

ĐẠI HỘI TIM MẠCH TOÀN QUỐC LẦN THỨ 12
TẠI TP NHA TRANG, KHÁNH HÒA 17-20 THÁNG 10 NĂM 2010

“TIM MẠCH HỌC TRONG KỶ NGUYÊN MỚI:
TỪ HIỂU BIẾT ĐẾN HÀNH ĐỘNG”

**LỰA CHỌN BỆNH NHÂN VÀ VỊ TRÍ TẠO
NHỊP TỐI ƆU TRONG TẠO NHỊP
TÁI ĐÔNG BỘ TIM**

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Vietnam National Heart Institute



Guideline của ACC/AHA nói gì?

Bệnh nhân suy tim có $EF \leq 35\%$:
QRS ≥ 120 ms
NHỊP XOANG
NYHA III-IV

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PRACTICE GUIDELINE: FULL TEXT

ACC/AHA/HRS 2008 Guidelines for Device-Based Therapy of Cardiac Rhythm Abnormalities

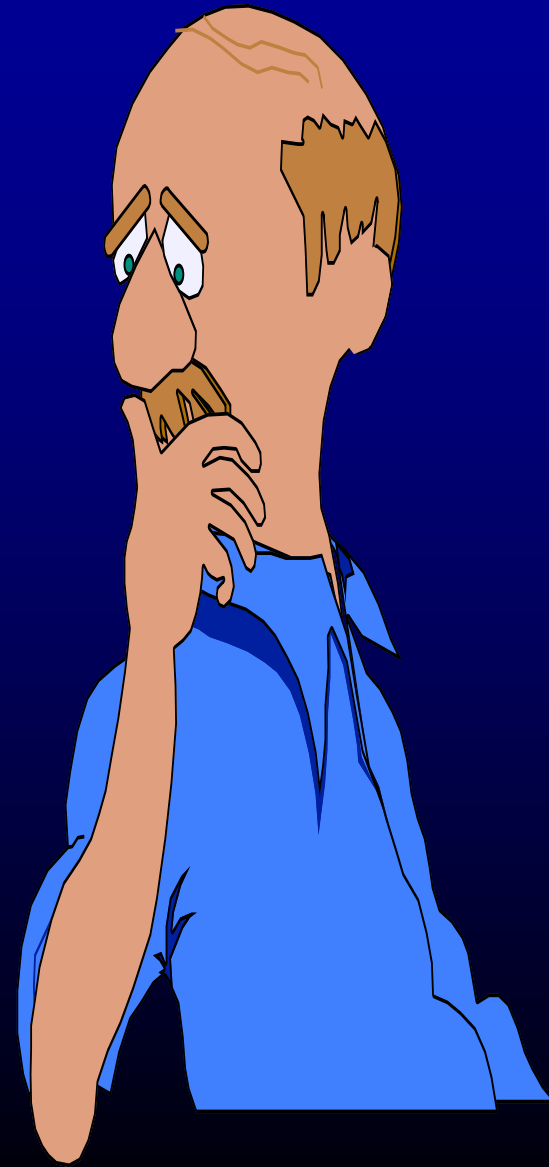
A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the ACC/AHA/NASPE 2002 Guideline Update for Implantation of Cardiac Pacemakers and Antiarrhythmia Devices)

Developed in Collaboration With the American Association for Thoracic Surgery and Society of Thoracic Surgeons

Recommendations for Cardiac Resynchronization Therapy in Patients With Severe Systolic Heart Failure

CLASS I

1. For patients who have LVEF less than or equal to 35%, a QRS duration greater than or equal to 0.12 seconds, and sinus rhythm, CRT with or without an ICD is indicated for the treatment of NYHA functional Class III or ambulatory Class IV heart failure symptoms with optimal recommended medical therapy. (Level of Evidence: A) (222,224,225,231)





Tiêu chuẩn chọn bn từ các nghiên cứu lớn

	MUSTIC ¹ (n=67)	PATH-CHF ² (n=36)	MIRACLE ³ (n= 453)	MIRACLE-ICD ⁴ (n=369)	CONTAK ⁵ (n=490)	COMPANION ⁶ (n=1520)
CRT-D or CRT-P	CRT-P	CRT-P	CRT-P	CRT-D	CRT-D	Both
Cardiac rhythm	SR	SR	SR	SR	SR	SR
Optimal HF Rx	Yes	Yes	Yes	Yes	Yes	Yes
NYHA class	III	III, IV	III, IV	III, IV	II, III, IV	III, IV
Distribution, %	100	86/14	91/9	89/9	33/59/8	85/15
ICM/NICM	Both	Both	Both	Both	Both	Both
Distribution, %	37/63	29/71	54/46	70/30	69/31	55/45
QRS, ms	≥150	≥120	≥130	≥130	≥120	≥120
Mean±SD, ms	176±19	175±32	166±20*	164±22*	158±26*	160†
LVEF	≤0.35	N/A	≤0.35	≤0.35	≤0.35	≤0.35
Mean±SD	0.23±7	0.21±7	0.22±6.3*	0.24±0.06*	0.21±7*	0.22†
LVEDD, mm	≥60	N/A	≥55	≥55	N/A	N/A
Mean±SD, mm	73±10	73±11	69±10*	76±10*	71±10*	67†
6-Min walk, m	N/A	N/A	≤450	≤450	N/A	N/A
Mean±SD, m	320±97	357±20	298±93*	243±123*	318±120*	262†



Tỷ lệ bệnh nhân đáp ứng với máy CRT.

Tác giả	Nguy hiểm nhân MV(%)	Số bn	Tỷ lệ cải thiện (%)
Higgins	67	245	74
Young	64	187	70
Ypenburg	56	91	76
Bleeker	55	76	80
Molhoek	54	125	79
Yeim	46	100	71
Gasparini	55	104	69
Leon	46	356	70

Depressed, not sleeping, low self esteem...still enough about me, what can I do for you?

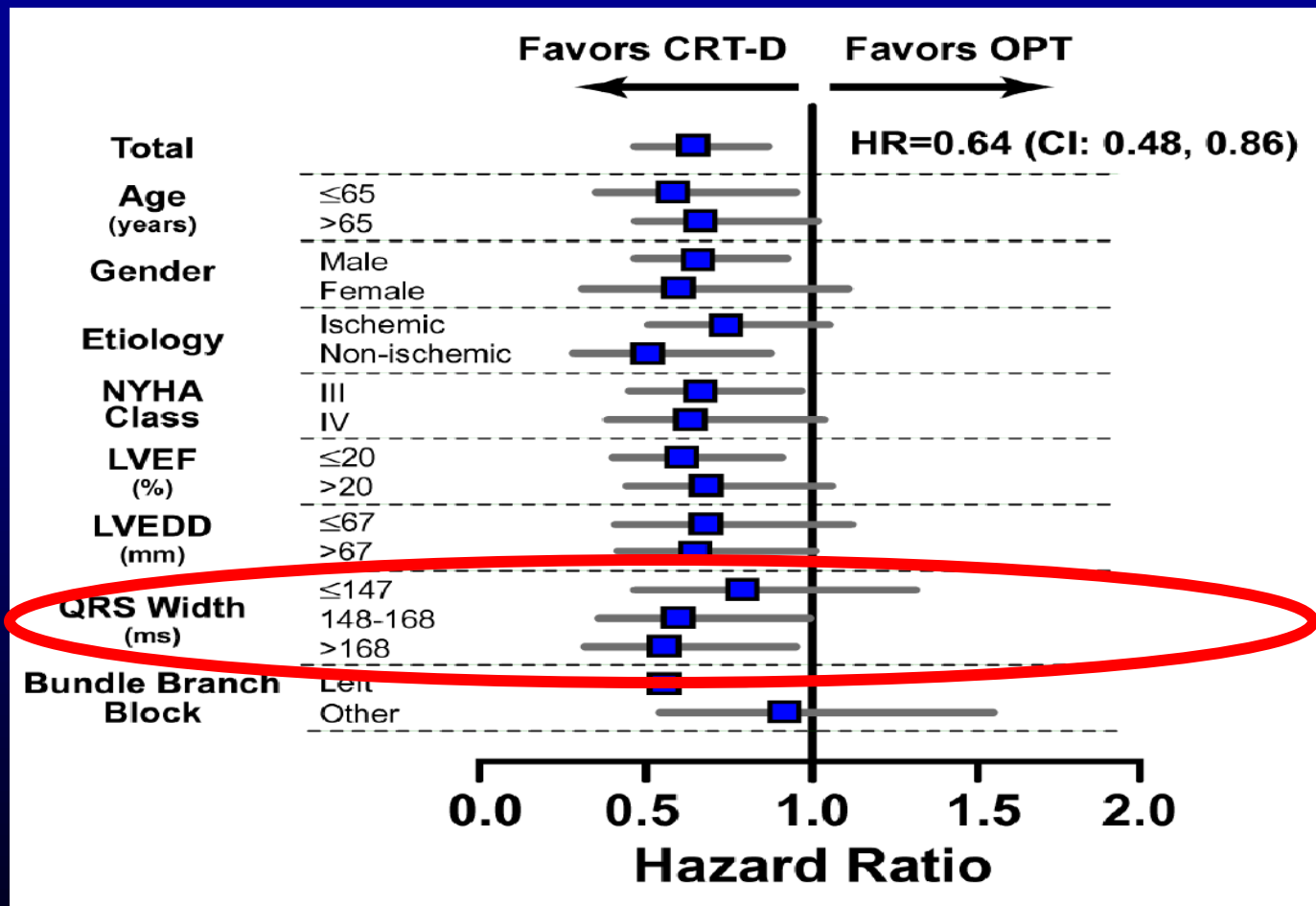




LỰA CHỌN BỆNH NHÂN TỐI ƯU



Độ rộng QRS trong nghiên cứu COMPANION



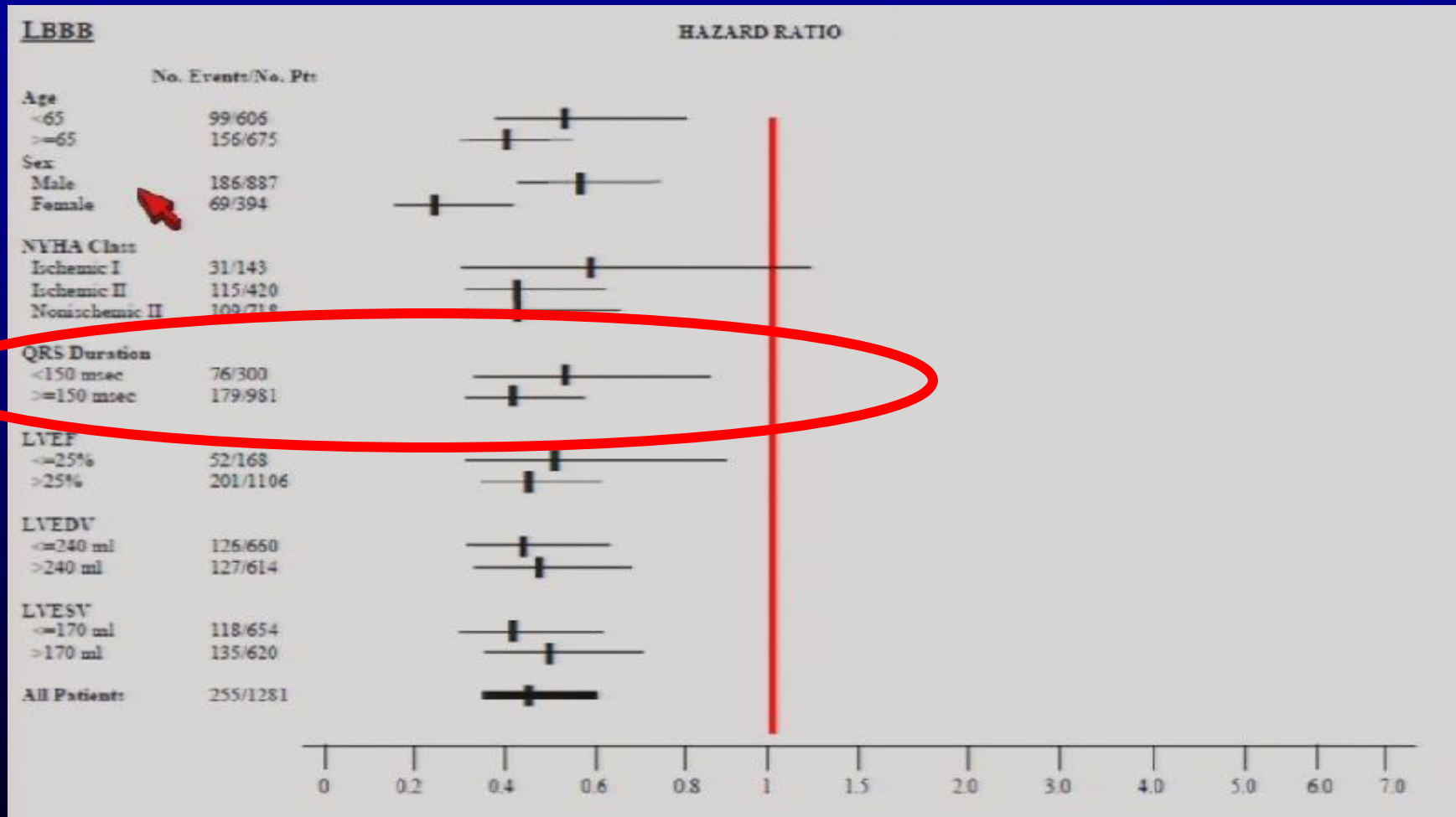


Độ rộng QRS trong nghiên cứu CARE-HF

NYHA class				
III	349/763			0.64 (0.52–0.80)
IV	34/50			0.50 (0.25–1.01)
Ejection fraction				
<24.7%	205/372			0.65 (0.49–0.86)
≥24.7%	152/373			0.62 (0.44–0.85)
QRS interval				
<160 msec	152/290			0.74 (0.54–1.02)
≥160 msec	222/505			0.60 (0.46–0.79)
Interventricular mechanical delay				
<49.2 msec	199/367			0.77 (0.58–1.02)
≥49.2 msec	147/368			0.50 (0.36–0.70)



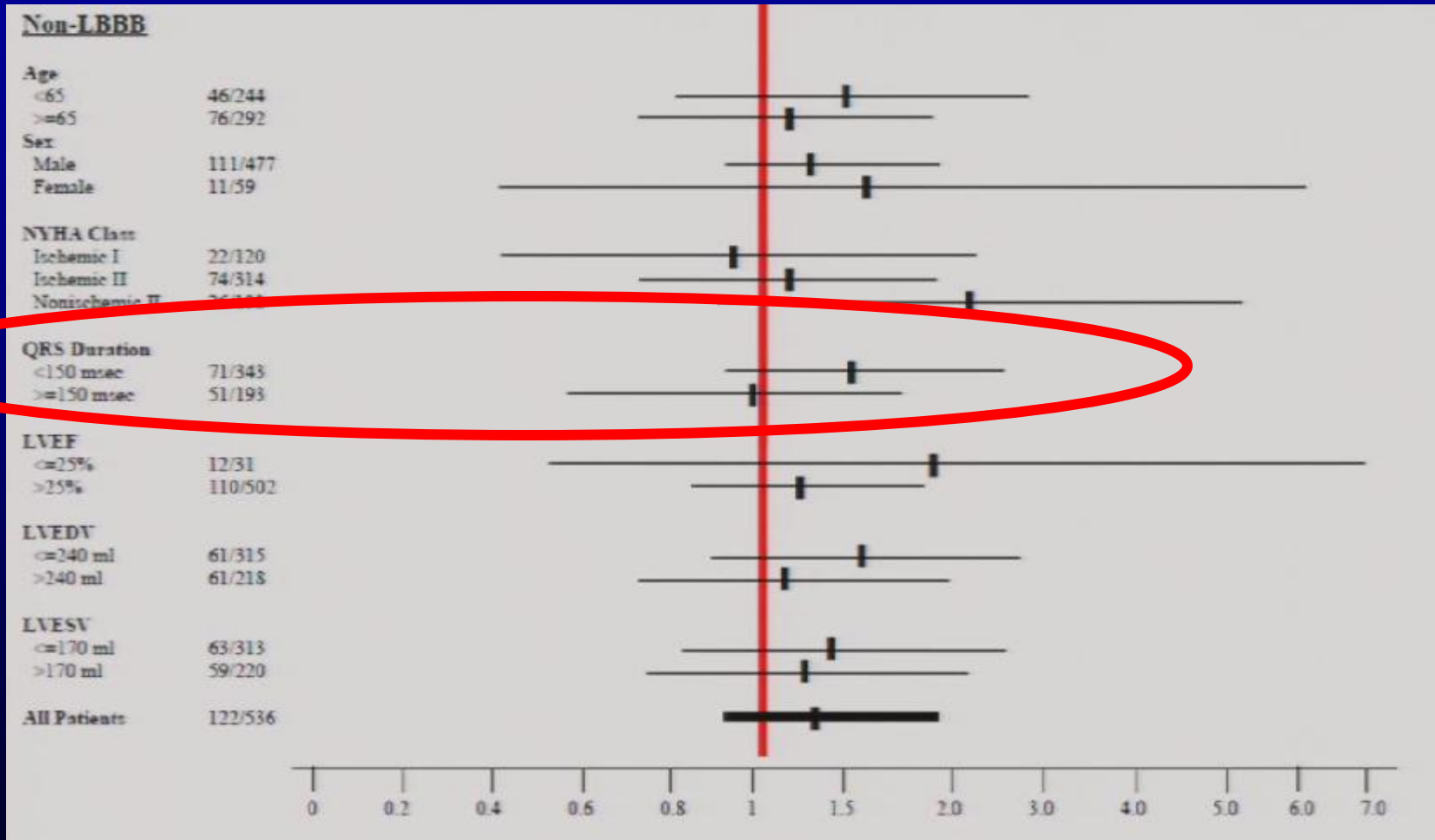
Độ rộng QRS trong nghiên cứu MADIT-CRT



Moss et al. NEJM 2009;361: 1329-1338



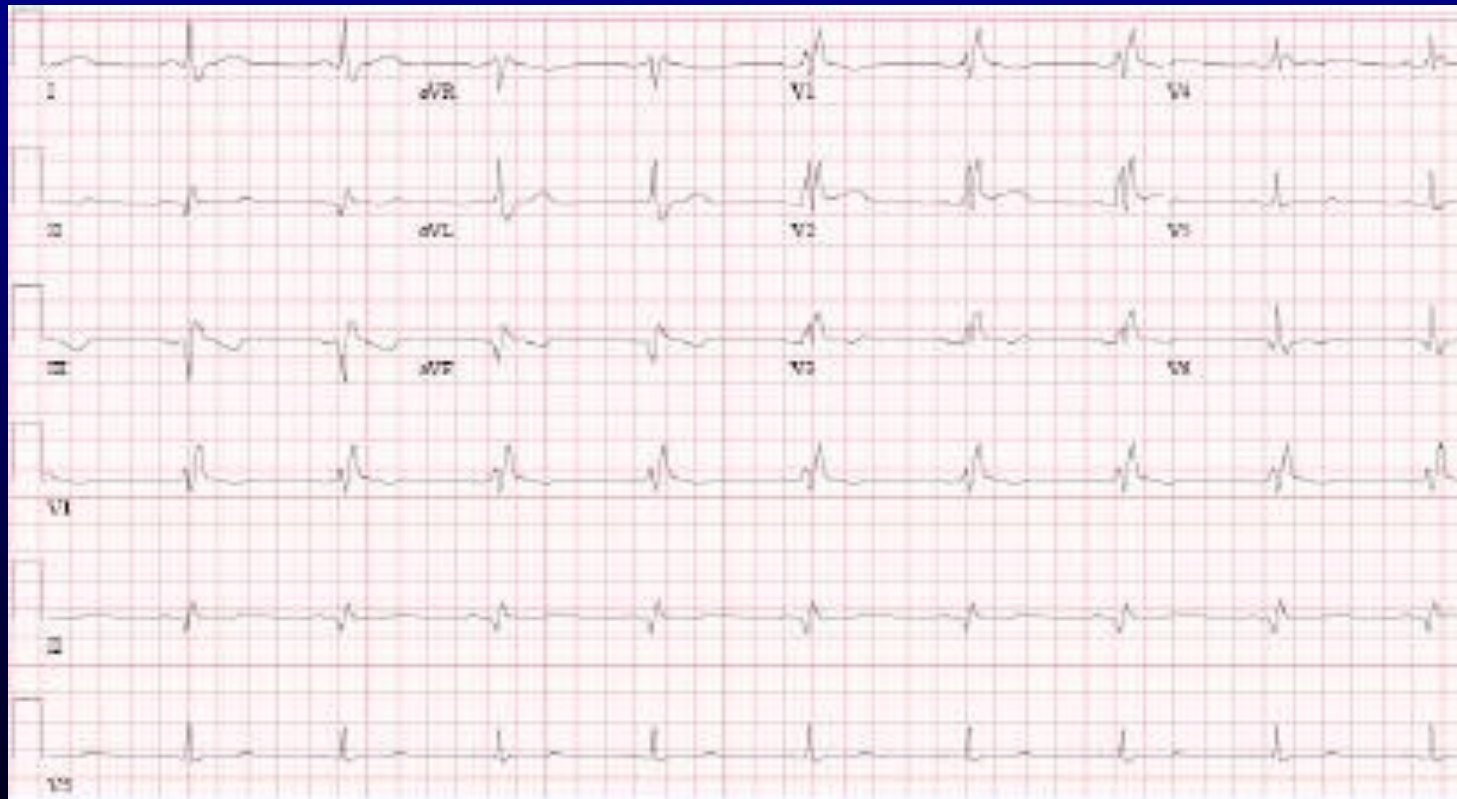
Độ rộng QRS trong nghiên cứu MADIT-CRT





Blốc nhánh phải?

Chỉ định CRT vì theo Guideline chỉ xét đến độ rộng $QRS \geq 120 \text{ ms}$?

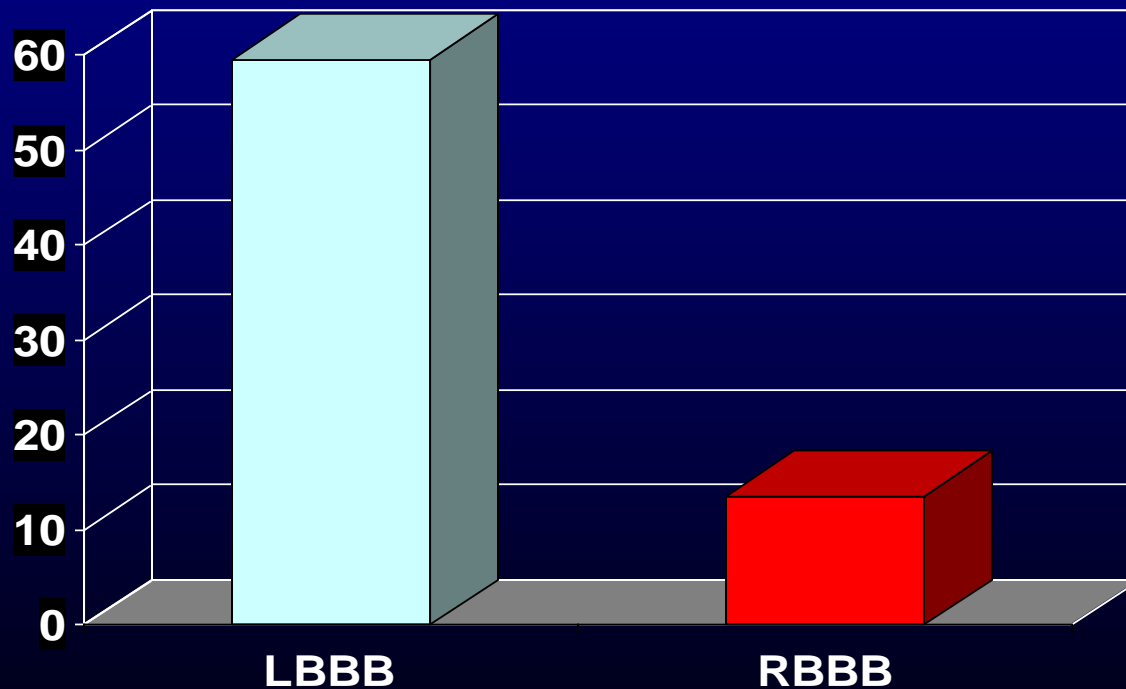




Đáp ứng với CRT: so sánh bloc nhánh phải và bloc nhánh trái

Nghiên cứu Bức xạ vi mô hắc Pittsburgh từ 2000-2007

- Bloc nhánh trái - cấy đặt CRT: 412 bn
- Bloc nhánh phải - cấy đặt CRT: 162 bn





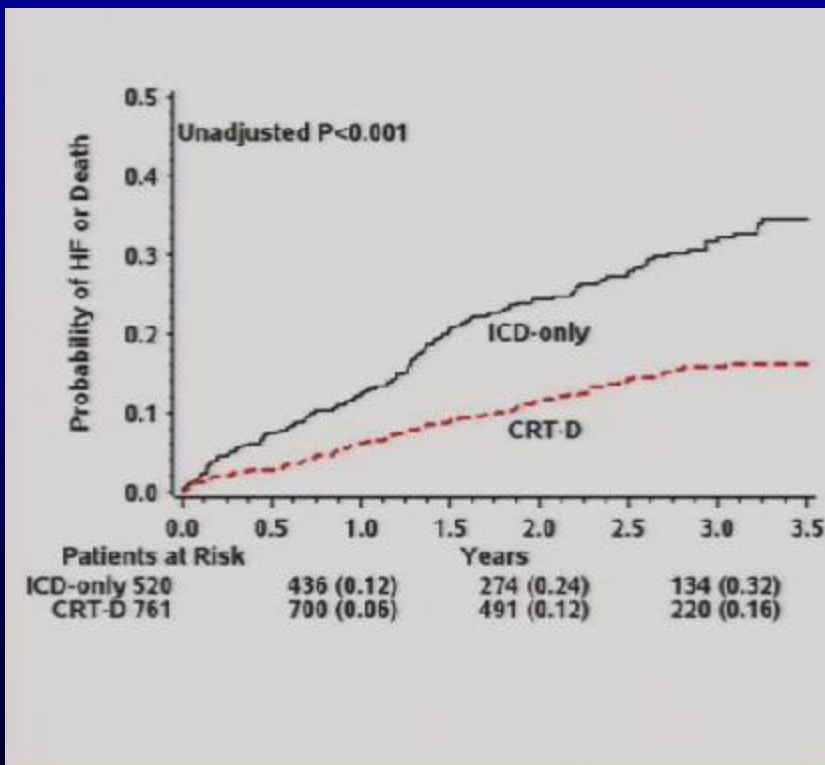
Hiệu quả của CRT trên bloc nhánh phải ở 1 nghiên cứu trộn.

Số liệu từ 2 thử nghiệm MICRACLE ICD và CONTACT CD

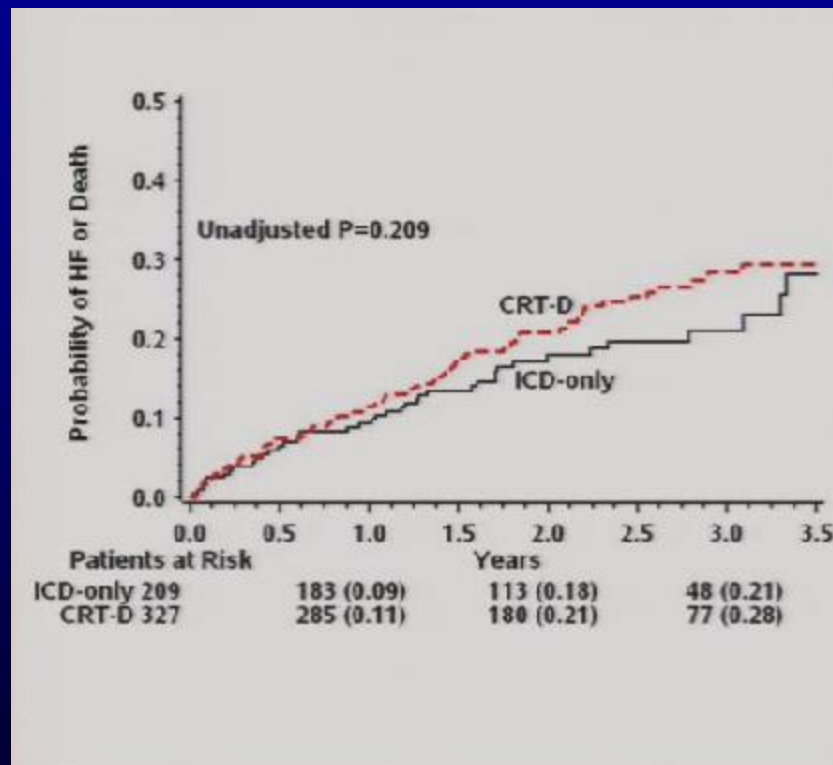
	Tr- ử thử nghiệm	Sau 6 tháng	P
NYHA			
CRT (n=34)	3,1	2,3	<0,001
Nhóm chng (n=27)	3,0	2,8	0,005
Đi bộ trong 6 phút (m)			
CRT	284,1	339,4	NS
Nhóm chng	260,7	291,8	NS
Đạm chng I- ửng cục sng			
CRT	51,8	37,7	NS
Nhóm chng	51,1	42,8	NS
LVEF (%)			
CRT	27,2	29,0	NS
Nhóm chng	31,1	32,0	NS



Nghiên cứu MADIT-CRT: Tỷ lệ suy tim và chết giữa có và không có block nhánh trái.



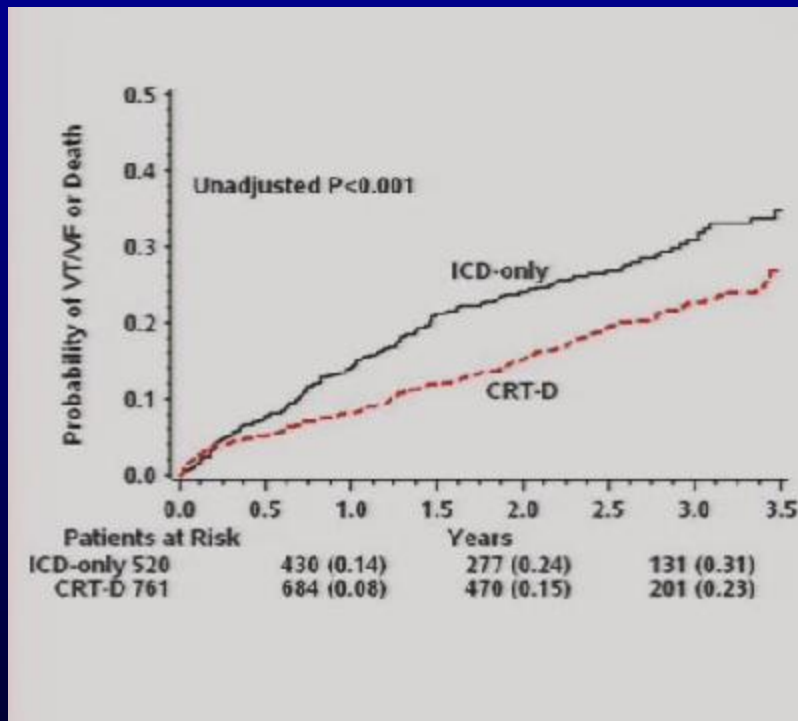
LBBB



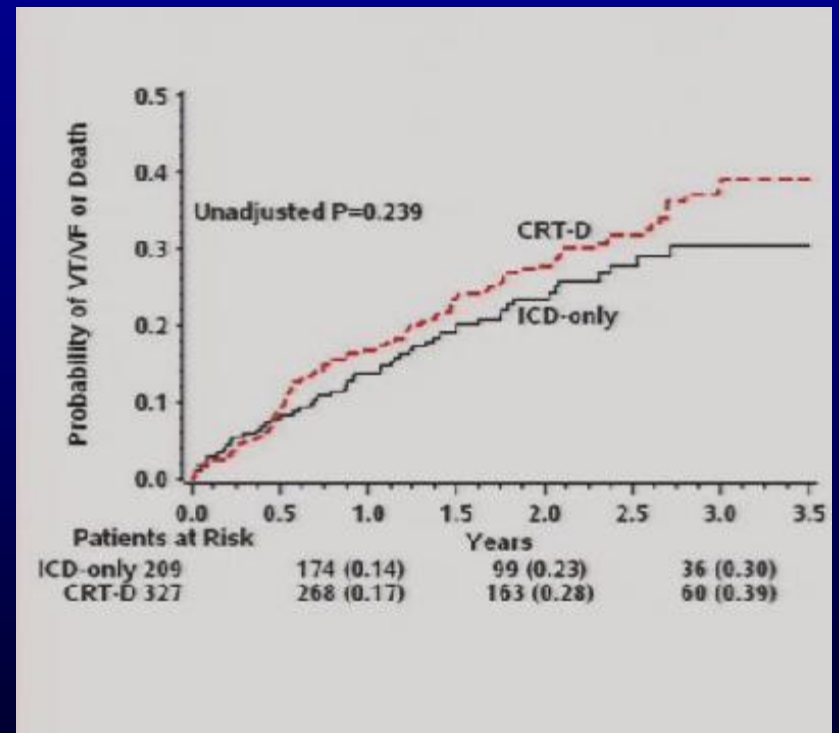
Non- LBBB



Nghiên cứu MADIT-CRT: Tỷ lệ VT/VF và chết giữa có và không có block nhánh trái.



LBBB



Non- LBBB

Four-Year Efficacy of Cardiac Resynchronization Therapy on Exercise Tolerance and Disease Progression

The Importance of Performing Atrioventricular Junction Ablation in Patients With Atrial Fibrillation

Maurizio Gasparini, MD,* Angelo Auricchio, MD, PhD,‡§ François Regoli, MD,* Cecilia Fantoni, MD,‡ Mihoko Kawabata, MD,‡ Paola Galimberti, MD,* Daniela Pini, MD,* Carlo Ceriotti, MD,* Edoardo Gronda, MD,* Catherine Klersy, MD, MSc,† Simona Fratini, MD,‡ Helmut H. Klein, MD‡

Milan and Pavia, Italy; Magdeburg, Germany; and Lugano, Switzerland

OBJECTIVES The goal of this study was to investigate the effects of cardiac resynchronization therapy (CRT) in heart failure patients with permanent atrial fibrillation (AF) and the role of atrioventricular junction (AVJ) ablation.

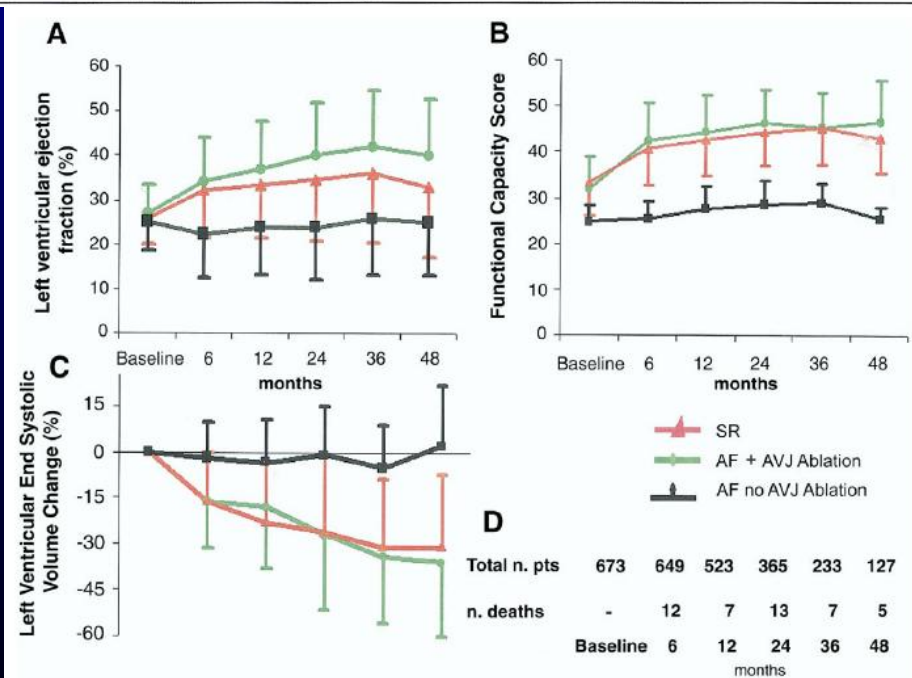
BACKGROUND Cardiac resynchronization therapy has been proven effective in heart failure patients with sinus rhythm (SR). However, little is known about the effects of CRT in heart failure patients with permanent AF.

METHODS Efficacy of CRT on ventricular function, exercise performance, and reversal of maladaptive remodeling process was prospectively compared in 48 patients with permanent AF in whom ventricular rate was controlled by drugs, thus resulting in apparently adequate delivery of biventricular pacing (>85% of pacing time), and in 114 permanent AF patients, who had undergone AVJ ablation (100% of resynchronization therapy delivery). The clinical and echocardiographic long-term outcomes of both groups were compared with those of 511 SR patients treated with CRT.

RESULTS Both SR and AF groups showed significant and sustained improvements of all assessed parameters (model $p < 0.001$ for all parameters). However, within the AF group, only patients who underwent ablation showed a significant increase of ejection fraction ($p < 0.001$), reverse remodeling effect ($p < 0.001$), and improved exercise tolerance ($p < 0.001$); no improvements were observed in AF patients who did not undergo ablation.

CONCLUSIONS

CRT cải thiện chức năng tim, khả năng tập thể dục và đảo ngược quá trình tái cấu trúc bệnh lý tim mạch ở bệnh nhân suy tim thất nhĩ vĩnh viễn.



673 bn CRT

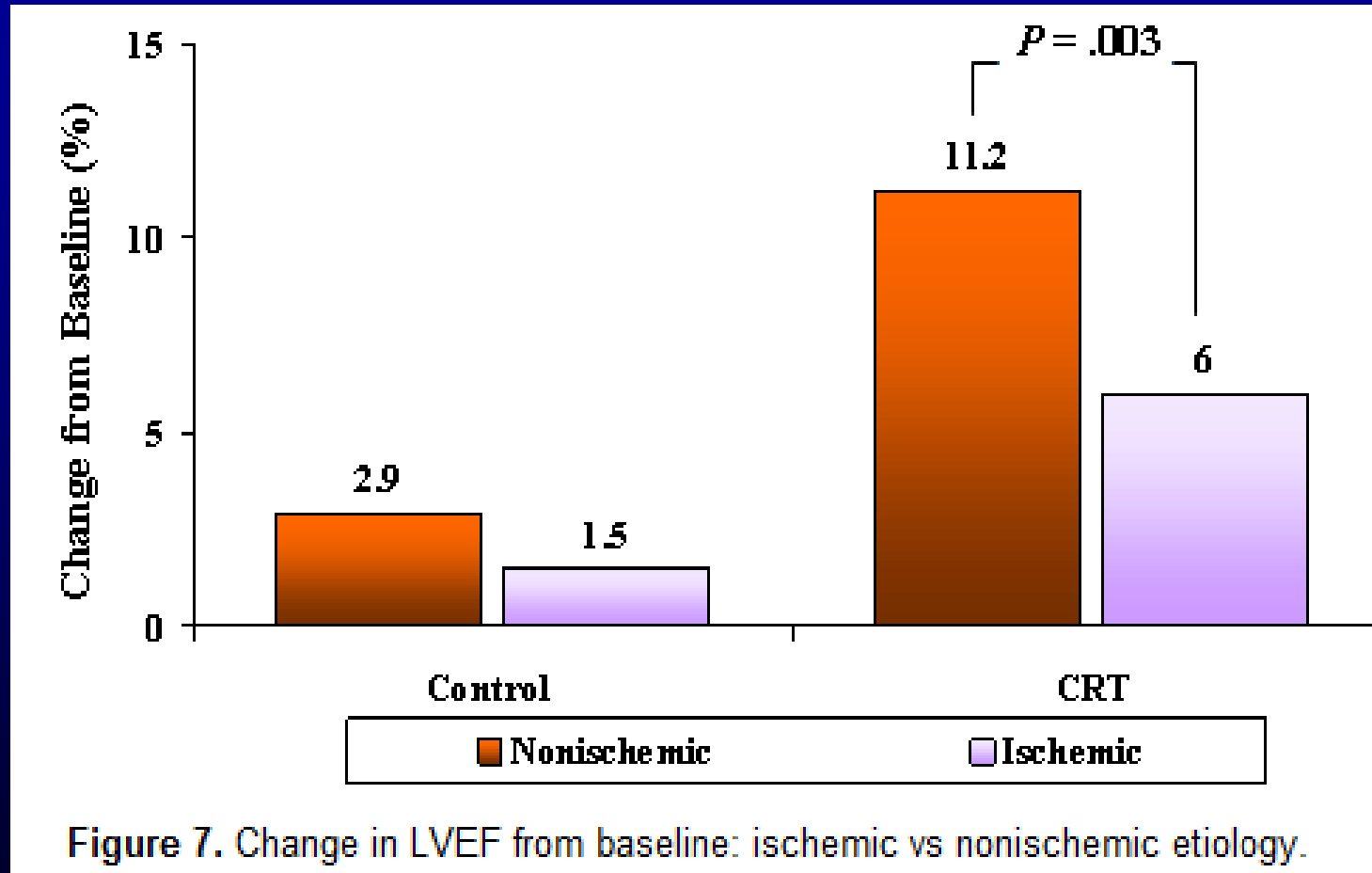
162 cường nhồi máu tim.

Tốc độ nhịp BiV <85% → AVN ablation

JACC 2006;48:734



Lựa chọn BCT hay bệnh mạch vành?



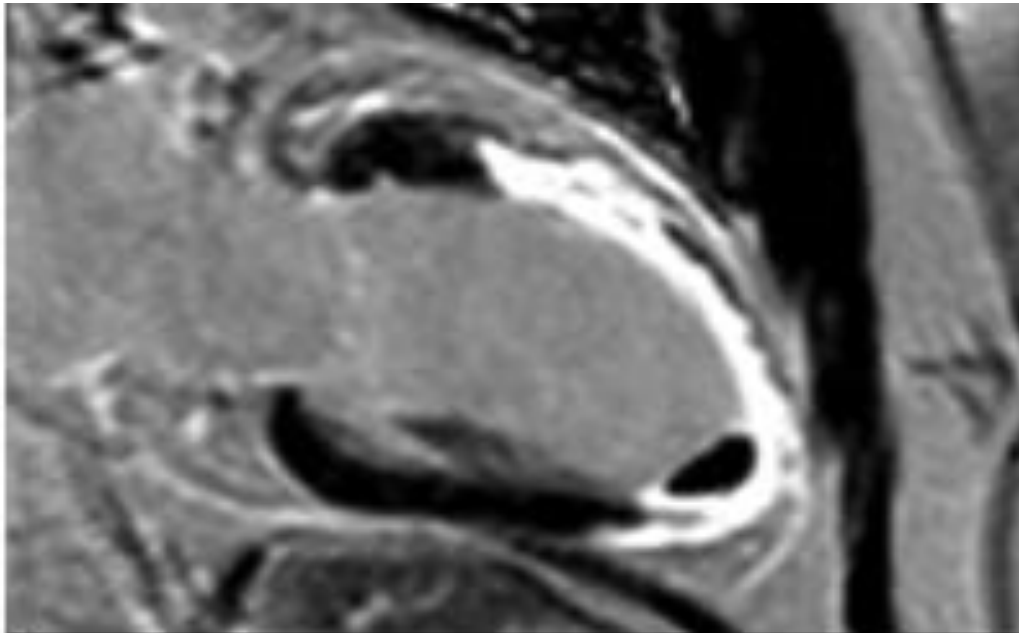
Effect of Posterolateral Scar Tissue on Clinical and Echocardiographic Improvement After Cardiac Resynchronization Therapy

Gabe B. Bleeker, MD; Theodorus A.M. Kaandorp, MD; Hildo J. Lamb, MD, PhD; Eric Boersma, PhD; Paul Steendijk, PhD; Albert de Roos, MD, PhD; Ernst E. van der Wall, MD, PhD; Martin J. Schalij, MD, PhD; Jeroen J. Bax, MD, PhD

Background—Currently, one third of patients treated with cardiac resynchronization therapy (CRT) do not respond. Nonresponse to CRT may be explained by the presence of scar tissue in the posterolateral left ventricular (LV) segments, which may result in ineffective LV pacing and inadequate LV resynchronization. In the present study, the relationship between transmural posterolateral scar tissue and response to CRT was evaluated.

Methods and Results—Forty consecutive patients with end-stage heart failure (NYHA class III/IV), LV ejection fraction $\leq 35\%$, QRS duration > 120 ms, left bundle-branch block, and chronic coronary artery disease were included. The localization and transmural extent of scar tissue were evaluated with contrast-enhanced MRI. Next, LV dyssynchrony was assessed at baseline and immediately after implantation with tissue Doppler imaging. Clinical parameters, LV volumes, and LV ejection fraction were assessed at baseline and at a 6-month follow-up. Fourteen patients (35%) had a transmural ($> 50\%$ of LV wall thickness) posterolateral scar. In contrast to patients without posterolateral scar tissue, these patients showed a low response rate (14% versus 81%; $P < 0.05$) and did not show improvement in clinical or echocardiographic parameters. In addition, LV dyssynchrony remained unchanged after CRT implantation (84 ± 46 versus 78 ± 41 ms; $P = \text{NS}$). Patients without posterolateral scar tissue and severe baseline dyssynchrony (≥ 65 ms) showed an excellent response rate of 95% compared with patients with a posterolateral scar and/or absent LV dyssynchrony (11%).

Conclusions—CRT does not reduce LV dyssynchrony in patients with transmural scar tissue in the posterolateral LV segments, resulting in clinical and echocardiographic nonresponse to CRT. (*Circulation*. 2006;113:969-976.)



CRT không làm giảm sự mất đồng bộ thất trái ở bệnh nhân có sẹo nhồi máu ở thành sau bên bên trái.

*Bleeker et al. Cir 2006;
113: 969-976.*



Kết quả chính từ nghiên cứu Prospect?

Measurement	Echocardiographic Technique	Dyssynchrony Cutoff Value	% Echocardiograms Assessable	Intraobserver CV (%)	Interobserver CV (%)	Sensitivity (%)	Specificity (%)
Septal-to-posterior wall motion delay	M-mode	≥ 130 ms	72	24.3	72.1	64	52
LV pre-ejection Interval: delay between onset QRS and onset LV ejection	Pulsed-wave Doppler	≥ 140 ms	95	3.7	6.5	72	44
Interventricular delay: difference between left and right pre-ejection intervals	Pulsed-wave Doppler	≥ 40 ms	92	NA	NA	60	54
LV filling time in relation to cardiac cycle length (pulsed-wave Doppler)	Pulsed-wave Doppler	$\geq 40\%$	85	NA	NA	41	74
Delay in peak systolic velocity (2 segments: basal septum and lateral wall)	Color-coded TDI	≥ 60 ms	67	NA	NA	53	69
Delay in onset of systolic velocity (6 basal LV segments)	Color-coded TDI	≥ 110 ms	81	NA	NA	68	34
Standard deviation of time to peak systolic velocities (12 LV segments)	Color-coded TDI	≥ 31.4 ms	50	11.4	33.7	78	31



Các thông số siêu âm dự đoán có đáp ứng CRT?

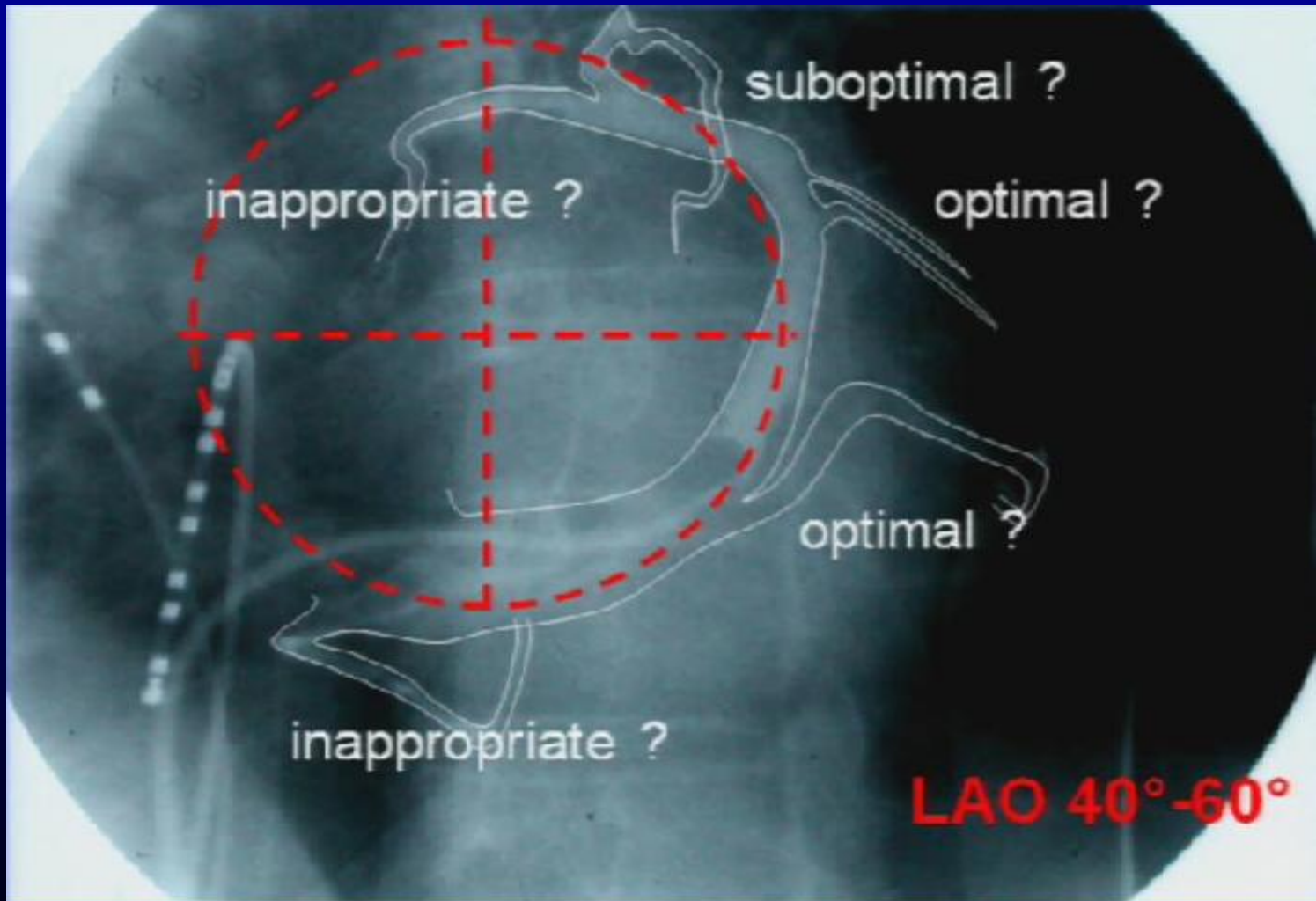
Author (Ref. #)	Patients (n)	Measurement	Echocardiographic Technique	Dyssynchrony Cutoff Value	Sensitivity (%)	Specificity (%)
Pitzalis et al. (45)	20	Septal-to-posterior wall motion delay	M-mode	≥ 130 ms	100	63
Marcus et al. (46)	79	Septal-to-posterior wall motion delay	M-mode	≥ 130 ms	24	66
Penicka et al. (47)	49	Sum of LV and VV dyssynchrony (pulsed-wave systolic velocities)	Pulsed-wave TDI	> 102 ms	96	77
Bax et al. (48)	25	Delay in peak systolic velocity (2 segments: basal septum and lateral wall)	Color-coded TDI	≥ 60 ms	76	78
Notabartolo et al. (49)	49	Delay in onset of systolic velocity (6 basal LV segments)	Color-coded TDI	≥ 110 ms	97	55
Yu et al. (39)	54	Standard deviation of time to peak systolic velocities (12 LV segments)	Color-coded TDI	≥ 31.4 ms	96	78
Van de Veire et al. (50)	60	Standard deviation of time to peak systolic velocities (12 LV segments)	Tri-plane TDI	> 33 ms	90	83
Gorcsan et al. (51)	29	Delay in peak systolic velocity (2 segments: [antero]septal and posterior wall)	Tissue synchronization imaging	≥ 65 ms	87	100
Suffoletto et al. (52)	64	Delay in peak strain (2 segments: anteroseptal and posterior wall)	2D radial strain	≥ 130 ms	89	83
Gorcsan et al. (53)	190	Combination between longitudinal and radial dyssynchrony (strain)	Color-coded TDI and 2D radial strain	≥ 60 ms ≥ 130 ms	88	80
Marsan et al. (54)	60	Systolic dyssynchrony index = standard deviation of time to volume shift (16 LV segments)	Real-time 3D echocardiography	$\geq 5.6\%$	88	86



VỊ TRÍ ĐIỆN CỰC THẮT TRÁI TỐI ƆU

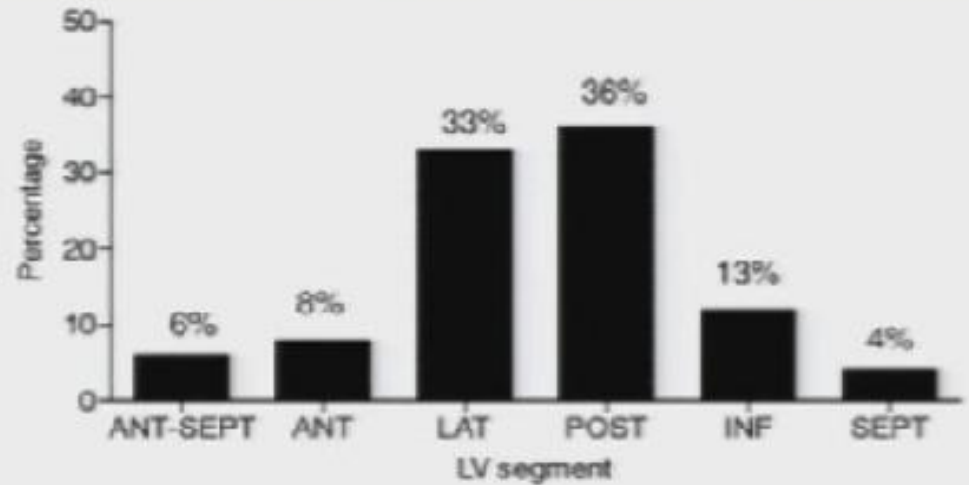
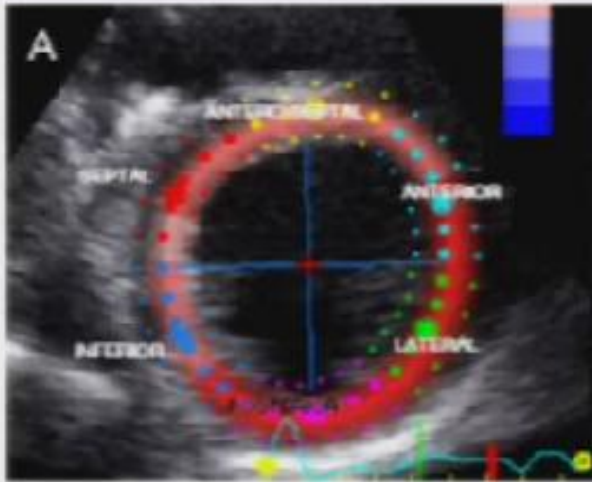


Nơi nào là vị trí điện cực thất trái tối - u





Vị trí điện cực thất trái trên bệnh nhân có đáp ứng với CRT từ nghiên cứu Prospect

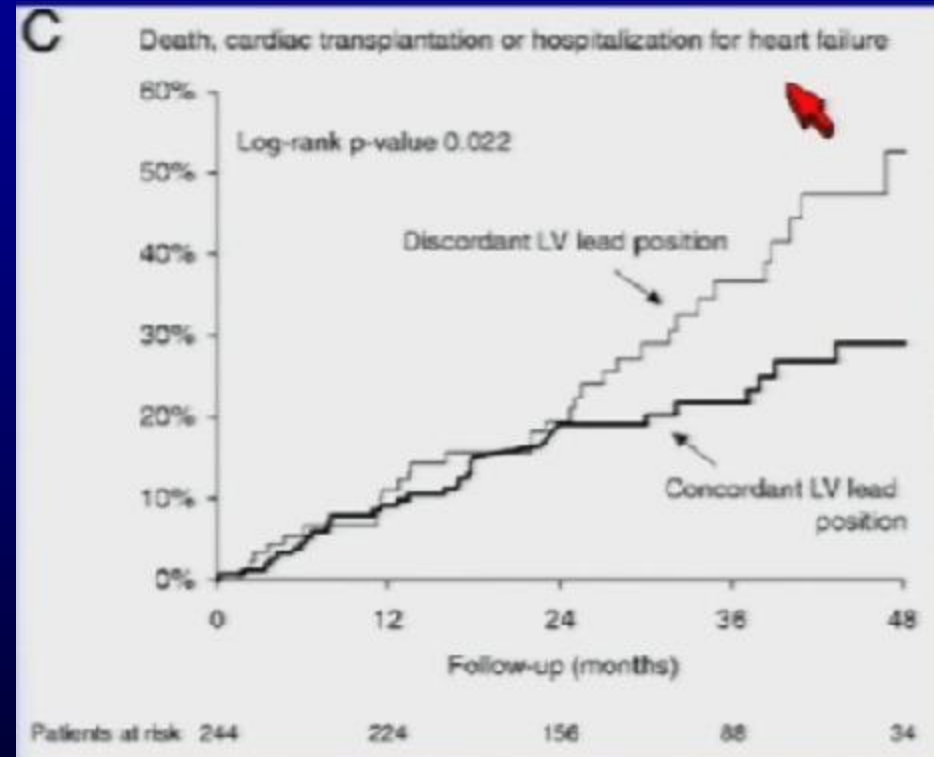
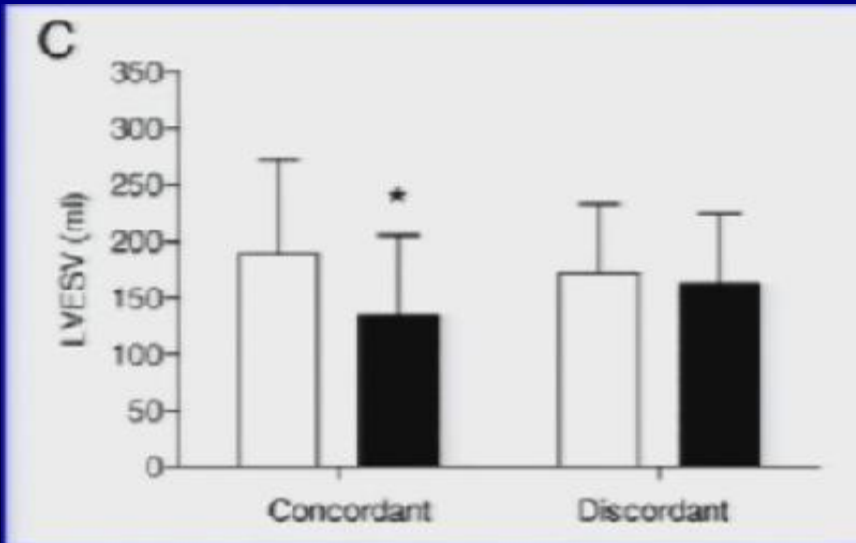


257 bệnh nhân

Vị trí hoạt động cơ học muộn nhất xác định trên siêu âm so sánh với vị trí điện cực thất trái trên màn XQ. Hoạt động cơ học muộn nhất phù hợp với vị trí thất trái đi kèm với tăng EF nhiều nhất.

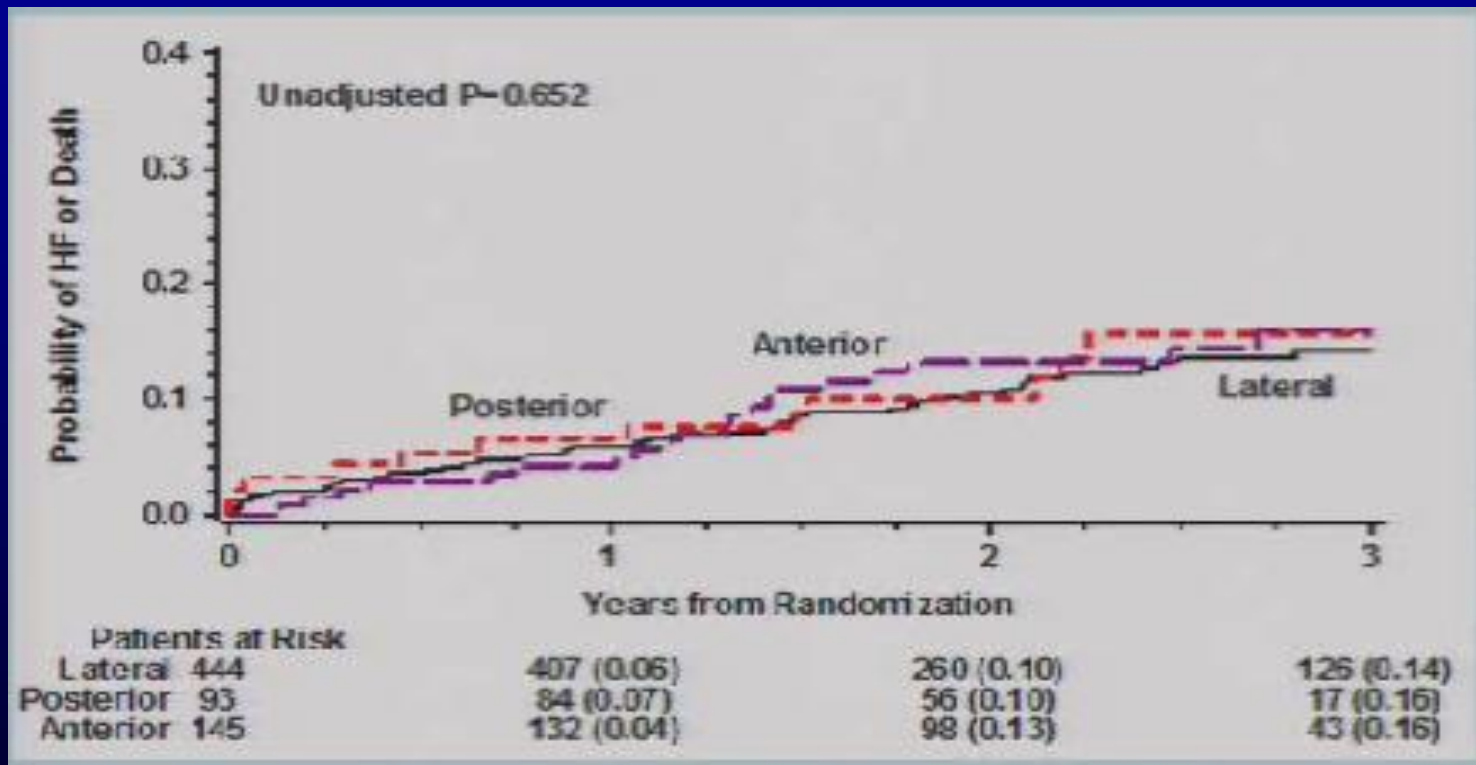


Vị trí điện cực thất trái trên bệnh nhân có đáp ứng với CRT từ nghiên cứu Prospect



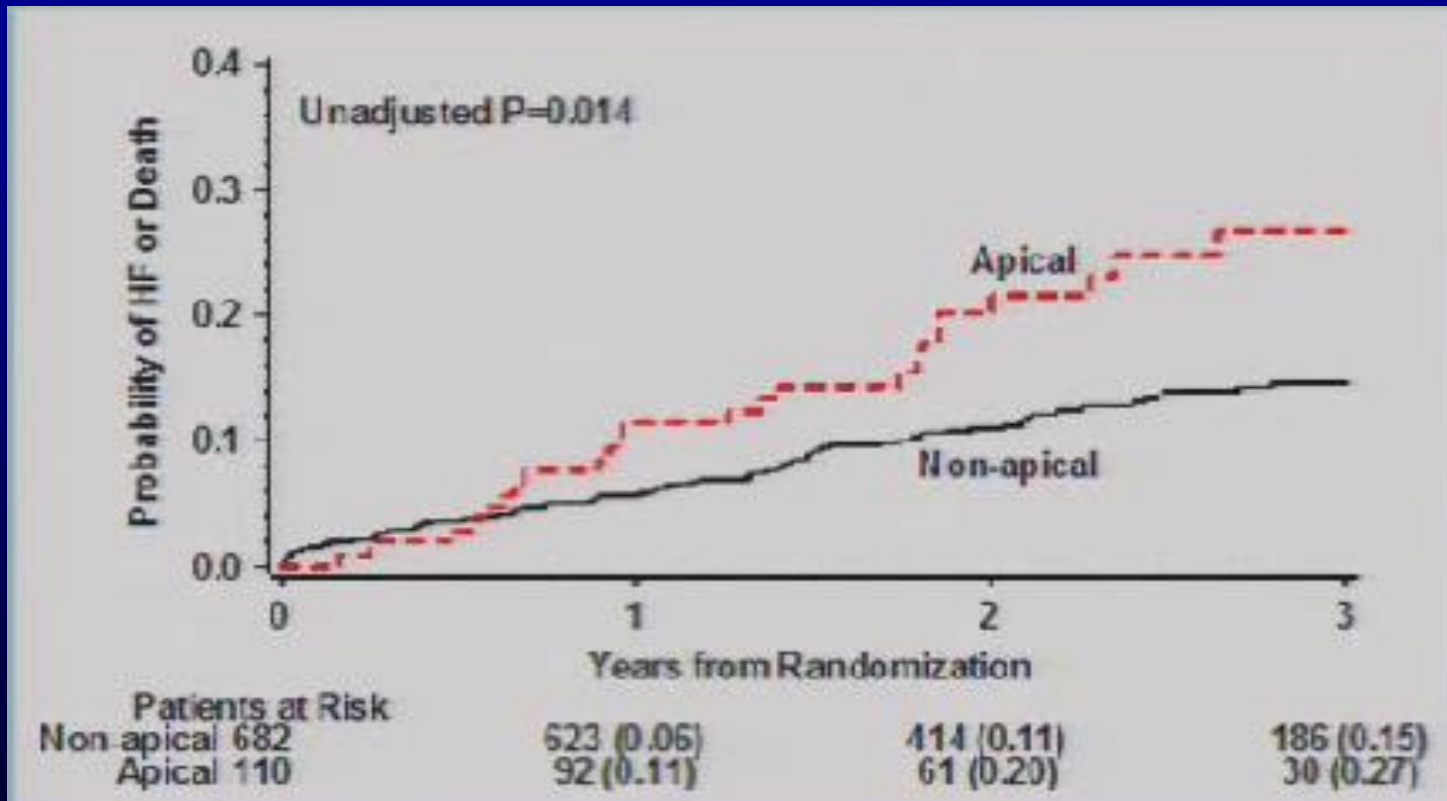


Nghiên cứu MADIT-CRT: Vị trí điện cực tr- ớc, sau và bên.



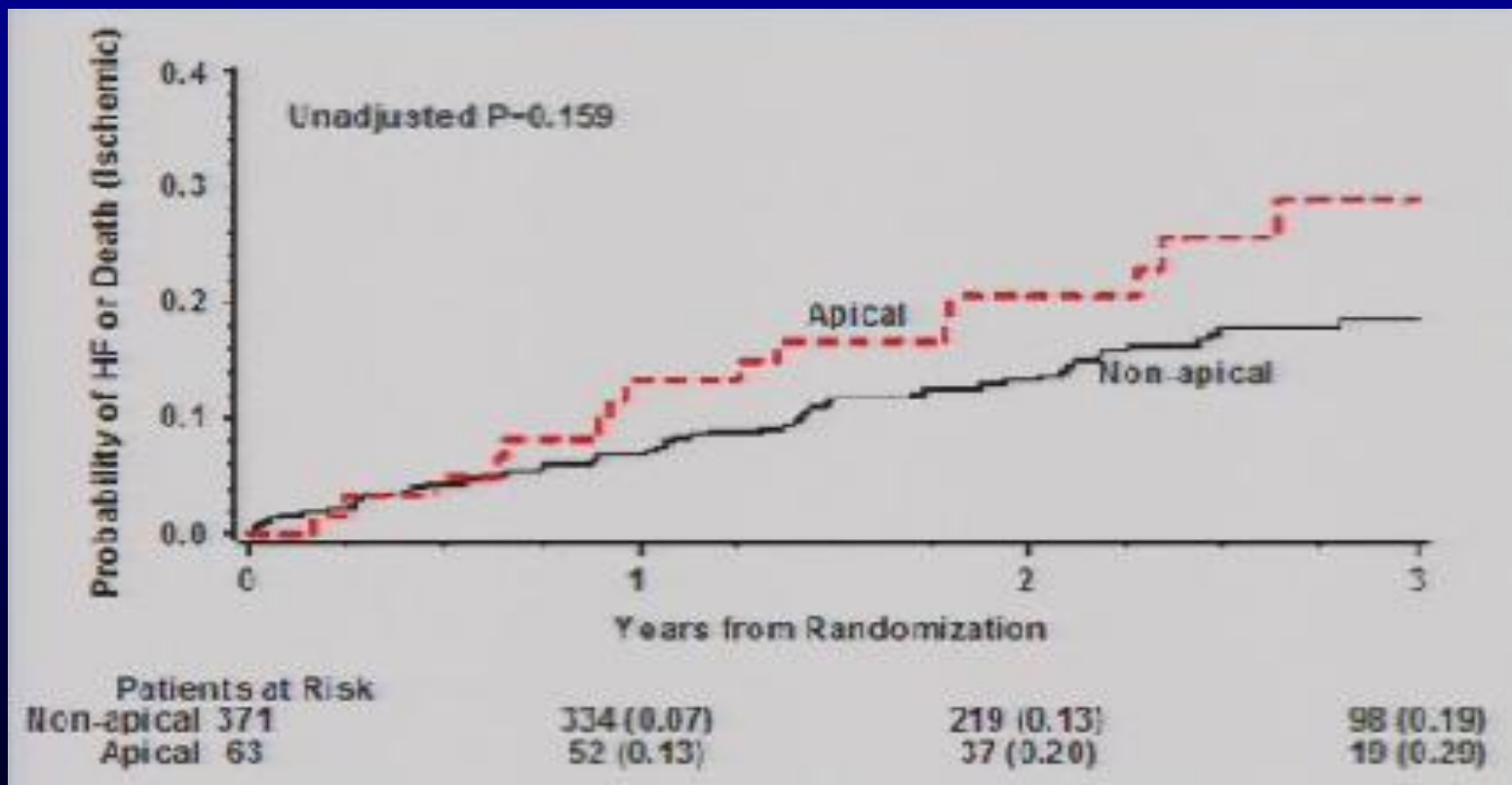


Nghiên cứu MADIT-CRT: Vị trí điện cực ở vùng mỏm và đáy.





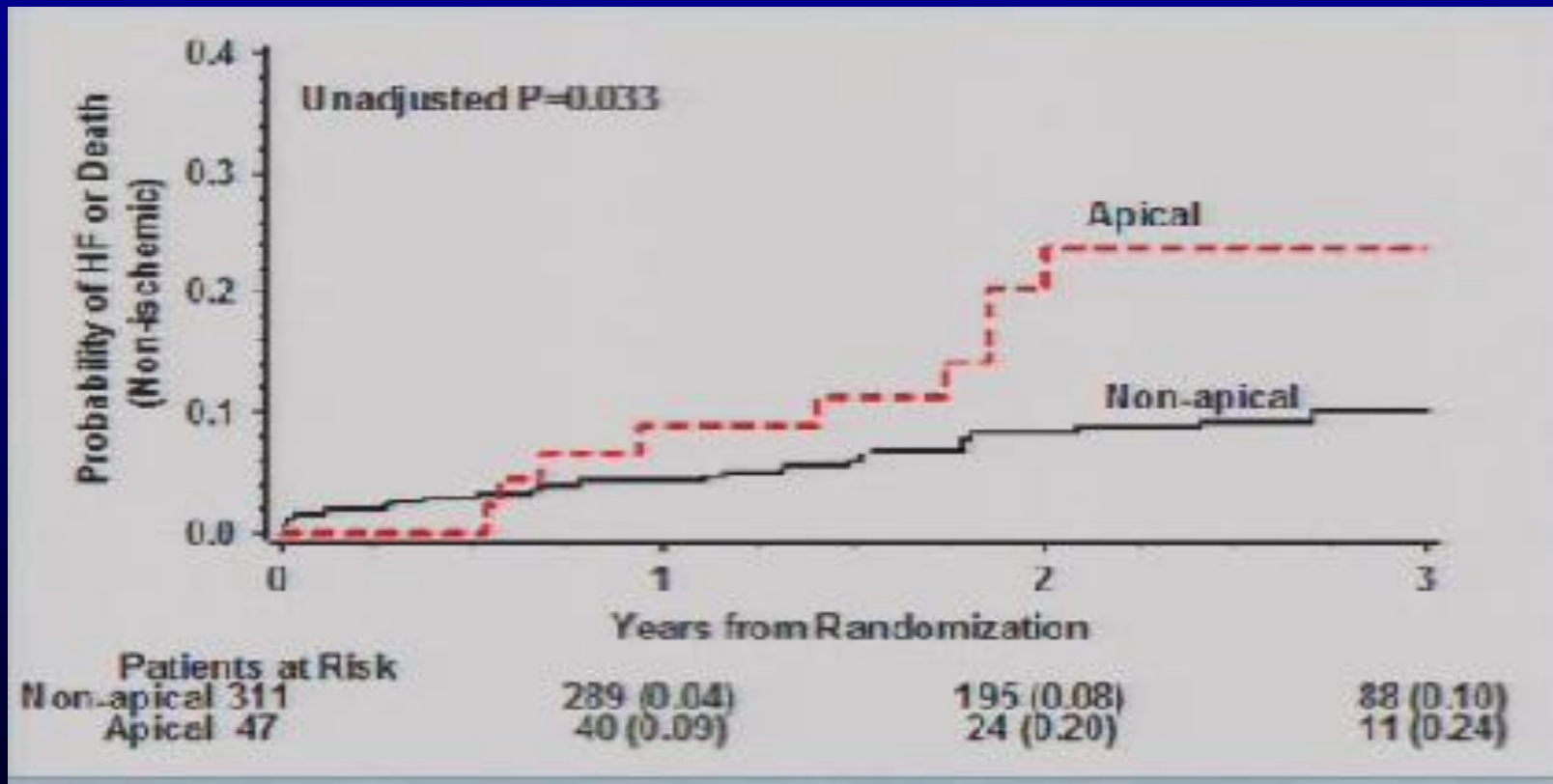
Nghiên cứu MADIT-CRT: Vị trí điện cực ở vùng mỏm và đáy trong bệnh mạch vành.

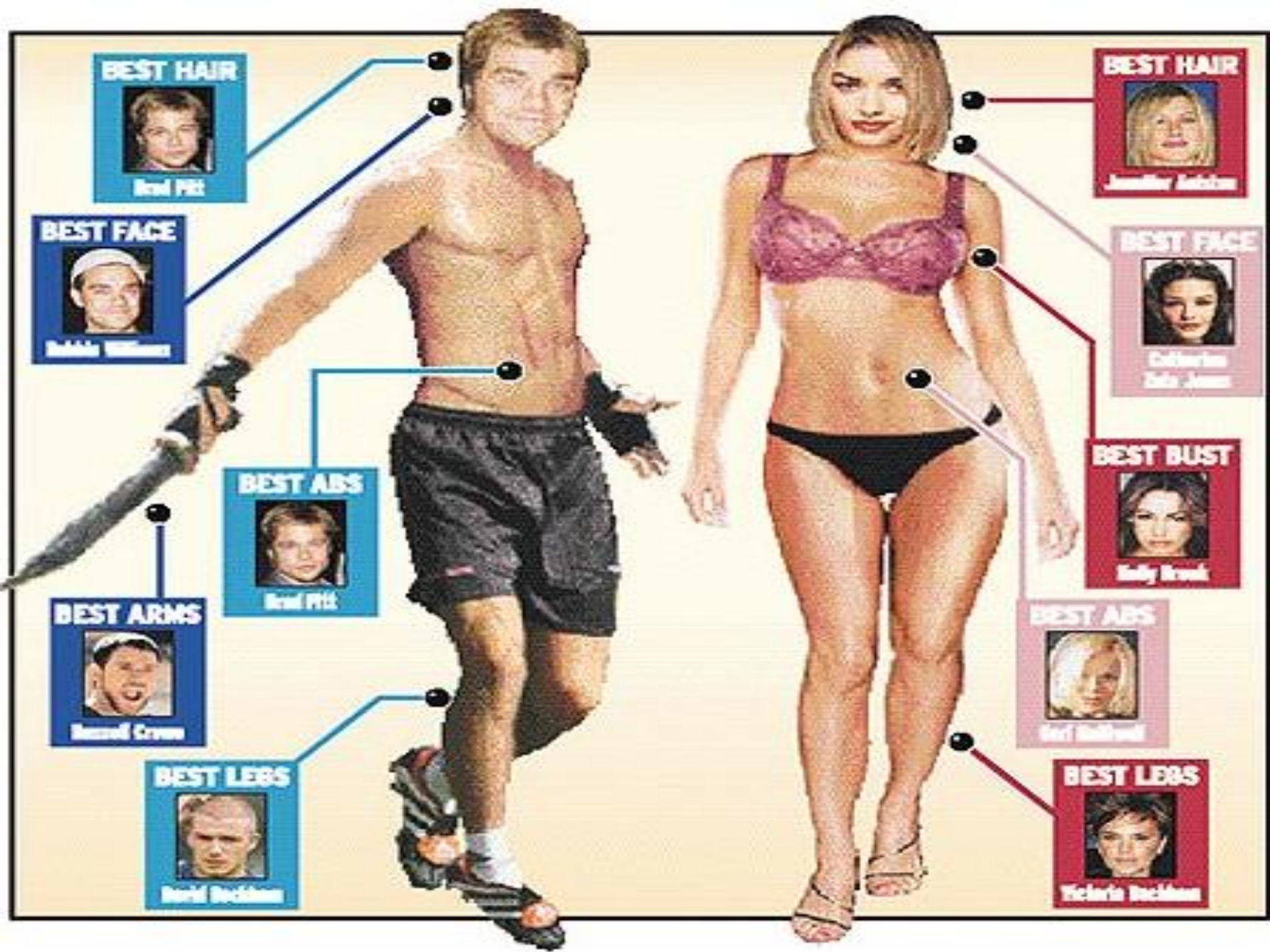


Moss et al. NEJM 2009;361: 1329-1338



Nghiên cứu MADIT-CRT: Vị trí điện cực ở vùng mỏm và đáy trong bệnh cơ tim giãn.





BEST HAIR



Brad Pitt

BEST FACE



Robbie Williams

BEST ABS



Brad Pitt

BEST ARMS



Russell Crowe

BEST LEGS



David Beckham

BEST HAIR



Jennifer Aniston

BEST FACE



Catherine Tate Jones

BEST BUST



Kelly Brook

BEST ABS



Gert Hallberg

BEST LEGS



Victoria Beckham



KẾT LUẬN

- Chúng ta nên chọn một bệnh nhân:
 - 📖 Bệnh cơ tim giãn với $EF \leq 35\%$.
 - 📖 Bloc nhánh trái có $QRS \geq 150$ ms.
 - 📖 Có siêu âm tim mất đồng bộ tim.
- Vị trí đặt điện cực hiệu quả nhất:
 - 📖 ở vùng đáy nhiều hơn vùng mỏm, ở các vị trí thành sau bên thất trái.

XIN CẢM ƠN SỰ CHÚ Ý

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Hình ảnh bệnh nhân sử dụng
trình thi giã- c c y m y t o
nh p tim n m 1958.