

How to built up a Heart Failure Clinic in 2017?

The German View

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Charité – Dept Cardiology
Campus Virchow Clinic
Berlin

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.

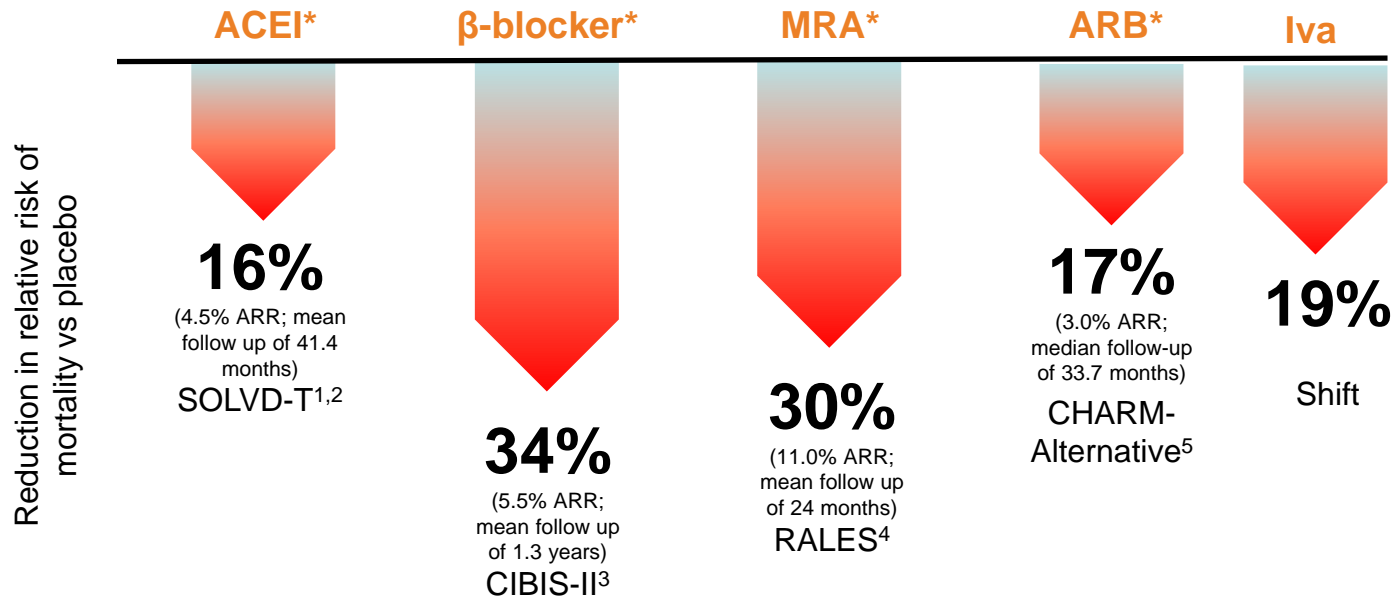
Germany ca. 300 000 Pat. /year

Rising



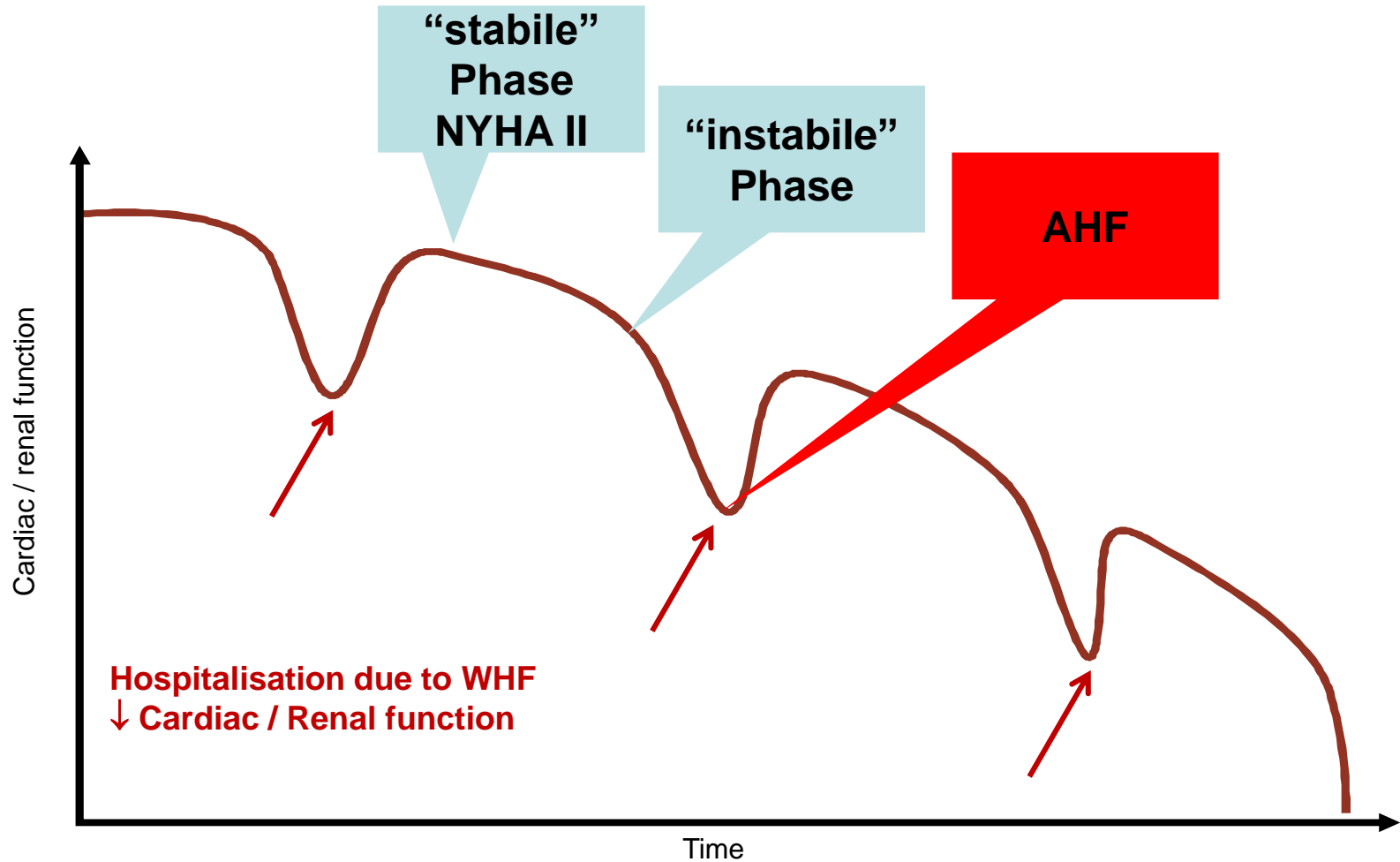
- Aging
- Rise in risk factors
- Improved prognosis after MI

High mortality in heart failure exists further



- However, significant mortality remains: ~50% of patients die within 5 years of diagnosis⁶⁻⁸

Heart failure is not stable !



„The frequent flyer“

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JN The JAMA Network
JAMA The Journal of the
American Medical Association

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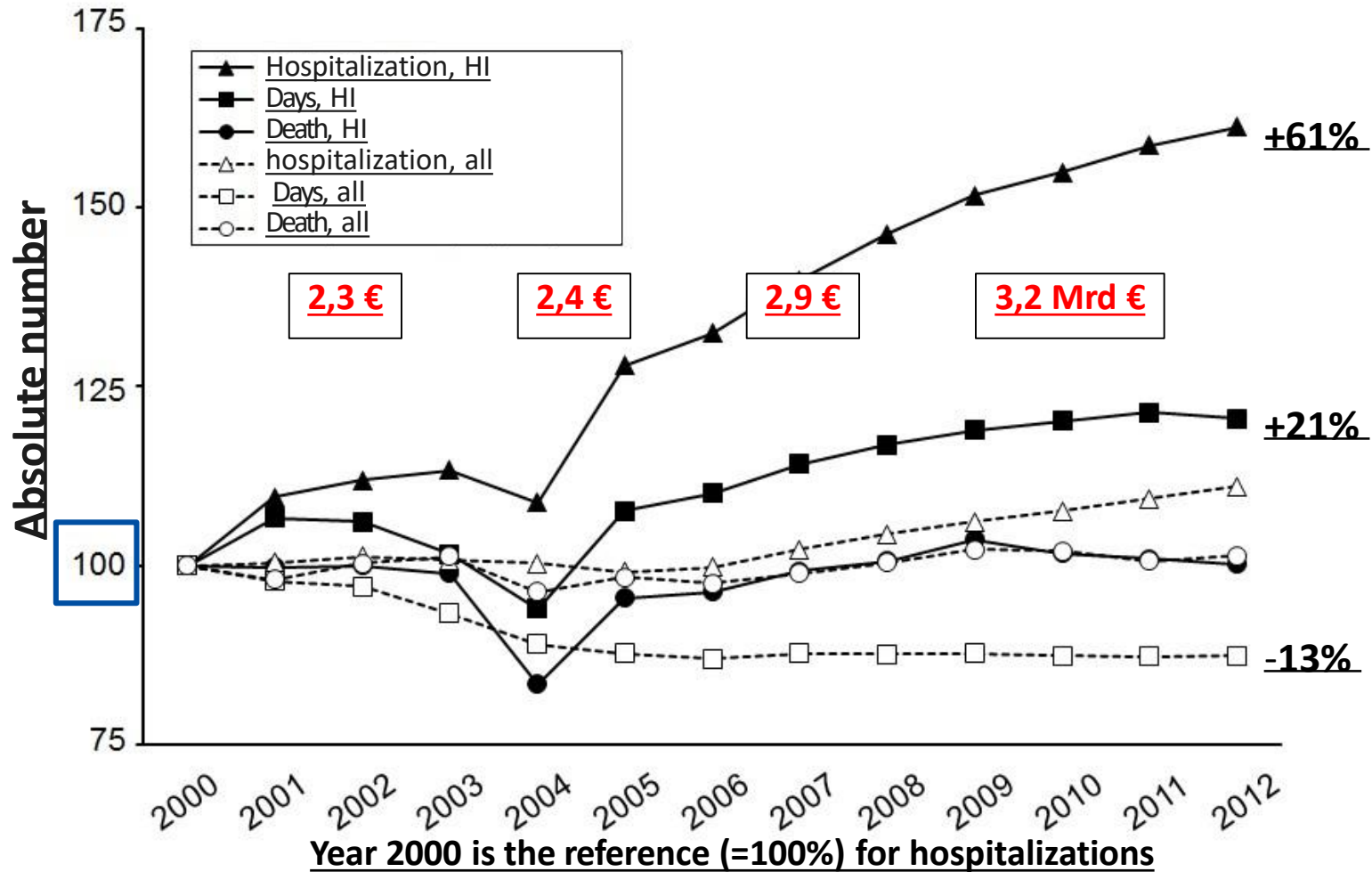
JAMA

January 23, 2013, Vol 309, No. 4

Trends (Germany)

Hospitalization, hospital days, hospital-related death

Absolute case number x 1000. costs in billions €



Heart failure imposes a significant economic burden on the healthcare system



70%

of the cost of HF is due to hospitalizations¹

~10%

of the cost of HF is due to pharmacological treatment²

German cardiology committee Heart Failure Units



Empfehlungen und Stellungnahmen

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

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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

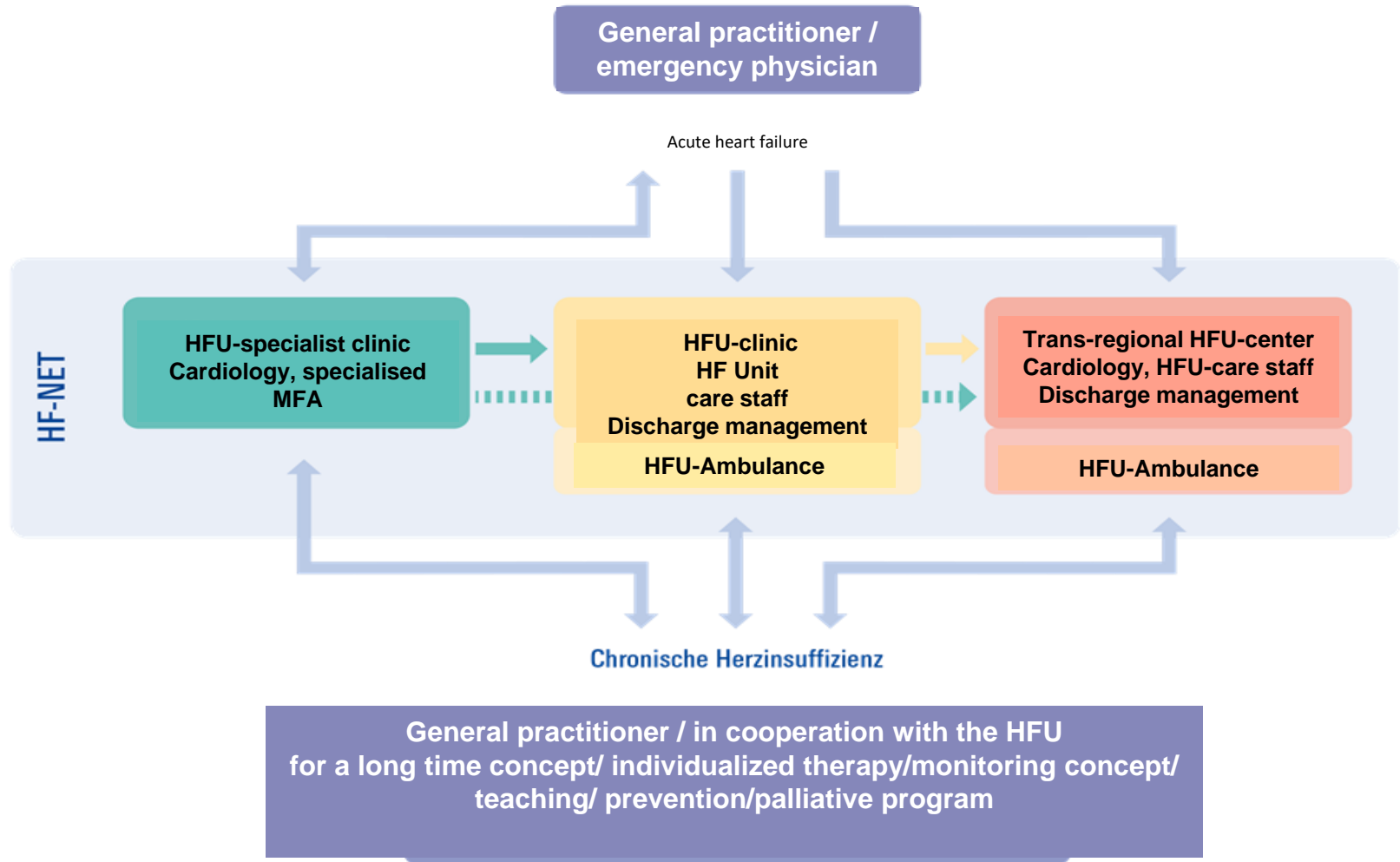
Gemeinsame Empfehlungen der DGK und der DGTHG zur Behandlung

Common recommendation of DGK and DGTHG for treatment of heart failure

Deutsche
Gesellschaft
für Kardiologie



HF-NET with HFU-modules at three organisational levels



Heart Failure Out Clinic Praxis



Heart Failure Out Clinic Praxis

Cardiologist

Cooperation with HF-Clinic

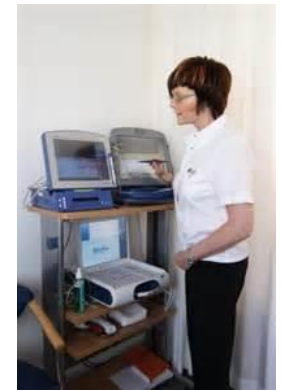
EKG/24hEKG, Echo/Stress Echo
Ergo, PM/ICD/CRT control

Lab: Trop T / BNP

Special educated nurses

Treatment SOPs

1 Monitor, O₂, AICD



Cooperation for testing:
Sleep apnoe, Spiroergometrie, Lungfunktion

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

Task:

First contact

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- Progression of chronic HF
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Teaching HF patients

- **compliance/self treatment**

Organisation of HF programs

- HF nurses

Lack of awareness

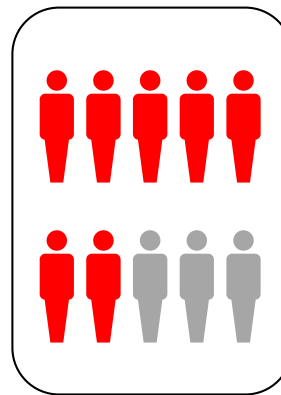


Prevalence, symptoms and prognosis of HF receive not enough attention

AWARENESS IN THE POPULATION

86 %
have heard of HF ...

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



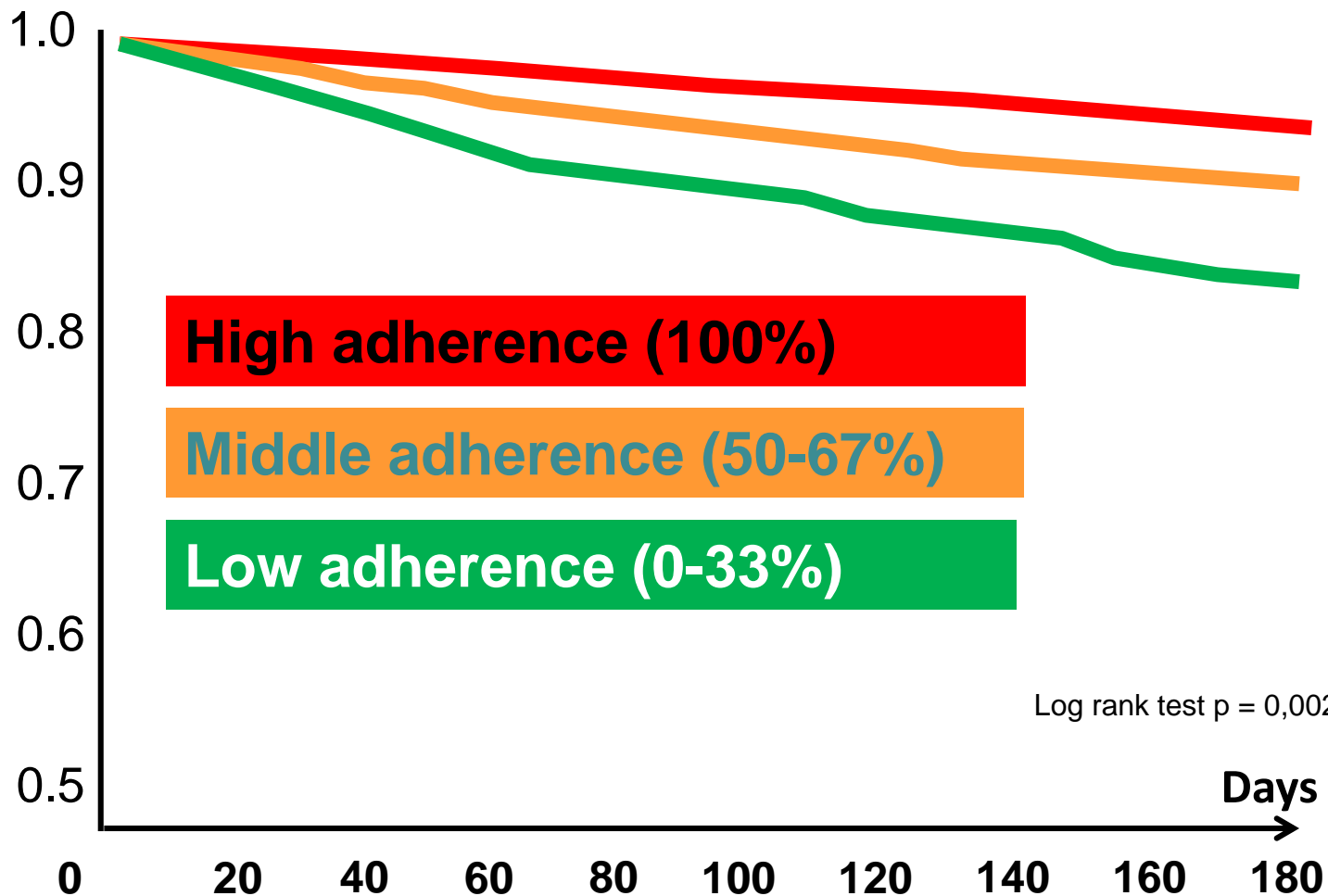
ABOUT **70 %** CONSIDER HF **NOT** AS A SEVERE DISEASE

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

The role of adherence to guidelines in clinical praxis

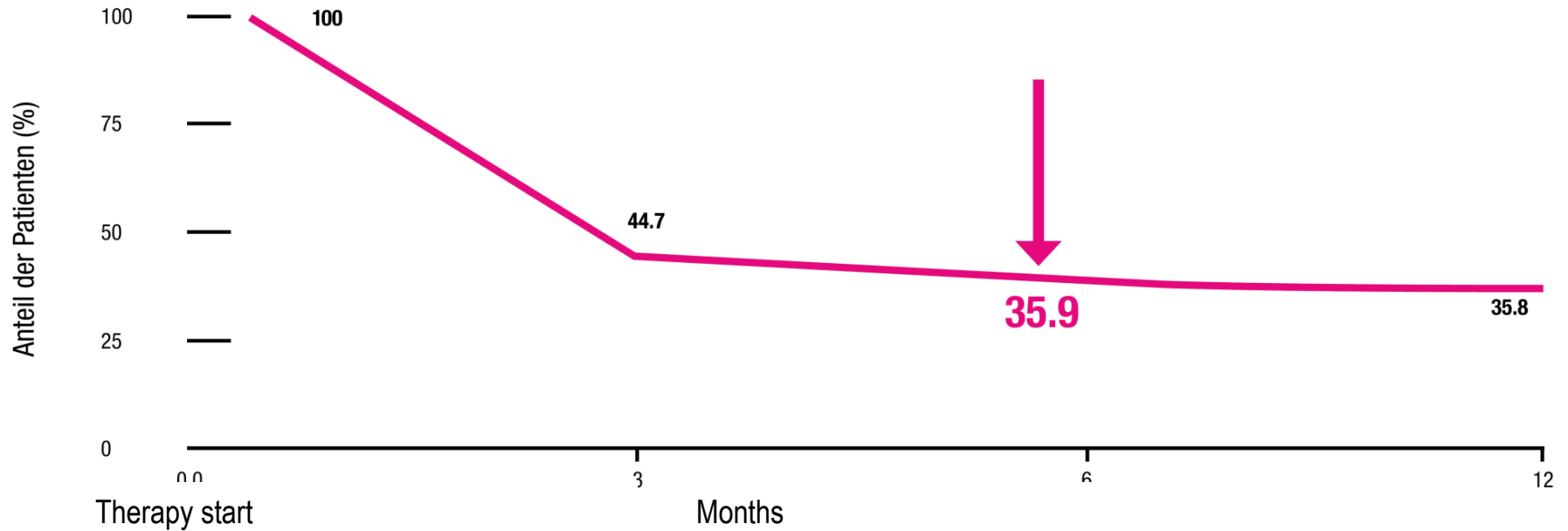


Freedom of Hospitalisation



Log rank test p = 0,002

Adherence of RR and lipidtherapy over time



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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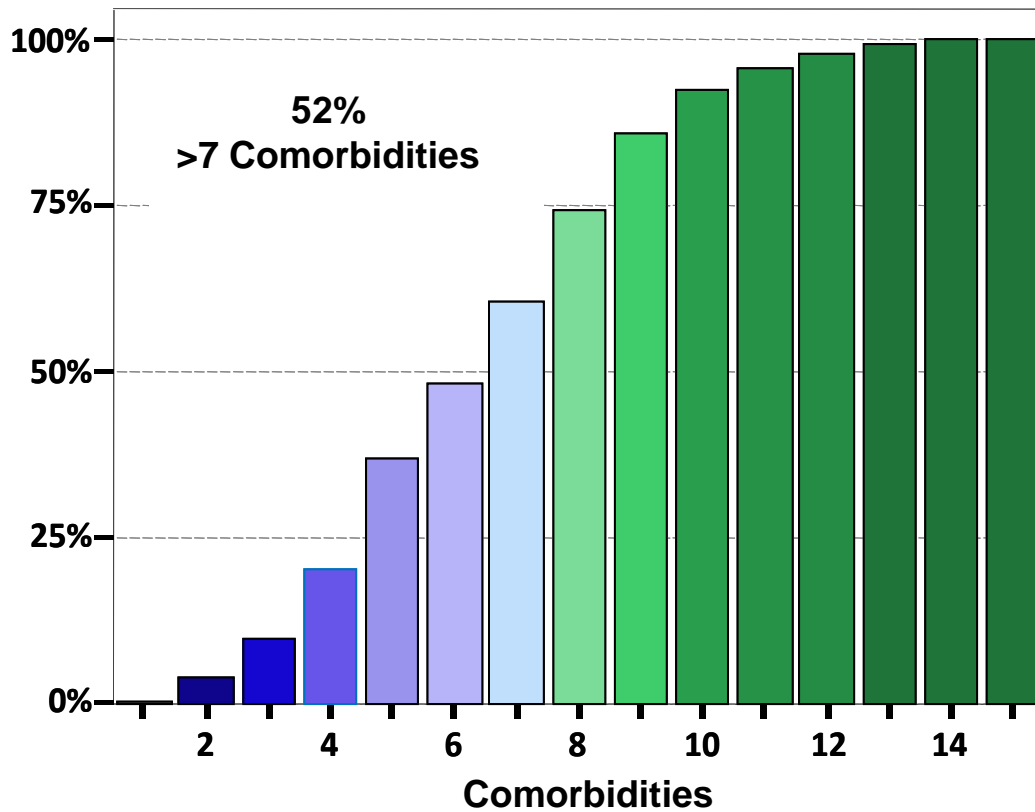
Basal equipment

**EKG/RR control
Echo/TOE
X-Ray
CT**

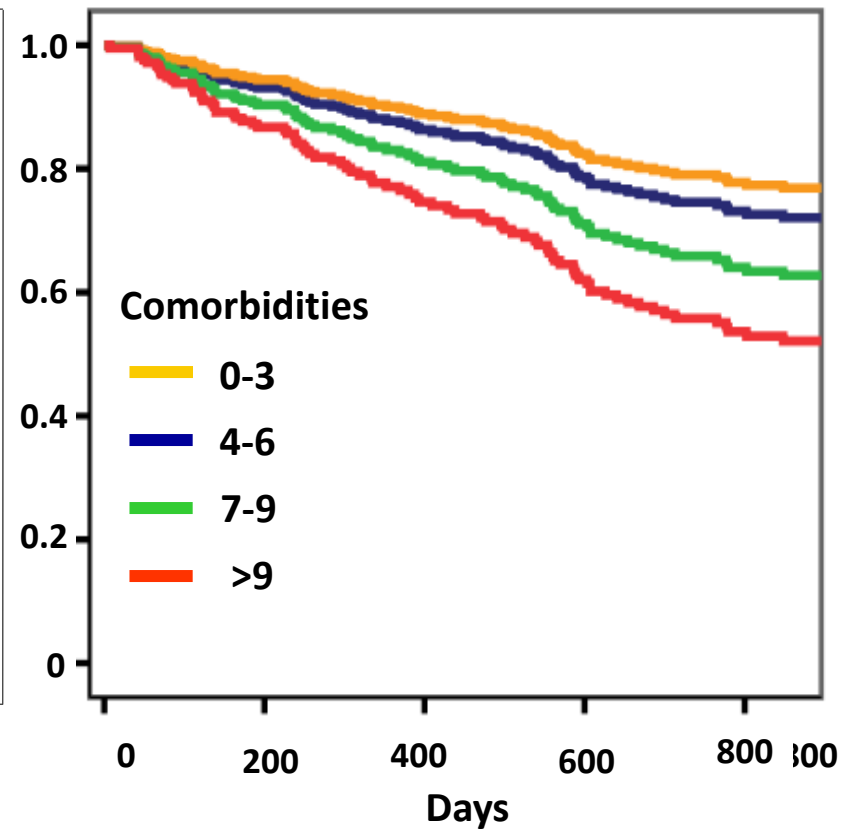
Basic diseases and comorbidities of Heart Failure Patients in Germany (Area of Würzburg n=1054)



Cumulative co-bidities (per patient)



Survival with heart failure



Heart Failure Clinic



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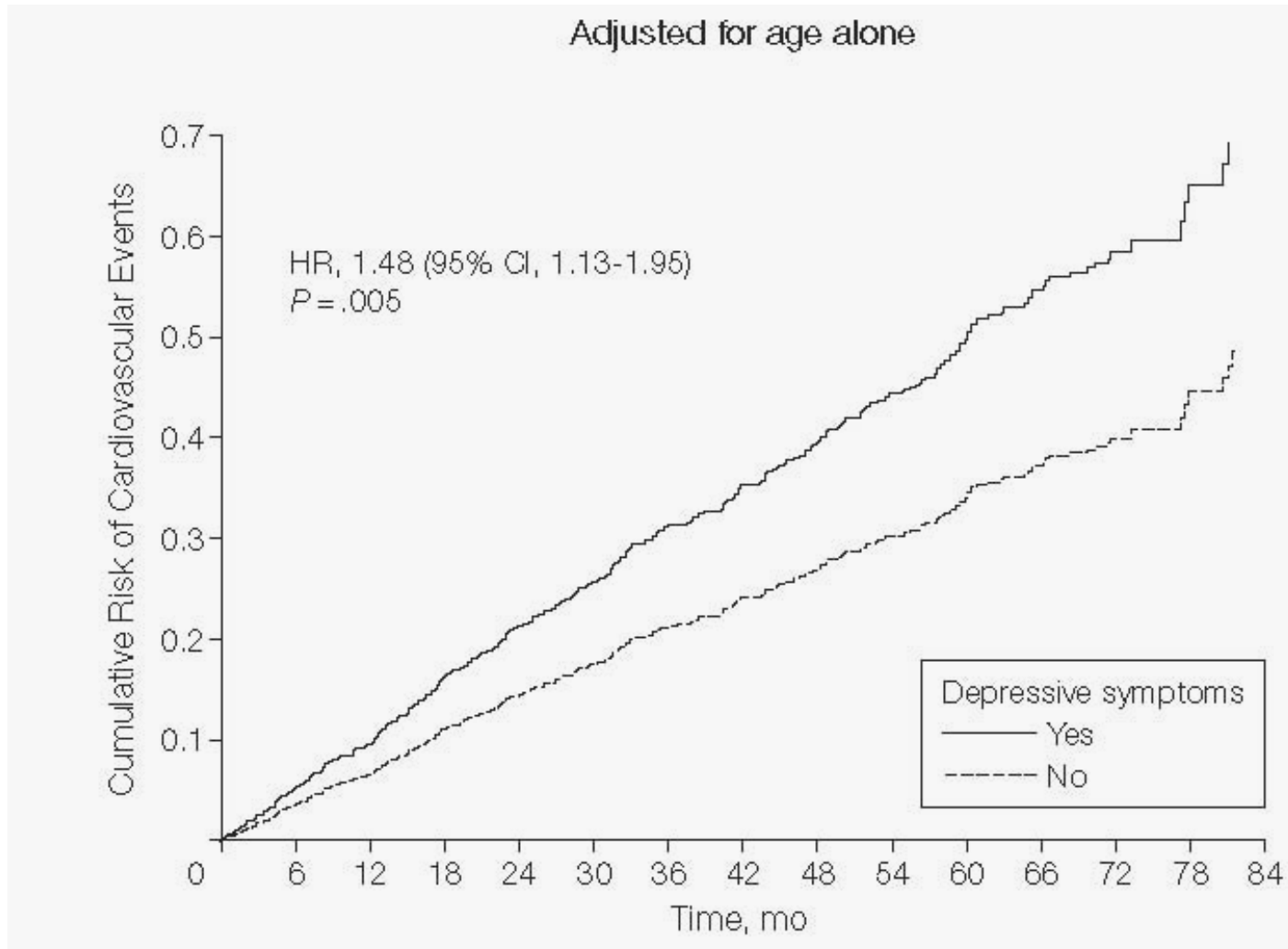
Nephrology, Pulmonology,
Radiology, **Psychiatrics**
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CT



Heart and Soul Studie : Dpression and HF





Patient Health 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

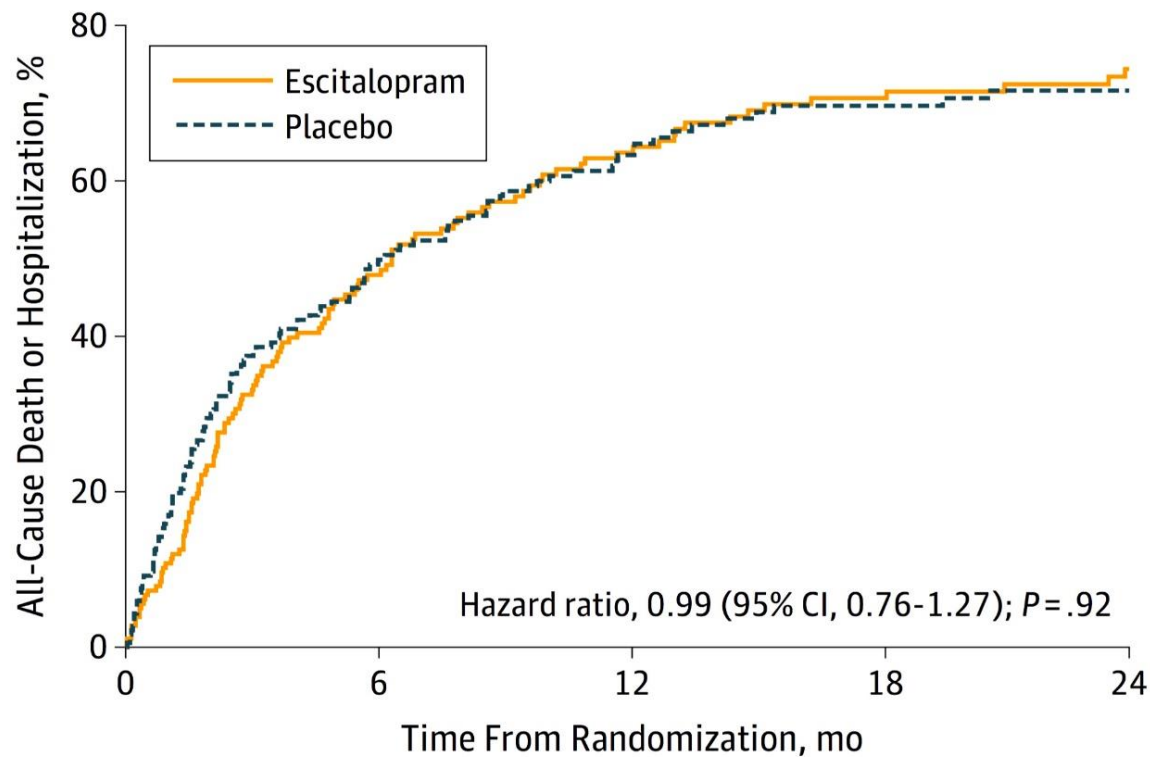
MOOD-HF

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



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but plus Intensive Care specialty**
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Gastroenterology

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X-Ray
CT

- 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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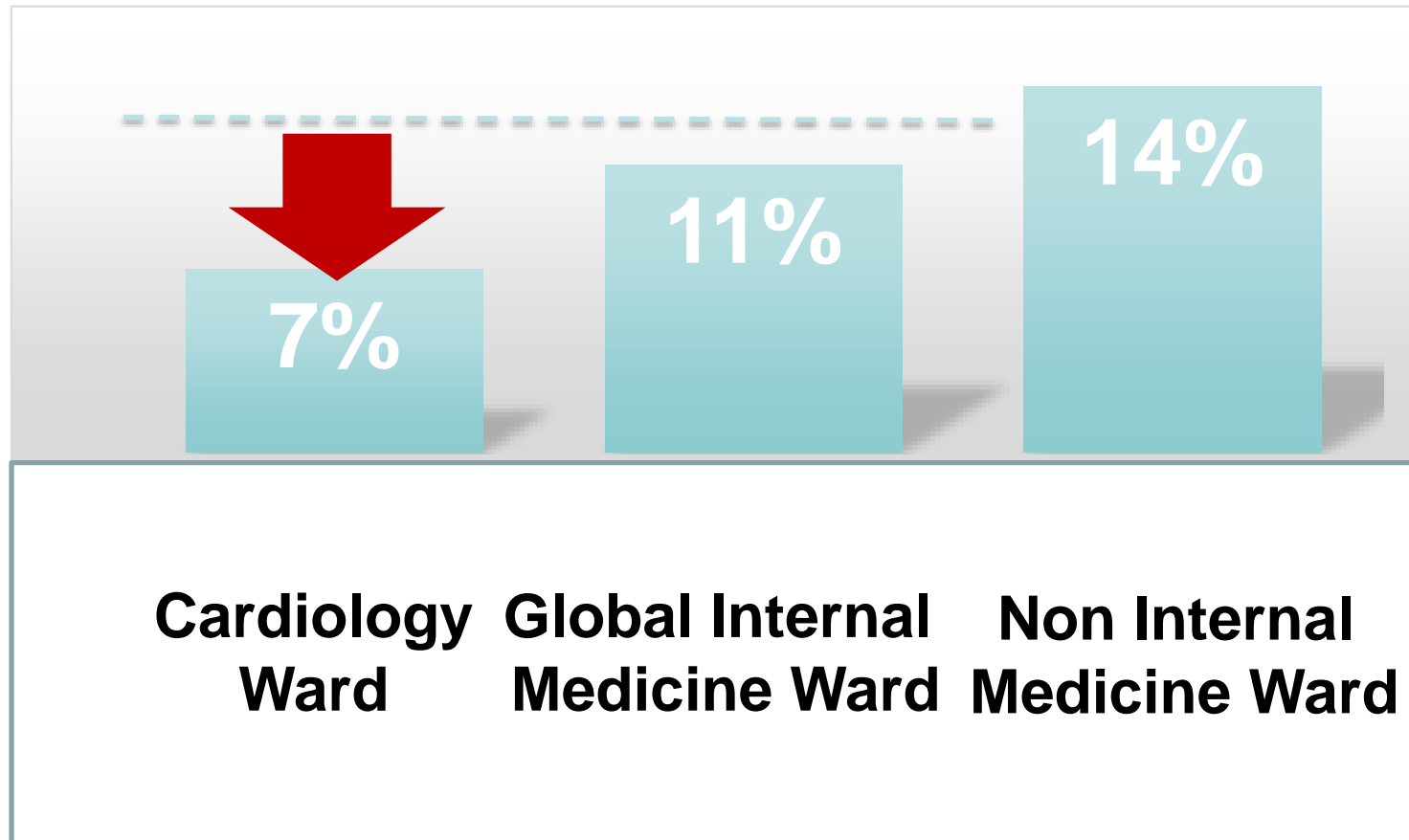
Nurse/Patient: 1:4

Physiotherapy /30min/Pat

Expertise improves the outcome

Reduction of mortality

In-hospital mortality of Heart Failure patients:
halved via treatment by a specialist

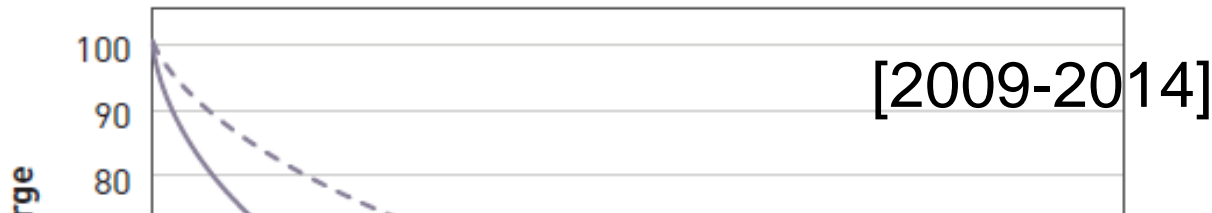


Cardiology Ward Global Internal Medicine Ward Non Internal Medicine Ward

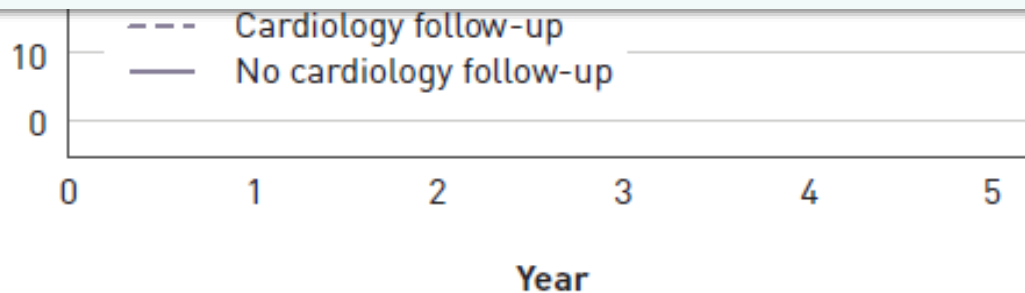
Expertise improves the outcome

Reduction of mortality

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



“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. FREDLAND, PH.D., AND ROBERT M. CARNEY, PH.D.

- 282 hospitalized CHF patients \geq 70 years
- Standard medication vs. multidisciplinary intervention by experienced caregiver, diet-assistent, sozial service employees,

3 months

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

Expertise is certifiable

The Curriculum 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. McDonagh¹, Roy S. Gardner^{2*}, Mitja Lainscak³, Olav W. Nielsen⁴, John Parissis⁵, Gerasimos Filippatos⁶, and Stefan D. Anker⁷

¹King's College Hospital, London, UK; ²Golden Jubilee National Hospital, Clydebank, UK; ³University Clinic Golnik, Golnik, Slovenia; ⁴Copenhagen University Hospital Bispebjerg, Copenhagen, Denmark; ⁵University of Athens Medical School, Attikon University Hospital, Athens, Greece; ⁶2nd Department of Cardiology, Athens University Hospital Attikon, Athens, Greece; and ⁷Charité - Universitätsmedizin, Berlin, Germany

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

Reviewers/collaborators

HFA Board Members

M. Crespo, A.W. Hoes, L. Neyses, B. Pieske, J. Riley, P. Seferovic.

Presidents of the National Heart Failure Societies

O. Amir, J. Altenberger, M. Galinier, P. Gatzov, L. Gullestad, O. Gurte, F. Gustafsson, S. Hardman, M. Hassanein, J. Hradec, G. Kanczola, A. Kavaliuniene, B. Moura, J. Murin, G. Moschovitis, R. Sepp, H. Skouri, S. Stoerk, A. Temizan, D. Tousoulis, J. Trochu, L. Tulldari, D. Vinereanu.

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

*Corresponding author: Golden Jubilee National Hospital, Clydebank, UK. Tel: +44 1506 846551. Fax: +44 1419 515859. Email: rsgardner@doctors.org.uk
†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 interdisziplinäre team
4. Definition for further education in certain areas:
 - imaging
 - Rhythm management, device-implantation
 - Heart transplantation and mechanically 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

Heart Failure Clinic



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Cooperation with HF-Center

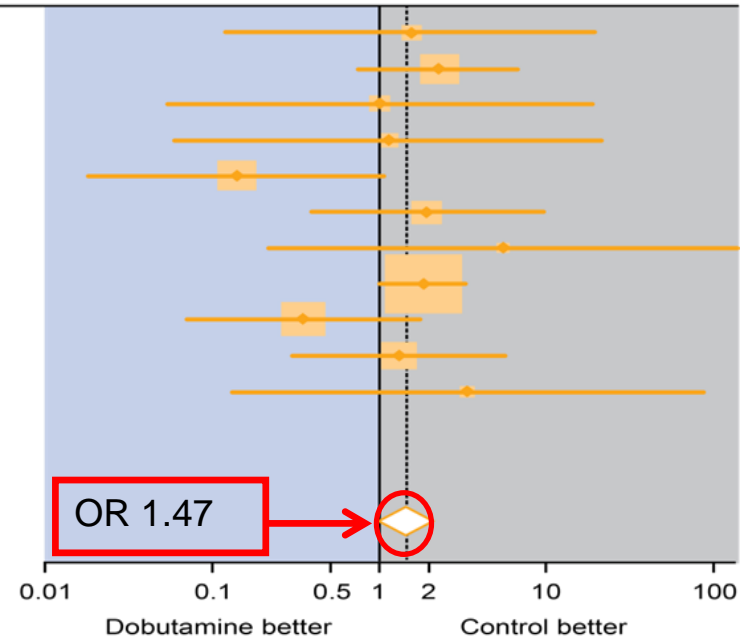
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Meta-Analysis on Inotropika



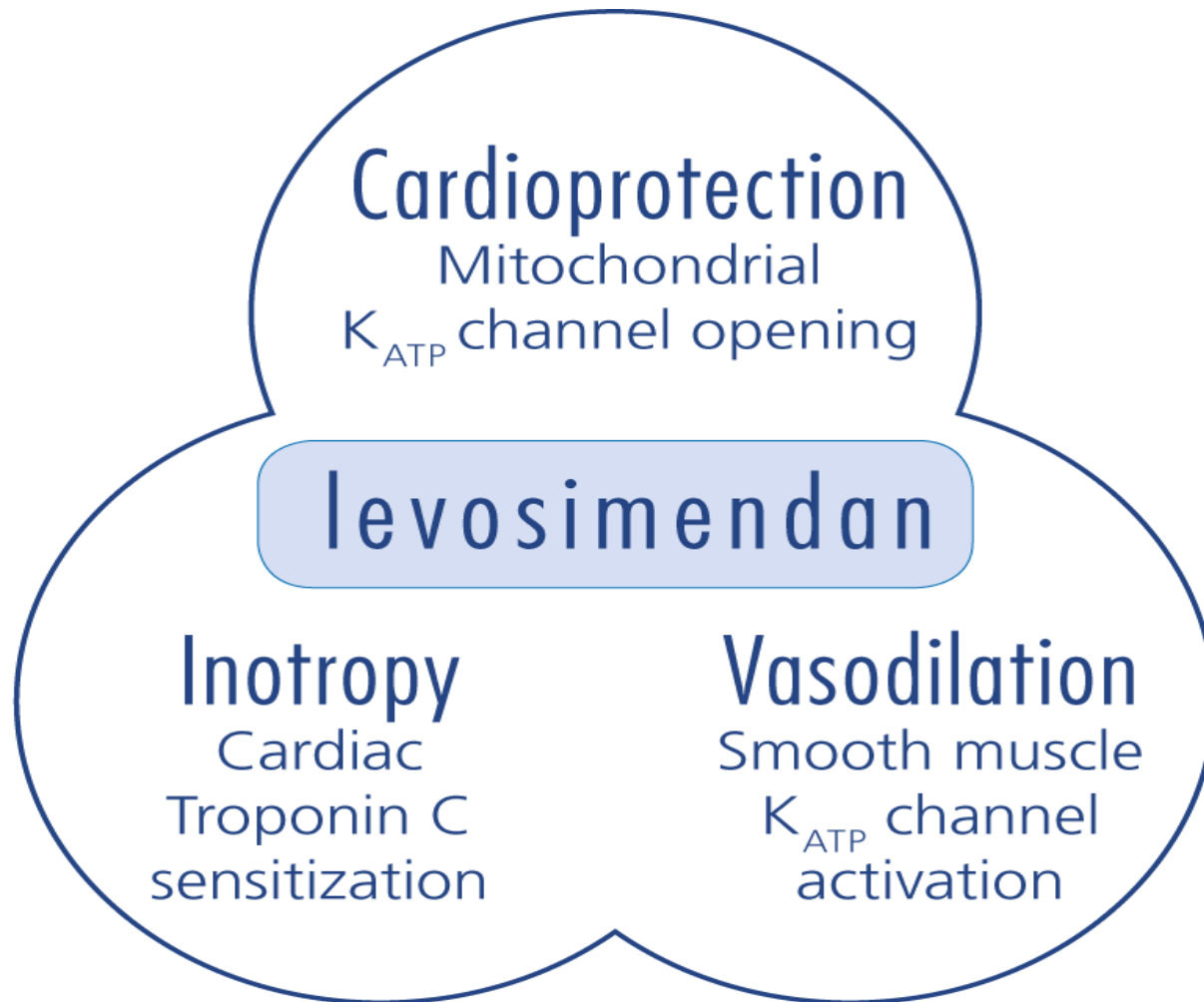
Dobutamin and Mortality in HF

Study	OR (95% CI)	Events		% Weight
		Dobutamine	Control	
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	1.47 (0.98, 2.21)	90/331	66/322	100.00
$I^2=4.5\%$, $p=0.401$				



“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.”

Calcium Sensitizer: Levosimendan



LevoRep-Program



Patient: NYHA III/IV > 3 months

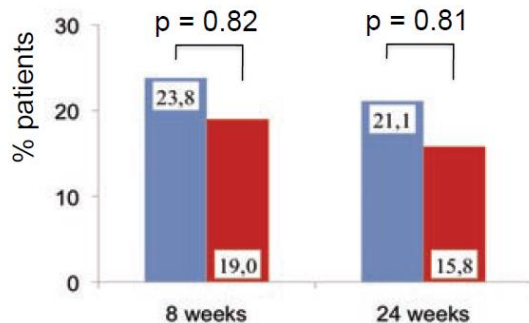
EF < 35%

OMD

IMC: iv Infusions (0,2 µg/kg/min) al 6-8 weeks

Primärer Endpunkt

(Improvements in six min walk test $\geq 20\%$ and
KCCQ clinical summary score $\geq 15\%$)

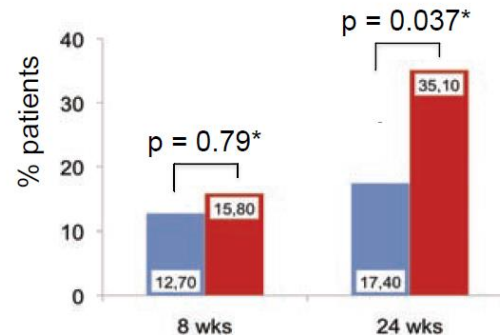


Poelzl et al., HFA
Lissabon 2013

■ Levosimendan

Sekundärer Endpunkt[®]

(Death, HTx and acute heart failure)



■ Placebo

* Fischer¹⁾

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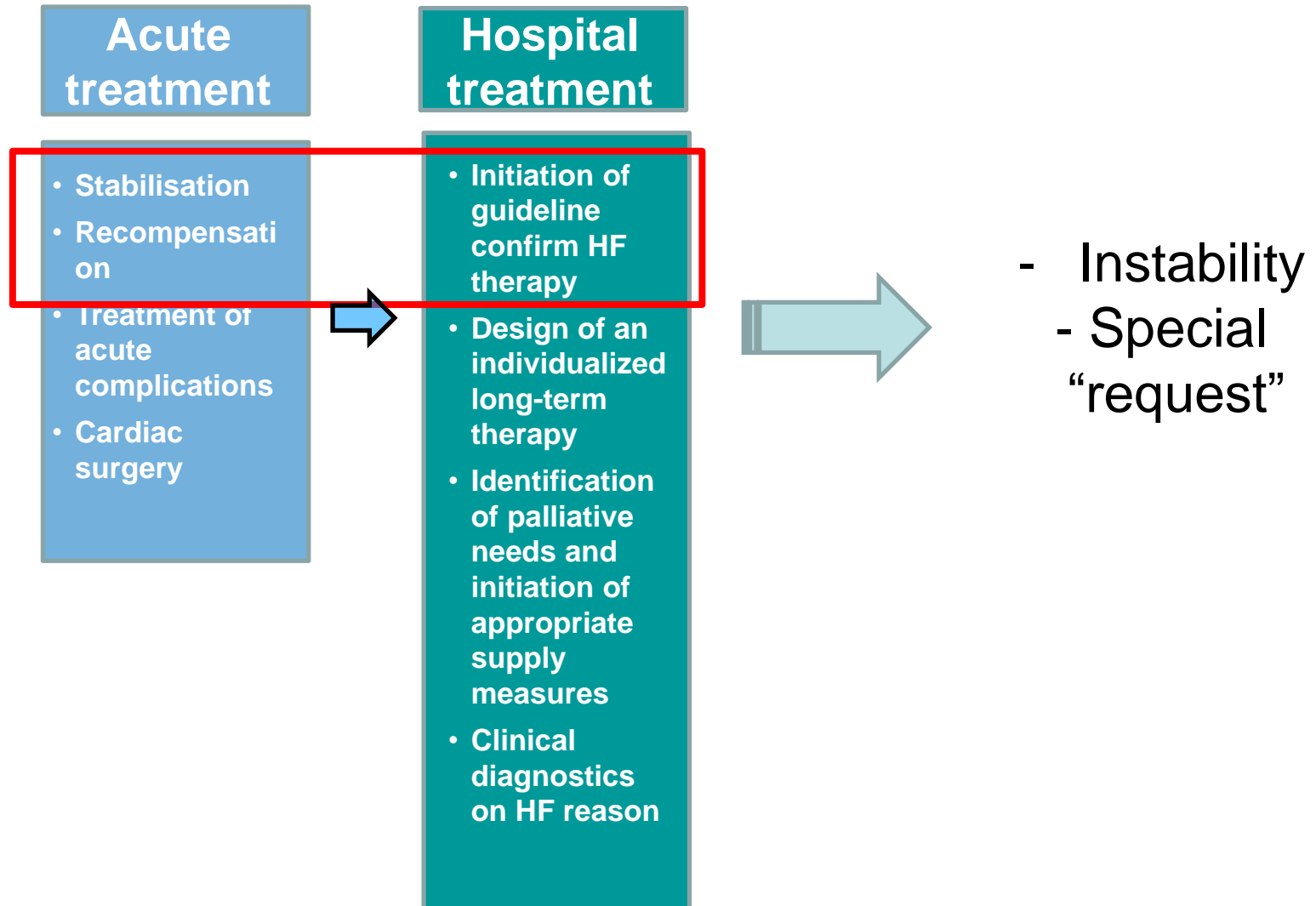
Heart Failure Clinic



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

Regional Heart Failure Center



Cardiologist/Heart Surgeon incl. Intensive Care specialty

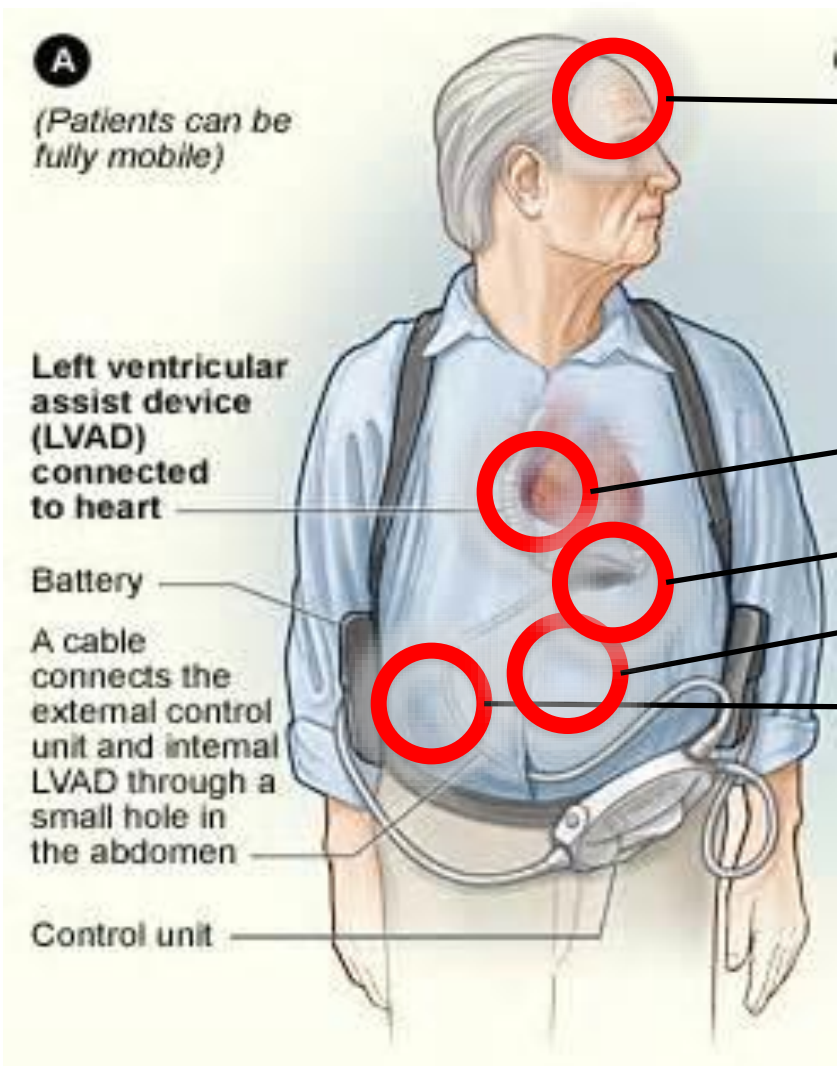
Partners

- Heart Team:
 - Heart Surgeon
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Spectrum

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LVAD Complicationen



Bleeding/Stroke

Right heart Failure

Device Failure

GI-Bleeding

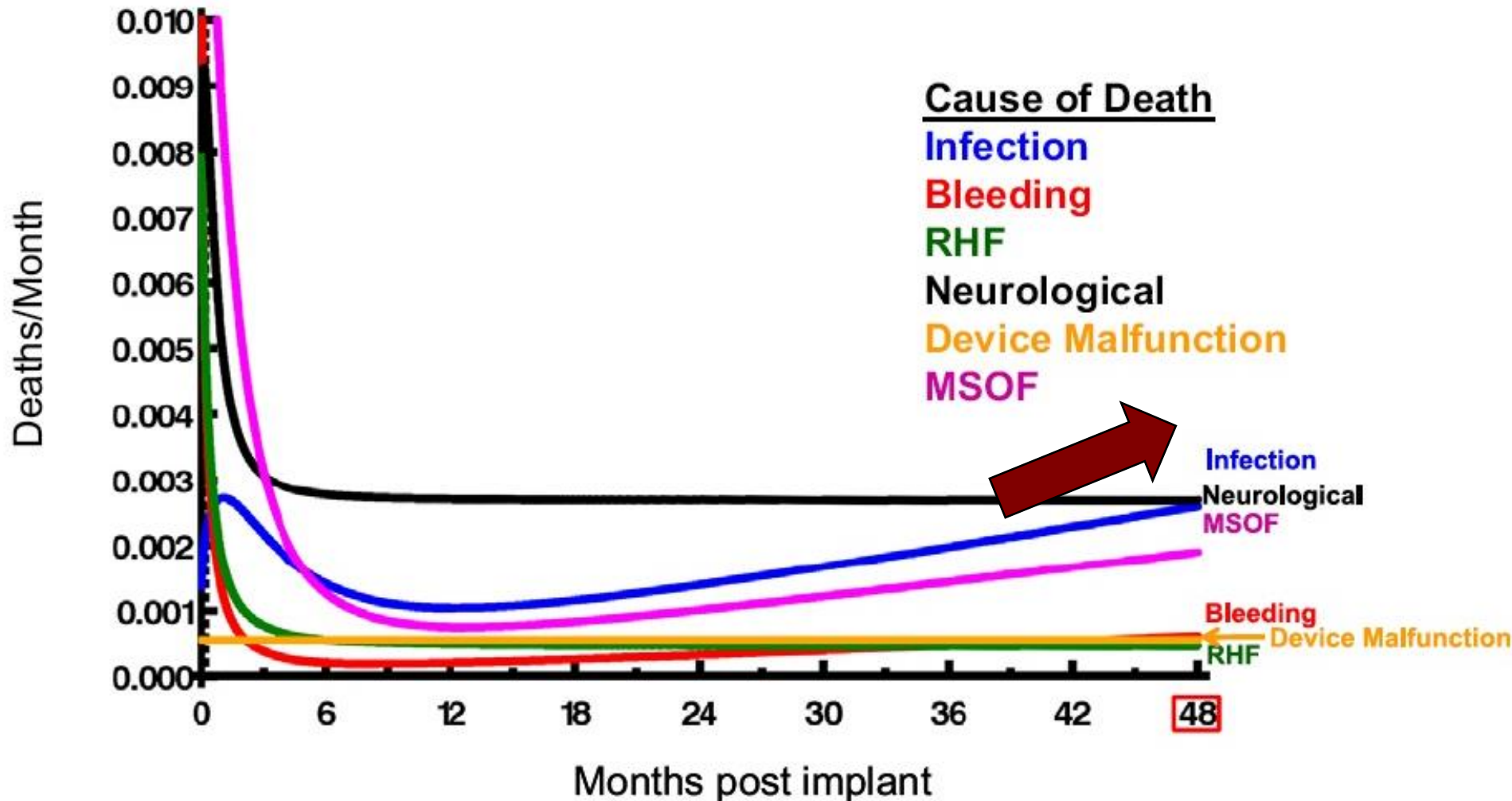
Driveline Infections



Complicationen Continuous Flow Devices



Instantaneous Death Rate (Hazard) for selected causes



Regional Heart Failure Center



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- **Myocardial biopsy**

ESC Guidelines



<p>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.</p>	<p>I</p>	<p>C</p>
<p>Right heart catheterization with a pulmonary artery catheter:</p> <ul style="list-style-type: none"> - is recommended in patients with HF for mechanical circulatory support; - should be considered in patients with HF and pulmonary hypertension and right heart disease; - may be considered in order to assess the need for standard therapies and who are symptomatic despite initial 	<p>I IIa IIb</p>	<p>C C C</p>
<p>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.</p>	<p>IIa</p>	<p>C</p>
<p>Thoracic ultrasound may be considered for the confirmation of pulmonary congestion and pleural effusion in patients with AHF.</p>	<p>IIb</p>	<p>C</p>
<p>Ultrasound measurement of inferior vena cava diameter may be considered for the assessment of volaemia status in patients with HF.</p>	<p>IIb</p>	<p>C</p>

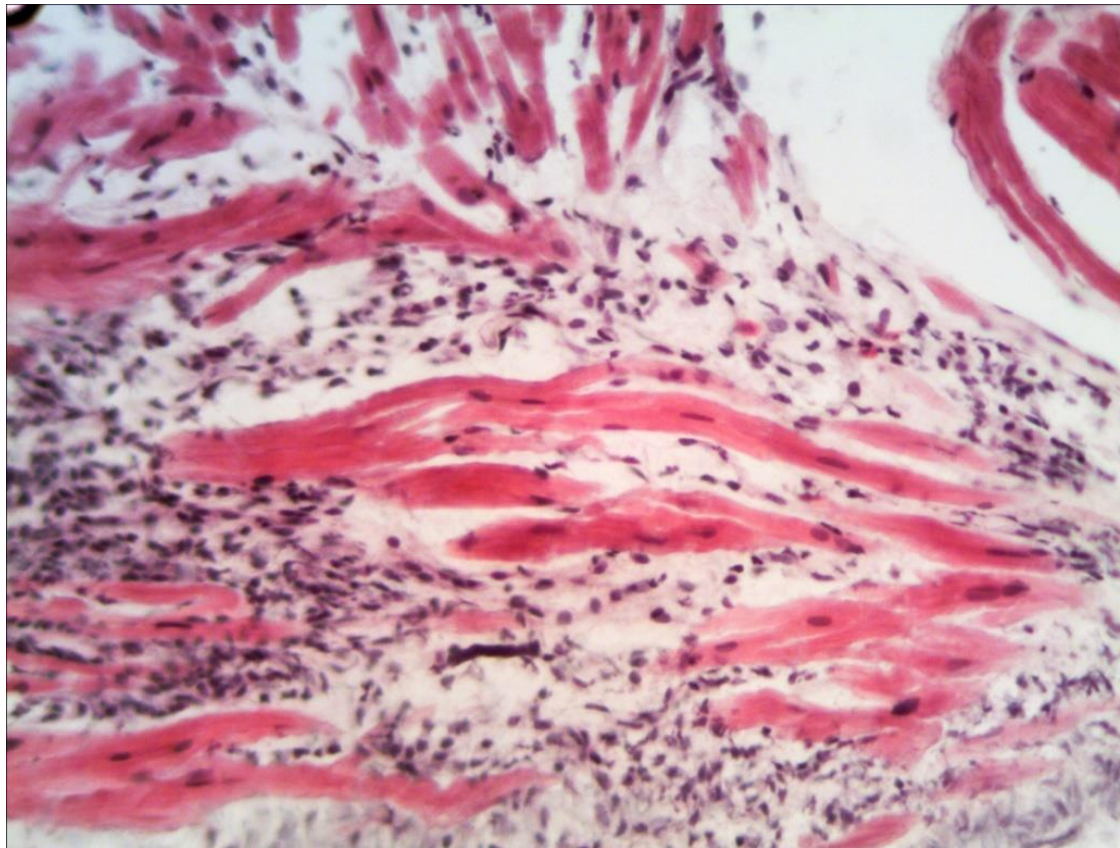
Biopsy

Patient 2: W.H.

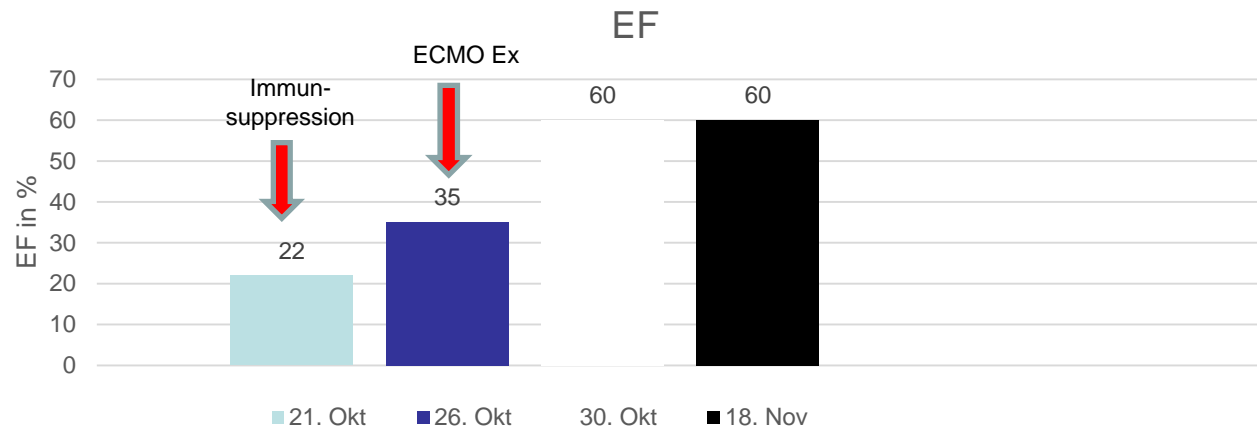
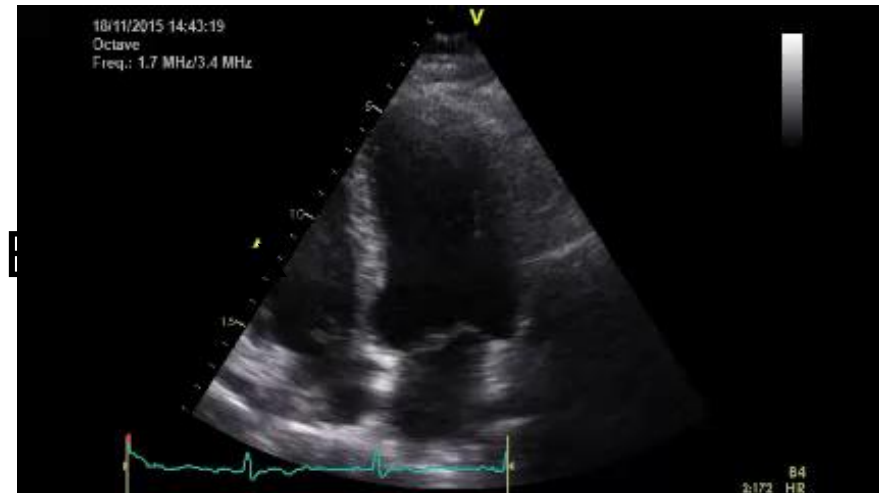
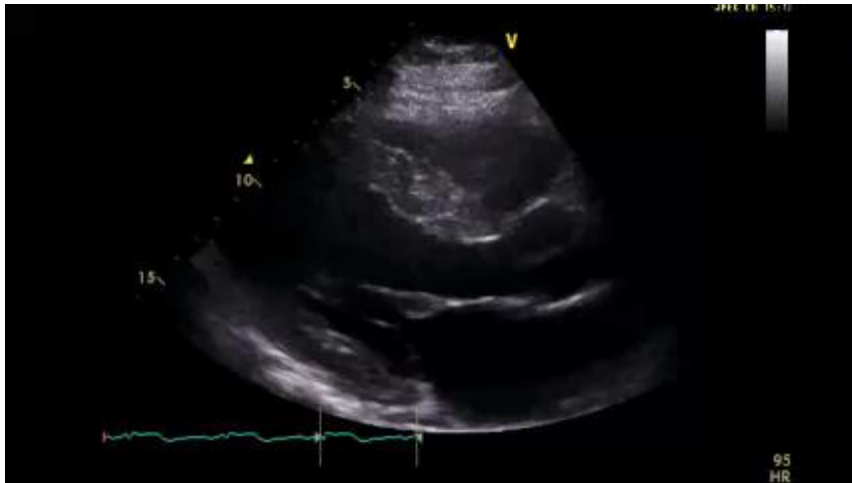
27.01.1981



EMB (21.10.2015):
Eosinophilic Myocarditis / Perforin pos / PVB pos.

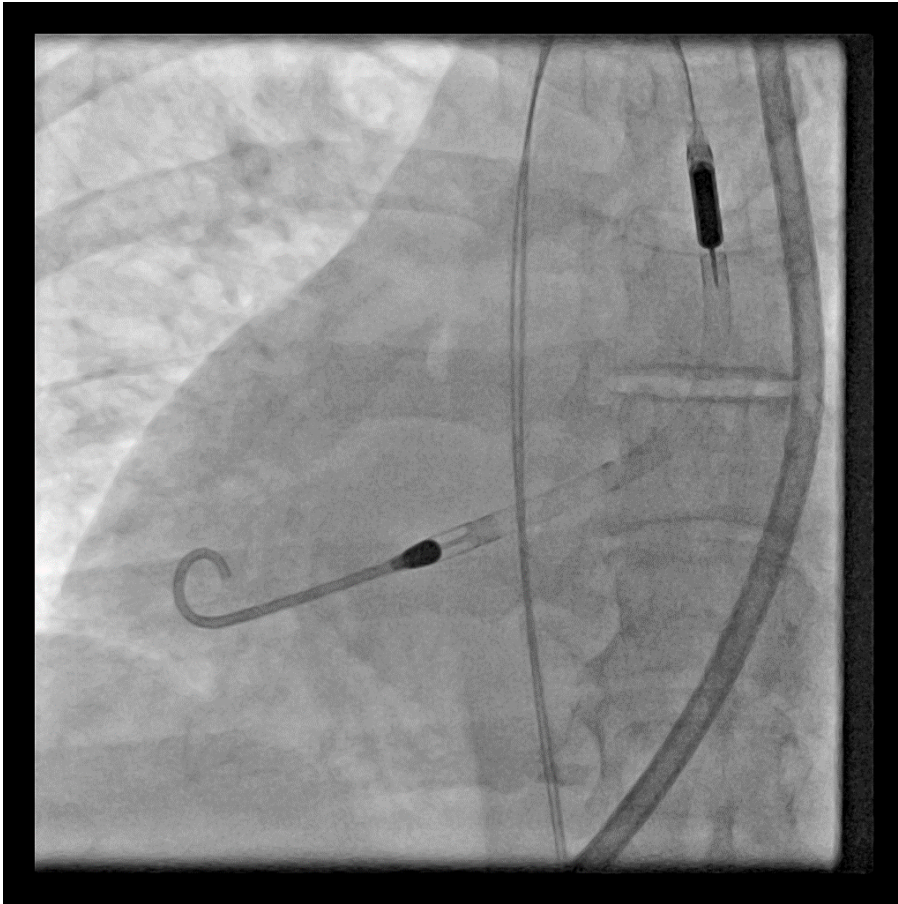


Course of an eosinophilic myocarditis



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



Heart Failure Unit Heart Failure Clinic

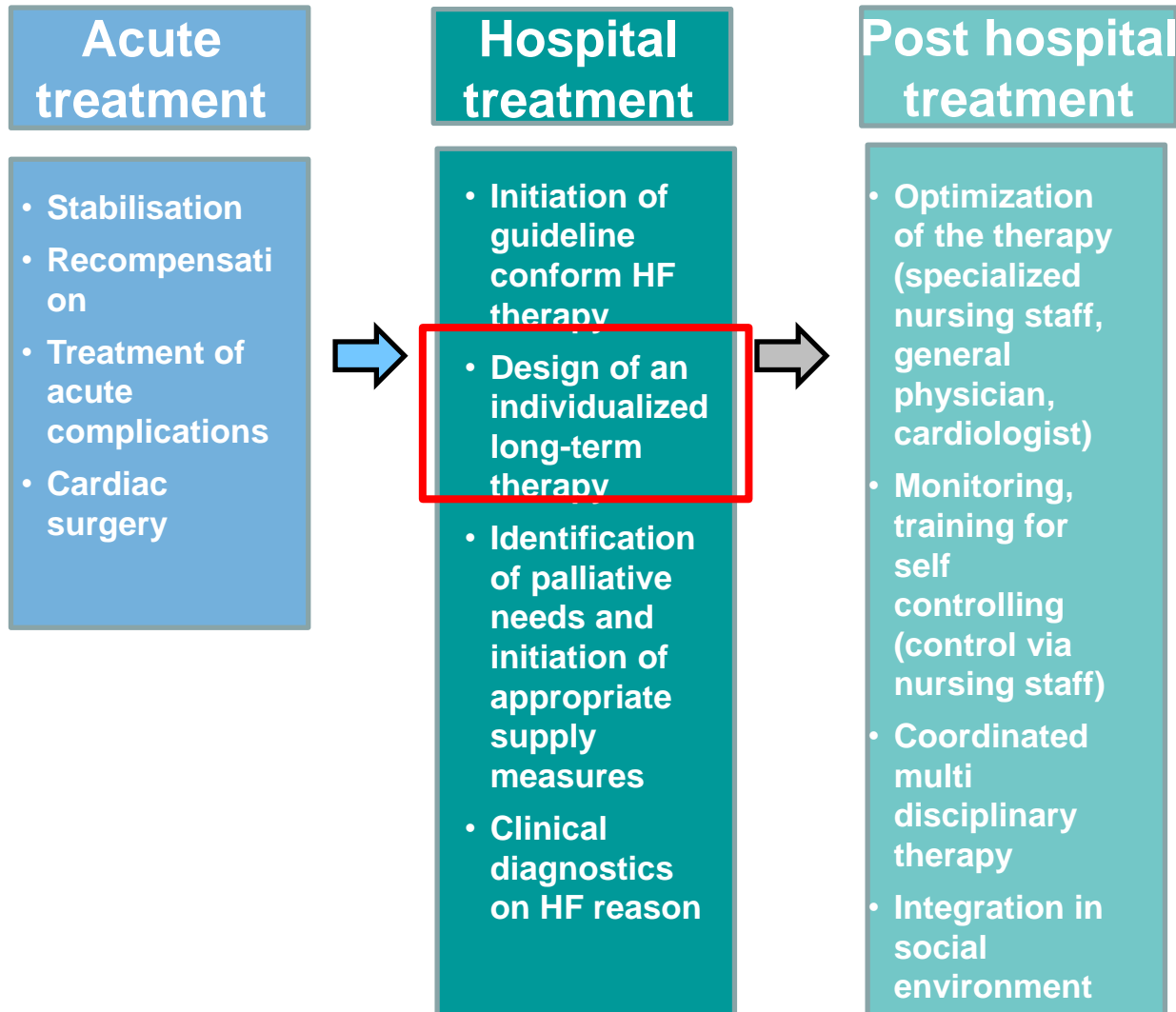


Structured Discharge program

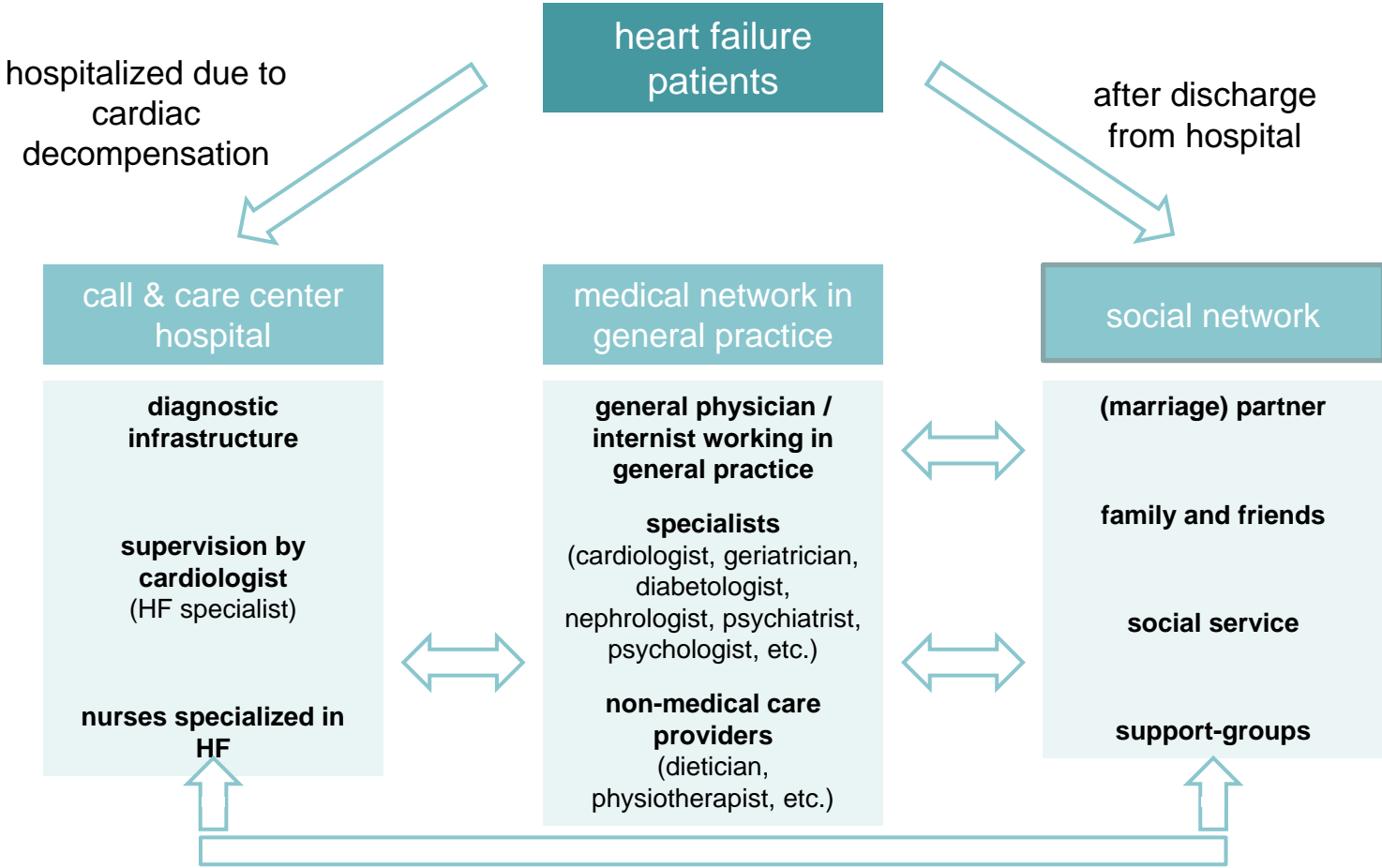
Network with the HF
out clinic praxis

Heart Failure Unit

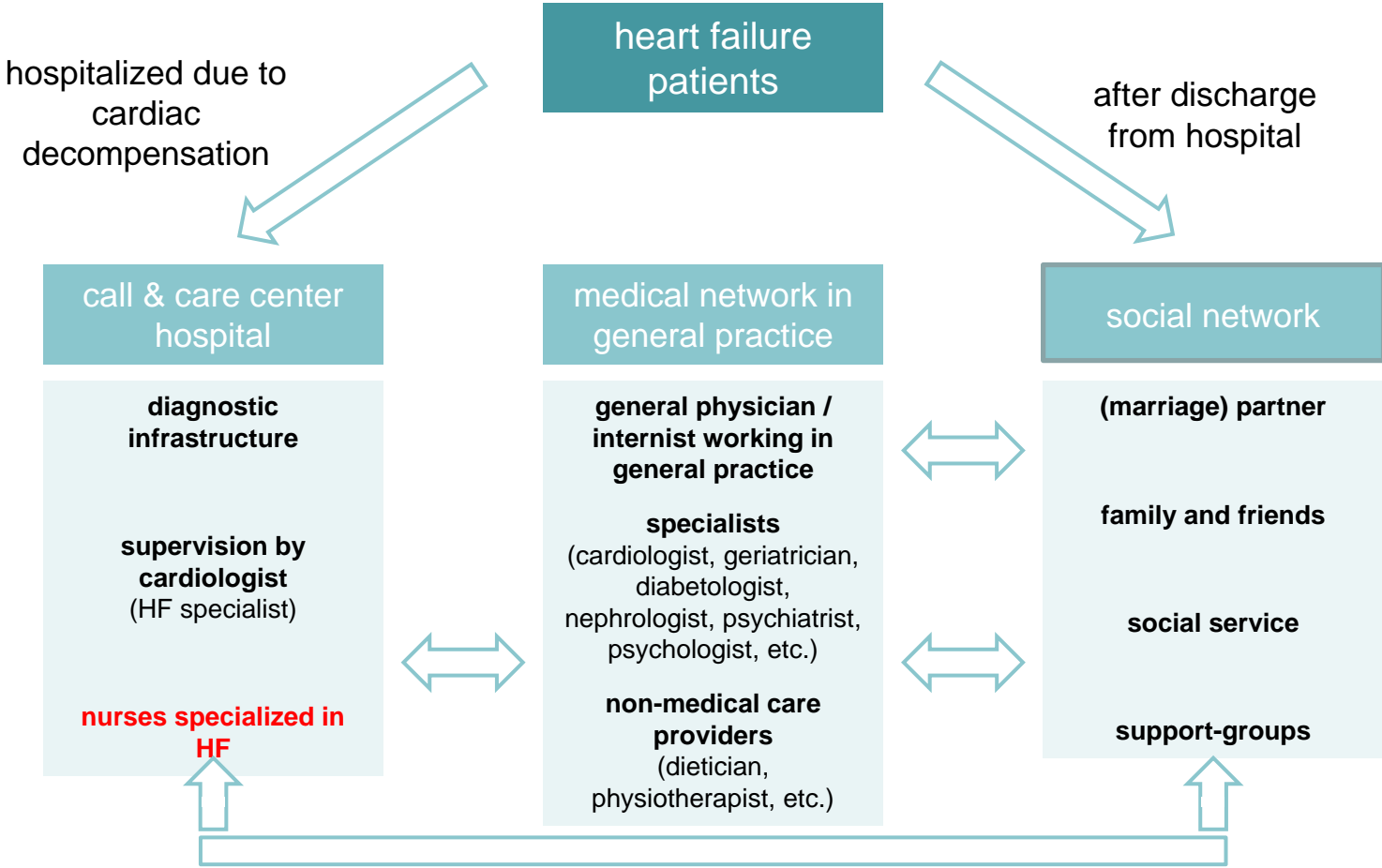
Heart Failure Clinic



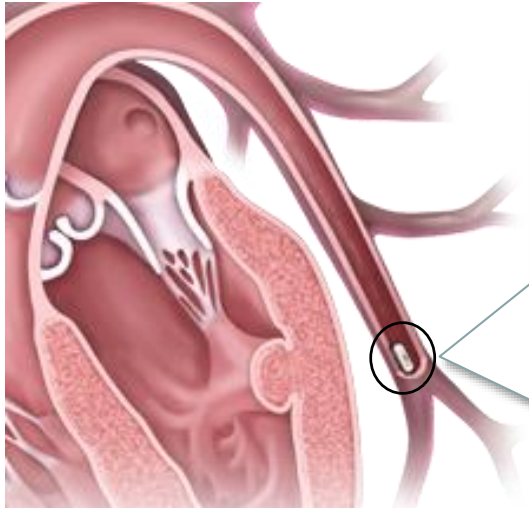
Supply strategy in Heart Failure *HeartNetCare-HF*TM – Supply network for heart failure risk patients



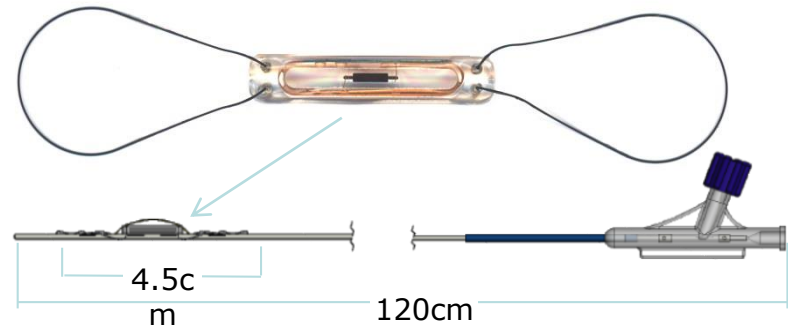
Supply strategy in Heart Failure *HeartNetCare-HF*TM – Supply network for heart failure risk patients



Pressure sensor: Cardiomems



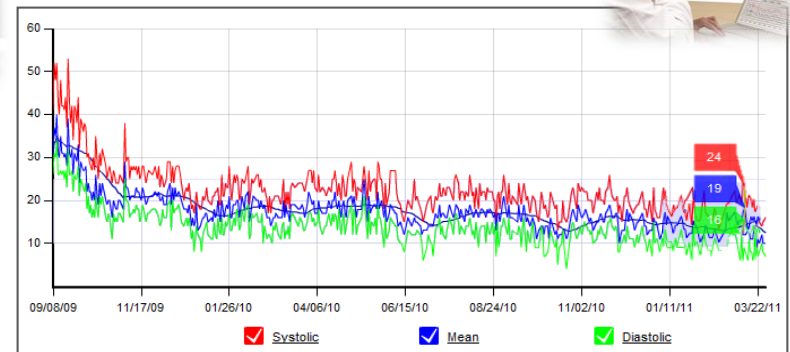
PA Pressure Sensor on Catheter Delivery System



Patient Home Electronics Unit



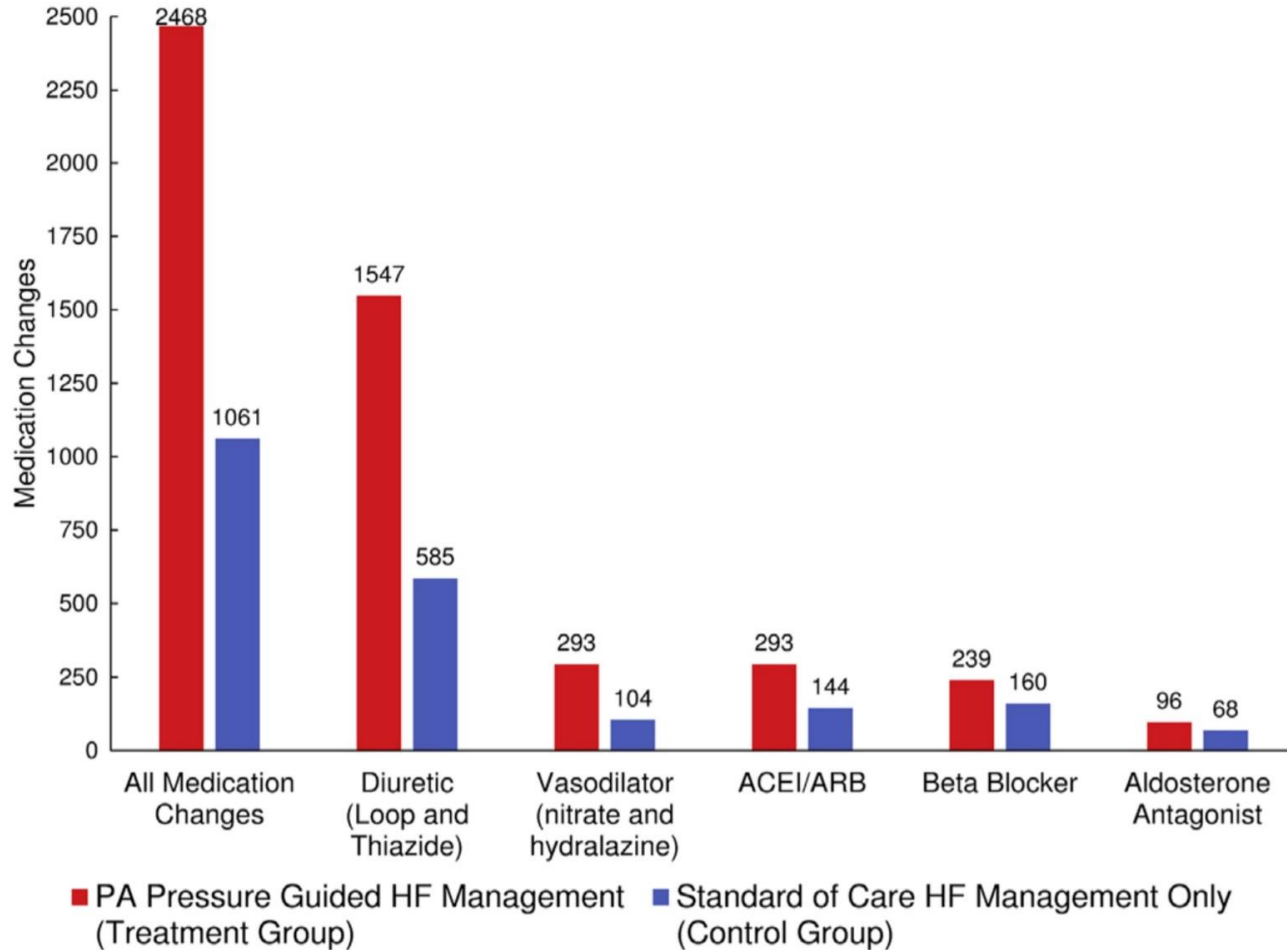
PA Pressure Database



Physician Access Via Secure Website

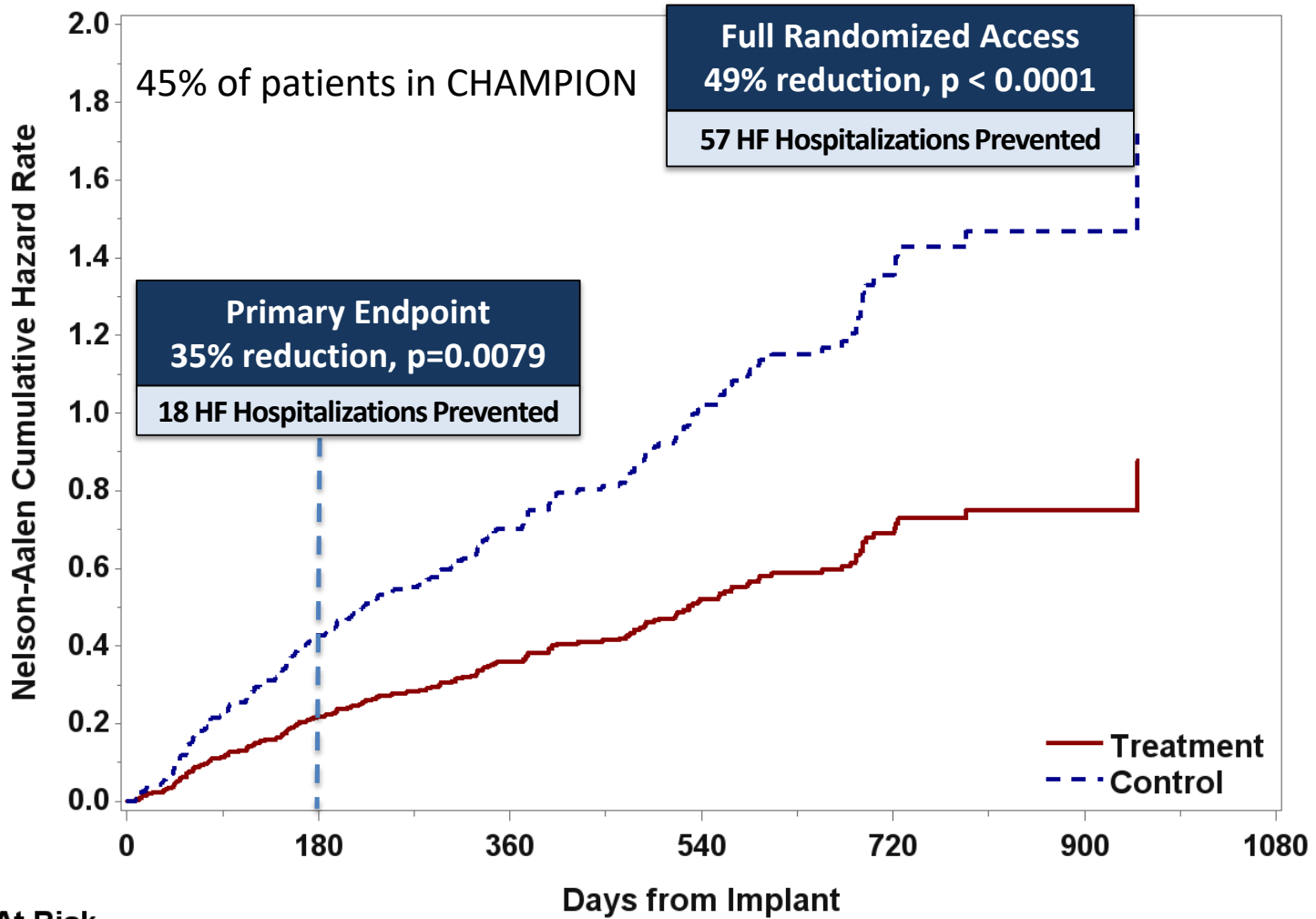
Pressure Sensor: Cardiomems

Regulation of drugs



Pressure sensor: Cardiomeems

Reduction of Hospitalisationrate



No. At Risk

Treatment 120
Control 125

108
108

87
90

57
56

30
25

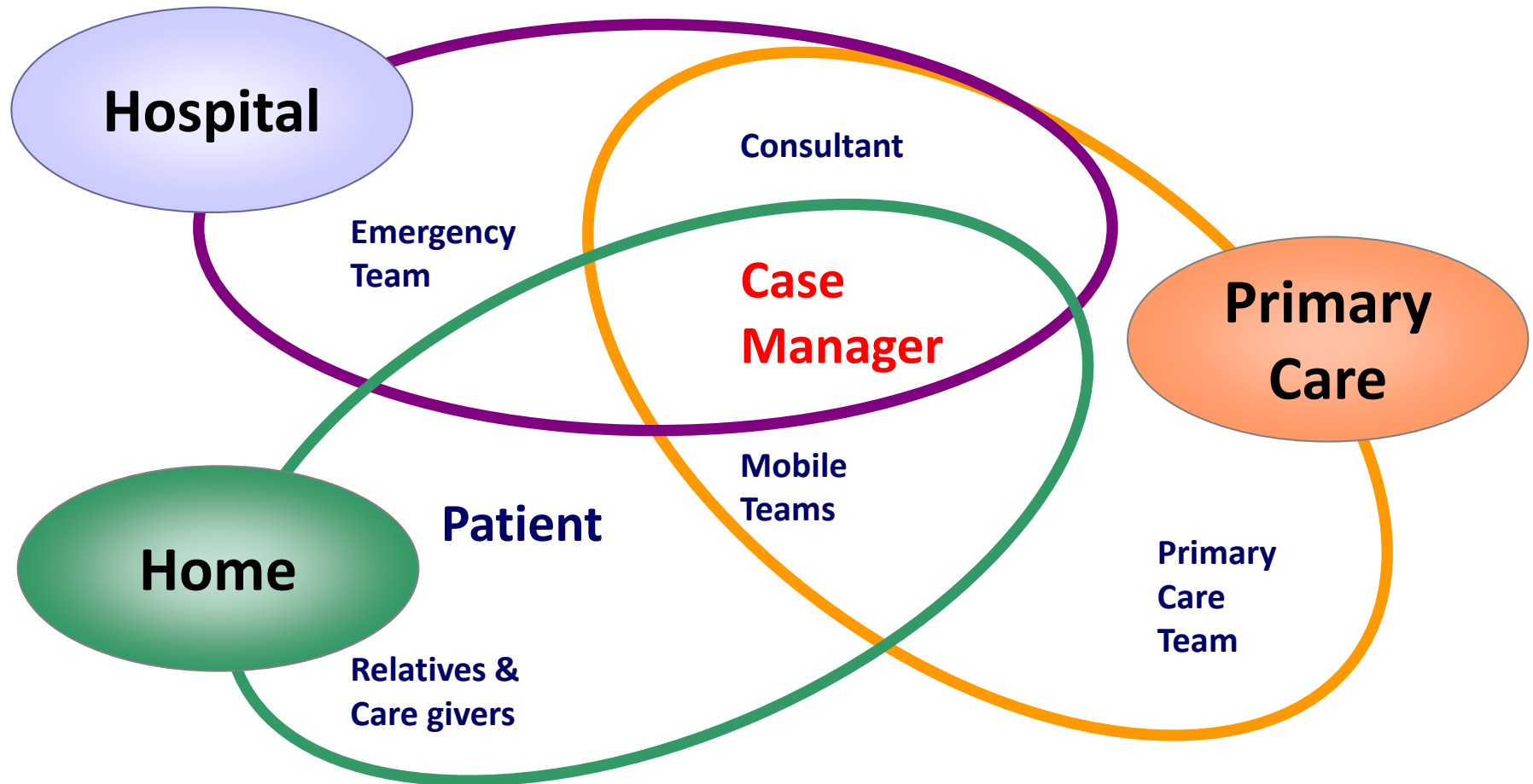
3
4

0
0

Adaptation of health services to *chronic* patients

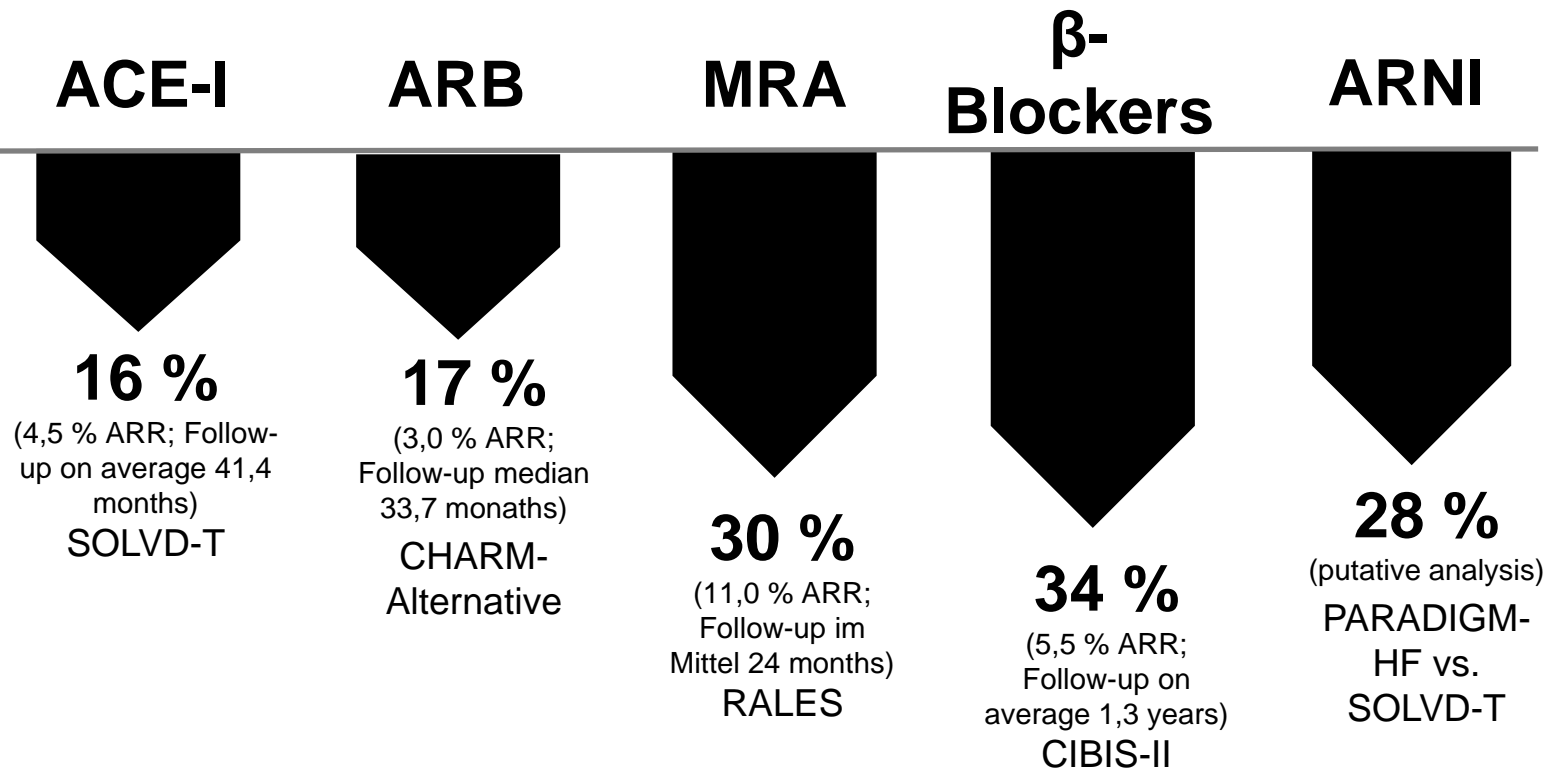
(shared care arrangements across the system)

Example Catalunya



Expertise improves the outcome

Reduction der Mortalität



Expertise improves the outcome

Reduction der Mortalität

© 2012

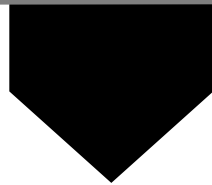
Integrated supply



34 %

(Total Mortality after 12 months)
Cochrane
Meta-analysis

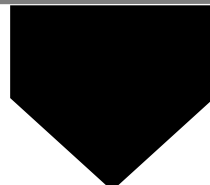
ACE-I



16 %

(4,5 % ARR; Follow-up on average 41,4 months)
SOLVD-T

ARB



17 %

(3,0 % ARR; Follow-up median 33,7 months)
CHARM-Alternative

MRA



30 %

(11,0 % ARR; Follow-up im Mittel 24 months)
RALES

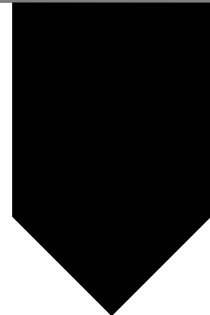
β -Blockers



34 %

(5,5 % ARR; Follow-up on average 1,3 years)
CIBIS-II

ARNI



28 %

(putative analysis)
PARADIGM-HF vs. SOLVD-T