No doente idoso a ressincronização cardíaca deve ser com CRT-P: Posição: sim

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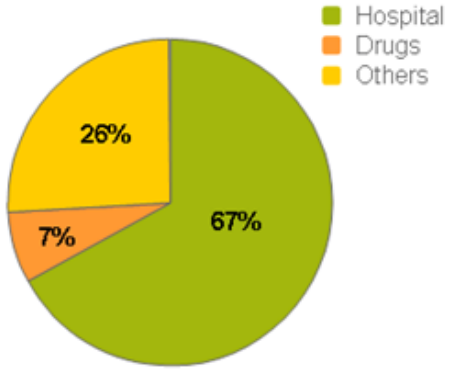
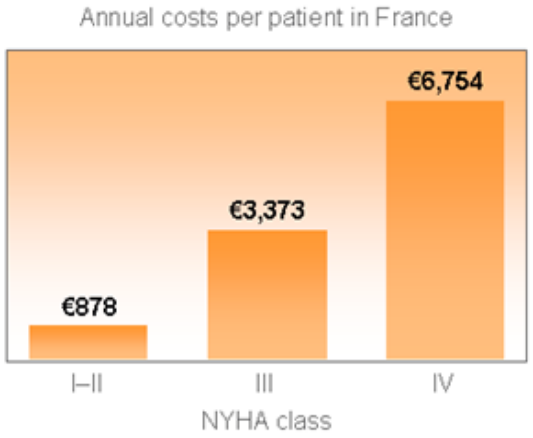
Congestive Heart Failure – scope of the problem

. Nearly 3 million annual hospital admissions (>90% in past 10 years)
. 6,5 million hospital days/year
. Single largest expense for Medicare ($39-$56 billion)

>500.000 new cases/year
14 million in Europe
5,7 million in USA
> Million individuals worldwide

- HF costs approximately €10.4 billion in Europe (~ Austria's healthcare budget)
- > 67% of total costs are hospital costs
- Costs increase with severity of disease





1.AHA. 2002 Heart and Stroke Statistical Update; 2001
2.Barry C, EJHF 2001
3.Hunt SA, et al. ACC/AHA Guidelines for the Evaluation and Management of Chronic Heart Failure in the Adult. 2001
4.merican Heart Association. Heart disease and stroke statistics—2011 update. Dallas, TX: American Heart Association; 2011
hospitalization

CHF - Epidemiology

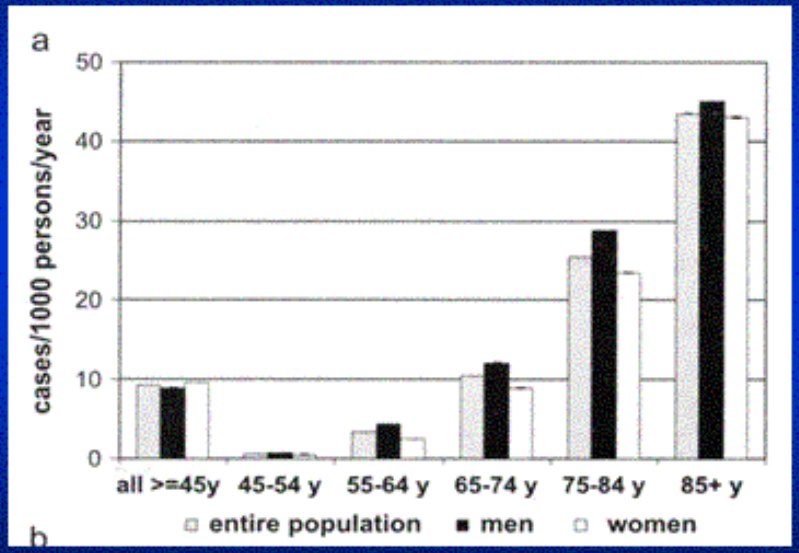
…a major and growing public health concern in developed countries, in terms of morbidity, mortality, and cost to society.

… better treatment of cardiovascular disease, in particular of acute ischemic events, (keep more people alive, but often at the cost of damaged heart muscle)

… ageing population – the average age of the HF patient in the community is 75 years

Prevalence: 2-2,5%
(10% >80 years)

Incidence of CHF in a General Practice population (696,884 patients) in the UK



de Giuli et al, Eur J Heart Fail 2005;7:295-302

Heart Failure – treatment objectives

- ↑ survival
- ↓ morbidity
- ↑ functional capacity
- ↑ quality of life
- ↓ neurohormonal abnormalities
- ↓ HF (ventricular dysfunction) progression
- ↓ symptoms

- ↓ hospital readmissions

Treatment

All

- Prevention. Control of risk factors. Life style
- Treat etiologic cause / aggravating factors*

(elderly patients with HF should be offered pneumococcal and influenza vaccines…)

- Drug therapy *(… a large % of patients still symptomatic despite maximum tolerable dosages)*
- Personal care. Team work

selected patients

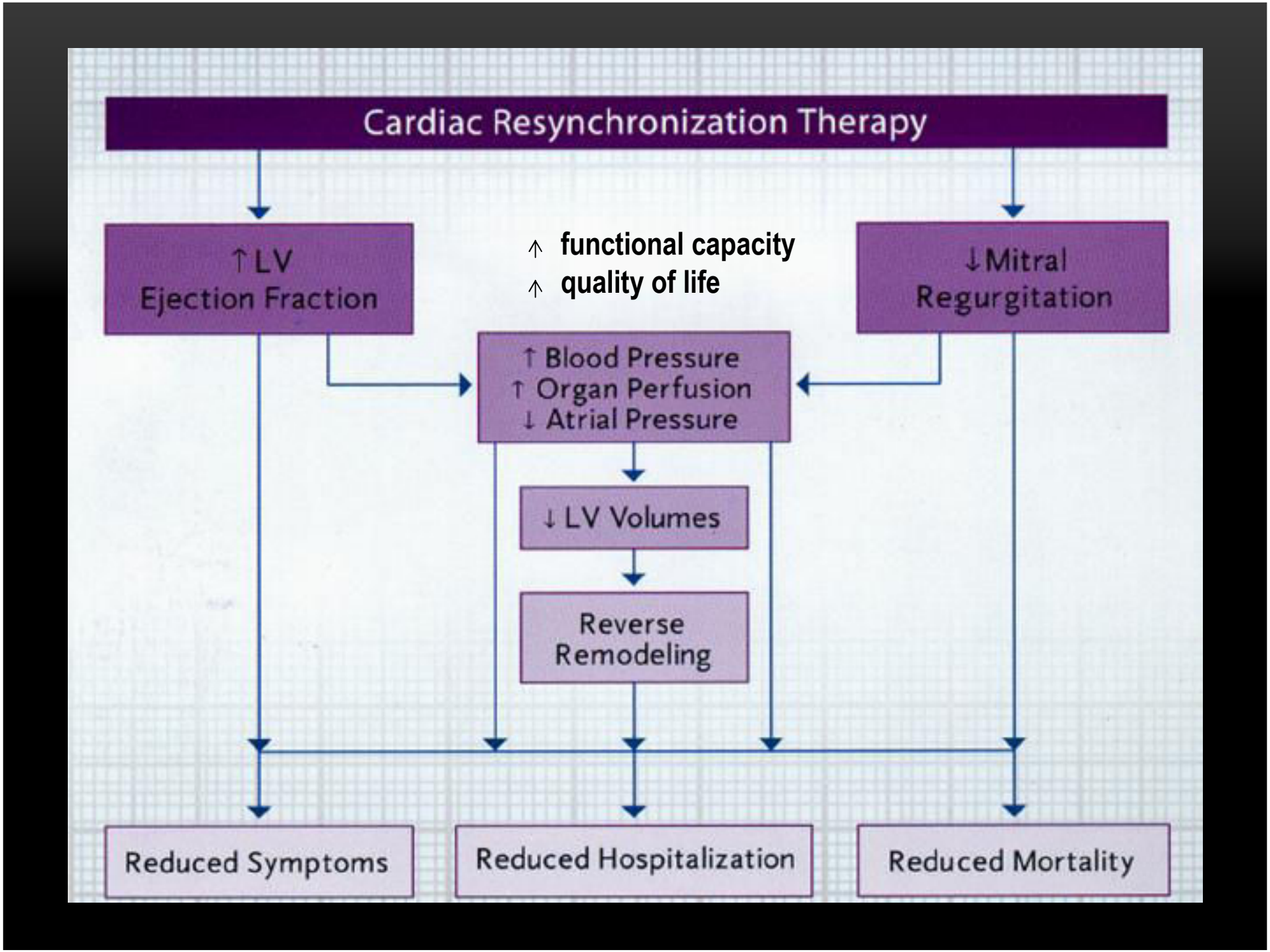
- Revascularization if ischemia causes HF
- ICD (Implantable Cardiac Defibrillator)
- Cardiac resyncronization *(… what is the % of candidates for CRT?)*
- Ventricular assist devices
- Heart transplant
- Artificial heart
- Autonomic Modulation *(cardiac rehabilitation, vagal stimulation, BAT…)*
- Neoangiogenesis, Gene therapy

Guidelines

Recommendations	Class[a]	Level[b]	Ref[c]
LBBB QRS morphology CRT-P/CRT-D is recommended in patients in sinus rhythm with a QRS duration of ≥120 ms, LBBB QRS morphology, and an EF ≤35%, who are expected to survive with good functional status for >1 year, to reduce the risk of HF hospitalization and the risk of premature death.	I	A	156, 157
Non-LBBB QRS morphology CRT-P/CRT-D should be considered in patients in sinus rhythm with a QRS duration of ≥150 ms, irrespective of QRS morphology, and an EF ≤35%, who are expected to survive with good functional status for >1 year, to reduce the risk of HF hospitalization and the risk of premature death.	IIa	A	156, 157

Recommendations	Class[a]	Level[b]	Ref[c]
LBBB QRS morphology CRT, preferably CRT-D is recommended in patients in sinus rhythm with a QRS duration of ≥130 ms, LBBB QRS morphology, and an EF ≤30%, who are expected to survive for >1 year with good functional status, to reduce the risk of HF hospitalization and the risk of premature death.	I	A	154, 155
Non-LBBB QRS morphology CRT, preferably CRT-D should be considered in patients in sinus rhythm with a QRS duration of ≥150 ms, irrespective of QRS morphology, and an EF ≤30%, who are expected to survive for >1 year with good functional status, to reduce the risk of HF hospitalization and the risk of premature death.	IIa	A	154, 155

All primary prevention recommendations apply only to patients who are receiving optimal medical therapy and have reasonable expectation of survival with good functional capacity for >1 year.


Cardiac Resynchronization Therapy
↑ LV Ejection Fraction
↓ Mitral Regurgitation
↑ functional capacity
↑ quality of life
↑ Blood Pressure
↑ Organ Perfusion
↓ Atrial Pressure
↓ LV Volumes
Reverse Remodeling
Reduced Symptoms
Reduced Hospitalization
Reduced Mortality

Cardiac Resynchronization Trials

Impact of QRS Duration on Clinical Event Reduction With Cardiac Resynchronization Therapy:
Meta-analysis of Randomized Controlled Trials (5 trials; n=5813)

CRT was effective in reducing adverse clinical events (death, hospitalizations) in pts with HF and a baseline QRS ≥150 ms, but did not reduce events in pts with a QRS of <150 ms.

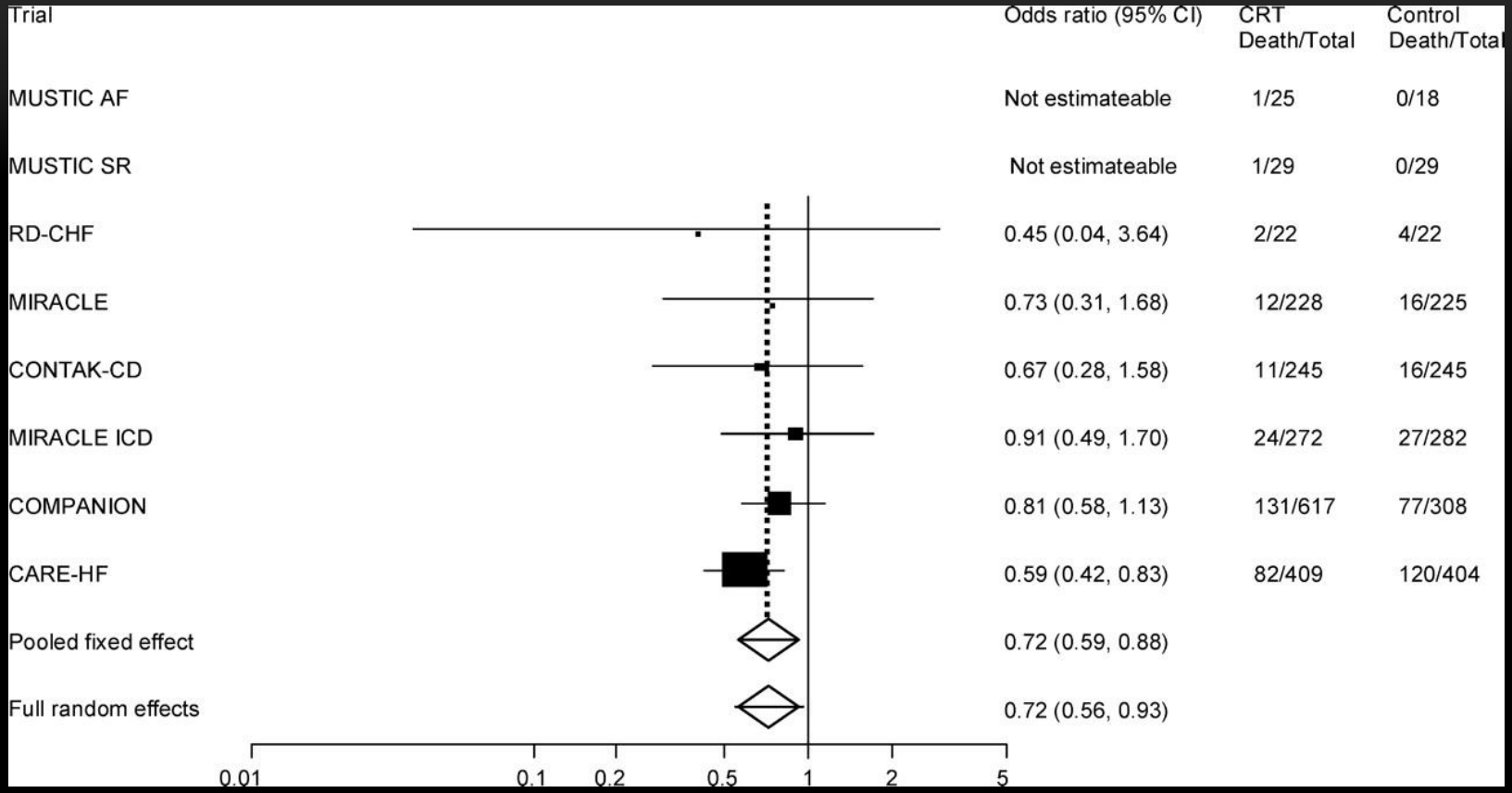
50% reduction in hospital readmissions due to HF

38% reduction in HF mortality

28% reduction in mortality

- ⇧ functional capacity
- ⇧ quality of life
- ⇩ hospitalizations
- reverse remodeling
- ⇩ mortality

Effects of CRT on all-cause mortality



38% reduction in HF mortality

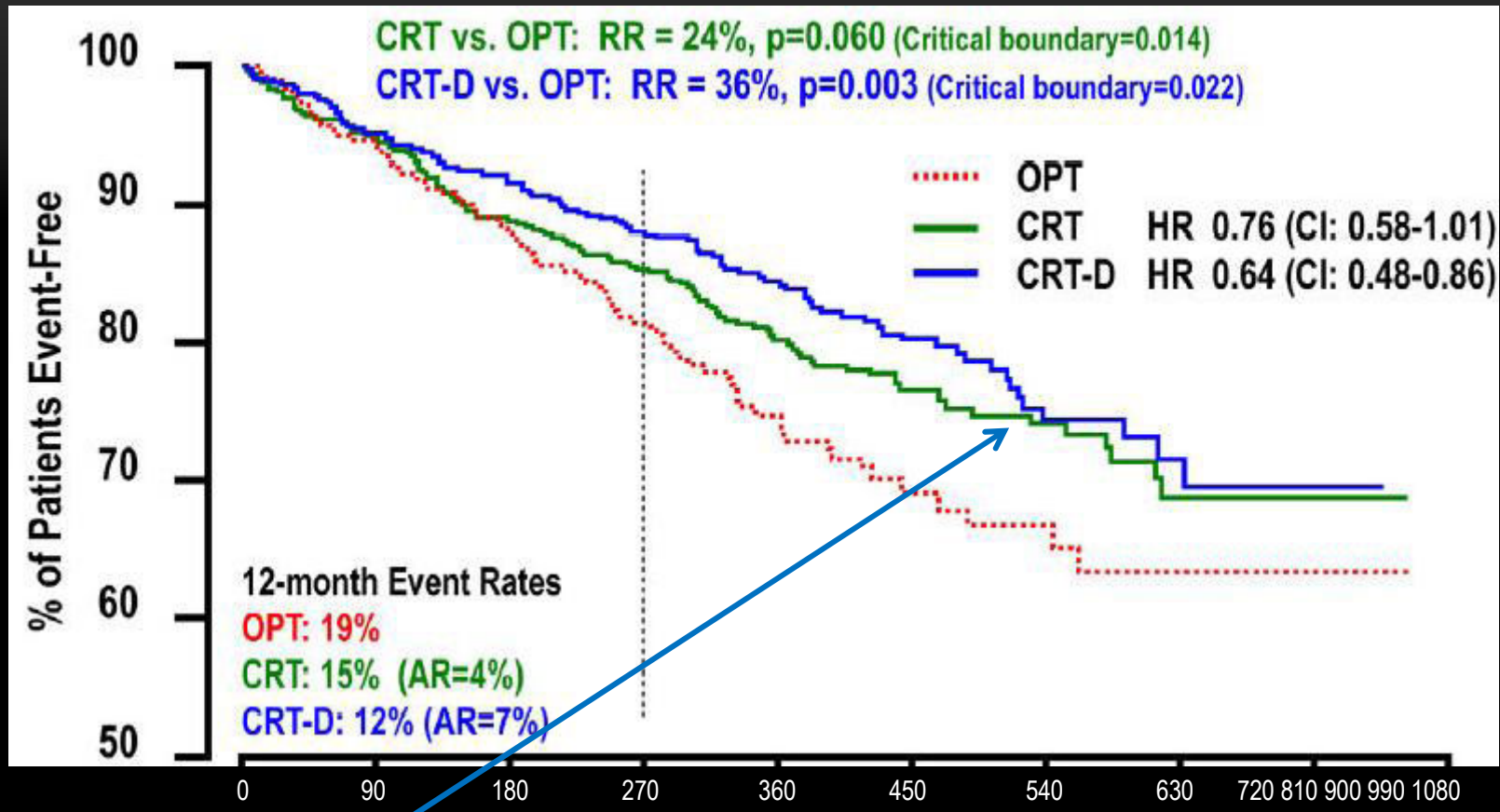
Hohnloser S H , Prystowsky E N Eur Heart J Suppl 2007;9:G9-G16

Meta-analysis of cardiac resynchronization therapy for congestive heart failure

Study	No. of patients in intervention/control groups;* study design	Mean length of follow-up, mo	Age, yr, mean (SD)	Male, %	Ischemic cardio-myopathy, %	Mean ejection fraction, % (SD)	QRS interval, ms, mean (SD)	NYHA class, %	AF, %	RBBB, %
Lozano et al., 2000[19]	CRT-ICD/ICD (109/113); crossover	3	65 (10)	83	68	22 (0.007)	NR	I/II: 35 III/IV: 65	NR	NR
MUSTIC, 2001[20]	CRT/OMT (29/29); crossover	6	63 (10)	75	NR	NR	176 (19)	I/II: 100	NR	NR
MIRACLE, 2002[21]	CRT/OMT (228/225); parallel	6	64 (11)	68	54	21.7 (6.3)	166 (20)	III/IV: 100	0	NR
MIRACLE ICD, 2003[22]	CRT-ICD/ICD (187/182); parallel	6	67 (10)	77	70	24 (6.2)	163 (22)	III/IV: 100	0	13
MIRACLE ICD II, 2004[23]	CRT-ICD/ICD (85/101); parallel	6	63 (12)	89	57	24.5 (6.7)	165 (24)	I/II: 100	NR	16
COMPANION 2004[24]	CRT-ICD/CRT/OMT (595/617/308); parallel	14.8–16.5	67	67	55	22	160	III/IV: 100	NR	10
RHYTHM-ICD, 2004[25]	CRT-ICD/ICD (119/59); parallel	12.1	NR	NR	NR	24.8 (7.7)	168	I/II: 8 III/IV: 92	0	NR
CARE-HF, 2005[26]	CRT/OMT (409/404); parallel	29.4	66	74	38	25	160	III/IV: 100	0	NR
VECTOR, 2005[27]	CRT/OMT (59/47); parallel	19.9	67.1 (9.7)	63	NR	NR	NR	I/II: 29 III/IV: 71	NR	NR
REVERSE, 2008[28]	CRT-ICD/ICD (419/191); parallel	12	62 (11)	79	55	27 (7)	153 (12)	I/II: 100	0	NR
MADIT-CRT, 2009[29]	CRT-ICD/ICD (1089/731); parallel	28.8	65 (11)	75	55	24 (5)	65% > 150	I/II: 100	12	13
RAFT, 2010[14]	CRT-ICD/ICD (894/904); parallel	40	66 (9)	83	67	23 (5)	158 (24)	I/II: 80 III/IV: 20	13	9

Wells, 2011

COMPANION



- *Only CRT-D reduced SCD (OPT vs. CRT-D: HR 0.44, p=0,02) over a period of 12 months*
- *The impact of CRT on mortality takes time (reverse remodeling). ICD benefit is immediate*

COMPANION and CARE-HF:
HF patients with CRT-P remain at risk of SCD

	Mean follow-up (months)	Total mortality (%)/pump death (%)[a]/sudden death (%)[a]		
		OPT	CRT	CRT-D
COMPANION	16	25/44/23	21/40/37	17/50/16
CARE-HF	30	30/47/32	20/40/35	–
CARE-HF extension	37	38/42/36	25/38/32	–

[a]Per cent of deaths within each treatment group.

- **SCD in the COMPANION (CRT-D arm) - 2,9%**
- **SCD in the COMPANION (CRT arm) - 7,8%**
- **SCD in the CARE-HF - 7,2%**

CRT alone as compared with optimal medical therapy reduces all-cause mortality in patients with advanced HF. It predominantly reduces worsening HF mortality, not affecting SCD.
Ayerza M, et al. EHJ 2006

Insuficiência cardíaca nos idosos (I)

A) A incidência e a prevalência da IC aumenta dramaticamente com a idade

B) Metade dos doentes com IC tem mais de 75 anos

C) Metade dos doentes idosos com IC apresentam função sistólica do ventriculo esquerdo preservada

D) A mortalidade aumenta com a idade e há diferenças importantes nas causas de morte em relação aos doentes mais idosos

Insuficiência cardíaca nos idosos (II)

E) As diversas comorbilidades são muito importantes nos idosos

F) Nos idosos, os objectivos terapêuticos de manutenção de uma satisfatória qualidade de vida e da preservação da independência pessoal podem ser mais importantes que o prolongar da sobrevivência

G) Distinguir a cronobiologia

Role of the implantable defibrillator among elderly patients with a history of life-threatening ventricular arrhythmias

Baseline characteristics in patients: age <75 years vs. ≥75 years

Table 1 Baseline characteristics in patients: age <75 years vs. ≥75 years

	Age <75 years ($n = 1614$)	Age ≥75 years ($n = 252$)	*P*-value
LV EF	33.8 ± 14.9%	32.6 ± 13.7%	0.20
NYHA 3 or 4	190 (11.8%)	31 (12.3%)	0.38
Prior MI	1114 (69%)	169 (67%)	0.47
Prior CABG	129 (8%)	30 (12%)	0.15
Presenting arrhythmia			0.0001
VF	855 (53%)	98 (39%)	
VT with syncope	242 (15%)	58 (23%)	
VT	436 (27%)	81 (32%)	
Other	81 (5%)	15 (6%)	

NYHA, New York Heart Association; MI, myocardial infarction; CABG, coronary artery bypass grafting; VF, ventricular fibrillation; VT, ventricular tachycardia.

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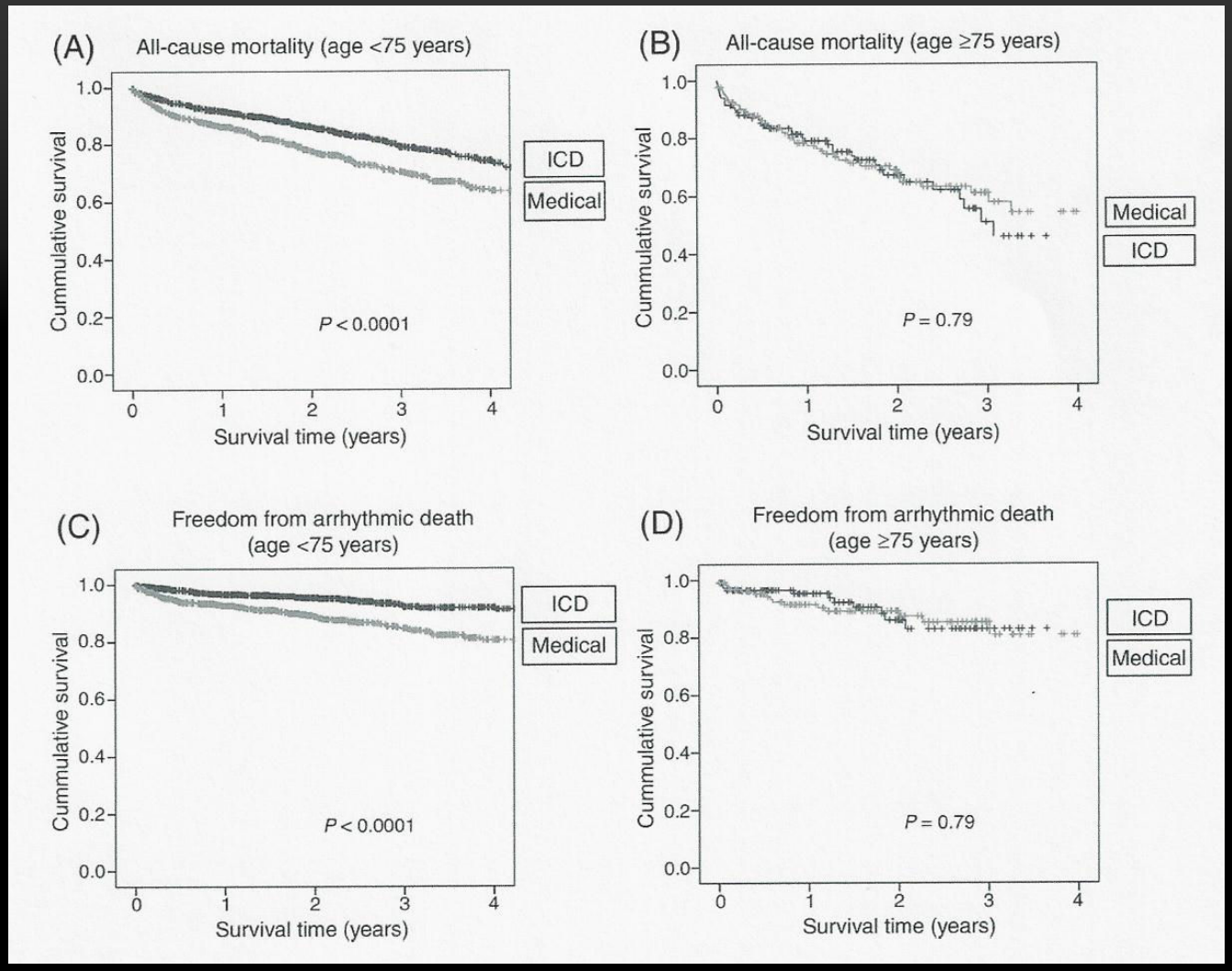

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Role of the implantable defibrillator among elderly patients with a history of life-threatening ventricular arrhythmias

Jeffrey S. Healey[1*], Al P. Hallstrom[2], Karl-Heinz Kuck[3], Girish Nair[1], Eleanor P. Schron[4], Robin S. Roberts[5], Carlos A. Morillo[1], and Stuart J. Connolly[1]

[1] *Population Health Research Institute, Hamilton Health Sciences—General Site, McMaster University, 237 Barton St. E amilton, Ontario, Hamilton, Canada L8L 2X2;* [2] *Department of Biostatistics, University of Washington, Seattle, Washington, USA;* [3] *Allgemeines Krankenhaus, St. Georg, Hamburg, Germany;* [4] *National Heart, Lung and Blood Institute, Bethesda, Maryland, USA; and* [5] *Henderson Research Group, McMaster University, Hamilton, Canada*

Conclusion Elderly patients with a history of life-threatening ventricular arrhythmias have a high incidence of non-arrhythmic death. In these patients, the ICD may not afford the same survival advantage over amiodarone that is seen in younger patients. ICD therapy should not be withheld based on age alone; however, physicians should carefully consider the risk of non-arrhythmic death among elderly patients when selecting the appropriate therapy for an individual.

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CDI

- A percentagem de choques "inapropriados" é importante: 15 – 35%,
- E tem significado prognóstico:
  - Agrava os estado mental
  - Prejudica a qualidade de vida
  - Ansiedade e depressão
  - Proarritmia
  - Prolonga o *"tempo de morte"*
  - Aumenta a mortalidade(?)

Comparison of the Usefulness of Cardiac Resynchronization Therapy in Three Age-Groups (<65, 65-74 and ≥75 Years) (from the InSync/InSync ICD Italian Registry)

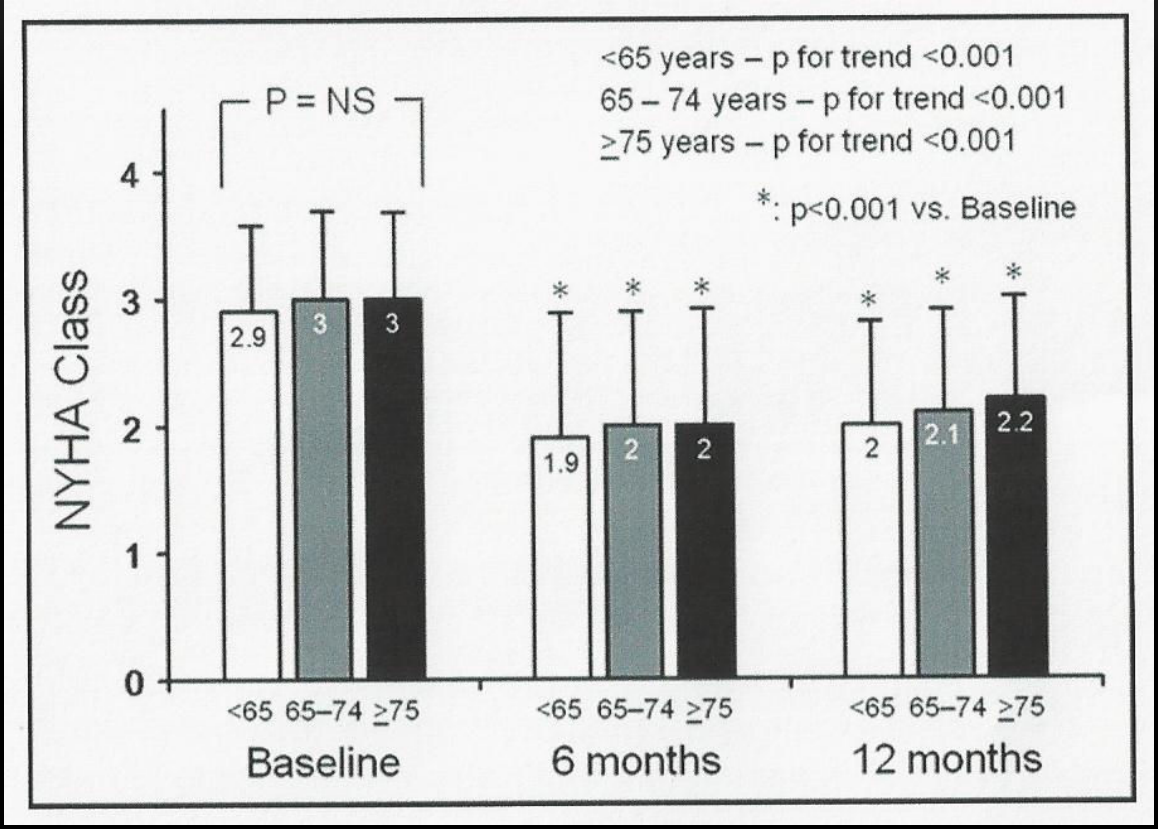
Stefano Fumagalli, MD, PhD[a,*], Sergio Valsecchi, EE[c], Giuseppe Boriani, MD, PhD[d], Maurizio Gasparini, MD[e], Maurizio Landolina, MD[f], Maurizio Lunati, MD[g], Margherita Padeletti, MD[h], Francesca Tronconi, EE[c], Niccolò Marchionni, MD[a], and Luigi Padeletti, MD[b]

Chronic heart failure is one of the most important geriatric syndromes, associated with disability, increased hospital admissions, and high mortality. The aim of this study was to evaluate the existence of age-related differences in clinical effectiveness and outcomes of cardiac resynchronization therapy (CRT), alone or in combination with an implantable cardioverter-defibrillator (CRT-D), in a large, real-world registry. A total of 1,787 patients admitted for CRT or CRT-D to the 117 centers participating in the InSync/InSync ICD Italian Registry from 1999 to 2005 were evaluated. Patients were divided into 3 age groups: <65 years (n = 571), 65 to 74 years (n = 740), and ≥75 years (n = 476). The left ventricular ejection fraction did not differ in the 3 groups (26 ± 8% vs 26 ± 7% vs 27 ± 8%, p = 0.123). Atrial fibrillation prevalence demonstrated an age-related increase. The use of recommended medical therapy for chronic heart failure decreased with age, as well as CRT-D implantation (p <0.001). The percentage of echocardiographic responders to CRT was similar in the 3 groups, and New York Heart Association class significantly improved independent of age. During the follow-up period (19 ± 13 months), all-cause mortality was higher in patients aged ≥75 years than in those aged <65 years (p = 0.005). In the whole population, mortality was associated with the nonresponder condition, the presence of atrial fibrillation and the lack of prescription of recommended medical therapy. In conclusion, CRT improved left ventricular performance and functional capacity independent of age. The proportion of the responder condition to CRT was the same in all groups. Pharmacologic undertreatment is an important issue in a "real-world" geriatric population. (Am J Cardiol 2011;107:1510–1516)

Clinical and instrumental characteristics of the InSync/InSync ICD Italian Registry population

Variable	Age Group (years)			p Value
	<65 (n = 571)	65–74 (n = 740)	≥75 (n = 476)	
Age (years)	57 ± 7	70 ± 3	78 ± 3	—
Men	481 (84%)	603 (81%)	362 (76%)*†	0.003
Chronic obstructive pulmonary disease	26 (5%)	55 (7%)*	27 (6%)	0.088
Diabetes mellitus	47 (8%)	64 (9%)	30 (6%)	0.312
Hypertension	73 (13%)	133 (18%)*	97 (20%)*	0.003
Renal failure	18 (3%)	58 (8%)*	21 (4%)†	0.001
≥3 co-morbidities	24 (4%)	68 (9%)*	34 (7%)*	0.002
Coronary artery disease	223 (39%)	367 (50%)*	240 (50%)*	<0.001
LV end-diastolic diameter (mm)	70 ± 10	69 ± 9	68 ± 9*	0.015
LV end-systolic diameter (mm)	60 ± 12	58 ± 10	57 ± 11*	0.016
LV end-diastolic volume (ml)	242 ± 94	221 ± 91	209 ± 104*	0.050
LV end-systolic volume (ml)	168 ± 81	154 ± 85	133 ± 63*	0.025
LVEF (%)	26 ± 8	26 ± 7	27 ± 8	0.123
QRS length (ms)	167 ± 33	165 ± 31	162 ± 32	0.136
New York Heart Association class	2.9 ± 0.6	3.0 ± 0.6	3.0 ± 0.6*	0.063
Hospitalizations (n)	1.6 ± 1.4	1.6 ± 1.5	1.7 ± 1.4	0.256
Permanent AF	61 (11%)	131 (18%)*	101 (21%)*	<0.001
Atrioventricular node ablation	28 (5%)	67 (9%)*	32 (7%)	0.014
Angiotensin-converting enzyme inhibitors/angiotensin receptor blockers	450 (79%)	525 (71%)*	335 (70%)*	0.001
β blockers	341 (60%)	331 (45%)*	176 (37%)*†	<0.001
Digoxin	244 (43%)	316 (43%)	216 (45%)	0.604
Diuretics	494 (87%)	658 (89%)	419 (88%)	0.415
Nitrates	96 (17%)	169 (23%)*	126 (26%)*	0.001
Class III antiarrhythmic drugs	193 (34%)	278 (38%)	164 (34%)	0.312

CRT-induced changes in New York Heart Association (NYHA) Class between baseline and the 12-months evaluation, by age group



Results of univariate Cox regression analyses exploring the association between clinical and instrumental variables and all-cause follow-up mortality in the entire InSync/InSync ICD Italian Registry population

Variable	HR	95% CI	p Value
Age group (years)			
<65	1		
65–74	0.99	0.76–1.31	0.976
≥75	1.47	1.10–1.98	0.010
Men vs women	1.67	1.12–2.49	0.012
Chronic obstructive pulmonary disease (+ vs −)	1.53	0.90–2.60	0.113
Diabetes mellitus (+ vs −)	0.93	0.55–1.57	0.775
Hypertension (+ vs −)	1.14	0.80–1.62	0.483
Renal failure (+ vs −)	1.94	1.24–3.05	0.004
≥3 co-morbidities (+ vs −)	1.75	1.13–2.73	0.013
Coronary artery disease (+ vs −)	1.34	1.02–1.76	0.033
LV end-diastolic diameter (mm)	1.01	0.99–1.02	0.592
LV end-systolic diameter (mm)	1.01	0.98–1.02	0.887
LVEF (%)	0.98	0.96–0.99	0.025
QRS length (ms)	1.00	0.99–1.01	0.605
New York Heart Association class	1.07	0.84–1.36	0.596
Permanent atrial fibrillation (+ vs −)	1.62	1.18–2.22	0.003
Atrioventricular node ablation (+ vs −)	0.96	0.57–1.63	0.890
Angiotensin-converting enzyme inhibitors/angiotensin receptor blockers (+ vs −)	0.64	0.48–0.85	0.002
β blockers (+ vs −)	0.46	0.35–0.62	<0.001
CRT responder (+ vs −)	0.40	0.30–0.52	<0.001
CRT-D (+ vs −)	0.94	0.70–1.25	0.664

CI = confidence interval; HR = hazard ratio; LV = left ventricular.

Response to cardiac resynchronization therapy in elderly patients (≥70 years) and octogenarians

Frederik H. Verbrugge[1,2], Matthias Dupont[1,3], Philippe De Vusser[1], Maximo Rivero-Ayerza[1], Hugo Van Herendael[1], Jan Vercammen[1], Linda Jacobs[1], David Verhaert[1,4], Pieter Vandervoort[1,4], W.H. Wilson Tang[3], and Wilfried Mullens[1,4]*

Conclusion Reverse left ventricular remodelling and functional capacity improvement after CRT are sustained at advanced age. Moreover, time to all-cause mortality or heart failure admission was similar, irrespective of age, in a context of maximized optimization including optimal medical therapy.

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Baseline characteristics of the study population

	Total population (n = 220)	<70 years (n = 76)	70–79 years (n = 95)	≥80 years (n = 49)	P-value
Male gender, n (%)	148 (67)	51 (67)	65 (68)	32 (65)	0.931
Blood pressure (mmHg)					
Systolic blood pressure	123 ± 16	121 ± 13	123 ± 15	125 ± 20	0.232
Diastolic blood pressure	73 ± 10	74 ± 10	73 ± 9	72 ± 9	0.388
Diabetes mellitus, n (%)	66 (30)	16 (21)	34 (36)	16 (33)	0.101
History of PCI, n (%)	58 (26)	22 (29)	20 (21)	16 (33)	0.267
History of valvular surgery, n (%)	27 (12)	8 (11)	16 (17)	3 (6)	0.151
COPD, n (%)	64 (29)	23 (30)	27 (28)	14 (29)	0.962
Atrial fibrillation at implantation, n (%)	57 (26)	16 (21)	25 (26)	16 (33)	0.349
eGFR (mL/min/1.73 m^2)	63 ± 24	72 ± 26	61 ± 21	52 ± 20	<0.001
Serum haemoglobin concentration (g/dL)	13.3 ± 1.7	13.4 ± 1.6	13.4 ± 1.7	13.0 ± 1.7	0.329
Ischaemic aetiology for heart failure, n (%)	110 (50)	28 (37)	51 (54)	31 (63)	0.010
NYHA functional class, n (%)					0.511
II	63 (29)	27 (36)	23 (24)	13 (27)	
III	134 (61)	41 (54)	63 (66)	30 (61)	
IV	23 (10)	8 (10)	9 (10)	6 (12)	
VO_{2max} (mL/kg/min)	13.9 ± 4.7	14.8 ± 4.6	13.4 ± 3.9	12.4 ± 6.4	0.075
CRT type, n (%)					<0.001
CRT pacemaker	128 (58)	30 (39)	54 (57)	44 (90)	
CRT defibrillator	92 (42)	46 (61)	41 (43)	5 (10)	
QRS width (ms)	156 ± 31	147 ± 29	159 ± 31	163 ± 30	0.006
LBBB, n (%)	183 (83)	63 (83)	80 (84)	40 (82)	0.923
LVEF (%)	29 ± 10	29 ± 9	29 ± 10	31 ± 11	0.510
LVEDD (cm)	6.5 ± 1.0	6.6 ± 1.1	6.5 ± 1.1	6.2 ± 0.7	0.075
LVESD (cm)	5.5 ± 1.1	5.6 ± 1.2	5.6 ± 1.2	5.2 ± 0.8	0.058
Left atrial diameter (cm)	4.3 ± 0.8	4.2 ± 0.8	4.4 ± 0.8	4.4 ± 0.8	0.162

New York Heart Association (NYHA) functional class at implantation and after 6 months of cardiac resynchronization therapy

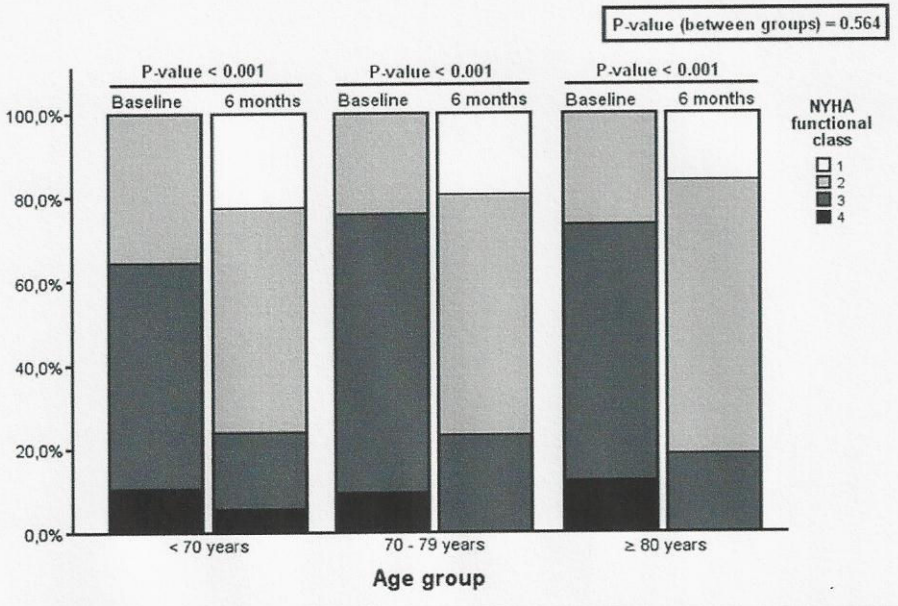

Figure 2 New York Heart Association (NYHA) functional class at implantation and after 6 months of cardiac resynchronization therapy according to age group.

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Clinical outcome: freedom from all-cause mortality or heartfailure admission according to age group

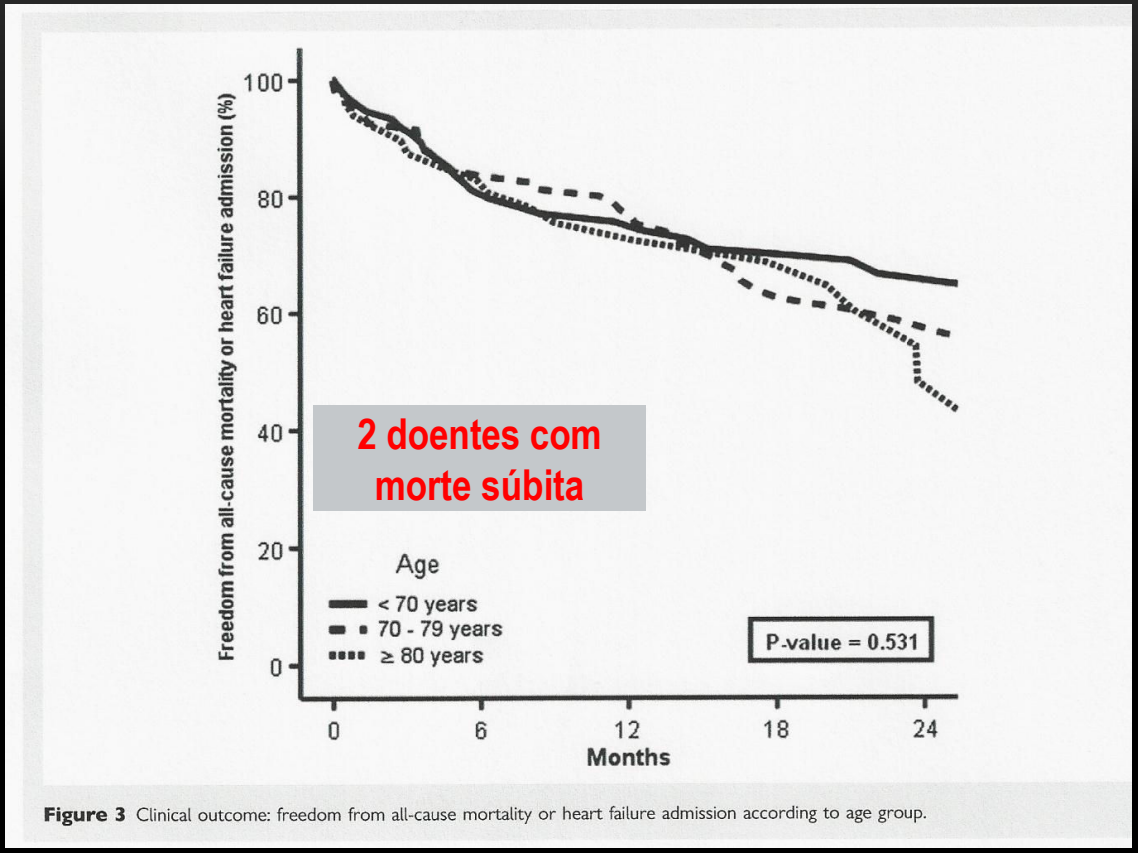

Figure 3 Clinical outcome: freedom from all-cause mortality or heart failure admission according to age group.

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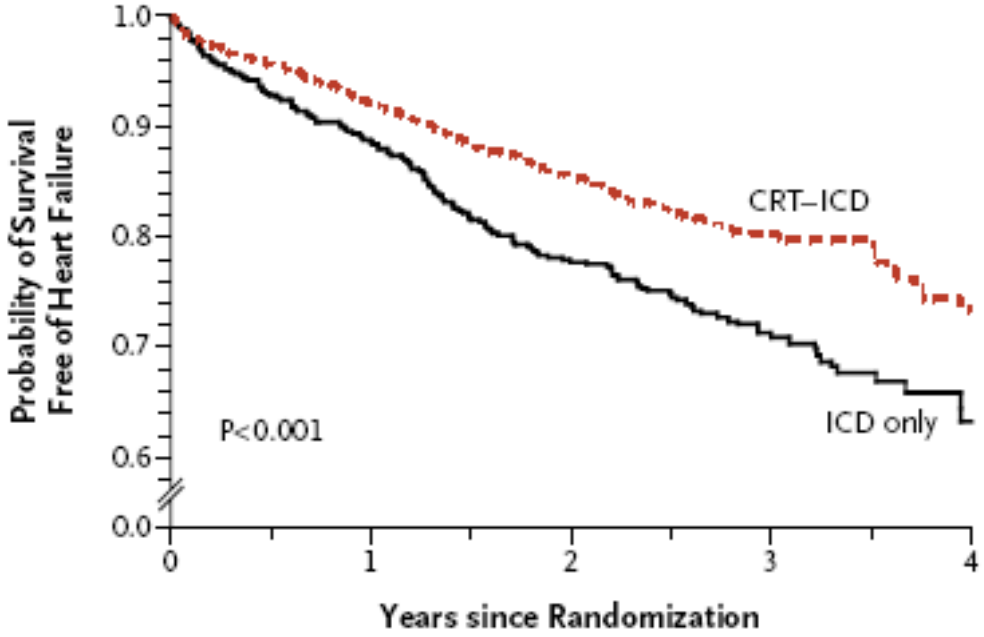

No. at Risk (Probability of Survival)					
ICD only	731	621 (0.89)	379 (0.78)	173 (0.71)	43 (0.63)
CRT–ICD	1089	985 (0.92)	651 (0.86)	279 (0.80)	58 (0.73)

Figure 2. Kaplan–Meier Estimates of the Probability of Survival Free of Heart Failure.

There was a significant difference in the estimate of survival free of heart failure between the group that received cardiac-resynchronization therapy plus an implantable cardioverter–defibrillator (CRT–ICD) and the group that received an ICD only (unadjusted P<0.001 by the log-rank test).

MADIT CRT: Subgroup analysis

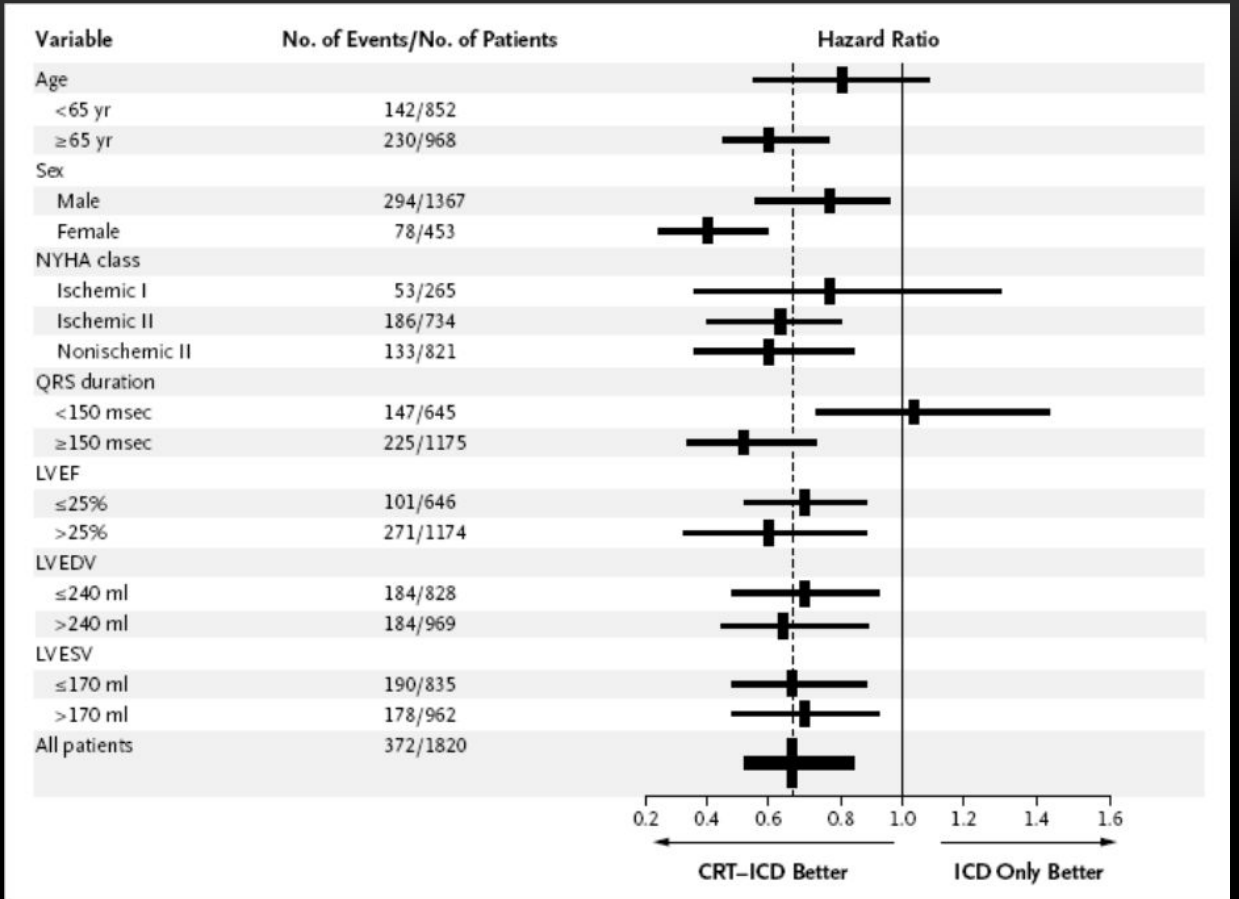

Figure 3. Risk of Death or Heart Failure, According to Selected Clinical Characteristics.

The hazard ratios for death or nonfatal heart failure (whichever came first) are shown for various subgroups among patients who received cardiac-resynchronization therapy plus an implantable cardioverter–defibrillator (CRT–ICD) and those who received an ICD only. The dashed vertical line represents the results for the entire study (hazard ratio in the CRT–ICD group, 0.66), and the horizontal lines indicate 95% confidence intervals. LVEDV denotes left ventricular end-diastolic volume, LVEF left ventricular ejection fraction, LVESV left ventricular end-systolic volume, and NYHA New York Heart Association. Two subgroup treatment interactions were identified, for sex ($P=0.01$) and QRS duration ($P=0.001$). All other interaction P values exceeded 0.10.

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Cost-effectiveness of cardiac resynchronisation therapy for patients with moderate-to-severe heart failure: a lifetime Markov model

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ABSTRACT

Objective: To assess the cost-effectiveness of cardiac resynchronisation therapy (CRT) both with CRT-P (biventricular pacemaker only) and with CRT-D (biventricular pacemaker with defibrillator) in patients with New York Heart Association (NYHA) functional class III/IV from a Belgian healthcare-payer perspective.

Methods: A lifetime Markov model was designed to calculate the cost–utility of both interventions. In the reference case, the treatment effect was based on the Comparison of Medical Therapy, Pacing and Defibrillation in Heart Failure trial. Costs were based on real-world data. Pharmacoeconomic guidelines were applied, including probabilistic modelling and sensitivity analyses.

Results: Compared with optimal medical treatment, on average 1.31 quality-adjusted life-years (QALY) are gained with CRT-P at an additional cost of €14 700, resulting in an incremental cost-effectiveness ratio (ICER) of about €11 200/QALY. As compared with CRT-P, CRT-D treatment adds on average an additional 0.55 QALYs at an extra cost of €30 900 resulting in an ICER of €57 000/QALY. This result was very sensitive to the incremental clinical benefit of the defibrillator function on top of CRT.

Conclusions: Based on efficiency arguments, CRT-P can be recommended for NYHA class III and IV patients if there is a willingness to pay more than €11 000/QALY. Even though CRT-D may offer a survival benefit over CRT-P, the incremental clinical benefit appears to be too marginal to warrant a threefold-higher device price for CRT-D. Further clinical research should focus on the added value of CRT-D over CRT-P.

No doente idoso a ressincronização cardíaca deve ser com CRT-P:
Conclusões (I)

A) Não existe nenhum estudo em doentes com mais de 75 anos e insuficiência cardíaca que compare directamente a terapêutica com CRT-P versus CRT-D. A partir de um conjunto de estudos já publicados podemos inferir algumas evidências.

B) Os doentes mais idosos com insuficiência cardíaca apresentam uma maior incidência de morte cardíaca não arrítmica ou de morte relacionada com comorbilidades. Nestes doentes o papel do CDI na prevenção da mortalidade é muito menos importante que nos doentes mais jovens, e é uma terapêutica que mantem uma iatrogenia significativa.

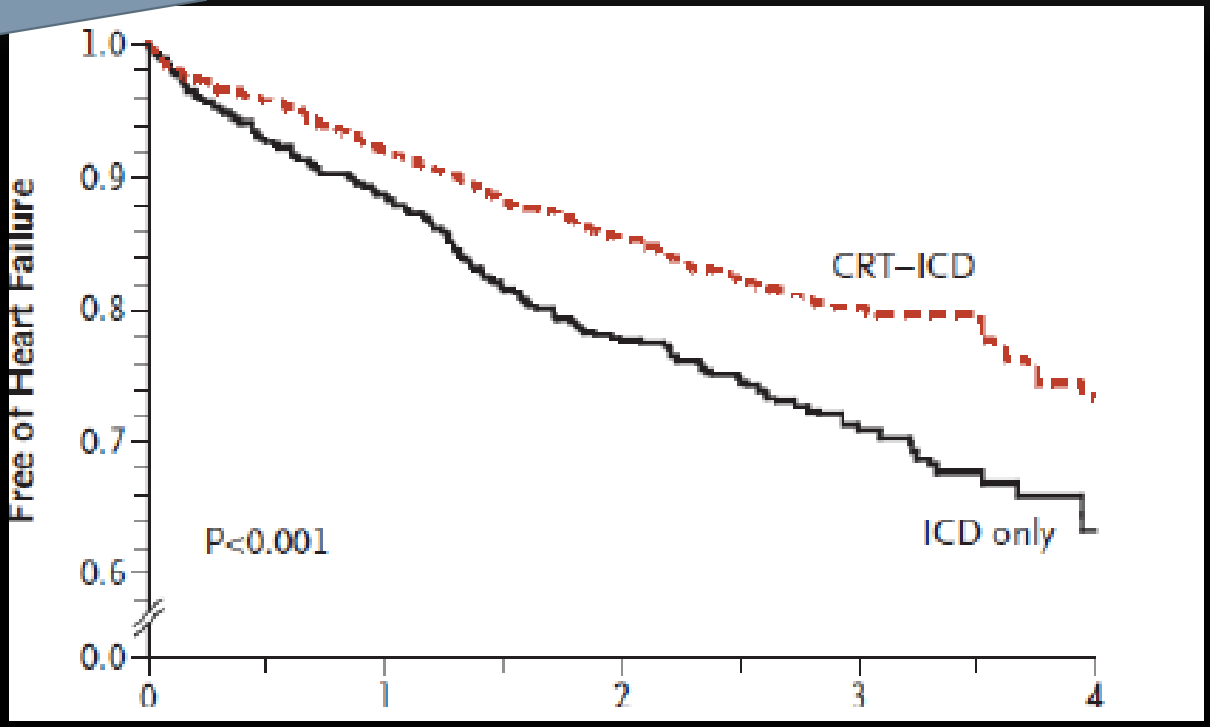
No doente idoso a ressincronização cardíaca deve ser com CRT-P:
Conclusões (II)

C) O CRT-P tem demonstrado ser uma terapêutica muito eficaz nestes doentes e apresenta uma boa relação custo/benefício que é superior ao CRT-D.

D) Enquanto não houver evidência objectiva da vantagem do CRT-P ou do CRT-D deve ser o primeiro usado como terapêutica de eleição nos doentes com mais de 75 anos e insuficiência cardíaca, e com os restantes critérios das “Guidelines”.

Cardiac-Resynchronization Therapy for the Prevention of Heart-Failure Events

MADIT - CRT

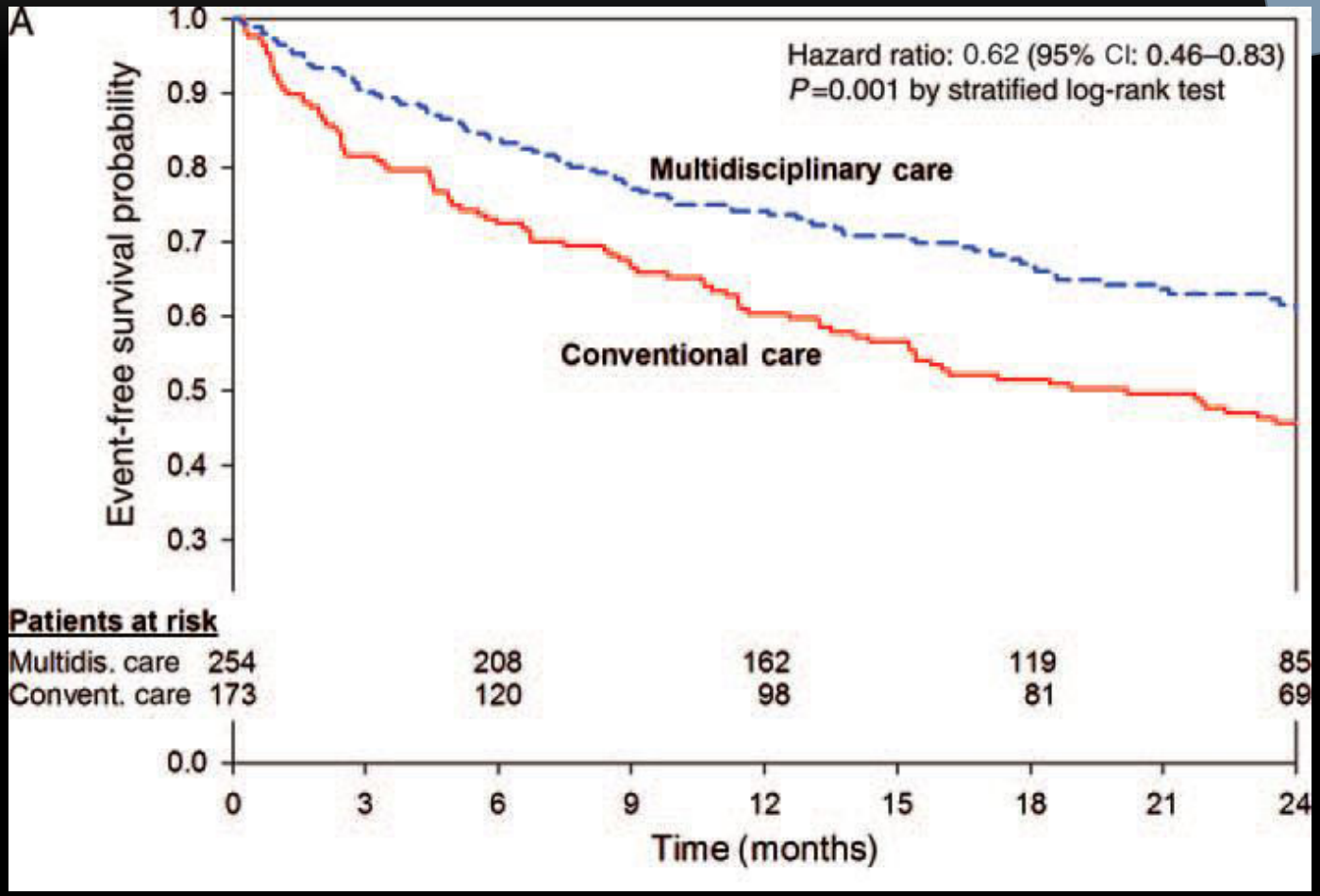


• CRT combined with ICD decreased the risk of HF events in relatively asymptomatic patients with a low LVEF and wide QRS complex.

Multidisciplinary approach to care in HF

- Ensure an integrated approach to care delivery by a multidisciplinary team
- HF & EP & Echo Specialists / Nurses / Rehabilitation service

CRT



Altman, et al. European Heart Journal May 2012

VIVER

O Homem não se cansa de viver. E nós vemos que é mais facil morrer em jovem, que morrer em velho. Há um livro de um escritor francês, em que há um homem distinto, um médico, que chega ao fim da vida e a quem o filho tenta convencer – quando ele já está para morrer, já moribundo – que é natural que a pessoa velha, que viveu muito, morra, que não tem de sentir pena por morrer. E o pai diz: “Pois é, por isso mesmo; porque vivi muito e sei o que é viver é que tenho pena, por isso é que me custa muito mais”. Enquanto que vemos a serenidade com que um jovem desafia a morte. Senão não ia para a guerra. Os jovens consideram, de certa maneira, que a vida não tem importância.

Agustina Bessa Luís

End-of-life preferences of elderly patients with chronic heart failure

Aims Elderly heart failure (HF) patients are assumed to prefer improved quality of life over longevity, but sufficient data are lacking. Therefore, we assessed the willingness to trade survival time for quality-of-life (QoL) and the preferences for resuscitation.

Methods and results At baseline and after 12 and 18 months, 622 HF patients aged ≥60 years (77 ± 8 years, 74% NYHA-class ≥III) participating in the Trial of Intensified vs. standard Medical therapy in Elderly patients with Congestive Heart Failure had prospective evaluation of end-of-life preferences by answering trade-off questions (willingness to accept a shorter life span in return for living without symptoms) and preferences for resuscitation if necessary. The time trade-off question was answered by 555 patients (89%), 74% of whom were not willing to trade survival time for improved QoL. This proportion increased over time (Month 12: 85%, Month 18: 87%, $P < 0.001$). In multivariable analysis, willingness to trade survival time increased with age, female sex, a reduced Duke Activity Status Index, Geriatric Depression Score, and history of gout, exercise intolerance, constipation and oedema, but even combining these variables did not result in reliable prediction. Of 603 (97%) patients expressing their resuscitation preference, 51% wished resuscitation, 39% did not, and 10% were undecided, with little changes over time. In 430 patients resuscitation orders were known; they differed from patients' preferences 32% of the time. End-of-life preferences were not correlated to 18-month outcome.

Conclusion Elderly HF patients are willing to address their end-of-life preferences. The majority prefers longevity over QoL and half wished resuscitation if necessary. Prediction of individual preferences was inaccurate. Trial Registration: isrctn.org Identifier: ISRCTN43596477

Keywords Heart failure • Survival • Ageing • End-of-life preferences • Quality of life

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CRT-P versus CRT-D: Cost-effectiveness estimates

Author (reference)	Setting, patients	Methods	Notes	Incremental cost-effectiveness ratio per QALY gained
Feldman *et al.*[22]	1520 HF patients (NYHA functional class III–IV) enrolled in the COMPANION trial and randomized to CRT-P or CRT-D vs. control	Assessment of costs at 2-year follow-up and modelling to predict cost-effectiveness at 7 years	Hospitalizations over a 2-year follow-up period	$28 100 (€20 710) for CRT-P vs. control, $46 700 (€34 418) for CRT-D vs. control
Calvert *et al.*[23]	813 HF patients (NYHA functional class III–IV) enrolled in the CARE-HF trial and randomized to CRT-P vs. control	Assessment of post-implant costs during a mean follow-up of 29.4 months	CRT-P associated with increased costs, survival, and QALYs	€43 596 for CRT-P vs. control
Yao *et al.*[26]	Economic model based on HF patients (NYHA functional class III–IV) enrolled in the CARE-HF trial. Survival data for CRT-D from the COMPANION trial	Markov model with Monte Carlo simulation to assess the cost-effectiveness of CRT-P and CRT-D for a lifetime time horizon from a UK perspective	Estimates related to a 65-year-old patient	€7011 for CRT-P vs. control, €35 864 for CRT-D vs. control

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