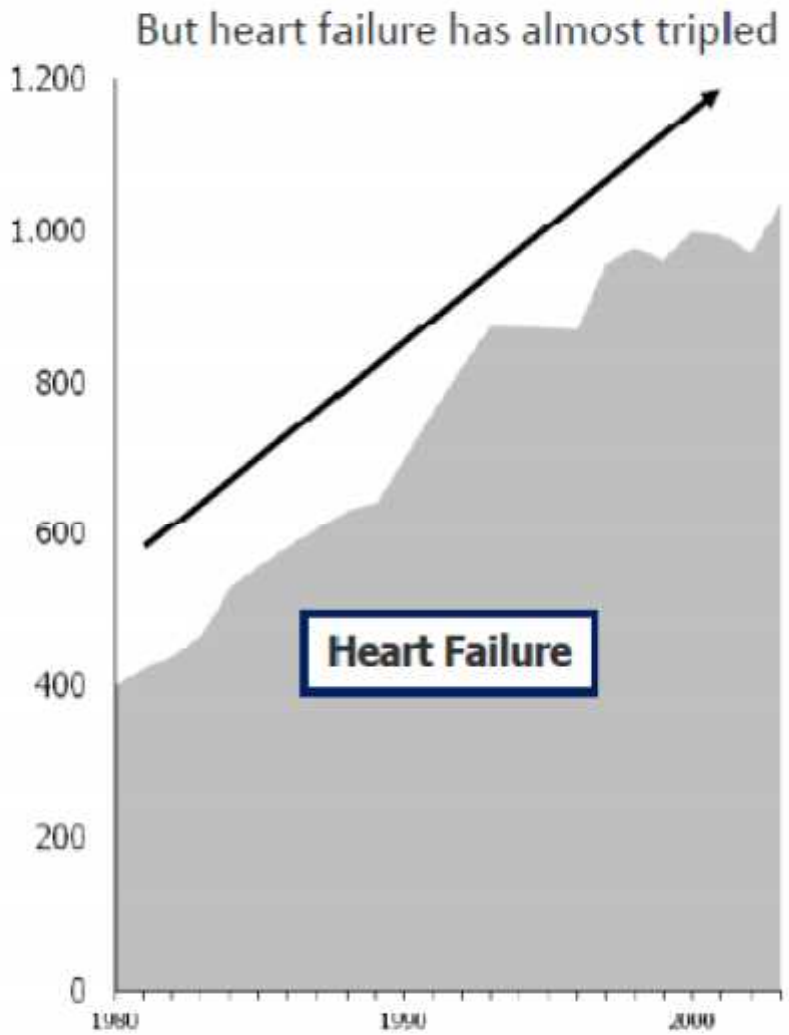
Heart failure in the elderly will more than double by 2040 and triple by 2060



Danielsen R et al. Eur Heart J 2016: 37(Suppl):1109:P5425

Heart Failure – the magnitude of the problem



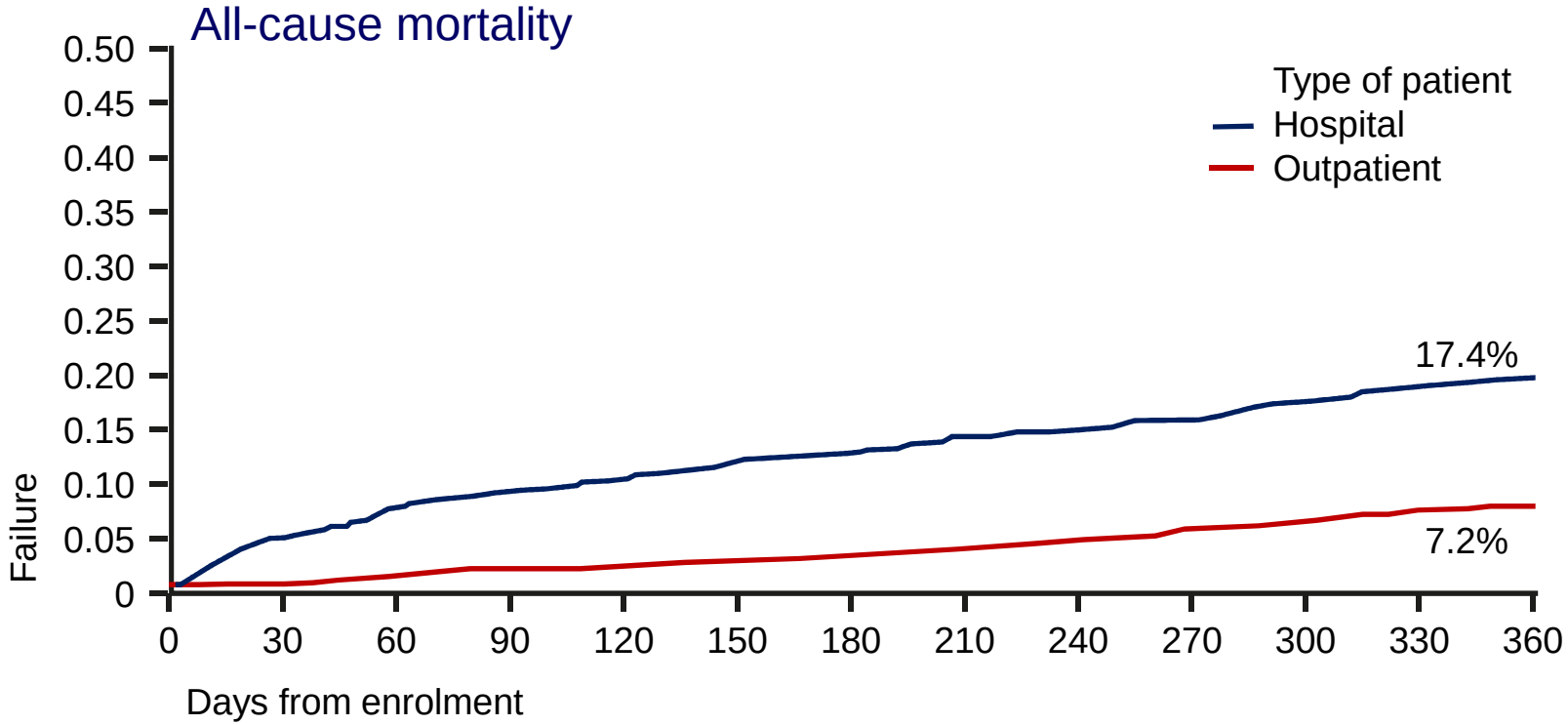


Source: National Hospital Discharge Survey data. Centers for Disease Control and Prevention/National Center for Health Statistics and National Heart, Lung, and Blood Institute.

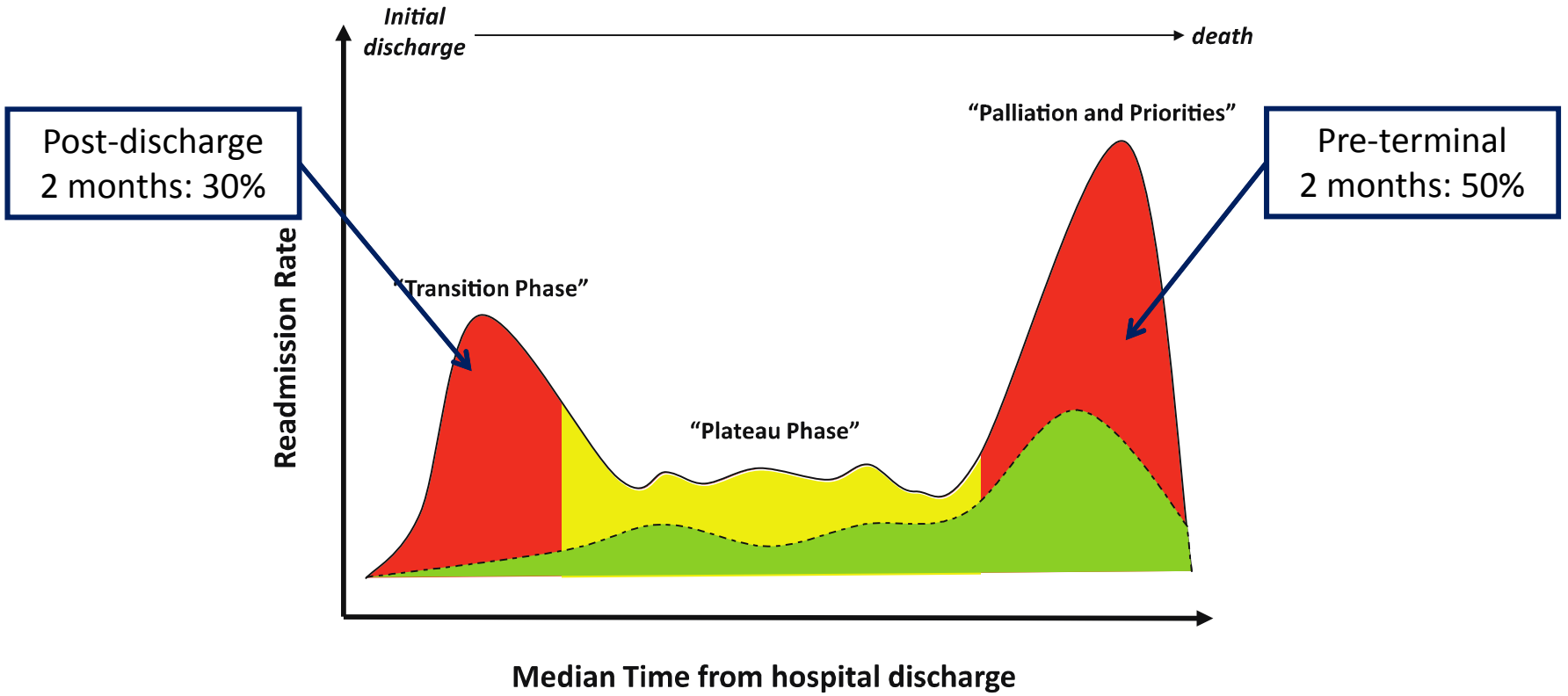
European Journal of Heart Failure (2013) 15, 808–817
doi:10.1093/eurjhf/hft050

EURO*observational* Research Programme: regional differences and 1-year follow-up results of the Heart Failure Pilot Survey (ESC-HF Pilot)

Aldo P. Maggioni[1]*, Ulf Dahlström[2], Gerasimos Filippatos[3], Ovidiu Chioncel[4], Marisa Crespo Leiro[5], Jaroslaw Drozdz[6], Friedrich Fruhwald[7], Lars Gullestad[8], Damien Logeart[9], Gianna Fabbri[1], Renato Urso[1], Marco Metra[10], John Parissis[11], Hans Persson[12], Piotr Ponikowski[13], Mathias Rauchhaus[14], Adriaan A. Voors[15], Olav Wendelboe Nielsen[16], Faiez Zannad[17], and Luigi Tavazzi[18] on behalf of the Heart Failure Association of the European Society of Cardiology (HFA)†



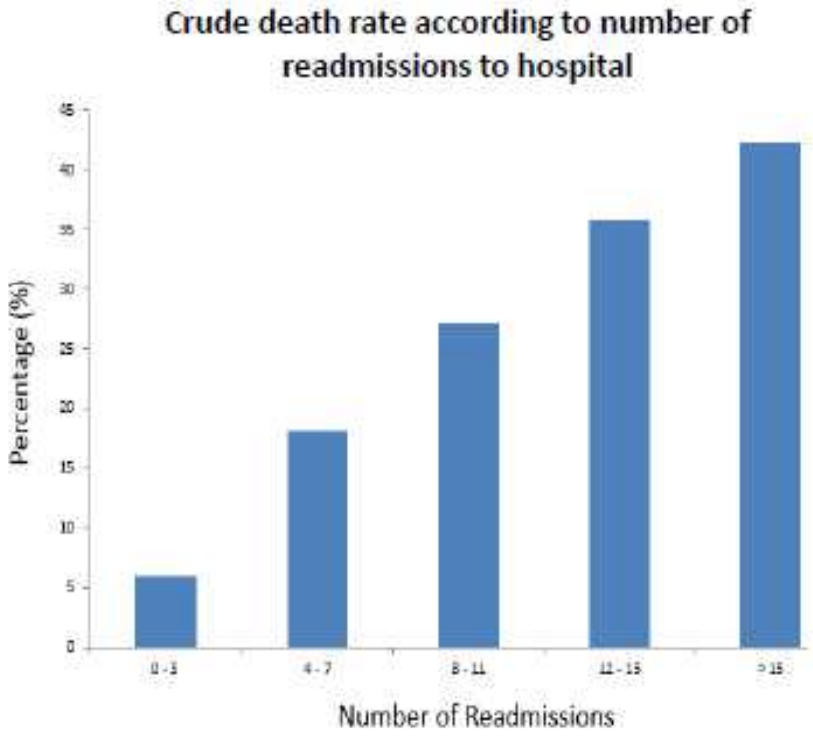
Rehospitalization risk: Timing

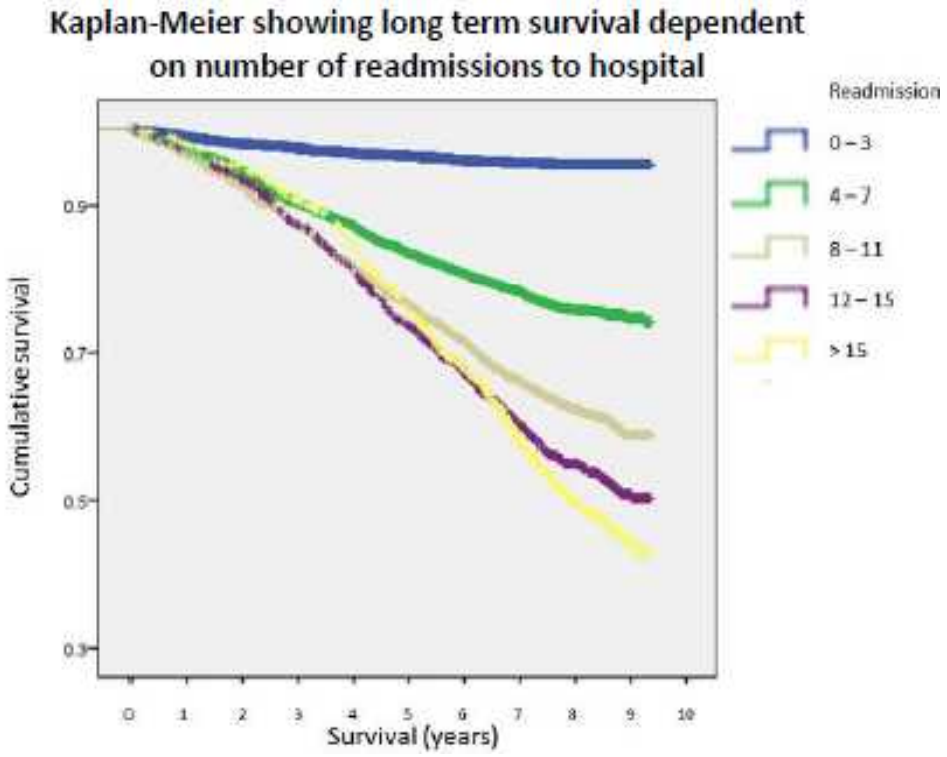


Desai and Stevenson, Circulation 2012

(data by Chun et al, Circ Heart Fail 2012 and Russo et al, J Card Fail 2008)

Each readmission to hospital among HF patients leads to worse mortality and poorer survival





15 year study from UK from 200-2014, 13416 patients with HF

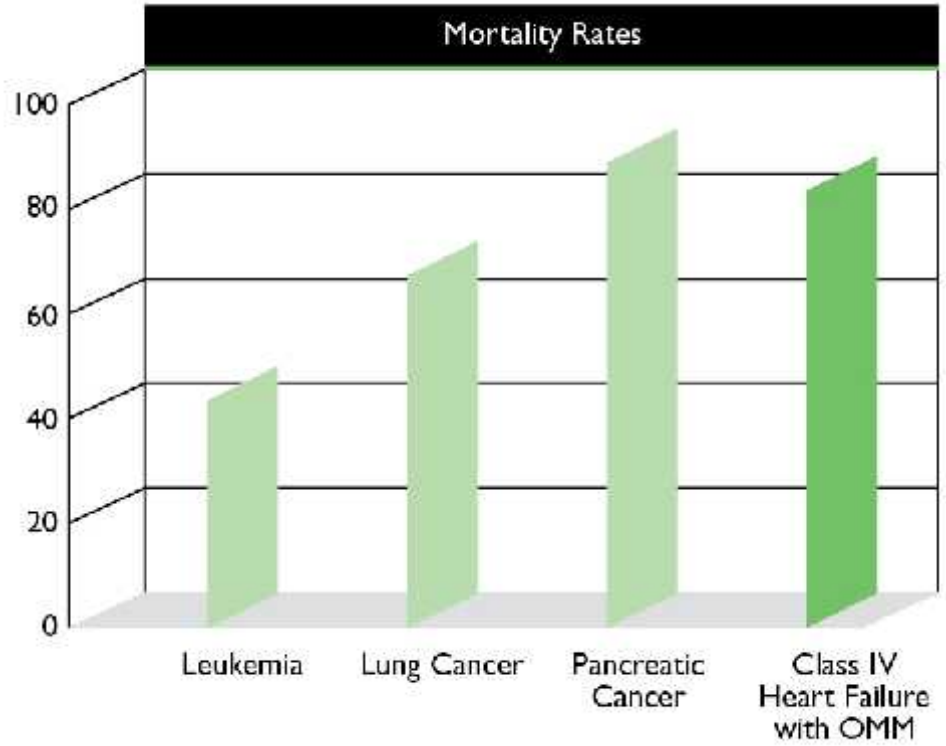
Readmissions to hospital amongst HF patients leads to worse mortality and poorer survival. Each admission to hospital statistically increases risk of mortality by 2 %. The reasons for multiple readmissions including potential early discharges without specialist input and cardio-protective treatments should be explored further and addressed.

Potluri R et al. Eur Heart J 2016: 37(Suppl):532:P2670

Advanced Heart Failure Has A High Mortality Rate Similar To Aggressive Malignancies

Medical therapy alone can be a poor long-term treatment option for many in the more advanced stages of heart failure.

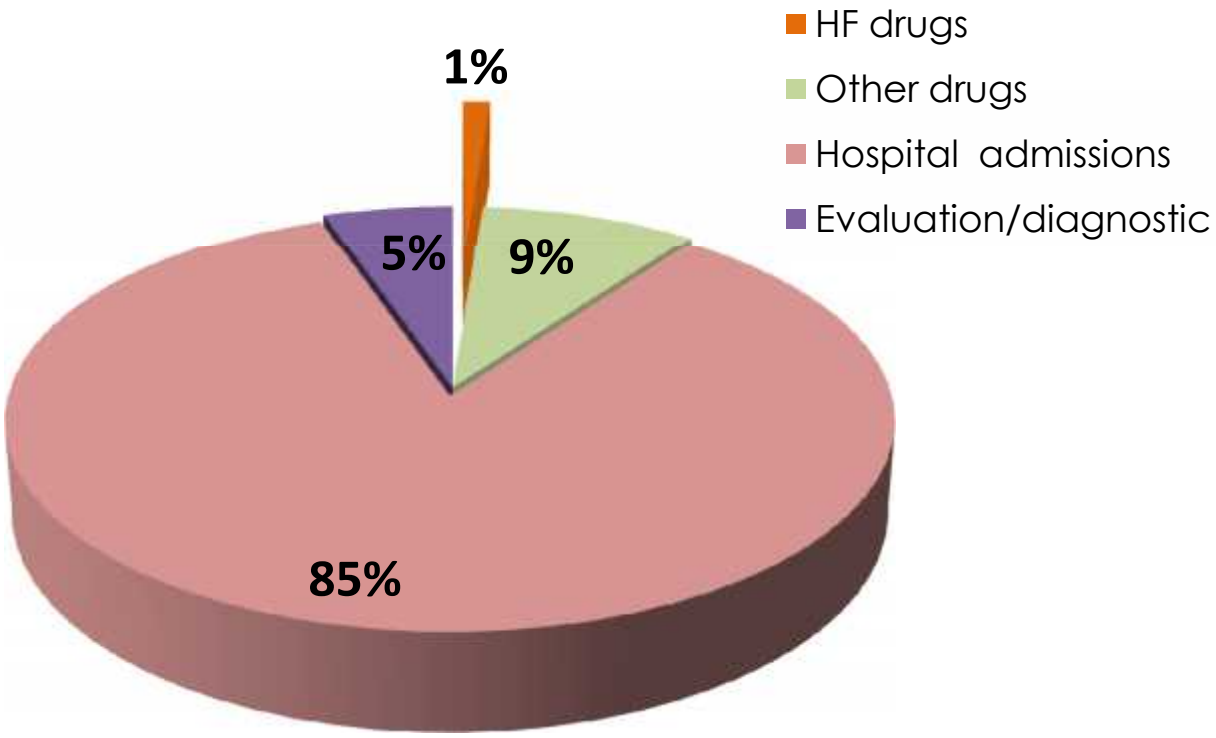
Many publications show the mortality risk associated with NYHA Class IV heart failure is high, with a 1-year mortality between 60 and 94 percent.[1-4]



Class IV heart failure patients treated with medical therapy alone have mortality rates similar to or greater than aggressive forms of cancer.[5]

[1] Rose, Gelijns, Moskowitz, et al. *NEJM*. 345:1435-43, 2001.
[2] Rogers, Butler, Lansman, et al. *J Am Coll Cardiol*. 50:741-47, 2007.
[3] Hershberger, Nauman, Walker, et al. *J Card Fail*. 22:616-24, 2003.
[4] Gorodeski, Chu, Reese, et al. *Circ Heart Fail*. 2:320-24, 2009.
[5] Data on file. Pleasanton, Calif: Thoratec Corp.

The yearly cost for a patient with HF is high and mainly driven by hospitalizations

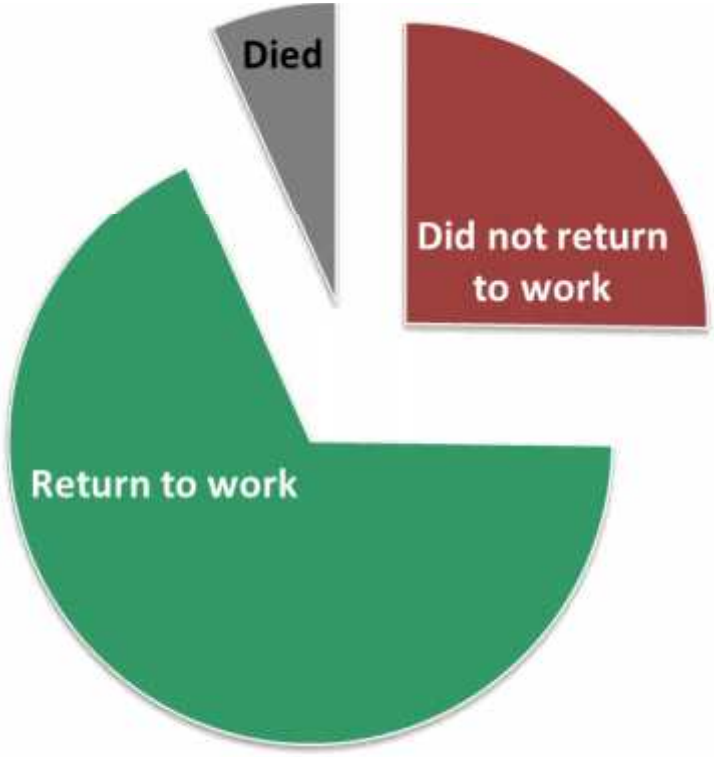


Total annual cost per patients with HF, %

Maggioni AP et al. Eur J Heart Fail. 2016;18(4):402-10.

Loss of employment is an important consequence of HF both for the individual patient, and financially for society

Data from nationwide Danish registries in 11880 HF patients with a first HF hospitalization (1997-2012)

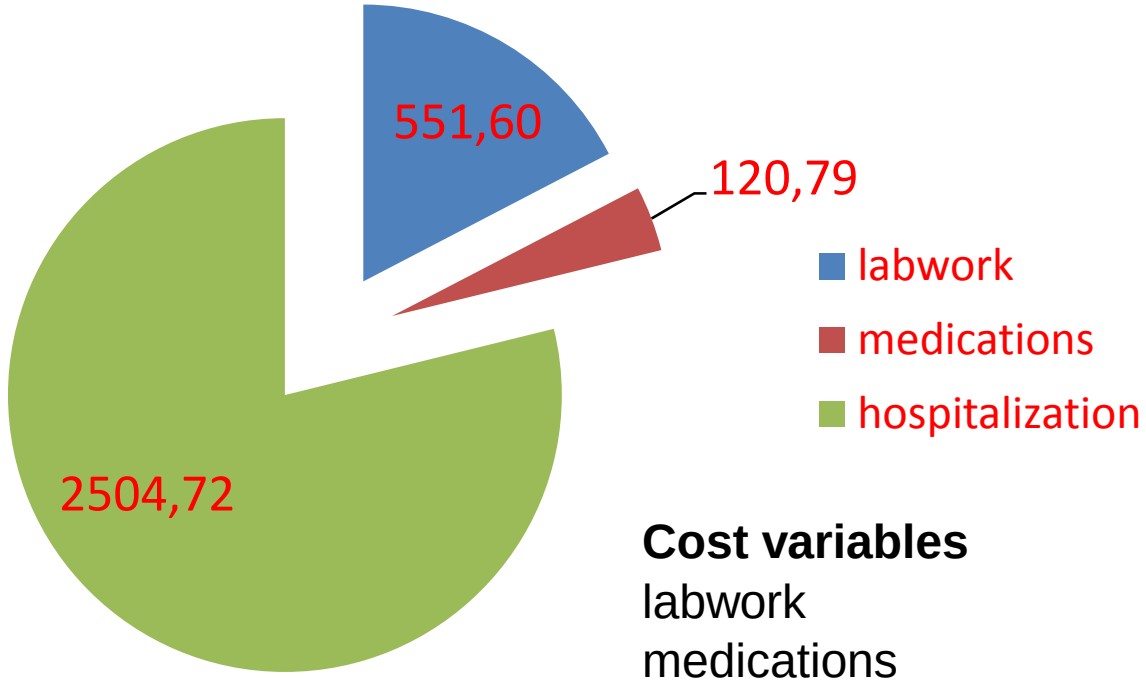


One of three patients, who were employed/able to work before their first heart failure hospitalization, were not in the workforce 1 year later, despite a relatively low 1-year mortality (7%) among these patients.

Rørth R et al. Circulation. 2016;134(14):999-1009

Cost of HF hospitalization in Greece: a single center study

- **Mean cost per patient: 3177,12€**

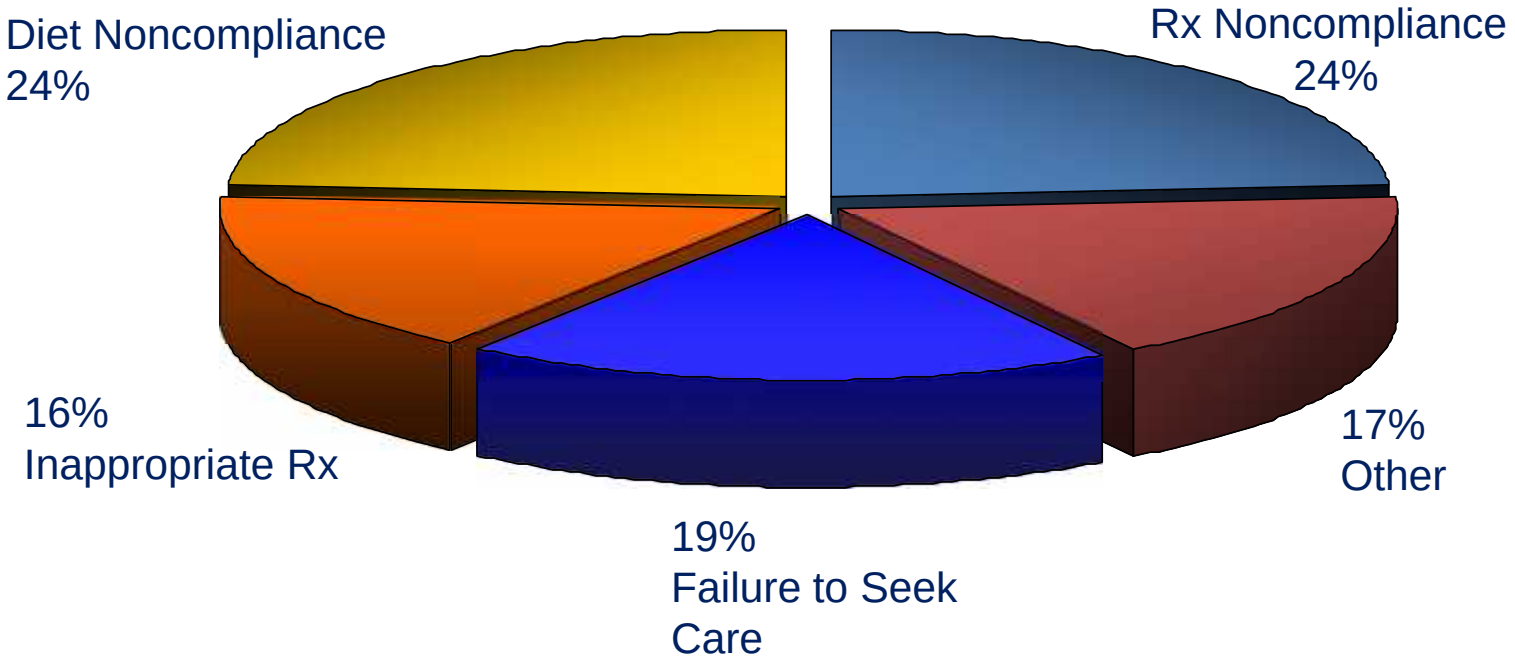


Cost variables	absolute	percent
labwork	551,6	17,4%
medications	120,79	3,8%
hospitalization (ward)	2504,72	78,8%
total	3177,12	100,0%

Parissis J et al Int J Cardiol 2014

Causes of Hospital Readmission for Heart Failure

Over 2/3 of HF Hospitalizations Preventable



Annals of Internal Medicine 122:415-21, 1995

European Heart Journal
doi:10.1093/eurheartj/ehw128

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

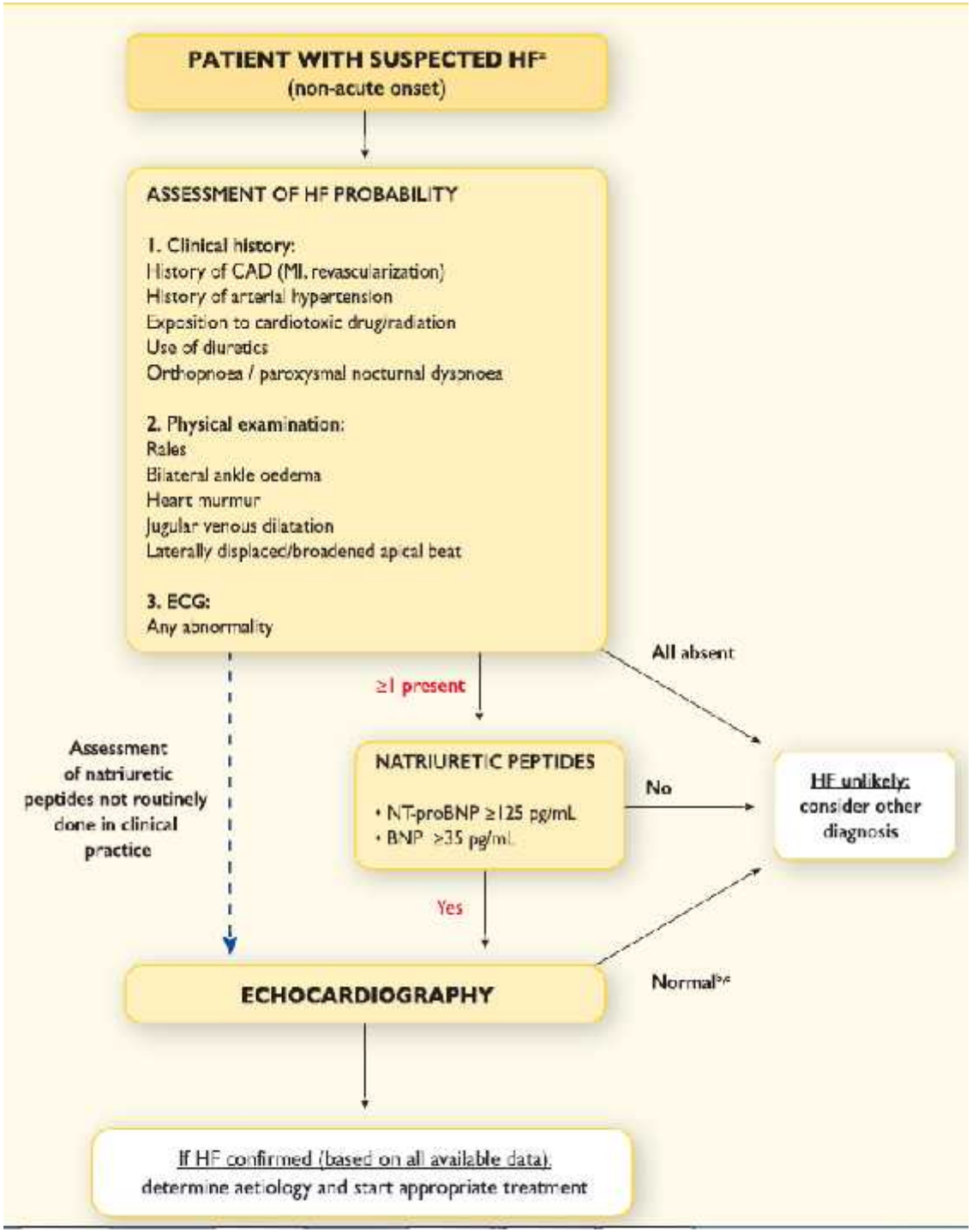
The Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC)

Developed with the special contribution of the Heart Failure Association (HFA) of the ESC

Authors/Task Force Members: Piotr Ponikowski* (Chairperson) (Poland), Adriaan A. Voors* (Co-Chairperson) (The Netherlands), Stefan D. Anker (Germany), Héctor Bueno (Spain), John G. F. Cleland (UK), Andrew J. S. Coats (UK), Volkmar Falk (Germany), José Ramón González-Juanatey (Spain), Veli-Pekka Harjola (Finland), Ewa A. Jankowska (Poland), Mariell Jessup (USA), Cecilia Linde (Sweden), Petros Nihoyannopoulos (UK), John T. Parissis (Greece), Burkert Pieske (Germany), Jillian P. Riley (UK), Giuseppe M. C. Rosano (UK/Italy), Luis M. Ruilope (Spain), Frank Ruschitzka (Switzerland), Frans H. Rutten (The Netherlands), Peter van der Meer (The Netherlands)

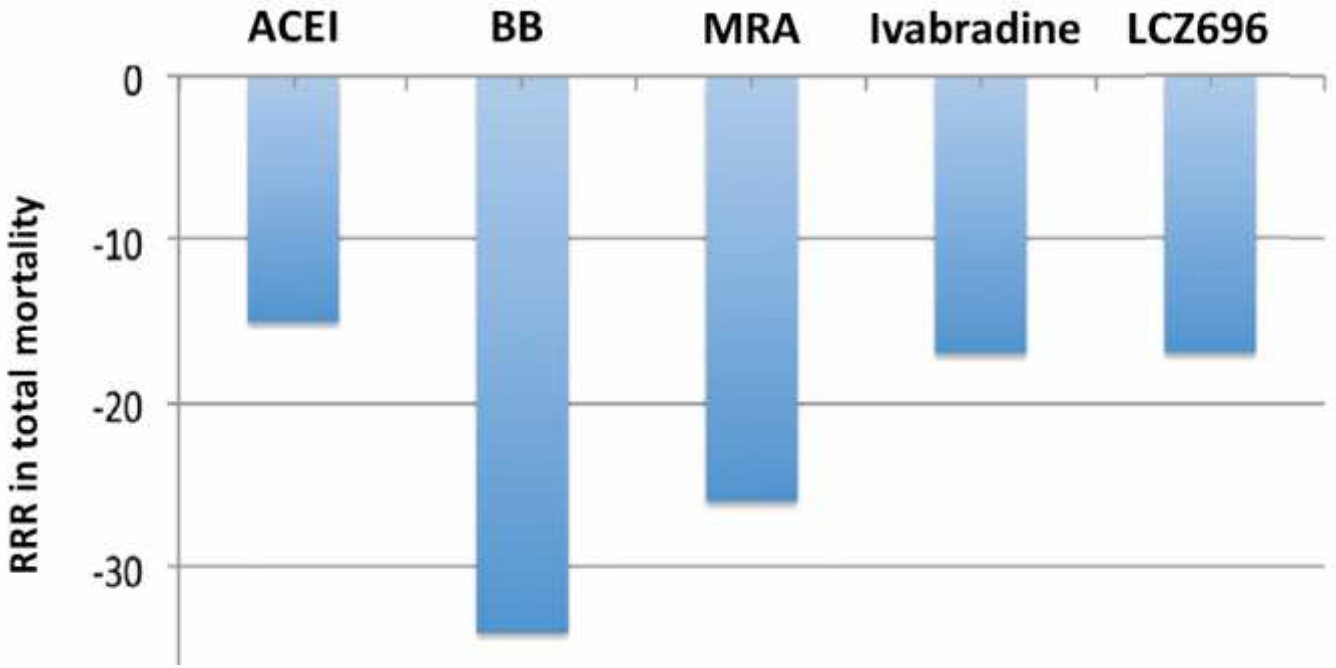
Definition of heart failure with preserved (HFpEF), mid-range (HFmrEF) & reduced ejection fraction (HFrEF)

Type of HF		HFrEF	HFmrEF	HFpEF
CRITERIA	1	Symptoms ± Signs[a]	Symptoms ± Signs[a]	Symptoms ± Signs[a]
	2	LVEF <40%	LVEF 40–49%	LVEF ≥50%
	3	–	1. Elevated levels of natriuretic peptides[b]; 2. At least one additional criterion: a. relevant structural heart disease (LVH and/or LAE), b. diastolic dysfunction (for details see Section 4.3.2).	1. Elevated levels of natriuretic peptides[b]; 2. At least one additional criterion: a. relevant structural heart disease (LVH and/or LAE), b. diastolic dysfunction (for details see Section 4.3.2).



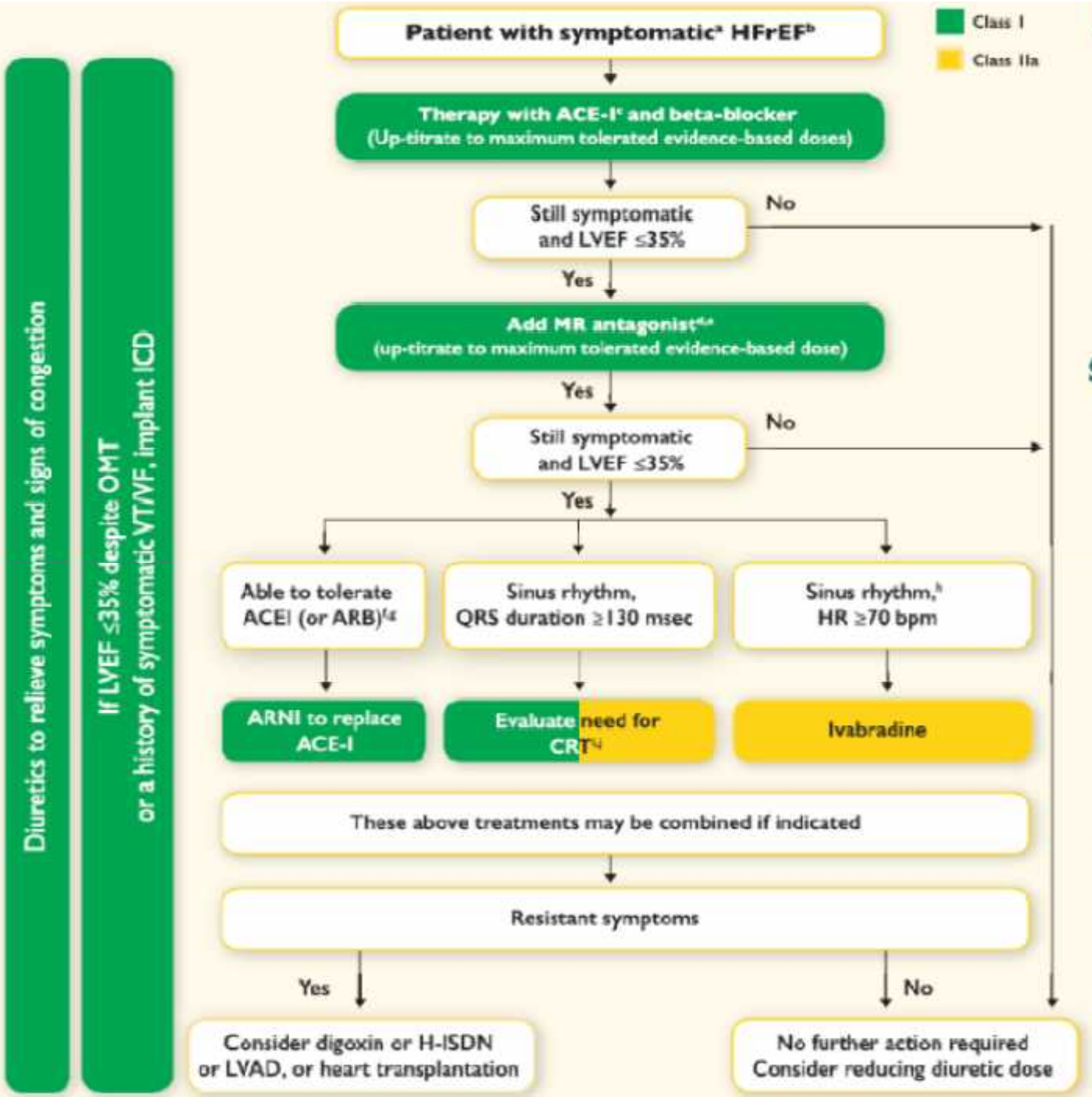
Diagnostic algorithm for a diagnosis of heart failure of non-acute onset

Important modalities in heart failure management to improve survival



CHF population	Symptomatic HFrEF	Symptomatic HFrEF	Symptomatic HFrEF	Symptomatic HFrEF, SR, HR≥75 bpm	Symptomatic HFrEF with elevated NP levels
Background therapy	vs placebo	ACEI vs placebo	ACEI, BB vs placebo	ACEI, BB, MRA vs placebo	BB, MRA vs enalapril

Therapeutic algorithm for a patient with symptomatic HFrEF



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	Starting dose (mg)	Target dose (mg)
ACE-I		
Captopril[a]	6.25 *t.i.d.*	50 *t.i.d.*
Enalapril	2.5 *b.i.d.*	20 *b.i.d.*
Lisinopril[b]	2.5–5.0 *o.d.*	20–35 *o.d.*
Ramipril	2.5 o.d.	10 o.d.
Trandolapril[a]	0.5 *o.d.*	4 *o.d.*
Beta-blockers		
Bisoprolol	1.25 *o.d.*	10 *o.d.*
Carvedilol	3.125 *b.i.d.*	25 *b.i.d.*[a]
Metoprolol succinate (CR/XL)	12.5–25 *o.d.*	200 o.d.
Nebivolol[c]	1.25 *o.d.*	10 *o.d.*
ARBs		
Candesartan	4–8 *o.d.*	32 *o.d.*
Valsartar	40 *b.i.d.*	160 *b.i.d.*
Losartan[a,c]	50 *o.d.*	150 *o.d.*
MRAs		
Eplerenone	25 *o.d.*	50 *o.d.*
Spironolactone	25 *o.d.*	50 *o.d.*
ARNI		
Sacubitril/valsartan	49/51 *b.i.d.*	97/103 *b.i.d.*
If-channel blocker		
Ivabradire	5 *b.i.d.*	7.5 *b.i.d.*

Evidence-based doses of disease-modifying drugs in key randomized trials in HF with reduced ejection fraction (or after myocardial infarction)

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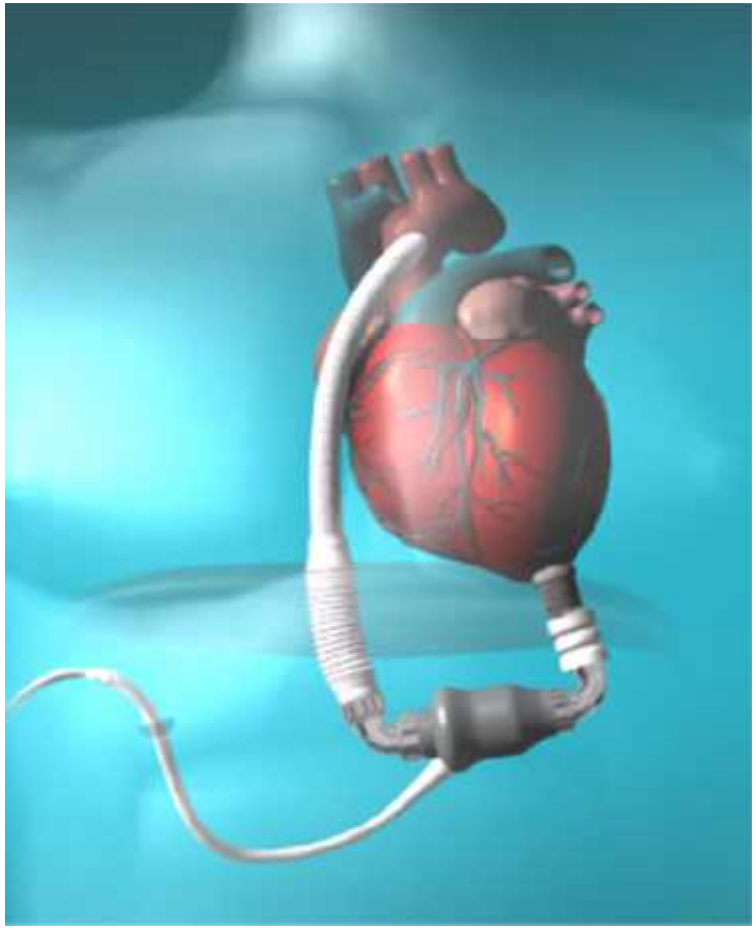
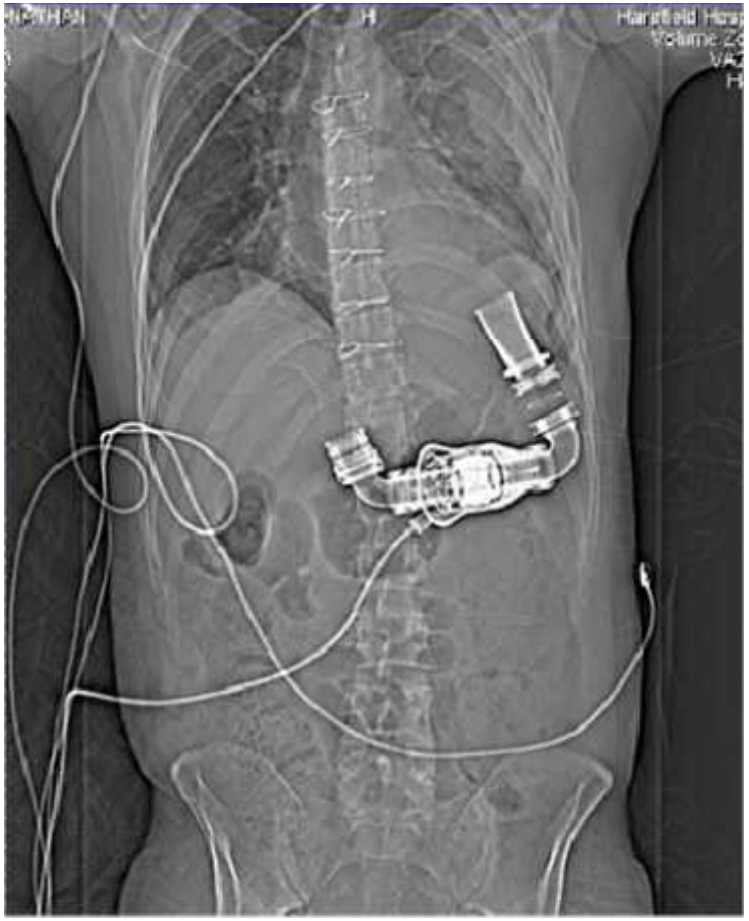
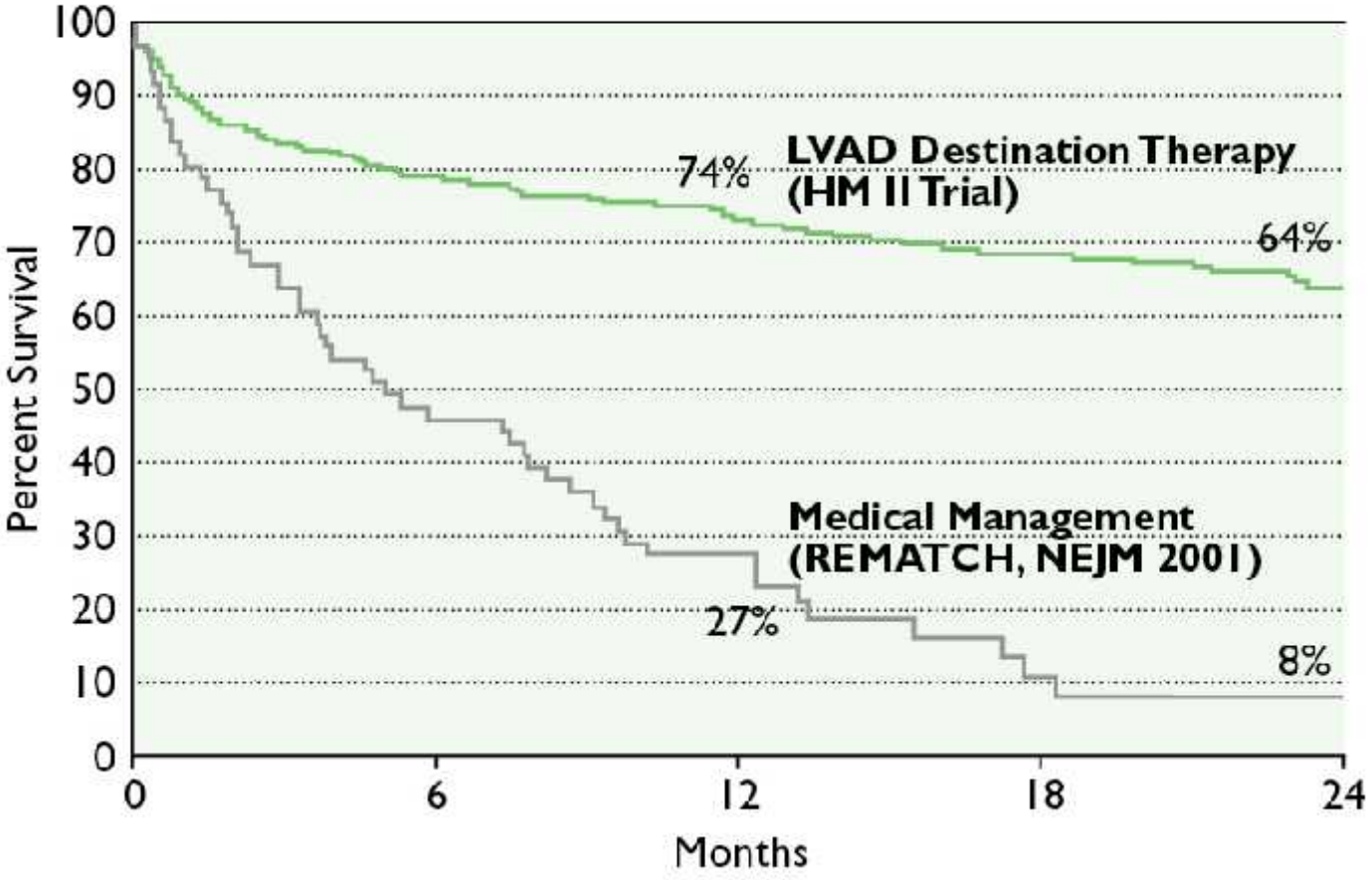
Mind the gap: Use a LV Assist Device





LVAD Survival Compared To OMM Therapy

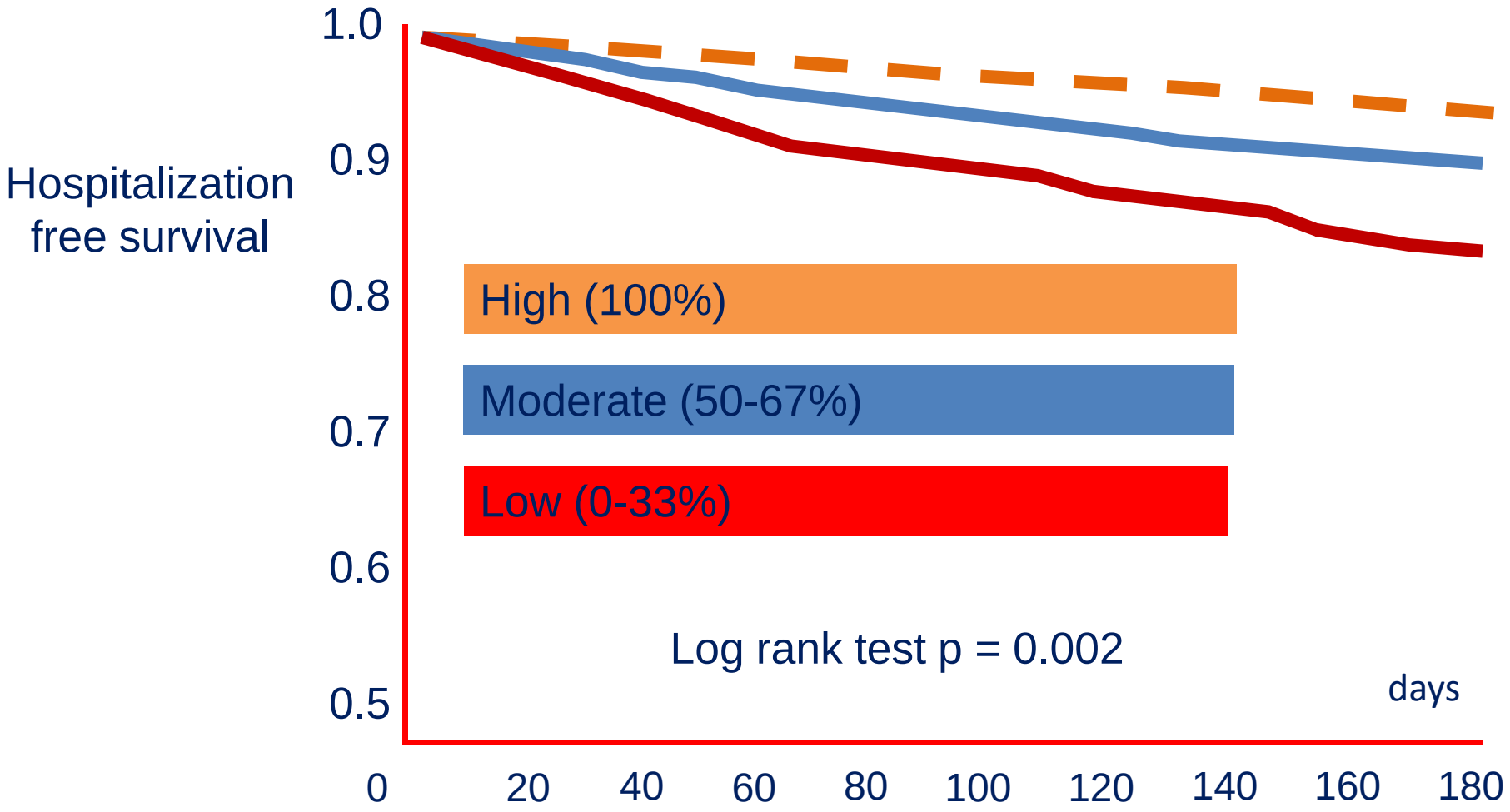


Park SJ. AHA Scientific Sessions, November 2010.

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

Recommendations	Class [a]	Level [b]
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

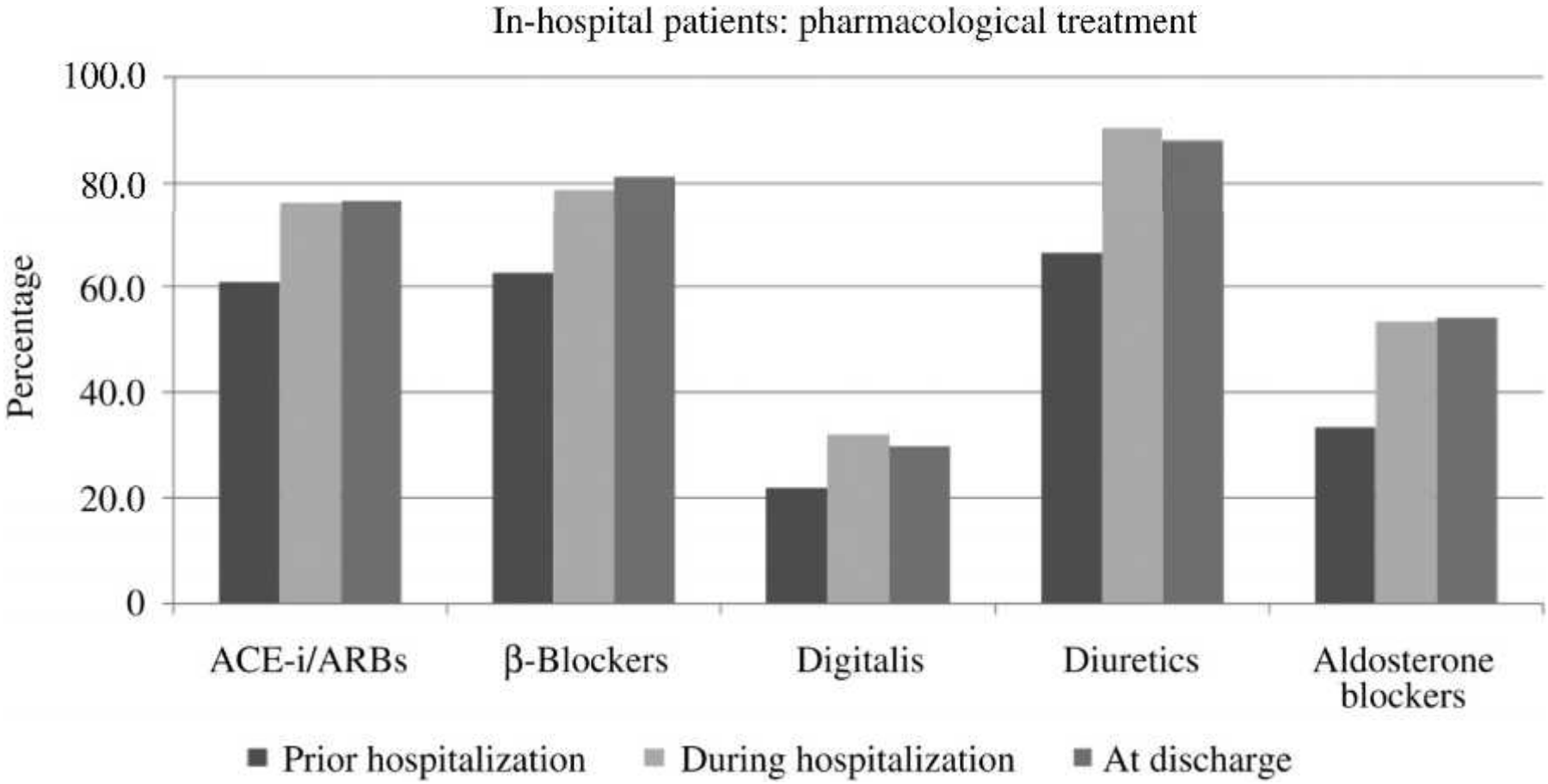
Adherence to HF guidelines predicts HF hospitalizations



Komajda M et al, Eur Heart J 2005

EURO*bservational* Research Programme: The Heart Failure Pilot Survey (ESC-HF Pilot)

Aldo P. Maggioni[1*], Ulf Dahlström[2], Gerasimos Filippatos[3], Ovidiu Chioncel[4], Marisa Crespo Leiro[5], Jaroslaw Drozdz[6], Friedrich Fruhwald[7], Lars Gullestad[8], Damien Logeart[9], Marco Metra[10], John Parissis[11], Hans Persson[12], Piotr Ponikowski[13], Mathias Rauchhaus[14], Adriaan Voors[15], Olav Wendelboe Nielsen[16], Faiez Zannad[17], and Luigi Tavazzi[18] on behalf of the Heart Failure Association of the ESC (HFA)



Maggioni A P et al. Eur J Heart Fail 2010;12:1076-1084

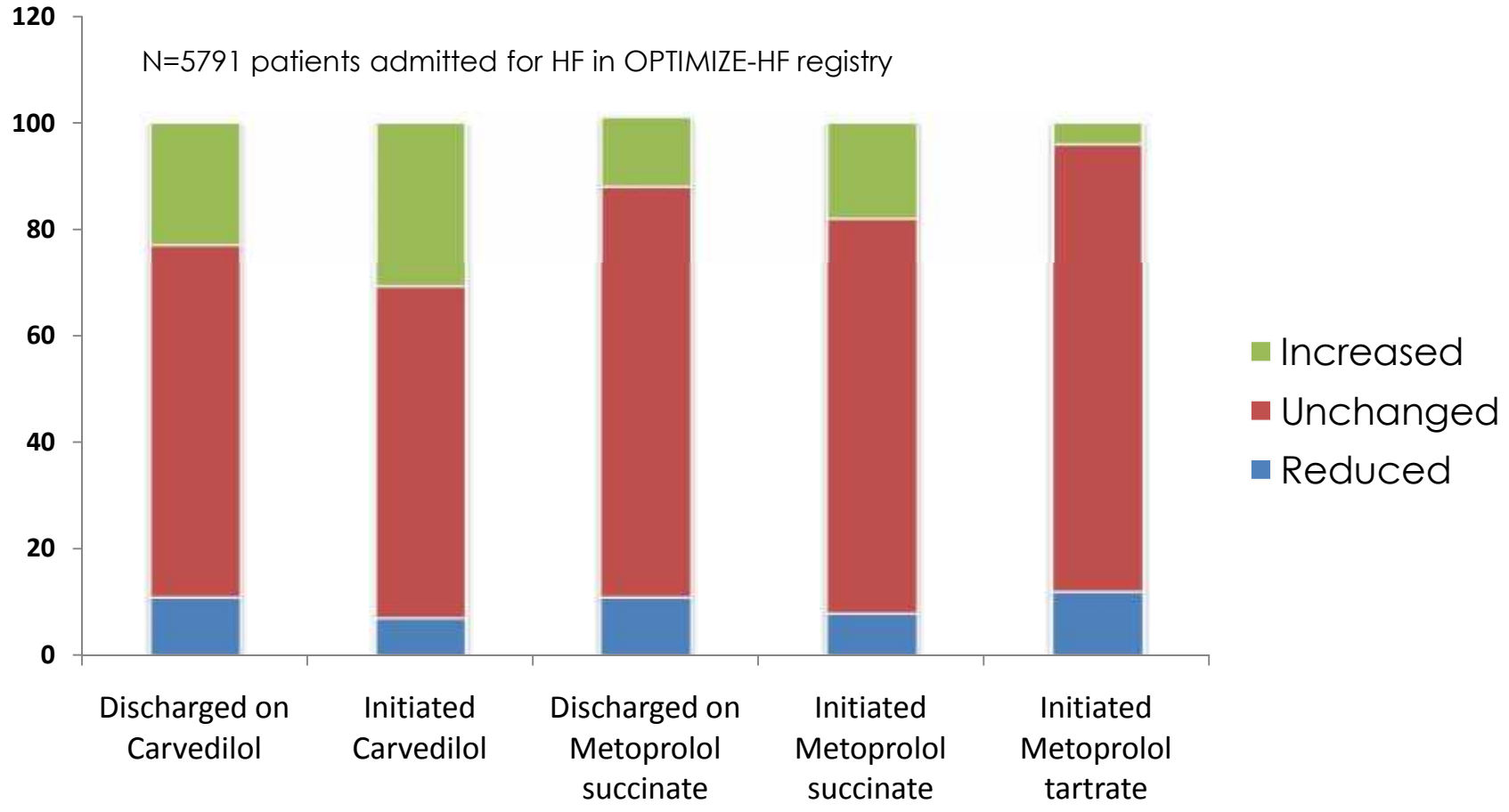
ESC HF LONG TERM REGISTRY

Rate of patients at target dosage of recommended pharmacological treatments

Drug	*At target n. (%)*
ACE-I (4710 pts)	1380 (29.3)
ARBs (1500 pts)	362 (24.1)
Beta-blockers (6468 pts)	1130 (17.5)
MRAs (4226 pts)	1290 (30.5)

Maggioni AP, et al. Eur J Heart Fail, online Aug 26, 2013.

No uptitration of BBs in more than 2/3 patients in 3 month after hospital discharge



Fonarow GC et al. Am J Cardiol 2008;102:1524–1529

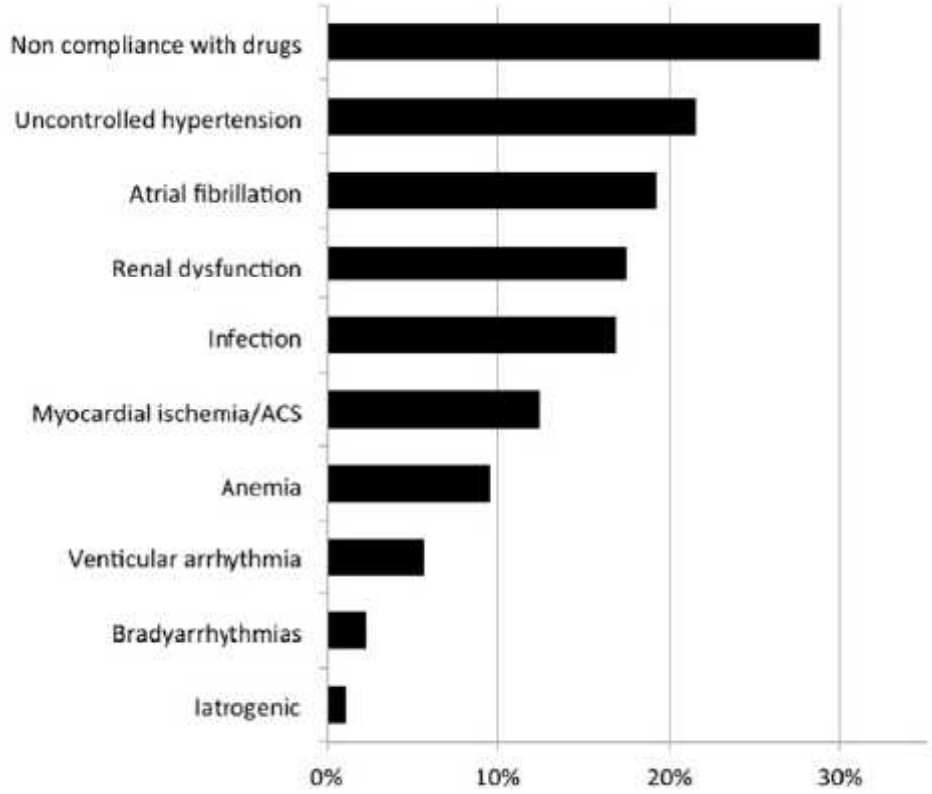
Poor medication adherence

- ≈ 50% among chronic disease
- Leads to :
  - . new hospitalisation
  - . increase in morbi-mortality
- 40% of avoidable CV deaths each year in the USA
- High costs

Improving adherence may have a far greater impact on health than any improvement in specific medical treatments

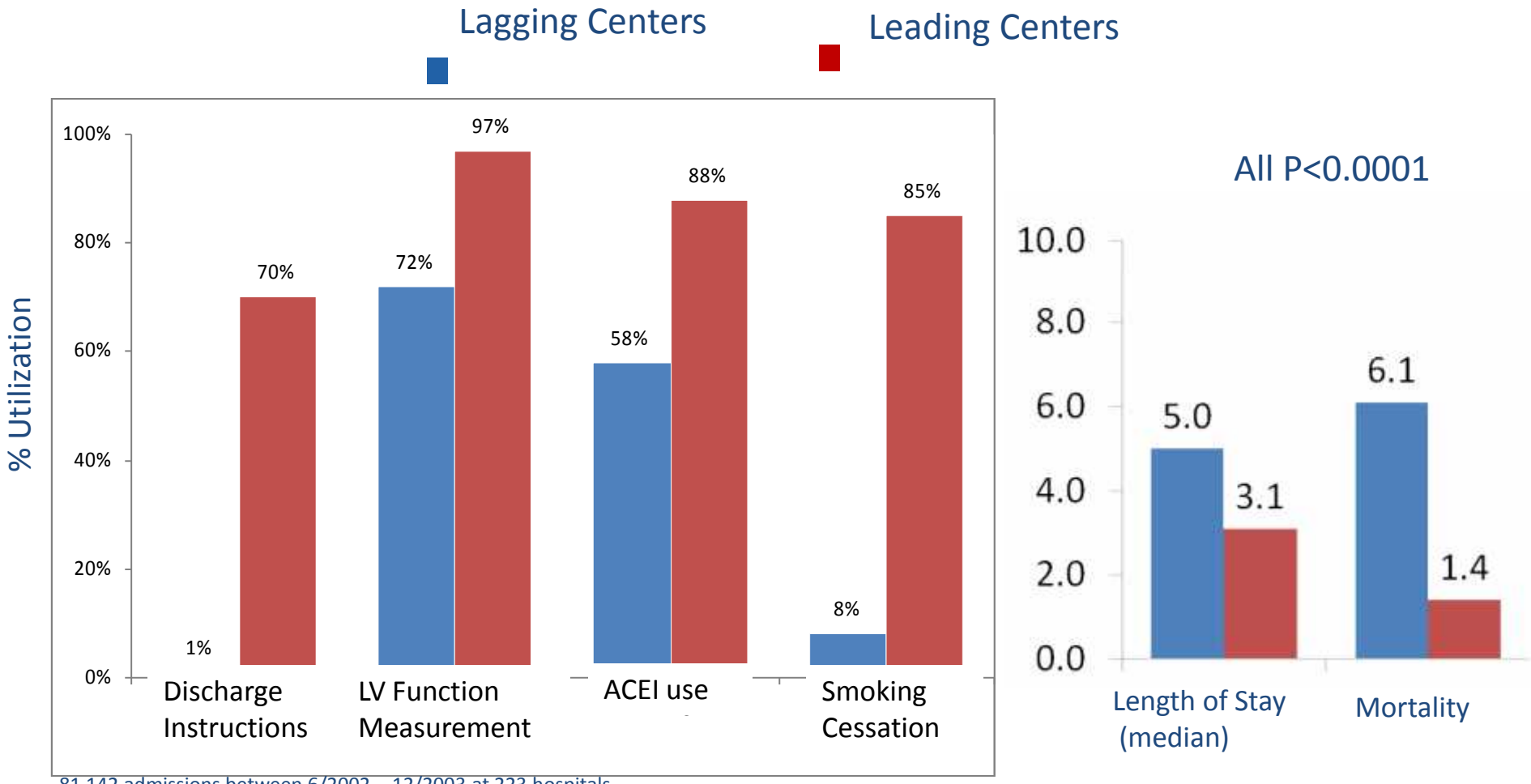
The heart failure pandemic: The clinical and economic burden in Greece☆

P. Stafylas [a,*], D. Farmakis [b], G. Kourlaba [c], G. Giamouzis [d], K. Tsarouhas [d], N. Maniadakis [e], J. Parissis [b]



International Journal of Cardiology 227 (2017) 923–929

ADHERE Quality of Care
Conformity to The Joint Commission HF Performance Indicators



81 142 admissions between 6/2002 – 12/2003 at 223 hospitals
Grouped by Leading (90th percentile) and Lagging (10th percentile)

Fonarow GC et al. Arch Intern Med 2005;165:1469-1477

Key topics and self-care skills to include in patient education and the professional behaviours to optimize learning and facilitate shared decision making
ESC HF GLs 2016

Education topic	Patient skills	Professional behaviours
Definition, aetiology and trajectory of HF (including prognosis).	• Understand the cause of HF symptoms and disease trajectory. • Make realistic decisions including decisions about treatment at end-of-life.	• Provide oral and written information that takes account of educational grade and health literacy. • Recognize HF disease barriers to communication and provide information at regular time intervals. • Sensitively communicate information on prognosis at time of diagnosis, during decision making about treatment options, when there is a change in the clinical condition and whenever the patient requests.
Symptom monitoring and self-care.	• Monitor and recognize change in signs and symptoms. • Know how and when to contact a healthcare professional. • In line with professional advice, know when to self-manage diuretic therapy and fluid intake.	• Provide individualized information to support self-management such as: ⇨ In the case of increasing dyspnoea or oedema or a sudden unexpected weight gain of >2 kg in 3 days, patients may increase their diuretic dose and/or alert their healthcare team. ⇨ Use of flexible diuretic regime. ⇨ Self-care support aids such as dosette box when appropriate.
Pharmacological treatment.	• Understand the indications, dosing and side effects of drugs. • Recognize the common side effects and know when to notify a healthcare professional. • Recognize the benefits of taking medication as prescribed.	• Provide written and oral information on dosing, effects and side effects (see web tables 7.4–7.8 – practical guidance on use of pharmacological agents).
Implanted devices and percutaneous/ surgical interventions.	• Understand the indications and aims of procedures/ implanted devices. • Recognize the common complications and know when to notify a healthcare professional. • Recognize the importance and benefits of procedures/ implanted devices.	• Provide written and oral information on benefits and side effects. • Provide written and oral information on regular control of device functioning, along with documentation of regular check-up.
Immunization	• Receive immunization against influenza and pneumococcal disease	• Advise on local guidance and immunization practice.

Can individualized weight monitoring using the HeartPhone algorithm improve sensitivity for clinical deterioration of heart failure?

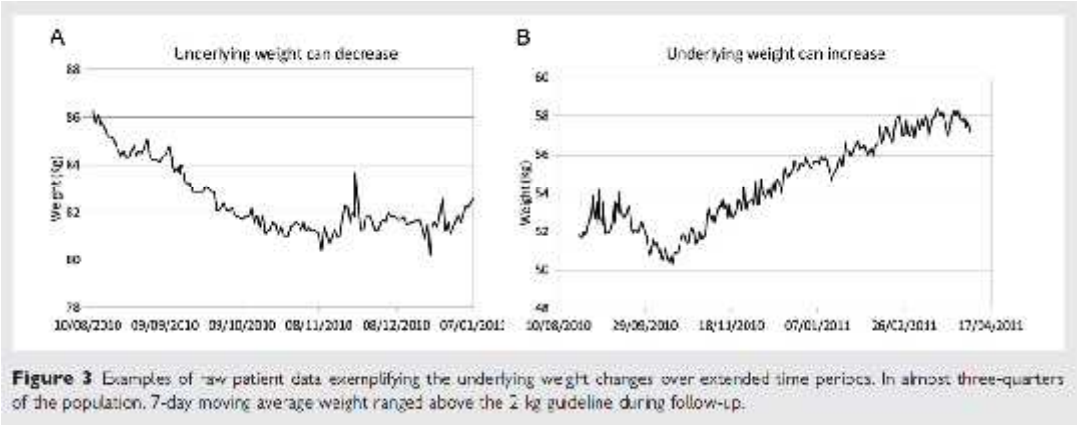
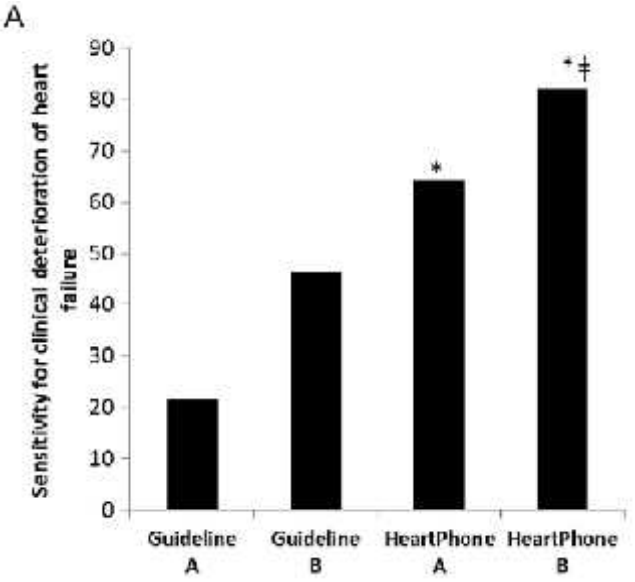


Figure 3 Examples of raw patient data exemplifying the underlying weight changes over extended time periods. In almost three-quarters of the population, 7-day moving average weight ranged above the 2 kg guideline during follow-up.



Conclusions An individualized approach to weight monitoring in HF with the HeartPhone algorithm improved prediction of HF deterioration. Further evaluation of HeartPhone with and without other biomarkers of HF deterioration is warranted.

European Journal of Heart Failure (2013) **15**, 447–455

Self-Check Plan
for HF Management

RISE ABOVE Heart Failure

Excellent – Keep Up the Good Work!

- ☐ No new or worsening shortness of breath
- ☐ Physical activity level is normal for you
- ☐ No new swelling, feet and legs look normal for you
- ☐ Weight check stable Weight: _____
- ☐ No sign of chest pain

GREAT! CONTINUE: Daily Weight Check · Meds as Directed · Low Sodium Eating · Follow-up Visits

Pay Attention – Use Caution!

- ☐ Dry, hacking cough
- ☐ Worsening shortness of breath with activity
- ☐ Increased swelling of legs, feet, and ankles
- ☐ Sudden weight gain of more than 2-3 lbs in a 24 hour period (or 5 lbs in a week)
- ☐ Discomfort or swelling in the abdomen
- ☐ Trouble Sleeping

CHECK IN! Your symptoms may indicate: A need to contact your doctor or provider · A need for a change in medications

Medical Alert – Warning!

- ☐ Frequent dry, hacking cough
- ☐ Shortness of breath at rest
- ☐ Increased discomfort or swelling in the lower body
- ☐ Sudden weight gain of more than 2-3 lbs in a 24 hour period (or 5 lbs in a week)
- ☐ New or worsening dizziness, confusion, sadness or depression
- ☐ Loss of appetite
- ☐ Increased trouble sleeping; cannot lie flat

WARNING! You need to be evaluated right away. Call your physician or call **911**

DIET Approach to the Patient With Heart Failure

- *D*iagnose
  - Etiology
  - Severity (LV dysfunction)
- *I*nitiate
  - Diuretic/ACE inhibitor
  - β-blocker
  - MRAs
  - Ivabradine (selected pts)
  - *iv iron (selected pts)*
  - *LCZ696 (in resistant to ACE i pts)*
- *E*ducate/*Evaluate*
  - Diet
  - Exercise
  - Lifestyle
  - CV Risk
  - QOL/ compliance
- *T*itrate
  - Optimize ACE inhibitor
  - Optimize β-blocker
  - Optimize MRA
  - Achieve optimal heart rate

TAKE HOME MESSAGES

- HF imposes a significant economic burden for the Greek social security system and national economy, mainly because of the frequent, long and costly hospitalizations.
- It was demonstrated that HF patients need very often hospitalisations and have a high annual mortality, worse than several types of cancer.
- Improving compliance with guidelines, adherence to medication, new innovative therapies, as well as early identification and treating cardiovascular risk factors could reduce the burden of the disease