

# hartfalen bij ouderen

Medisch Symposium Geriatrie voor Huisartsen

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Cardiologie IZ

UZ Leuven

# frequent problem !

	CHF
all	2.2% (45/ 2.042)
45-54 yr	0.7%
55-64 yr	1.3%
65-74 yr	1.5%
>75 yr	8.4%

# atypische presentatie

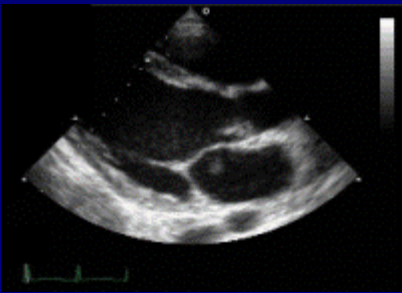


- inspanningscapaciteit ↓  
dyspnoe d'effort  
vermoeidheid  
orthopnoe
- gewichtstoename  
gestuwde halsvenen  
malleolaire oedemen
- verwardheid, onrust  
nachtelijke incontinentie  
abdominale last, nausea,  
anorexie
- vermagering  
sacraal oedeem  
cyanose

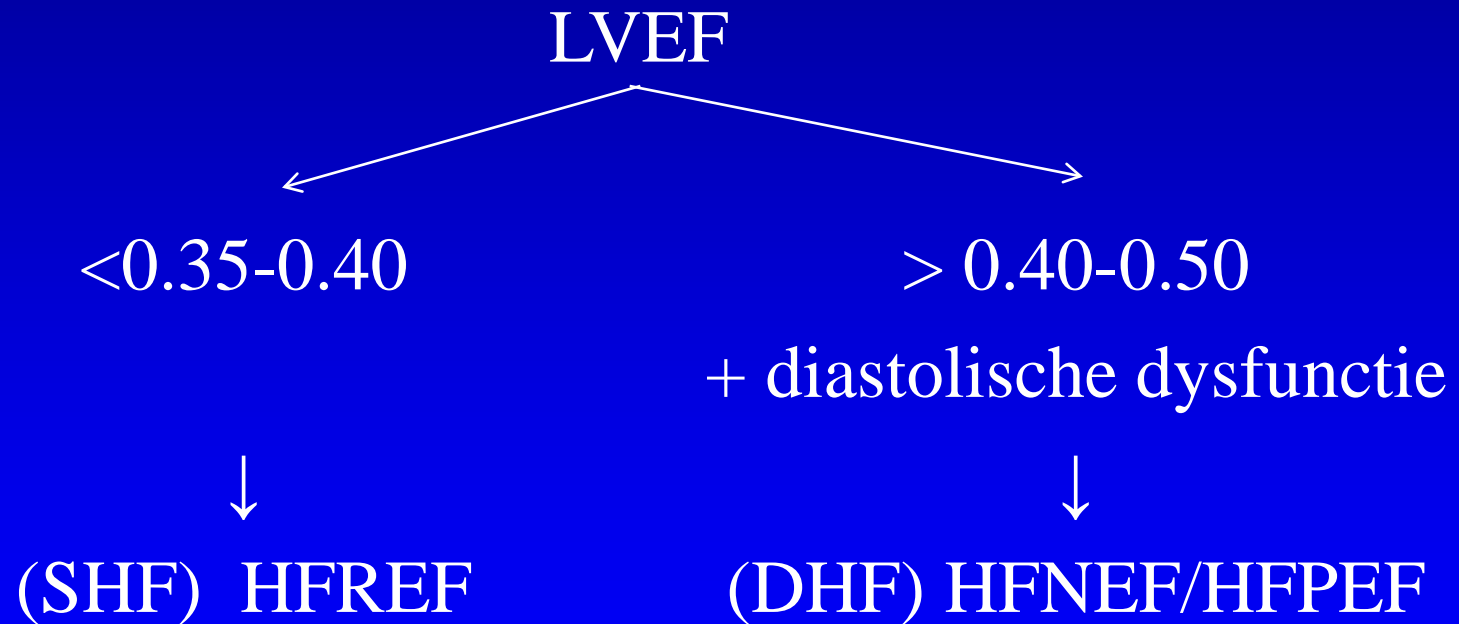
# NTproBNP (& BNP)

↑ leeftijd  
↑ chronisch nierlijden  
↑ VKF  
↓ overgewicht

leeftijd (jaar)	NTproBNP (ng/L)
18-44	≤ 115
45-54	≤ 175
55-64	≤ 263
65-74	≤ 349
≥75	≤ 738



# transthoracale echocardiografie



# HFREF & HFPEF

**Table 1.** Characteristics of Patients with Heart Failure and Preserved or Reduced Ejection Fraction.\*

Characteristic	Reduced Ejection Fraction (N=2429) 53%	Preserved Ejection Fraction (N=2167) 47%	P Value	Adjusted P Value†
Age (yr)	71.7±12.1	74.4±14.4	<0.001	NA
Male sex (% of patients)	65.4	44.3	<0.001	<0.001
Body-mass index‡	28.6±7.0	29.7±7.8	0.002	0.17
Obesity (% of patients)‡§	35.5	41.4	0.007	0.002
Serum creatinine on admission (mg/dl)	1.6±1.0	1.6±1.1	0.31	0.30
Hemoglobin on admission (g/dl)	12.5±2.0	11.8±2.1	<0.001	<0.001
Hypertension (% of patients)	48.0	62.7	<0.001	<0.001
Coronary artery disease (% of patients)	63.7	52.9	<0.001	<0.001
Atrial fibrillation (% of patients)	28.5	41.3	<0.001	<0.001
Diabetes (% of patients)	34.3	33.1	0.42	0.61
Substantial valve disease (% of patients)	6.5	2.6	<0.001	0.05
Ejection fraction (%)	29±10	61±7	<0.001	NA

# HFREF & HFPEF

**TABLE 2. Diastolic Heart Failure: Effects of Age on Prevalence and Prognosis**

	Age, y		
	<50	50–70	>70
Prevalence	15	33	50
Mortality	15	33	50
Morbidity	25	50	50

All values are percentages.

Prevalence indicates percentage of all heart failure patients presenting with diastolic heart failure; Mortality, 5-year mortality rate; and Morbidity, 1-year rate of hospital admission for heart failure. The percentage values given in this table are approximate and rounded figures based on multiple studies.<sup>24,27–40</sup>

# behandeling : HFREF = !

	NYHA I	NYHA II	NYHA III	NYHA IV	age (yrs.)
diuretica	±	±	±	±	
ace-inhibitoren (ARB)	++	+++	+++	++	64
beta-blockers	+	+++	+++	++	64
aldosterone-blockers		++	++	+	67
ARB		+	+		65
ICD (LVEF <0.35)		++	++		63
CRT (QRS > 130 msec)		++	++	+	66



# behandeling : HFPEF = ?

SENIOR (76)

PEP-CHF (76)

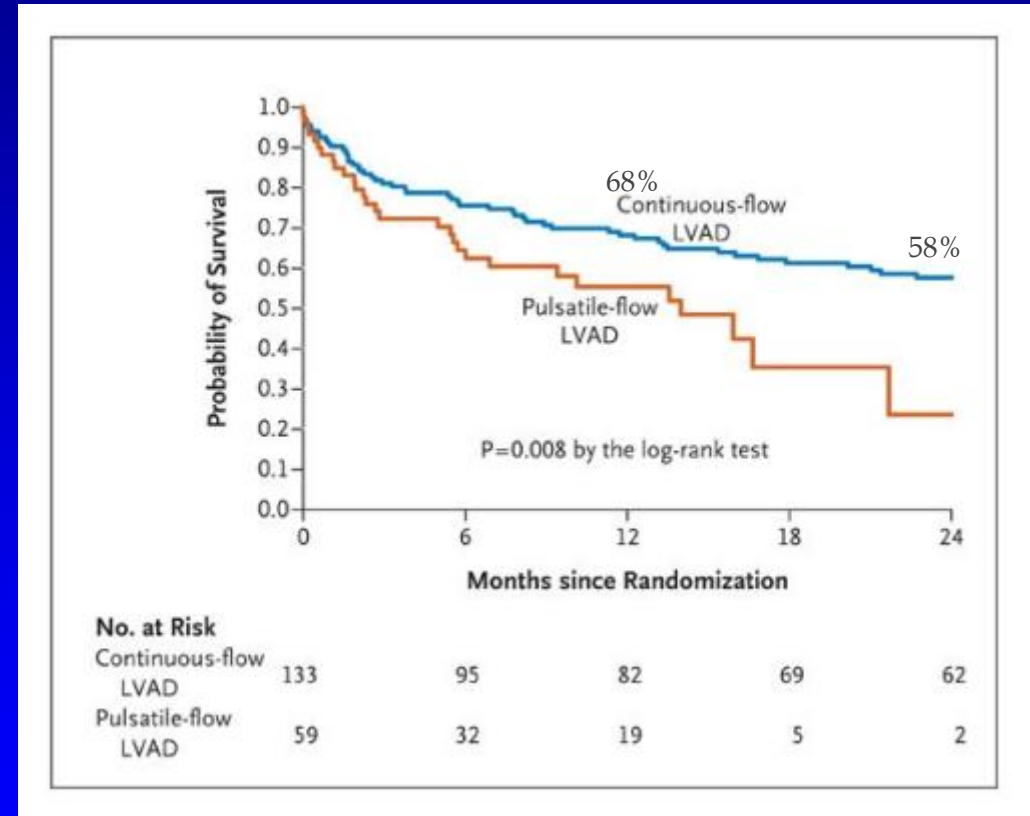
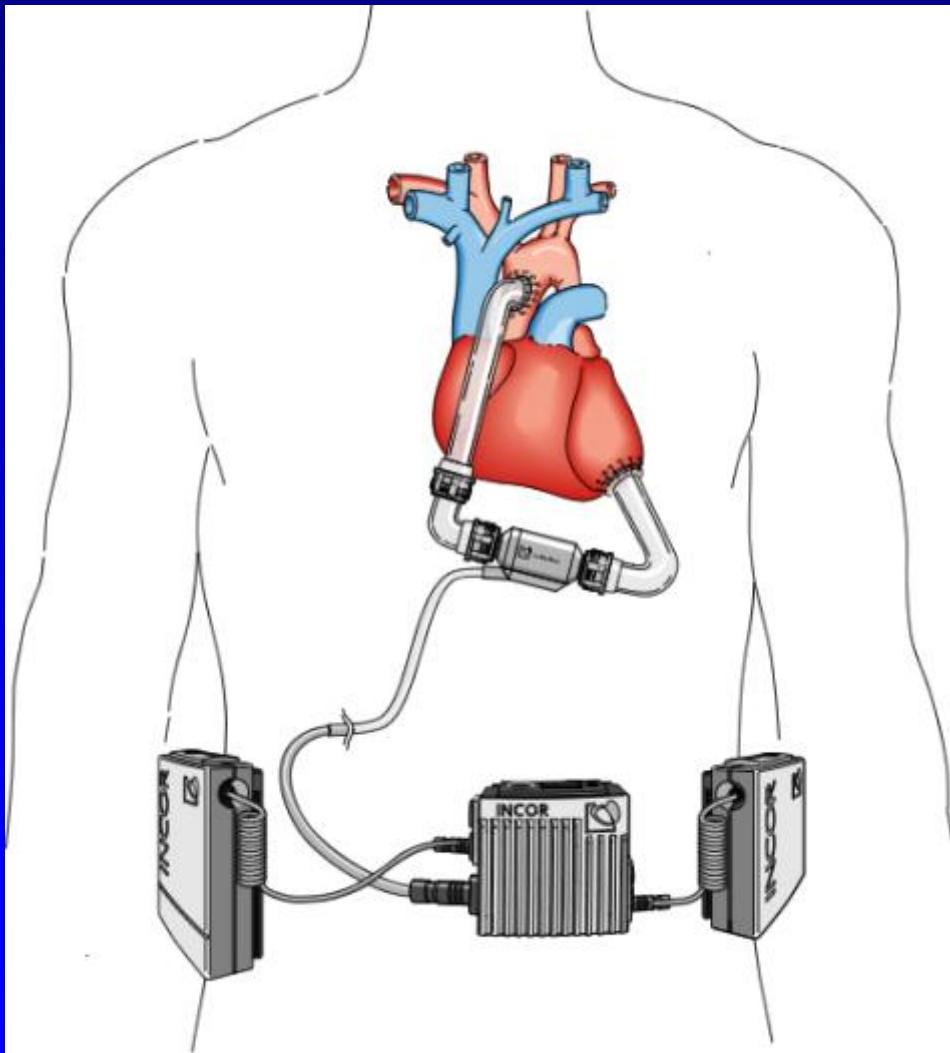
CHARM-preserved (67)

I-PRESERVE (72)

TOPCAT (?)

- diuretica !!
- controleer bloeddruk  
behoud sinusritme  
controleer hartfrequentie  
behandel ischemie

# LVAD destination therapy ?



Slaughter MS. NEJM 2009;361:.

# hartfalen bij ouderen

frequent

atypische presentatie

NT-proBNP & TTE

HFREF (!) vs. HFPEF (?)

back-up slides



**Box. Framingham Criteria for the Clinical Diagnosis of Congestive Heart Failure<sup>9</sup>**

**Major Criteria**

Paroxysmal nocturnal dyspnea

Orthopnea

Elevated jugular venous pressure

Pulmonary rales

Third heart sound

Cardiomegaly on chest radiograph

Pulmonary edema on chest radiograph

**Minor Criteria**

Peripheral edema

Night cough

Dyspnea on exertion

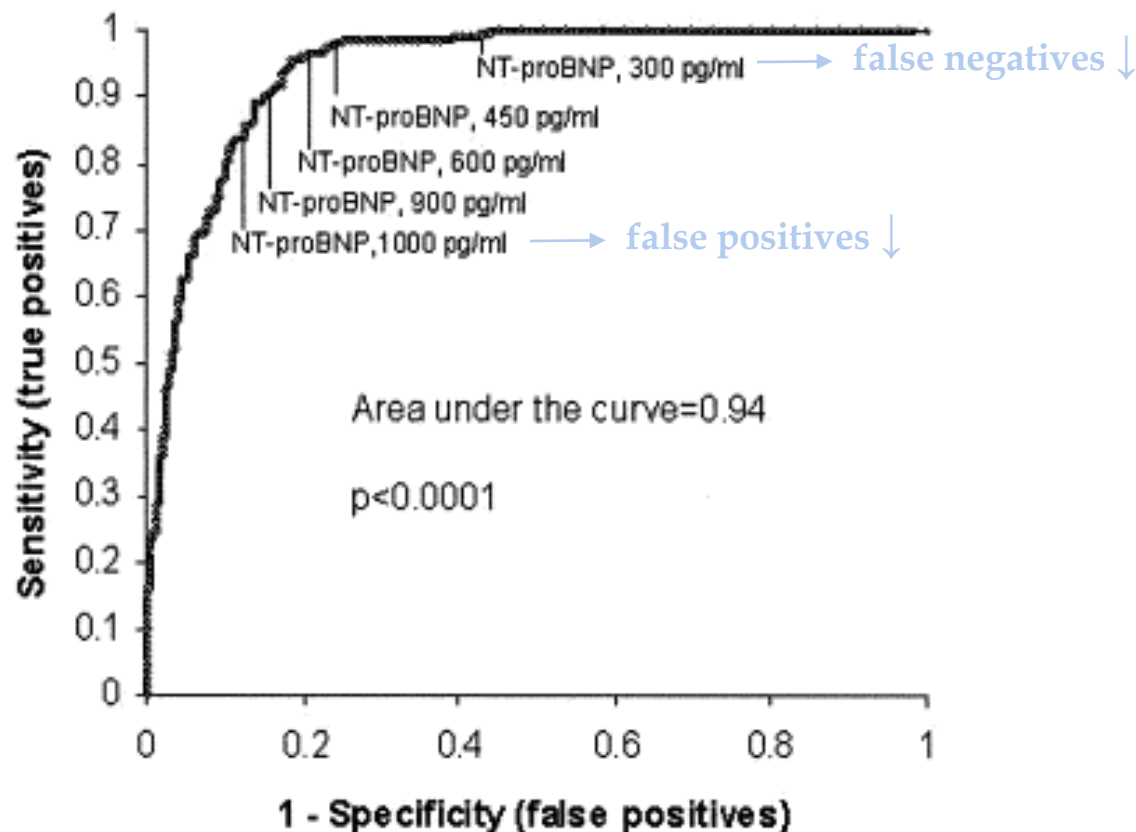
Hepatomegaly

Pleural effusion

Heart rate  $>120/\text{min}$

Weight loss  $\geq 4.5$  kg in 5 days\*

\*Weight loss  $\geq 4.5$  kg in 5 days is considered a major criterion if it occurred in response to therapy for congestive heart failure (CHF). A patient was considered to have validated CHF if 2 major criteria were present or 1 major and 2 minor criteria were present concurrently.

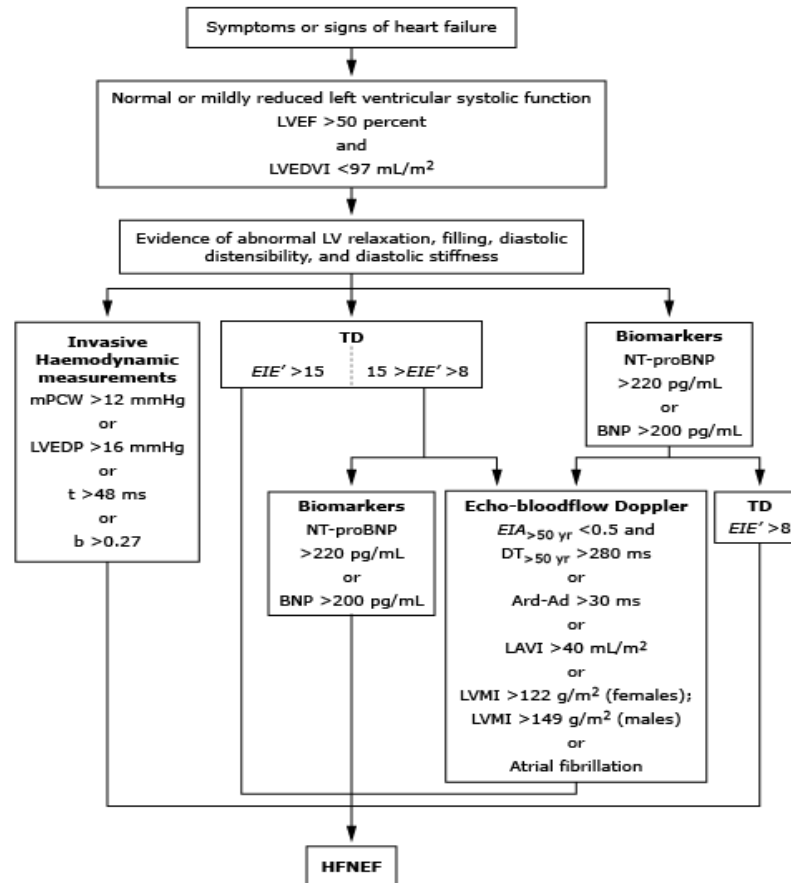


Cut Point	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Accuracy
300 pg/ml	99%	68%	62%	99%	79%
450 pg/ml	98%	76%	68%	99%	83%
600 pg/ml	96%	81%	73%	97%	86%
900 pg/ml	90%	85%	76%	94%	87%
1000 pg/ml	87%	86%	78%	91%	87%



	sensitivity (TP/TP+FN)	specificity (TN/TN+FP)
<u>GFR <math>\geq</math> 60 ml/min/1.73m<sup>2</sup></u> < 50 yrs. cutpoint 450 & > 50 yrs. cutpoint 900	85	88
<u>GFR &lt; 60 ml/min/1.73m</u> <50 yrs. cutpoint 450 & $\geq$ 50 yrs. cutpoint 900	97	68
<u>GFR &lt; 60 ml/min/1.73m<sup>2</sup></u> cutpoint 1200	89	72

## Diagnostic flowchart on "How to diagnose HFNEF" in a patient suspected of HFNEF



LVEDVI: left ventricular end-diastolic volume index; mPCW: mean pulmonary capillary wedge pressure; LVEDP: left ventricular end-diastolic pressure; t: time constant of left ventricular relaxation; b: constant of left ventricular chamber stiffness; TD: tissue Doppler; E: early mitral valve flow velocity; E': early TD lengthening velocity; NT-proBNP: N-terminal-pro brain natriuretic peptide; BNP: brain natriuretic peptide; E/A: ratio of early (E) to late (A) mitral valve flow velocity; DT: deceleration time; LVMI: left ventricular mass index; LAVI: left atrial volume index; Ard: duration of reverse pulmonary vein atrial systole flow; Ad: duration of mitral valve atrial wave flow.

Reproduced with permission from: Paulus, WJ, Tschope, C, Sanderson, JE, et al. How to diagnose diastolic heart failure: a consensus statement on the diagnosis of heart failure with normal left ventricular ejection fraction by the Heart Failure and Echocardiography Associations of the European Society of Cardiology. *Eur Heart J* 2007; 28:2539. Copyright © 2007 Oxford University Press.



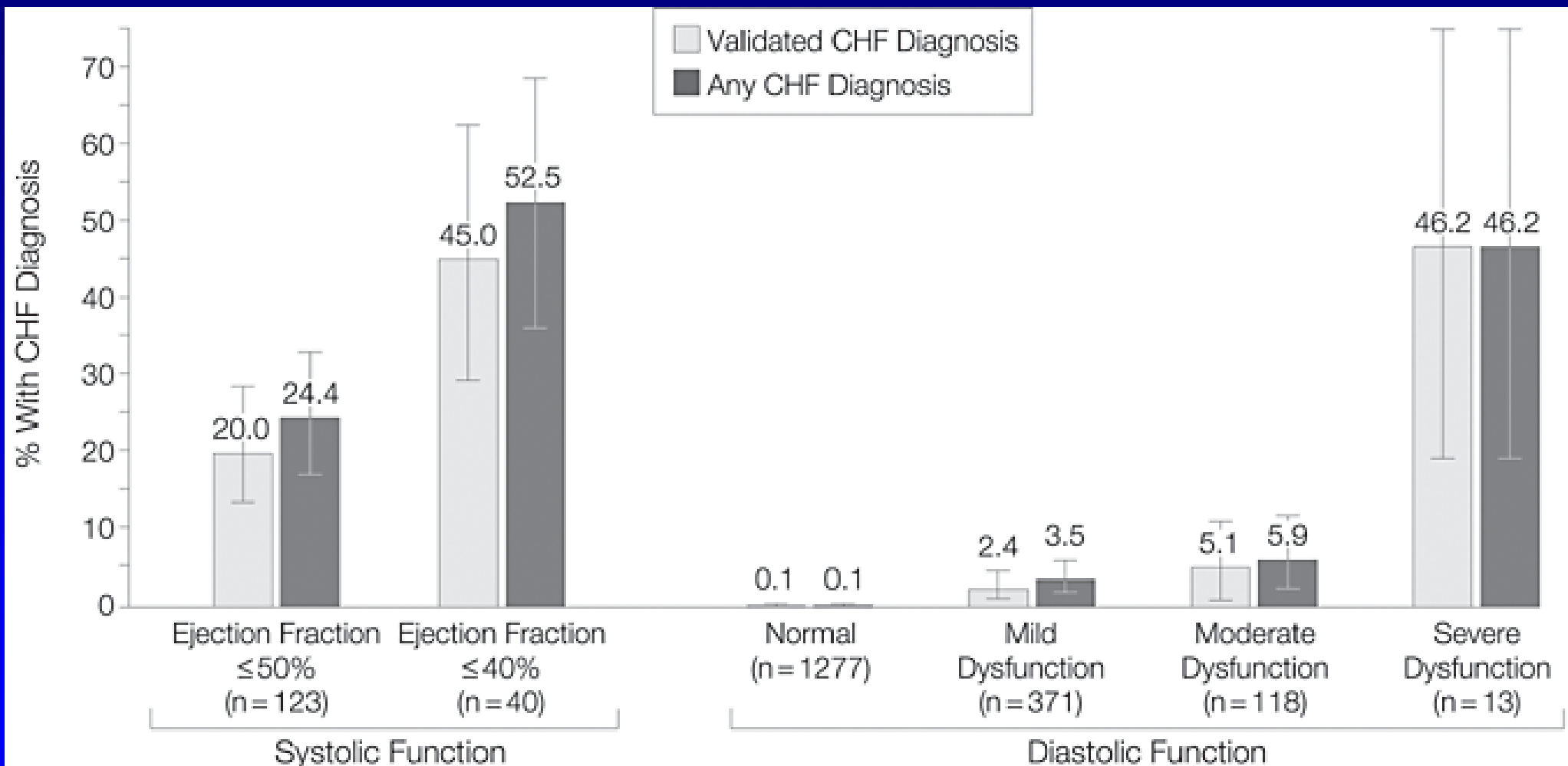
# prevalence of systolic and diastolic dysfunction

- Olmsted County : 106.470 residents
- random sample of residents  $\geq 45$  years old in 1997 : 4203 eligible
- 47% (2042) residents participated :
  - review medical record (previous history, chf)
  - physical examination
  - doppler echocardiography

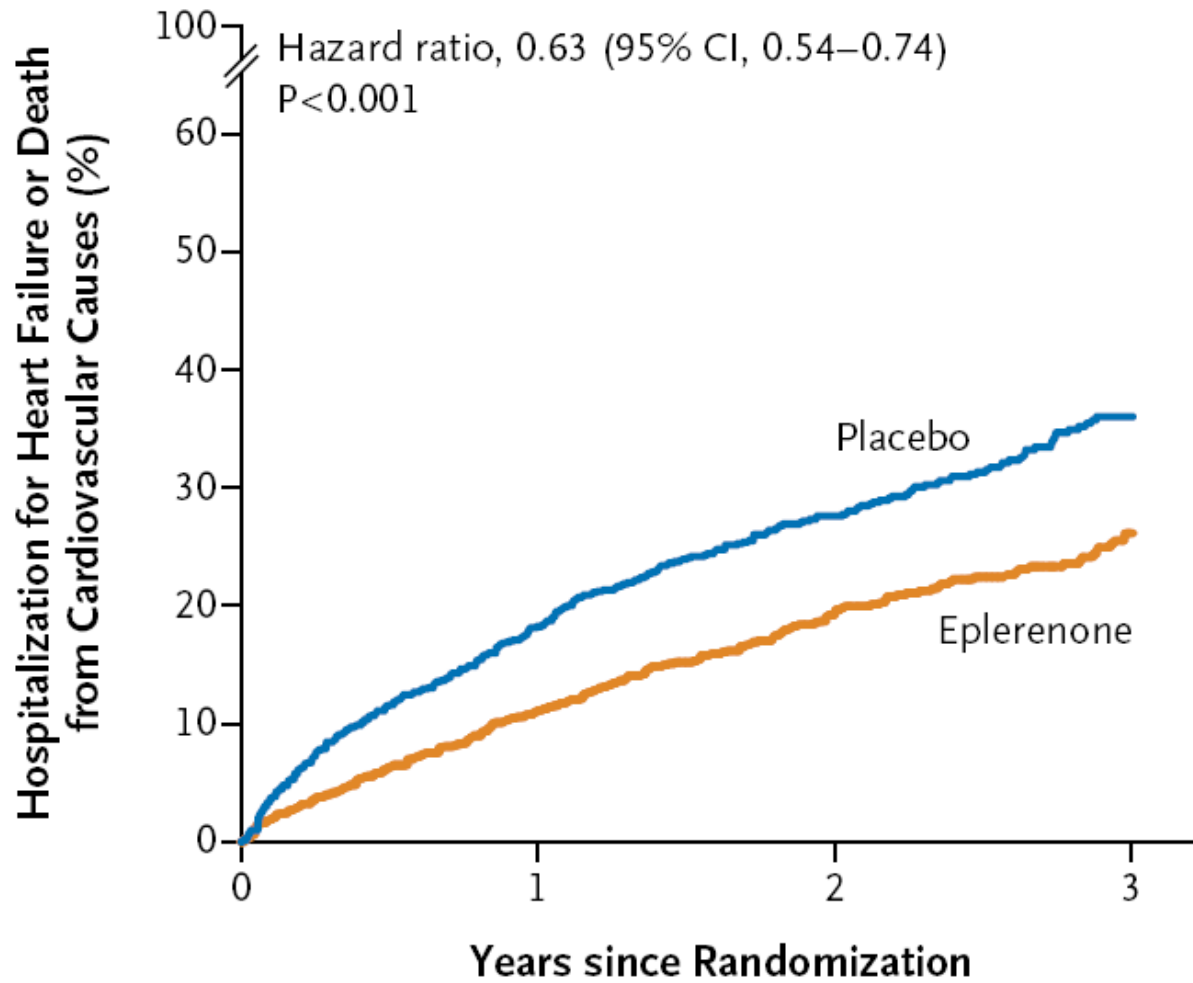
**Table 1.** Prevalence of Systolic and Diastolic Dysfunction According to Age and Sex\*

Variables	No. (%) of Patients Affected				Overall
	Age Group, y				
	45-54	55-64	65-74	≥75	
<b>Diastolic Dysfunction</b>					
Mild					
All	27 (4.8)	72 (13.2)	149 (34.2)	123 (52.8)	371 (20.8)
Men	20 (7.2)	43 (16.0)	76 (37.2)	49 (57.0)	188 (22.5)
Women	7 (2.4)	29 (10.4)	73 (31.6)	74 (50.3)	183 (19.4)
Moderate					
All	8 (1.4)	33 (6.0)	43 (9.9)	34 (14.6)	118 (6.6)
Men	5 (1.8)	19 (7.1)	17 (8.3)	15 (17.4)	56 (6.7)
Women	3 (1.0)	14 (5.0)	26 (11.3)	19 (12.9)	62 (6.6)
Severe					
All	0 (0)	2 (0.4)	3 (0.7)	8 (3.4)	13 (0.7)
Men	0 (0)	0 (0)	2 (1.0)	3 (3.5)	5 (0.6)
Women	0 (0)	2 (0.7)	1 (0.4)	5 (3.4)	8 (0.8)
<b>Systolic Dysfunction</b>					
Any, ejection fraction ≤50%					
All	18 (3.0)	30 (4.8)	37 (7.1)	38 (12.9)	123 (6.0)
Men	15 (5.1)	23 (7.4)	27 (10.6)	26 (22.8)	91 (10.2)
Women	3 (1.0)	7 (2.2)	10 (3.8)	12 (6.6)	32 (3.8)
Moderate to severe, ejection fraction ≤40%					
All	5 (0.8)	8 (1.3)	14 (2.7)	13 (4.4)	40 (2.0)
Men	5 (1.7)	6 (1.9)	12 (4.7)	9 (7.9)	32 (3.6)
Women	0 (0.0)	2 (0.6)	2 (0.8)	4 (2.2)	8 (1.0)

\*A total of 1799 participants were classified as having normal diastolic function or as having mild, moderate, or severe diastolic dysfunction with 243 classified as indeterminate. Ejection fraction was assessed in 2036 participants.



A



**No. at Risk**

Placebo	1373	848	512	199
Eplerenone	1364	925	562	232

# TOPCAT

- NIH sponsored R-DB-PC trial
- pts. > 50 yrs, with HF (recent hospitalisation or NP), LVEF  $\geq 0.45$  and  $K^+ < 5$  mmol/L
- spironolactone 15  $\rightarrow$  45 mg od vs. placebo
- 6 yrs. FU
- CV death + HF hospitalisation (I)  
all-cause mortality (II)  
qol(II)

# polypharmacy

**TABLE 4**

**Drug interactions and additive adverse effects of common medications**

<b>Drug</b>	<b>Effect</b>
Calcium channel blockers (nifedipine, verapamil, diltiazem)	Negative inotropic effect
Thiazolidinediones (glitazones)	Cause fluid retention
Antiarrhythmic agents (especially flecainide, propafenone, disopyramide and calcium channel blockers, and less so for amiodarone, dofetilide and ibutilide)	Negative inotropic effect
Doxorubicin	Direct cardiotoxic effect
Nonsteroidal anti-inflammatory drugs, including cyclooxygenase-2 inhibitors (celecoxib)	Cause fluid retention
Beta-blockers	Negative inotropic effect initially

# orthostatic hypotension

**TABLE 6**  
**Causes of orthostatic hypotension**

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Medications	Antipsychotics
	Tricyclics
	Diuretics
	Antihypertensives and vasodilators
	Alpha-antagonists
	Antiparkinsonian agents
Medical conditions	Adrenal insufficiency
	Bed rest, deconditioning
	Postprandial hypotension
	Heat-induced vasodilation
	Systolic hypertension
	Volume depletion
	Peripheral neuropathy
	Parkinsonian syndromes
Autonomic failure	

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