How to built up a Heart Failure Clinic in 2017?

The German View

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Prevalence of heart failure

26 Million HF patients world wide.

PREVALENCE

2% in Europe (~ 15 Millionen)

Germany: 2 Millionen HF .

INCIDENCE

new cases / 100.000 /y.

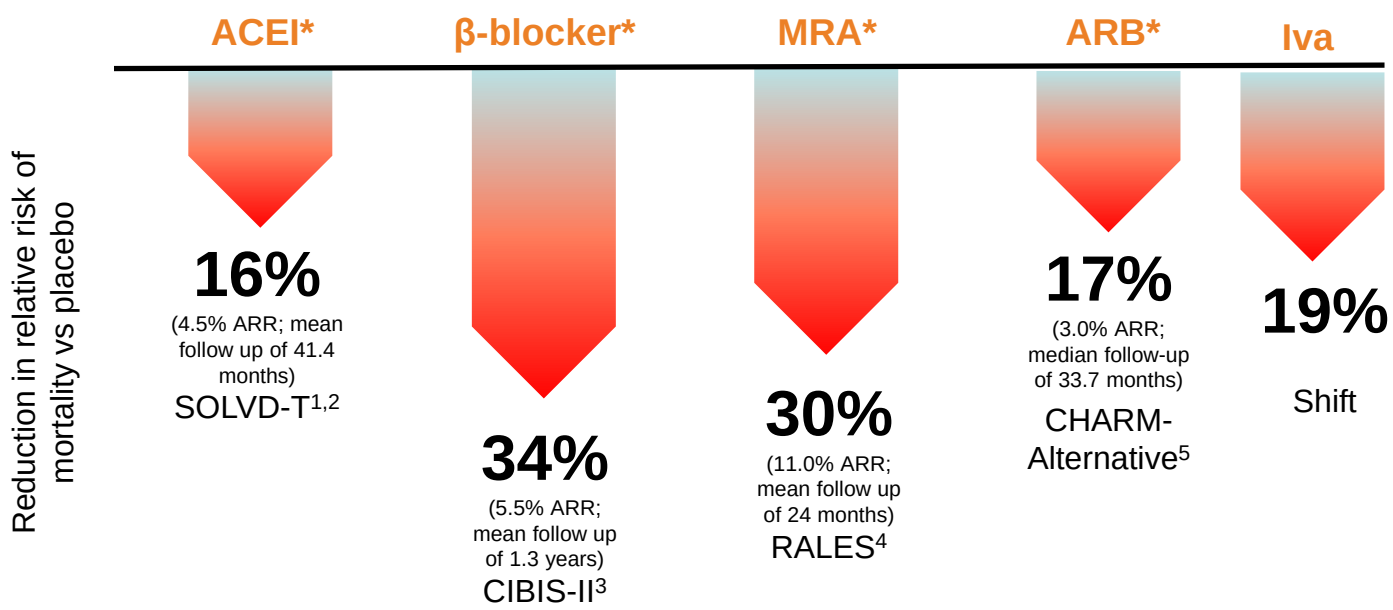
Germany ca. 300 000 Pat. /year

Rising

- Aging
- Rise in risk factors
- Improved prognosis after MI

Ambrosy PA et al., J Am Coll Cardiol 2014;63:1123-1133
Van Deursen VM et al., Eur J Heart Fil 2014;16:103-111

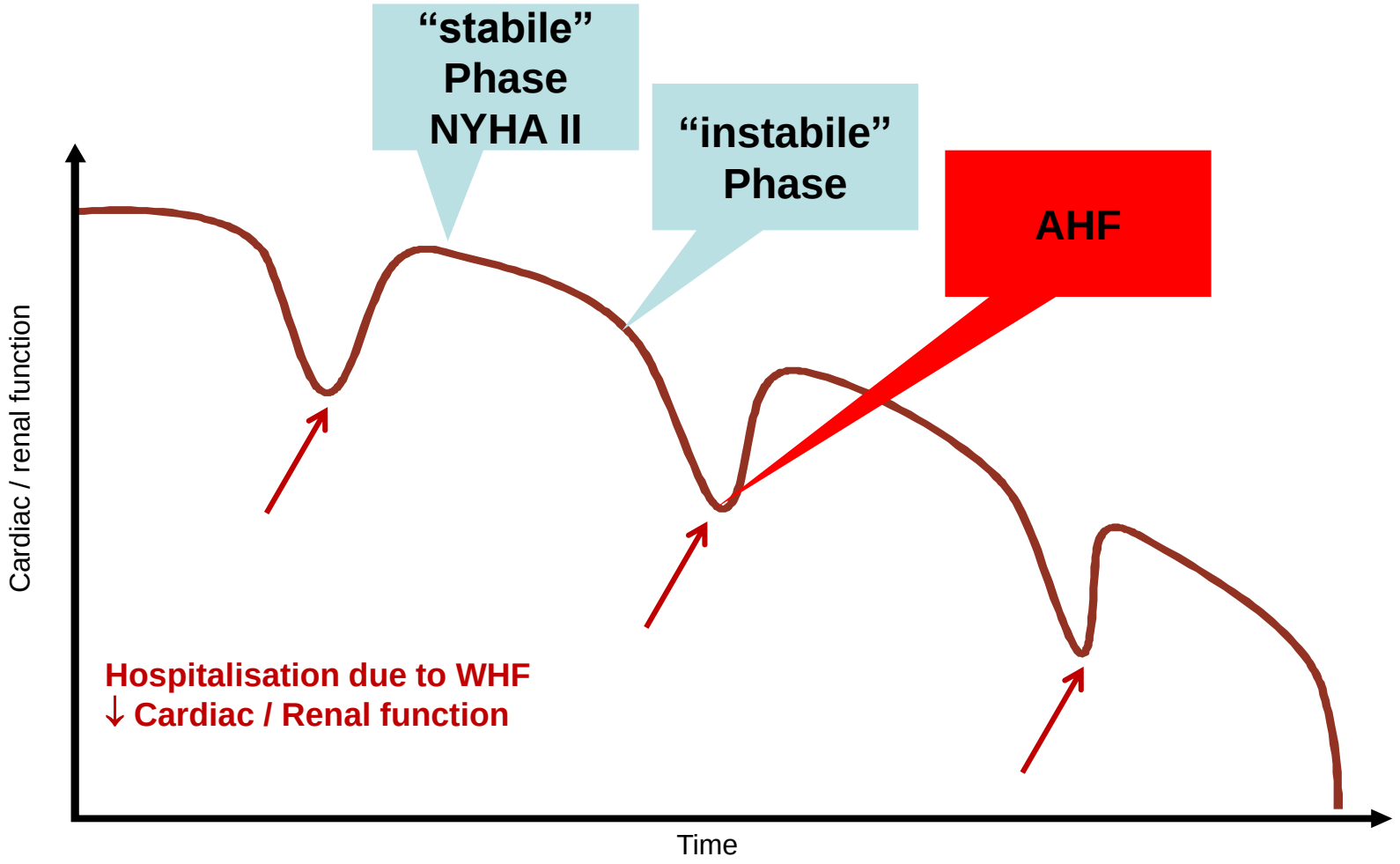
High mortality in heart failure exists further



- However, significant mortality remains: ~50% of patients die within 5 years of diagnosis[6–8]

1. Pitt et al. Eur Heart J 2012;33:1787–847; 2. SOLVD Investigators. N Engl J Med 1991;325:293–302; 3. CIBIS-II Investigators. Lancet 1999;353:9–13; 4. Pitt et al. N Engl J Med 1999;341:709-17;–50; 5. Granger et al. Lancet 2003;362:772–6; 6. Go et al. Circulation 2014;129:e28-e292; 7. Yancy et al. Circulation 2013;128:e240–327; 8. Levy et al. N Engl J Med 2002;347:1397–402

Heart failure is not stable !



1. Alla et al. Heart Fail Rev 2007;12:91–5; 2. Cleland et al. Eur Heart J 2003;24:442–636;
3. Gheorghiade et al. Am J Cardiol 2005;96:11G–17G

„ The frequent flyer“

The JAMA Network

JAMA The Journal of the American Medical Association

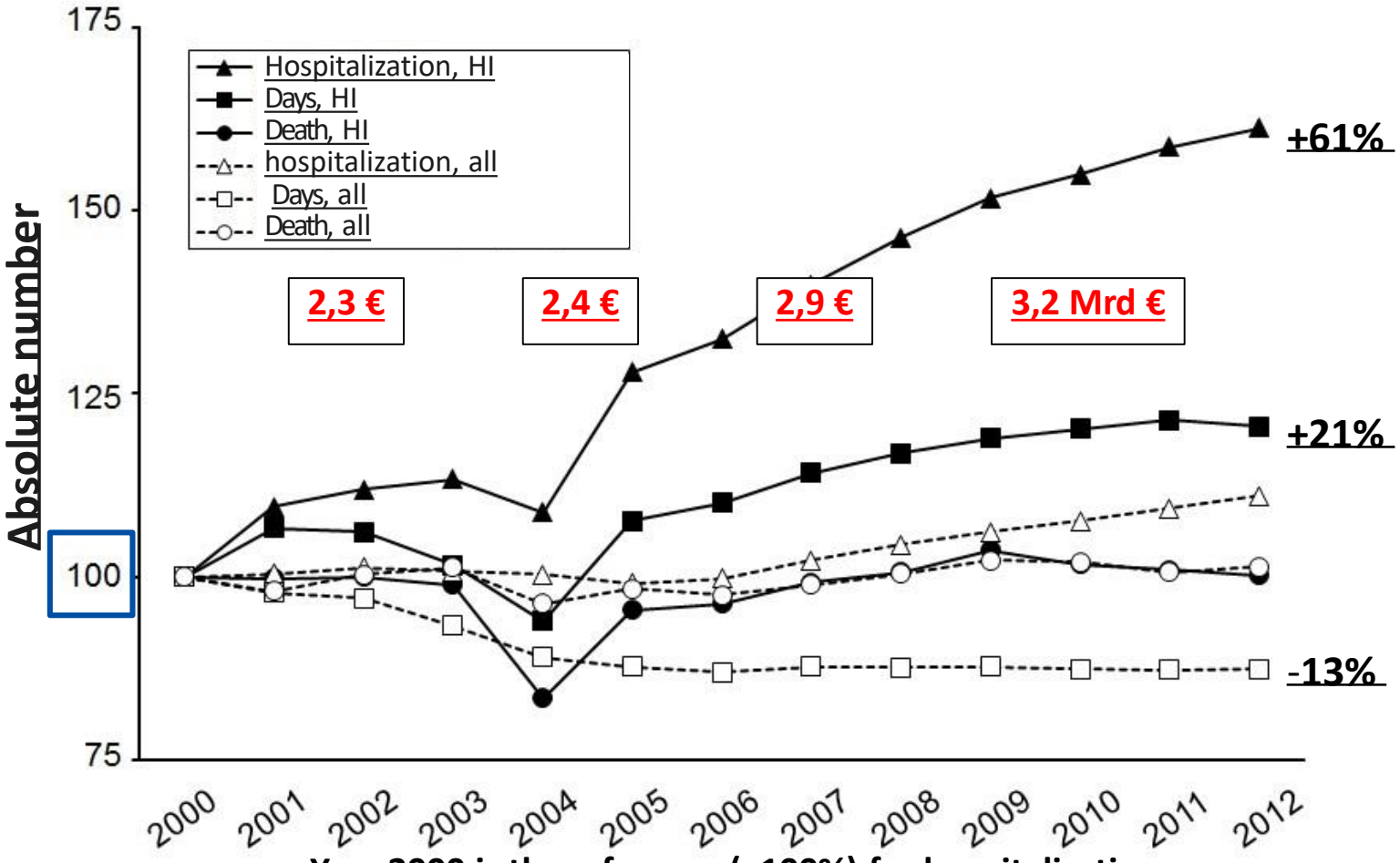
Home Current Issue All Issues Online First

JAMA

January 23, 2013, Vol 309, No. 4

Trends (Germany)
Hospitalization, hospital days, hospital-related death

Absolute case number x 1000. costs in billions €



Year 2000 is the reference (=100%) for hospitalizations

Heart failure imposes a significant economic burden on the healthcare system

70% of the cost of HF is due to **hospitalizations**[1]

~10% of the cost of HF is due to **pharmacological treatment**[2]

German cardiology committee Heart Failure Units

Deutsche Gesellschaft für Kardiologie

Empfehlungen und Stellungnahmen

Kardiologe 2016 · 10:222–235
DOI 10.1007/s12181-016-0072-6
Online publiziert: 13. Juli 2016

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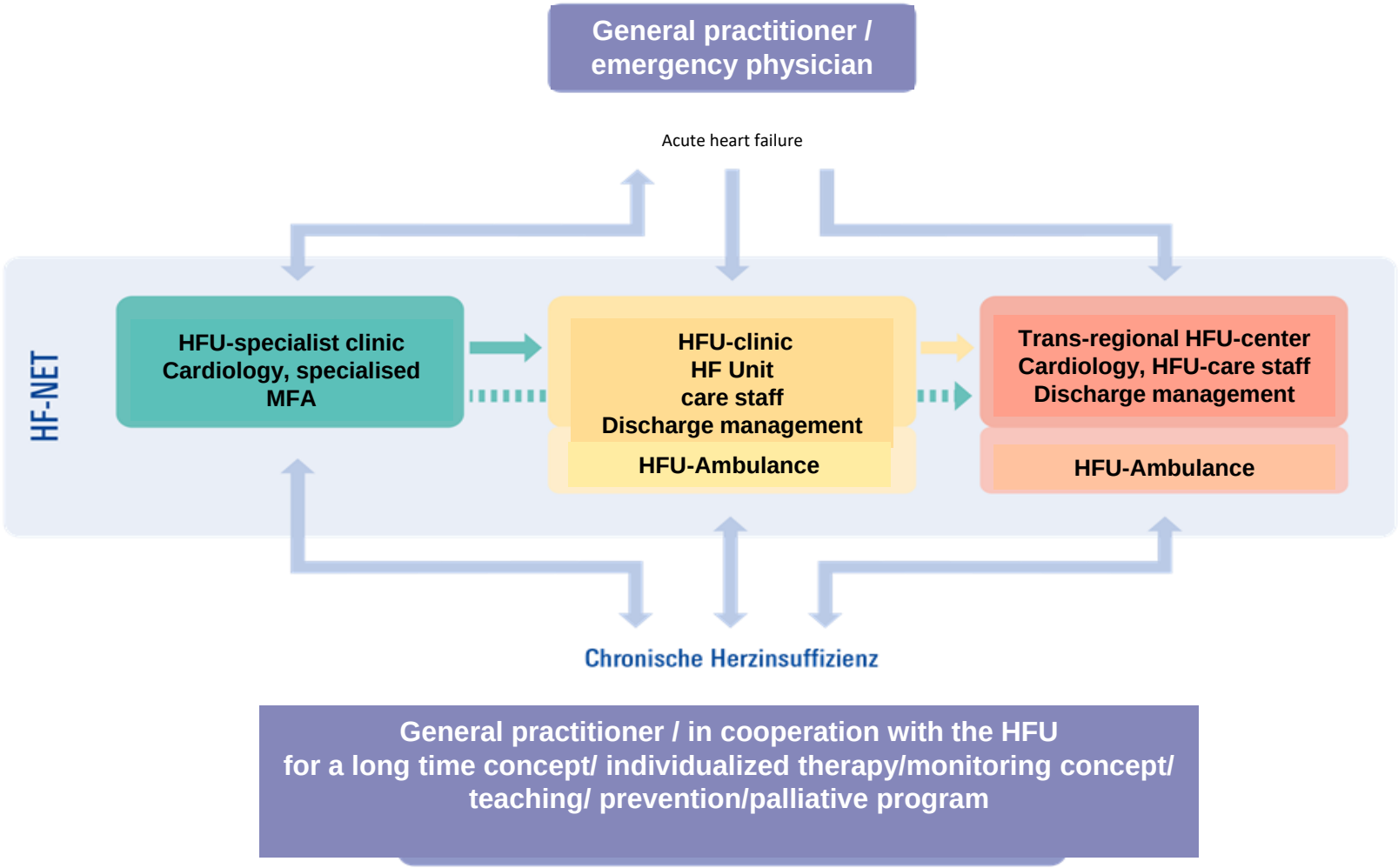
Development and organisation of heart failure networks (HF-NETs) and heart failure units (HFUs) for optimisation of acute and chronic heart failure

Chronic heart failure

Gemeinsame Empfehlungen der DGK und der DGTHG zur Behandlung

Common recommendation of
DGK and DGTHG for treatment of heart failure

HF-NET with HFU-modules at three organisational levels



Heart Failure Out Clinic Praxis

Heart Failure Out Clinic Praxis

Cardiologist
Cooperation with HF-Clinic

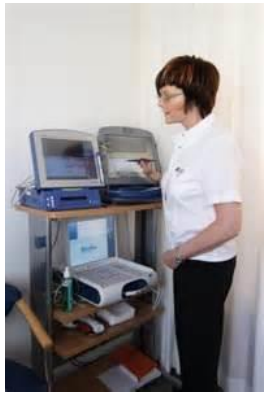
EKG/24hEKG,Echo/Stress Echo
Ergo, PM/ICD/CRT control

Lab: Trop T / BNP

Special educated nurses

Treatment SOPs

1 Monitor, O2, AICD



Cooperation for testing:
Sleep apnoe, Spiroergometrie, Lungfunction

Heart Failure Out Clinic Praxis

Task:

First contact

- for decompensating patients
- De Novo HF
- Progression of chronic HF
- Treatment of HF complications

Teaching HF patients

- compliance/self treatment

Organisation of HF programs

- HF nurses

Heart Failure Out Clinic Praxis

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First contact
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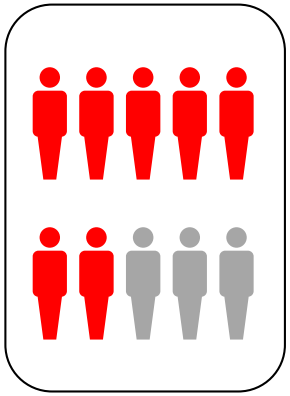
Lack of awareness

Prevalence, symptoms and prognosis of HF receive not enough attention

86 %
have heard of **HF** …

…but only **3 %**
can recognize the signs and **symptoms**

AWARENESS IN THE POPULATION

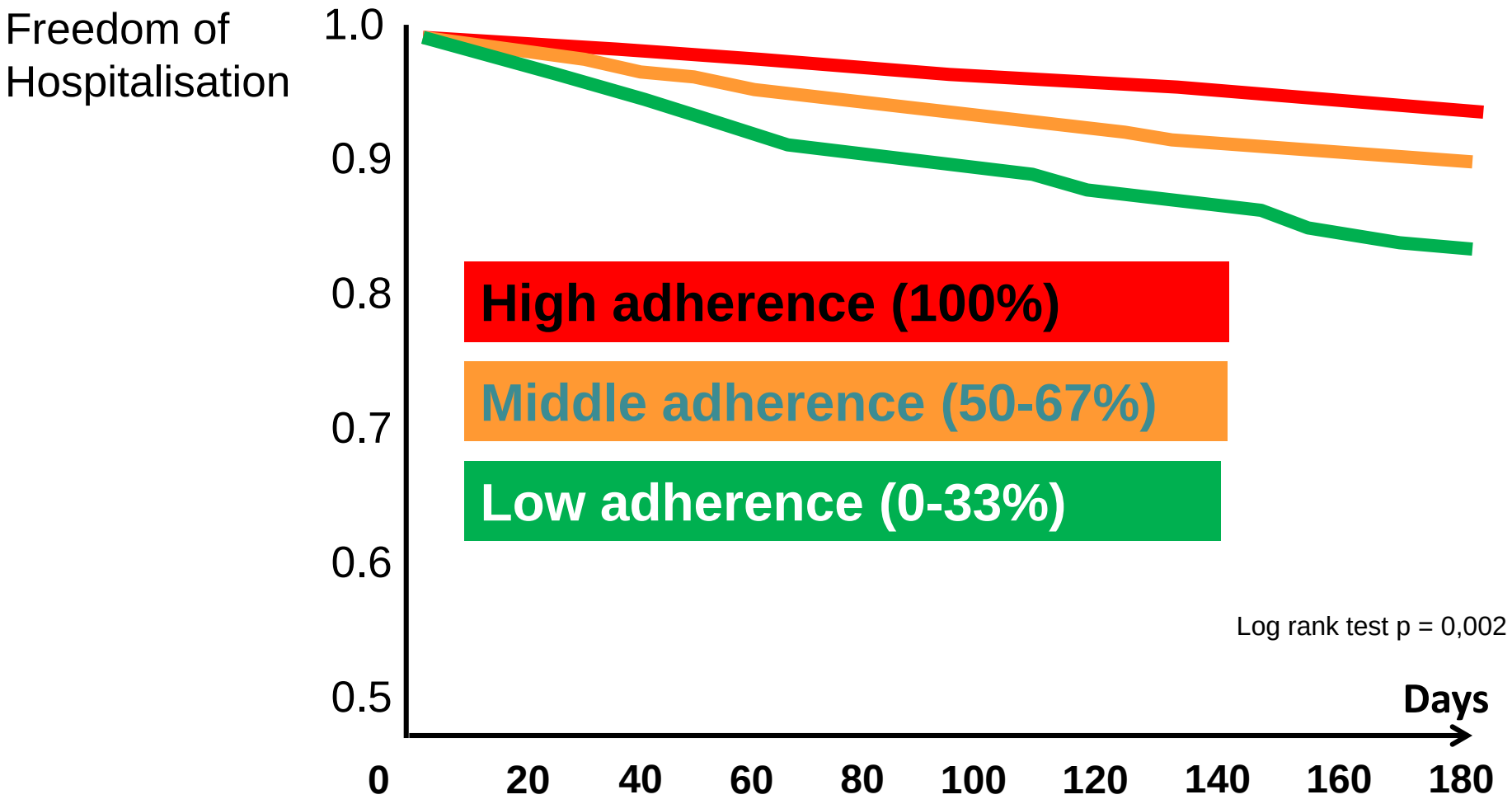


ABOUT **70 %** **CONSIDER HF *NOT* AS A SEVERE DISEASE**

67 % ***MISTAKENLY*** **CONSIDER, THAT THE PROGNOSIS OF HF-PATIENTS IS BETTER THAN OF A CANCER PATIENT**

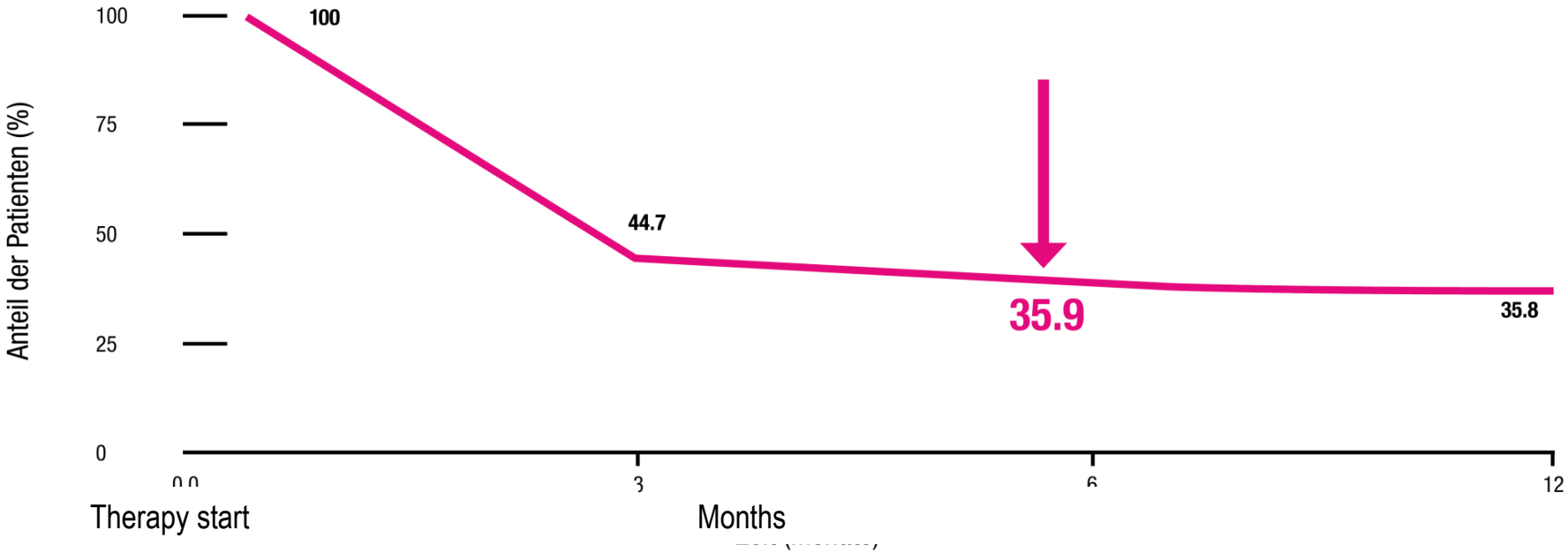
HF=Herzinsuffizienz
Remme et al. Eur Heart J 2005;26:2413–21

The role of adherence to guidelines in clinical praxis



Komajda M et al. *Eur Heart J* 2005.

Adherence of RR and lipidtherapy over time



Chapman RH et al., Predictors o adherence with anthypertensive and lipid-lowerinig therapy, Arch Intern Med 2005; 165: 1147-1152

Heart Failure Clinic

Heart Failure Clinic

Cardiologist or Heart Surgeon
but plus Intensive Care specialty
Cooperation with HF-Center

Partners
Nephrology, Pulmonology,
Radiology, Psychiatrics
Gastroenterology

Basal equipment
EKG/RR control
Echo/TOE
X-Ray
CT

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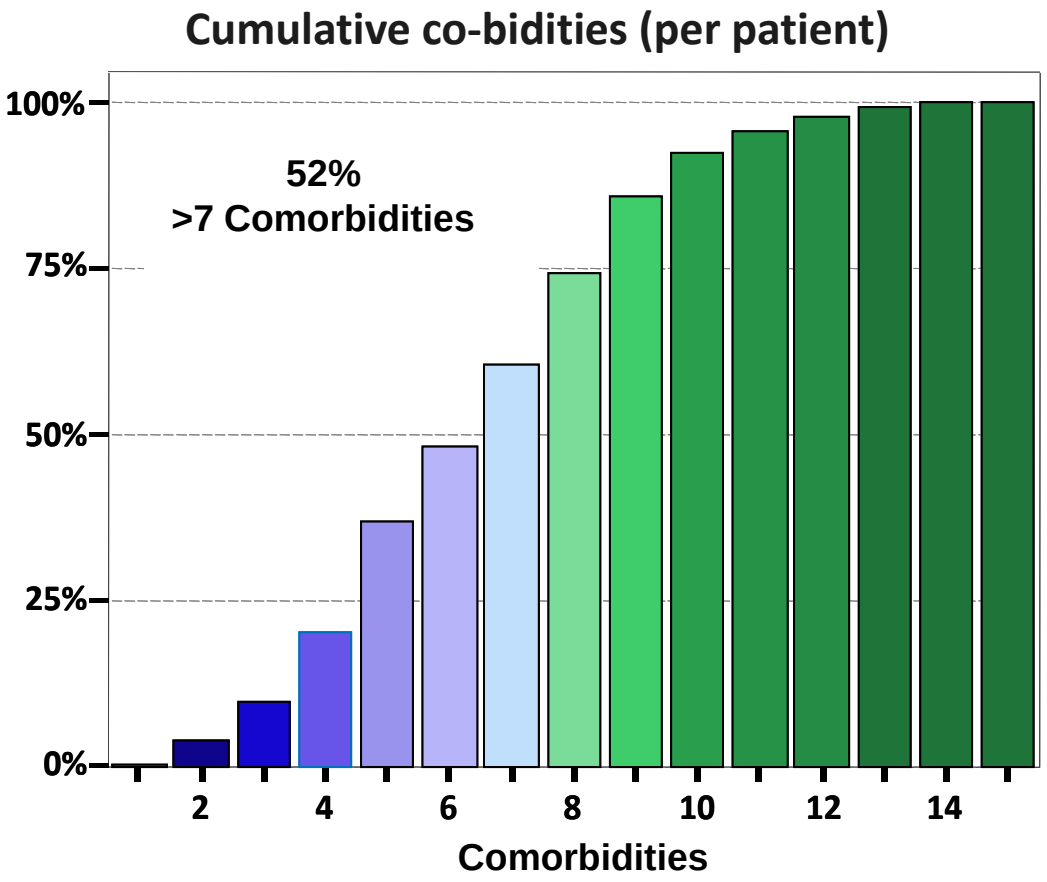
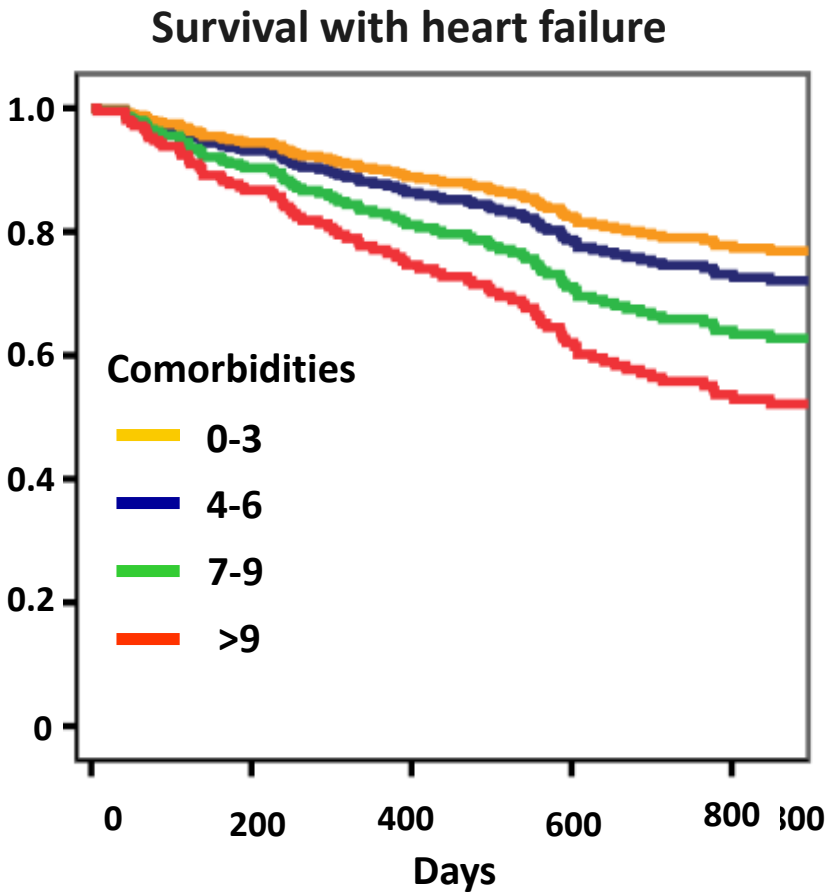
Basic diseases and comorbidities of Heart Failure Patients in Germany

(Area of Würzburg n=1054)





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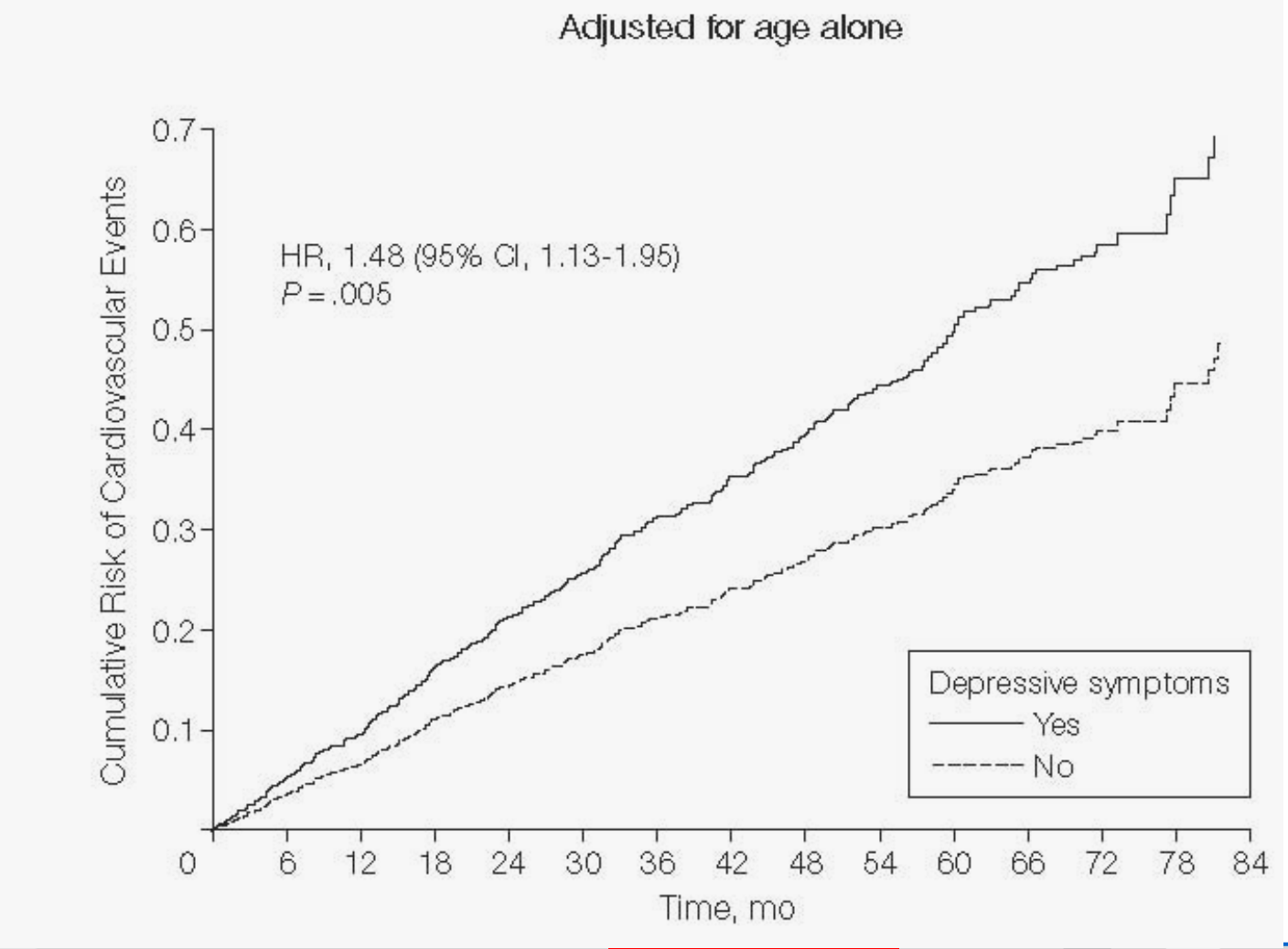
Heart and Soul Studie : Dpression and HF



Whooley; JAMA 2008

Patient Healt Care Questionnaire PHQ-9

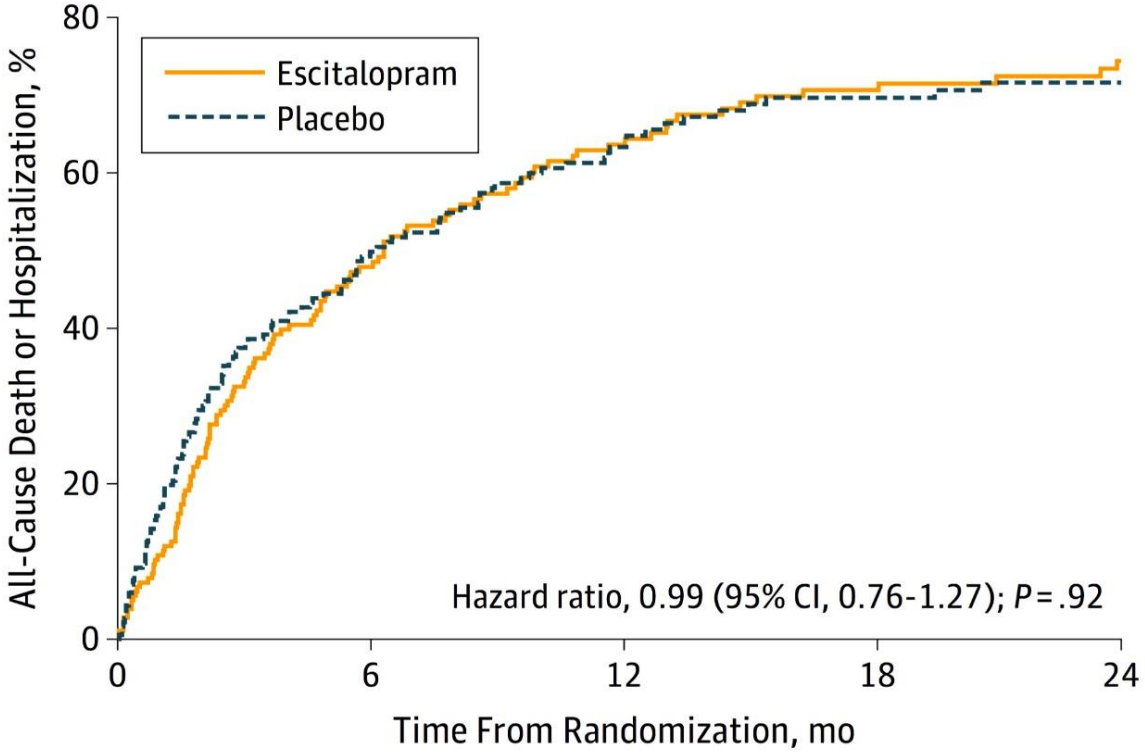
Lichtmann; Circulation 2008

Over the *last 2 weeks*, how often have you been bothered by any of the following problems? *(use "✓" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead, or of hurting yourself in some way	0	1	2	3

MOOD-HF
Anti-Depressiva and HF

Effect of Escitalopram on All-Cause Mortality and Hospitalization in Patients With Heart Failure and Depression
The MOOD-HF Randomized Clinical Trial

Kaplan-Meier Curves for the Incidence of All-Cause Death or Hospitalization



Pat hatten keine strenge psych. Grunderkrankung

Angermann et al, JAMA 315 (2016): 2683-2693

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- HF-Unit / IMC
≥ 4 Monitor-Beds
MD 24/d
Cardiologist 24h Call
CPAP/Respirator 24h/d
CVVH/Dialysis 24h/d
Nurse/Patient: 1:4
Physiotherapy /30min/Pat

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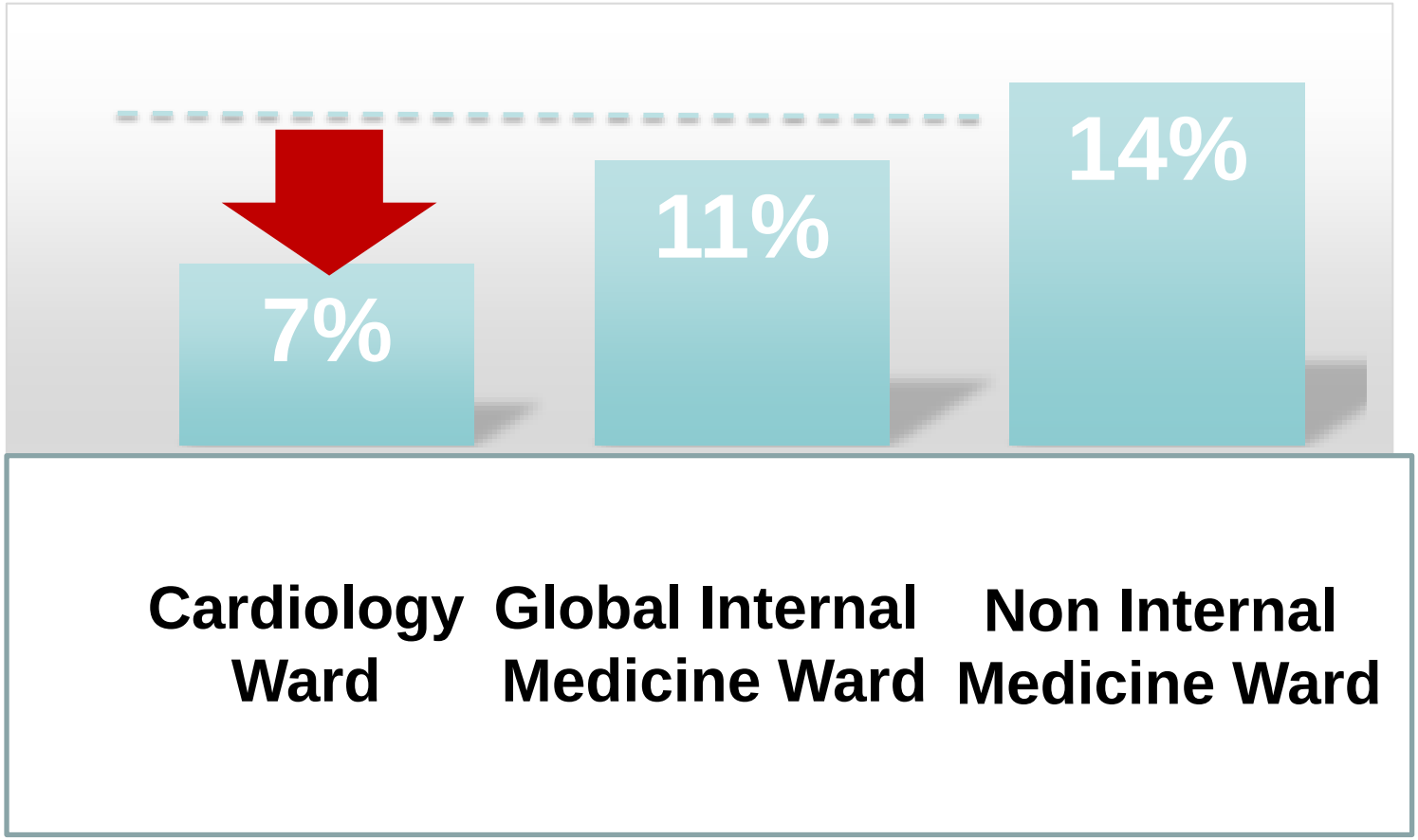
Expertise improves the outcome

Reduction of mortality

In-hospital mortality of Heart Failure patients:

halved via treatment by a specialist

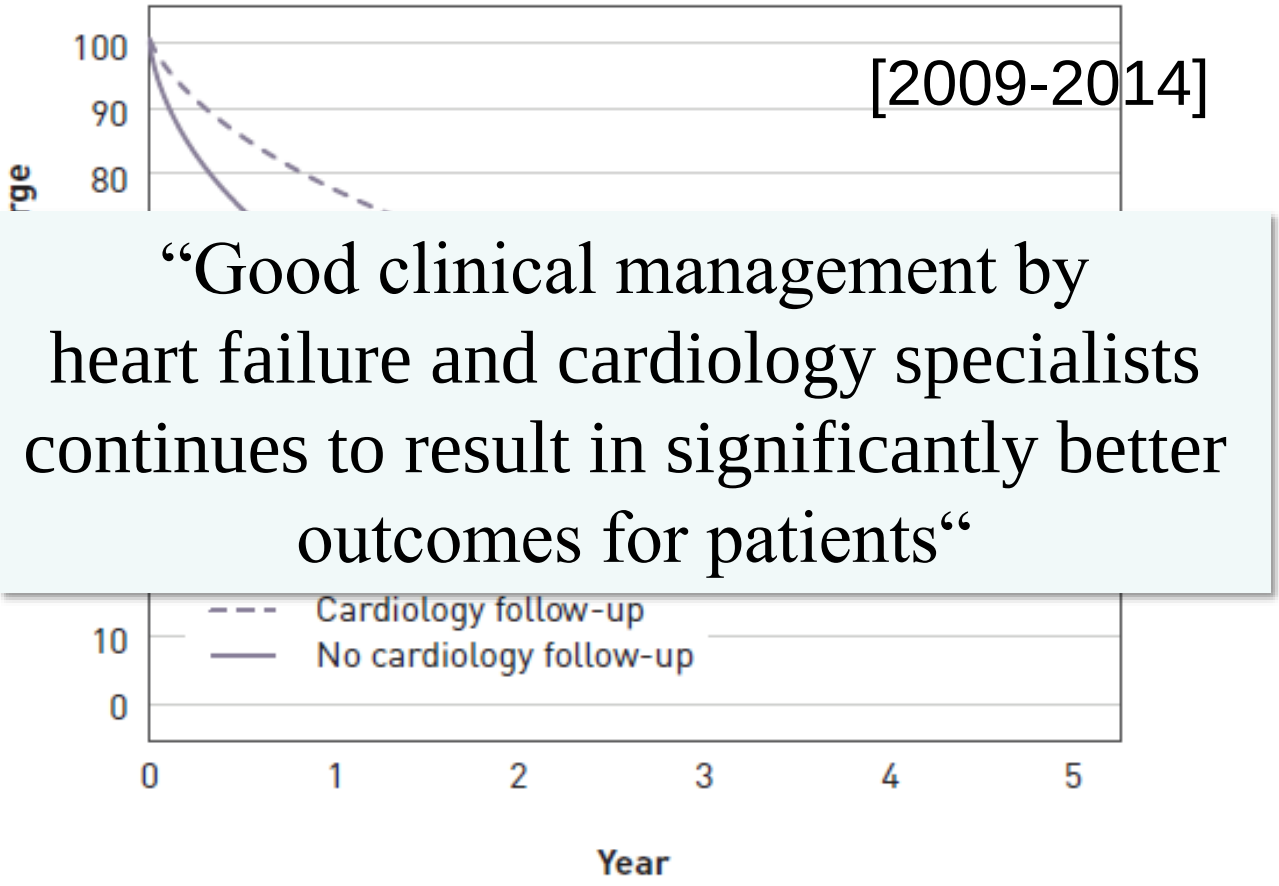


Expertise improves the outcome

Reduction of mortality

Survival probability of Heart Failure patients after hospital dimissal: much higher via treatment by a specialist

[2009-2014]



"Good clinical management by heart failure and cardiology specialists continues to result in significantly better outcomes for patients"

Expertise improves the outcome

Less hospitalization, better life quality, lower costs

1190 THE NEW ENGLAND JOURNAL OF MEDICINE Nov. 2, 1995

A MULTIDISCIPLINARY INTERVENTION TO PREVENT THE READMISSION OF ELDERLY PATIENTS WITH CONGESTIVE HEART FAILURE

MICHAEL W. RICH, M.D., VALERIE BECKHAM, R.N., CAROL WITTENBERG, R.N., CHARLES L. LEVEN, PH.D., KENNETH E. FREEDLAND, PH.D., AND ROBERT M. CARNEY, PH.D.

- 282 hospitalized CHF patients ≥ 70 years
- **Standard medication** vs. **multidisciplinary intervention** by experienced caregiver, diet-assistent, sozial service emploees,

3 months

Rehospitalization rate due to Heart Failure: -56%
Life quality (CHF Questionnaire-Score): +96%
Total costs: -9%

Rich MW et al., NEJM 1995

Expertise is certifiable

ThecCurriculum for the HF-specialist (HFA)

European Journal of Heart Failure (2014) **16**, 151–162
doi:10.1002/ejhf.41

CURRICULUM

Heart Failure Association of the European Society of Cardiology Specialist Heart Failure Curriculum†

Theresa A. McDonagh[1], Roy S. Gardner[2]*, Mitja Lainscak[3], Olav W. Nielsen[4], John Parissis[5], Gerasimos Filippatos[6], and Stefan D. Anker[7]

[1]King's College Hospital, London, UK; [2]Golden Jubilee National Hospital, Clydebank, UK; [3]University Clinic Golnik, Golnik, Slovenia; [4]Copenhagen University Hospital Bispebjerg, Copenhagen, Denmark; [5]University of Athens Medical School, Attikon University Hospital, Athens, Greece; [6]2nd Department of Cardiology, Athens University Hospital Attikon, Athens, Greece; and [7]Charité - Universitätsmedizin, Berlin, Germany

Received 3 September 2013; revised 00 0000; accepted 9 September 2013; online publish-ahead-of-print 8 January 2014

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UEMS-CS/EBAC
L. Michalis.

It is well established that organized care of heart failure patients, including specialist management by cardiologists, improves patient outcomes. In response to this, other national training bodies (the UK and the USA) have developed heart failure subspecialty curricula within their Cardiology Training Curricula. In addition, European Society of Cardiology (ESC) subspecialty curricula exist for Interventional Cardiology and Heart Rhythm Management. The purpose of this heart failure curriculum is to provide a framework which can be used as a blueprint for training across Europe. This blueprint mirrors other ESC curricula. Each section has three components: the knowledge required, the skills which are necessary, and the professionalism (attitudes and behaviours) which should be attained. The programme is designed to last 2 years. The first year is devoted to the specialist heart failure module. The second year allows completion of the optional modules of advanced imaging, device therapy for implanters, cardiac transplantation, and mechanical circulatory support. The second year can also be devoted to continuation of specialist heart failure training and/or research for those not wishing to continue with the advanced modules.

Keywords Curriculum • Heart failure • Training

Introduction

Heart failure is increasing in prevalence. This is partly due to the ageing of our population and as a consequence of our better treatment of myocardial infarction. Not only is the number of heart failure patients to be managed great, so is the mortality and morbidity associated with the diagnosis. Heart failure presents both chronically and acutely. It is characterized by frequent and recurrent hospitalizations which are responsible for its huge economic burden on our healthcare systems. Over the last 10–15 years we

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†The names of HFA board members and Presidents of the National Heart Failure Societies are given in Reviewers/collaborators.

Aim of the curriculum

1. Definition of the expert knowledge (Reason, natural course, diagnostics, therapy)
2. Definition of skills for an optimal Heart Failure treatment
3. Definition of skills for the development and participation in an interdisziplinary team
4. Definition for further education in certain areas:
   - imaging
   - Rhythm management, device-implantation
   - Heart transplantation and mechanially circulatory support method

Heart Failure Clinic

Cardiologist or Heart Surgeon
but plus Intensive Care specialty
Cooperation with HF-Center

- **Emergency Ambulance Car 7d/24h**
- **Chest Pain Unit for 7d/24**
- **Shock room**
- **Cath-Lab for 7d/24h**
- **Defi/CRT**
- **Sterile Interventionroom** (Hybrid-OP)
- **Intensive Care Unit**
  - Cooling system
  - Invasive monitoring
  - Advanced inotropic therapy
  - SOP´s

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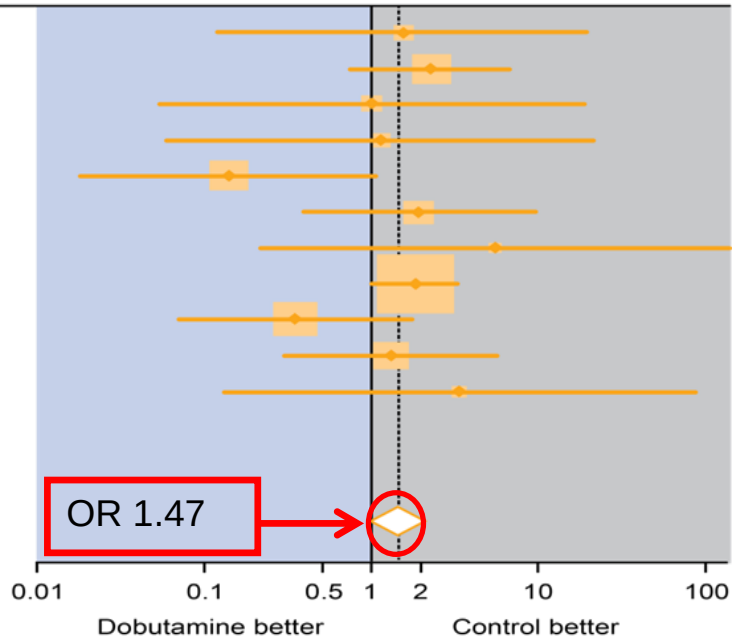
Meta-Analysis on Inotropika

Dobutamin and Mortality in HF

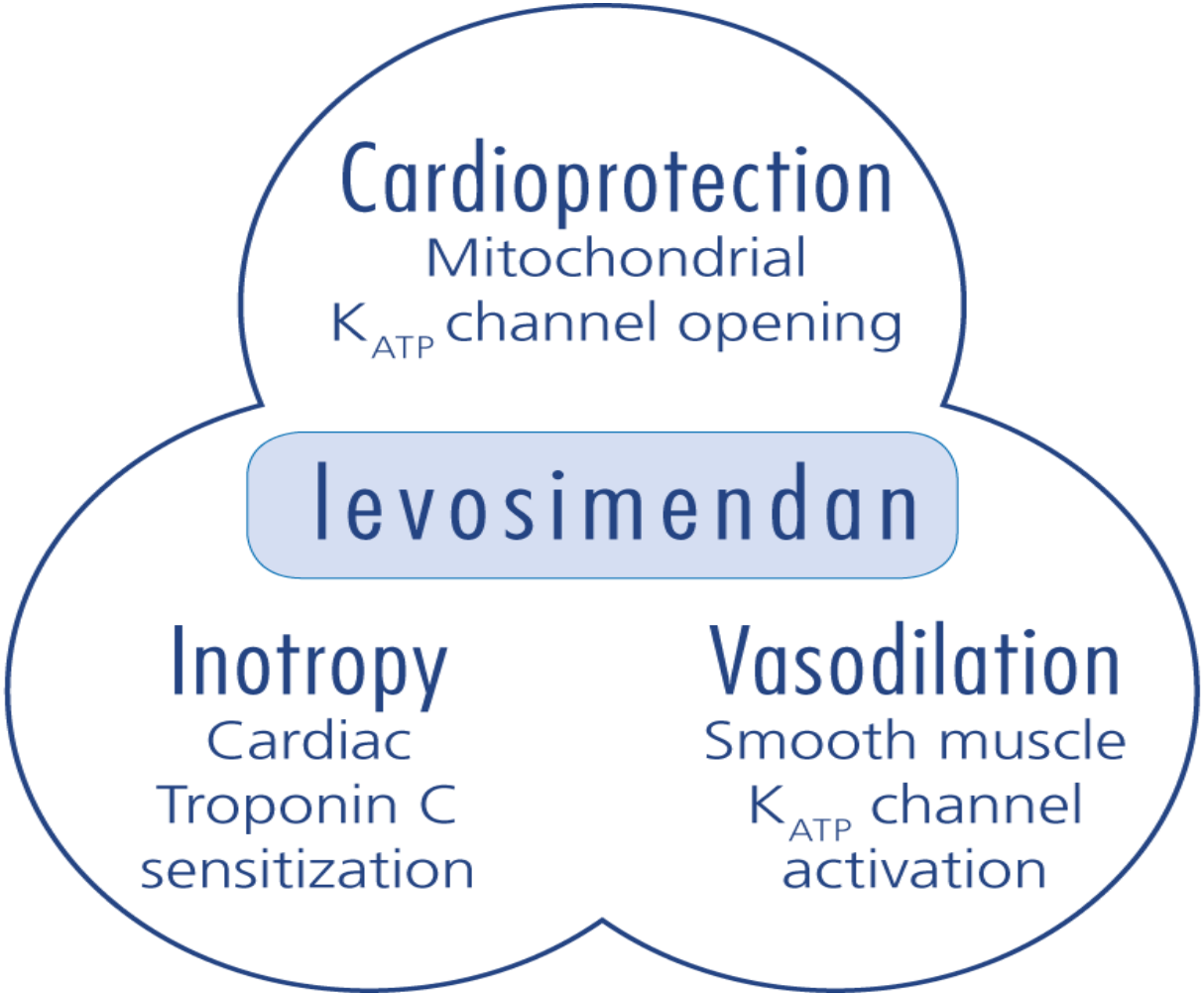
Study	OR (95% CI)	Events: Dobutamine	Events: Control	% Weight
Leier 1982	1.54 (0.12, 19.47)	2/15	1/11	2.58
Dies 1986	2.27 (0.75, 6.89)	13/31	7/29	10.83
Eriemeier 1992	1.00 (0.05, 1.57)	1/10	1/10	2.32
Ellis 1998	1.12 (0.06, 21.09)	9/10	8/9	2.17
Sindone 1998	0.14 (0.02, 1.06)	2/26	3/8	10.92
Oliva 1999	1.90 (0.38, 9.44)	5/19	3/19	5.70
Nieminen 2000	5.62 (0.22, 144.46)	1/20	0/36	0.87
CASINO 2004	1.84 (1.02, 3.32)	42/100	28/99	42.10
Nanas 2004	0.35 (0.07, 1.76)	9/16	11/14	13.24
Adamopoulos 2006	1.32 (0.31, 5.71)	5/23	4/23	8.07
Bader 2010	3.35 (0.13, 84.53)	1/43	0/47	1.19
Liang 1864	–	0/8	0/7	0.00
Wimmer 1999	–	0/10	0/10	0.00
Overall I^2=4.5%, p=0.401	**1.47 (0.98, 2.21)**	**90/331**	**66/322**	**100.00**



"This meta-analysis showed that dobutamine is not associated with improved mortality in patients with heart failure, and there is a suggestion of increased mortality associated with its use, although this did not reach the conventional level of statistical significance."

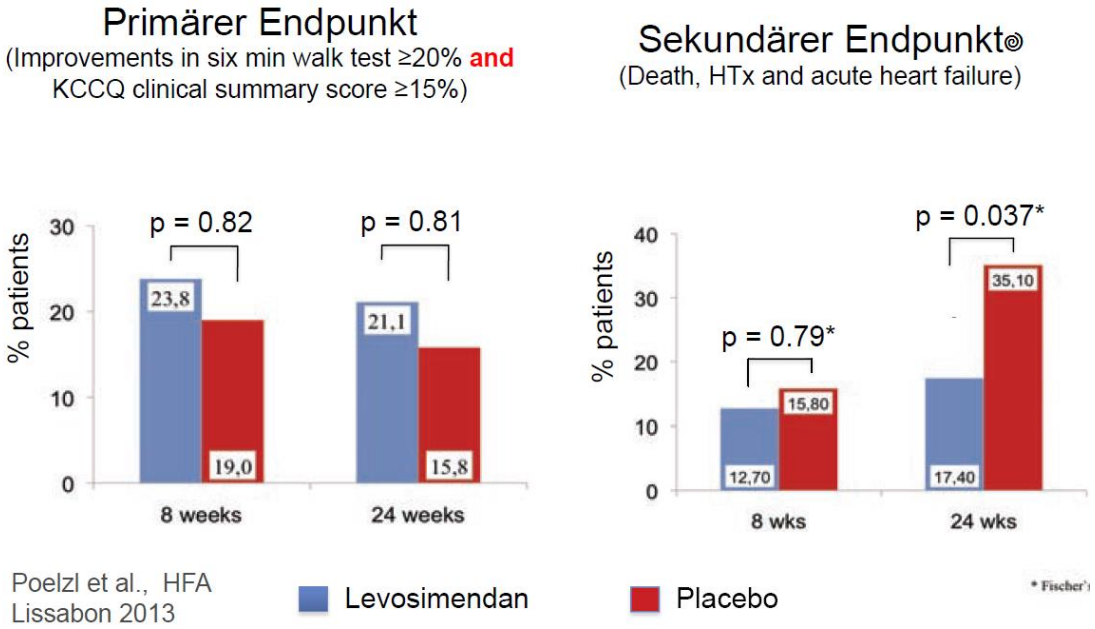
Tacon et al. Intensive Care Med 2011;38:359-367

Calcium Sensitizer: Levosimendan



LevoRep-Program

Patient: NYHA III/IV > 3 months
EF < 35%
OMD
IMC: iv Infusions (0,2 µg/kg/min) al 6-8 weeks



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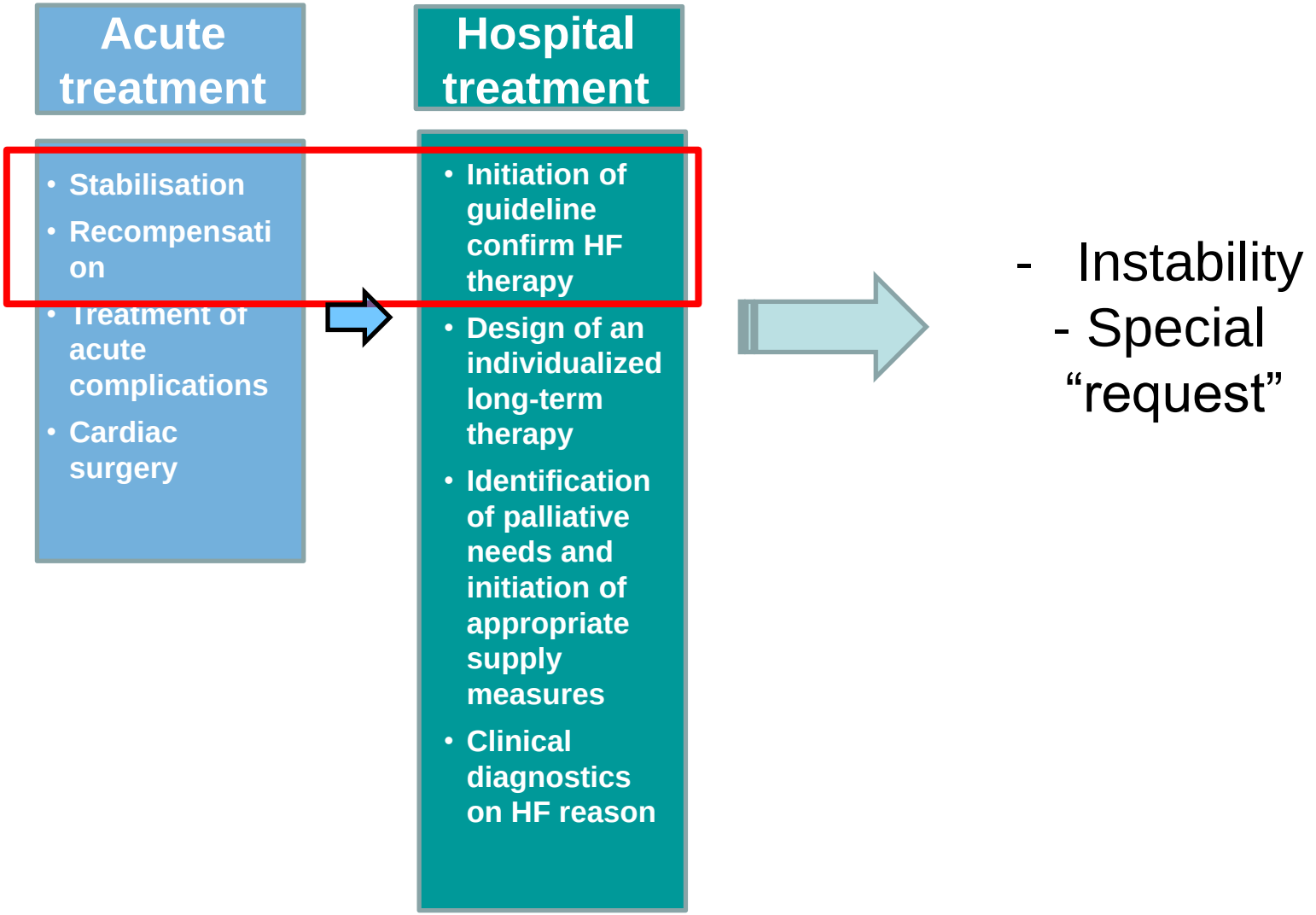
Heart Failure Clinic

Acute treatment

- Stabilisation
- Recompensation
- Treatment of acute complications
- Cardiac surgery

Heart Failure Clinic



Heart Failure Clinic

Acute treatment

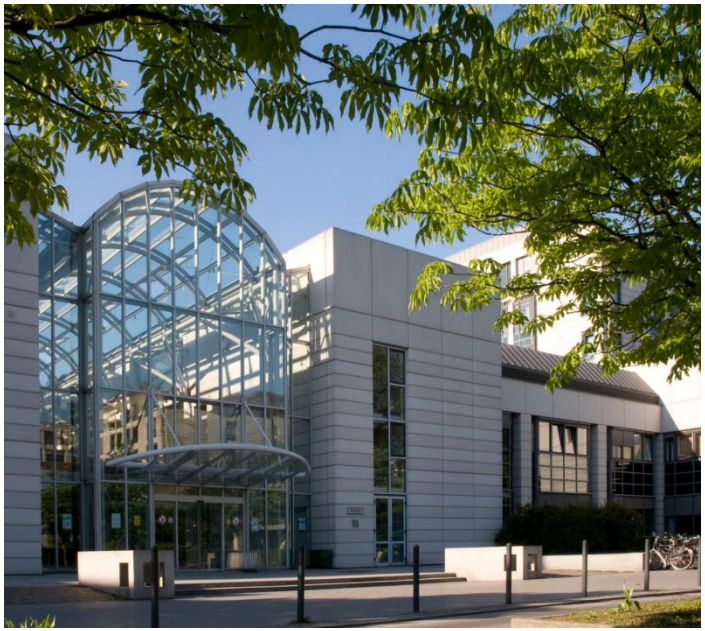
- Stabilisation
- Recompensation
- Treatment of acute complications
- Cardiac surgery

Hospital treatment

- Initiation of guideline confirm HF therapy
- Design of an individualized long-term therapy
- Identification of palliative needs and initiation of appropriate supply measures
- Clinical diagnostics on HF reason

Regional Heart Failure Center

Regional Heart Failure Center



Regional Heart Failure Center

Cardiologist/Heart Surgeon incl. Intensive Care specialty

Partners

- **Heart Team:**
  Heart Surgeon
  Anaesthesiologist

Regional Heart Failure Center

Cardiologist/Heart Surgeon incl. Intensive Care specialty

Partners

- Heart Team:
  Heart Surgeon
  Anaesthesiologist
- Neurologist
- Haematologist
- Vascular Surgeon
- Psychiatrics
- Palliative Medicine

Spectrum

- Genetic testing
- PCI/ACVB
- Valve Interventions
- Complex HRST Ablation
- Left/Right Catheter
- MRI
- LVAD-/Trapla program
- ECMO/Impella
- Myocardial biopsy

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Cardiologist/Heart Surgeon incl. Intensive Care specialty

Partners

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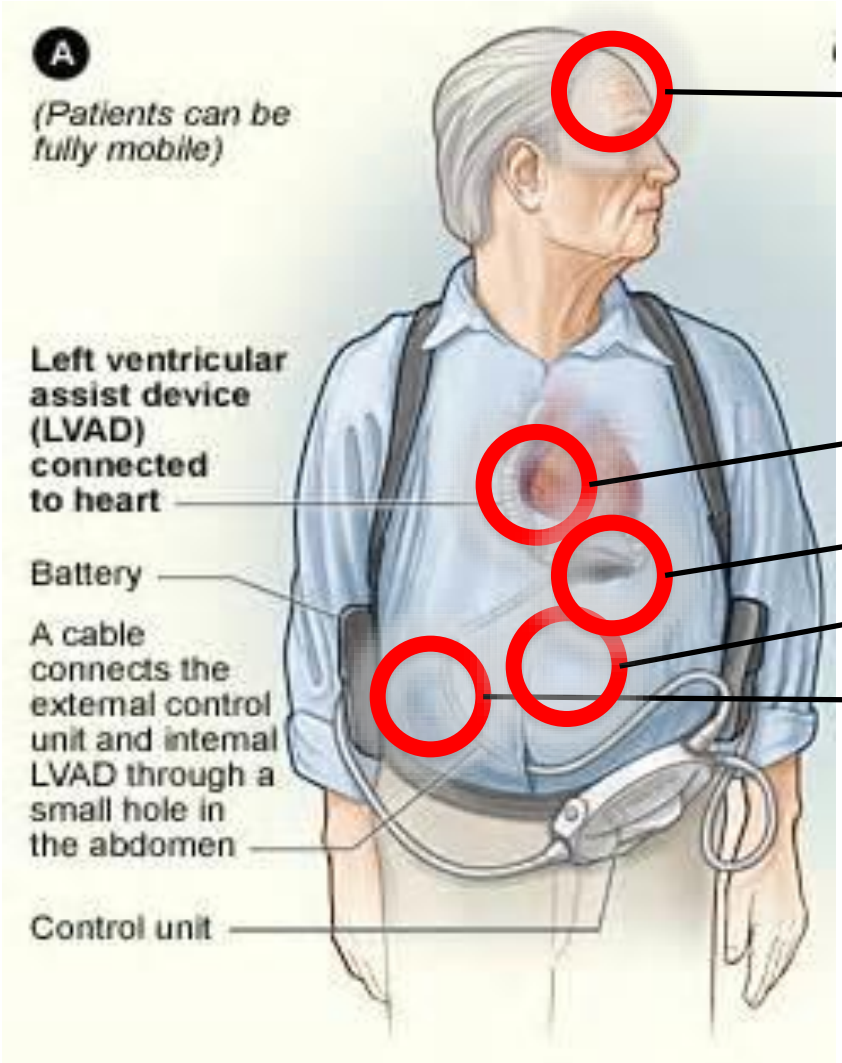
LVAD
Complicationen



Bleeding/Stroke

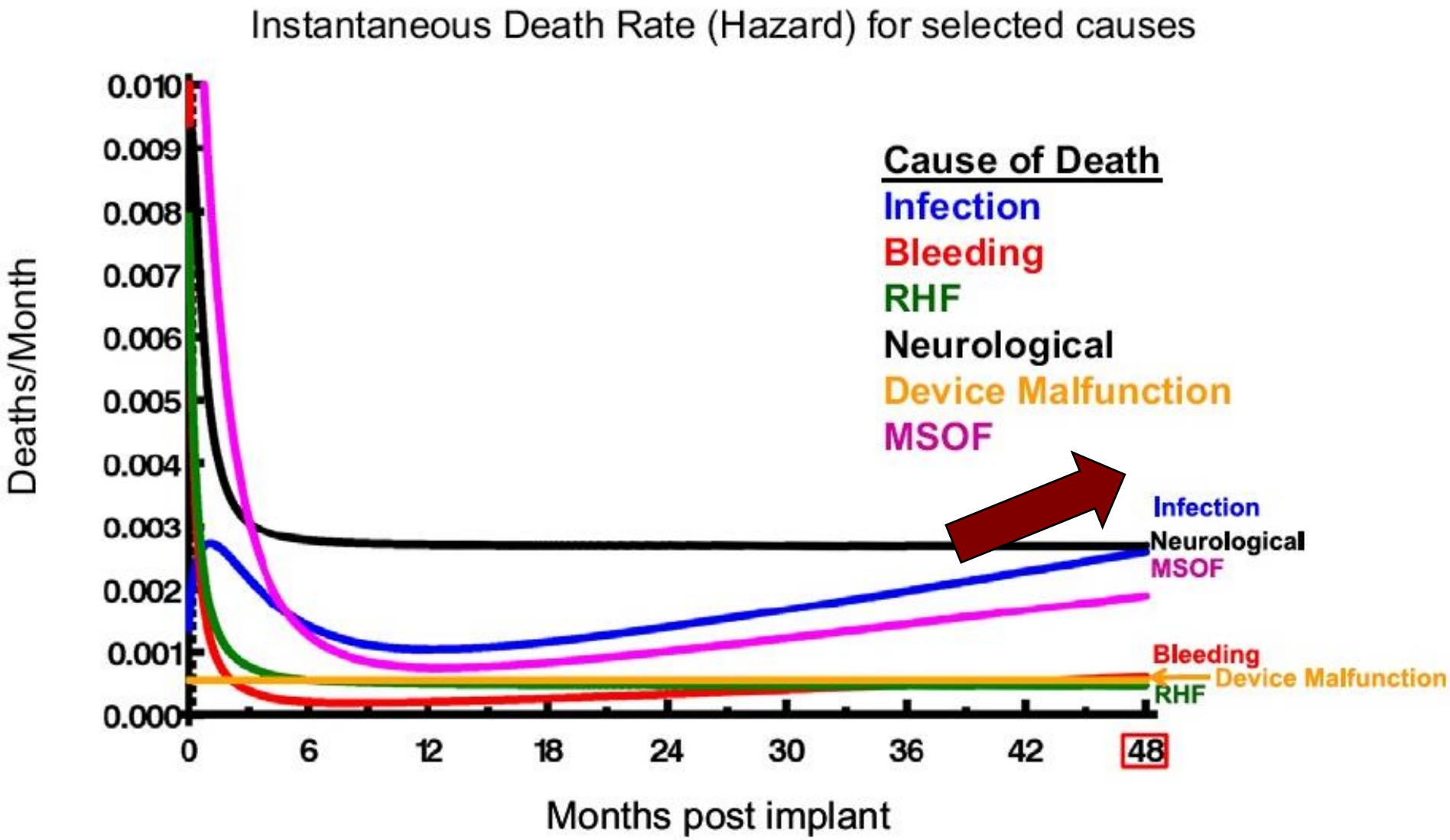
Right heart Failure

Device Failure

GI-Bleeding

Driveline Infections

Complicationen
Continuous Flow Devices

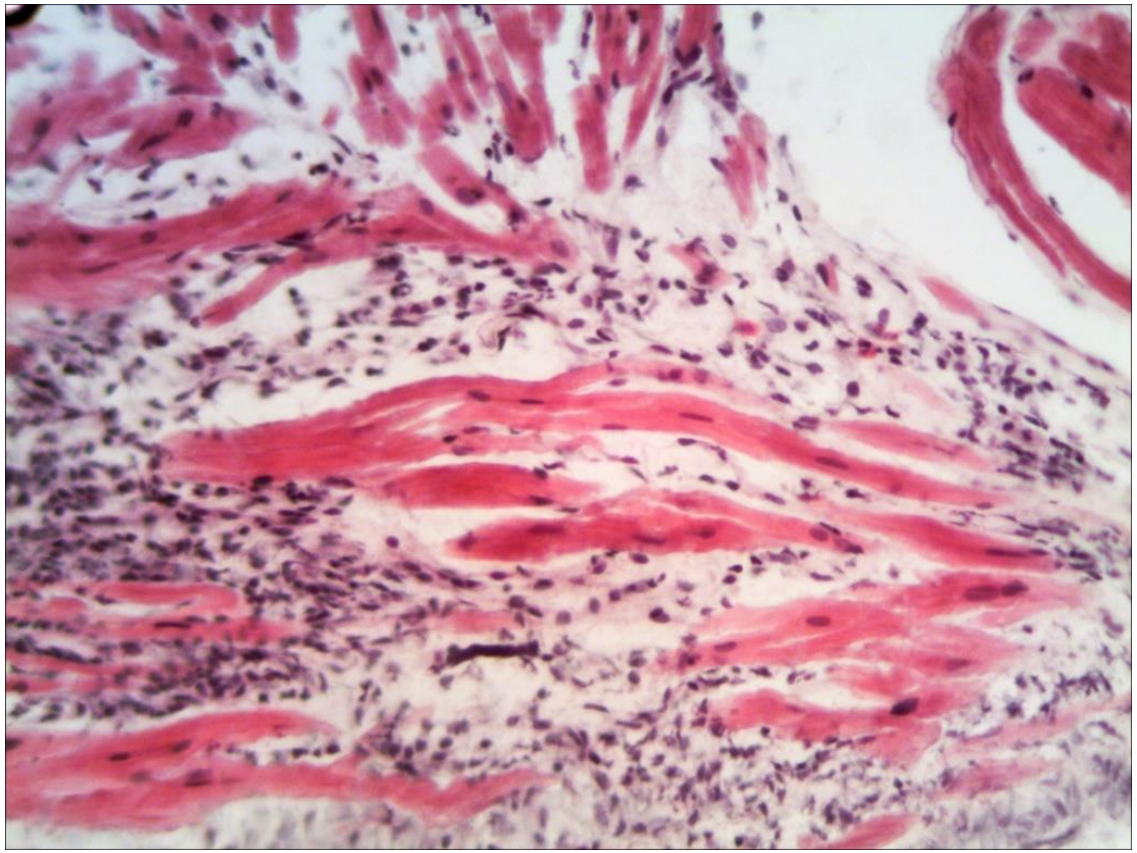


Kirklin, Journal of Heart and Lung Transplant. 2014;33:555-564.

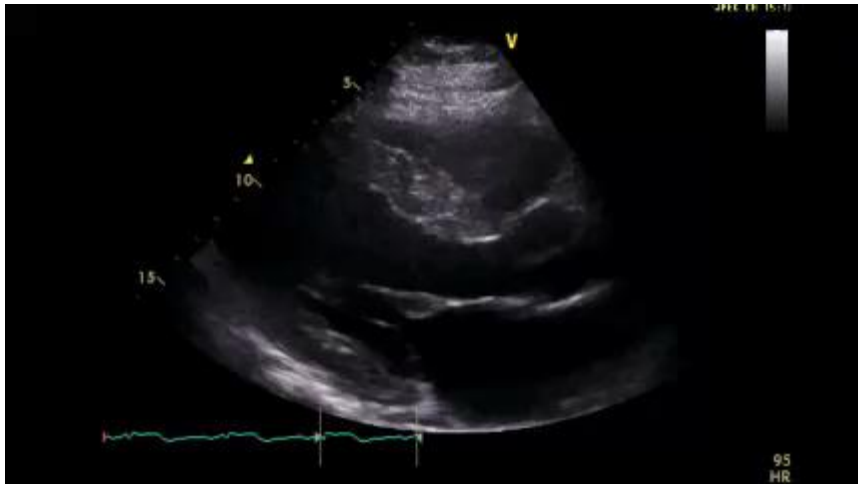
Patient 2: W.H.
27.01.1981

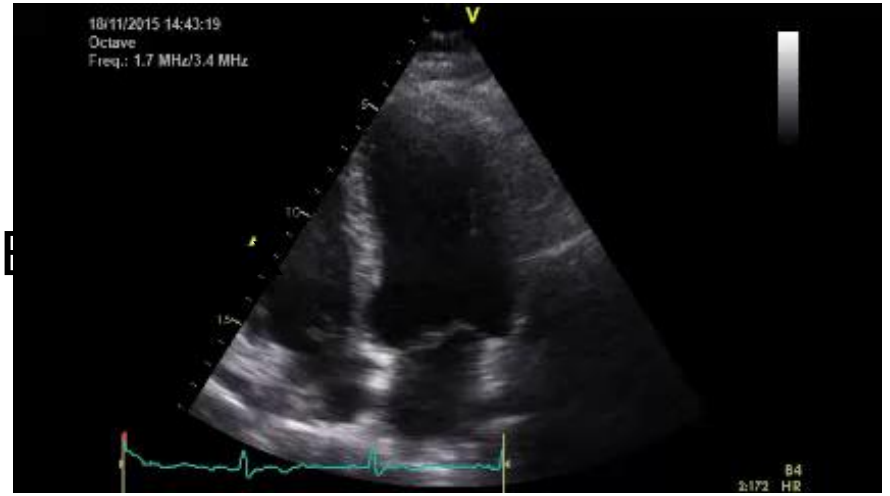
EMB (21.10.2015):

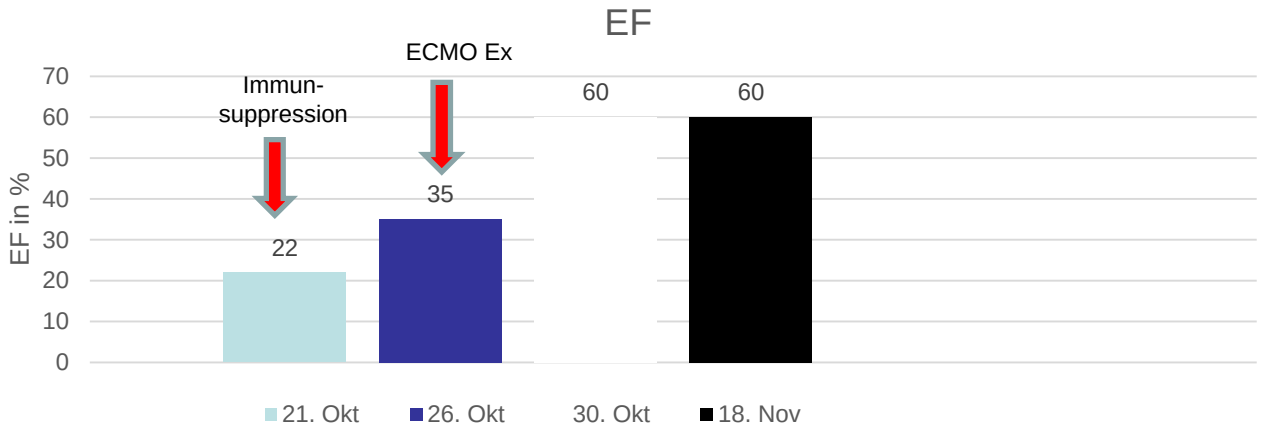
Eosinophilic Myocarditis / Perforin pos / PVB pos.



Course of an eosinsophilic myocarditis

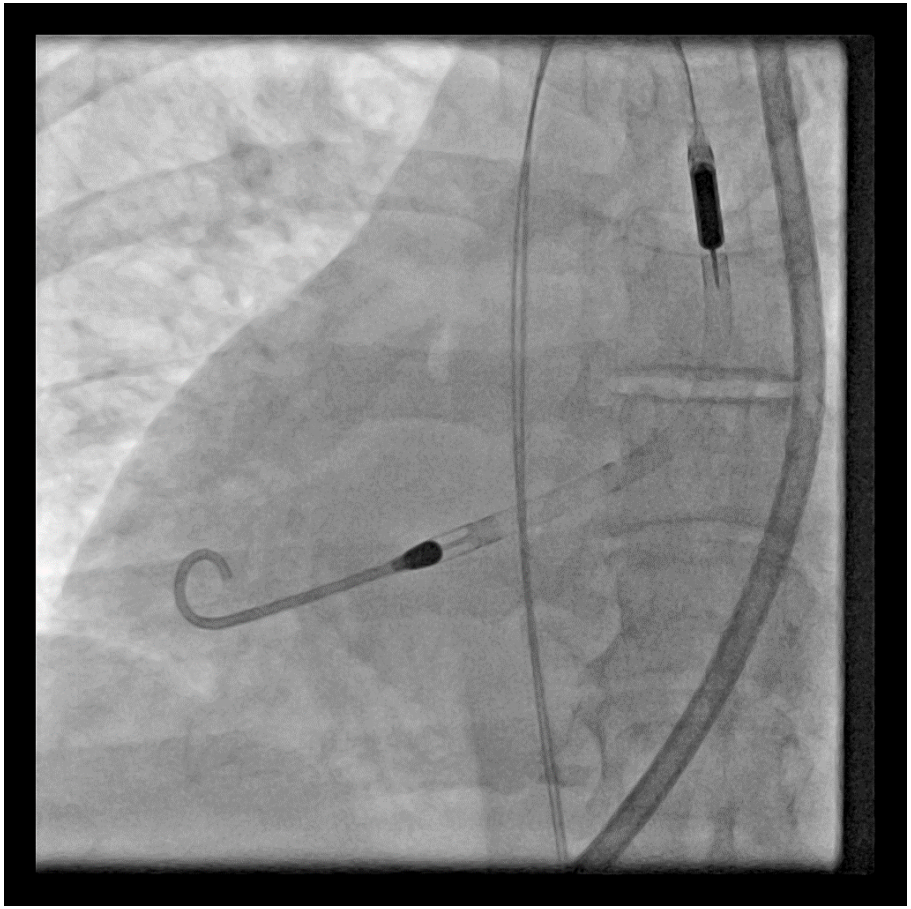






Intermediate mechanical unloading in severe heart failure patients by targeting integrin induced cardiac stress for reverse remodeling

Use of the Impella 5.0 Device as a Bridge to Recovery in Adult Fulminant Viral Myocarditis



Regional Heart Failure Center

Cardiologist/Heart Surgeon incl. Intensive Care specialty

Partners

- Heart Team:
  Heart Surgeon
  Anaesthesiologist
- Neurologist
- Haematologist
- Vascular Surgeon
- Psychiatrics
- Palliative Medicine

Spectrum

- Genetic testing
- PCI/ACVB
- Valve Interventions
- Complex HRST Ablation
- Left/Right Catheter
- MRI
- LVAD-/Trapla program
- ECMO/Impella
- Myocardial biopsy

ESC Guidelines

Chest radiography (X-ray) is recommended in patients with HF to detect/exclude alternative pulmonary or other diseases, which may contribute to dyspnoea. It may also identify pulmonary congestion/oedema and is more useful in patients with suspected HF in the acute setting.	I	C
Right heart catheterization with a pulmonary artery catheter:		
- is recommended in patients	I	C
- should be considered in pat	IIa	C
pulmonary hypertension an		
- may be considered in order	IIb	C
standard therapies and who		
EMB should be considered in patients with rapidly progressive HF despite standard therapy when there is a probability of a specific diagnosis which can be confirmed only in myocardial samples and specific therapy is available and effective.	IIa	C
Thoracic ultrasound may be considered for the confirmation of pulmonary congestion and pleural effusion in patients with AHF.	IIb	C
Ultrasound measurement of inferior vena cava diameter may be considered for the assessment of volaemia status in patients with HF.	IIb	C

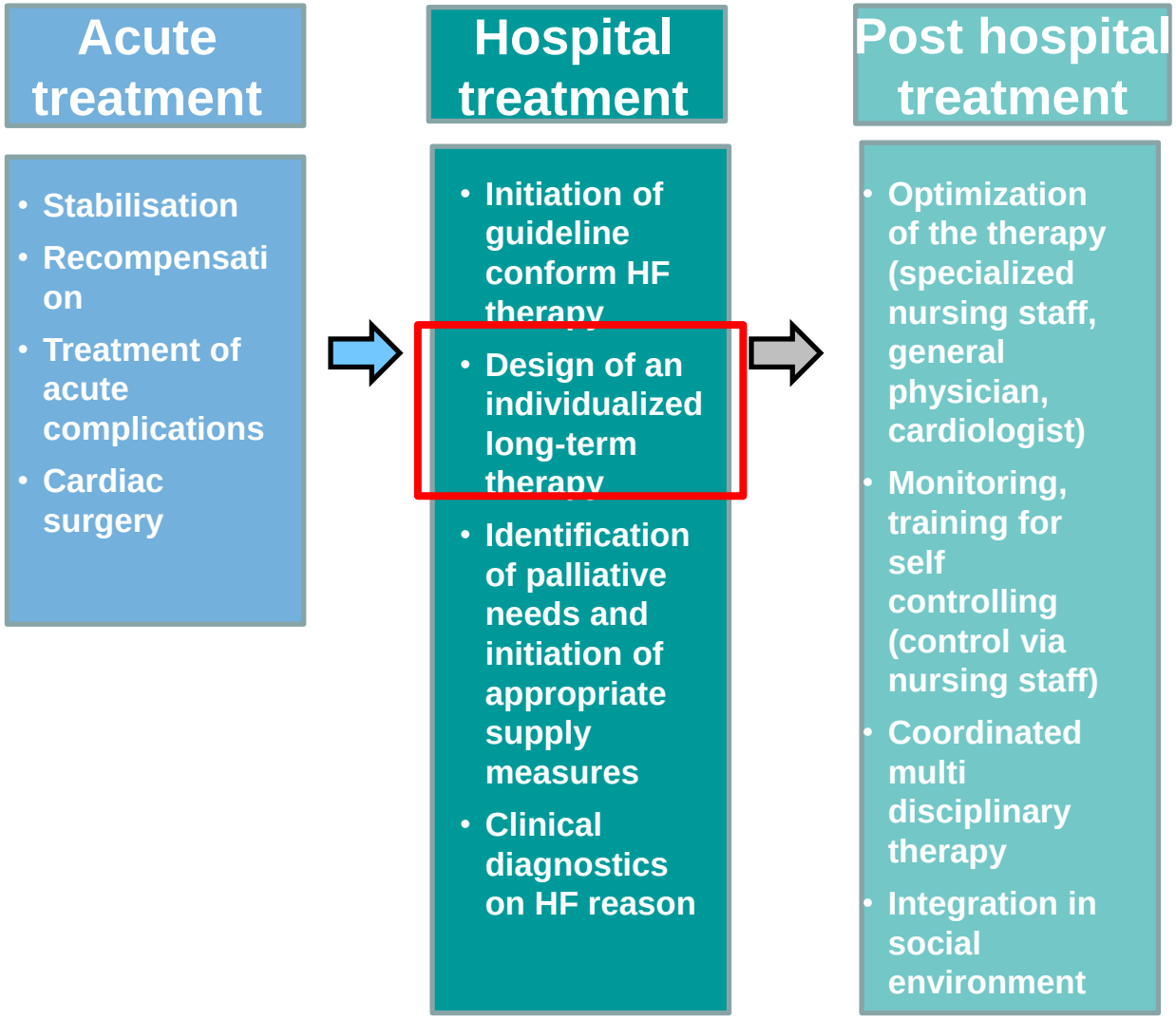
Biopsy

Ponikowski, Eur Heart J 2016

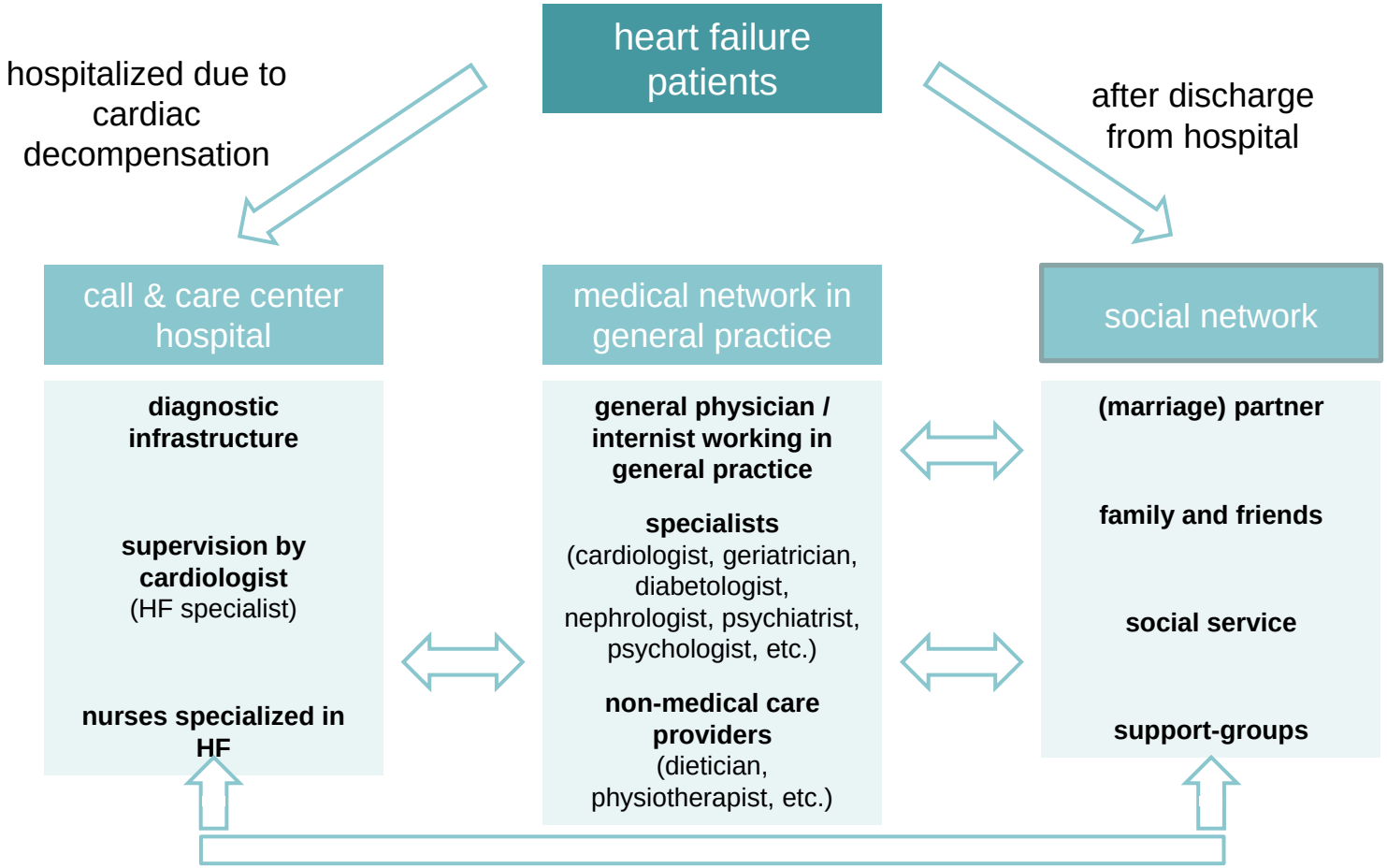
Structured Discharge program

Network with the HF out clinic praxis

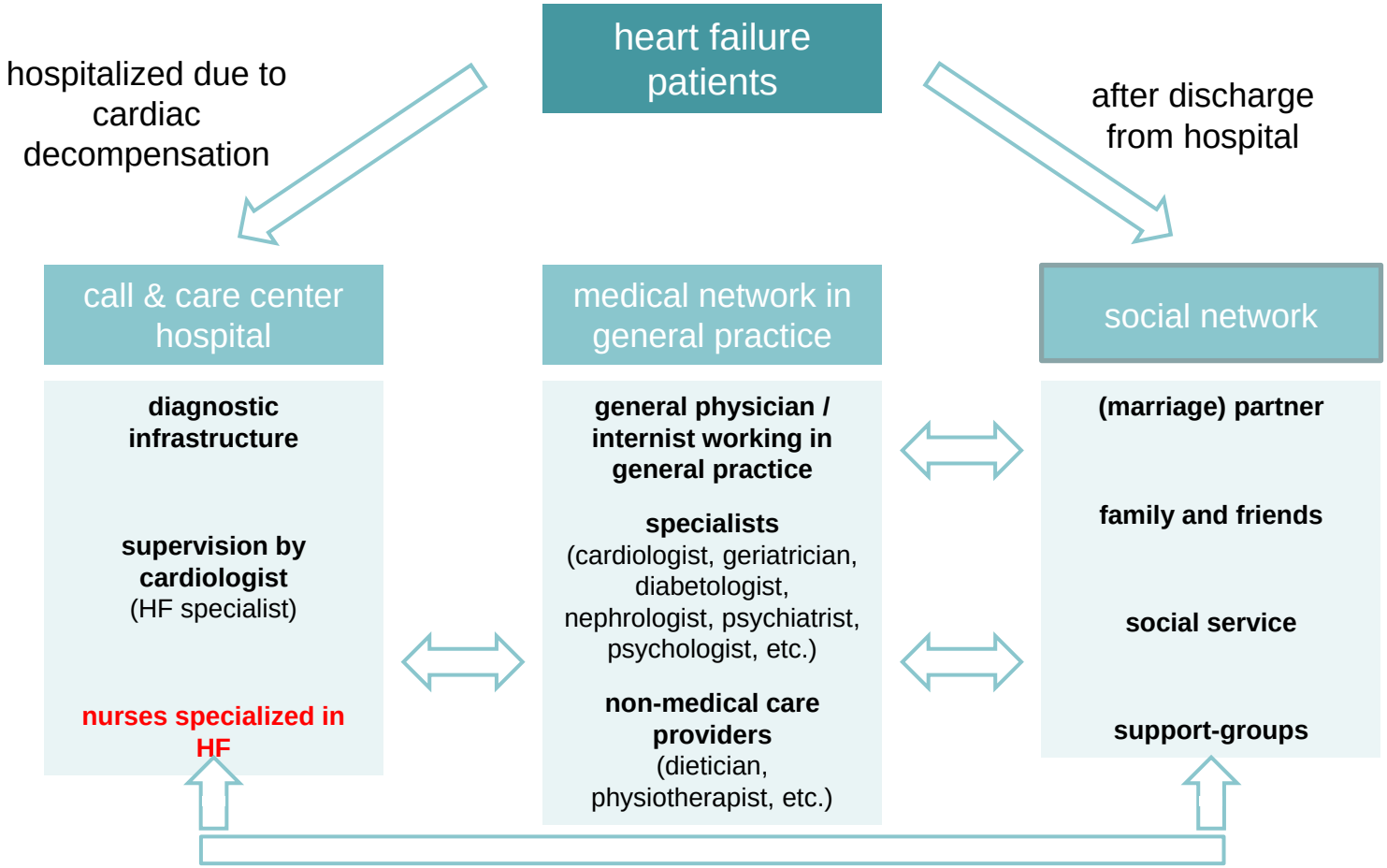
Heart Failure Unit
Heart Failure Clinic



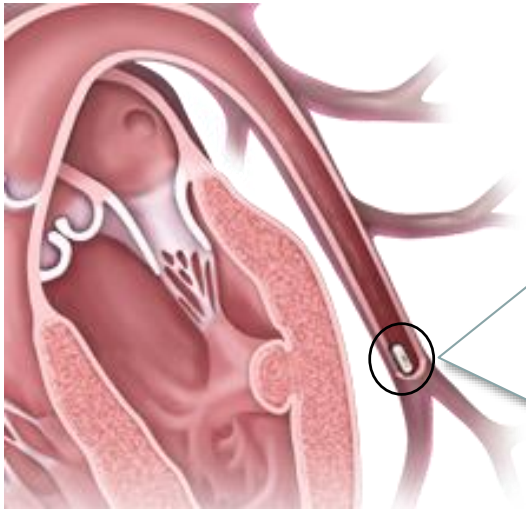
Supply strategy in Heart Failure *HeartNetCare-HF*™ – Supply network for heart failure risik patients



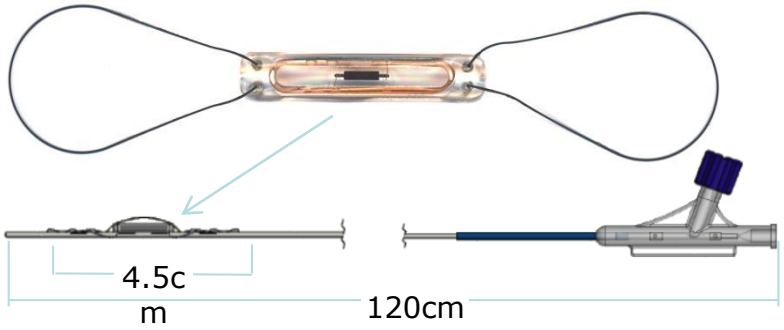
Supply strategy in Heart Failure *HeartNetCare-HF*™ – Supply network for heart failure risik patients



Pressure sensor: Cardiomems

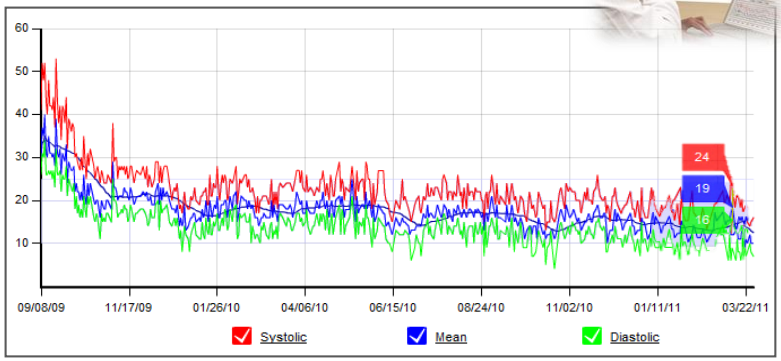


PA Pressure Sensor on Catheter Delivery System



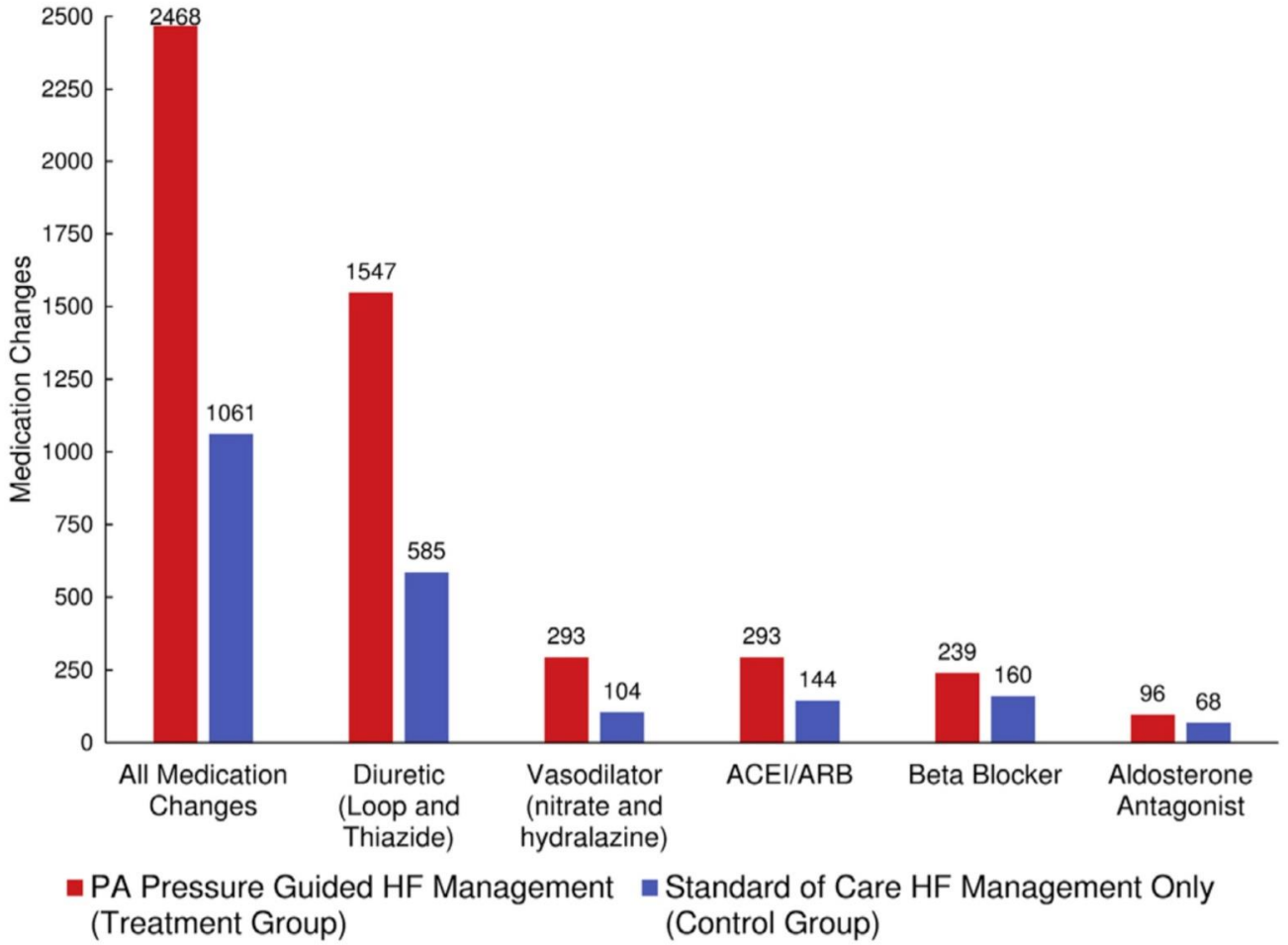
Patient Home Electronics Unit

PA Pressure Database



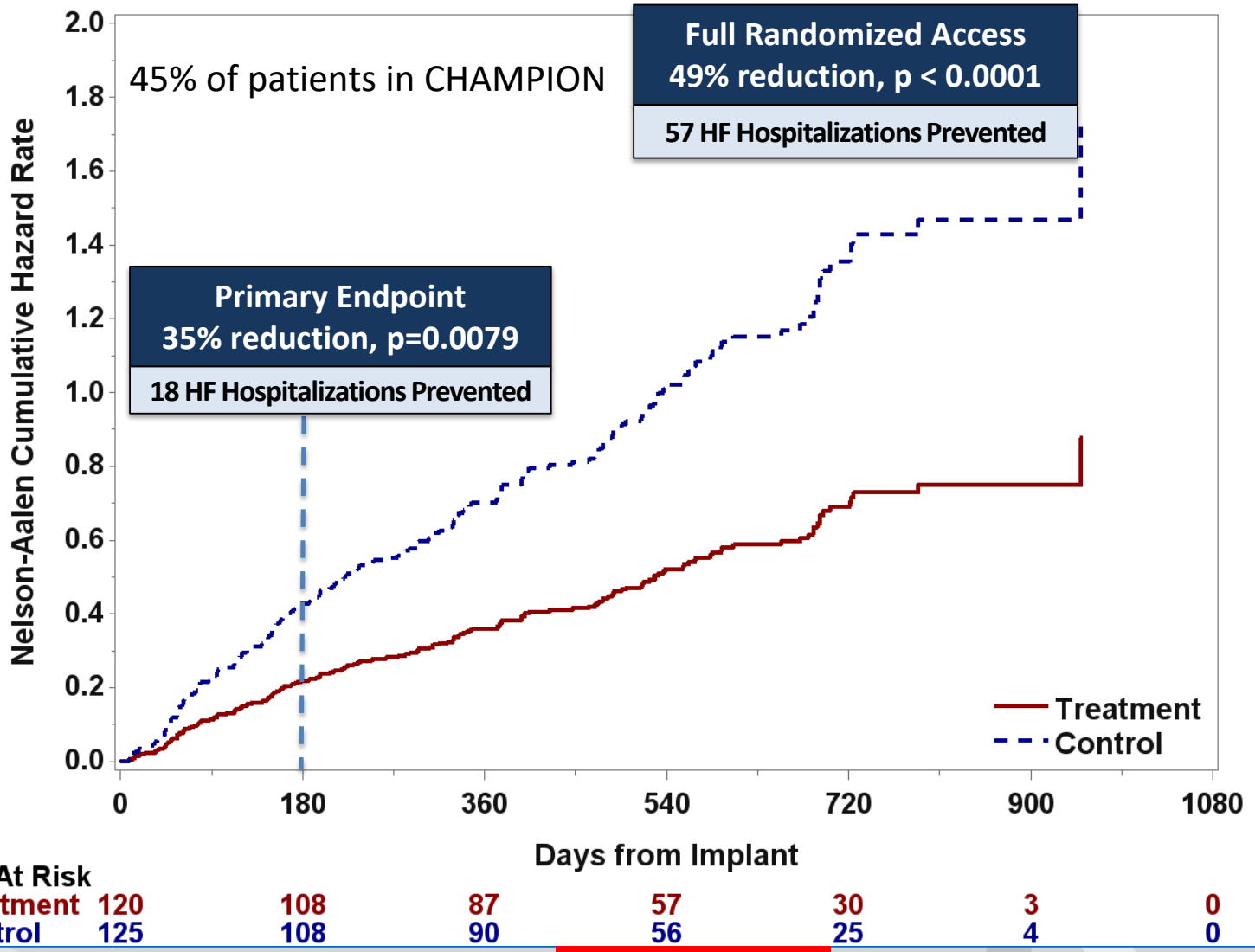
Physician Access Via Secure Website

Pressure Sensor: Cardiomems
Regulation of drugs



Costanzo et al, JACC Heart Failure 4 (2016): 333-344

Pressure sensor: Cardiomems Reduction of Hospitalisationrate

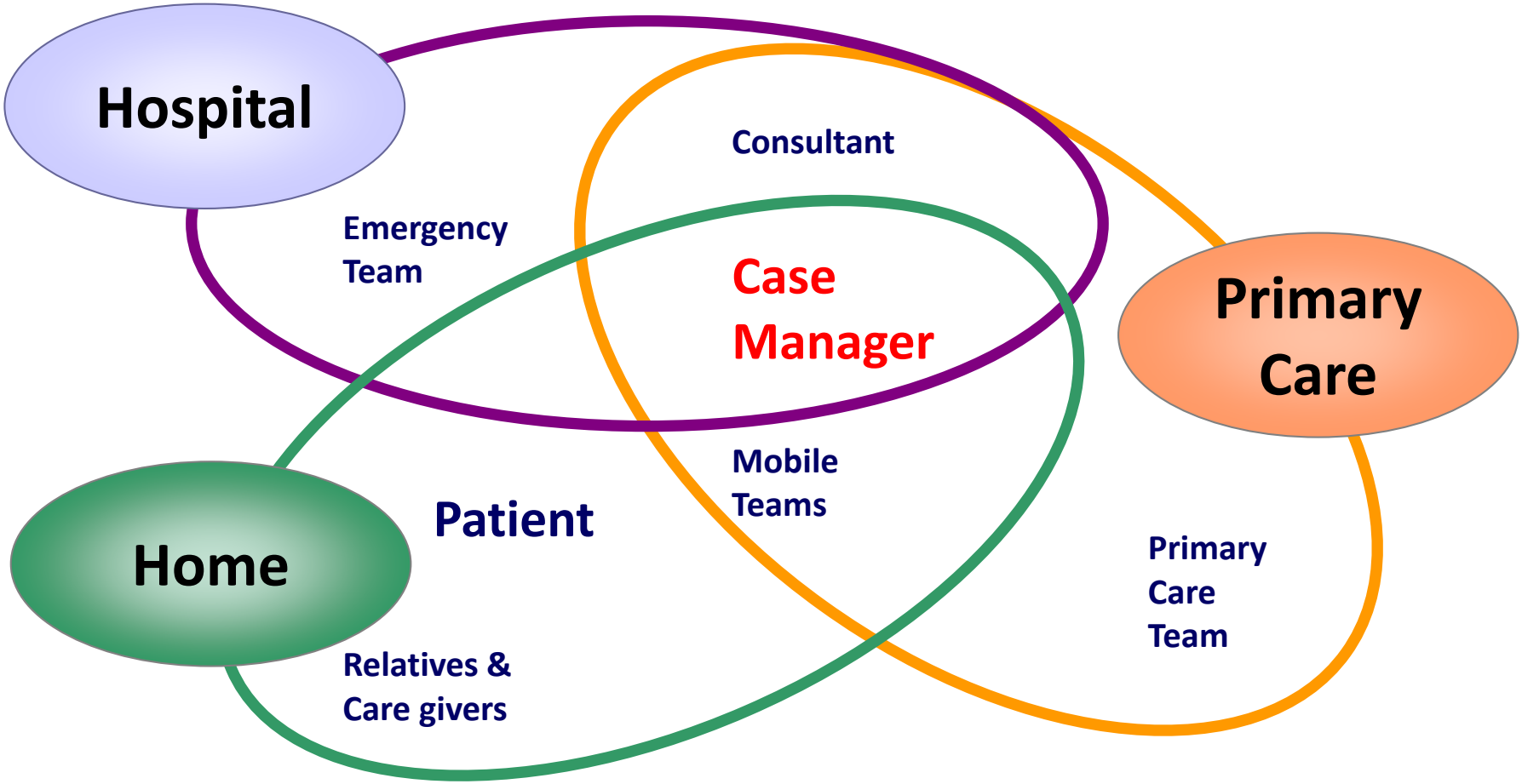


Adamson PB, Abraham WT, et al Circulation 2014; abst

Adaptation of health services to *chronic* patients

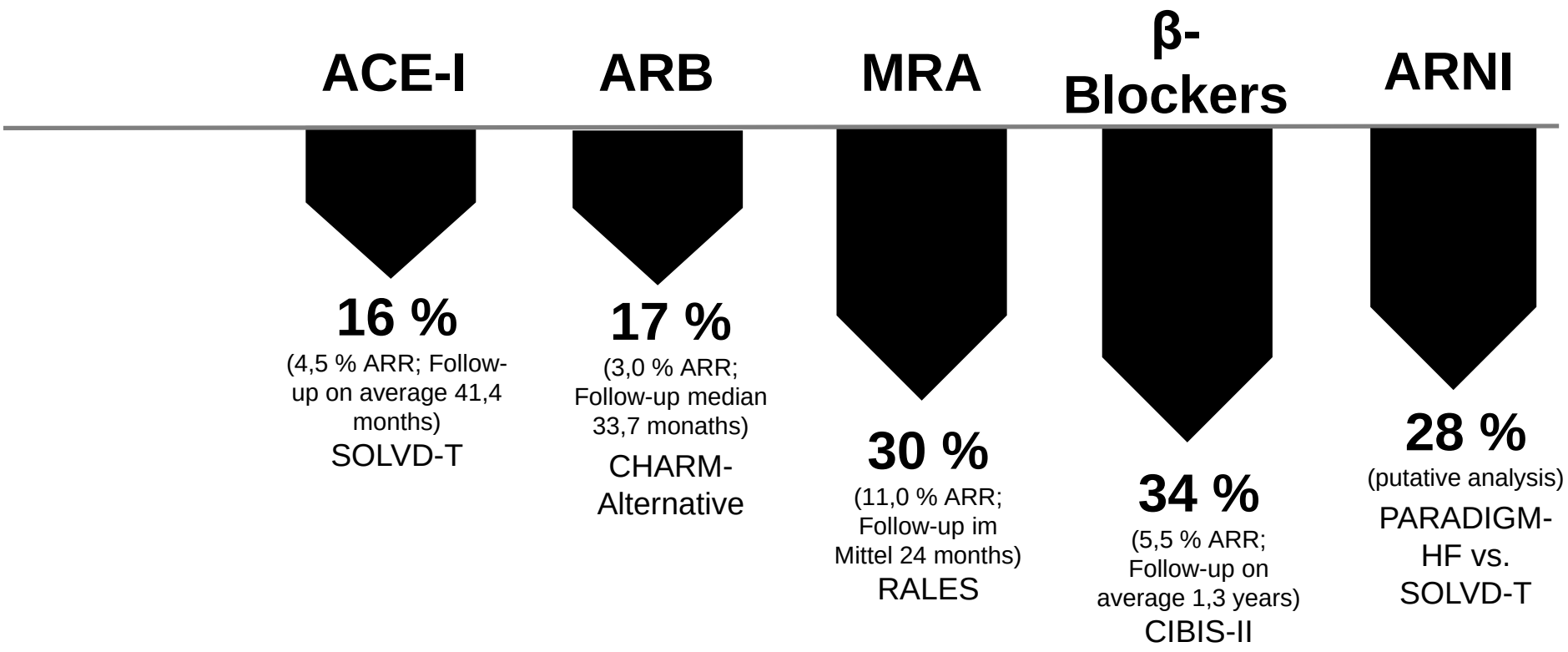
(*shared care arrangements across the system*)

Example Catalunya



Expertise improves the outcome

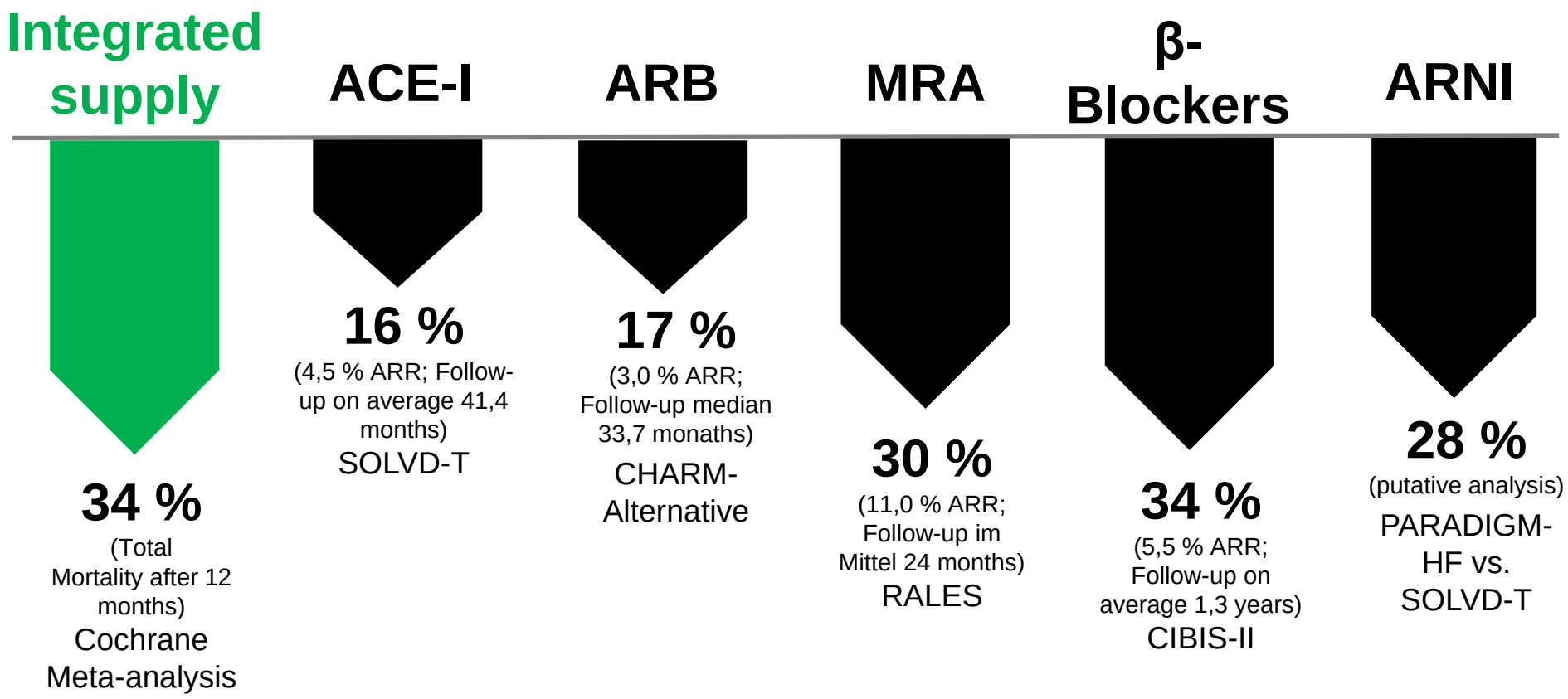
Reduction der Mortalität



Takeda et al., Cochrane Database of Systematic Reviews 2012

Expertise improves the outcome

Reduction der Mortalität



Takeda et al., Cochrane Database of Systematic Reviews 2012