Poliklinischer Abend

am Mi 22.1.2025

Herzinsuffizienz: Neue und bewährte Aspekte

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LMU-Klinikum
Medizinische Klinik und Poliklinik I

European Reference Network
for rare or low prevalence complex diseases
Network Heart Diseases (ERN GUARD-HEART)
Member Munich consortium for rare heart disease — Deutschland

NAMSE

ZSE

Fondation Leducq

Immune targets for the treatment of atrial fibrillation
International Networks of Excellence Program 2025-2031

Munich Heart Alliance

DZHK
DEUTSCHES ZENTRUM FÜR HERZ-KREISLAUF-FORSCHUNG E.V.

MÜNCHENER ZENTRUM FÜR SELTENE ERKRANKUNGEN (MZSE)

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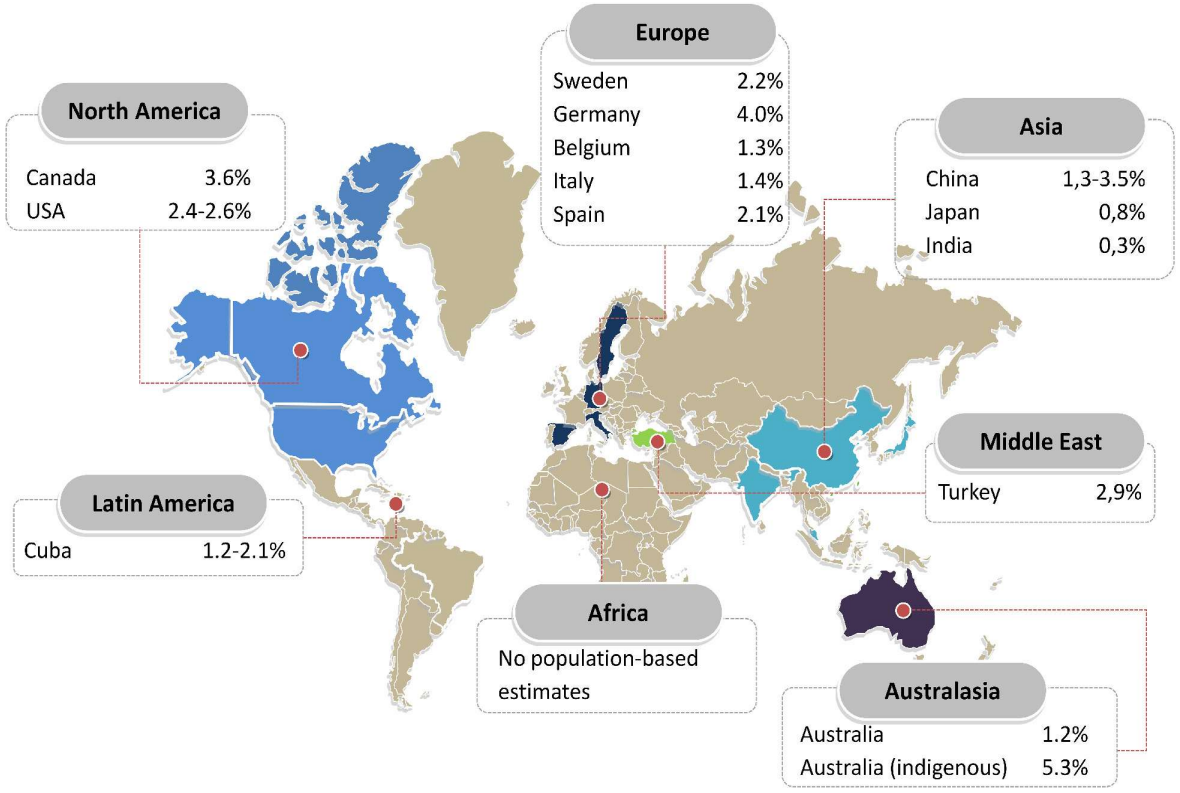
Herzinsuffizienz

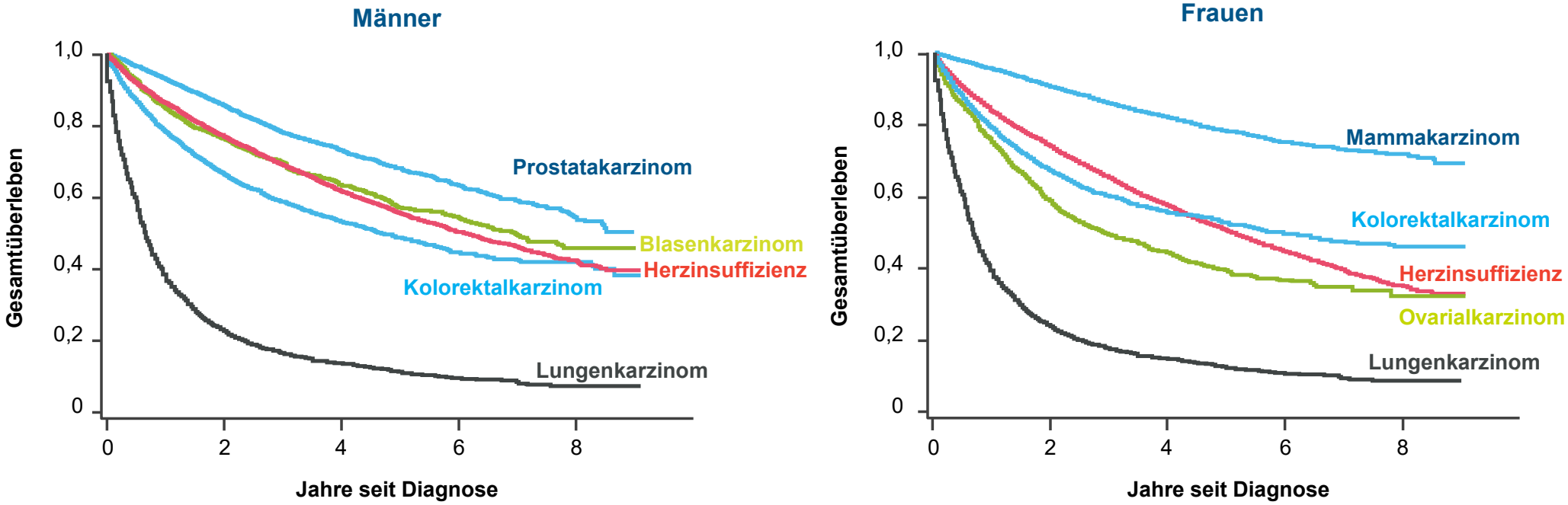


- *> 15 Millionen Menschen in Europa leben mit Herzinsuffizienz*
- *2 Millionen Hospitalisierungen aufgrund von Herzinsuffizienz pro Jahr in Europa*
- *Erwarteter Anstieg der Hospitalisierungen um 50% zwischen 2010 und 2035*
- *Morbidität und Mortalität der Herzinsuffizienz ist hoch*

Groenewegen et al., European J of Heart Fail 2021

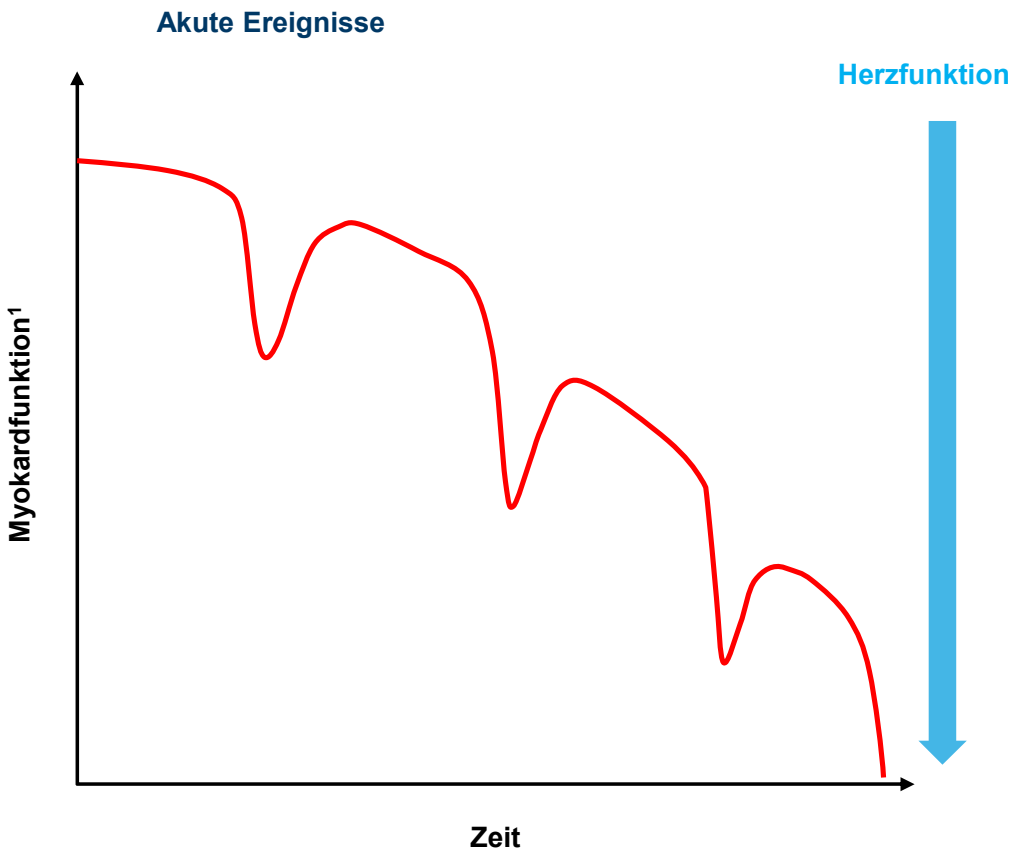
Die 5-Jahres-Überlebensrate von Patienten mit Herzinsuffizienz liegt zw. 25- 50% und ist vergleichbar mit einigen der häufigsten Krebsarten

Gesamtüberleben bei Herzinsuffizienz im Vergleich zu den häufigsten Krebsarten in einer schottischen Kohortenstudie in der Primärversorgung

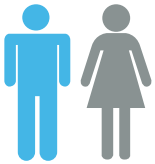


Modifiziert nach: Mamas MA, et al. Eur J Heart Fail 2017; 19:1095-104.

Akute Ereignisse tragen zur Progression der Herzinsuffizienz bei



Fast jeder 4. Patient (24,1%) mit Herzinsuffizienz wird **innerhalb von 30 Tagen** nach der Entlassung aus dem Krankenhaus **abermals hospitalisiert**[2]



Fast jeder 2. Patient (44%) mit Herzinsuffizienz wird **innerhalb von 60 Tagen** nach der Entlassung aus dem Krankenhaus **erneut hospitalisiert**[2]

mod. nach: 1. Gheorghiade M, et al. Am J Card 2005;96:11–17;
2. Gheorghiade M, et al. J Am Coll Cardiol 2013; 61:391-403

Genese der Herzinsuffizienz

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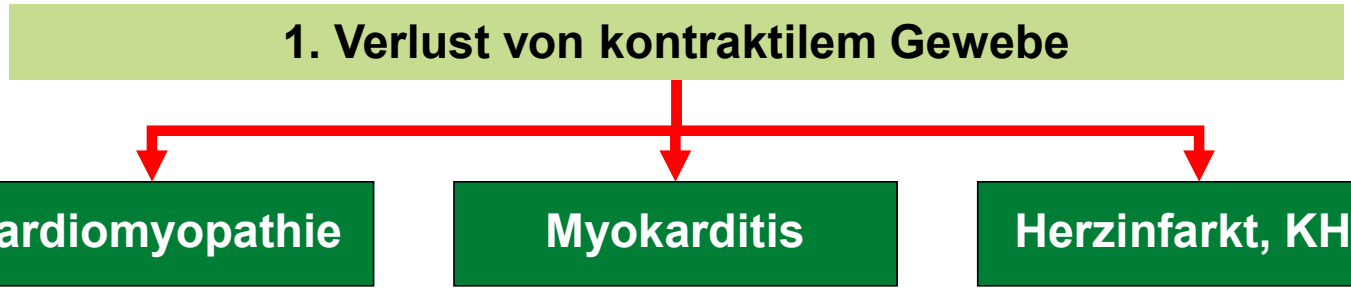

- Dilatative KMP
- Toxische KMP
  - -Ethanol
  - -Antrazykline
  - -5-Fluoruracil
- Metabolisch, nutritive KMP
- Erblich bedingte KMP (X-chromosomal)
- Speichererkrankungen (Amyloidose, M. Fabry, u.a.)

- Infektionen
  - -viral (ca. 50%)
  - -bakteriell
- Nicht infektiös
  - -Kolagenosen
  - -Vaskulitiden
  - -post Radiatio

- In 50 % Ursache der Herzinsuffizienz

Genese der Herzinsuffizienz

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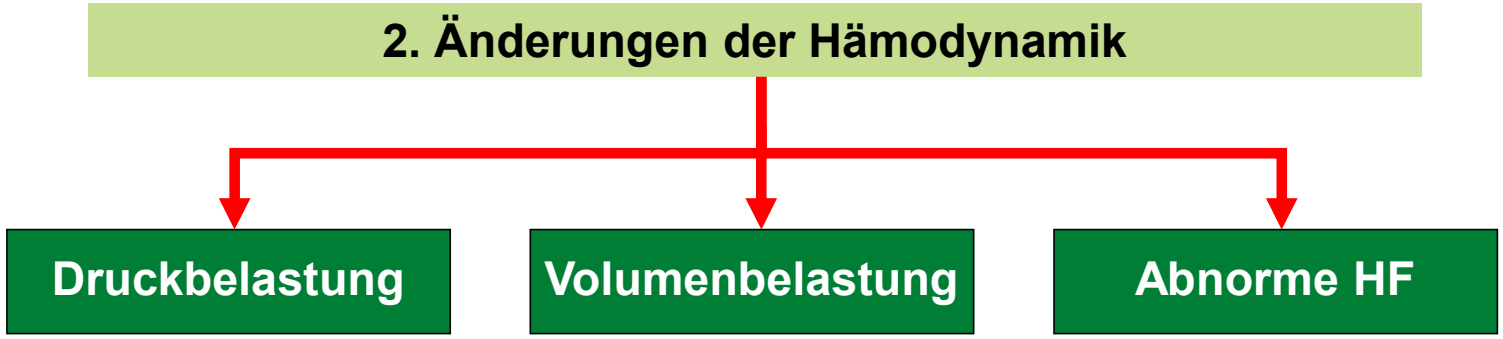

- Herzklappenstenose
- Arterielle Hypertonie
- Pulmonale Hypertonie

- Herzklappeninsuffizienz
- High-volume Shunt
  - Angeb. Herzfehler
  - Gefäßmissbildungen

- Tachykardie
- Bradykardie

Komorbidität bei Patienten mit chronischer Herzinsuffizienz

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erkennen und behandeln

- arterielle Hypertonie, KHK / Ischämie
- Diabetes mellitus & Metabolisches Syndrom
- COPD
- Schlaf Apnoe
- Depression / andere neurologische Erkrankungen
- Niereninsuffizienz
- Anämie und Eisenmangel
- Magen- Darmerkrankungen & Leberinsuffizienz
- Kachexie & Muskelschwund

Herzinsuffizienz: NYHA-Klassifikation

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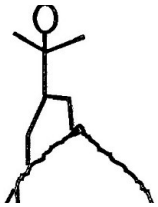
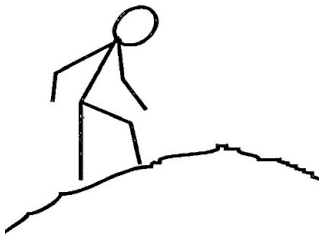


I

Uneingeschränkte Belastungsfähigkeit

- Keine Symptome
- Objektive kardiale Funktionseinschränkung



II

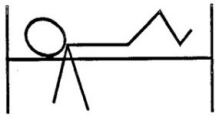
Leichte Einschränkung der Belastungsfähigkeit

- Bei Wohlbefinden in Ruhe
- Bei normaler Belastung Dyspnoe und vorzeitige Erschöpfung
- Funktionseinschränkung

III

Erhebliche Einschränkung der Belastungsfähigkeit

- bei Wohlbefinden in Ruhe
- bei leichter Belastung Dyspnoe und vorzeitige Erschöpfung
- Funktionseinschränkung



IV

Unfähigkeit irgendeine körperliche Aktivität durchzuführen

- Symptome der Herzinsuffizienz in Ruhe vorhanden
- bei jeder körperlichen Belastung verstärken sich die Beschwerden
- Funktionseinschränkung

Definition der Herzinsuffizienz: ESC Guidelines 2021

Table 3 **Definition of heart failure with reduced ejection fraction, mildly reduced ejection fraction and preserved ejection fraction**

Type of HF		HFrEF	HFmrEF	HFpEF
CRITERIA	1	Symptoms ± Signs[a]	Symptoms ± Signs[a]	Symptoms ± Signs[a]
	2	LVEF ≤40%	LVEF 41–49%[b]	LVEF ≥50%
	3	–	–	Objective evidence of cardiac structural and/or functional abnormalities consistent with the presence of LV diastolic dysfunction/raised LV filling pressures, including raised natriuretic peptides[c]

HF = heart failure; HFmrEF = heart failure with mildly reduced ejection fraction; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction; LV = left ventricle; LVEF = left ventricular ejection fraction.

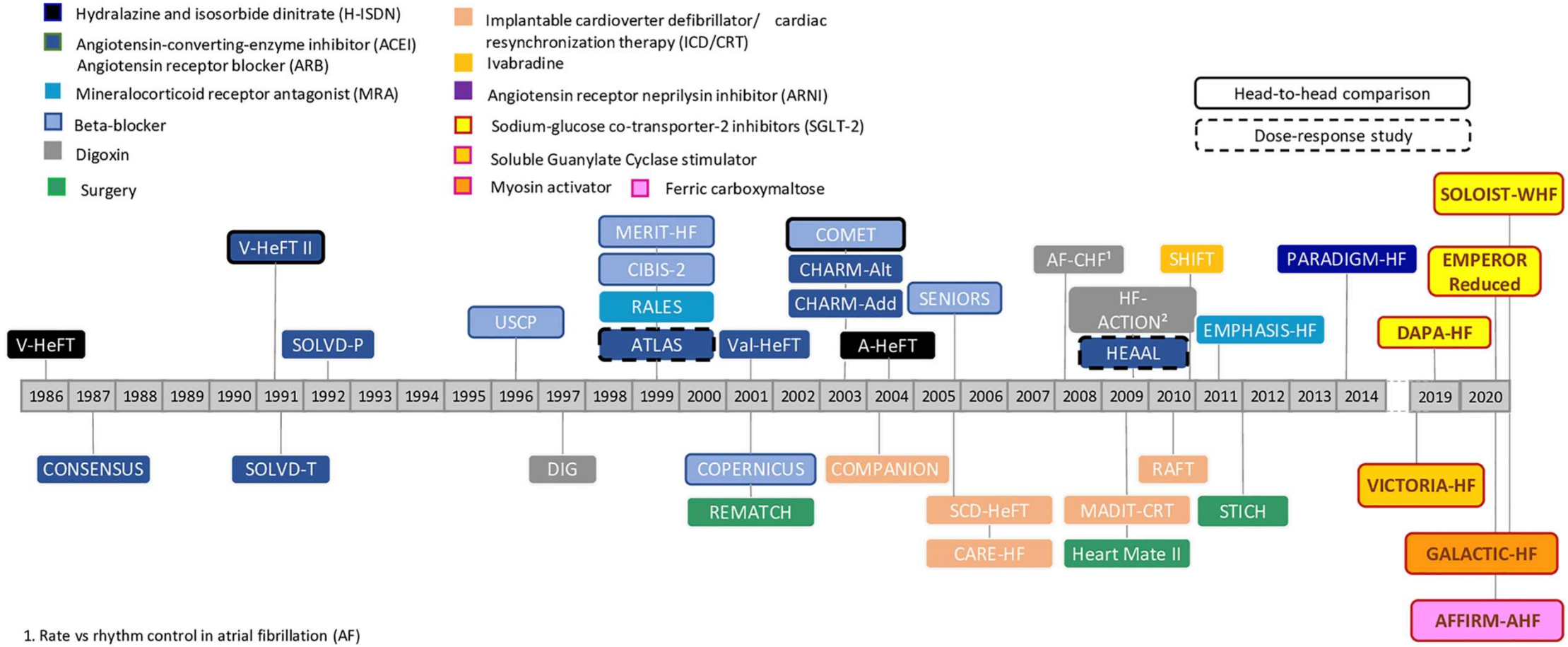
[a]Signs may not be present in the early stages of HF (especially in HFpEF) and in optimally treated patients.

[b]For the diagnosis of HFmrEF, the presence of other evidence of structural heart disease (e.g. increased left atrial size, LV hypertrophy or echocardiographic measures of impaired LV filling) makes the diagnosis more likely.

[c]For the diagnosis of HFpEF, the greater the number of abnormalities present, the higher the likelihood of HFpEF.

ESC, European Society of Cardiology.
McDonagh TA *et al. Eur Heart J* 2021; doi:10.1093/eurheartj/ehab368.

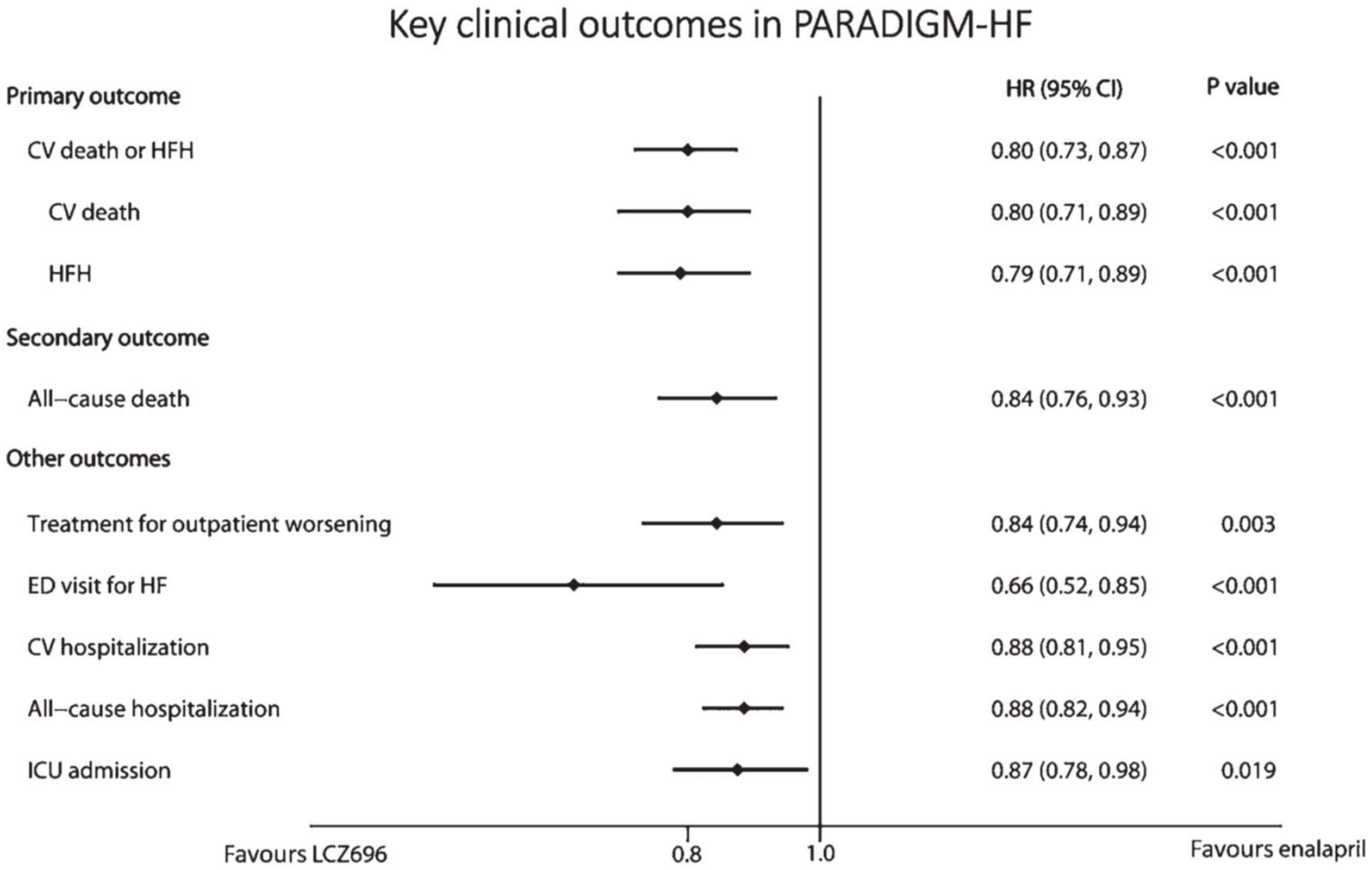
Positive HFrEF Herzinsuffizienzstudien seit 1986



1. Rate vs rhythm control in atrial fibrillation (AF)
2. Exercise prescription

modifiziert nach Tomasoni et al. ESC Heart Failure 2020

Clinical Outcomes in PARADIGM-HF trial



Angiotensin receptor neprilysin inhibitor		
Sacubitril/valsartan is recommended as a replacement for an ACE-I to further reduce the risk of HF hospitalization and death in ambulatory patients with HFrEF who remain symptomatic despite optimal treatment with an ACE-I, a beta-blocker and an MRA[d]	I	B

McMurray JJV, Eur J Heart Fail 2015

Basistherapie bei HFrEF erweitert: SGLT2 Inhibitoren

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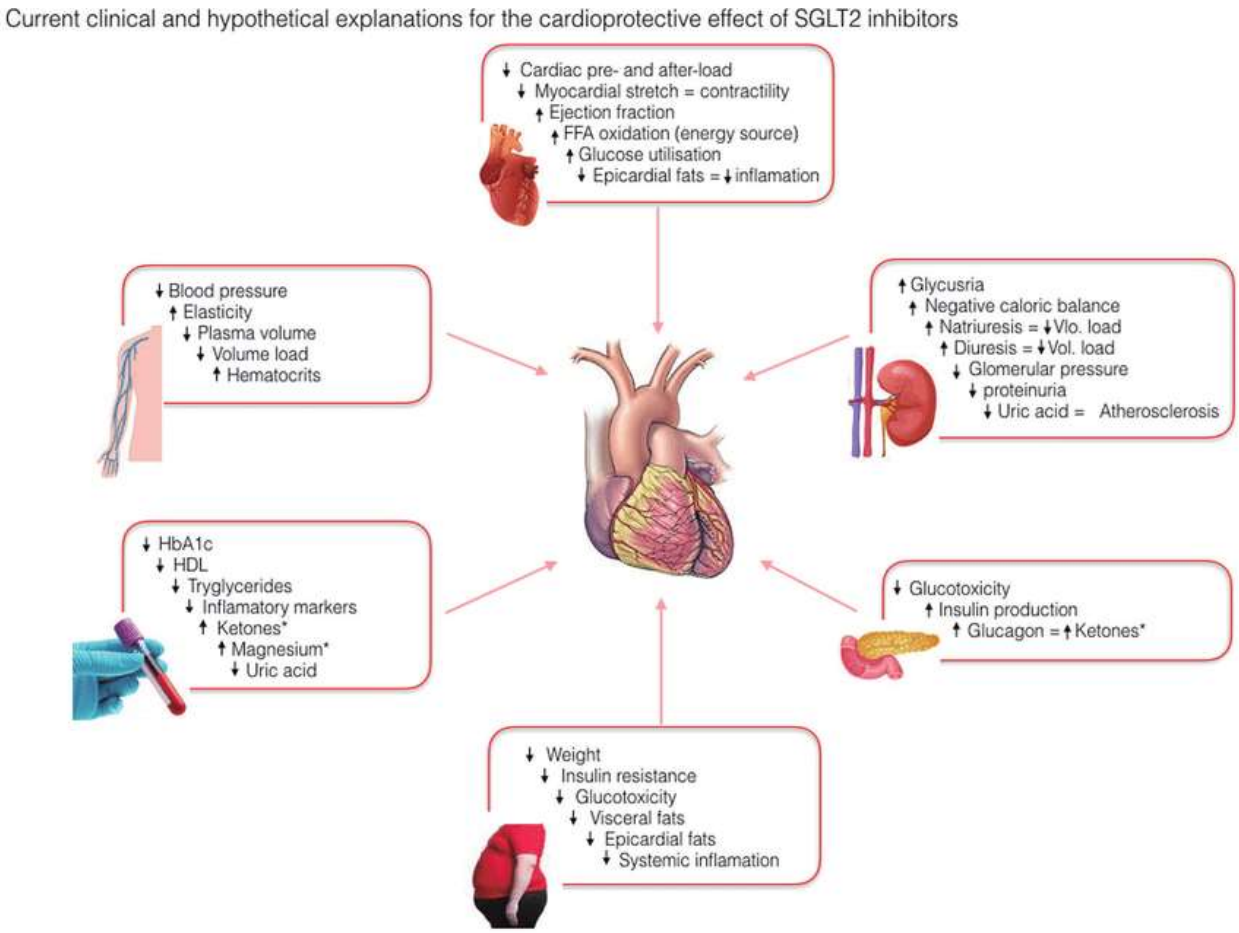
Wirkmechanismen der SGLT-2 Inhibitoren

- Steigerung der Glukosurie
  - Lipolyse durch vermehrte Glukagon-Freisetzung
  - Reduktion der Freisetzung pro-inflammatorischer Adipokine
  - verminderte interstitielle Fibrose, erhöhte Kontraktilität
- Steigerung der Natriurie
  - Vermindertes Plasmavolumen
  - Verminderter kardialer Füllungsdruck



SGLT-2 Inhibitors and Cardiovascular Protection: Lessons and Gaps in Understanding the Current Outcome Trials and Possible Benefits of Combining SGLT-2 Inhibitors With GLP-1 Agonists, 1010.14740/jocmr3467w- Journal of Clinical Medicine Research

Neue Basistherapie: SGLT2 Inhibitoren

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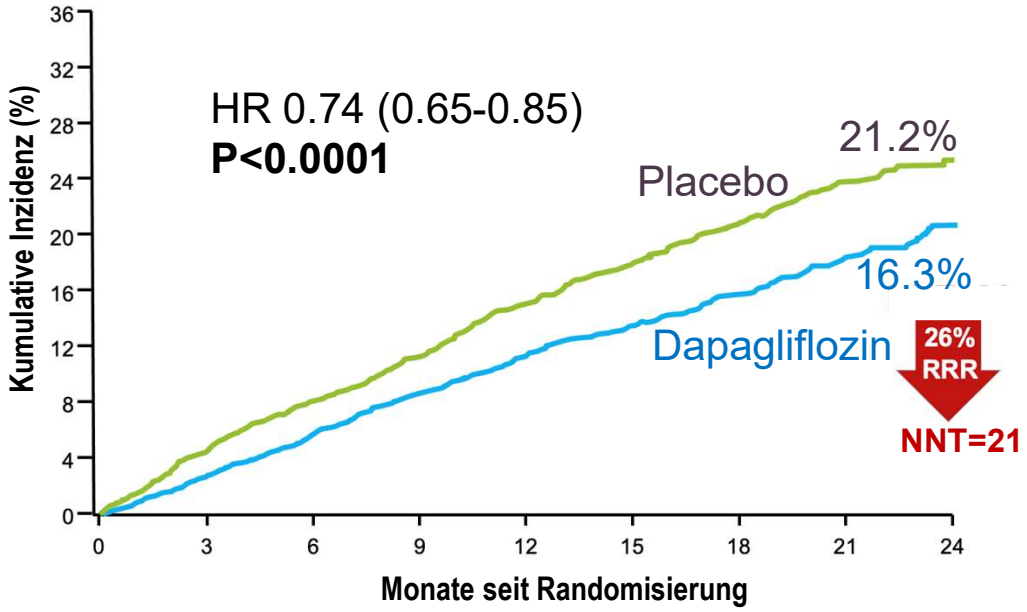
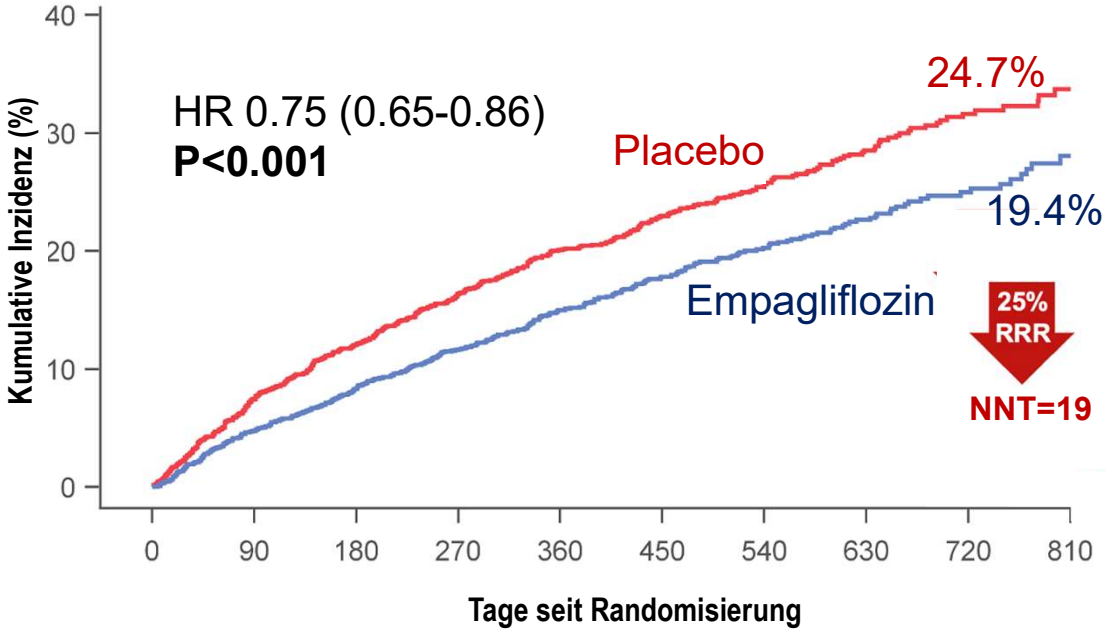
DAPA-HF



McMurray et al. N Engl J Med 2019

EMPEROR-Reduced



Packer et al. N Engl J Med 2020

Leitlinienempfehlungen nach ESC 2021

4 mortalitätsreduzierende Wirkansätze in der HFrEF-Therapie

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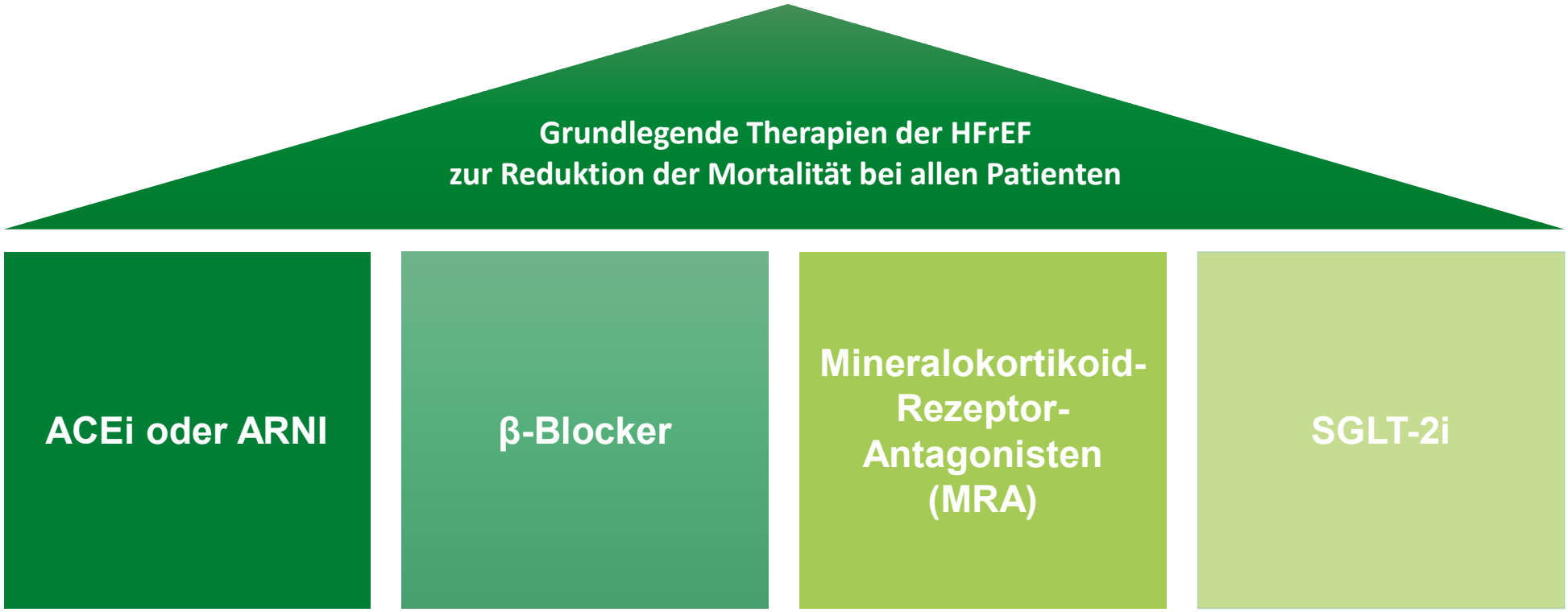

modif. nach: McDonagh TA, et al. Eur Heart J 2021; doi 10.1093/eurheartj/ehab368;

Therapie mit allen 4 Substanzen sollte „so schnell und sicher wie möglich“ begonnen werden

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- Ausmaß des Behandlungsnutzens jeder einzelnen Arzneimittelklasse ist unabhängig von den Vorteilen anderer Arzneimittelklassen
- Wirkstoffe senken die Morbidität und Mortalität bereits bei niedrigen Anfangsdosen
- Die Aufnahme einer neuen Medikamentenklasse in die Behandlung bringt einen größeren Nutzen als die Hochtitrierung bestehender Medikamente
- Sicherheit und Verträglichkeit können durch die richtige Reihenfolge der Medikamentenklassen verbessert werden
- Ein Nutzen der Wirkstoffgruppen lässt sich bereits innerhalb von 30 Tagen feststellen

Invasive Verfahren bei Herzinsuffizienz

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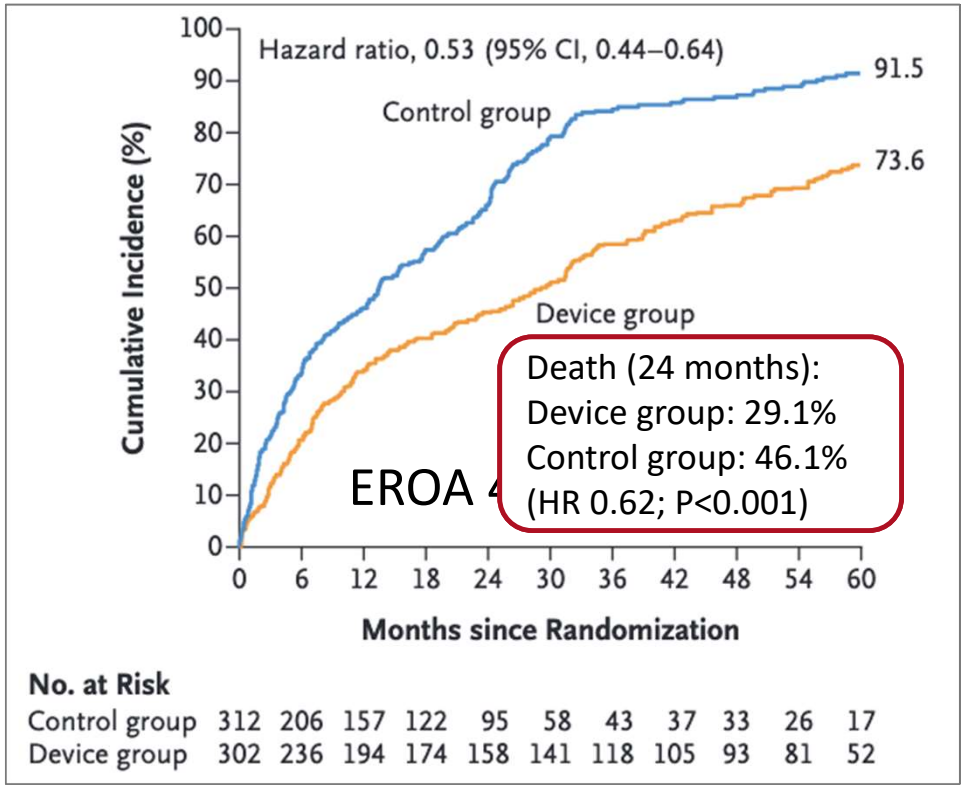
zum richtigen Zeitpunkt die richtige Therapie wählen

- Revaskularisation bei Nachweis von Ischämie
- Herzklappenintervention (interventionell oder chirurgisch)
- CRT-P /CRT-D bei Leitungsstörung (Schenkelblock) und intraventrikulärer Dyssynchronie
- Ventrikuläre Assist-Systeme

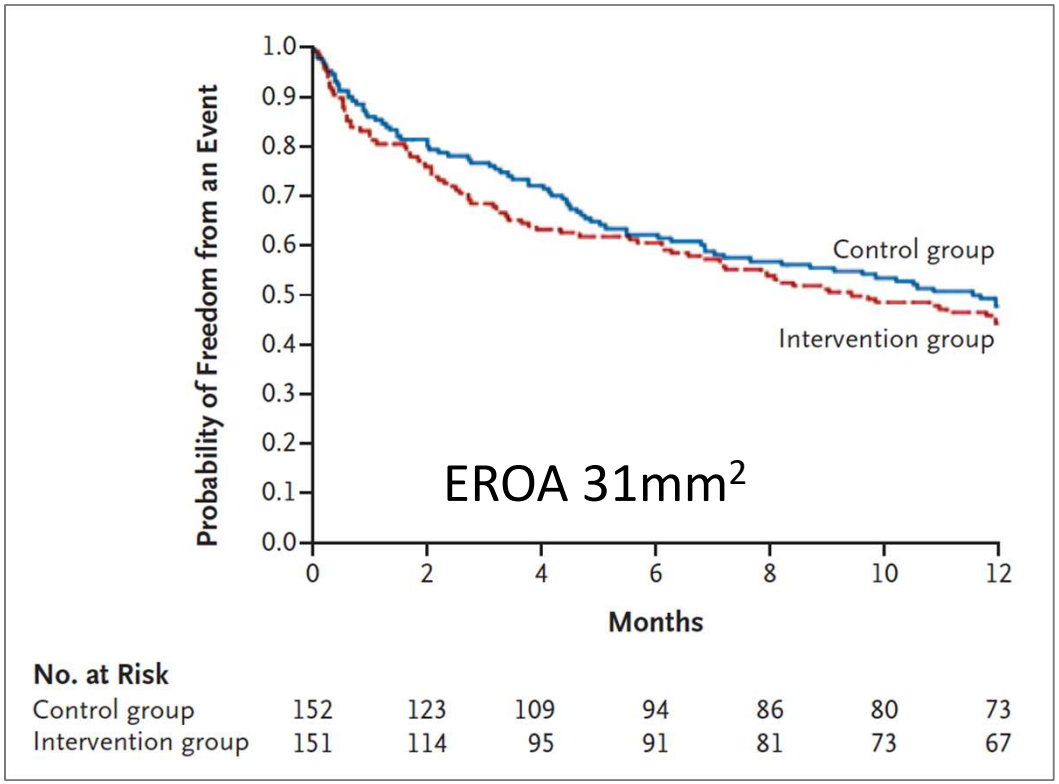
Efficiacy of TEER in HFrEF with severe MR

Death from any cause or first hospitalization for heart failure



COAPT investigators, N. Engl. J. Med. 2023

Death from any cause or unplanned hospitalization for heart failure



MITRA-FR investigators, N. Engl. J. Med. 2018

Secondary MR in HFrEF – 2021 ESC Guidelines

Recommendations	Class[b]	Level[c]
Valve surgery/intervention is recommended only in patients with severe SMR who remain symptomatic despite GDMT (including CRT if indicated) and has to be decided by a structured collaborative Heart Team.[247,323,336,337]	I	B
TEER should be considered in selected symptomatic patients, not eligible for surgery and fulfilling criteria suggesting an increased chance of responding to the treatment.[337,338,356,357 e]	IIa	B

TEER candidates

- Severe SMR
- Symptomatic heart failure (NYHA class II, III or ambulatory IV) despite optimized GDMT
- LVEF 20–50%
- LV end-systolic diameter ≤70 mm
- At least one heart failure hospitalization within the previous year or increased natriuretic peptide levels
- Anatomy judged suitable for TEER

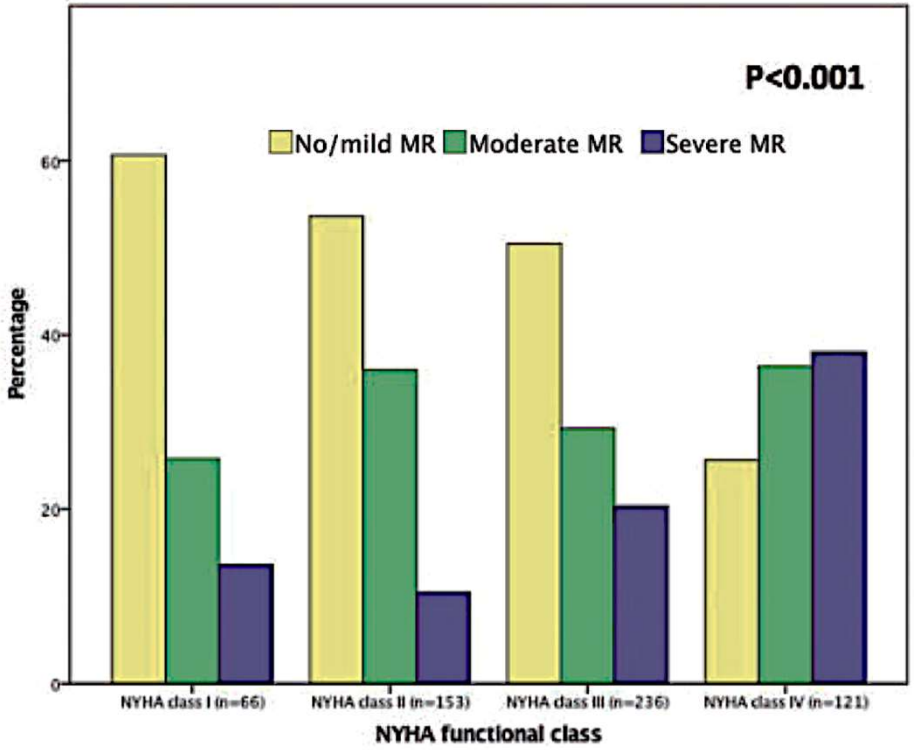
… only accounting for severe MR

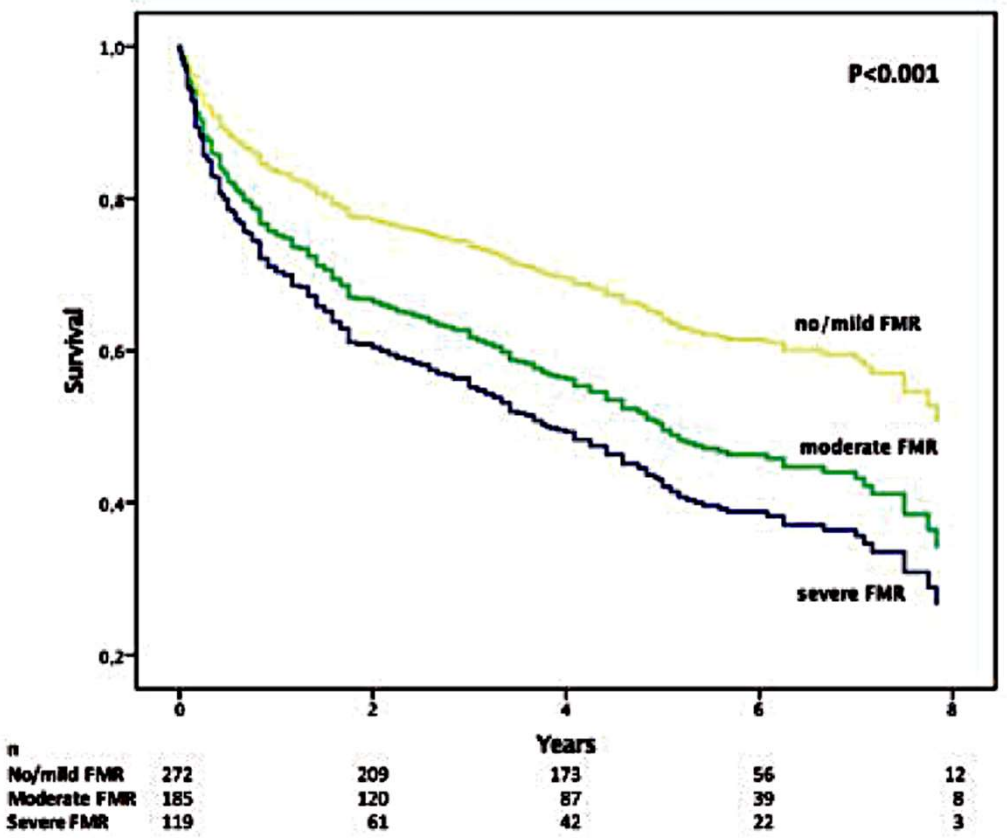
… defined as EROA of ≥0.4 cm^2 and regurgitant volume of ≥60ml or ≥0.3 cm^2 with a regurgitant volume of ≥40ml in the presence of an elliptoid PISA zone.

Vahanian et al., Eur. Heart J. 2022

Moderate MR is associated with worse prognosis

Prospective registry of 576 consecutive HFrEF patients on GDMT

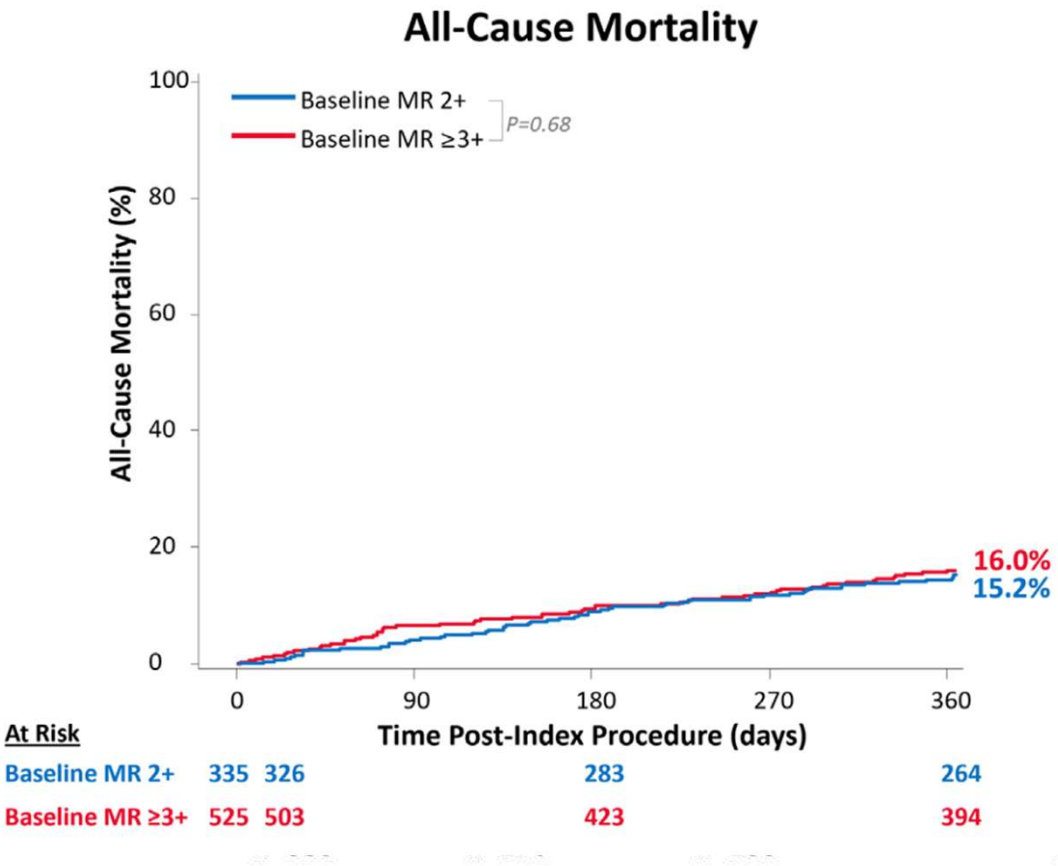


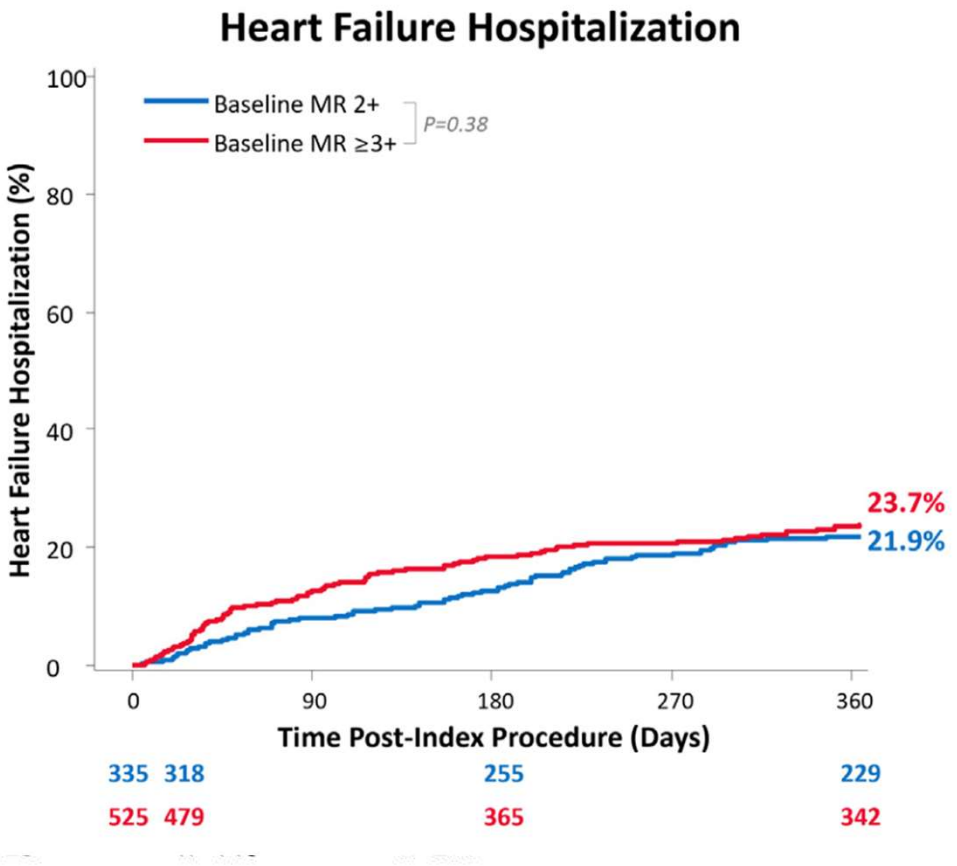


Goliasch et al., Eur. Heart J. 2018

Similar M-TEER Outcomes in moderate and severe MR

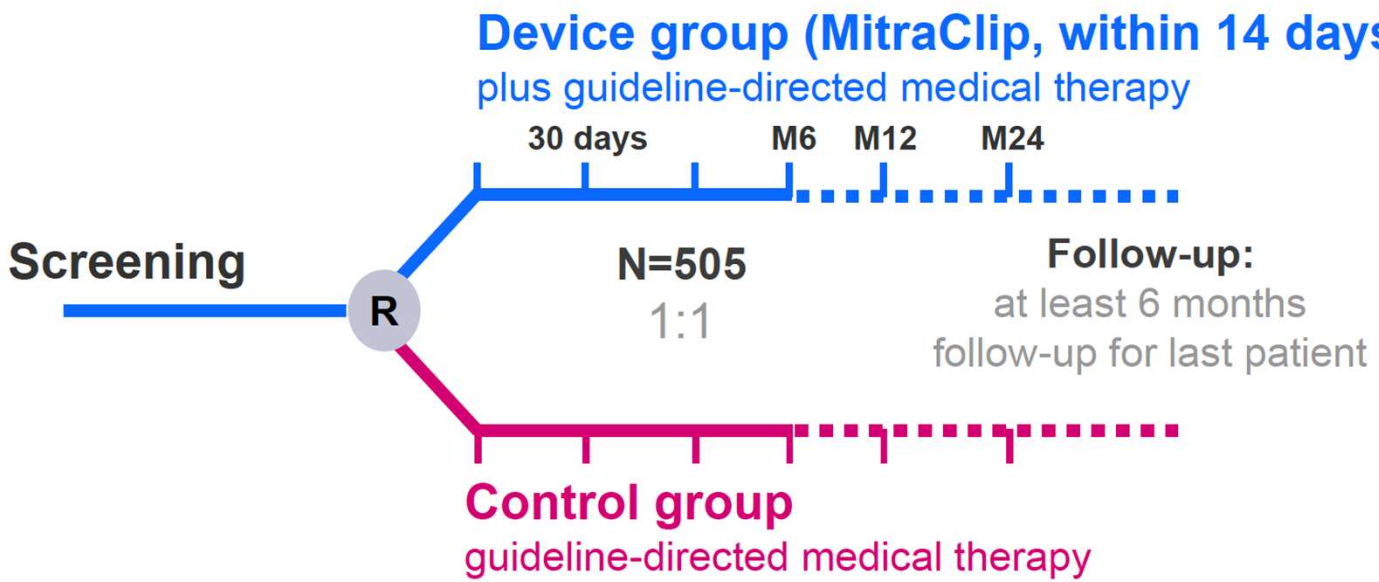
EXPANDED SMR registries





Asgar et al., JACC Heart failure 2024

RESHAPE – Moderate MR in HFrEF patients



Hospitalization for heart failure or cardiovascular death

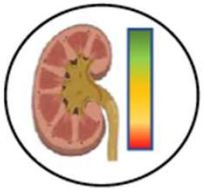
Composite of Hospitalization for Heart Failure or Death from Cardiovascular Causes

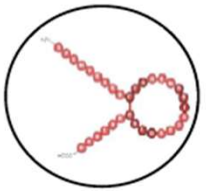
- Symptomatic CHF in NYHA functional class II–IV with LVEF 20–50% [if NYHA II, with NYHA III/IV in last 6mo]
- Clinically significant functional mitral regurgitation (FMR 3+ / 4+ according to European Association of Echocardiography) within 90d prior to randomization & confirmed by the Echo Core-Lab (within 48hrs)
- Hospitalization for HF within 12mo OR BNP ≥300 pg/mL or NT-proBNP ≥1000 pg/mL within 90d

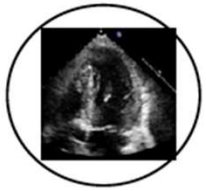
Reshape investigators, Eur Heart J 2024

RESHAPE patient characteristics

Patients in RESHAPE-HF2 form a third distinct population tested with MitraClip, primarily comprising those with moderate-to-severe FMR, unlike the COAPT and MITRA-FR trials, which recruited patients with severe FMR







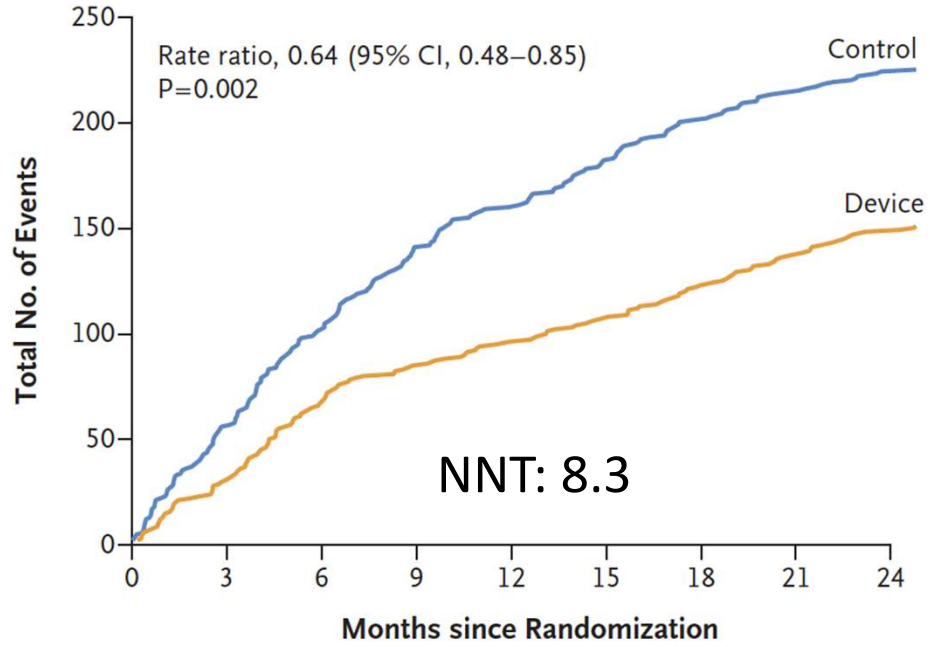
	Age (years)	eGFR (ml/min/1.73 m^2)	NT-proBNP (pg/ml)	LVEF (%)	Mean EROA (cm^2)	6MWD (m)
RESHAPE-HF2	70	56 ± 21	Mean: 4185 Median: 2745	31 ± 8	0.25	Mean: 292 Median: 300
COAPT	72	49 ± 26	Mean: 5558	31 ± 9	0.40	Median: 240
MITRA-FR	70	50 ± 20	Median: ≈3400	33 ± 6	0.31	Mean: 310

Anker et al., Eur Heart J 2024

RESHAPE – Moderate MR in HFrEF patients

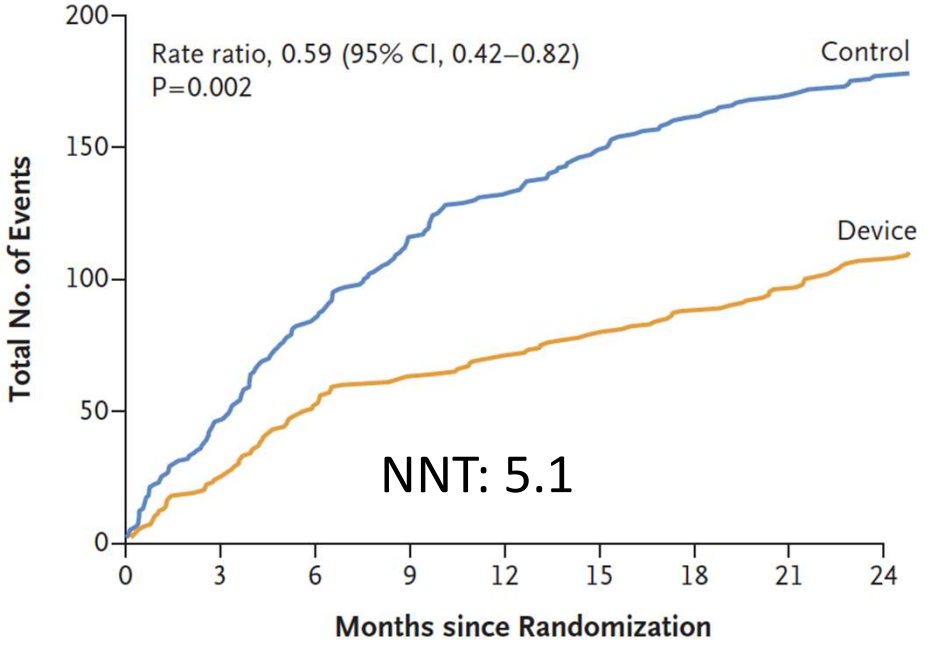
→TEER for <u>all</u> HFrEF patients with moderate MR?

Composite of Hospitalization for Heart Failure or Death from Cardiovascular Causes



No. at Risk									
Control	255	240	223	204	189	179	165	155	146
Device	250	241	222	207	197	191	179	170	163

Hospitalization for Heart Failure

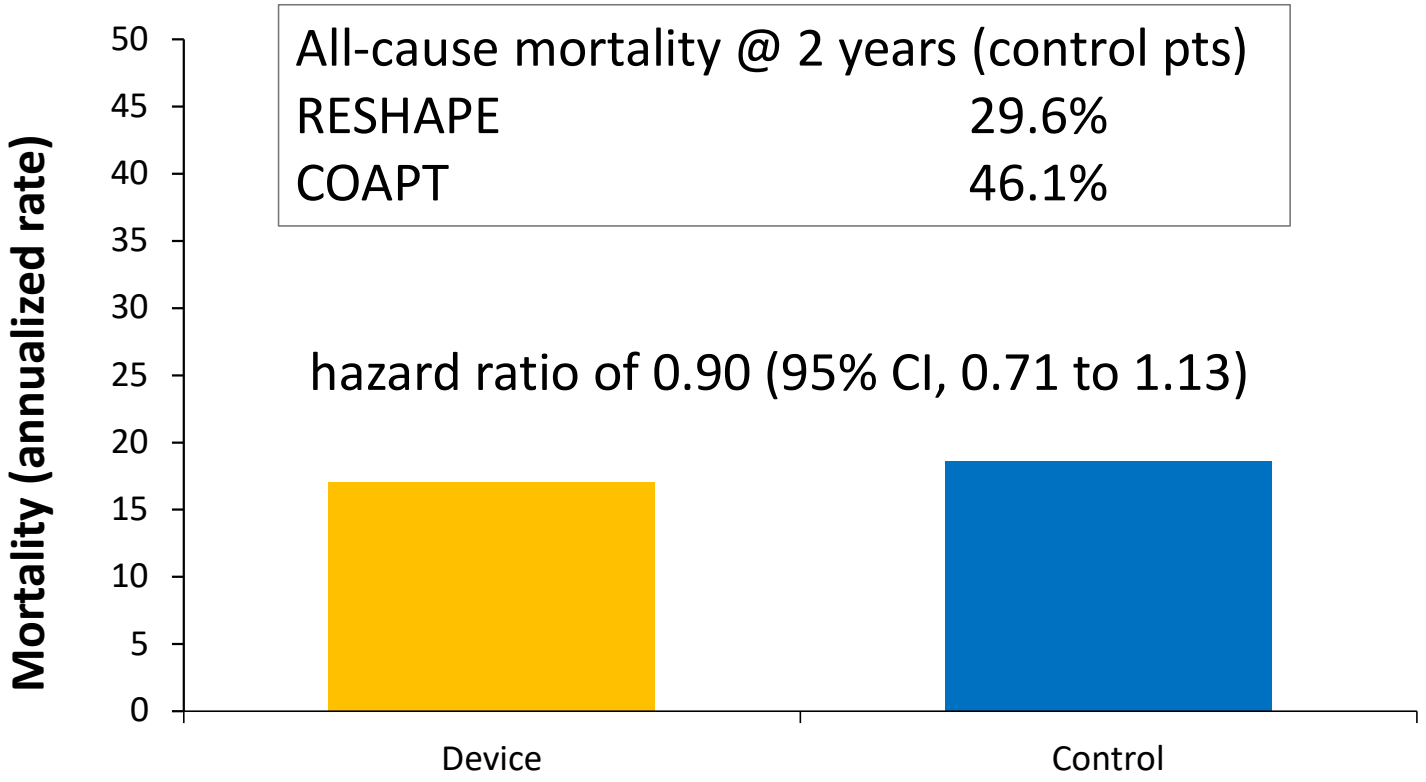


No. at Risk									
Control	255	240	223	204	189	179	165	155	146
Device	250	241	222	207	197	191	179	170	163

Reshape investigators, N. Engl. J. Med. 2024

TEER in selected patients with HFrEF & moderate MR

Argument #1: No impact on mortality (unlike COAPT)



Reshape investigators, N. Engl. J. Med. 2024

TEER in selected patients with HFrEF & moderate MR

Argument #6: OMT was not „optimal“ at baseline

Characteristic	Device Arm (n=250)	Control Arm (n=255)
Medications used at baseline		
Beta Blocker — no. (%)	238 (95.2)	246 (96.5)
ACEI or ARB or ARNI — no. (%)	210 (84.0)	204 (80.0)
ACEI or ARB — no. (%)	190 (76.0)	186 (72.9)
ACEI	142 (56.8)	142 (55.7)
ARB	51 (20.4)	45 (17.6)
ARNI	40 (16.0)	28 (11.0)
MRA — no. (%)	200 (80.0)	215 (84.3)
SGLT-2 inhibitors — no. (%)	24 (9.6)	22 (8.6)
Hydralazine — no. (%)	2 (0.80)	0 (0.0)
Nitrates — no. (%)	13 (5.2)	11 (4.3)
Diuretics — no. (%)	239 (95.6)	243 (95.3)
Aspirin — no. (%)	66 (26.4)	64 (25.1)
Oral Anticoagulant — no. (%)	163 (65.2)	152 (59.6)
Statin — no. (%)	120 (48.0)	124 (48.6)

Yet, TEER may facilitate rapid OMT updosing!

Reshape investigators, N. Engl. J. Med. 2024

TEER in all patients with HFrEF & moderate MR ?

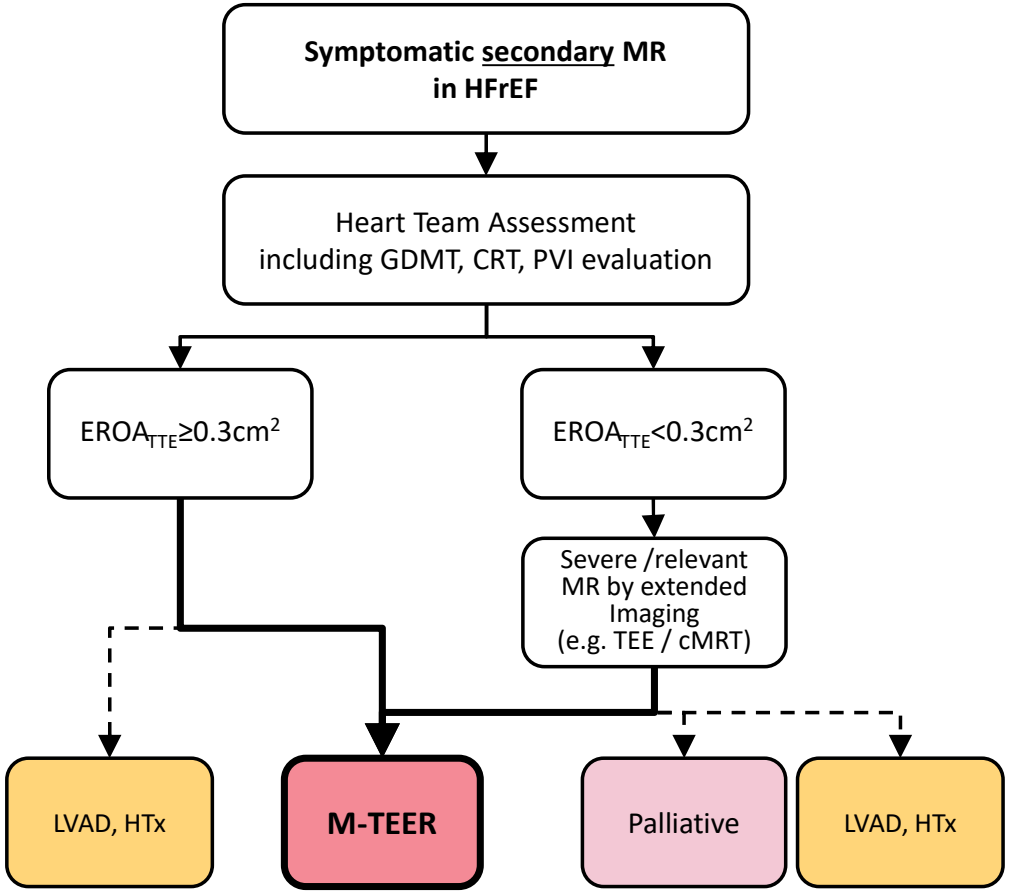
No, but…

… TEER is a central pillar in heart failure management.

… TEER should be considered in all symptomatic patients with at least moderate MR.

… should be weighed against other therapeutic options within the heart team.

… More trials are needed to define the optimal timing of TEER in the course of HFrEF.



Definition der Herzinsuffizienz: ESC Guidelines 2021

Table 3 **Definition of heart failure with reduced ejection fraction, mildly reduced ejection fraction and preserved ejection fraction**

Type of HF		HFrEF	HFmrEF	HFpEF
CRITERIA	1	Symptoms ± Signs[a]	Symptoms ± Signs[a]	Symptoms ± Signs[a]
	2	LVEF ≤40%	LVEF 41–49%[b]	LVEF ≥50%
	3	–	–	Objective evidence of cardiac structural and/or functional abnormalities consistent with the presence of LV diastolic dysfunction/raised LV filling pressures, including raised natriuretic peptides[c]

HF = heart failure; HFmrEF = heart failure with mildly reduced ejection fraction; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction; LV = left ventricle; LVEF = left ventricular ejection fraction.

[a]Signs may not be present in the early stages of HF (especially in HFpEF) and in optimally treated patients.

[b]For the diagnosis of HFmrEF, the presence of other evidence of structural heart disease (e.g. increased left atrial size, LV hypertrophy or echocardiographic measures of impaired LV filling) makes the diagnosis more likely.

[c]For the diagnosis of HFpEF, the greater the number of abnormalities present, the higher the likelihood of HFpEF.

ESC, European Society of Cardiology.
McDonagh TA *et al. Eur Heart J* 2021; doi:10.1093/eurheartj/ehab368.

Herzinsuffizienz: HFrEF, HFmrEF und HFpEF

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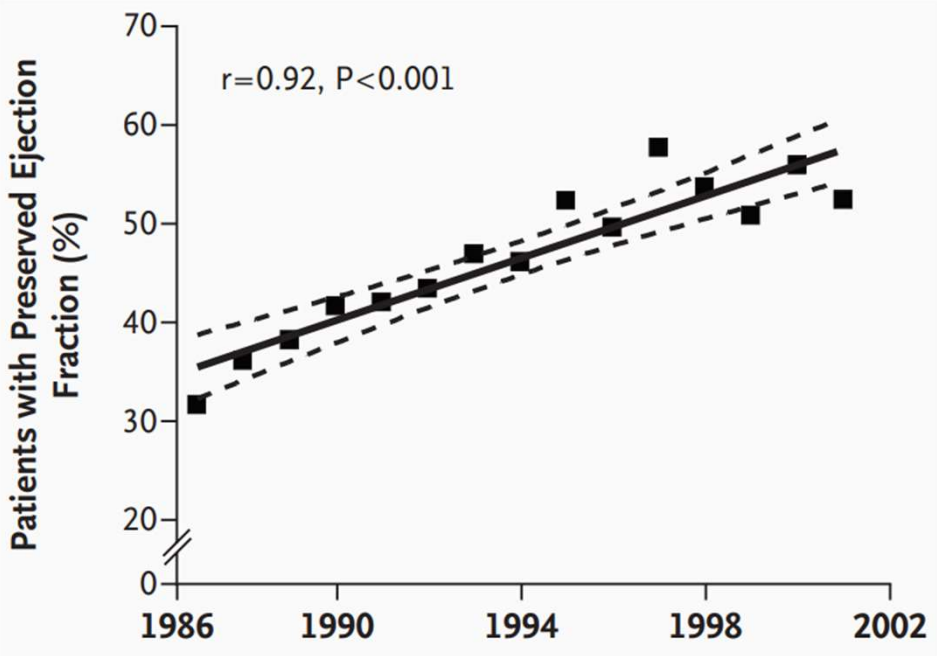
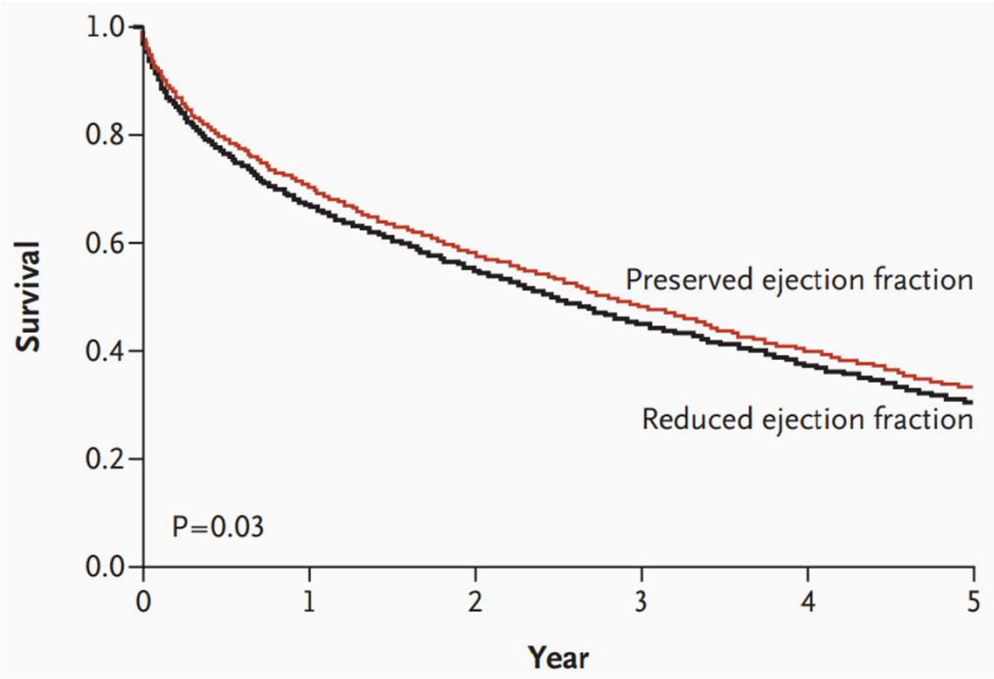
Prävalenz von Patienten mit HFpEF



Überleben HFrEF vs. HFpEF



Owan et al. NEJM 2006

Luftnot bei erhaltener Pumpfunktion: Diagnostische Herausforderung der HFpEF

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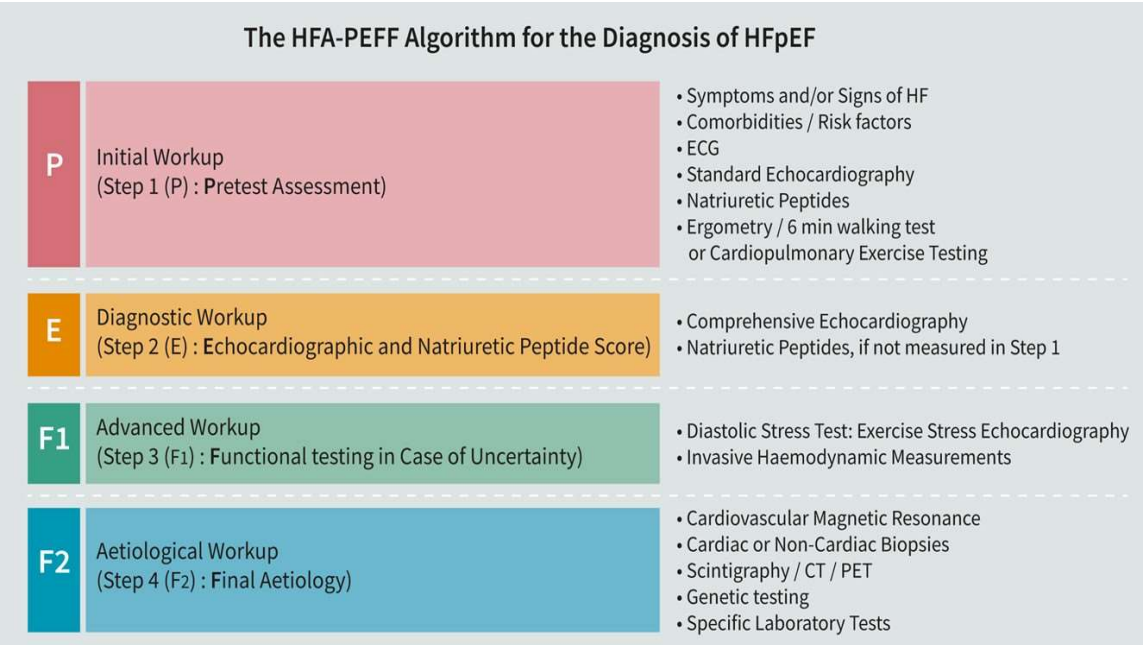
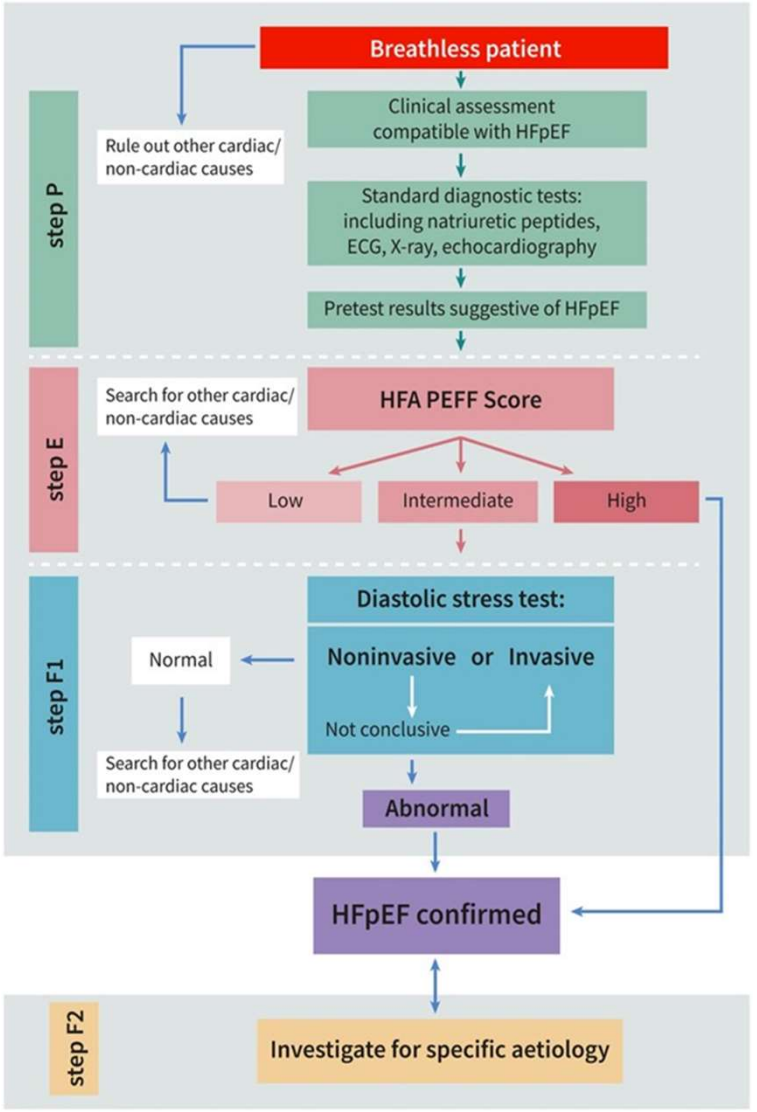
typical patient characteristics:

- overweigt / obesity
- metabolic syndrome / Type 2 diabetes mellitus
- physical inactivity / deconditioning
- arterial hypertension
- atrial fibrillation
- ECG abnormalities (beyond AF)
- elevated BNP /NT-proBNP levels



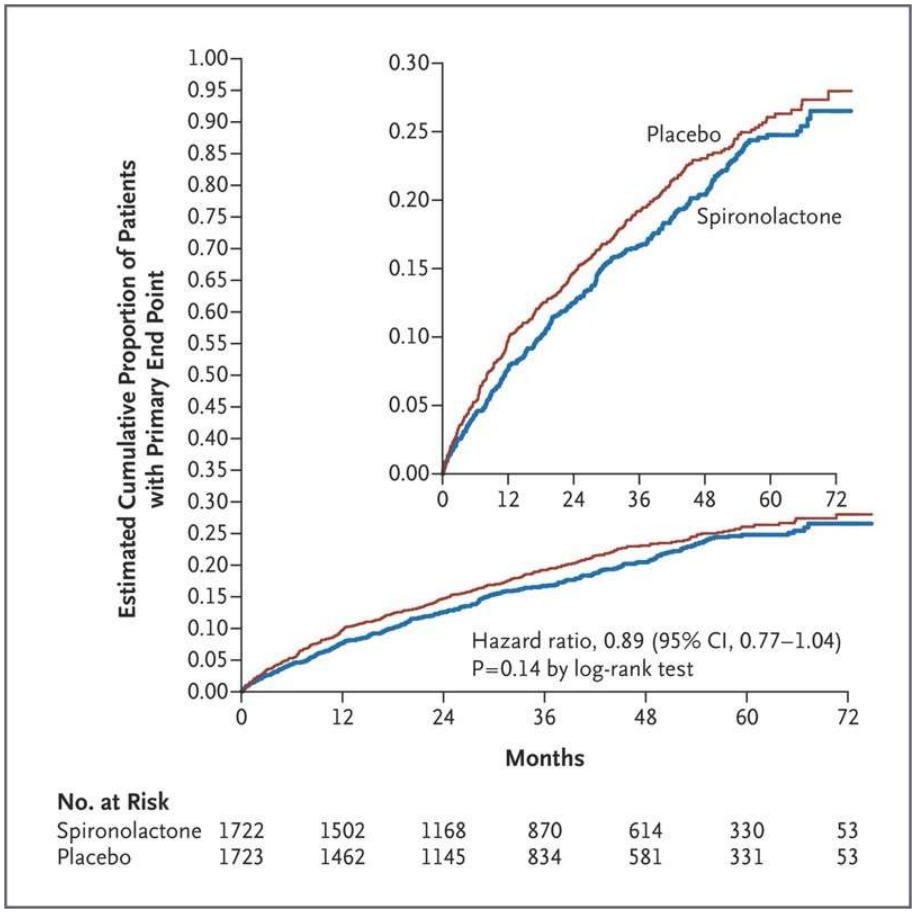


ESC
European Society of Cardiology

Medikamentöse Therapie bei HFpEF: Effekte auf das Outcome?

TOPCAT (Spironolacton)

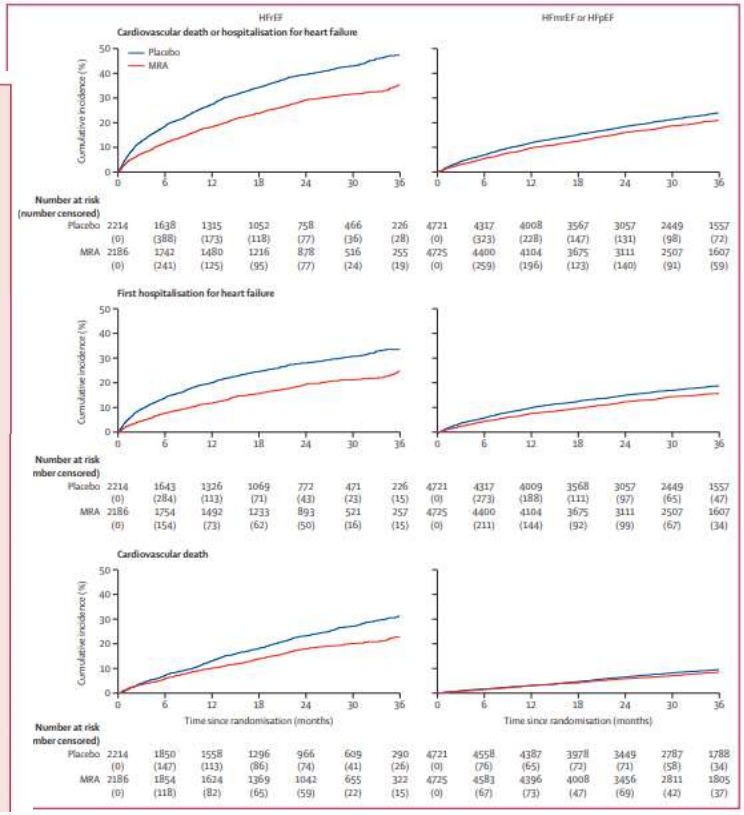
- Spironolacton vs Placebo
- 3445 Patienten
- Einschluss:
  - EF ≥45%
  - NT-proBNP >360 pg/ml ODER Hospitalisierung in letzten 12 Mo.
- Kombinierter Endpunkt: kardiovaskulärer Tod + HF-Hospitalisierung
- Ergebnis: *negativ*
  (HR 0.89 [0.77-1.04])



Pitt et al. NEJM 2014

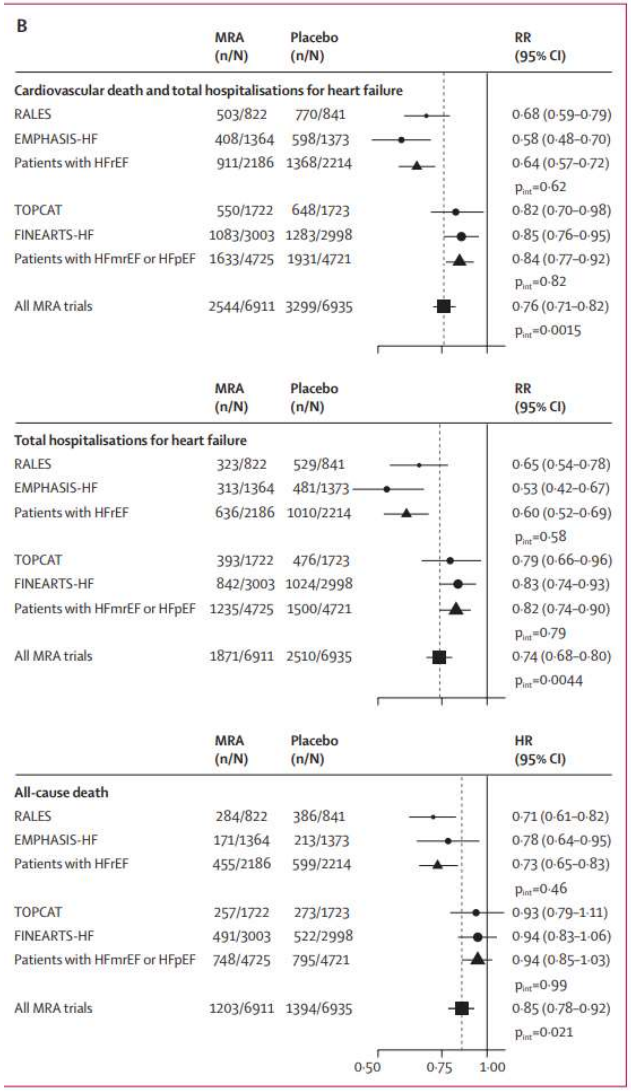
Herzinsuffizienz:
Die Bedeutung der Mineralcorticoidrezeptor Antagonisten (MRA)

	RALES (n=1663)	EMPHASIS-HF (n=2737)	TOPCAT (n=3445)	FINEARTS-HF (n=6001)	Total (n=13 846)
Age, years	65 (11)	68 (7)	68 (9)	72 (9)	69 (9)
Sex					
Female	446 (27%)	610 (22%)	1775 (52%)	2732 (46%)	5563 (40%)
Male	1217 (73%)	2127 (78%)	1670 (48%)	3269 (54%)	8283 (60%)
LVEF, %	25% (7)	26% (5)	57% (7)	53% (8)	45% (15)
NYHA class					
I or II	7 (<1%)	2730 (100%)	2303 (67%)	4146 (69%)	9186/13 835 (66%)
III or IV	1656 (100%)	3 (<1%)	1136 (33%)	1854 (31%)	4649/13 835 (34%)
Diabetes	369 (22%)	859 (31%)	1118 (32%)	2454 (41%)	4800 (35%)
Hypertension	391 (24%)	1819 (66%)	3147 (91%)	5325 (89%)	10 682 (77%)
Atrial fibrillation	183 (11%)	844 (31%)	1214 (35%)	3273 (55%)	5514 (40%)
Myocardial infarction	472 (28%)	1380 (50%)	893 (26%)	1541 (26%)	4286 (31%)
Stroke	NR	262 (10%)	265 (8%)	708 (12%)	1235/12 183 (10%)
ACE inhibitor or ARB	1589 (96%)	2558 (93%)	2900 (84%)	4246 (71%)	11 293 (82%)
ARN inhibitor	NR	NR	NR	513 (9%)	513 (4%)
SGLT2 inhibitor	NR	NR	NR	817 (14%)	817 (6%)
β blocker	171 (10%)	2374 (87%)	2676 (78%)	5095 (85%)	10 316 (75%)
Diuretic	1502 (90%)	2326 (85%)	2817 (82%)	5930 (99%)	12 575 (91%)
Digitalis glycosides	1216 (73%)	740 (27%)	342 (10%)	471 (8%)	2769 (20%)



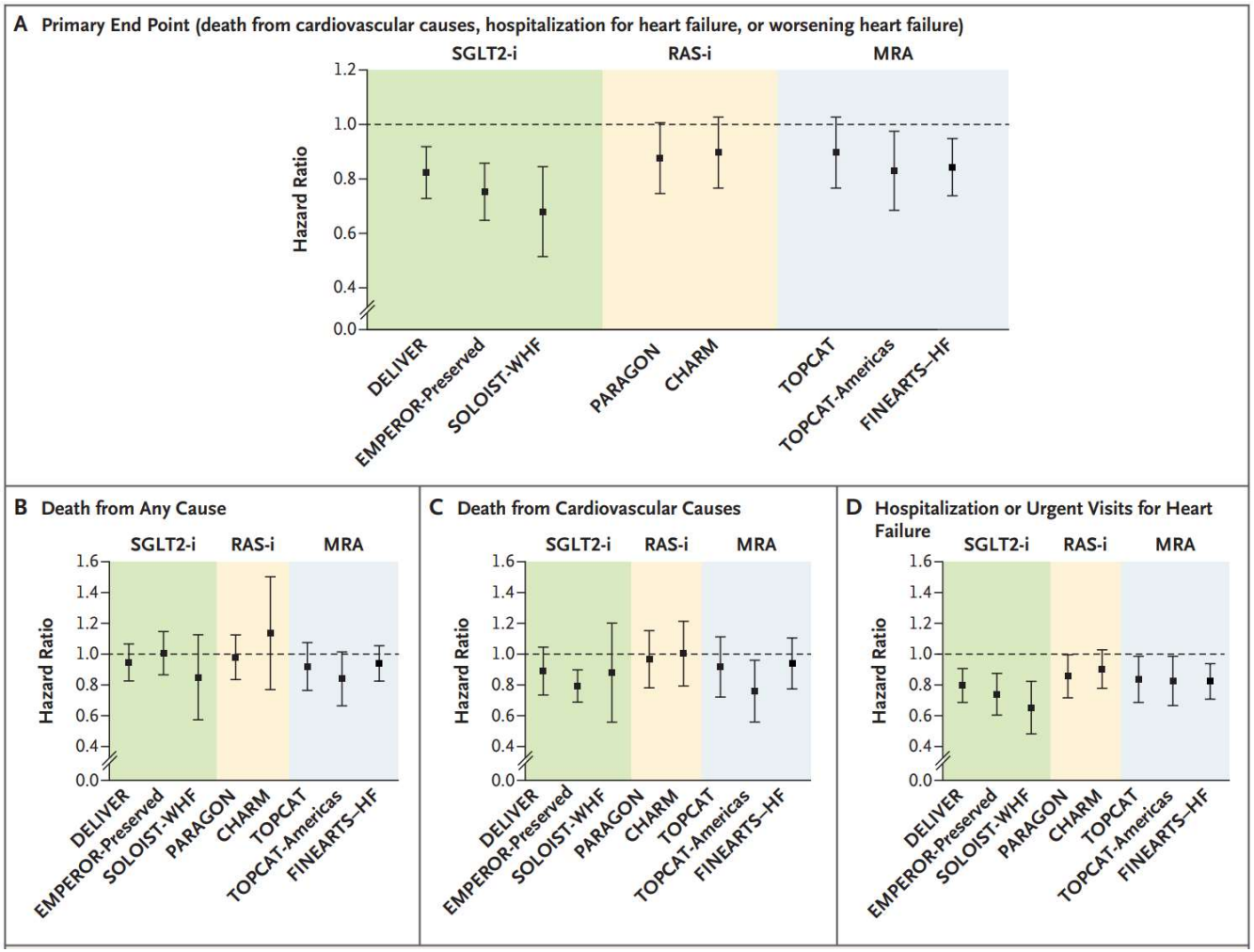
Jhund PS, et al. Mineralocorticoid receptor antagonists in heart failure: an individual patient level meta-analysis. Lancet. 2024 Sep 21;404(10458):1119-1131

Herzinsuffizienz:
Die Bedeutung der Mineralcorticoidrezeptor Antagonisten (MRA)



Jhund PS, et al. Mineralocorticoid receptor antagonists in heart failure: an individual patient level meta-analysis. Lancet. 2024 Sep 21;404(10458):1119-1131

Herzinsuffizienz mit erhaltener oder nur mild reduzierter Pumpfunktion: Medikamentöse Therapie



Cannata A, McDonagh TA. Heart Failure with Preserved Ejection Fraction. N Engl J Med. 2025 Jan 9;392(2):173-184.

3 Wirkansätze in der HFmrEF/HFpEF-Therapie (Reduktion der Hospitalisierung wegen Herzinsuffizienz

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Optimierte Versorgung und Therapie von Patienten mit Herzinsuffizienz

Schnittstelle zwischen stationärer und ambulanter Versorgung

Entlassung aus der stationären Behandlung
des akut dekompensierten Patienten

heart failure nurse / Telemedizin / smart APP

Aufnahme in die ambulante Betreuung
des kürzlich entlassenen Patienten mit Herzinsuffizienz

Ammenwerth E, et al., Pölzl G. HerzMobil, an Integrated and Collaborative Telemonitoring-Based Disease Management Program for Patients With Heart Failure: A Feasibility Study Paving the Way to Routine Care. JMIR Cardio. 2018 Apr 30;2(1):e11. doi: 10.2196/cardio.9936. PMID: 31758765; PMCID: PMC6857958.

Original Paper

HerzMobil, an Integrated and Collaborative Telemonitoring-Based Disease Management Program for Patients With Heart Failure: A Feasibility Study Paving the Way to Routine Care

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Abstract

Background: Heart failure is a major health problem associated with frequent hospital admissions. HerzMobil Tirol is a multidisciplinary postdischarge disease management program for heart failure patients to improve quality of life, prevent readmission, and reduce mortality and health care costs. It uses a telemonitoring system that is incorporated into a network of specialized heart failure nurses, physicians, and hospitals. Patients are equipped with a mobile phone, a weighing scale, and a blood pressure and heart rate monitor for daily acquisition and transmission of data on blood pressure, heart rate, weight, well-being, and drug intake. These data are transmitted daily and regularly reviewed by the network team. In addition, patients are scheduled for 3 visits with the network physician and 2 visits with the heart failure nurse within 3 months after hospitalization for acute heart failure.

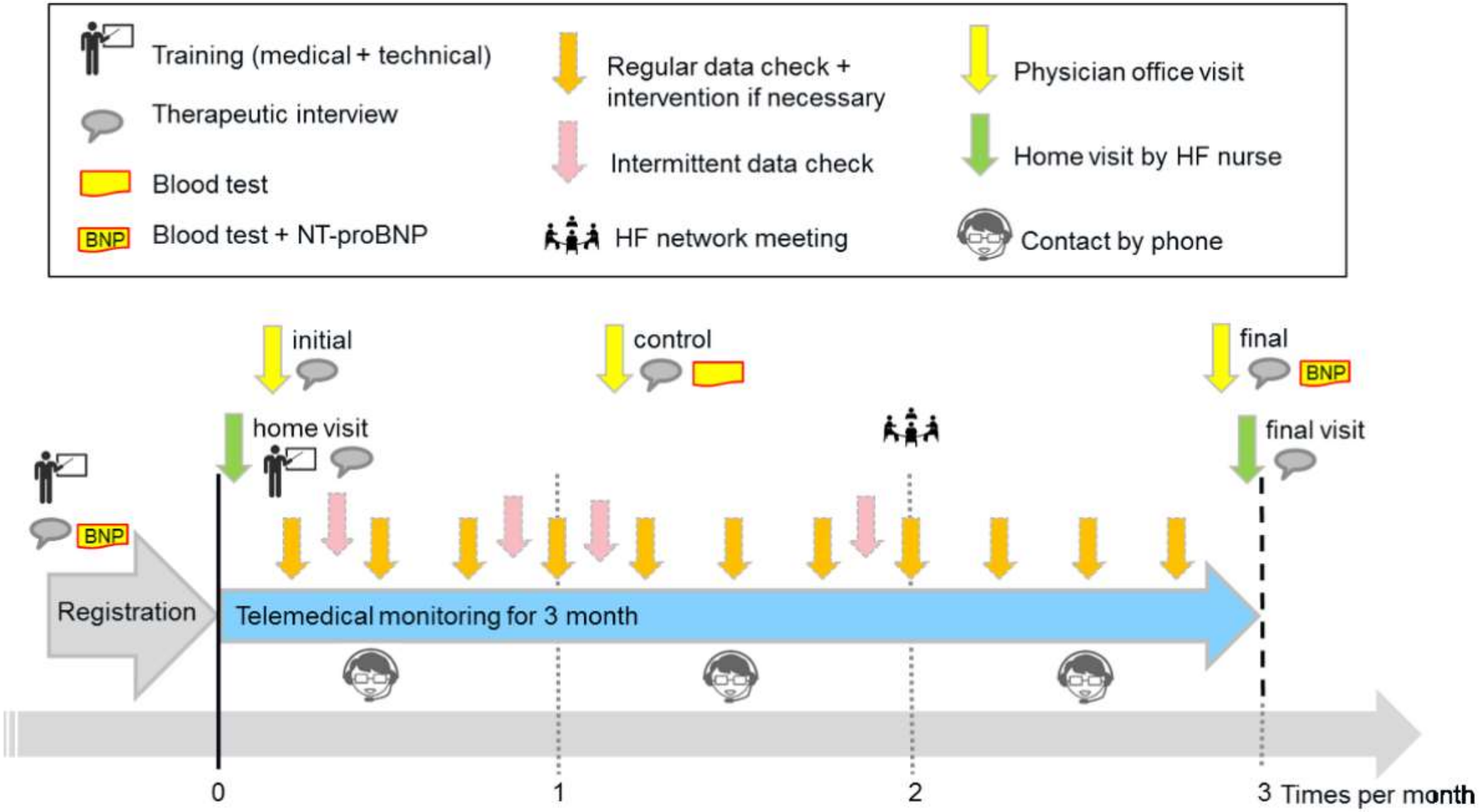
Objective: The objectives of this study were to evaluate the feasibility of HerzMobil Tirol by analyzing changes in health status as well as patients' self-care behavior and satisfaction and to derive recommendations for implementing a telemonitoring-based interdisciplinary disease management program for heart failure in everyday clinical practice.

Methods: In this prospective, pilot, single-arm study including 35 elderly patients, the feasibility of HerzMobil Tirol was assessed by analyzing changes in health status (via Kansas City Cardiomyopathy Questionnaire, KCCQ), patients' self-care behavior (via European Heart Failure Self-Care Behavior Scale, revised into a 9-item scale, EHFScB-9), and user satisfaction (via Delone and McLean System Success Model).

Results: A total of 43 patients joined the HerzMobil Tirol program, and of these, 35 patients completed it. The mean age of participants was 67 years (range: 43-86 years). Health status (KCCQ, range: 0-100) improved from 46.2 to 69.8 after 3 months. Self-care behavior (EHFScB-9, possible range: 9-22) after 3 months was 13.2. Patient satisfaction in all dimensions was 86% or higher. Lessons learned for the rollout of HerzMobil Tirol comprise a definite time schedule for interventions, solid network structures with clear process definition, a network coordinator, and specially trained heart failure nurses.

Conclusions: On the basis of the positive evaluation results, HerzMobil Tirol has been officially introduced in the province of Tyrol in July 2017. It is, therefore, the first regular financed telehealth care program in Austria.

Optimierte Versorgung und Therapie von Patienten mit Herzinsuffizienz: Herzmobil Tirol



Ammenwerth E, et al., JMIR Cardio. 2018 Apr 30;2(1):e11.

Herzinsuffizienz: Digitale Gesundheitsanwendung (DIGA)

ProHerz-App

ProHerz

ProCarement GmbH, Deutschland | procarement.com/

Vorläufig aufgenommen (15.05.2023 bis 14.04.2025)

Informationen für Fachkreise

- Aufklärung / Information
- Schulung
- Selbstmanagement
- Kommunikation

https://diga.bfarm.de/de/verzeichnis/01823

BDI Berufsverband Deutscher Internistinnen und Internisten

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BDI regional
Bayerischer Internistenkongress

LMU München, Klinikum Großhadern, Hörsaaltrakt
Freitag 24.- Samstag 25. Oktober 2025

https://www.bayerischerinternistenkongress.de/

Herzlichen Dank für Ihre Aufmerksamkeit !

LMU