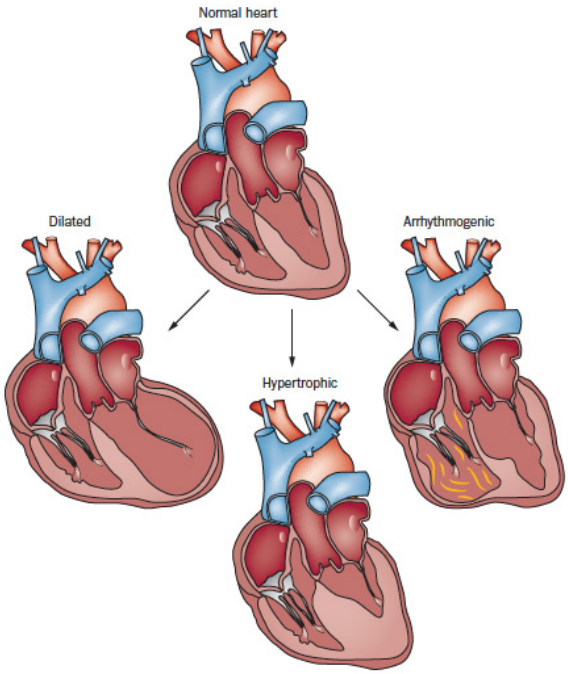
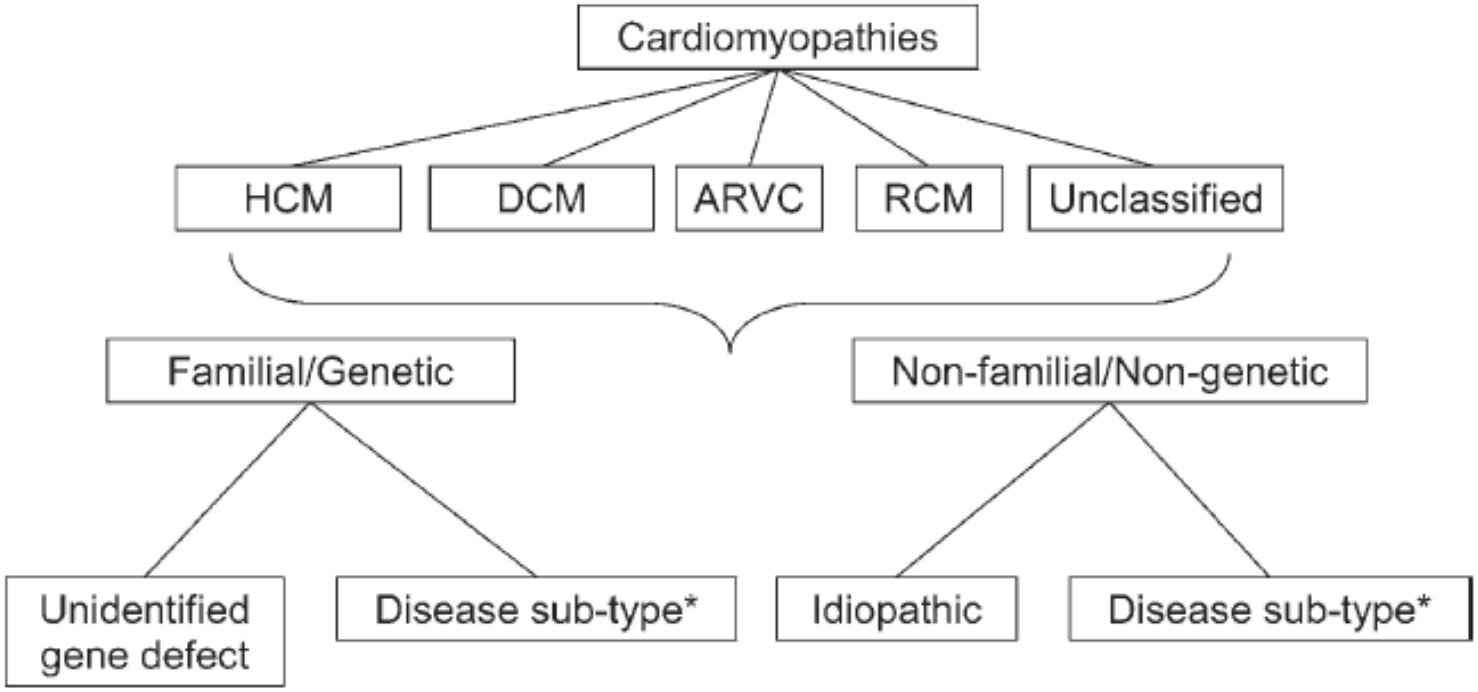
European Heart Journal (2008) **29**, 270–276
doi:10.1093/eurheartj/ehm342

Classification of the cardiomyopathies: a position statement from the european society of cardiology working group on myocardial and pericardial diseases





HEART MUSCLE DISEASE REGISTRY OF TRIESTE (HMDR) (UPDATE – 02/2016)

	DCM	HCM	ARVD	MYOC.	OTHERS
N° of pts	**1143**	295	127	113	240 (56 Amyloidosis)
Mean age (years)	**45±15**	41±20	54±15	38±16	50±14
Males (%)	**70**	64	69	70	66
Follow-up (months)	**110±83**	79±90	139±115	97±67	44±20
Years of enrolment	**1978-2016**	1983-2016	1976-2016	1981-2016	1980-2016
N° Follow-up (approx.)	**7300**	900	600	400	320

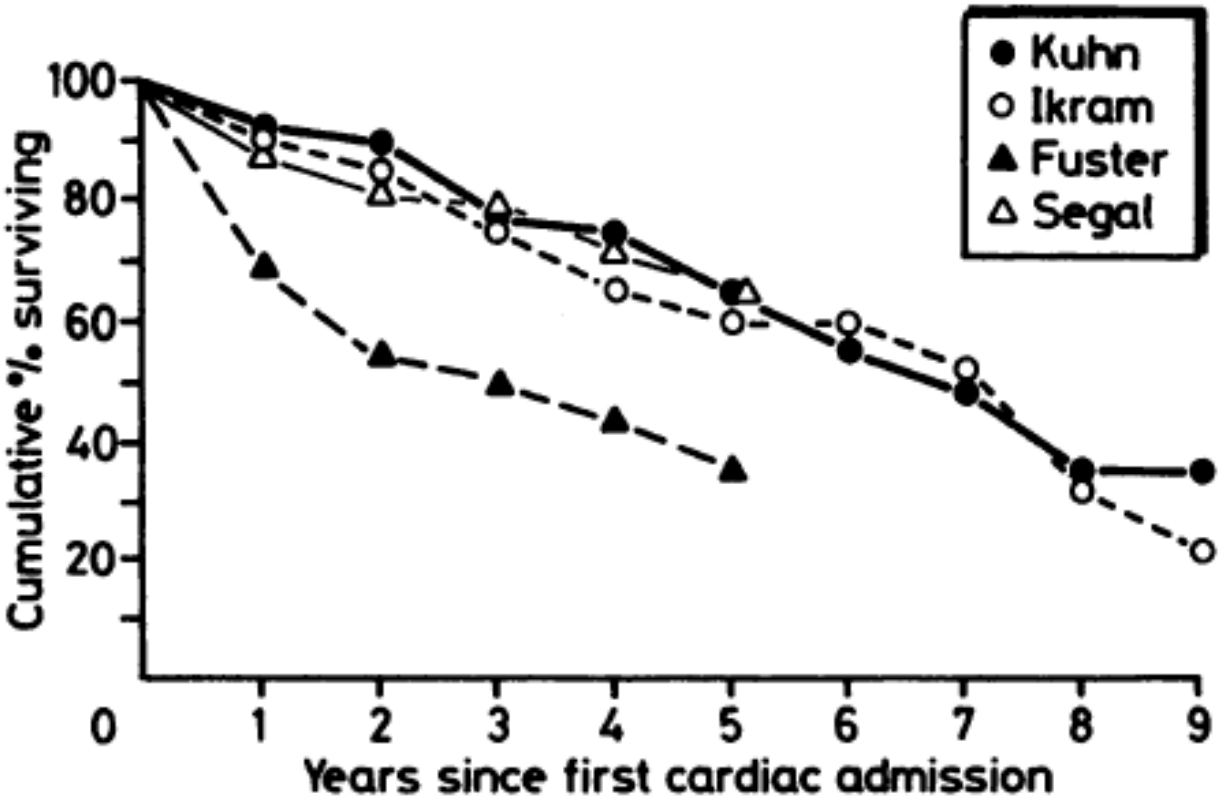
OSPEDALI RIUNITI DI TRIESTE

Br Heart J 1987;57:521–7

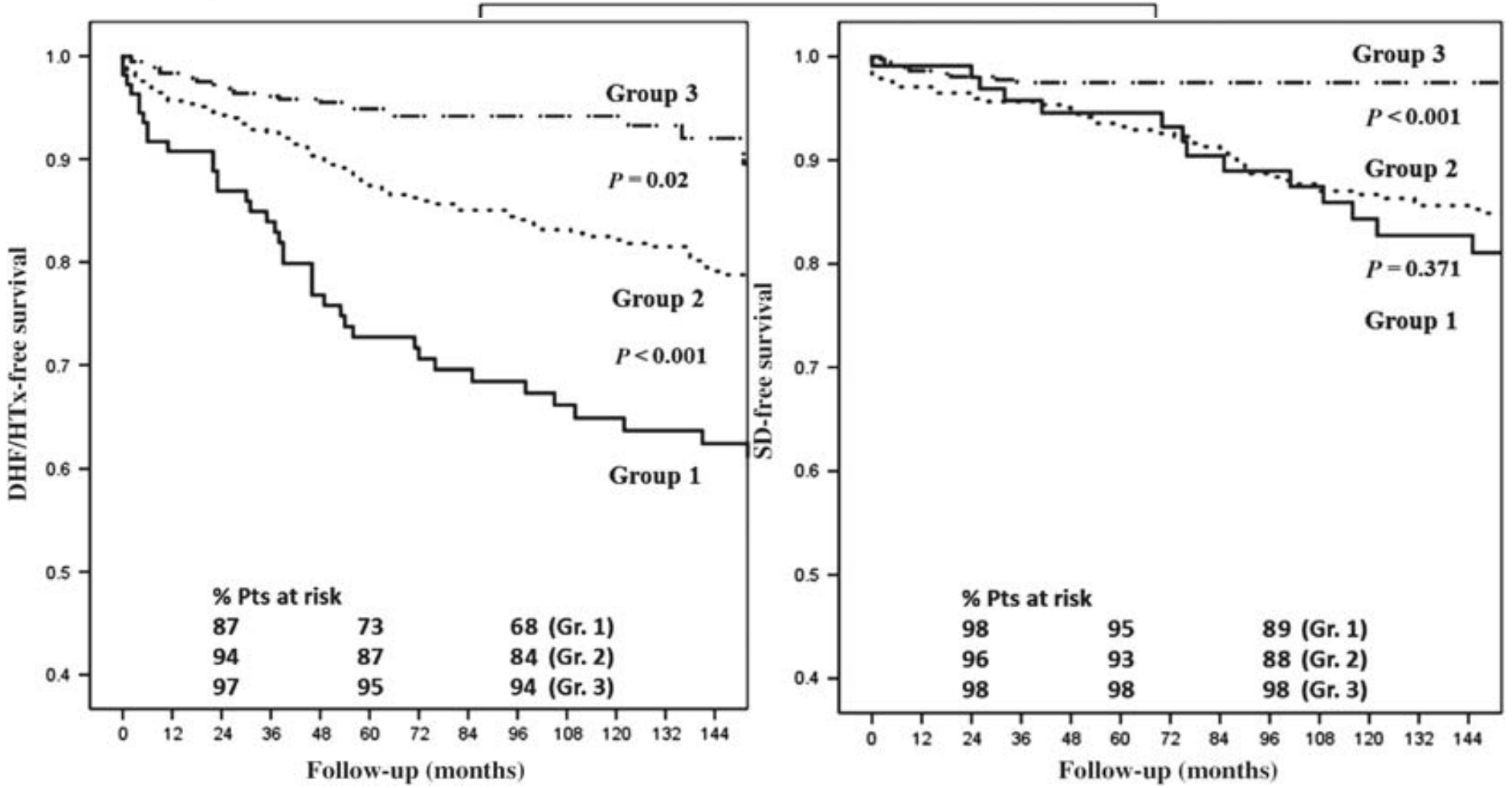
The course of idiopathic dilated cardiomyopathy in New Zealand

HAMID IKRAM, HAMMOND G WILLIAMSON, MICHAEL WON, IAN G CROZIER, ELIZABETH J WELLS

From the Departments of Cardiology and Community Medicine, The Princess Margaret Hospital, Christchurch, New Zealand



Long-term prognostic impact of therapeutic strategies in patients with idiopathic dilated cardiomyopathy: changing mortality over the last 30 years



Merlo M. Sinagra G et al; European Journal of Heart Failure (2014) **16**, 317–324

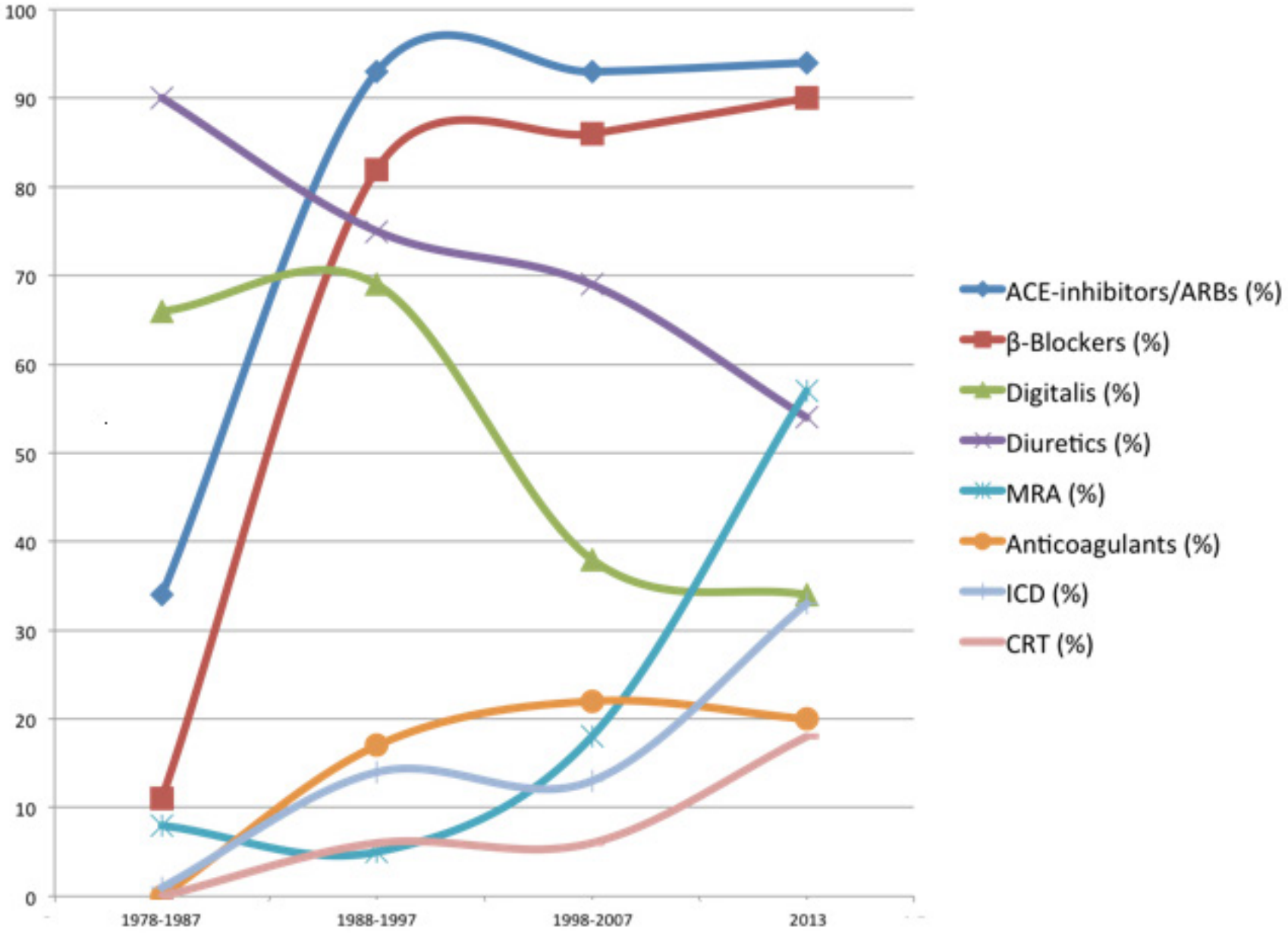
Ospedali Riuniti di Trieste

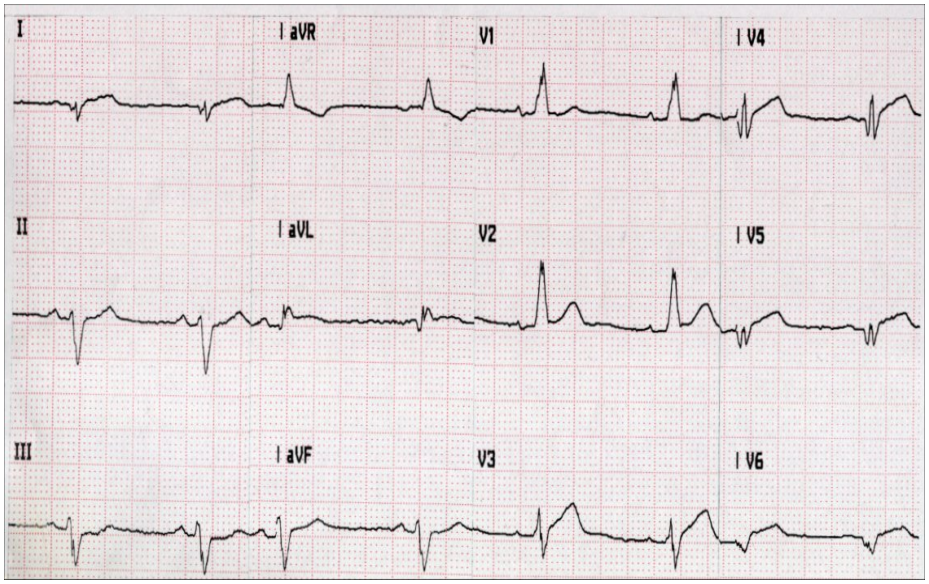
Long-term prognostic impact of therapeutic strategies in patients with idiopathic dilated cardiomyopathy: changing mortality over the last 30 years

	1st decade (1978–1987) (110 patients)	2nd decade (1988–1997) (376 patients)	3rd decade (1998–2007) (367 patients)
Mean follow-up (months)	151 ± 29	153 ± 82	93 ± 41
All-cause mortality/heart transplant, *n* (%)	77 (70)	178 (47)	53 (14)
Incidence (events/100 patients/year)	5.6	3.9	1.9
Unexpected sudden death, *n* (%)	16 (15)	51 (14)	9 (3)
Incidence (events/100 patients/year)	1.2	1.1	0.3

Merlo M. Sinagra G et al; European Journal of Heart Failure (2014) **16**, 317–324

Registro CMPD Trieste: 1978-2013

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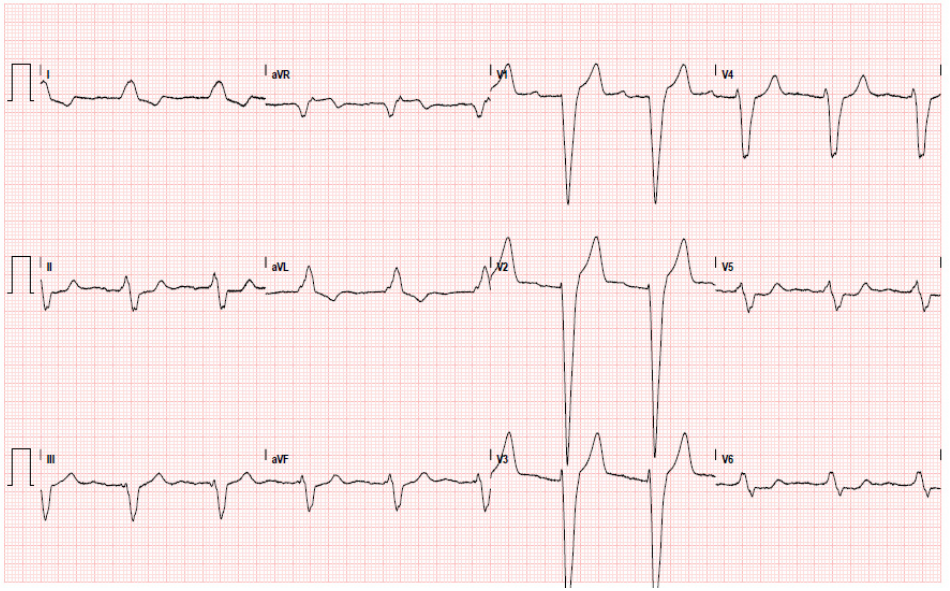
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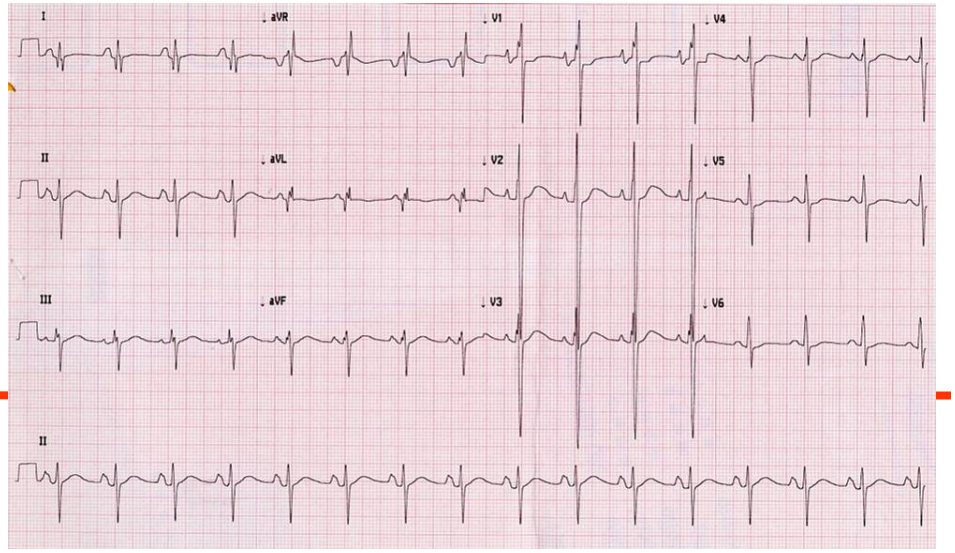
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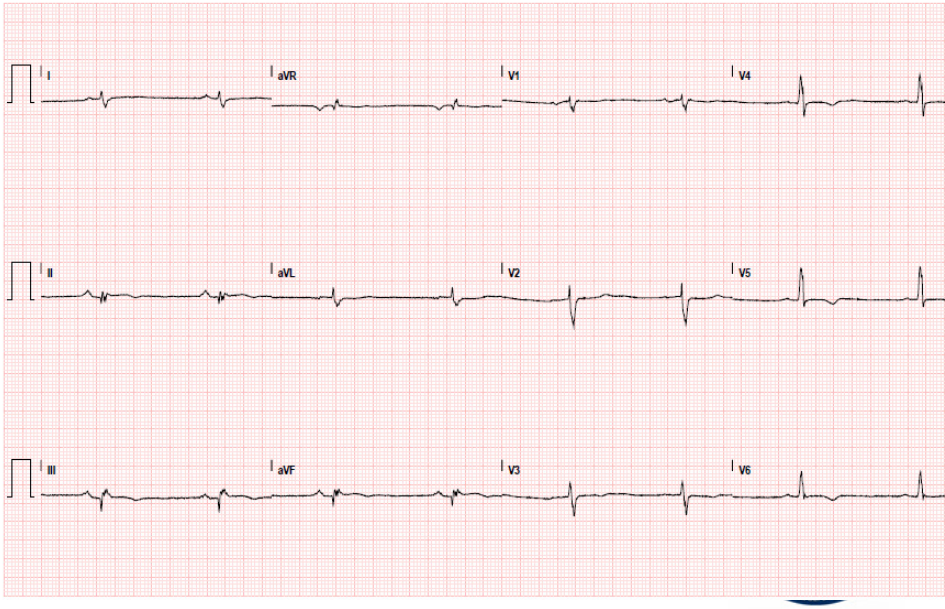
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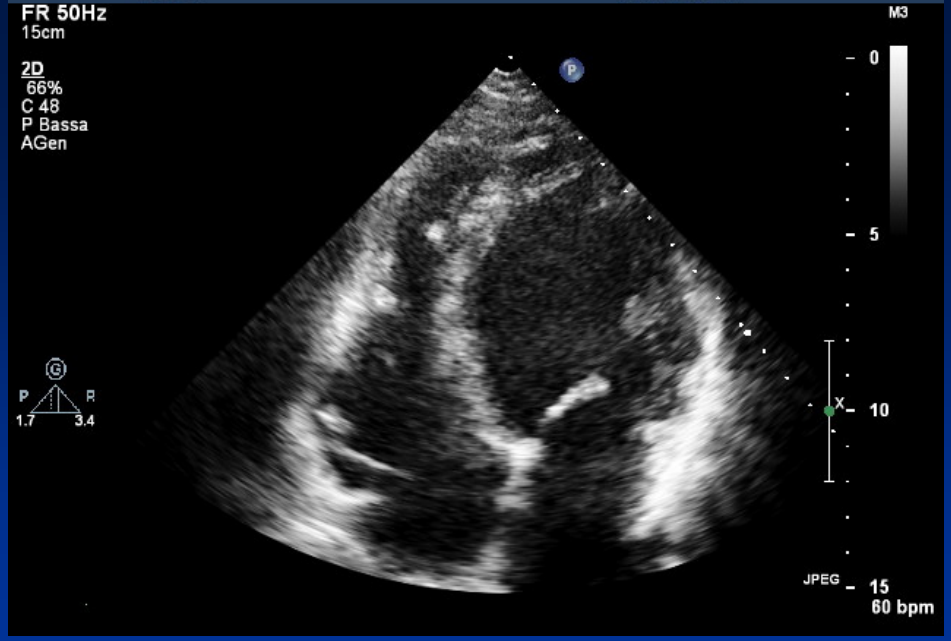
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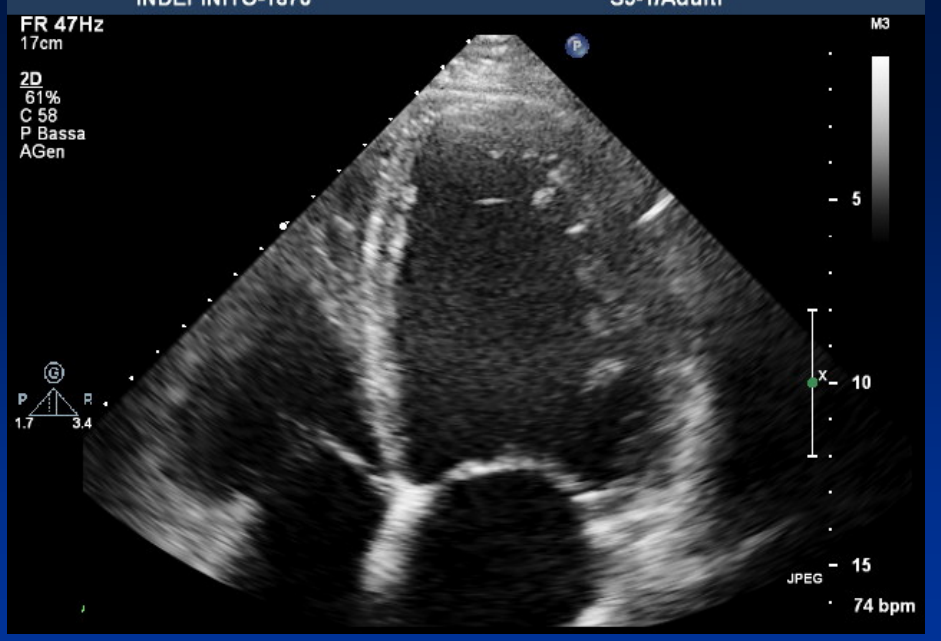
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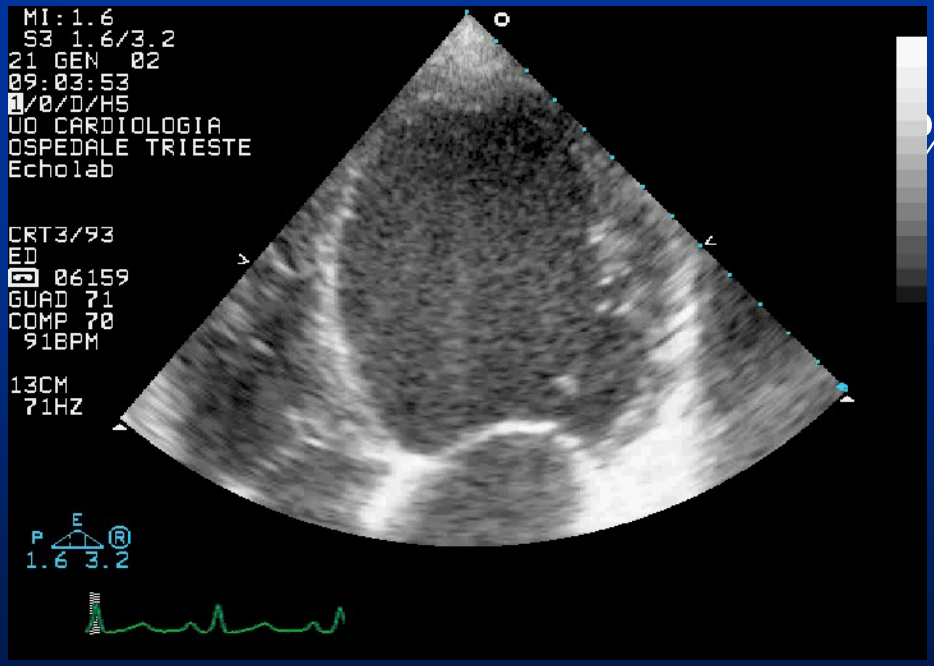
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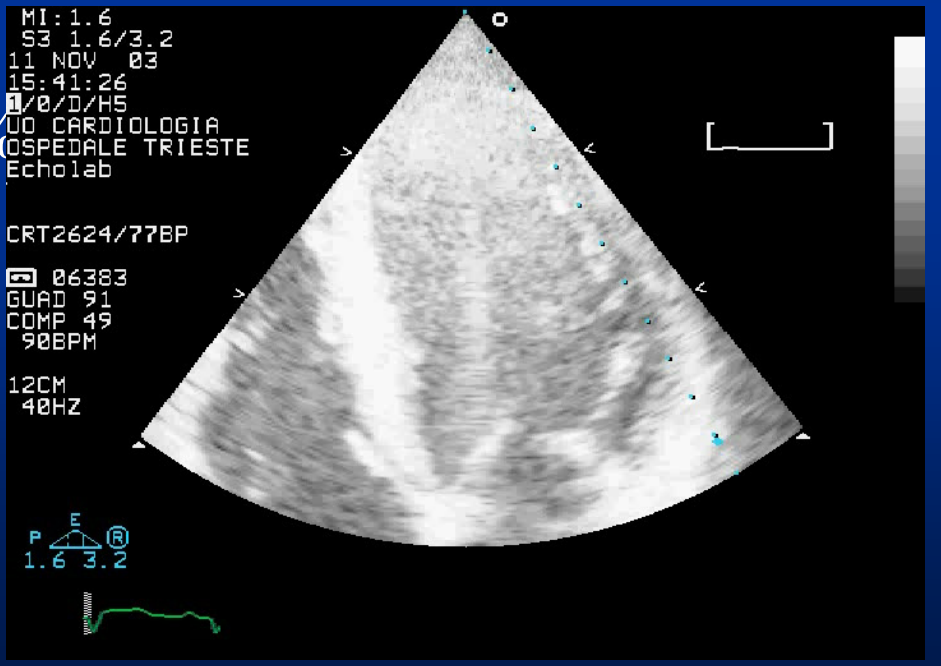
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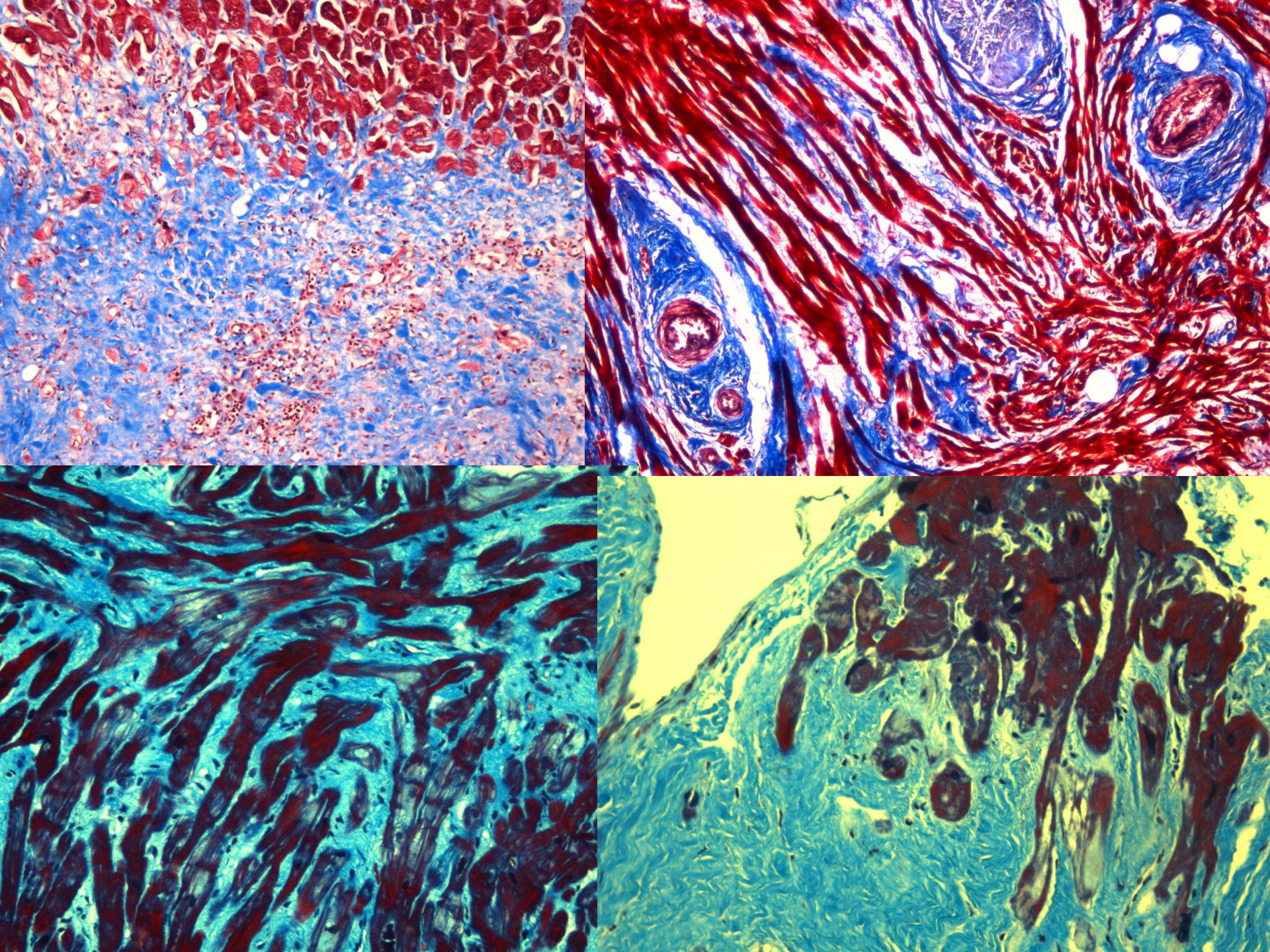
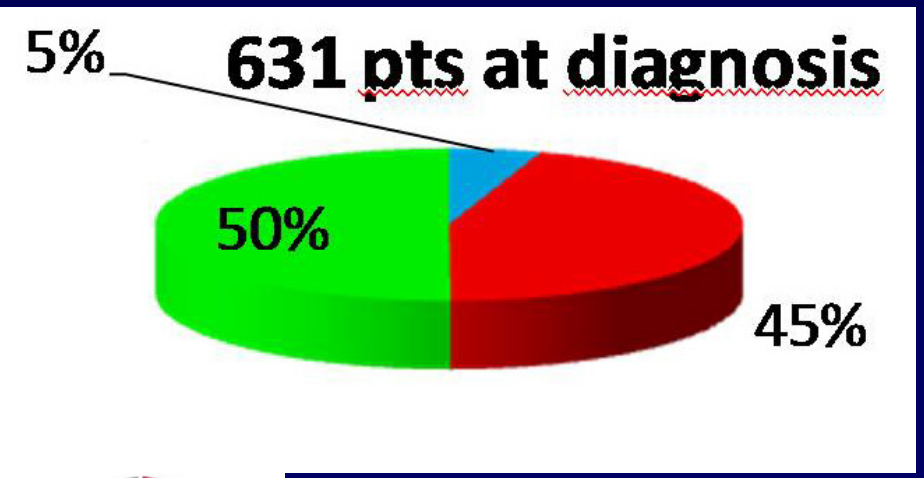
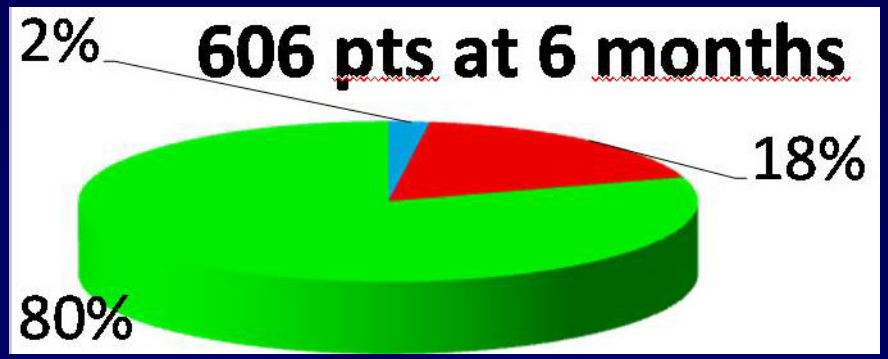


How Can Optimization of Medical Treatment Avoid Unnecessary Implantable Cardioverter-Defibrillator Implantations in Patients With Idiopathic Dilated Cardiomyopathy Presenting With "SCD-HeFT Criteria?"

Massimo Zecchin, MD[a,*], Marco Merlo, MD[a], Alberto Pivetta, MD[a], Giulia Barbati, PhD[b], Cristina Lutman, MD[a], Dario Gregori, PhD[b], Laura Vitali Serdoz, MD[a], Stefano Bardari, MD[a], Silvia Magnani, MD[a], Andrea Di Lenarda, MD[c], Alessandro Proclemer, MD[d], and Gianfranco Sinagra, MD[a]

THE TRIESTE CARDIOMYOPATHIES REGISTRY 1988-2006; DCM N=631 PTS; LVEF 30±10%



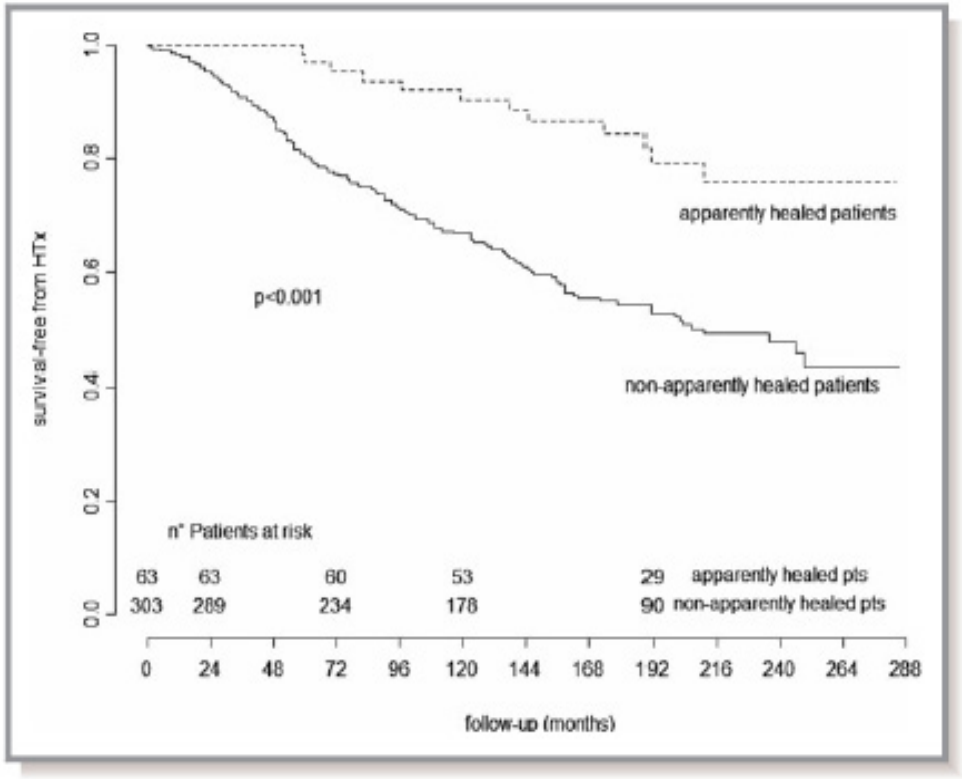


Ospedali Riuniti di Trieste

Zecchin, Sinagra et al
Am J Cardiol 2012;109:729-35

Persistent Recovery of Normal Left Ventricular Function and Dimension in Idiopathic Dilated Cardiomyopathy During Long-Term Follow-up: Does Real Healing Exist?

Marco Merlo, MD; Davide Stolfo, MD; Marco Anzini, MD; Francesco Negri, MD; Bruno Pinamonti, MD; Giulia Barbati, PhD; Federica Ramani, PhD; Andrea Di Lenarda, MD; Gianfranco Sinagra, MD, FESC



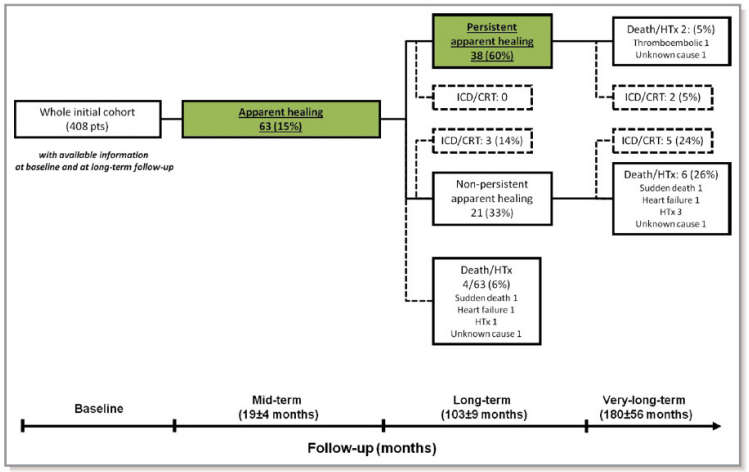
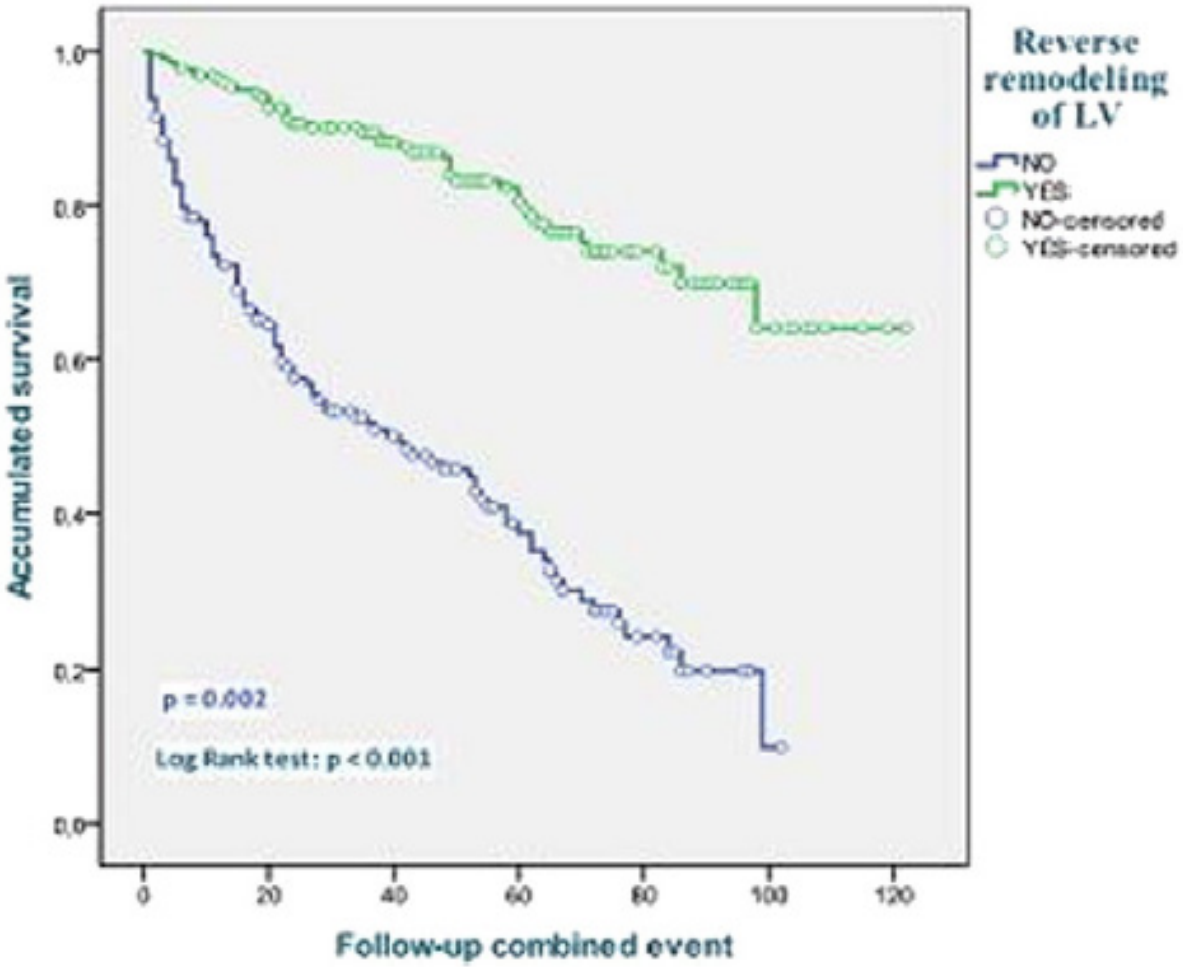


Figure 2. Flowchart of the long-term evolution of the study population. All analyzed patients underwent a complete echocardiographic evaluation at each follow-up. CRT indicates cardiac resynchronization therapy; HTx, heart transplant; ICD, implantable cardioverter-defibrillator.

Persistent apparent healing was defined as left ventricular ejection fraction ≥50% and indexed left ventricular end-diastolic diameter ≤33 mm/m2 at both mid-term (19±4 months) and long-term (103±9 months) follow-up.

J Am Heart Assoc. 2015 Jan; 4(1): e001504.

Incidence and prognosis implications of long term left ventricular reverse remodeling in patients with dilated cardiomyopathy



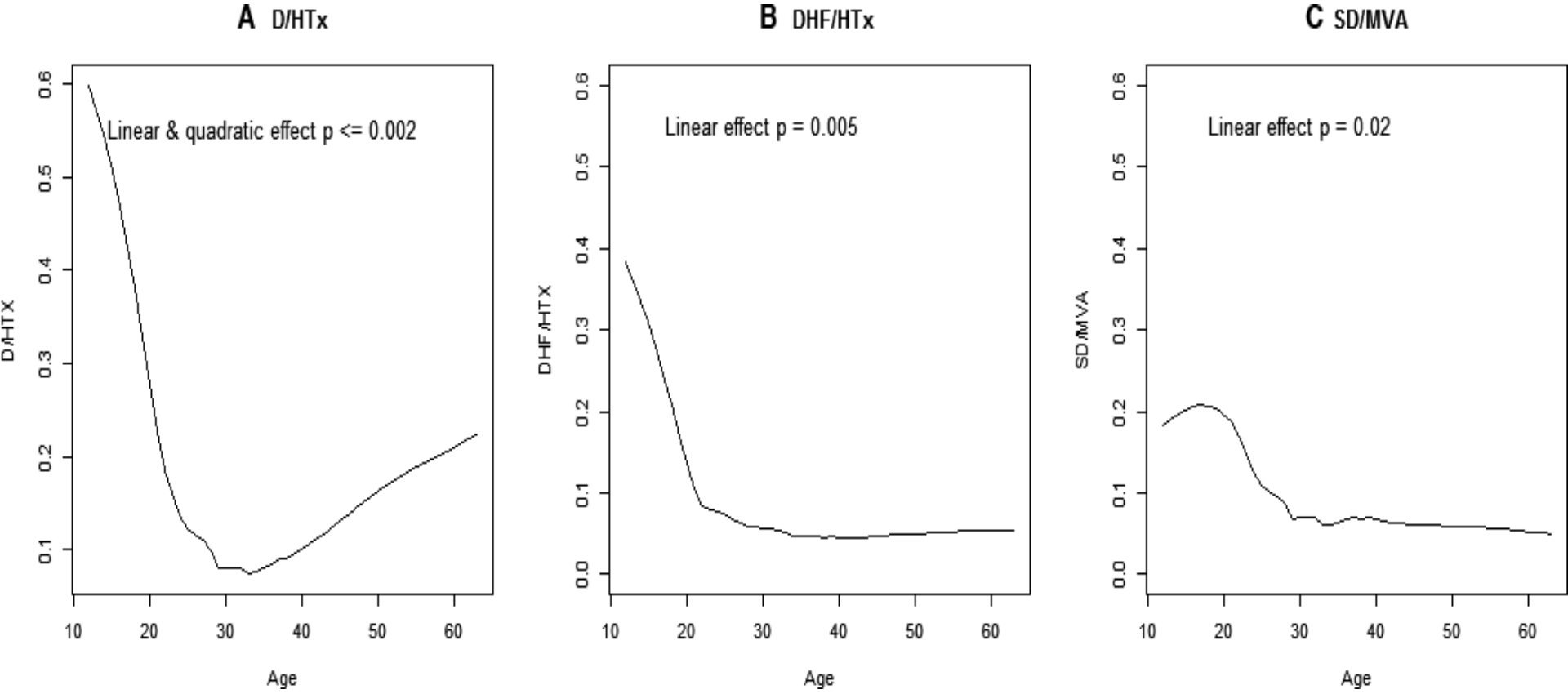
Kaplan–Meier analysis of combined clinical event (death,HTx and HFW) depending on achievement of reverse remodeling of the LV.

Zamora IR et al

International Journal of Cardiology 203 (2016) 1114–1121

Natural History of Dilated Cardiomyopathy in Children

Ilaria Puggia, MD; Marco Merlo, MD; Giulia Barbati, PhD; Teisha J. Rowland, PhD; Davide Stolfo, MD; Marta Gigli, MD; Federica Ramani, PhD; Andrea Di Lenarda, MD; Luisa Mestroni, MD, FACC, FESC; Gianfranco Sinagra, MD, FESC

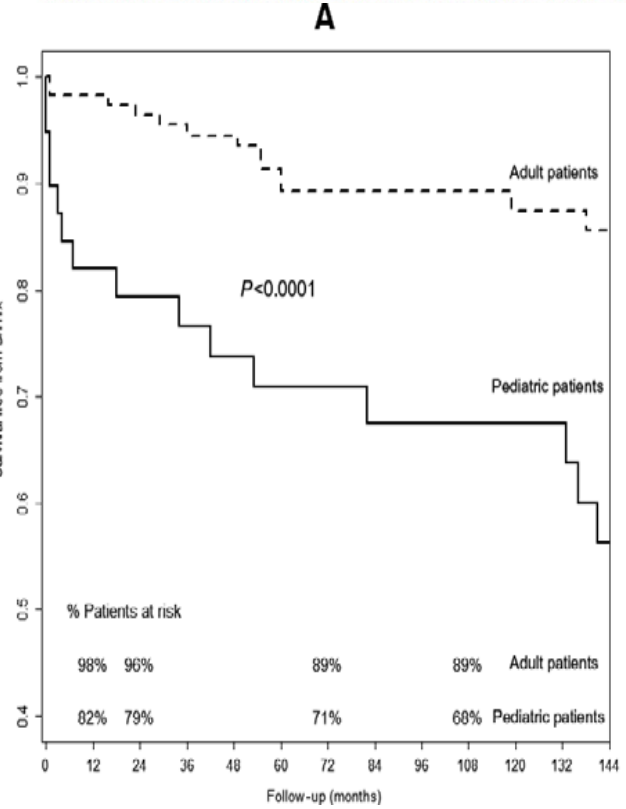


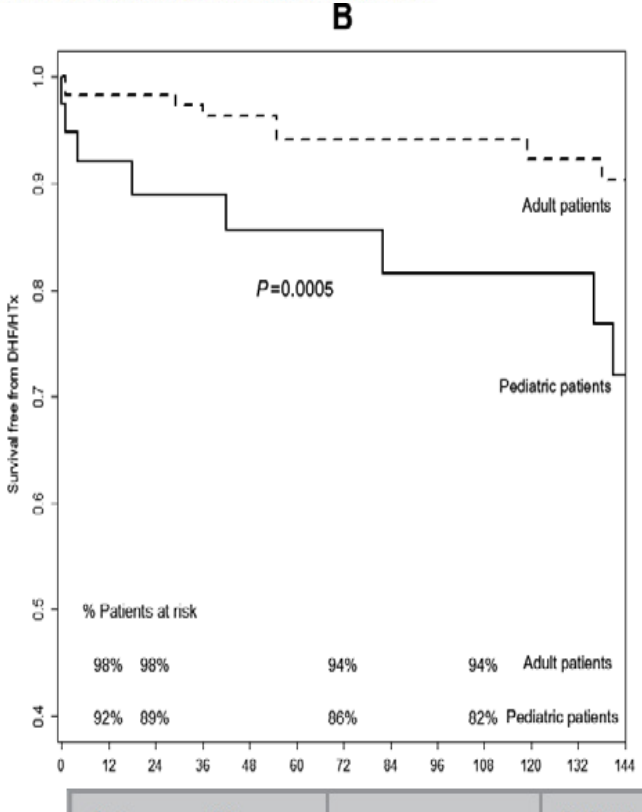
Effect of age on outcome measurements. Pediatric age (ie, <18 years) was associated with increasing risk of all major events: D/HTx (A), DHF/HTx (B), SD/MVA (C).

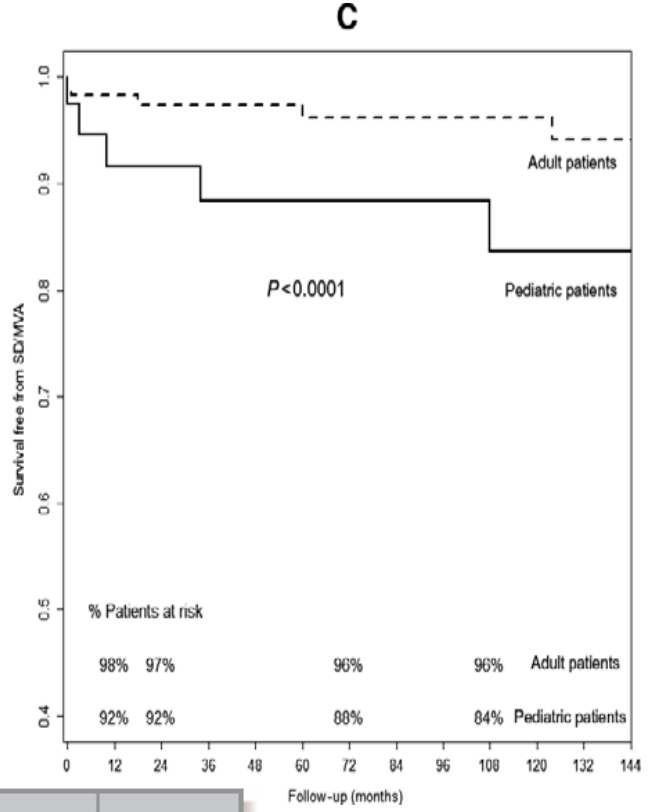
J Am Heart Assoc. 2016;5:e003450

Natural History of Dilated Cardiomyopathy in Children

Ilaria Puggia, MD; Marco Merlo, MD; Giulia Barbati, PhD; Teisha J. Rowland, PhD; Davide Stolfo, MD; Marta Gigli, MD; Federica Ramani, PhD; Andrea Di Lenarda, MD; Luisa Mestroni, MD, FACC, FESC; Gianfranco Sinagra, MD, FESC







	HR	95% CI Lower	95% CI Upper	P Value	HR	95% CI Lower	95% CI Upper	P Value
Sex	1.262	0.416	3.829	0.681	—	—	—	—
BSA (for 1-U increase)	0.405	0.131	1.251	0.116	—	—	—	—
Family history of DCM	0.798	0.33	1.930	0.616	—	—	—	—
Family history of SD	1.102	0.249	4.887	0.898	—	—	—	—
NYHA III to IV	2901	1.110	7.612	0.031	3.827	1.194	12.27	0.024
SBP (for 1-mm Hg increase)	0.974	0.944	1.005	0.097	—	—	—	—
DBP, mm Hg	0.957	0.913	1.002	0.061	—	—	—	—
LBBB (%)	4.079	0.890	18.685	0.070	—	—	—	—
LVEDD (for 1-mm/m^2 increase)	1.029	1.006	1.052	0.012	—	—	—	—
LVESD (for 1-mm/m^2 increase)	1.039	1.013	1.067	0.003	—	—	—	—
LVEDV (for 1-mL/m^2 increase)	1.019	1.010	1.029	<0.001	—	—	—	—
LVESV (for 1-mL/m^2 increase)	1.023	1.011	1.035	<0.001	—	—	—	—
LVEF (for 1-U increase)	0.960	0.924	0.988	0.039	0.939	0.895	0.986	0.012
Moderate to severe MR	2.582	1.051	6.345	0.039	—	—	—	—
RFP	2725	0.092	6.800	0.032	—	—	—	—
ACEIs	0.208	0.028	1.564	0.127	—	—	—	—
Antiarrhythmics	0.894	0.364	2.199	0.808	—	—	—	—
Beta blockers	0.380	0.148	0.973	0.044	0.082	0.021	0.323	0.000
Enrollment period (before 2000)	3.335	0.411	27.028	0.259	—	—	—	—

Outcome, n (%); incidence (events/ 100 patients/year)	Adult Population (n=880; 94.9%)	Pediatric Population (n=47; 5.1%)	*P* Value
Death or HTx	253 (25.8); 3.4	20 (42.5); 5.0	0.018
Death for refractory HF or HTx	63 (7); 0.8	10 (21); 2.5	<0.001
SD or MVA	126 (14); 1.7	10 (21); 2.5	<0.001
ICD implantation	155 (17.6); 2.3	10 (21); 2.5	0.556
Death from unknown cause	64 (7); 0.8	1 (2); 0.2	0.178

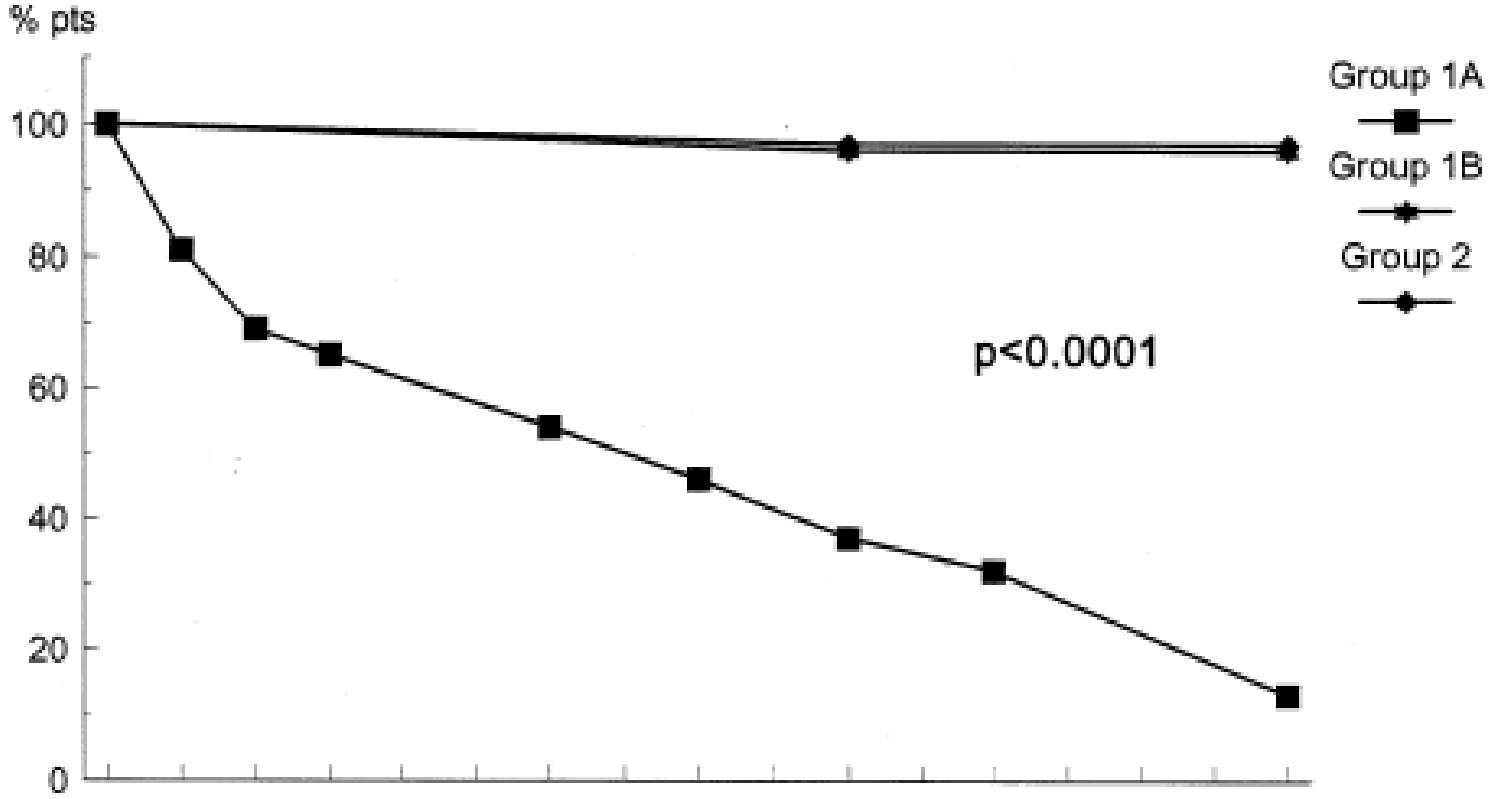
J Am Heart Assoc. 2016;5:e003450

Persistence of Restrictive Left Ventricular Filling Pattern in Dilated Cardiomyopathy: An Ominous Prognostic Sign

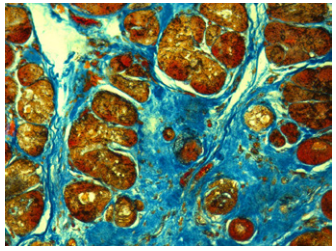
JACC

(J Am Coll Cardiol 1997;29:604–12)

BRUNO PINAMONTI, MD, MASSIMO ZECCHIN, MD, ANDREA DI LENARDA, MD,
DARIO GREGORI, MA, PHD, GIANFRANCO SINAGRA, MD, FULVIO CAMERINI, MD

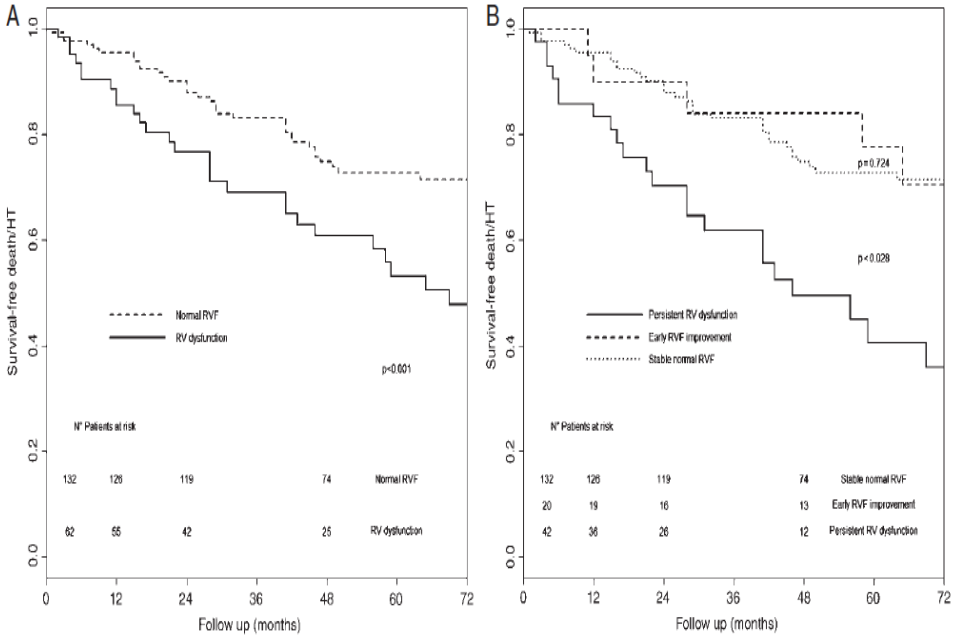


time	12 m	24 m	36 m	48 m
Gr 1a (n)	29	29	24	20
Gr 1b (n)	55	55	42	42
Gr 2 (n)	19	15	9	3



Early right ventricular response to cardiac resynchronization therapy: impact on clinical outcomes

Davide Stolfo*, Elisabetta Tonet, Marco Merlo, Giulia Barbati, Marta Gigli, Bruno Pinamonti, Federica Ramani, Massimo Zecchin, and Gianfranco Sinagra



194 pts. Sixty-two (32%) presented an impaired RVF before the procedure. 32% showed prompt normalization of RVF following CRT. This occurred in parallel with a large improvement in PAP, MR, E/E' ratio, and diastolic function. Pre-implantation independent predictors of early RVF normalization were LBBB (P = 0.034) and higher sSBP (P = 0.026). Improvement in RVF was independently associated with a better long-term prognosis at multivariable analysis [hazard ratio 0.124; 95% confidence interval 0.016–0.966, P = 0.04).

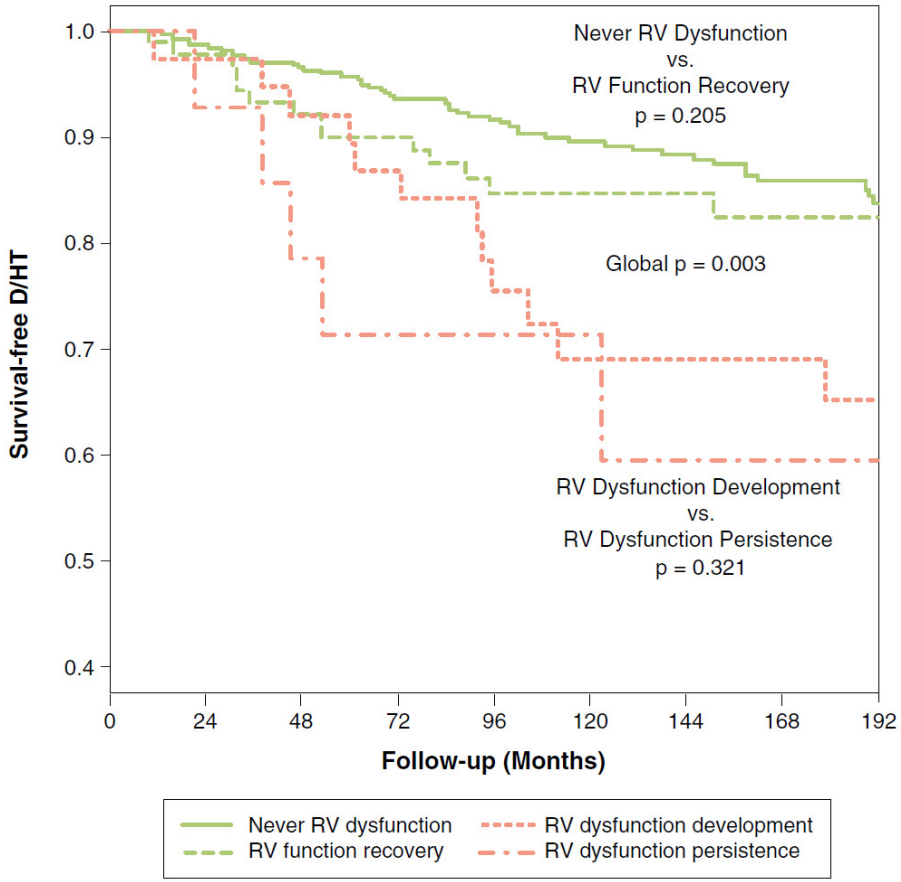
European Journal of Heart Failure (2016) **18**, 205–213

The Prognostic Impact of the Evolution of RV Function in Idiopathic DCM

Marco Merlo, MD,[a] Marco Gobbo, MD,[a] Davide Stolfo, MD,[a] Pasquale Losurdo, MD,[a] Federica Ramani, PhD,[a] Giulia Barbati, PhD,[a,b] Alberto Pivetta, MD,[a] Andrea Di Lenarda, MD,[b] Marco Anzini, MD,[a] Marta Gigli, MD,[a] Bruno Pinamonti, MD,[a] Gianfranco Sinagra, MD[a]

JACC Cardiovasc Imaging. 2016 Sep;9(9):1034-42

FIGURE 4 Kaplan-Meier Survival Curves: Long-Term Prognostic Role of RV Dysfunction Revaluation



JACC Cardiovascular Imaging

The American Journal of Cardiology

Early Improvement of Functional Mitral Regurgitation in Patients With Idiopathic Dilated Cardiomyopathy

Davide Stolfo, MD[a,*], Marco Merlo, MD[a], Bruno Pinamonti, MD[a], Stefano Poli, MD[a], Marta Gigli, MD[a], Giulia Barbati, PhD[a,b], Enrico Fabris, MD[a], Andrea Di Lenarda, MD[b], and Gianfranco Sinagra, MD, FESC[a]

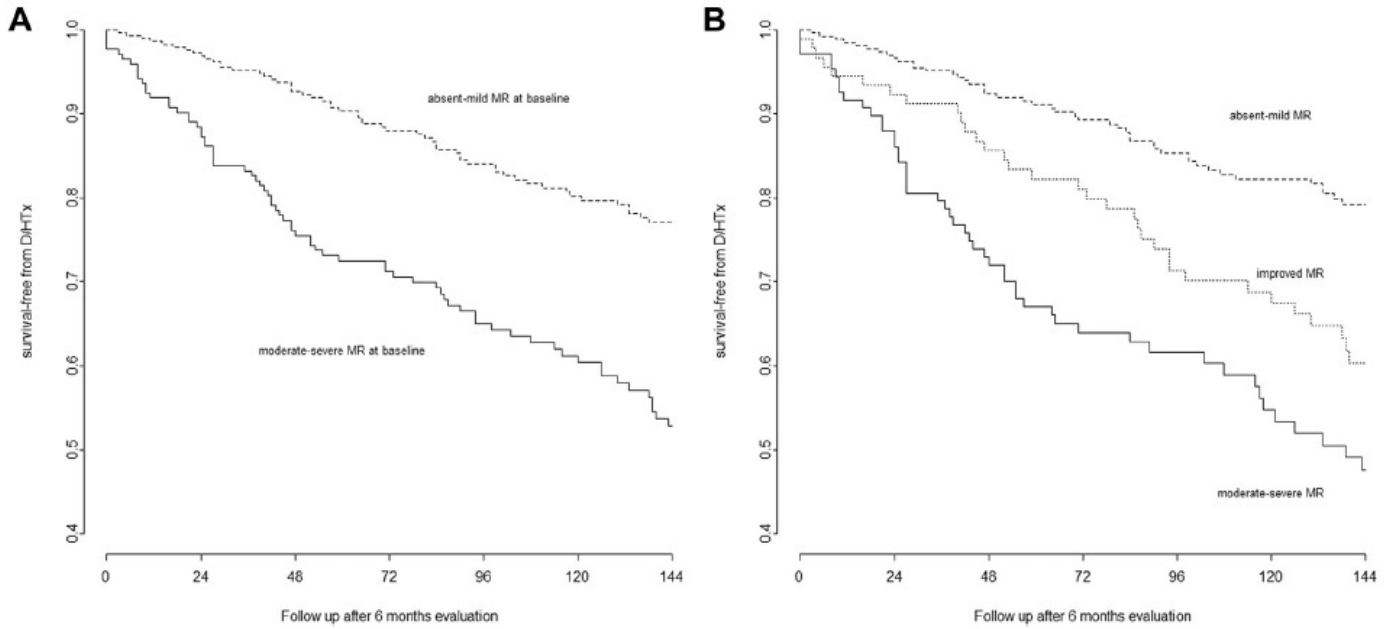


Figure 3. Kaplan-Meier curves—*(panel A)* survival free from death/heart transplantation in patients with IDC according to FMR degree at baseline; *(panel B)* survival free from death/heart transplantation in patients with IDC according to evolution of FMR. Abbreviations: D/heart transplantation = death/heart transplantation.

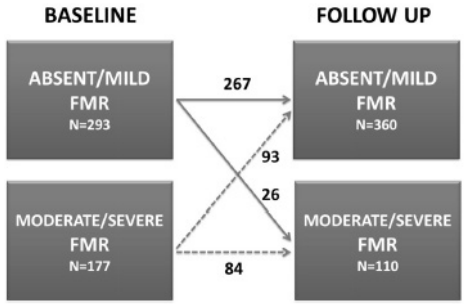


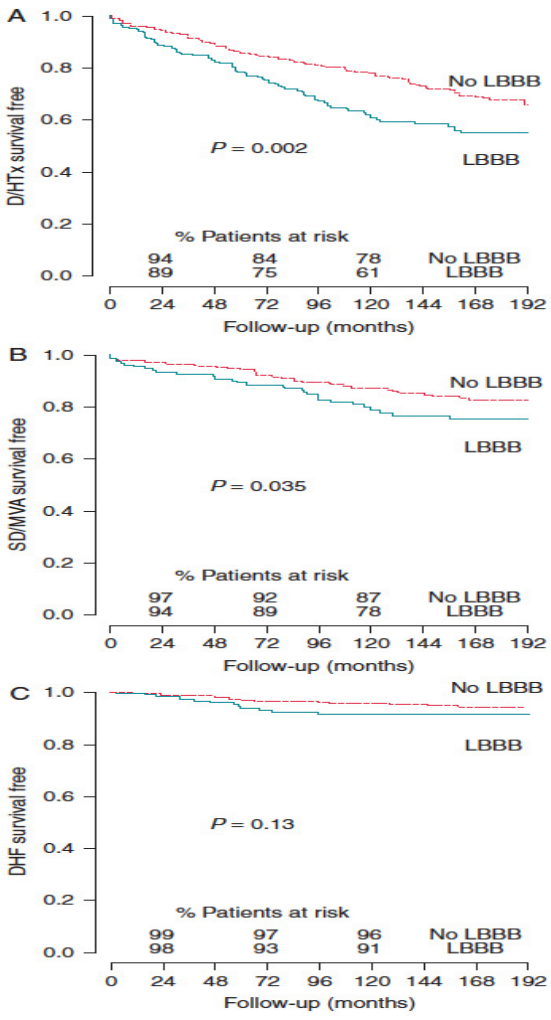
Figure 1. Evolution of FMR from baseline evaluation to 6 months follow-up—at baseline, 293 patients presented absent-mild FMR versus 177 patients with moderate-severe FMR. At 6 months evaluation, 93 patients (53% of patients with moderate-severe FMR at enrollment) improved the severity of FMR (downgrading from moderate-severe to absent-mild); 267 maintained absent-mild FMR and 110 presented moderate-severe FMR.

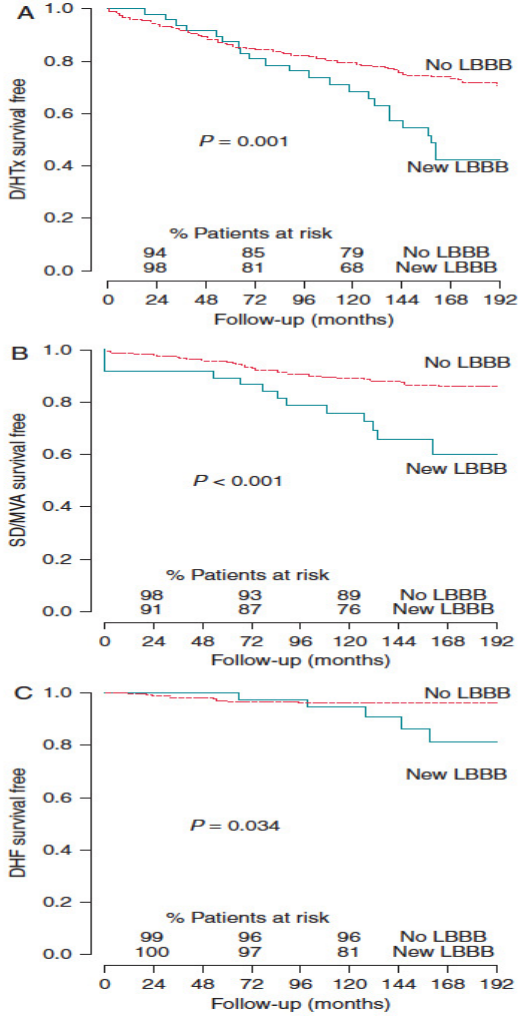
Am J Cardiol. 2015 Apr 15;115(8):1137-43

New-onset left bundle branch block independently predicts long-term mortality in patients with idiopathic dilated cardiomyopathy: data from the Trieste Heart Muscle Disease Registry

Europace (2014) **16**, 1450–1459

EUROPEAN SOCIETY OF CARDIOLOGY®



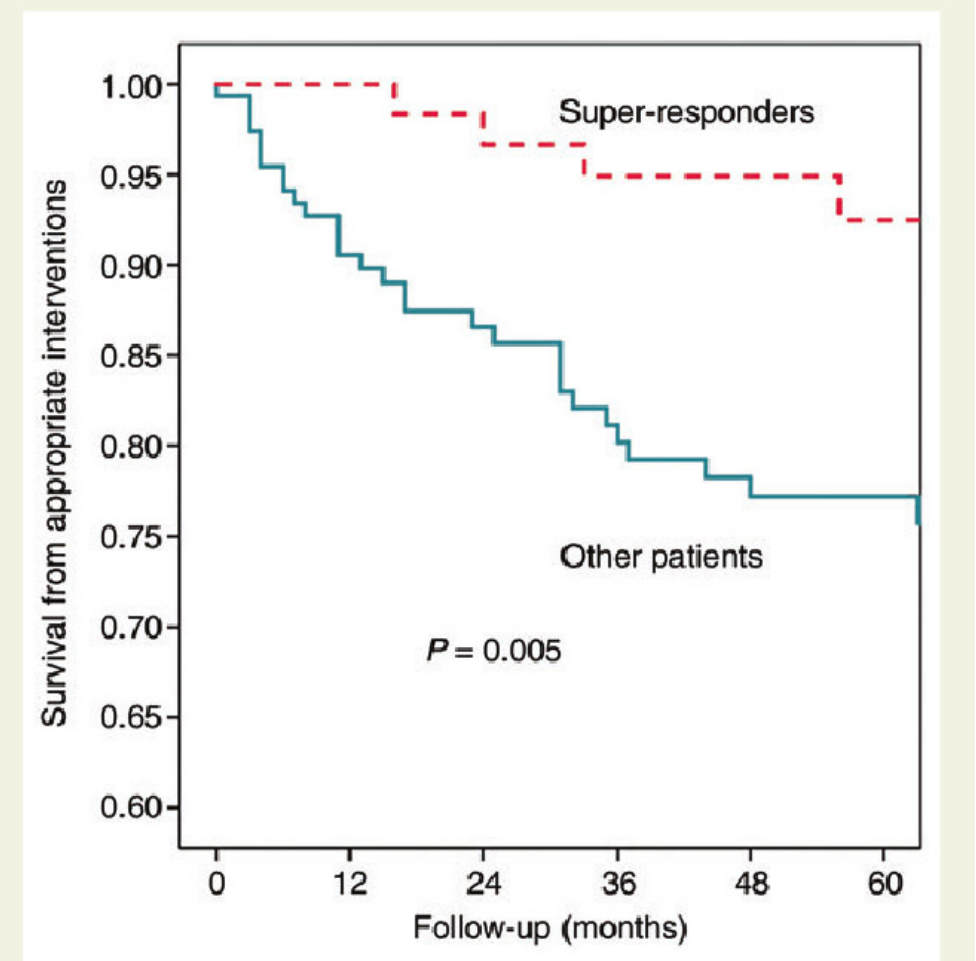


OSPEDALI RIUNITI DI TRIESTE

Europace (2014) **16**, 363–371
doi:10.1093/europace/eut339

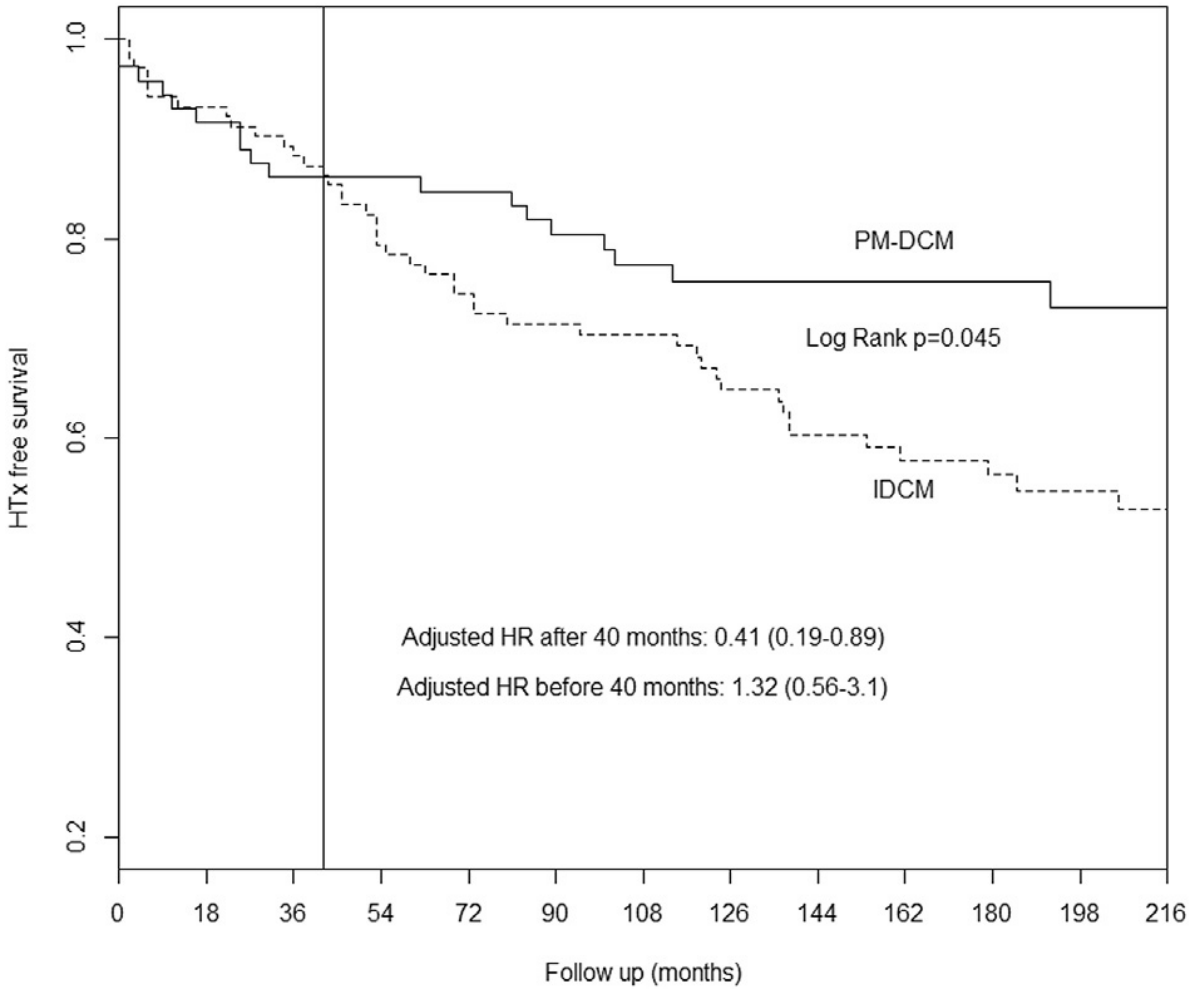
Long-term outcome of 'super-responder' patients to cardiac resynchronization therapy

Massimo Zecchin[1]*, Alberto Proclemer[1], Silvia Magnani[1], Laura Vitali-Serdoz[1], Domenico Facchin[2], Daniele Muser[2], Andrea Nordio[1], Giulia Barbati[1], Ilaria Puggia[1], Gianfranco Sinagra[1], and Alessandro Proclemer[2]



Characterization and Long-Term Prognosis of Postmyocarditic Dilated Cardiomyopathy Compared With Idiopathic Dilated Cardiomyopathy

The American Journal of Cardiology

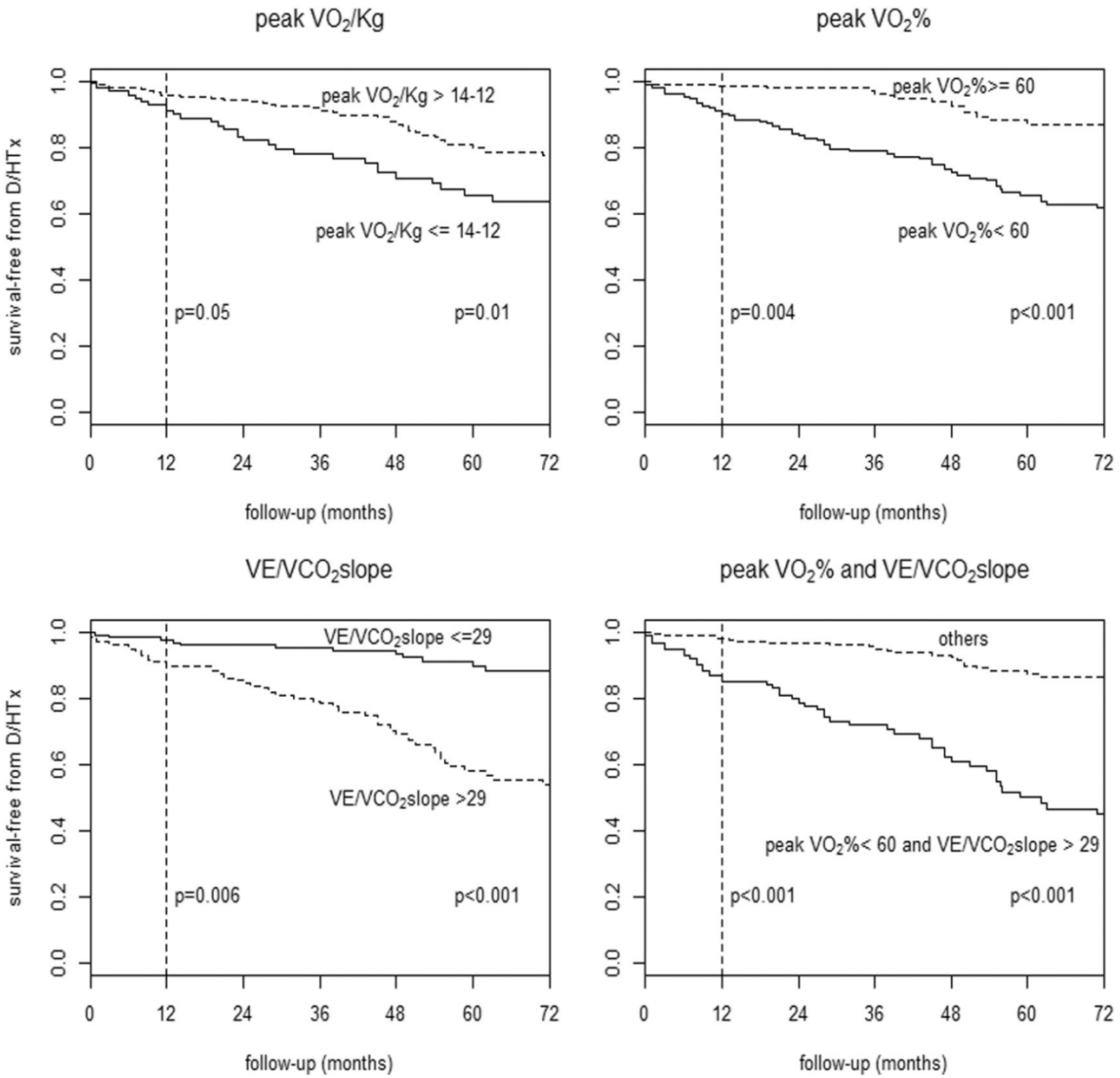


HT-free survival in patients with PM-DC versus IDC

Anzini, Merlo, Sinagra et al. Am J Cardiol. 2016 Sep 15;118(6):895-900.

Prognostic value of cardiopulmonary exercise testing in Idiopathic Dilated Cardiomyopathy

Gianfranco Sinagra [a,*,1], Annamaria Iorio [a,1], Marco Merlo [a], Antonio Cannatà [a], Davide Stolfo [a], Elena Zambon [a], Concetta Di Nora [a], Stefania Paolillo [b], Giulia Barbati [a], Emanuela Berton [c], Cosimo Carriere [a], Damiano Magrì [d], Gaia Cattadori [e], Marco Confalonieri [f], Andrea Di Lenarda [g], Piergiuseppe Agostoni [h,i,2]



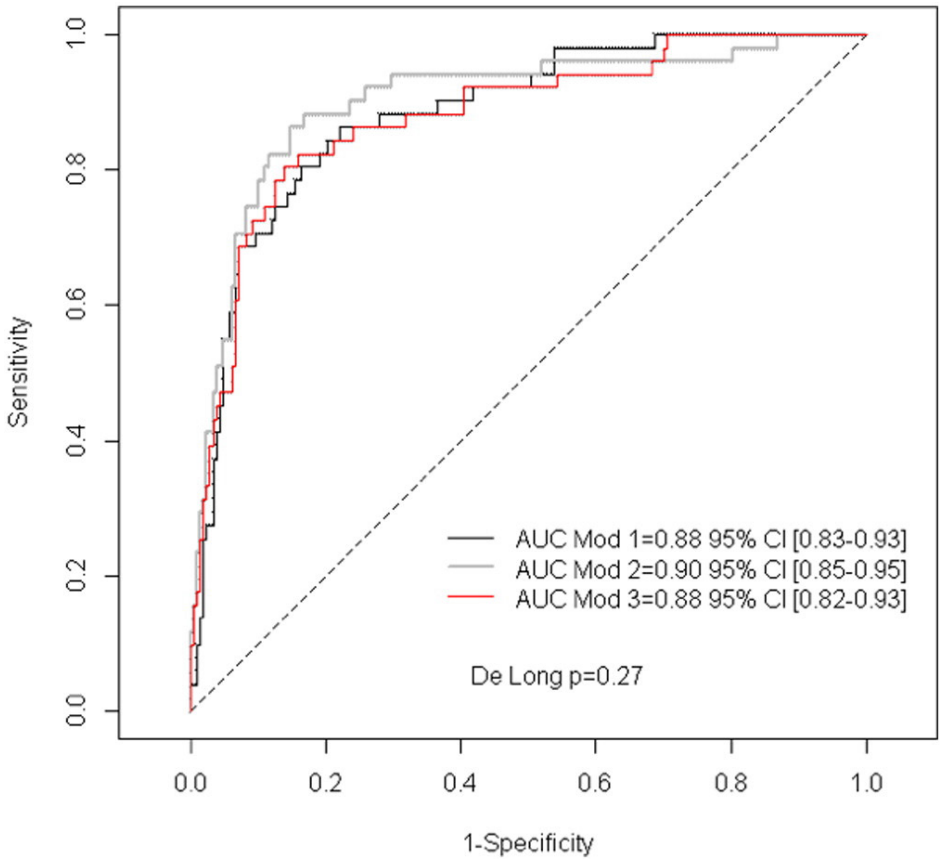
VE/VCO2 slope > 29 and **peak VO2% < 60%** emerged as the most accurate cut-offs and as independent predictors of outcome even at early timepoint (1 year)

Int J Cardiol (2016)

Multivariable Analysis

Multivariate analysis: models for cardiovascular death and heart transplantations. Model 1: predictive effect of peak VO2% and VE/VCO2 slope expressed as continuous variables. Model 2: predictive effect of peak VO2% and VE/VCO2 slope expressed as categorical variables. Model 3: predictive effect of the combination of peak VO2% and VE/VCO2 slope expressed as categorical variables.

Variables	p value	OR	Lower	Upper
Model 1				
Age (years)	.000	.931	.897	.967
LVESV (ml)	.000	1.011	1.005	1.017
Peak SBP (mm Hg)	.046	1.017	1.000	1.034
Peak VO_2% (% pred)	.004	.950	.917	.984
VE/VCO_2 slope	.001	1.159	1.064	1.262
ICD	.045	.391	.156	.981
Model 2				
Age (years)	.000	.932	.897	.968
LVESV (ml)	.000	1.012	1.005	1.019
Peak SBP (mm Hg)	.060	1.017	.999	1.034
Peak VO_2% <60%	.001	5.192	2.012	13.339
VE/VCO_2 slope >29	.000	18.229	6.042	54.995
ICD	.087	.447	.177	1.125
Model 3				
Age (years)	.001	.939	.907	.973
LVESV (ml)	.000	1.012	1.005	1.018
ICD	.043	.381	.152	.955
Peak VO_2% <60 & VE/VCO_2 slope >29	.000	20.04	8.172	49.164



The combination of peak VO2% and VE/VCO2 slope, considered as continuous or dichotomic variables (cut-offs 60% and 29 respectively) exerted a powerful and independent long-term prognostic role in our large DCM population.

G. Sinagra, et al., Int J Cardiol (2016)

Factors potentially predicting sudden death in idiopathic dilated cardiomyopathy

Funzione ventricolare

- Left ventricular ejection fraction
- NYHA functional class
- Left ventricular diameter
- Right ventricular function

Aritmie

- Spontaneous ventricular arrhythmias
- Induced ventricular arrhythmias
- Atrial fibrillation
- QRS duration
- Late potentials
- Fragmented QRS

Altri marker di instabilità elettrica/attivazione neurovegetativa

- T-wave alternans
- Heart rate variability
- Heart rate turbulence
- Heart rate recovery and recovery ventricular ectopy
- Baroreflex sensitivity
- QT variability
- QT dinamicity

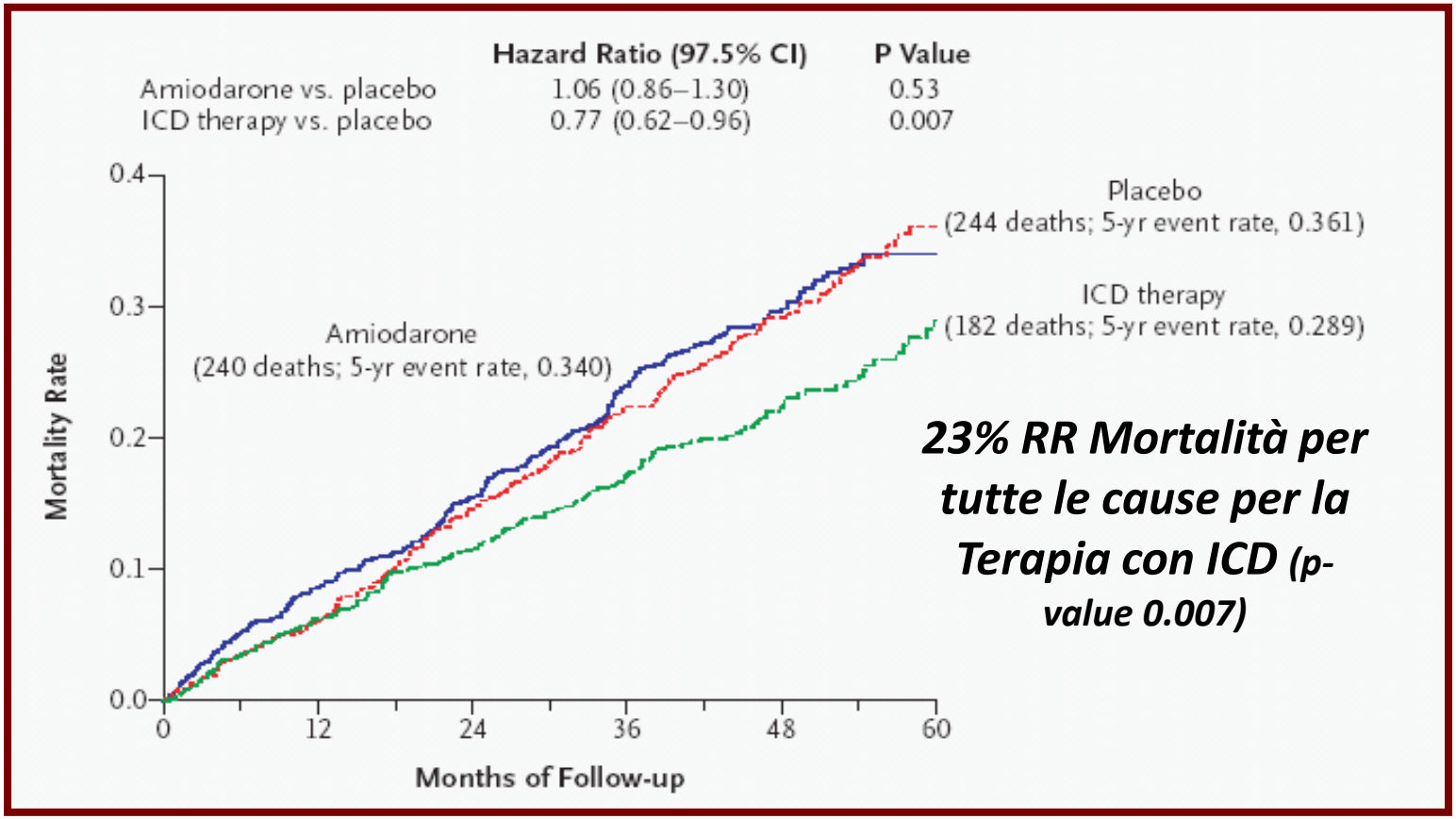
Imaging

- Heart/Mediastinum (H/M) ratio of meta-iodobenzylguanidine uptake

PREVENZIONE PRIMARIA

I TRIALS : SCDHEFT

Mortality by Intention-to-treat



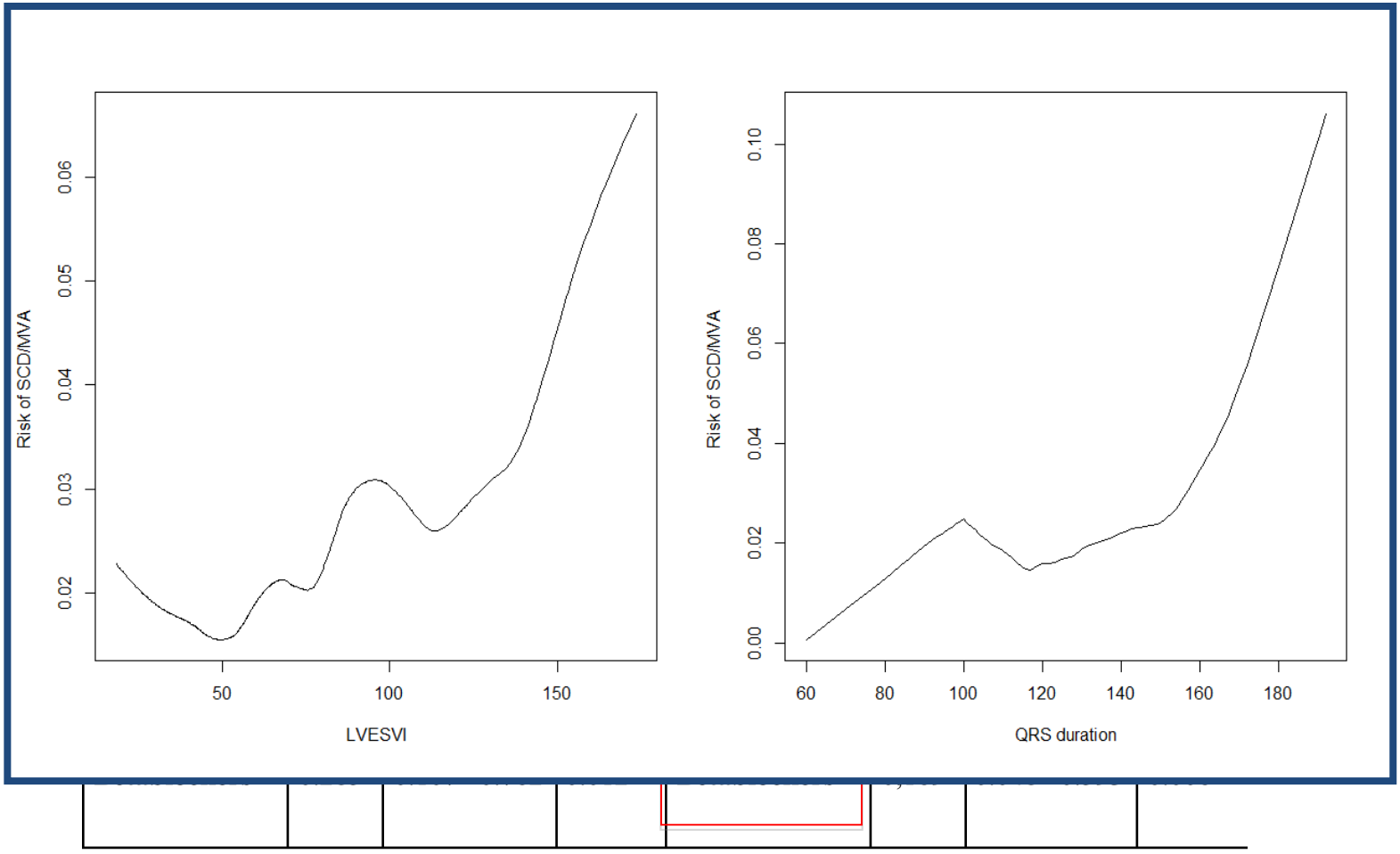
Bardy GH, Lee KL, Mark DB, et al. Amiodarone or an implantable cardioverter-defibrillator for congestive heart failure. *N Engl. J Med.* 2005; 352:225-237.

Recommendations for the use of implanted cardioverter defibrillators in patients with heart failure

Recommendations	Class[a]	Level[b]	Ref[c]
Secondary prevention An ICD is recommended in a patient with a ventricular arrhythmia causing haemodynamic instability, who is expected to survive for >1 year with good functional status, to reduce the risk of sudden death.	I	A	144–147
Primary prevention An ICD is recommended in a patient with symptomatic HF (NYHA class II–III) and an EF ≤35% despite ≥3 months of treatment with optimal pharmacological therapy, who is expected to survive for >1 year with good functional status, to reduce the risk of sudden death			
(i) Ischaemic aetiology and >40 days after acute myocardial infarction	I	A	148, 149
(ii) Non-ischaemic aetiology	I	B	149

European Heart Journal (2012) **33**, 1787–1847

Early SCD/MVAs in DCM

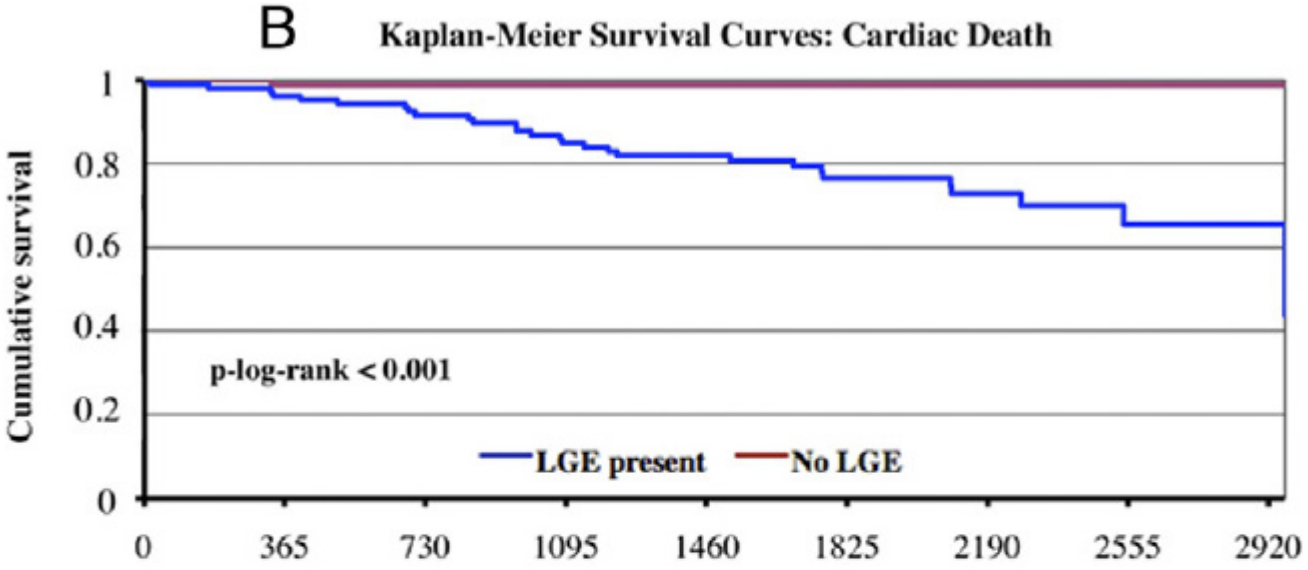


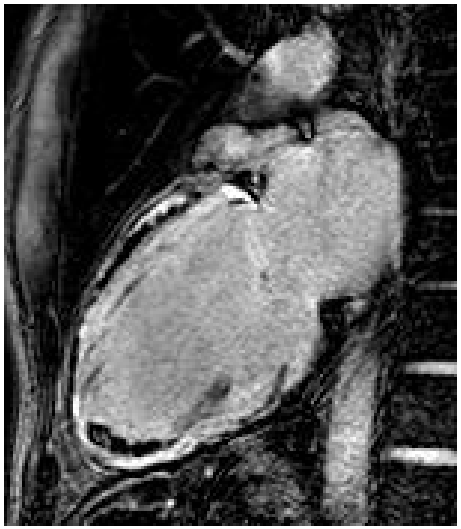
Losurdo P, Sinagra G et al. Under review

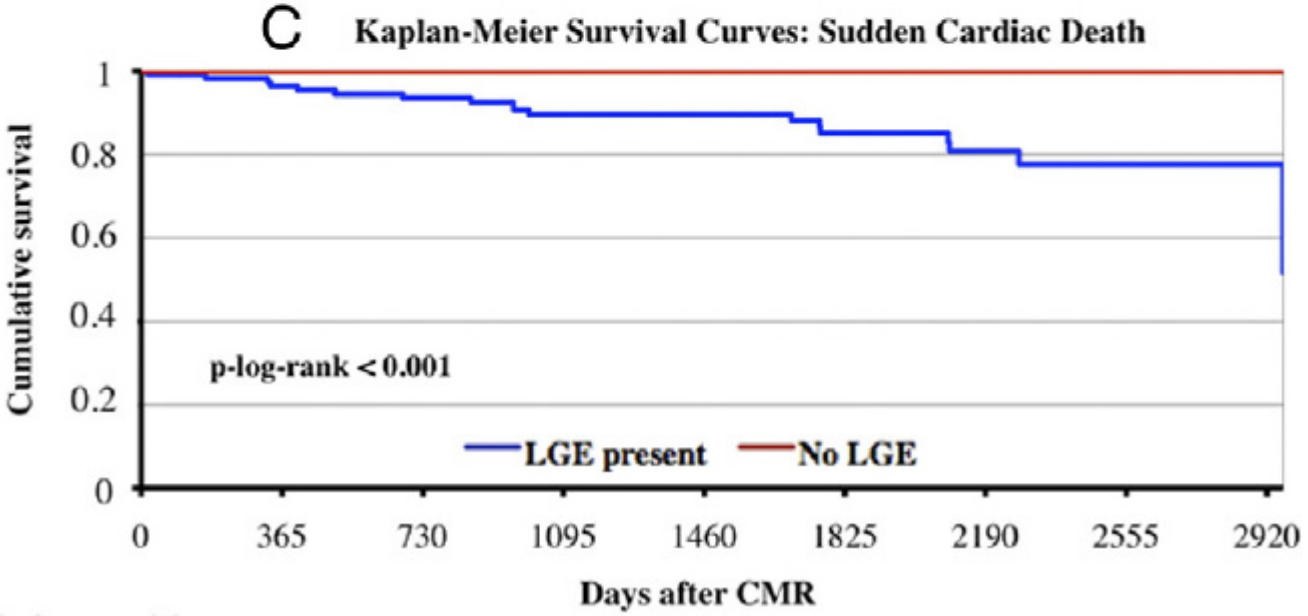
Long-Term Follow-Up of Biopsy-Proven Viral Myocarditis

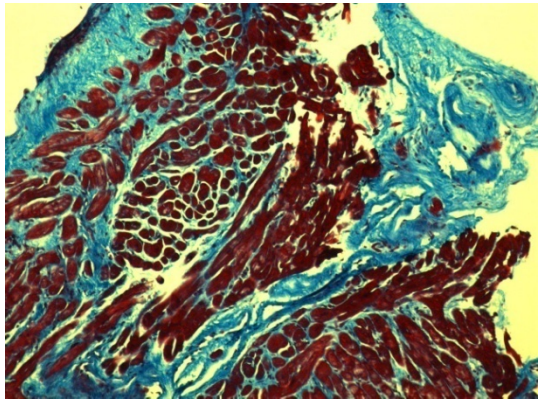
Predictors of Mortality and Incomplete Recovery

JACC Vol. 59, No. 18, 2012
May 1, 2012:1604–15









Myocardial Fibrosis Assessment by LGE Is a Powerful Predictor of Ventricular Tachyarrhythmias in Ischemic and Nonischemic LV Dysfunction

A Meta-Analysis

JACC
Journal of the American College of Cardiology

TABLE 3 Tachyarrhythmic Event Rate and Odds Ratio in the Different Subgroups of Studies

Subgroups	Studies	Patients	% AER	LGE-CMR		OR (95% CI)	p Value
				% of LGE+ AER*	% LGE− AER*		
Total	19	2,850	5.3	8.6	1.7	5.62 (4.20–7.51)	<0.00001
ICM	5	358	8.9	13.2	3.3	5.05 (2.73–9.36)	<0.00001
NICM	8	1,443	3.7	7.6	1.3	6.27 (4.15–9.47)	<0.00001
Mixed population	6	1,049	6.8	8.8	1.8	4.92 (2.70–8.98)	<0.00001
Mean EF ≤30%	11	1,178	6.6	10.3	1.2	9.56 (5.63–16.23)	<0.00001
Mean EF >30%	8	1,672	4.6	7.4	2.0	4.48 (3.17–6.33)	<0.00001

Disertori et al. JACC Imaging 2016 In press

Myocardial Fibrosis Assessment by LGE Is a Powerful Predictor of Ventricular Tachyarrhythmias in Ischemic and Nonischemic LV Dysfunction

A Meta-Analysis

JACC
Journal of the American College of Cardiology

TABLE 5 Association Between the Risk of Ventricular Arrhythmias and the Extent of the Total/Heterogeneous Scar, Assessed by LGE-CMR

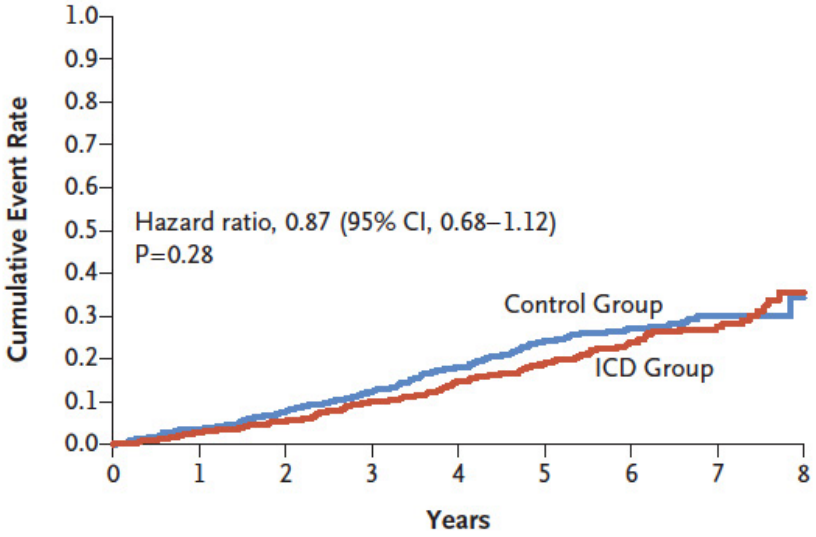
First Author (Ref. #)	Scar Patterns From LGE-CMR Image Analysis	HR (95% CI)	p Value
Studies including ischemic cardiomyopathy patients			
Roes et al. (8)	Total scar mass (g), HR per 10 g increase	1.15 (0.99–1.33)*	0.06
	Gray zone mass (g), HR per 10 g increase	1.49 (1.01–2.20)†	0.04
Alexandre et al. (15)	Total scar mass (g)	3.15 (1.35–7.33)†	<0.001
Demirel et al. (16)	Total scar mass (g)	1.01 (0.99–1.03)*	0.18
	Peri to core-infarct mass ratio	2.01 (1.17–3.44)†	0.01
Studies including nonischemic cardiomyopathy patients			
Assomull et al. (17)	Total scar extent (% of LV mass)	1.12 (1.03–1.24)†‡	0.02
Gulati et al. (11)	Total scar extent (% of LV mass), HR per 1% increase	1.10 (1.05–1.16)†	<0.001
Neilan et al. (20)	Total scar extent (% of LV mass), HR per 1% increase	1.17 (1.12–1.22)†	<0.0001
Perazzolo Marra et al. (22)	Total scar extent (% of LV mass)	1.04 (0.98–1.09)*	0.18
Masci et al. (23)	Total scar extent (number of segments)	1.24 (1.11–1.38) †§	<0.001
Studies including a mixed population of ischemic and nonischemic cardiomyopathy patients			
Fernandez-Armenta et al. (24)	Total scar extent (% of LV volume), HR per 1% increase	1.10 (1.06–1.15)†	<0.01
	Border zone mass (g), HR per 1 g increase	1.06 (1.04–1.09)†	< 0.01
Gao et al. (9)	Total scar mass (g), HR per 10 g increase	1.38 (1.18–1.62)†	<0.001
	Gray-zone mass (g), HR per 10 g increase‖	1.47 (0.96–2.26)*	0.074
Klem et al. (10)	Total scar extent (% of LV mass)	1.04 (1.00–1.07)*	0.03
Wu et al. (25)	Total scar mass (g, tertiles), HR 3rd tertile versus reference	3.4 (1.6–7.0)*§	0.001
	Gray-zone mass (g, tertiles), HR 3rd tertile versus reference	4.6 (1.4–15.4)†§	0.01
Mordi et al. (26)	Total scar extent (% of LV mass), HR per 1% increase	1.04 (1.01–1.07)†	0.004
Almehmadi et al. (27)	Total scar extent (% of LV mass), HR per 1% increase	1.0 (0.9–1.0)†	0.22

Disertori et al. JACC Imaging 2016 In press

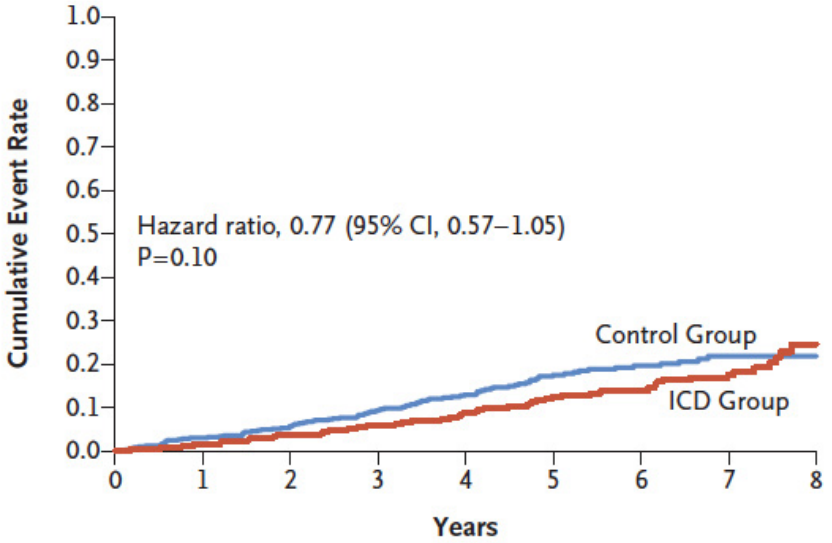
Defibrillator Implantation in Patients with Nonischemic Systolic Heart Failure

The NEW ENGLAND JOURNAL of MEDICINE
DOI: 10.1056/NEJMoa1608029

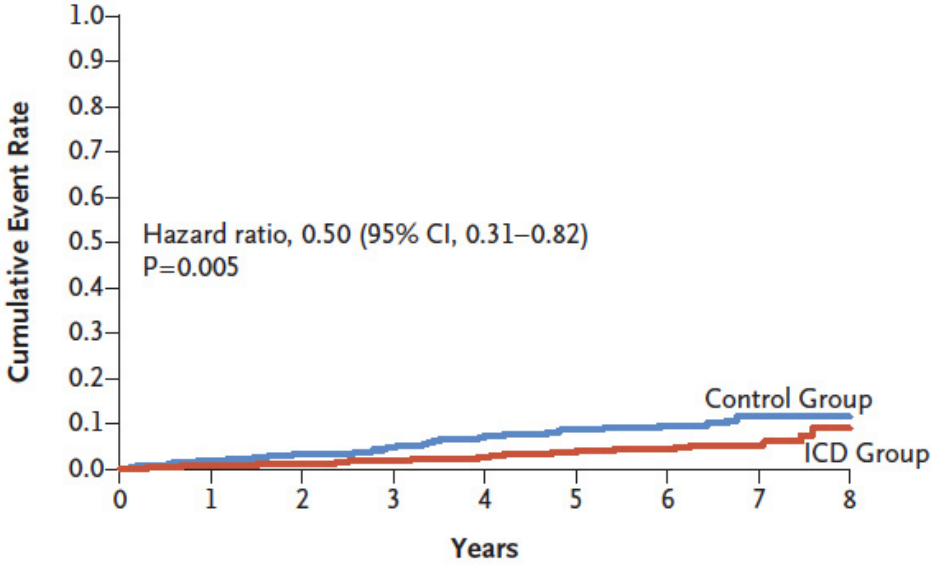
Death from Any Cause

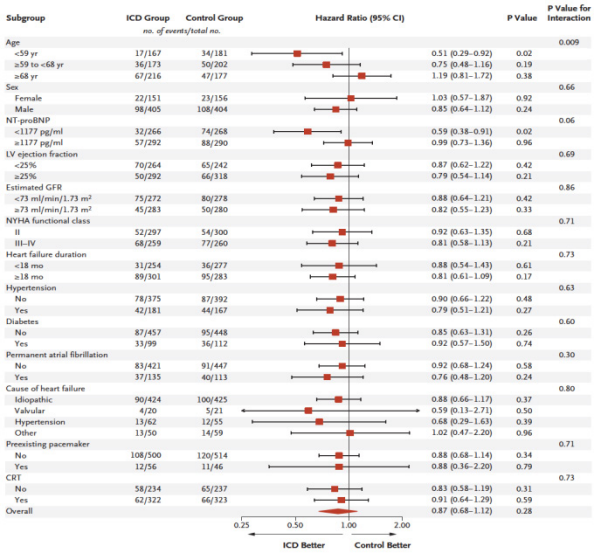


Cardiovascular Death



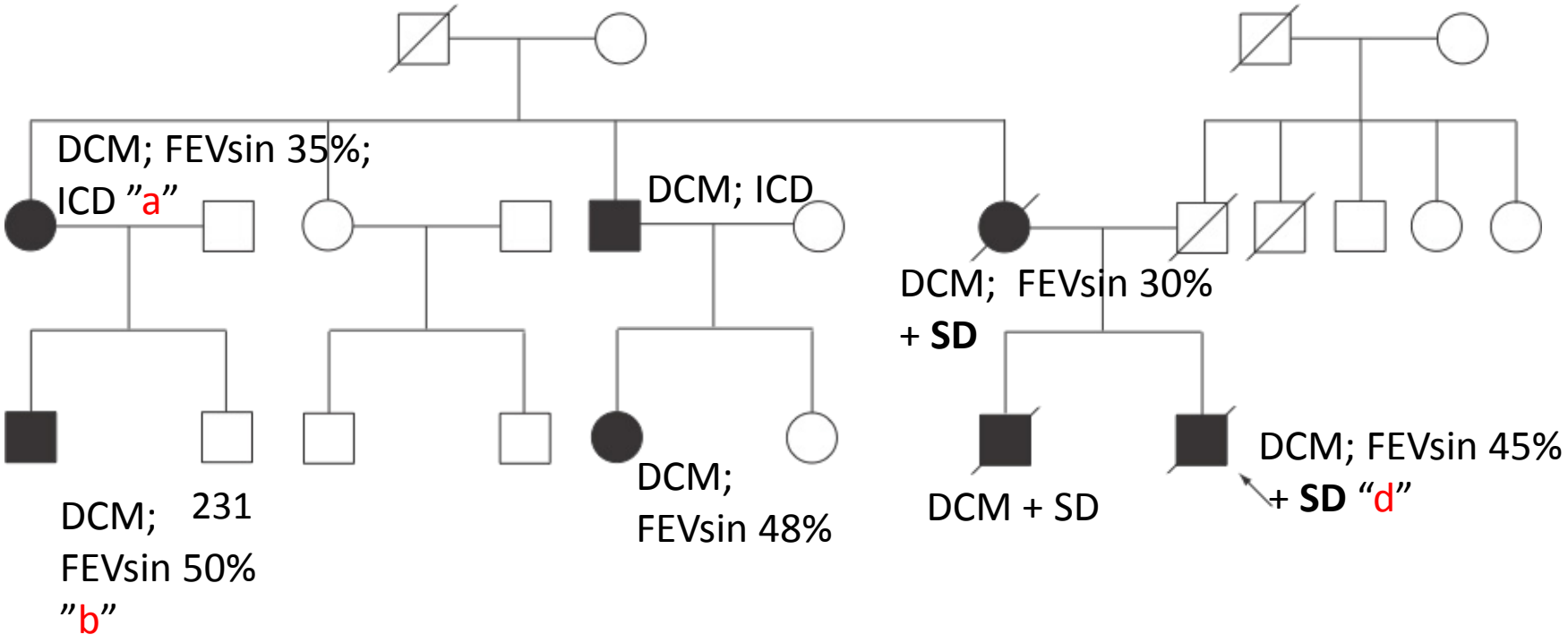
Sudden Cardiac Death





Subgroup	ICD Group	Control Group	Hazard Ratio (95% CI)	P Value	P Value for Interaction
	no. of events/total no.				
Age					0.009
<59 yr	17/167	34/181	0.51 (0.29–0.92)	0.02	
≥59 to <68 yr	36/173	50/202	0.75 (0.48–1.16)	0.19	
≥68 yr	67/216	47/177	1.19 (0.81–1.72)	0.38	
Sex					0.66
Female	22/151	23/156	1.03 (0.57–1.87)	0.92	
Male	98/405	108/404	0.85 (0.64–1.12)	0.24	
NT-proBNP					0.06
<1177 pg/ml	32/266	74/268	0.59 (0.38–0.91)	0.02	
≥1177 pg/ml	57/292	88/290	0.99 (0.73–1.36)	0.96	
LV ejection fraction					0.69
<25%	70/264	65/242	0.87 (0.62–1.22)	0.42	
≥25%	50/292	66/318	0.79 (0.54–1.14)	0.21	
Estimated GFR					0.86
<73 ml/min/1.73 m²	75/272	80/278	0.88 (0.64–1.21)	0.42	
≥73 ml/min/1.73 m²	45/283	50/280	0.82 (0.55–1.23)	0.33	
NYHA functional class					0.71
II	52/297	54/300	0.92 (0.63–1.35)	0.68	
III–IV	68/259	77/260	0.81 (0.58–1.13)	0.21	
Heart failure duration					0.73
<18 mo	31/254	36/277	0.88 (0.54–1.43)	0.61	
≥18 mo	89/301	95/283	0.81 (0.61–1.09)	0.17	
Hypertension					0.63
No	78/375	87/392	0.90 (0.66–1.22)	0.48	
Yes	42/181	44/167	0.79 (0.51–1.21)	0.27	
Diabetes					0.60
No	87/457	95/448	0.85 (0.63–1.31)	0.26	
Yes	33/99	36/112	0.92 (0.57–1.50)	0.74	
Permanent atrial fibrillation					0.30
No	83/421	91/447	0.92 (0.68–1.24)	0.58	
Yes	37/135	40/113	0.76 (0.48–1.20)	0.24	
Cause of heart failure					0.80
Idiopathic	90/424	100/425	0.88 (0.66–1.17)	0.37	
Valvular	4/20	5/21	0.59 (0.13–2.71)	0.50	
Hypertension	13/62	12/55	0.68 (0.29–1.63)	0.39	
Other	13/50	14/59	1.02 (0.47–2.20)	0.96	
Preexisting pacemaker					0.71
No	108/500	120/514	0.88 (0.68–1.14)	0.34	
Yes	12/56	11/46	0.88 (0.36–2.20)	0.79	
CRT					0.73
No	58/234	65/237	0.83 (0.58–1.19)	0.31	
Yes	62/322	66/323	0.91 (0.64–1.29)	0.59	
Overall			0.87 (0.68–1.12)	0.28	

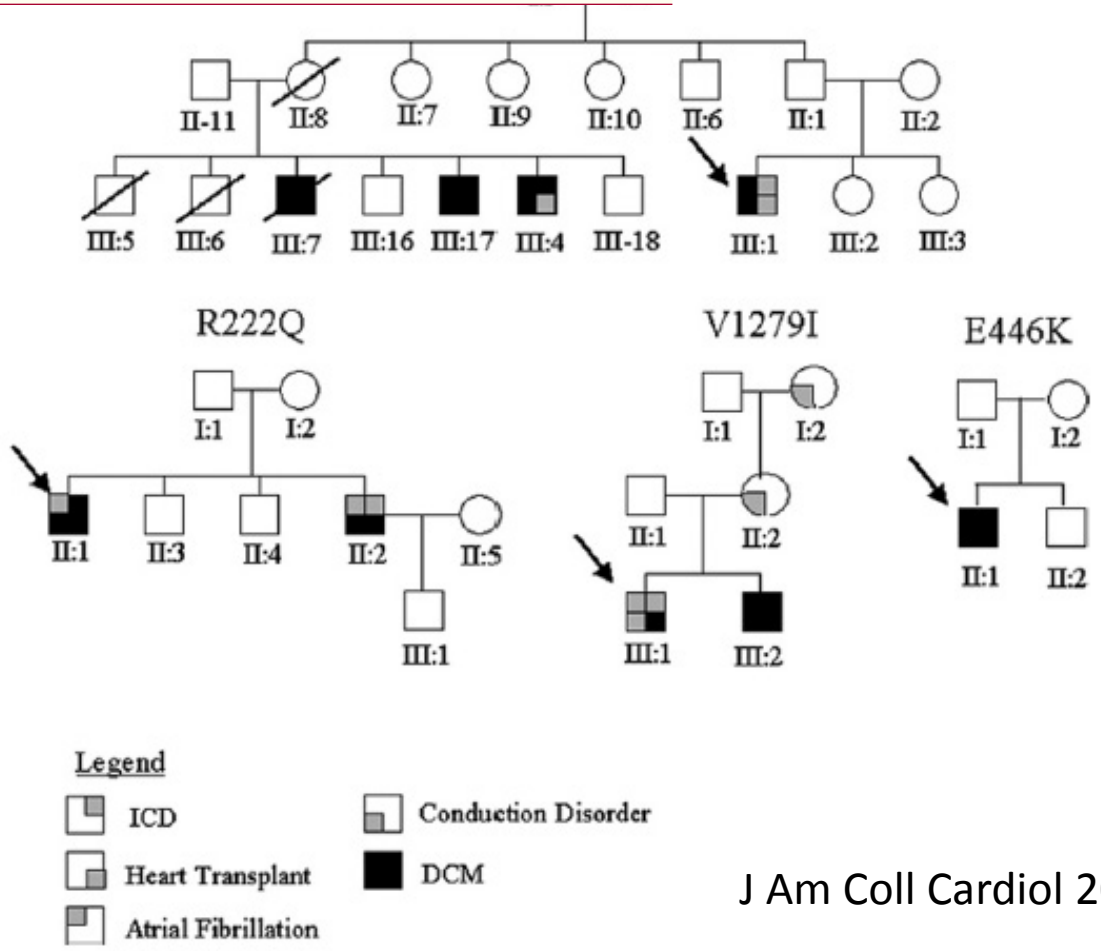
FAM#225:
DCM – Sudden death



SCN5A Mutations Associate With Arrhythmic Dilated Cardiomyopathy and Commonly Localize to the Voltage-Sensing Mechanism

William P. McNair, PHD,* Gianfranco Sinagra, MD,§ Matthew R. G. Taylor, MD, PHD,*†
Andrea Di Lenarda, MD,§ Debra A. Ferguson, MS, ANP,* Ernesto E. Salcedo, MD,*
Dobromir Slavov, PHD,* Xiao Zhu, BS,* John H. Caldwell, PHD,‡ Luisa Mestroni, MD,*†
and the Familial Cardiomyopathy Registry Research Group

Aurora, Colorado; and Trieste, Italy



J Am Coll Cardiol 2011;57:2160-8.

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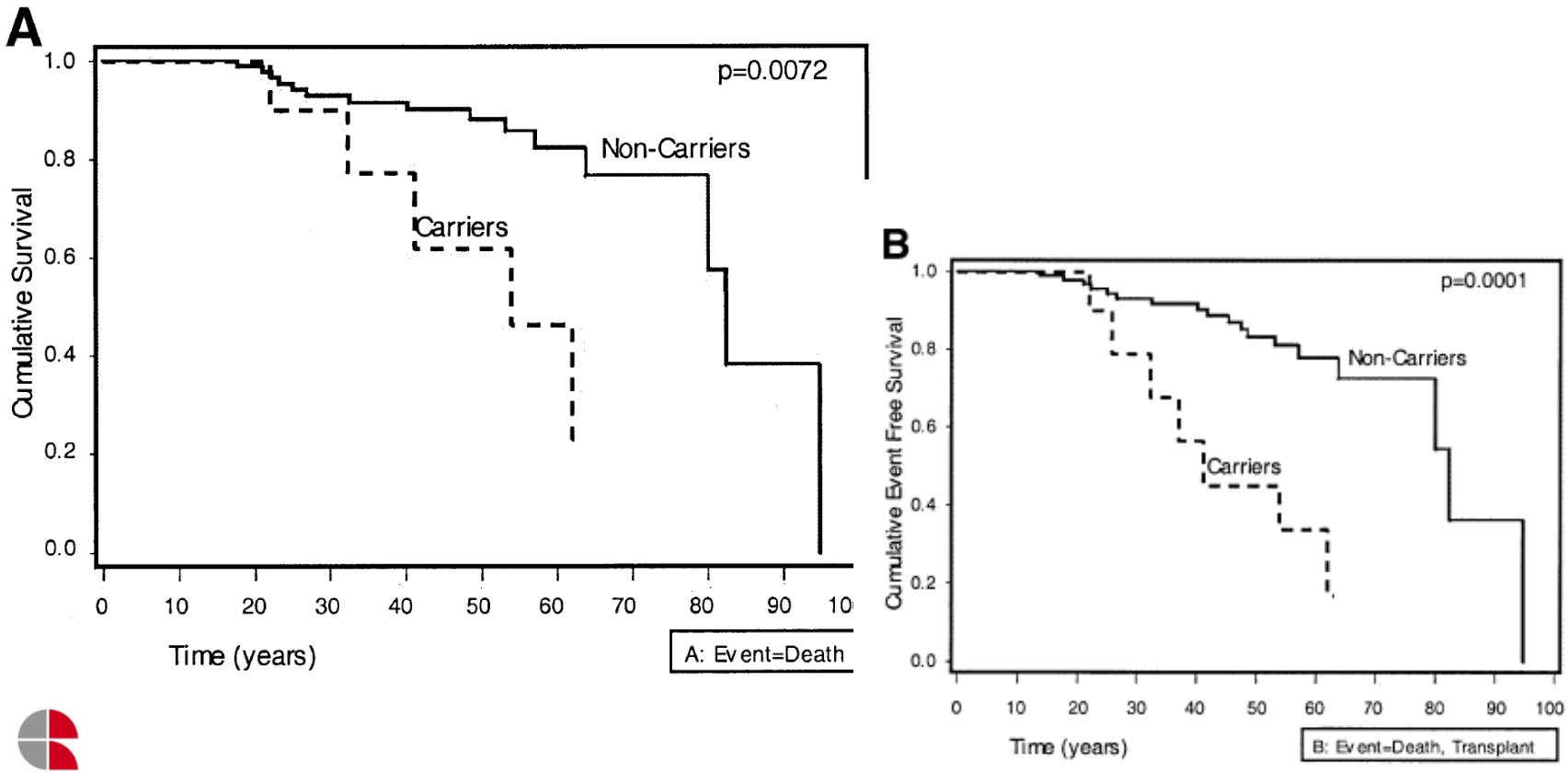
doi:10.1016/S0735-1097(02)02954-6

Cardiomyopathy

Natural History of Dilated Cardiomyopathy Due to Lamin A/C Gene Mutations

Matthew R. G. Taylor, MD,* Pamela R. Fain, PHD,*†‡ Gianfranco Sinagra, MD, FESC,§ Misi L. Robinson,‖ Alastair D. Robertson, PHD,* Elisa Carniel, MD,§ Andrea Di Lenarda, MD, FESC,§ Teresa J. Bohlmeyer, MD,* Debra A. Ferguson, MS,* Gary L. Brodsky, PHD,* Mark M. Boucek, MD,*¶ Jean Lascor, MS,¶ Andrew C. Moss, BA,* Wai-Lun P. Li, BS,*† Gary L. Stetler, PHD,† Francesco Muntoni, MD, FRCPCH,# Michael R. Bristow, MD, PHD, FACC,* Luisa Mestroni, MD, FACC, FESC,* Familial Dilated Cardiomyopathy Registry Research Group

Denver, Colorado; Trieste, Italy; Omaha, Nebraska; and London, United Kingdom



LMNA mutations in Dilated Cardiomyopathy

Study design:

- multicenter cohort of **269** *LMNA* mutation carriers

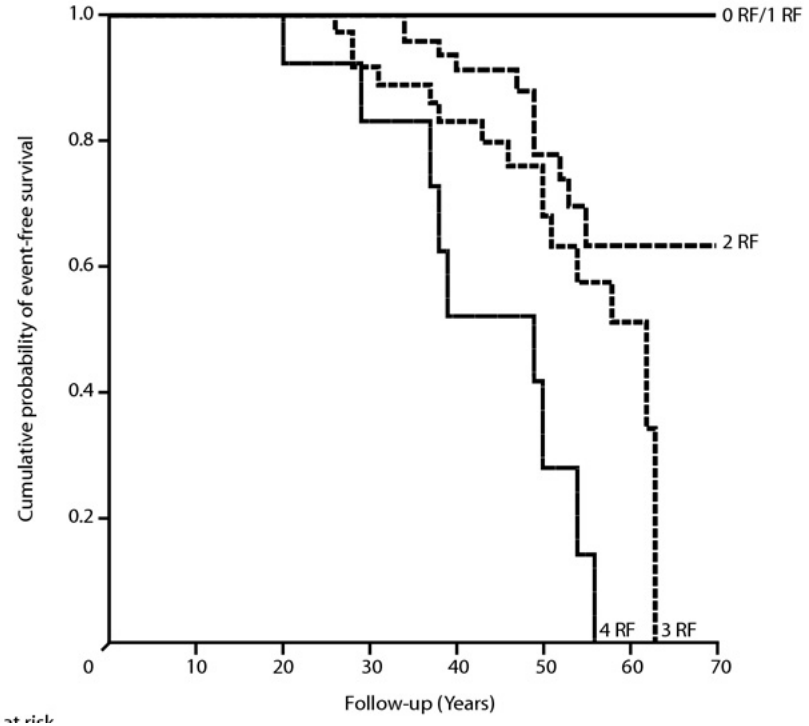
Results:

LMNA carriers with MVA: 18%

- 11 cardiopulmonary resuscitation
- 25 appropriate ICD treatment
- 12 SD

4 independent Risk Factors, cumulative risk:

- nonsustained ventricular tachycardia
- LVEF < 45%
- Male gender
- Truncating mutations



Rijsingen et al., J Am Coll Cardiol 2012;59:493–500

Genetics and genotype–phenotype correlations in Finnish patients with dilated cardiomyopathy

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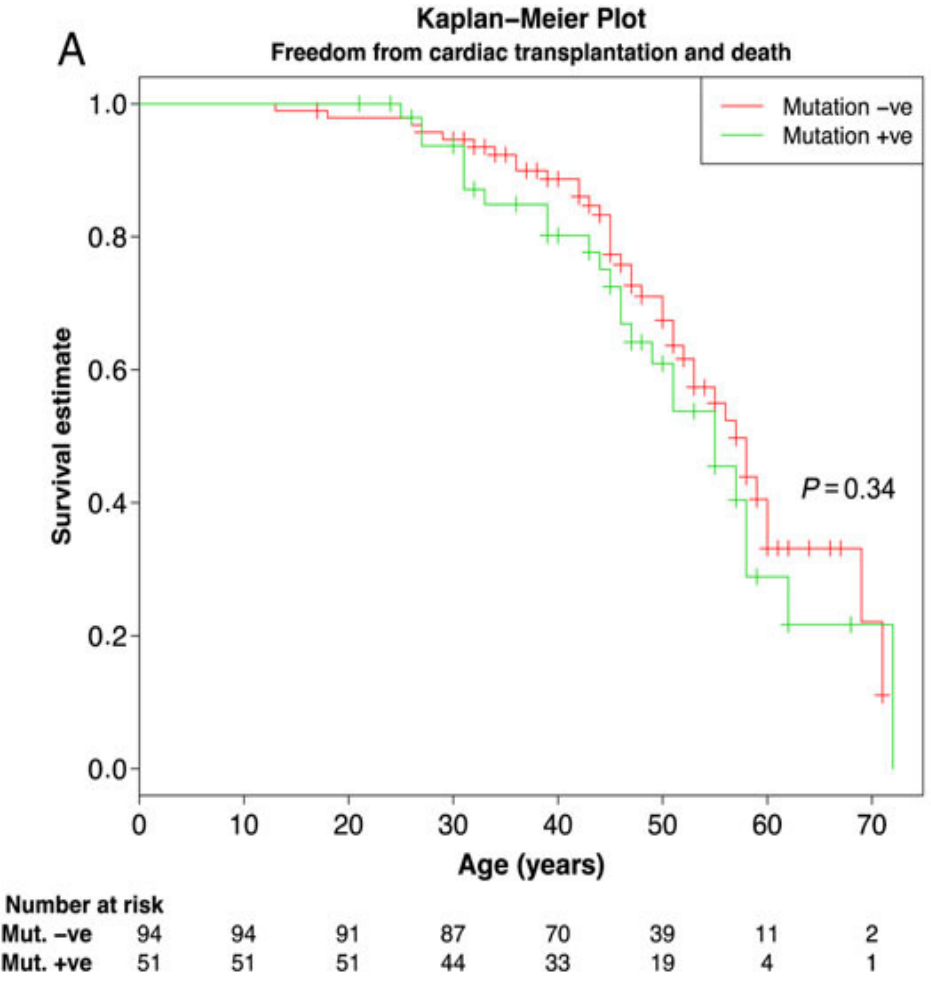
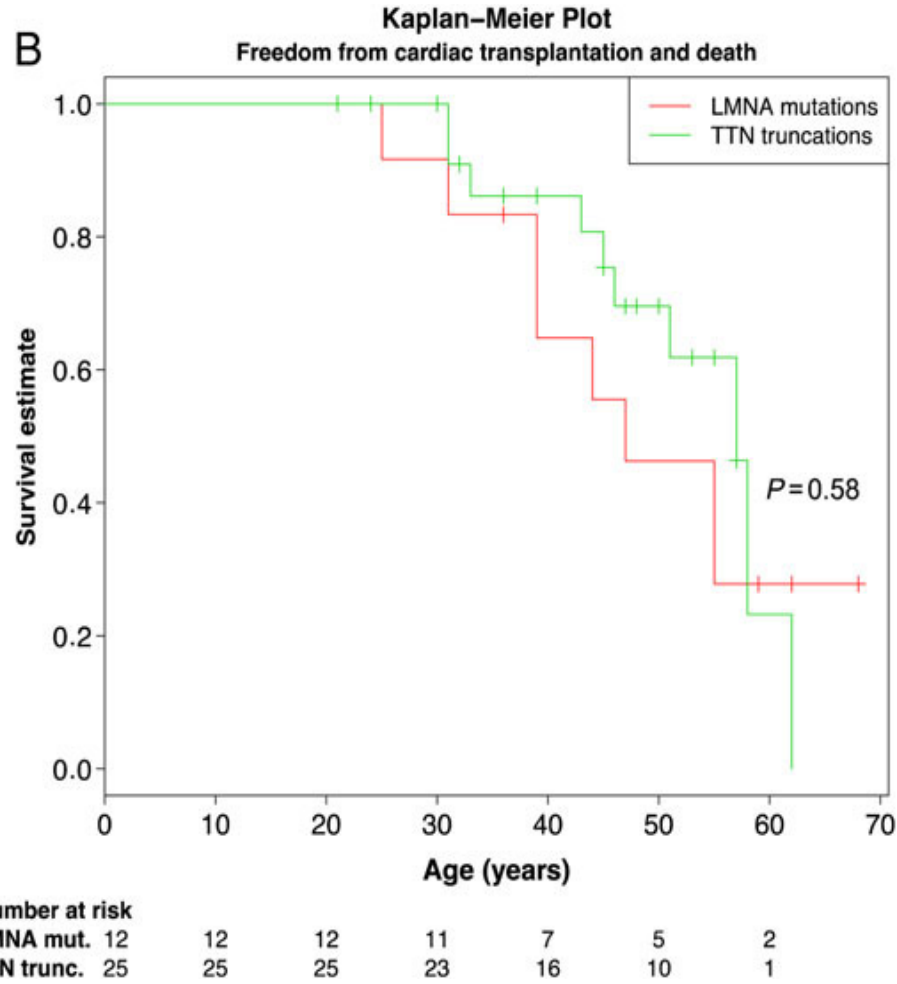
freedom from composite endpoint (HTx and death from cardiac causes)





European Heart Journal (2015) **36**, 2327–2337

Prognostic Relevance of Gene-Environment Interactions in Patients With Dilated Cardiomyopathy

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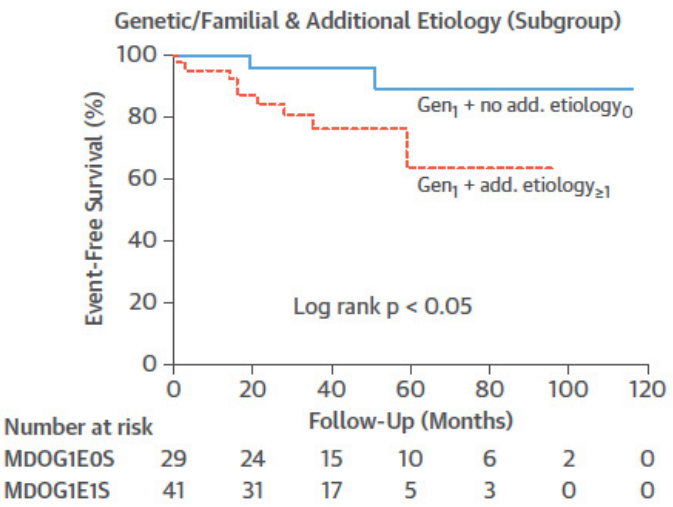
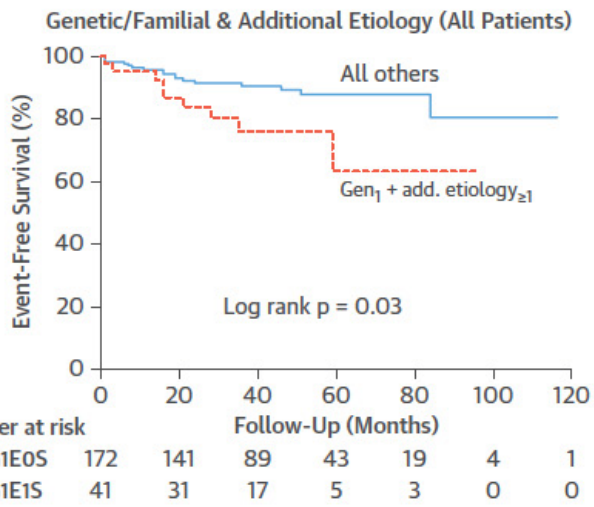
Applying the MOGE(S) Classification

A



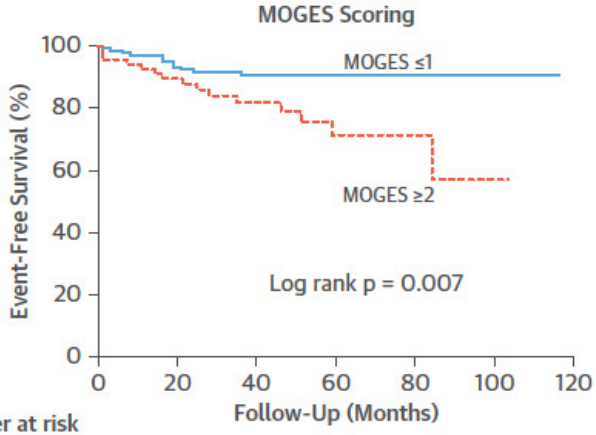
Number at risk							
MDOG1E0S	29	24	15	10	6	2	0
MDOG1E1S	41	31	17	5	3	0	0

B



Number at risk							
MDOG1E0S	172	141	89	43	19	4	1
MDOG1E1S	41	31	17	5	3	0	0

C



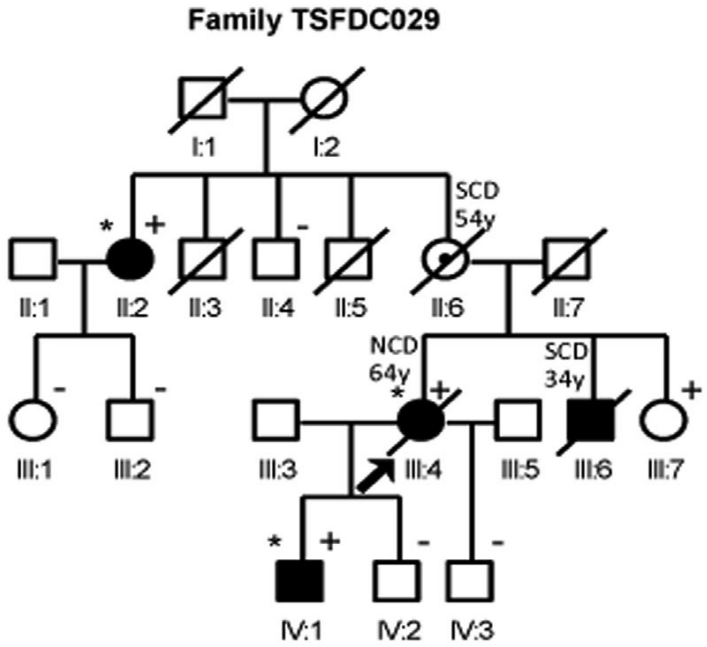
Number at risk							
MDOGES ≤1	145	119	72	34	14	2	1
MDOGES ≥2	68	53	34	14	8	2	0

J Am Coll Cardiol 2015;66:1313–23

FLNC Gene Splice Mutations Cause Dilated Cardiomyopathy

JACC
Basic to Translational Science

A



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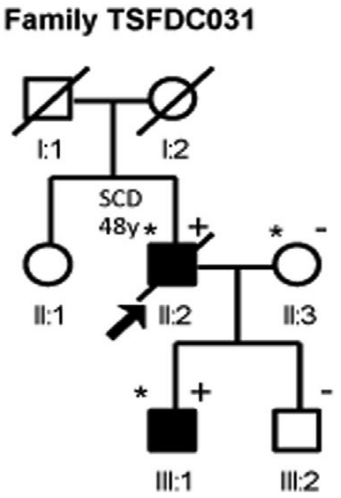

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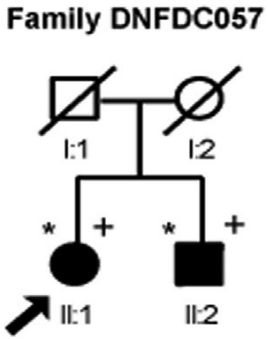
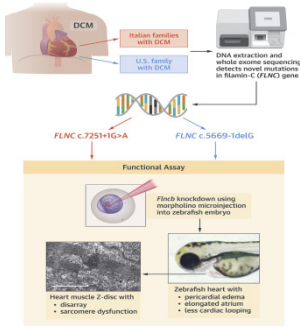
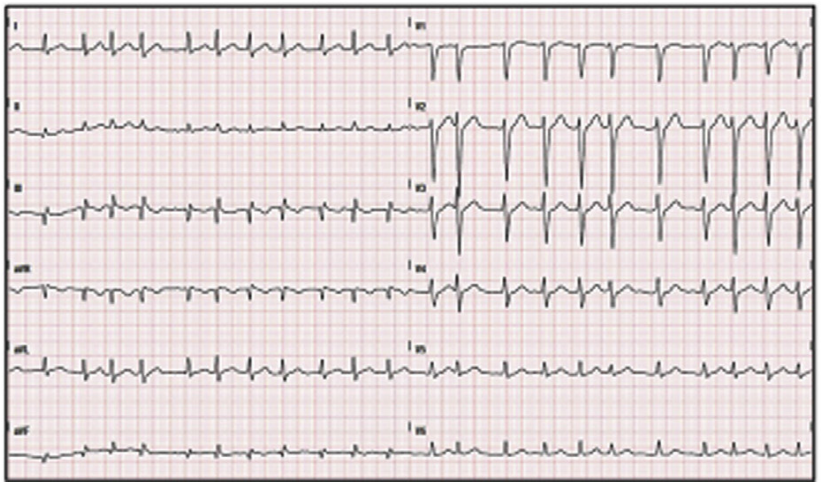
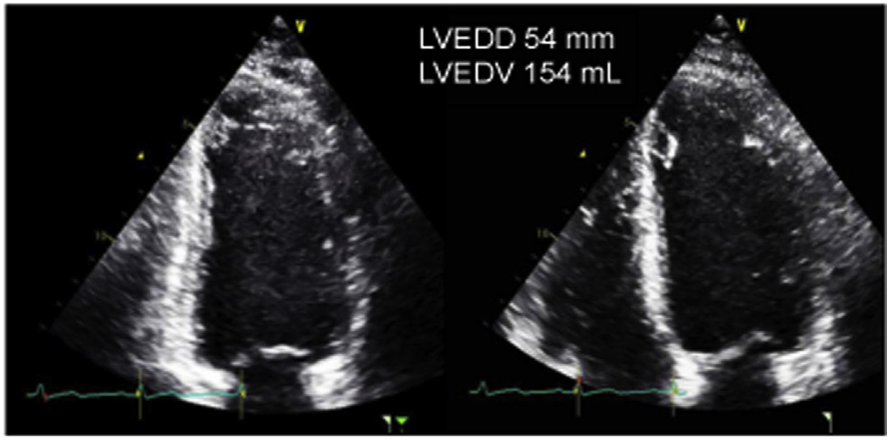




D



E



Begay, Sinagra, Mestroni at al

JACC: BASIC TO TRANSLATIONAL SCIENCE
http://dx.doi.org/10.1016/j.jacbts.2016.05.004

2015 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death

EUROPEAN SOCIETY OF CARDIOLOGY®

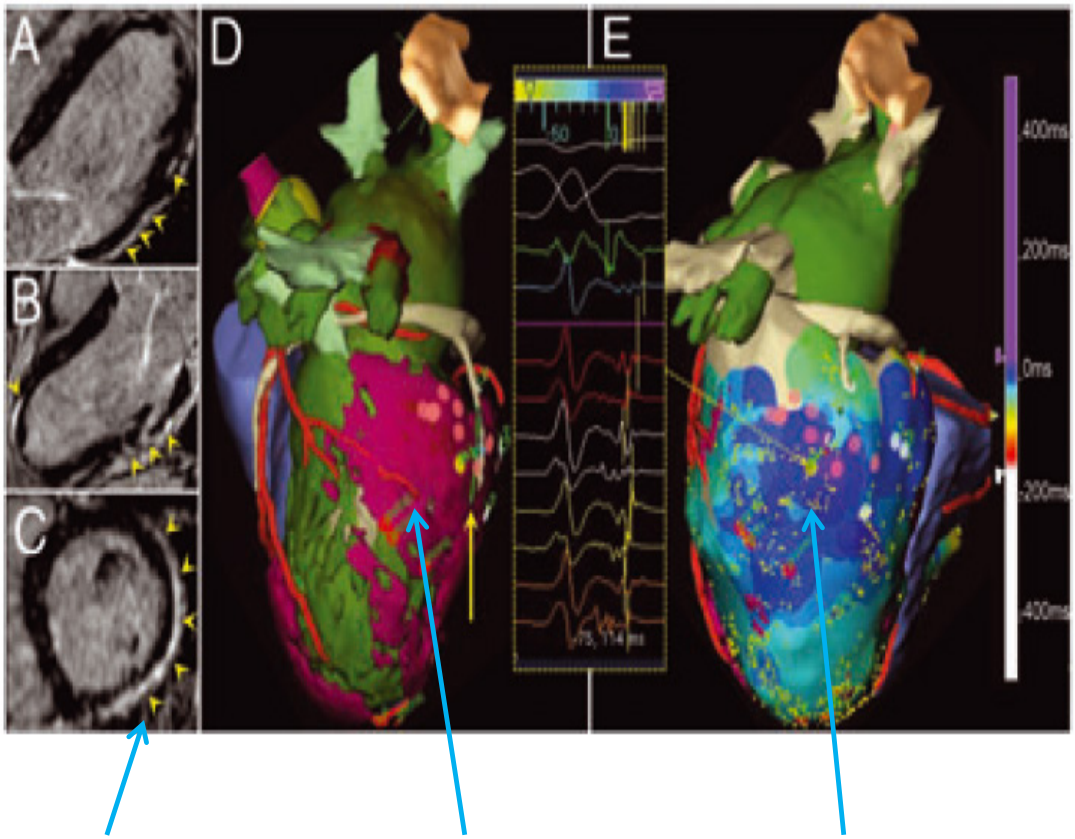
ESC GUIDELINES

Risk stratification and management of patients with dilated cardiomyopathy

Recommendations	Class[a]	Level[b]	Ref.[c]
An ICD should be considered in patients with DCM and a confirmed disease-causing *LMNA* mutation and clinical risk factors.[d]	IIa	B	71

doi:10.1093/eurheartj/ehv316

CORRELATION BETWEEN VOLTAGE MAPPING, ACTIVATION MAPPING AND DELAYED ENHANCEMENT

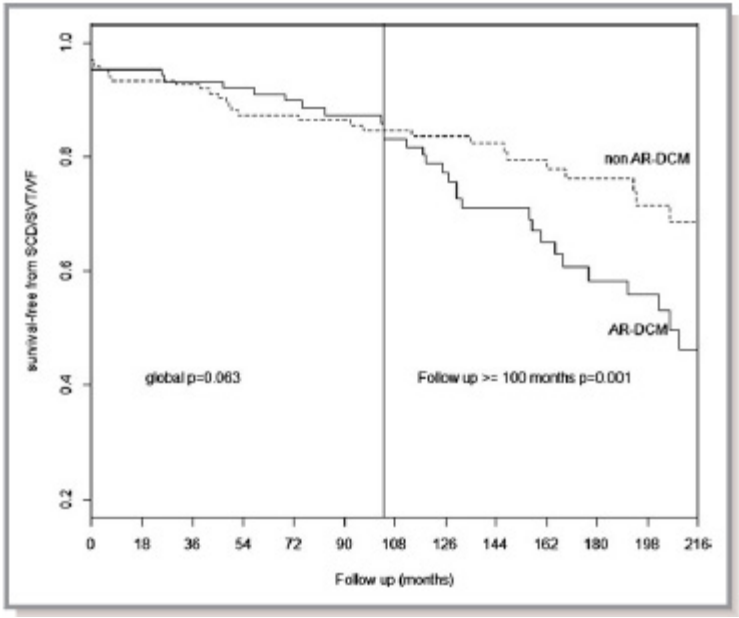


Delayed enhancement Scar (voltage mapping) Late conduction (activation mapping)

Cochet et al JCE 2013;24:419-26

Arrhythmogenic Phenotype in Dilated Cardiomyopathy: Natural History and Predictors of Life-Threatening Arrhythmias

Anita Spezzacatene, MD; Gianfranco Sinagra, MD; Marco Merlo, MD; Giulia Barbati, PhD; Sharon L. Graw, PhD; Francesca Brun, MD; Dobromir Slavov, PhD; Andrea Di Lenarda, MD; Ernesto E. Salcedo, MD; Jeffrey A. Towbin, MD; Jeffrey E. Saffitz, MD, PhD; Frank I. Marcus, MD; Wojciech Zareba, MD; Matthew R. G. Taylor, MD, PhD; Luisa Mestroni, MD, FACC, FAHA, FESC; on behalf of the Familial Cardiomyopathy Registry



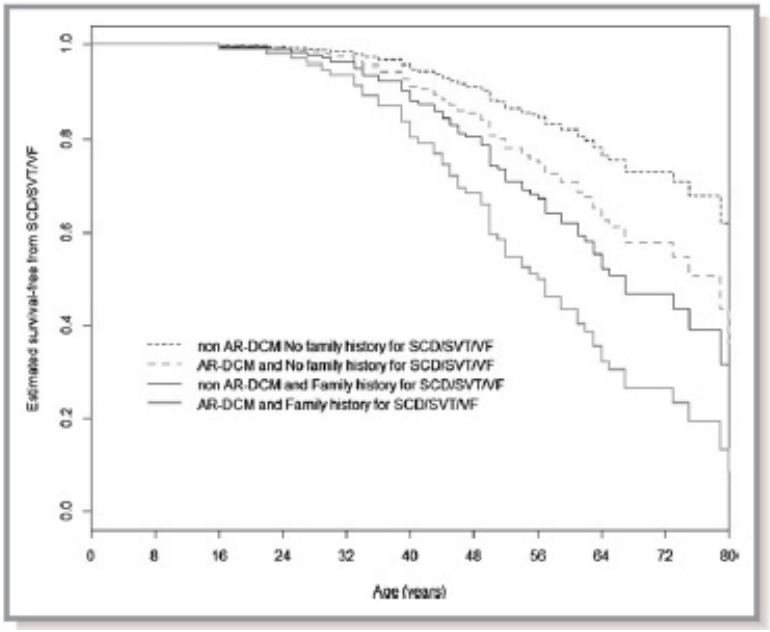
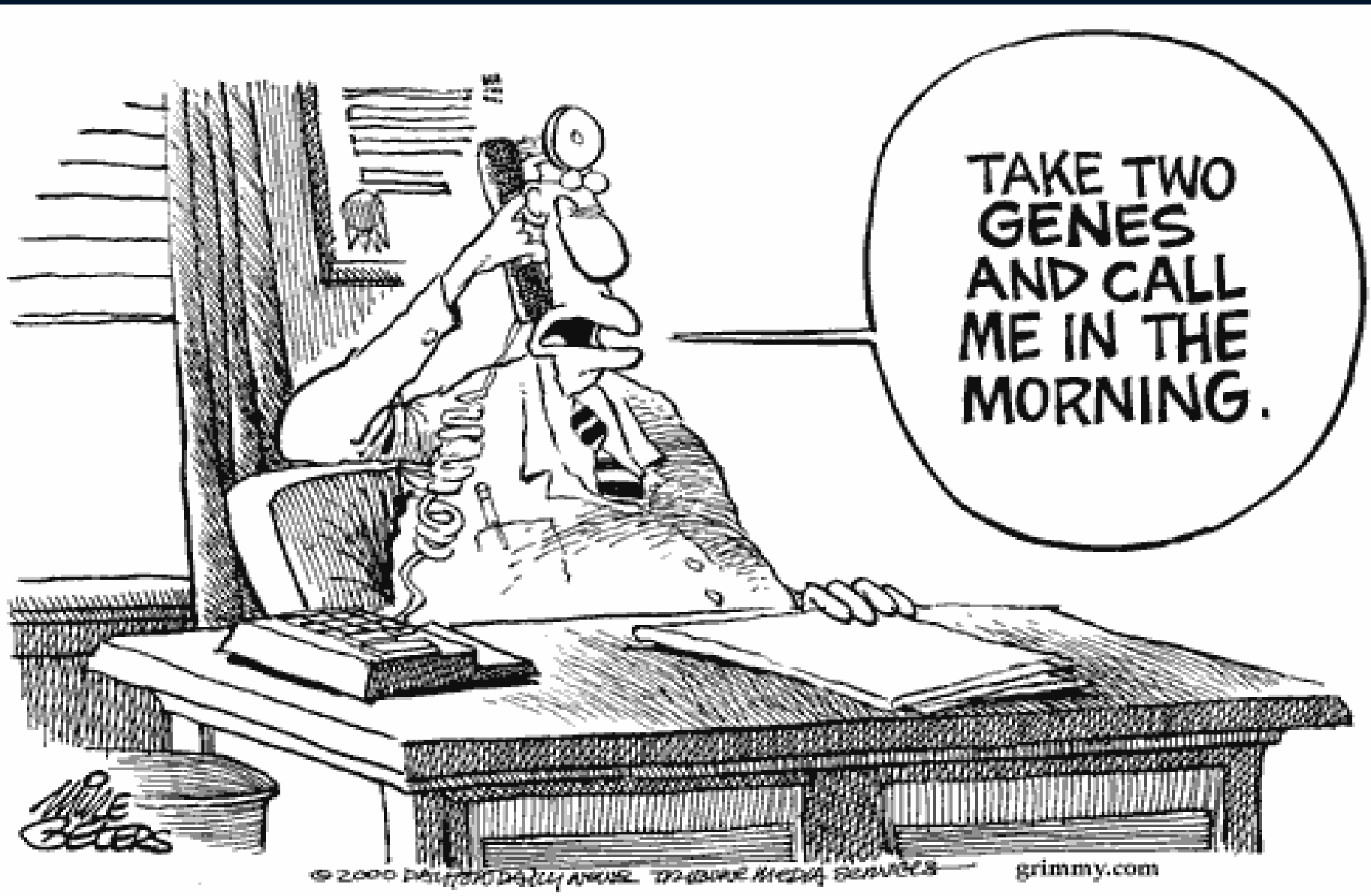


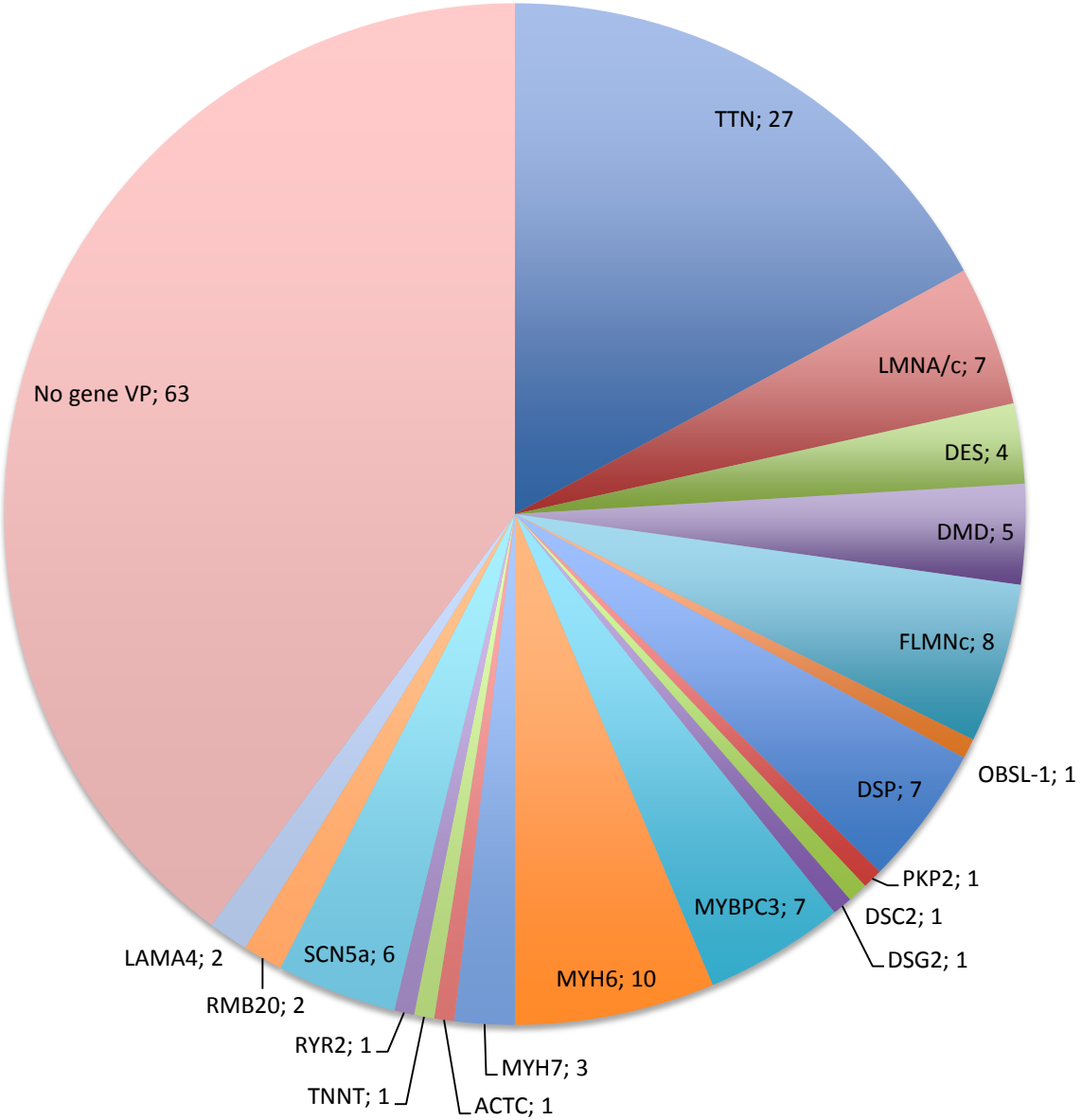
Table 1. Arrhythmic Profile of 109 AR-DCM Patients

Criteria	AR-DCM Patients, n (%)
NSVT (≥5 beats, ≥150 bpm)	43 (39.4)
≥1000 PVCs/24 h	90 (82.6)
≥50 Couplets/24 h	40 (36.7)
Syncope	8 (7.3)

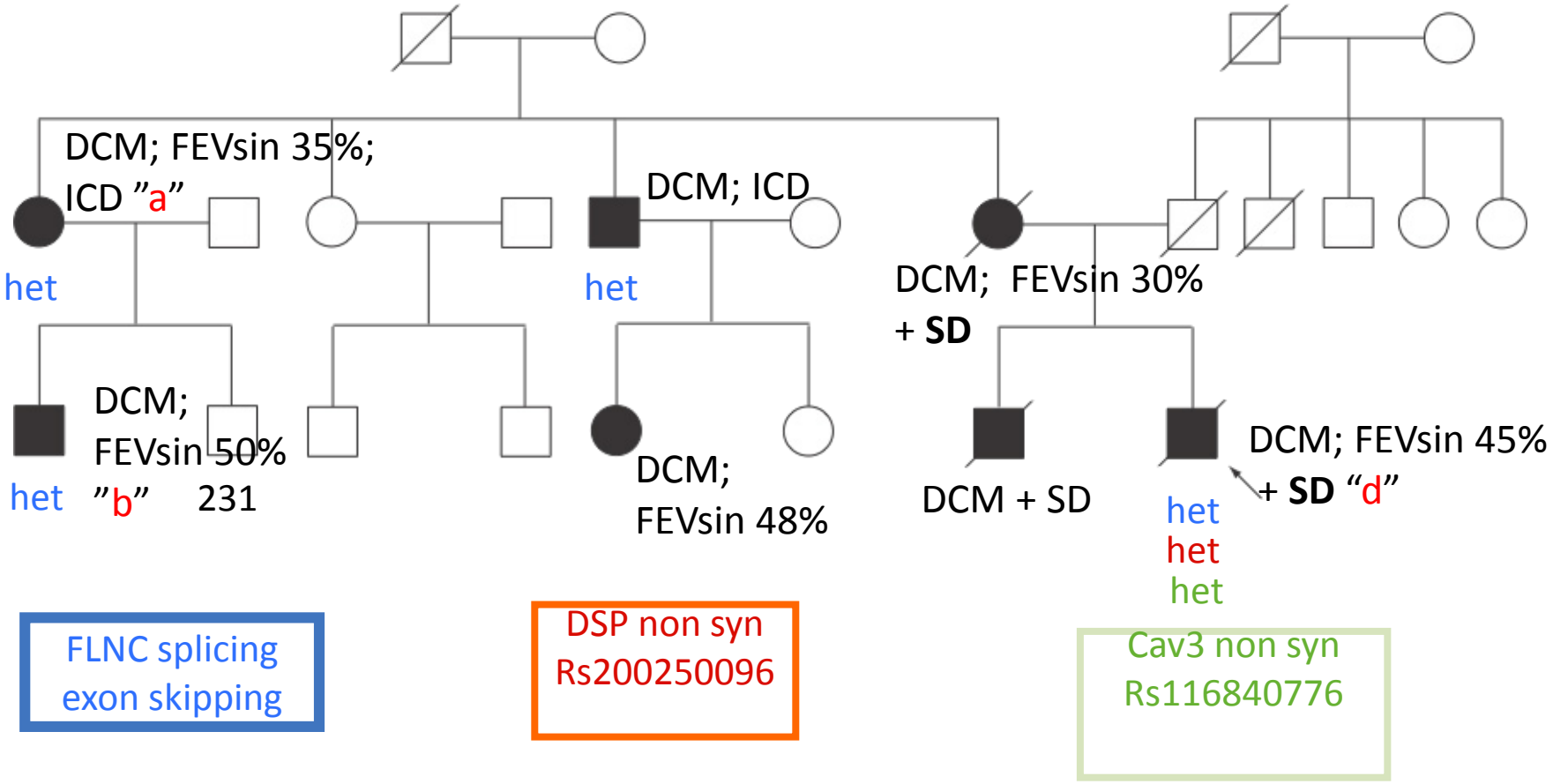
Am Heart Assoc. 2015 Oct 16;4(10):e002149.


TAKE TWO GENES AND CALL ME IN THE MORNING.
grimmy.com

DCM genes (n 152; solo varianti P o LP)

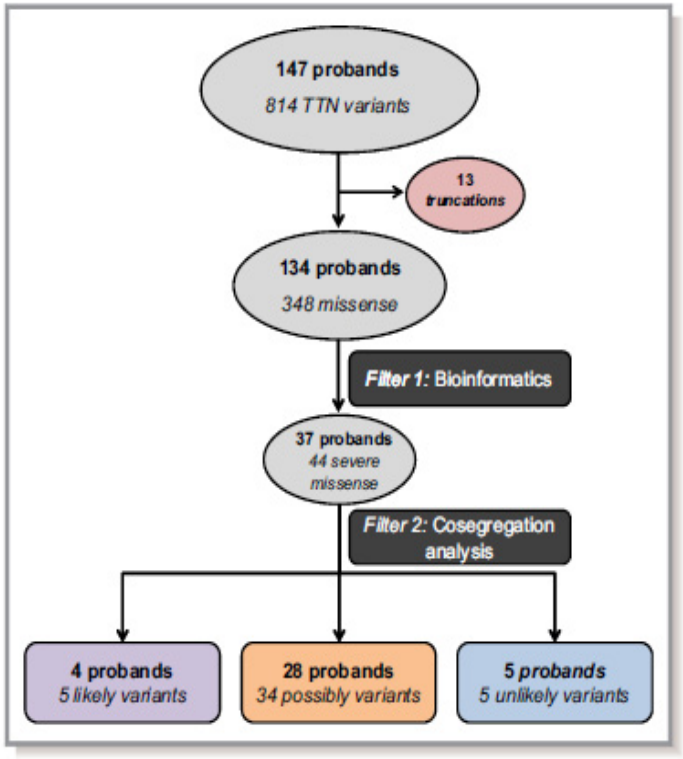


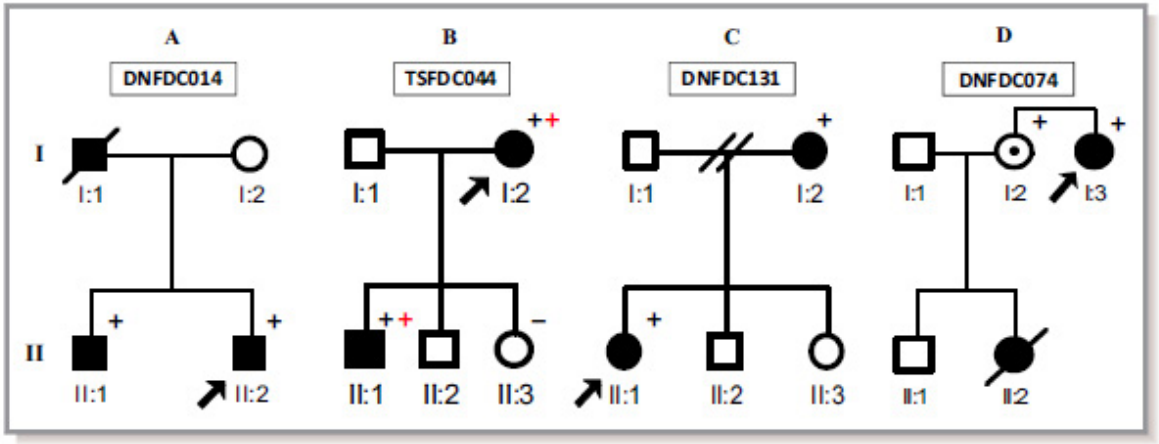
FAM#225:
DCM – Sudden death

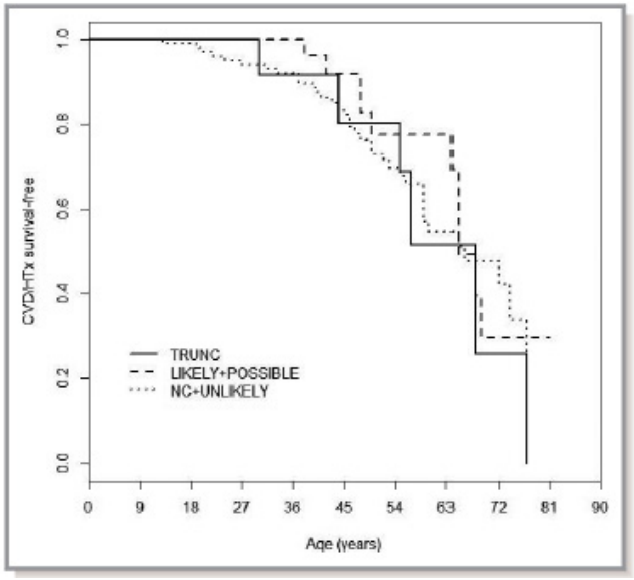


Role of Titin Missense Variants in Dilated Cardiomyopathy

Rene L. Begay, BS; Sharon Graw, PhD; Gianfranco Sinagra, MD; Marco Merlo, MD; Dobromir Slavov, PhD; Katherine Gowan; Kenneth L. Jones, PhD; Giulia Barbati, PhD; Anita Spezzacatene, MD; Francesca Brun, MD; Andrea Di Lenarda, MD; John E. Smith, PhD; Henk L. Granzier, PhD; Luisa Mestroni, MD; Matthew Taylor, MD, PhD; on behalf of the Familial Cardiomyopathy Registry







J Am Heart Assoc. 2015 Nov 13;4(11).

European Heart Journal (2012) **33**, 1564–1570
doi:10.1093/eurheartj/ehs112

REVIEW

Frontiers in cardiovascular medicine

Personalized medicine: hope or hype?

Keyan Salari[1], Hugh Watkins[2], and Euan A. Ashley[3]*

Figure 1 Domains of personalized medicine.

European Heart Journal
doi:10.1093/eurheartj/ehv497
FASTTRACK
ESC Clinical Registry

European Cardiomyopathy Pilot Registry: EURObservational Research Programme of the European Society of Cardiology

Perry Elliott[1*†], Philippe Charron[2†], Juan Ramon Gimeno Blanes[3], Luigi Tavazzi[4], Michal Tendera[5], Marème Konté[6], Cécile Laroche[6‡], and Aldo P. Maggioni[6‡], on behalf of the EORP Cardiomyopathy Registry Pilot Investigators[§]

Pilot registry
N = 1115 patients

- Adult cardiomyopathies

Enrollment end 2013

FU at 1 year (end 2014)

Long term registry

- Adult cardiomyopathies
- Paediatric cardiomyopathies
- Myocarditis

Enrollment end 2016

FU at 1 year (end 2017)

Publication plan

- Pilot study
- Main analyses / global registry
- FU of adult cardiomyopathies
- Paediatric cardiomyopathies
- Myocarditis
- Ancillary studies

Take Home Message

- **La storia naturale della CMPD è migliorata grazie all'ottimizzazione dei trattamenti, sistematizzazione del follow up e stringente caratterizzazione eziologica;**

• alcuni pattern fenotipici e di severità (familiarità, coesistenti condizioni rimuovibili, geometria e funzione Vsin e Vdx, fibrosi RM, RVFP, IM, aritmie VE, tolleranza ai farmaci) possono guidare nella stratificazione del rischio e timing procedurale;

• alcuni genotipi appaiono prognosticamente rilevanti e possono orientare scelte aggressive in alcuni sottogruppi, in particolare nella prevenzione della SD