

Diastolisch hartfalen en atriumfibrilleren: een onfortuinlijke combinatie

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NVHVV, Zeist, 17 mei 2022

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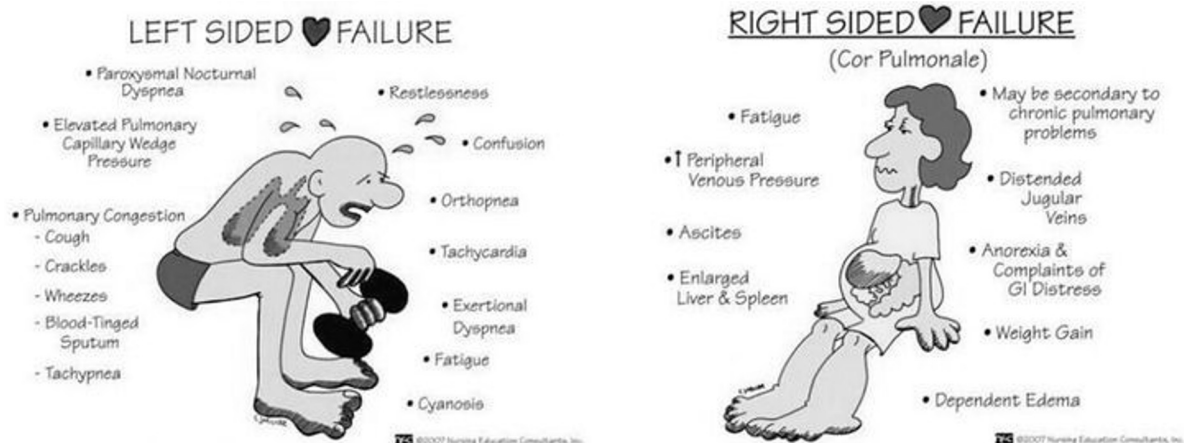
Diastolisch hartfalen / HFpEF

1. Symptomen en/of tekenen van hartfalen
2. LV ejectie fractie ($=SV/EDV$) $\geq 50\%$
3. Aanwijzing voor diastolische dysfunctie (echo, NT-proBNP)
4. Geen andere belangrijke verklaring van de klachten (cardiaal/extracardiaal)

McDonagh, Eur Heart J 2021
Huis in 't Veld/Handoko, Neth Heart J 2016

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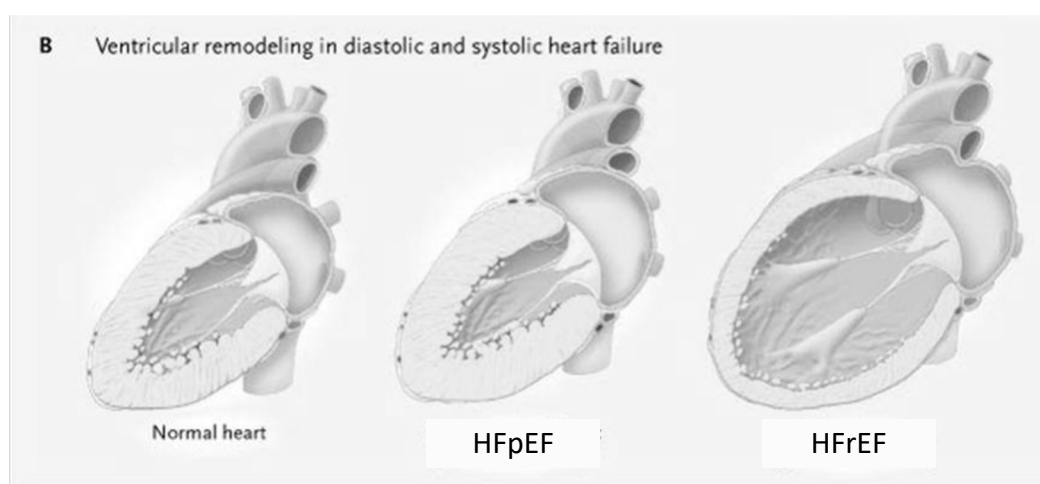
Klinische presentatie van hartfalen



<https://nl.pinterest.com/pin/364228688586606668/>

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“preserved” LV ejection fractie \neq normale hartfunctie

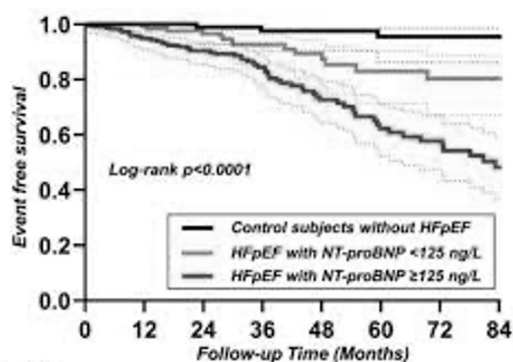


Jessup, N Engl J Med 2003

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laag NT-proBNP: geen hartfalen?

- (NT-pro)BNP komt vrij bij verhoogde wandspanning
- LaPlace: wandspanning \approx druk * diameter / wanddikte
- HFpEF: kleine LV & hypertrofie -> lage wandspanning -> laag NT-proBNP

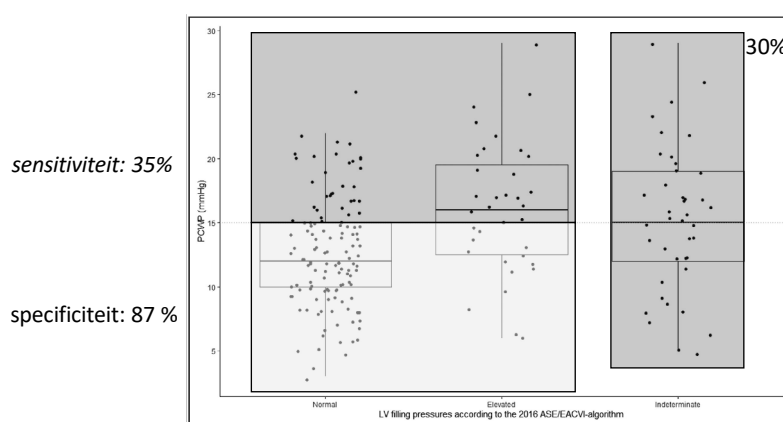


Verbrugge, Eur Heart J 2022

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“milde” diastolische dysfunctie: geen hartfalen?

Onbegrepen dyspneu / pulmonale hypertensie: TTE & RHC



Van de Bovenkamp/Handoko, J Am Heart Assoc 2021

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H₂FPEF-score

	Clinical Variable	Values	Points
H ₂	Heavy	Body mass index > 30 kg/m ²	2
	Hypertensive	2 or more antihypertensive medicines	1
F	Atrial Fibrillation	Paroxysmal or Persistent	3
P	Pulmonary Hypertension	Doppler Echocardiographic estimated Pulmonary Artery Systolic Pressure > 35 mmHg	1
E	Elder	Age > 60 years	1
F	Filling Pressure	Doppler Echocardiographic E/e' > 9	1
H ₂ FPEF score			Sum (0-9)
Total Points	0 1 2 3 4 5 6 7 8 9		
Probability of HFpEF	0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 0.95		

Reddy, Circulation 2018

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Noodzaak tot diastolische stress test

- NT-proBNP (<125 pg/L): sensitiviteit 52% specificiteit 76%
- Rust TTE (n/DD I): sensitiviteit 35% specificiteit 87%
- H₂FPEF (≤1; ≥6) sensitiviteit 97% specificiteit 98%
- X-TTE (E/e' < 14): sensitiviteit 90% specificiteit 71%
- RHC (PCWP@PLR < 19 mmHg): sensitiviteit 52% specificiteit 100%
- X-RHC (PCWP@ex < 25 mmHg): sensitiviteit 100% specificiteit 100%

Borlaug, Circ Heart Fail 2010

Obokata, Circulation 2017

Reddy, Circulation 2018

Van de Bovenkamp/Handoko, JAHA 2021

Van de Bovenkamp/Handoko, Circulation HF 2022

Reddy/Handoko/Borlaug JC 2022

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HFpEF?

- Ischemische cardiomyopathie
- Kleplijden
- Hypertrofische cardiomyopathie
- Infiltratieve cardiomyopathie (bv. amyloidose)
- Stiff LA syndrome
- Pericarditis constrictiva
- Radiatie cardiomyopathie
- ...

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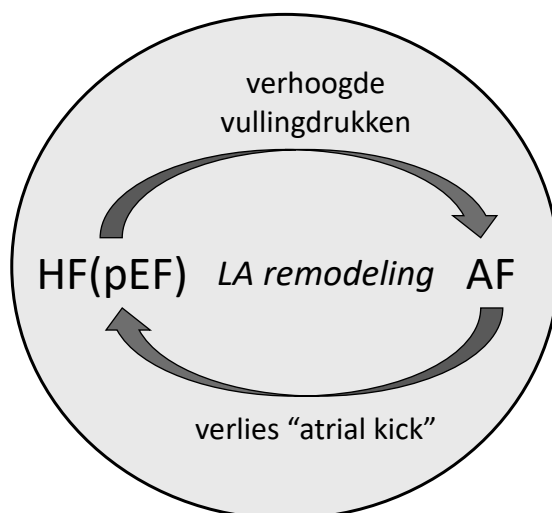
Relatie tussen HFpEF en AF

- **20%** van AF-patiënten heeft HFpEF
- **20-50%** van HFpEF-patiënten heeft AF (afhankelijk van ernst)
- Bij combinatie AF/HFpEF, kans op HF-opname of overlijden **+20%**

Sartipy, JACC Heart Fail 2017
Kotecha, JACC 2016

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Relatie tussen HFpEF en AF



Gedeelde risicofactoren:

- Hypertensie
- Obesitas
- OSAS
- Hoge leeftijd
- ...

Sartipy, JACC Heart Fail 2017
Kotecha, JACC 2016

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AF bij HFpEF: rhythm of rate control?

[PubMed.gov](#): 'HFpEF AND atrial fibrillation AND rhythm control' ->



Article

Rhythm Control in Patients with Heart Failure with Preserved Ejection Fraction: A Meta-Analysis

Narut Prasitlumkum^{1,*†}, Ronpichai Chokesuwattanaskul^{2,3,*†}, Wisit Cheungpasitporn^{4,*},
Jakrin Kewcharoen⁵, Charat Thongprayoon⁴, Tarun Bathini⁶, Saraschandra Vallabhajosyula⁷ and
Krit Jongnarangsin⁸

Prasitlumkum, J Clin Med 2021

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Table 1. Characteristics of included studies.

Study	Kelly 2019 [16]	Machino-Ohtsuka 2019 [17]	Slee 2019 [18]	Zhang 2020 [19]	Zhirov 2019 [20]
Types	Retro	Retro	Retro	Retro	Pros
Country	USA	Japan	USA	USA	Russia
Participants	HF patients >65 years old with concurrent AF who were discharged alive	HFpEF patients >20 years old with AF	>65 years old HF patients with prior AF who were at high risk of stroke	HF patients >18 years old with prior or current AF	HF patients >18 years old with prior or current non-valvular AF
Database	Medicare data from 2008 to 2014	Multicenter from 2012 to 2015	AFFIRM registry	REP from 2000 to 2014	Multicenter from 2015 to 2016
Exclusion	Patients who did not receive either rhythm or rate control strategies, patients who were not admitted	Younger than 20 years old, prior MI, valvular disease requiring intervention, history of pacemaker implantation, severe lung and liver diseases	N/A	Patients without documented EF, patients with AF who died within 1 year	Recent stroke/TIA, recent MI, valvular AF, BiV implantation, severe life-limiting comorbidities, recent VTE
HFpEF criteria	HF with EF > 50%	HF with EF > 50%	HF with EF > 40%	HF with EF > 50%	HF with EF > 50%
Mean EF (%)	38.0	63.8 ± 8	N/A	61.2 ± 6.7	60.0 ± 5.0
Mean age (years)	83.0	71 ± 8	70.9 ± 8.7	79.2 ± 11.1	72.0
Sex (Female%)	65.8	39.9	40.1	60.2	65.4
CHA2DS2-VASc	N/A	Rate: 4.2 ± 1.4, Rhythm: 3.0 ± 1.3	N/A	Rate: 5.2 ± 1.7, Rhythm: 4.7 ± 1.3	N/A
Total participants	15,682	283	349	447	387
Hypertension	Rate: 81.9%, Rhythm: 83.8%	Rate: 73.0%, Rhythm: 80.4%	Rate: 80.1%, Rhythm: 76.4%	Rate: 83.4%, Rhythm: 75.0%	68%
Diabetes	Rate: 36.2%, Rhythm: 36.0%	Rate: 31.3%, Rhythm: 34.6%	Rate: 33.3%, Rhythm: 20.8%	Rate: 36.8%, Rhythm: 30.0%	23%
Coronary artery disease	Rate: 45.8%, Rhythm: 48.7%	Rate: 17.0%, Rhythm: 25.2%	Rate: 17.0%, Rhythm: 10.7%	Rate: 16.5%, Rhythm: 15.0%	70%
CVA/TIA	Rate: 19.3%, Rhythm: 17.5%	Rate: 9.1%, Rhythm: 12.1%	Rate: 11.7%, Rhythm: 16.9%	Rate: 22.6%, Rhythm: 2.5%	15%
Proportion of paroxysmal AF	N/A	37.4%	N/A	N/A	37.2%
AF duration (years)	N/A	5.8 ± 6.7	N/A	4.2 (IQR 2-9)	N/A
Mean follow up (months)	12	24	48	49.2	12
Proportion of rhythm control	11.8%	37.8%	51.0%	15.9%	40.6%
Proportion of rate control	78.2%	62.2%	49.0%	74.1%	59.4%
Adjusted variables	Age, sex, race, prior MI, hypertension, hyperlipidemia, smoking history, prior CVA/TIA, DM, CKD, anemia, PVD, prior HF, COPD	Age, sex, body mass index, vital signs, prior MI, hypertension, hyperlipidemia, CKD, DM, medications, laboratory data, LVEF, LA volume, E/E', TRPG, GLS, LV mass	Age, sex, failed antiarrhythmic drugs, hypertension, MI, stroke, DM, hypertension, cardiomyopathy, valvular heart disease	Age, sex, time interval from HF to AF, body mass index, hypertension, COPD, prior MI, prior stroke	N/A

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Rhythm vs. rate control: medicatie

Table 2. Rate and rhythm control modalities.

Study	Rhythm Control	Rate Control
Kelly 2019 [16]	Class III 80.9%, Cardioversion 13.6%, AF ablation 1%, Unspecified 11.4%	Beta blocker 89.4%, CCB 25.3%, Digoxin 17.1%
Machino-Ohtsuka 2019 [17]	Class IA 6.5%, Class IC 37.4%, Class III 52.3%, Unspecified 10.3%	Beta blocker 54.5%, CCB 42.6%
Slee 2019 [18]	Class IC 3.9%, Class III 78.7%, Unspecified 8.4%	Beta blocker 36.8%, CCB 39.2%, Digoxin 51.9%
Zhang 2020 [19]	N/A	Beta blocker 80%, CCB 30%, Digoxin 20%
Zhirov 2019 [20]	N/A	N/A

Abbreviations: AF: atrial fibrillation; AFFIRM: The Atrial Fibrillation Follow-up Investigation of Rhythm Management; BiV: biventricular ventricular resynchronization; CCB: calcium channel blocker; CKD: chronic kidney disease; COPD: chronic obstructive pulmonary disease; CVA: cerebrovascular accident; DM: diabetes mellitus; EF: ejection fraction; GLS: global longitudinal strain; HF: heart failure; HFpEF: heart failure with preserved ejection fraction; LA: left atrium; LV: left ventricle; MI: myocardial infarction; N/A: not applicable; PVD: peripheral vascular disease; REP: Rochester Epidemiology Project; TIA: transient ischemic stroke; TRPG: tricuspid regurgitation peak gradient; VTE: venous thromboembolism.

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Rhythm vs. rate control: sterfte -15%

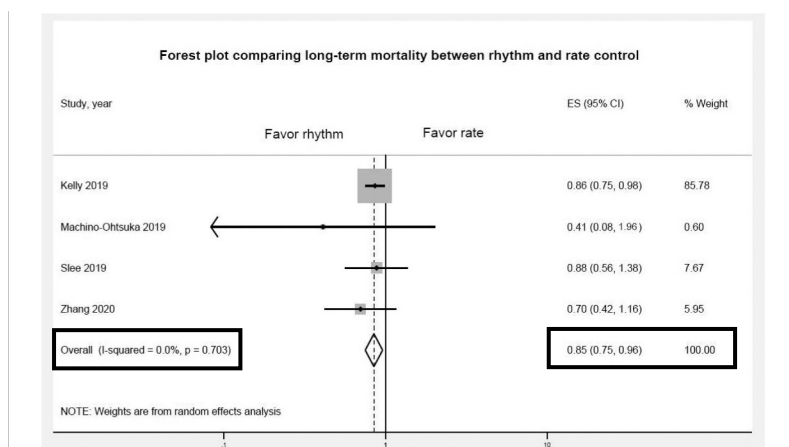
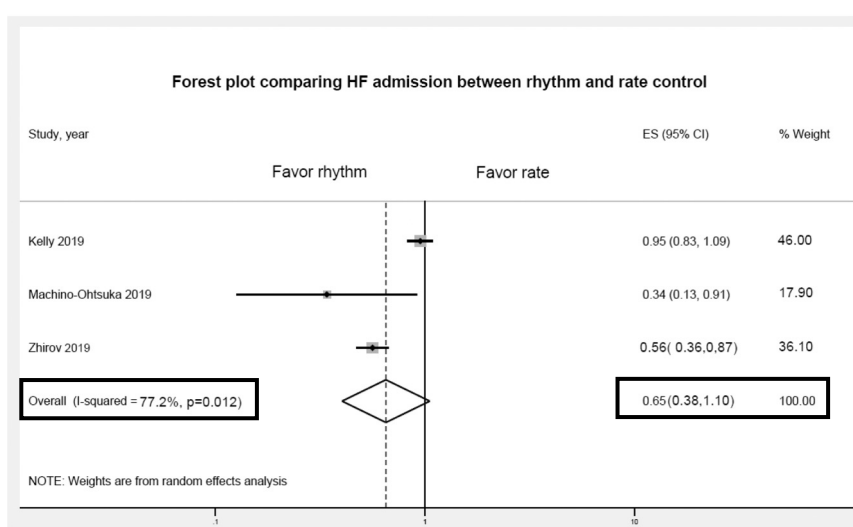


Figure 2. Forest plot comparing risk of long-term mortality between rhythm and rate controls. Horizontal lines represent the 95% CIs, with marker size reflecting the statistical weight of the study, using the random-effects model. A diamond data marker represents the overall adjusted OR and 95% CI for the outcome of interest.

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Rhythm vs. rate control: HF-opname -35% (n.s.)



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Take home message

- HFpEF en AF zijn pathofysiologisch gelinkt: LA myopathie?
- Veel AF-patienten hebben *ondergediagnosticeerd* HFpEF
- HFpEF en AF zijn een slechte combinatie
- Screen en behandel (gedeelde) co-morbiditeit
- Voorkeur voor *rhythm* controle: overweeg altijd 1x een elektrische cardioversie onder adequate amiodaron spiegel; rol voor ablatie?

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Literatuur

- Diagnostiek HFpEF: Huis in't Veld/Handoko, Neth Heart J 2016
- Relatie HFpEF en AF: Kotecha, JACC 2016
- Rate/rhythm control: Prasitlumkum, J Clin Med 2021

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