



29º
CONGRESSO
DE CARDIOLOGIA
DO ESTADO DA BAHIA

10 a 13 de maio de 2017
Bahia Othon Palace

Novidades na Cardiologia Nuclear

Luiz José de Oliveira Júnior





Utilização do MIBG em Pacientes com ICC e Risco de Morte Súbita

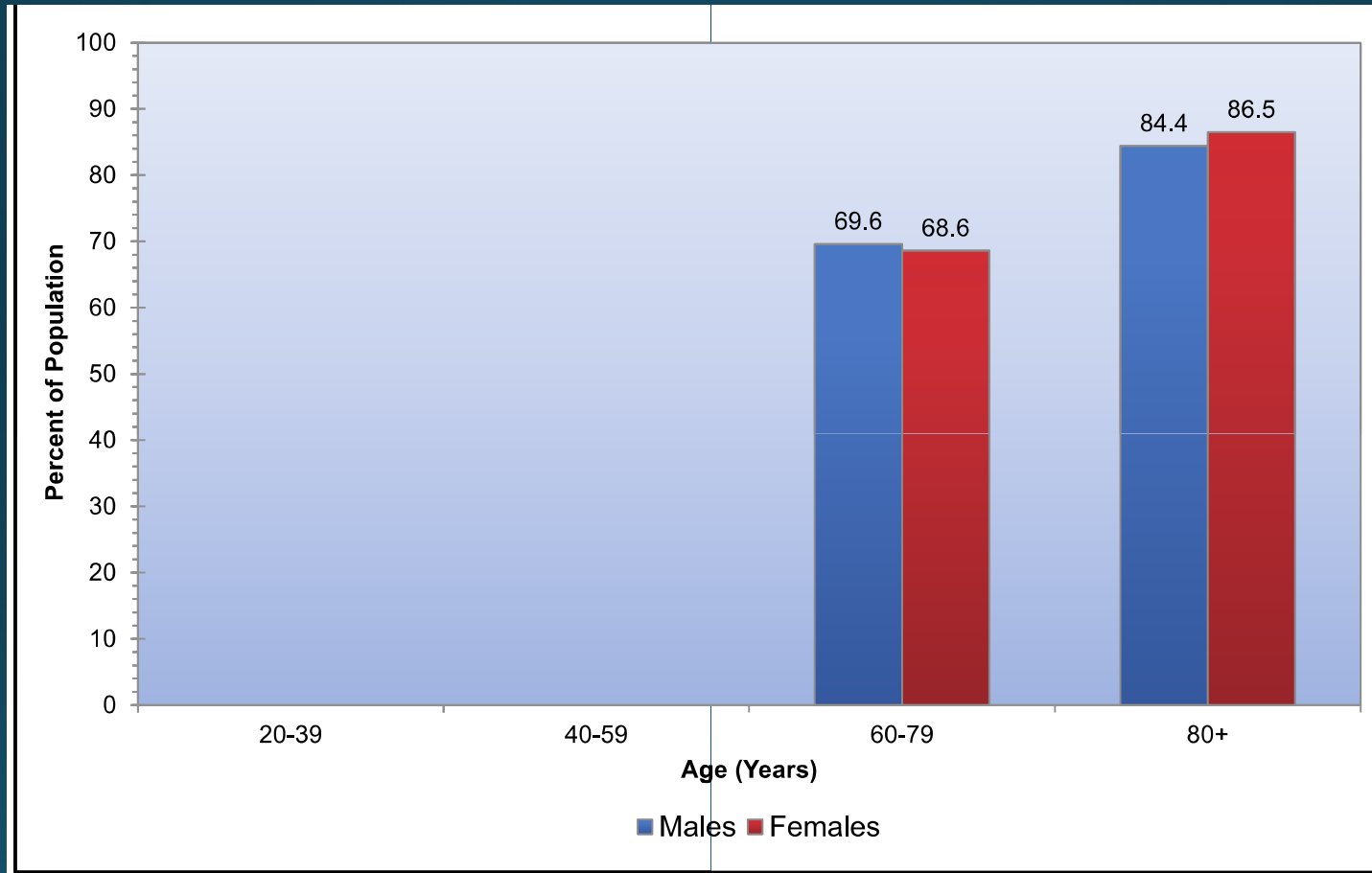
Papel do PET-FDG em Pacientes com Endocardite Infecciosa



Utilização do I-123 MIBG em pacientes com ICC e Risco de Morte Súbita

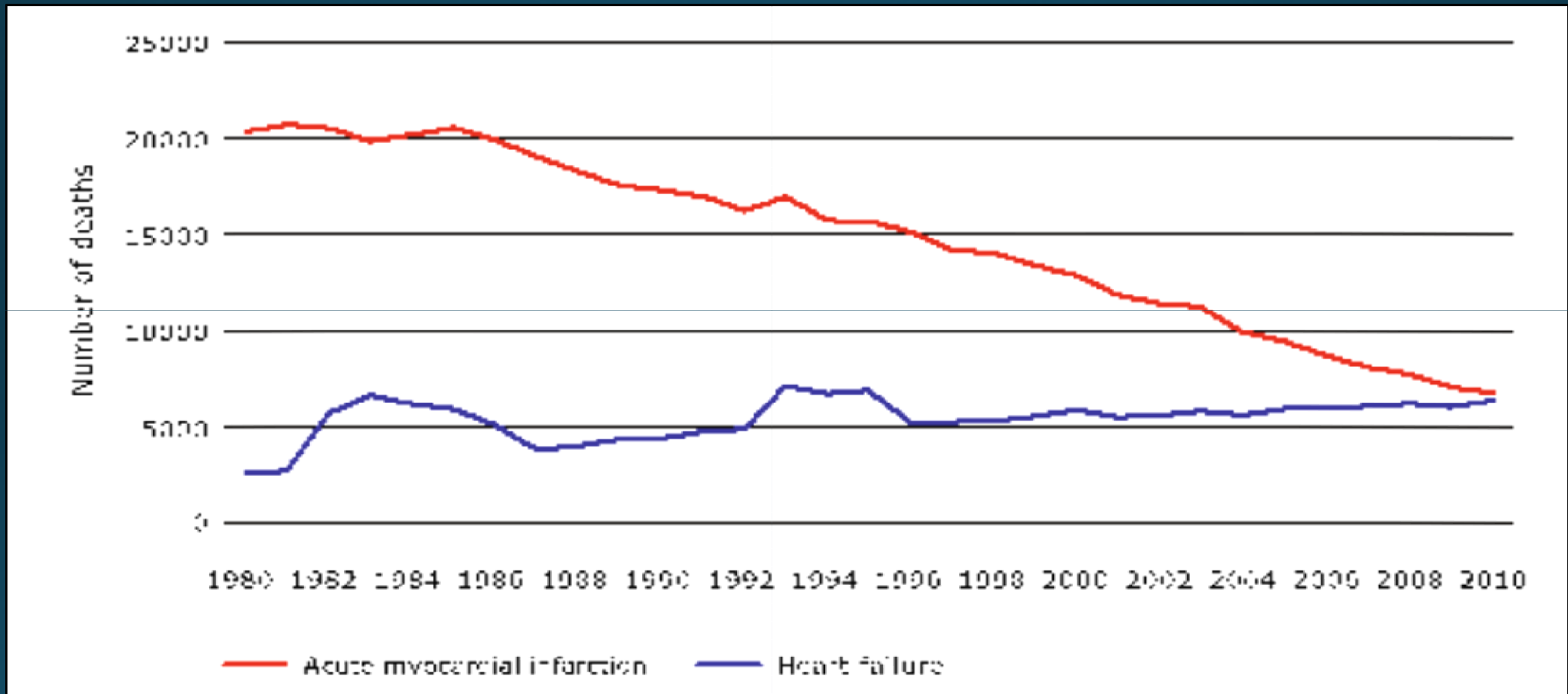


Prevalence of cardiovascular disease in adults ≥ 20 years of age by age and sex (NHANES 2011–2014).



Source: National Center for Health Statistics and National Heart, Lung, and Blood Institute.

Number of deaths as a result of acute myocardial infarction and heart failure in the Netherlands from 1980 to 2010.





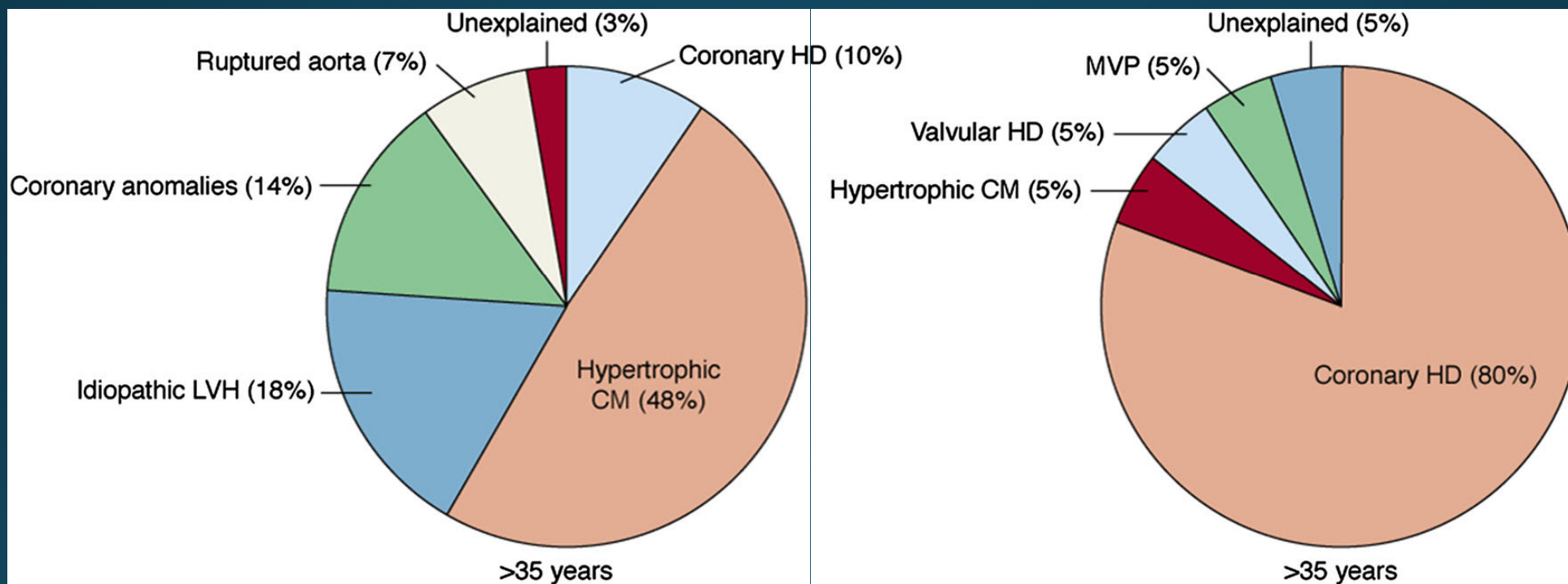
Mecanismos de Morte na ICC



Falência de bomba

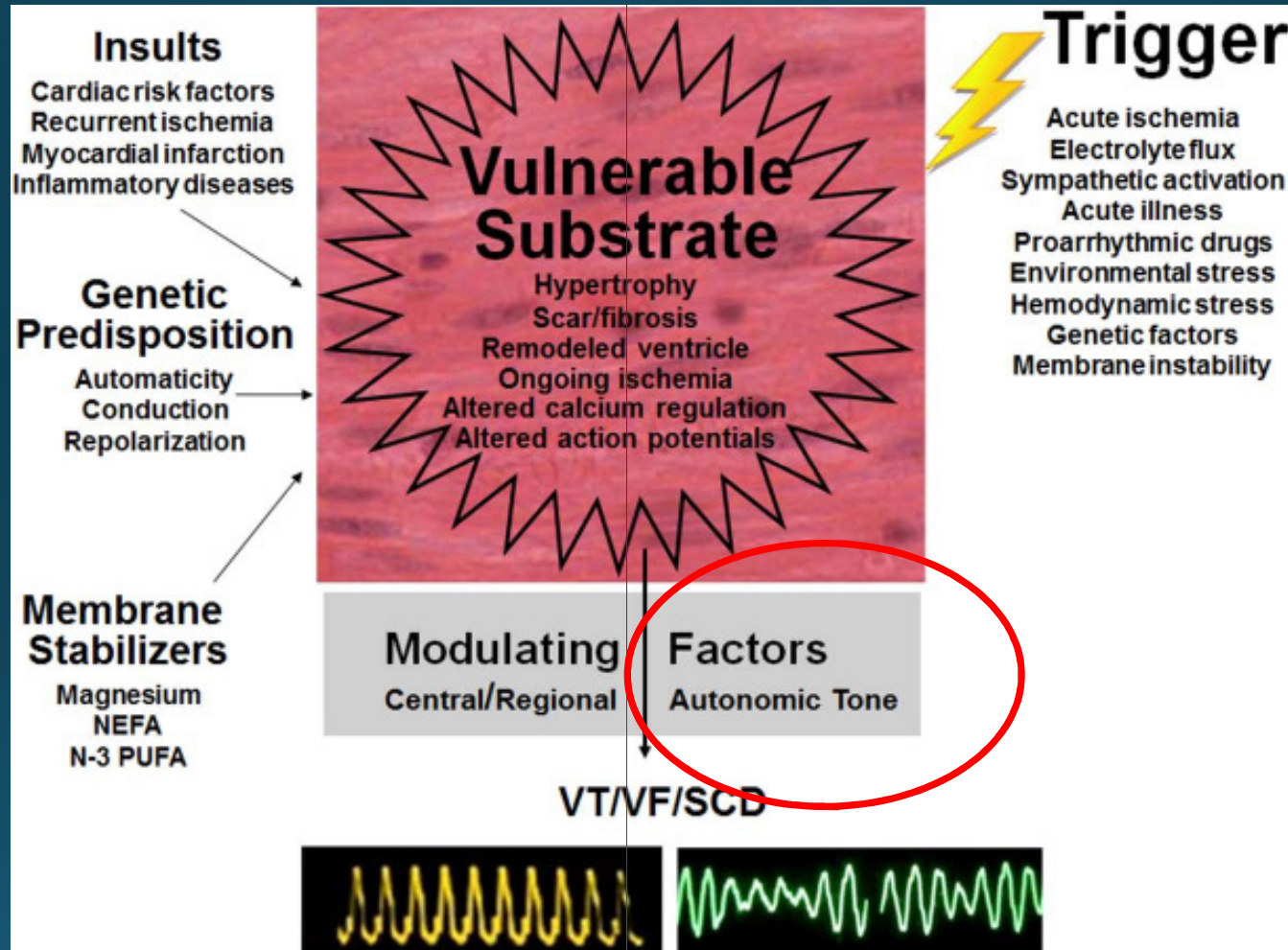
Morte Súbita

Causas de Morte Súbita em Atletas de acordo com a Faixa Etária



McElwee et al. J Nucl Cardiol 2016;23:1368–79.)

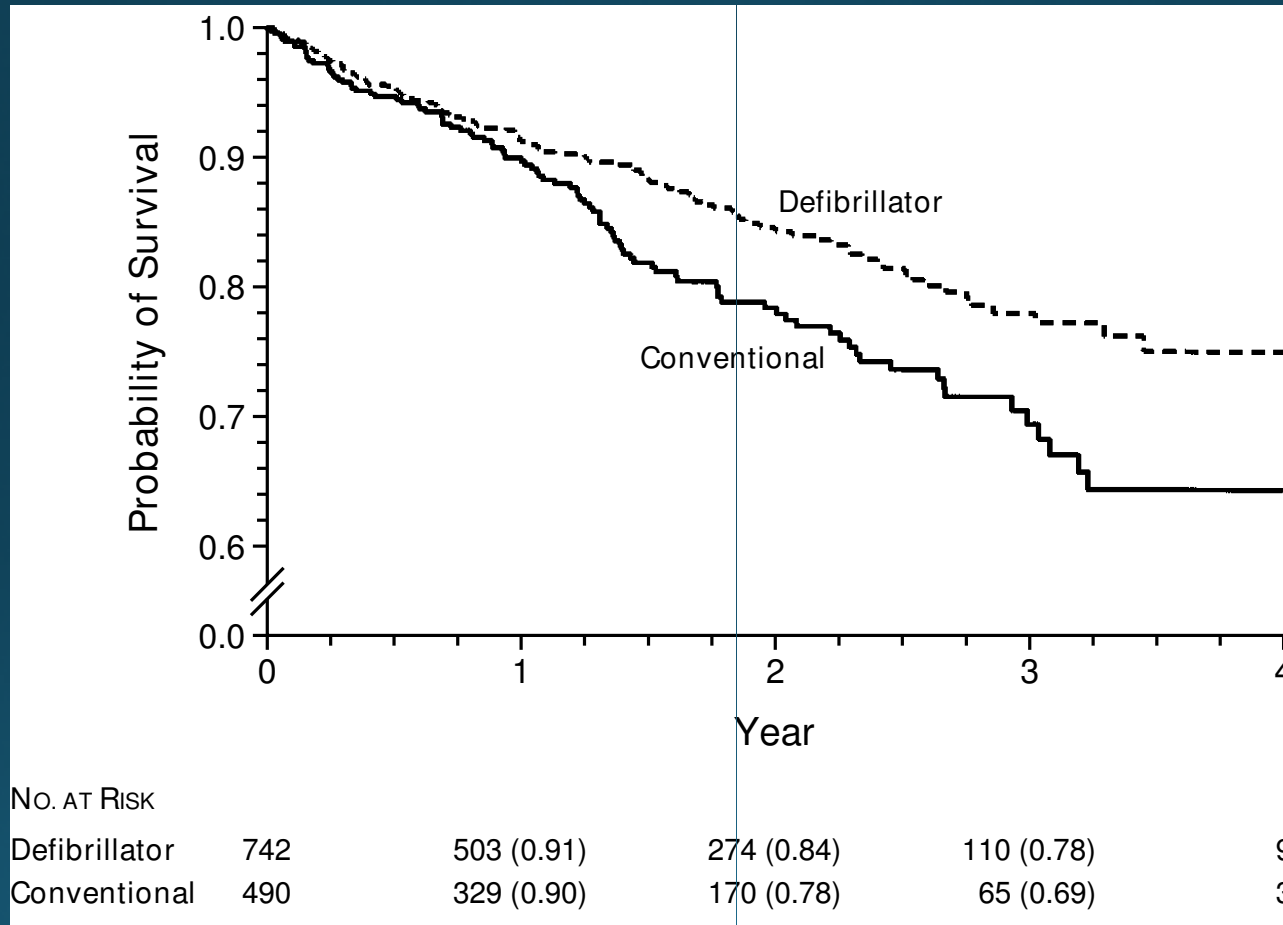
Fatores Relacionados à Gênese de Arritmias Letais



Travin et al *Circ Cardiovasc Imaging*. 2015;8:e003019.



Probabilidade de Sobrevida em Pacientes Selecionados para Uso de CDI e Tratamento Médico convencional



MADDIT II
TRIAL

Moss et al. N Engl J Med 2002;346:877-83.



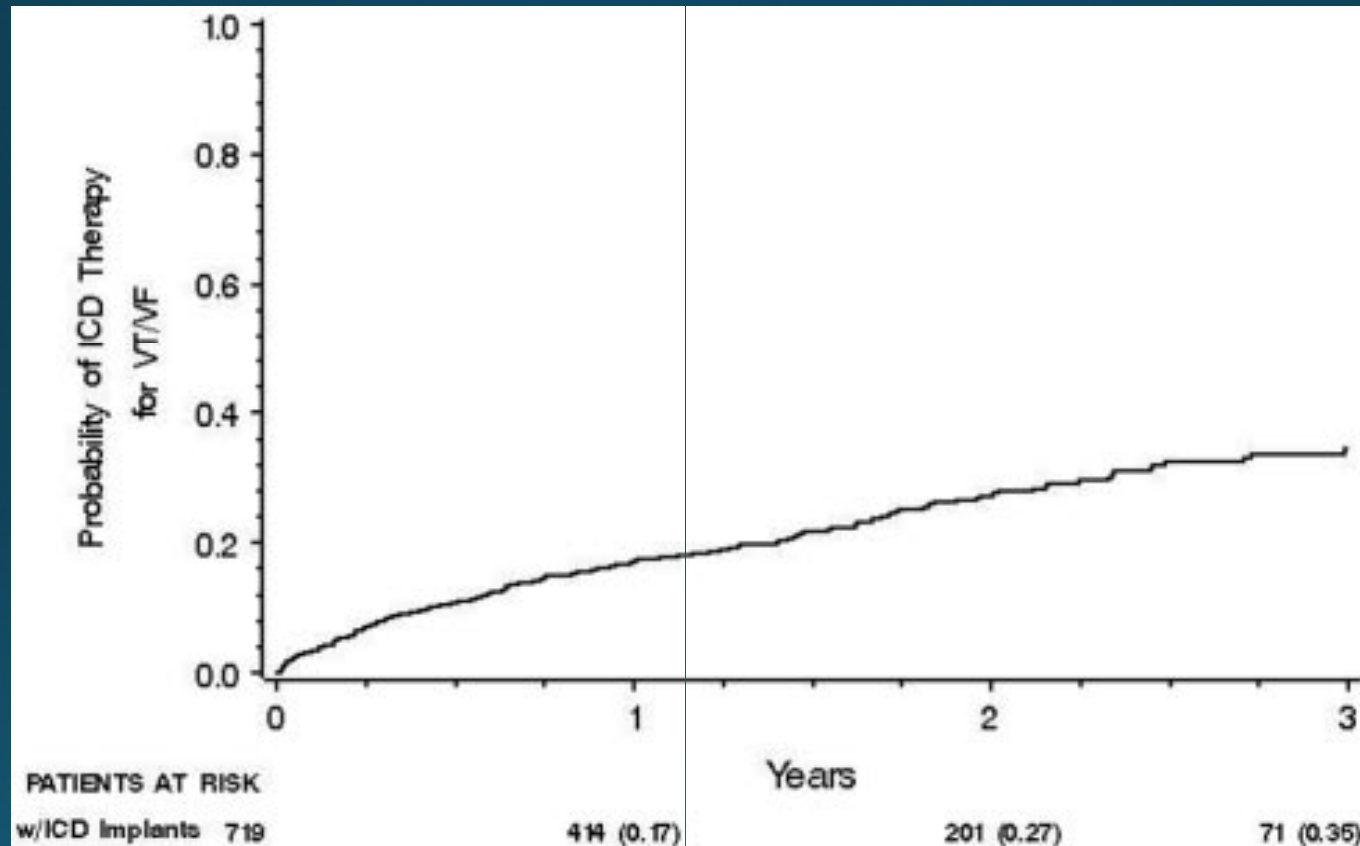
Role of LVEF in current guidelines for ICD implantation in primary prevention

Indication	LVEF cut-off (%)	Class of recommendation
Patients with symptomatic HF (NYHA class II or III), ischemic cause, more than 40-day post-MI, on adequate medical therapy	≤35	I
Patient with symptomatic HF (NYHA class II or III), non-ischemic cause, on adequate medical therapy	≤35	I
Patient with LV dysfunction secondary to MI, asymptomatic (NYHA class I) more than 40-day post-MI, on adequate medical therapy	≤30	I
Patient with non-sustained VT due to prior MI with inducible VF or sustained VT at electrophysiology study	≤40	I
Patient with asymptomatic (NYHA class I) non-ischemic cardiomyopathy	≤35	IIb

LVEF, Left ventricular ejection fraction; *ICD*, implantable cardioverter defibrillator; *HF*, heart failure; *MI*, myocardial infarction; *LV*, left ventricle; *VT*, ventricular tachycardia; *VF*, ventricular fibrillation.



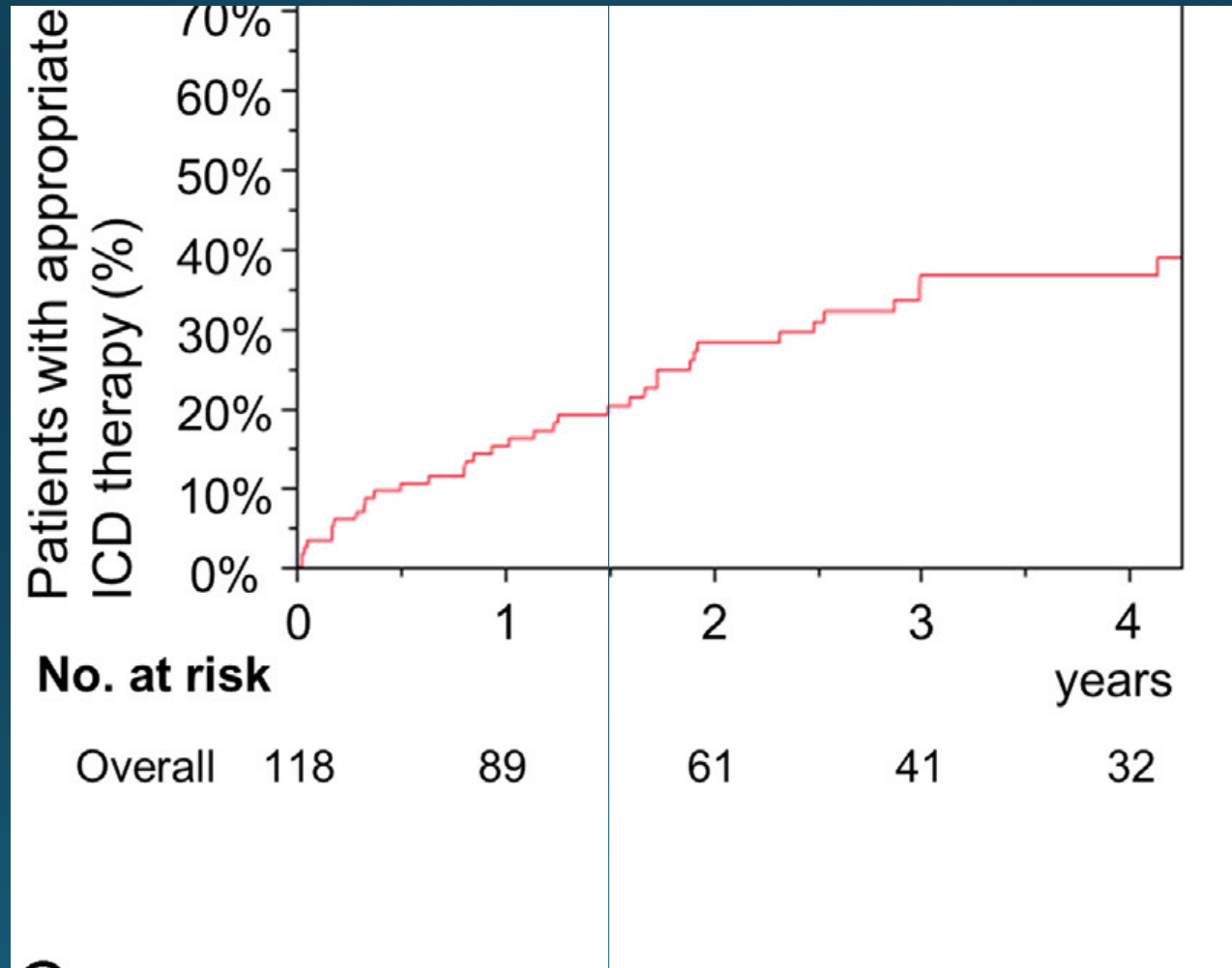
Kaplan-Meier graph of cumulative probability of first appropriate ICD therapy for VT or VF after study entry.



Moss et al .*Circulation*. 2004;110:3760-3765.



Probabilidade de Uso Adequado do CDI em 4 anos

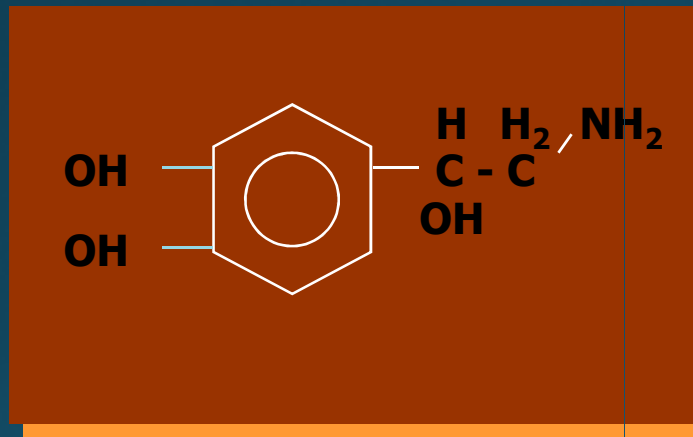




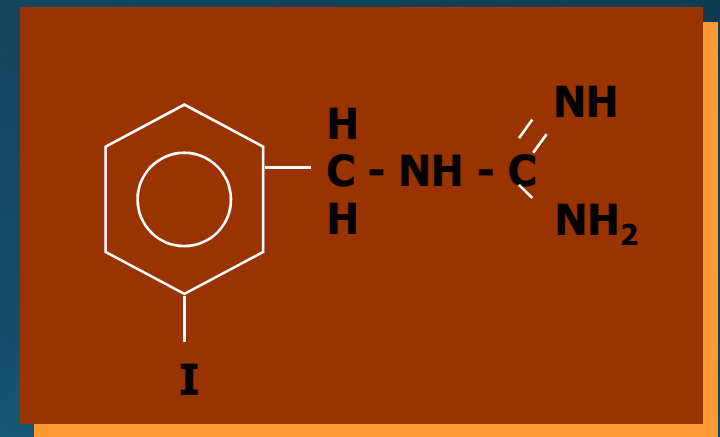
Avaliação Adrenérgica Cardíaca com mIBG



Norepinefrina (NE) e mIBG-¹²³I

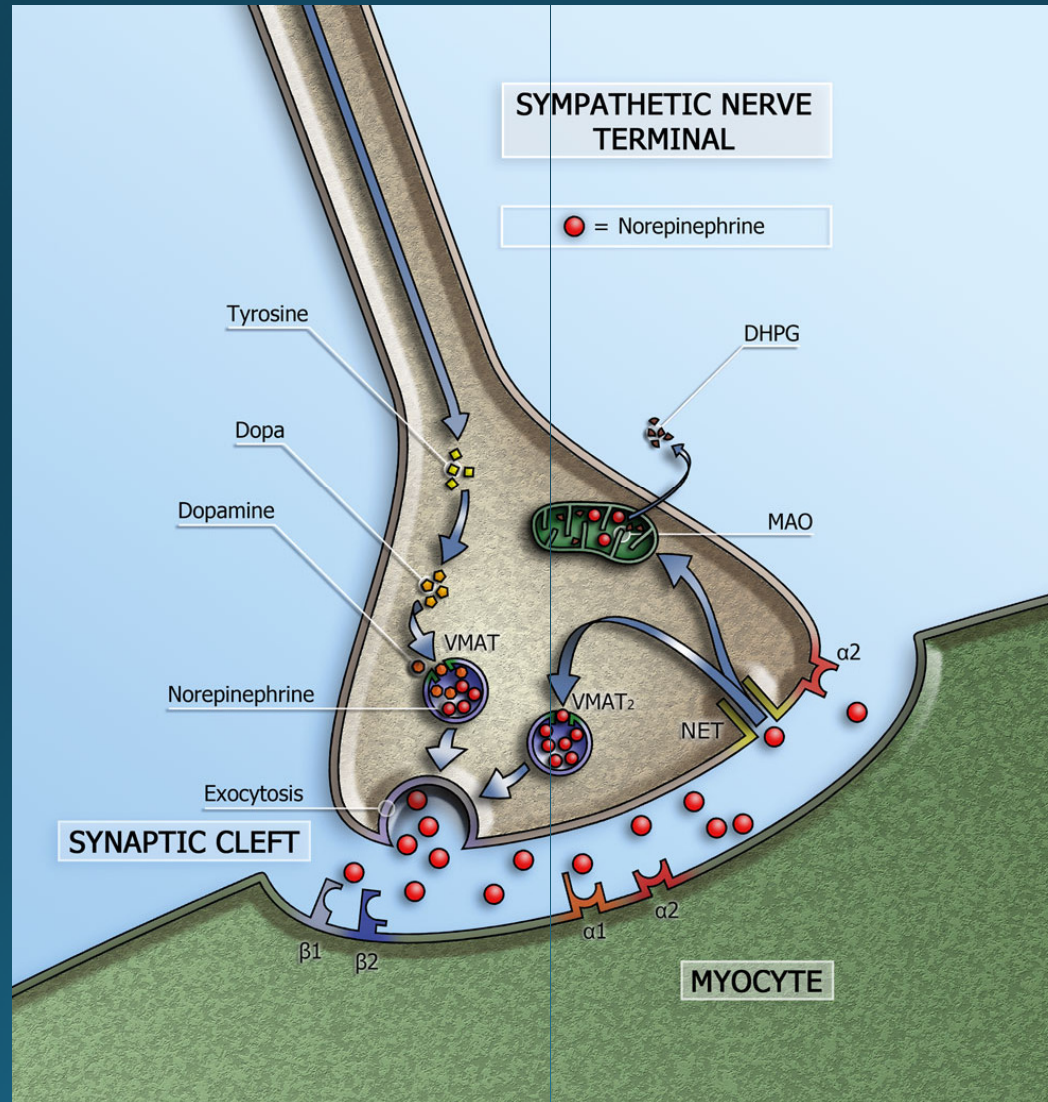


Norepinefrina

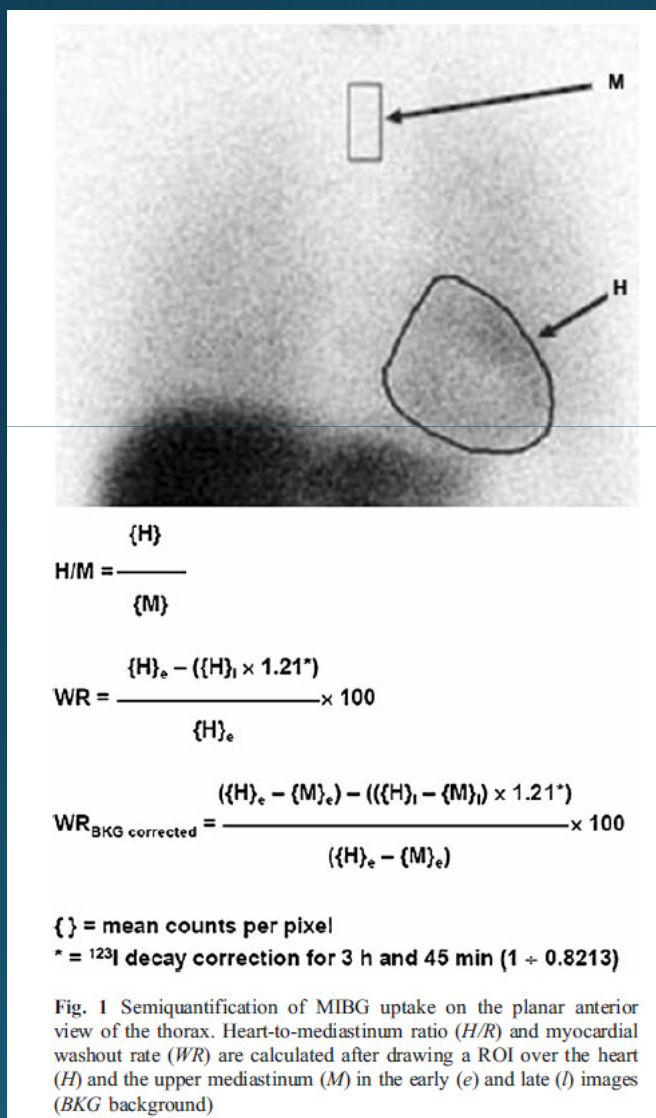


mIBG

Representação Esquemática da Sinapse Simpática



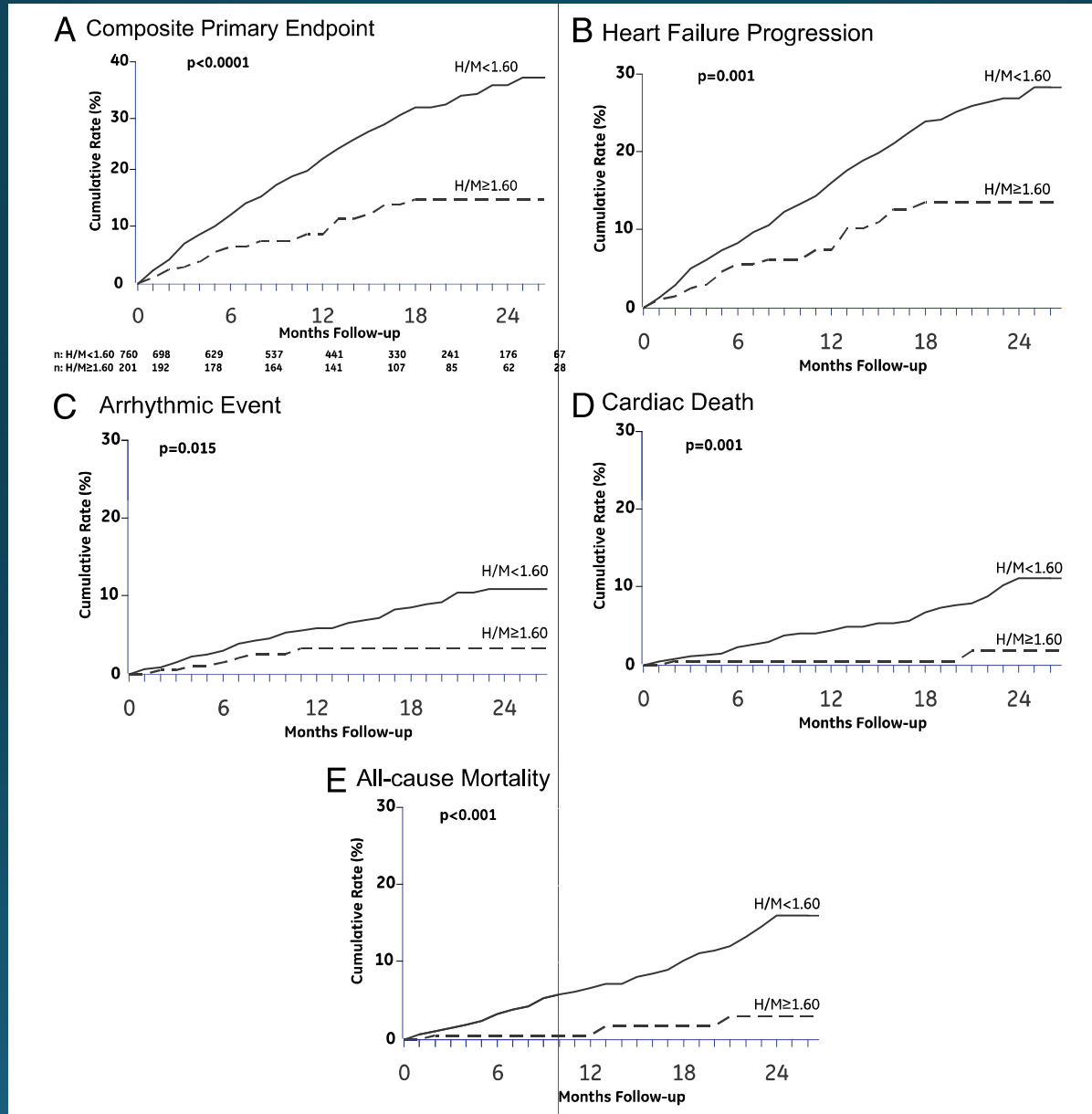
ROIs CORAÇÃO E MEDIASTINO E VARIÁVEIS A SER CALCULADAS



$R C/M$ = reflete a distribuição relativa das terminações nervosas simpáticas, oferecendo informação global sobre a função neuronal (uptake, armazenamento e liberação)

WR = reflete a integridade neuronal ou tônus simpático, representado principalmente pelo uptake 1.

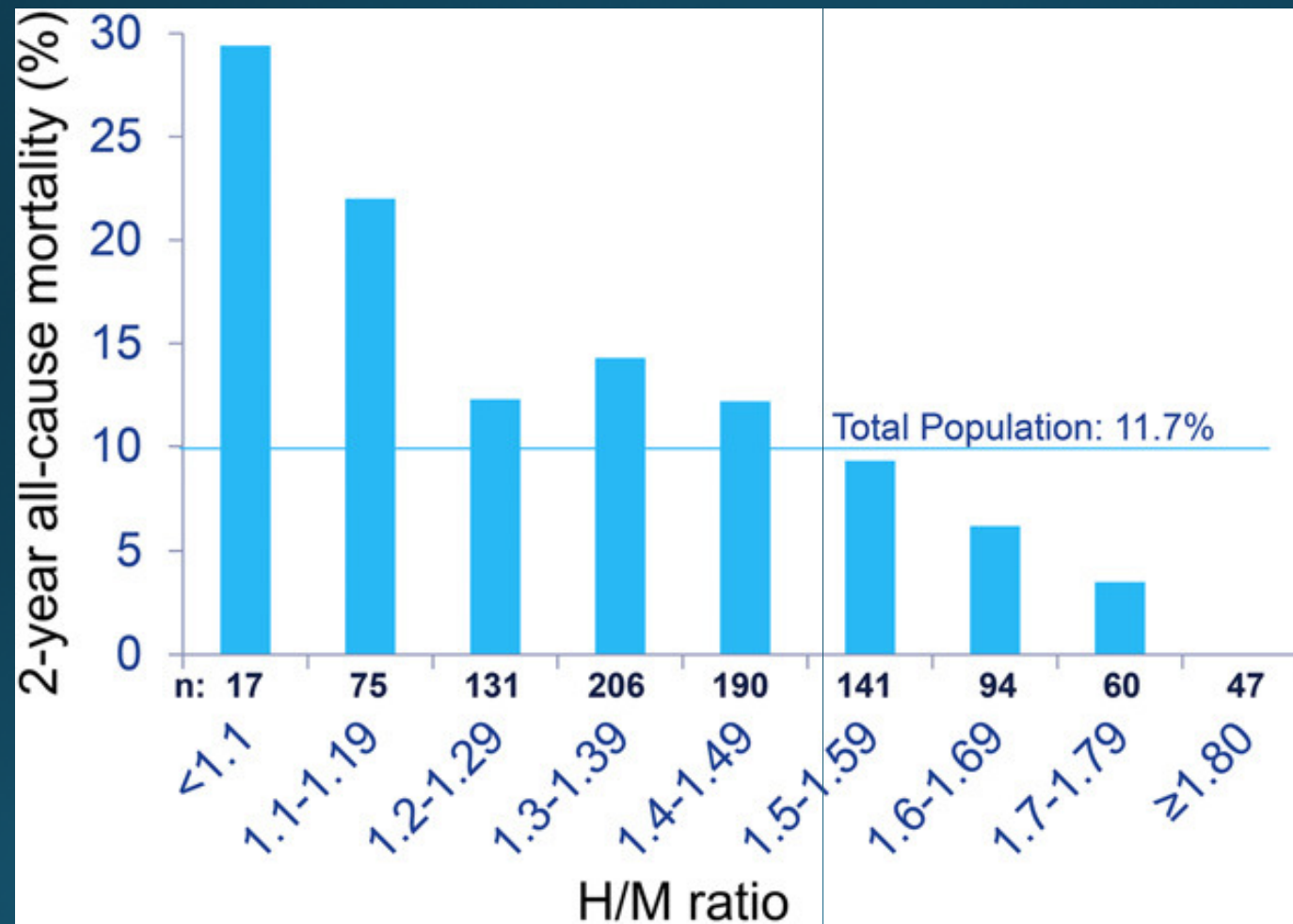
Curvas de Eventos Cumulativos Segundo a Relação H/M do MIBG



**ADMIRE-HF
 TRIAL**



Curva Cumulativa de Morte em 2 anos Segundo a Relação H/M do MIBG



ADMIRE-HF
TRIAL



Categories of heart diseases that contribute to sudden cardiac death	
	Percentage of all SCA
No diagnosis of heart disease	45%
Diagnosis of heart disease	
LVEF > 40%	40%
LVEF < 40%	13%
Genetic arrhythmic risk	2%

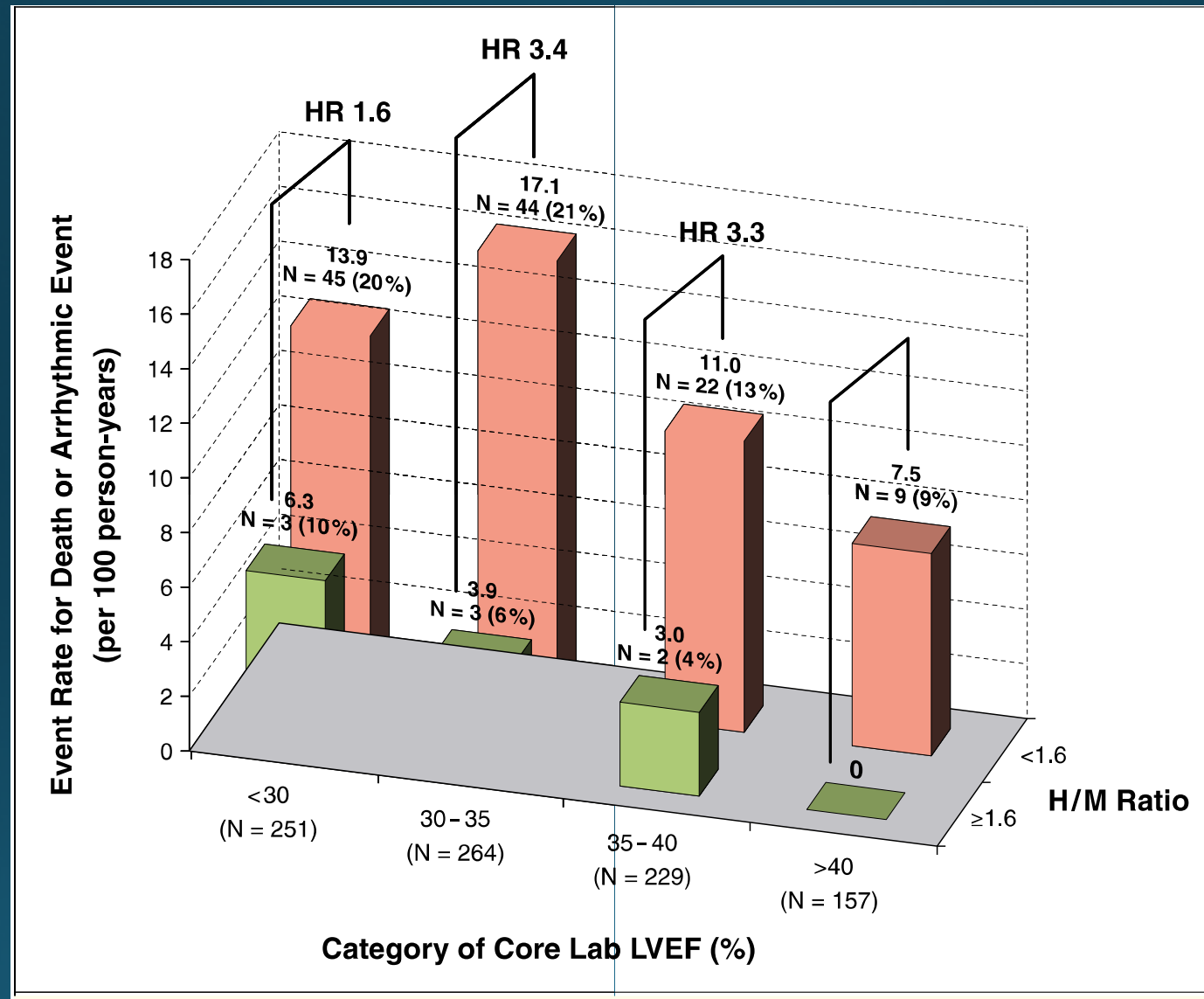
SCA sudden cardiac arrest, LVEF left ventricular ejection fraction

Wellens et al. European Heart Journal (2014) 35, 1642–1651

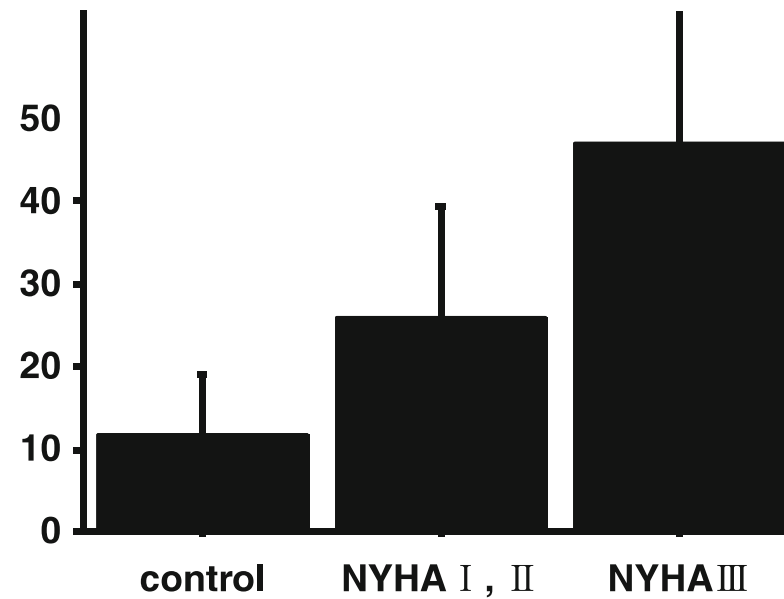


**MIBG também é Capaz de Prever Eventos Cardíacos
em Pacientes com ICC e FEVE Preservada?**

Taxa de Eventos Segundo FEVE e relação H/M

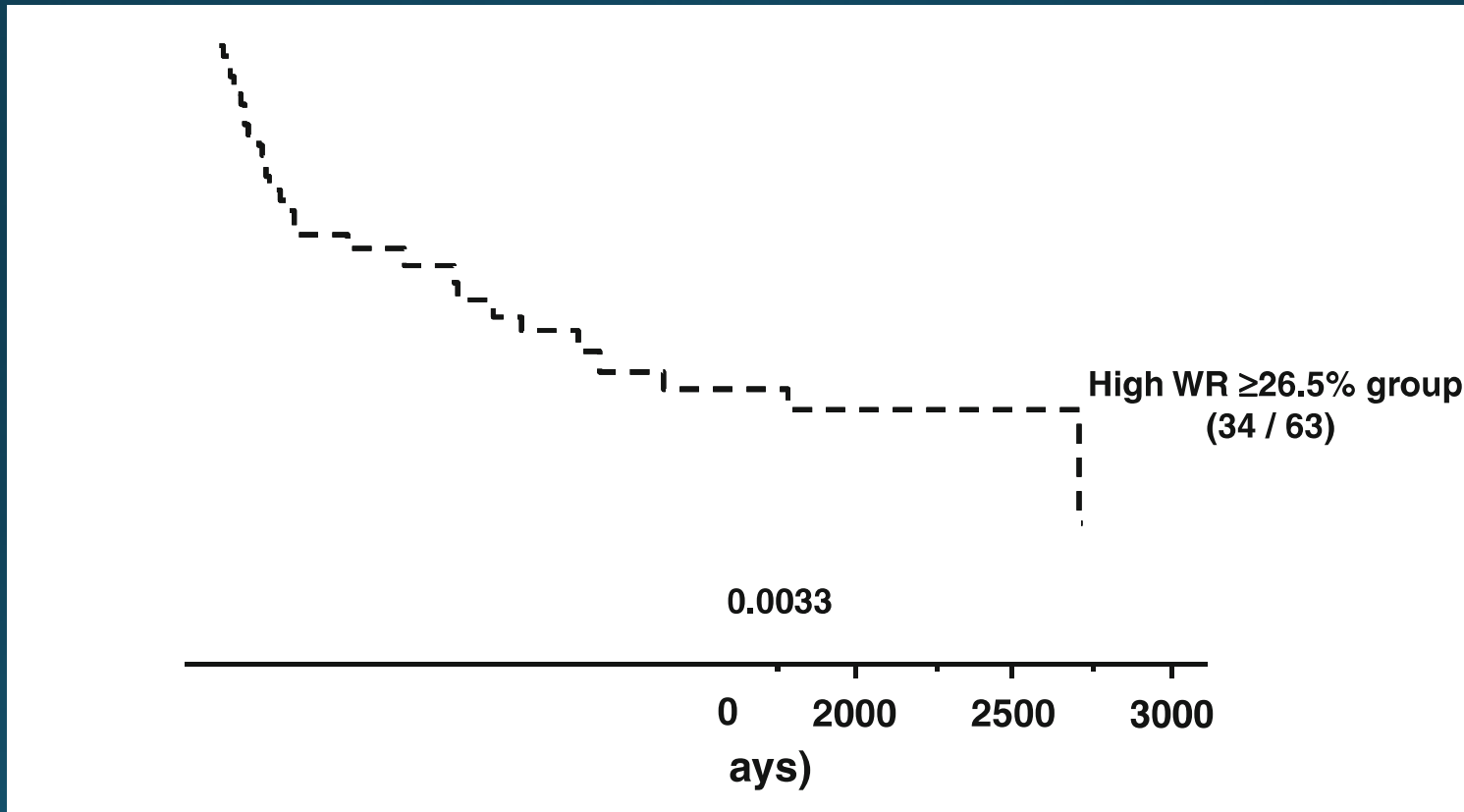


Relação H/M e WO na População



Katoh et al. Ann Nucl Med (2010) 24:679–686

Wash Out do I-123 MIBG e Taxa de Eventos Cardíacos em Pacientes com FEVE Preservada



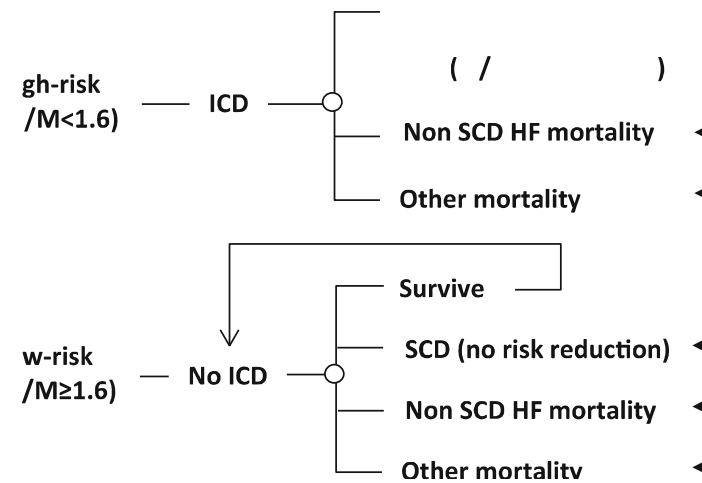
Katoh et al. Ann Nucl Med (2010) 24:679–686



Usar Cintilografia com I-123 MIBG para Selecionar Pacientes para Implante de CDI é Custo- Efetivo?



Estrutura do Modelo de Análise Decisória



n/m near/midasternum ratio, ICD implantable cardioverter defibrillator, LVEF left ventricular ejection fraction, NYHA New York Heart Association, SCD sudden cardiac death



Disaggregated results; left ventricular ejection fraction $\leq 35\%$

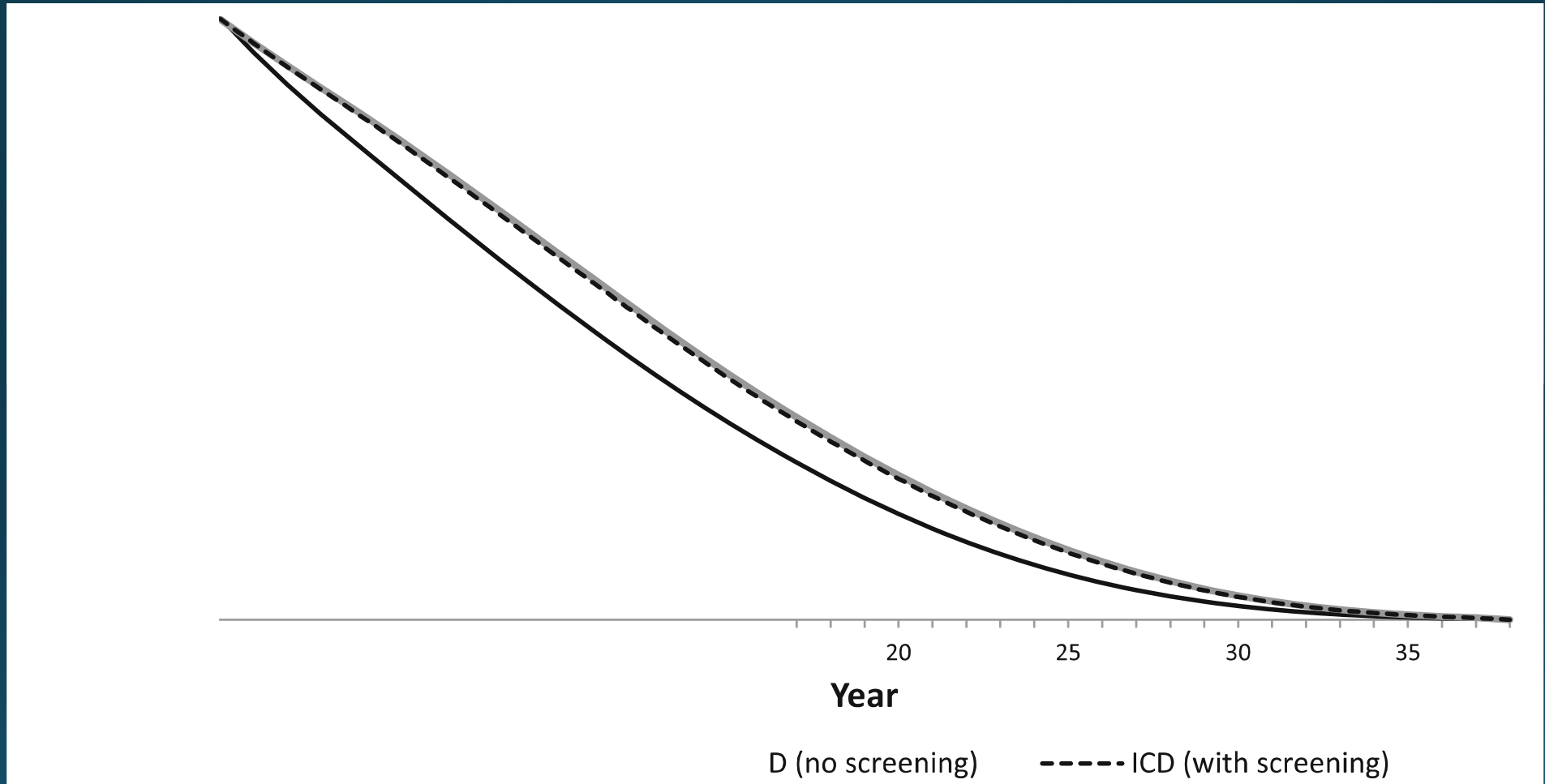
	2 years				10 years			
	No ICD	ICD		Difference between screening and no screening	No ICD	ICD		Difference between screening and no screening
		No screening	Screening			No screening	Screening	
Outcomes								
ICD (%)	0.0	100.0	79.1	-20.9	0.0	100.0	79.1	-20.9
Mortality (%)	11.2	8.1	8.3	0.2	47.8	39.3	40.0	0.7
LYs	1.922	1.953	1.952	-0.001	7.508	8.072	8.032	-0.040
LYs; discounted	1.866	1.896	1.895	-0.001	6.598	7.068	7.035	-0.033
QALYs; discounted	1.508	1.532	1.531	-0.001	5.243	5.454	5.411	-0.043
Costs (\$)								
Screening	0	0	3209	3209	0	0	3209	3209
ICD	0	41,486	32,815	-8671	0	41,486	32,815	-8671
Battery/lead replacement	0	0	0	0	0	33,422	26,143	-7279
ICD evaluation	0	611	482	-129	0	2313	1814	-500
Medical costs	31,217	30,177	30,268	91	113,278	116,560	116,370	-190
Total	31,217	72,274	66,774	-5500	113,278	193,781	180,351	-13,431

The numbers may not sum because of rounding

ICD implantable cardioverter defibrillator, LY life-year, QALY quality-adjusted life-year



Sobrevida Segundo o Modelo de Escolha Adotado



K. O'Day et al. Appl Health Econ Health Policy
(2016) 14:361–373



**Para quem está indicado a realização
de cintilografia com MIBG?**



Estudo ADMIRE- ICD

	LVEF cut-off	Class of recommendation
Patients with symptomatic heart failure 40-day post-MI, NYHA class II or III	≤ 40	I
Patient with symptomatic heart failure on adequate medical therapy and LVEF ≤ 40	≤ 40	I
Patient with LV dysfunction and NYHA class II or III heart failure more than 40-days post-MI	≤ 40	I
Patient with non-sustained VT due to prior MI with inducible VF or sustained VT at electrophysiology study	≤ 40	I
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LVEF, Left ventricular ejection fraction; *ICD*, implantable cardioverter defibrillator; *HF*, heart failure; *MI*, myocardial infarction; *LV*, left ventricle; *VT*, ventricular tachycardia; *VF*, ventricular fibrillation.

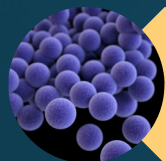


Pacientes com ICC CF II/III e FEVE > 35%

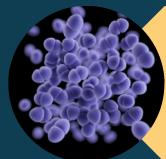


FDG PET-CT e Avaliação de Endocardite Infecciosa

PET/CT-¹⁸FDG na endocardite infecciosa em 2017?



212 pacientes incluídos



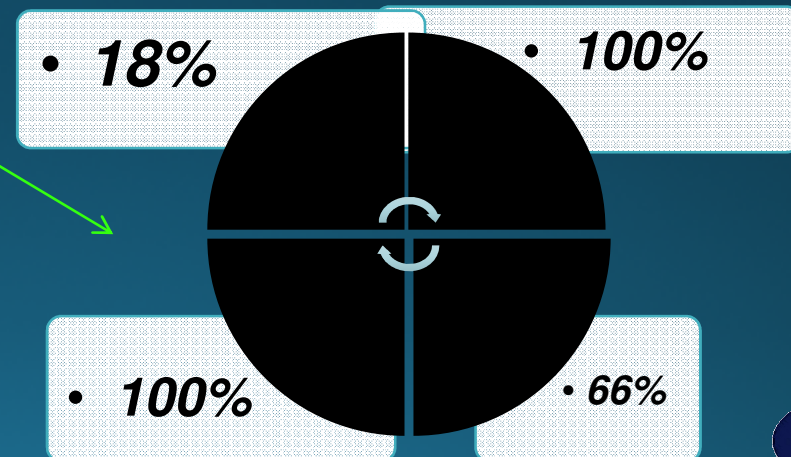
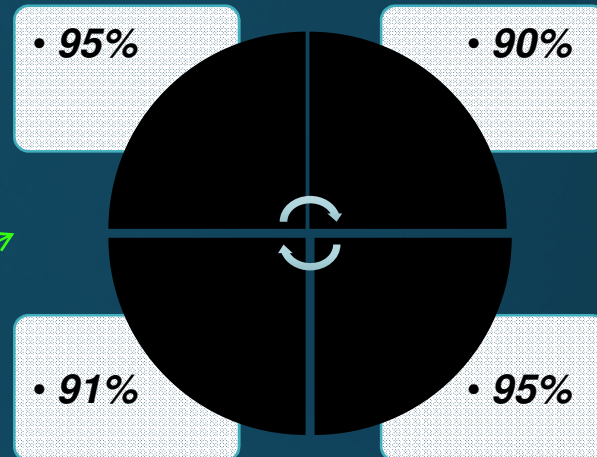
124 próteses valvares



88 válvulas nativas



158 pacientes excluídos





Definitions of the terms used in the European Society of Cardiology 2015 modified criteria for the diagnosis of infective endocarditis

	<p>m; thetic valve. e of prosthetic valve implantation nly if the prosthesis was implanted eukocytes SPECT/CT. ardiac CT.</p>
	<p>sing heart condition, or injection 8°C. those detected by imaging only): onary infarcts, infectious (mycotic) ge, conjunctival haemorrhages, and rulonephritis, Osler's nodes, Roth's blood culture but does not meet e or serological evidence of active t with IE.</p>

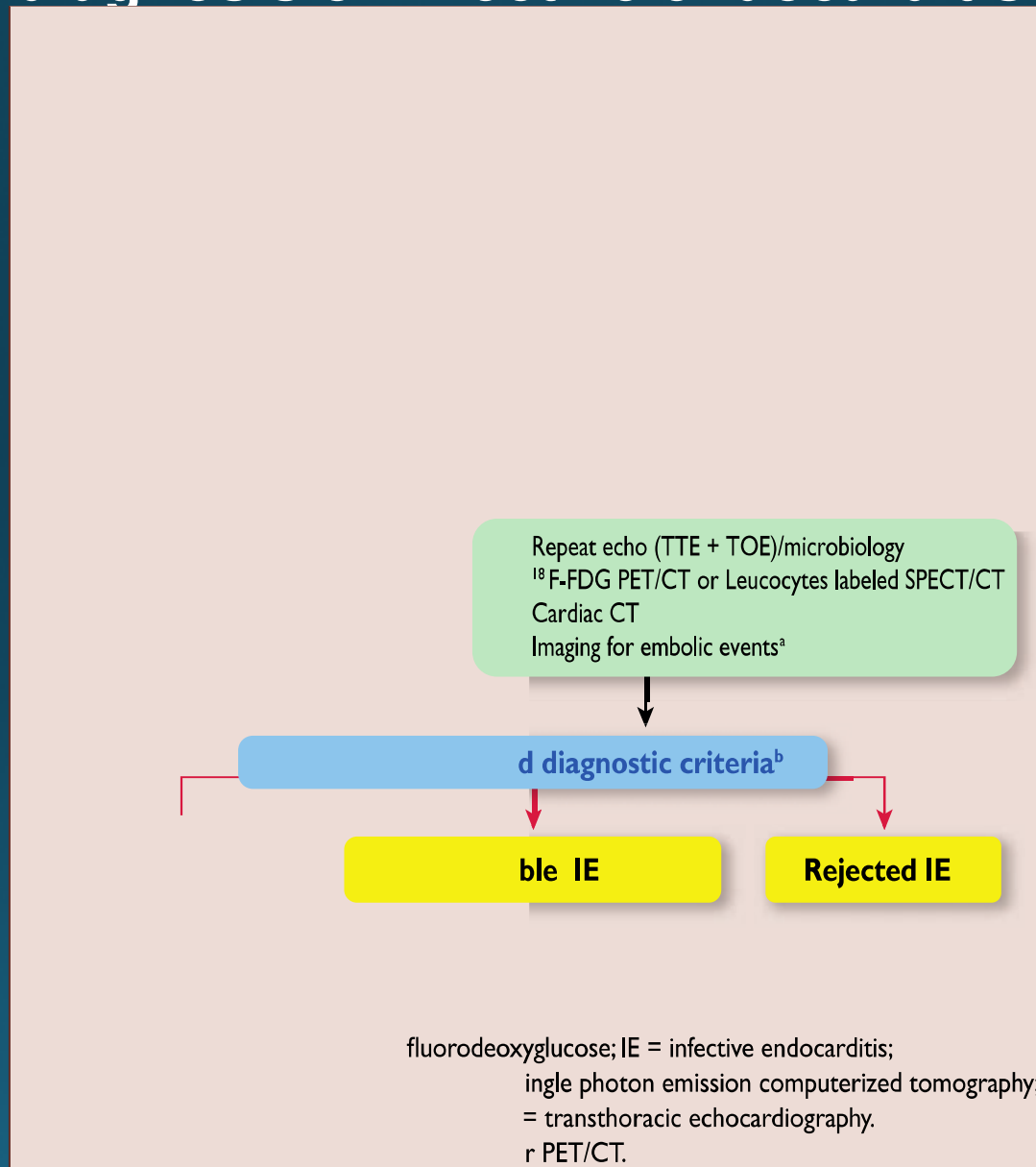
C
F
A
c
ir
e

orodeoxyglucose; HACEK =
lus, H. paraphrophilus, H. influenzae,
Cardiobacterium hominis, Eikenella
ficans; IE = infective endocarditis; Ig =
n tomography; SPECT = single photon
apted from Li et al.⁸⁷

PET/CT-¹⁸FDG na endocardite infecciosa em 2017?

- Dos 32 casos de prótese valvar classificados como possível pelos critérios de Duke da admissão, a inclusão da PET/CT como critério maior permitiu reclassificar 29 deles como Duke definido (29/32, 90,6%).
- Da mesma forma, colocando a PET/CT como critério maior de Duke na admissão, foi possível atingir um diagnóstico conclusivo (definido / rejeitado) dos casos de endocardite de prótese valvar em 97,6% da amostra (121/124).
- Dos 88 casos de investigados de endocardite em válvula nativa, 14 pacientes foram classificados como Duke possível na admissão. Quando o PET foi incluído como critério maior, foi possível reclassificar para Duke definido apenas 2 pacientes (2/14; 14,3%).

European Society of Cardiology 2015 algorithm for diagnosis of infective endocarditis.





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Obrigado!

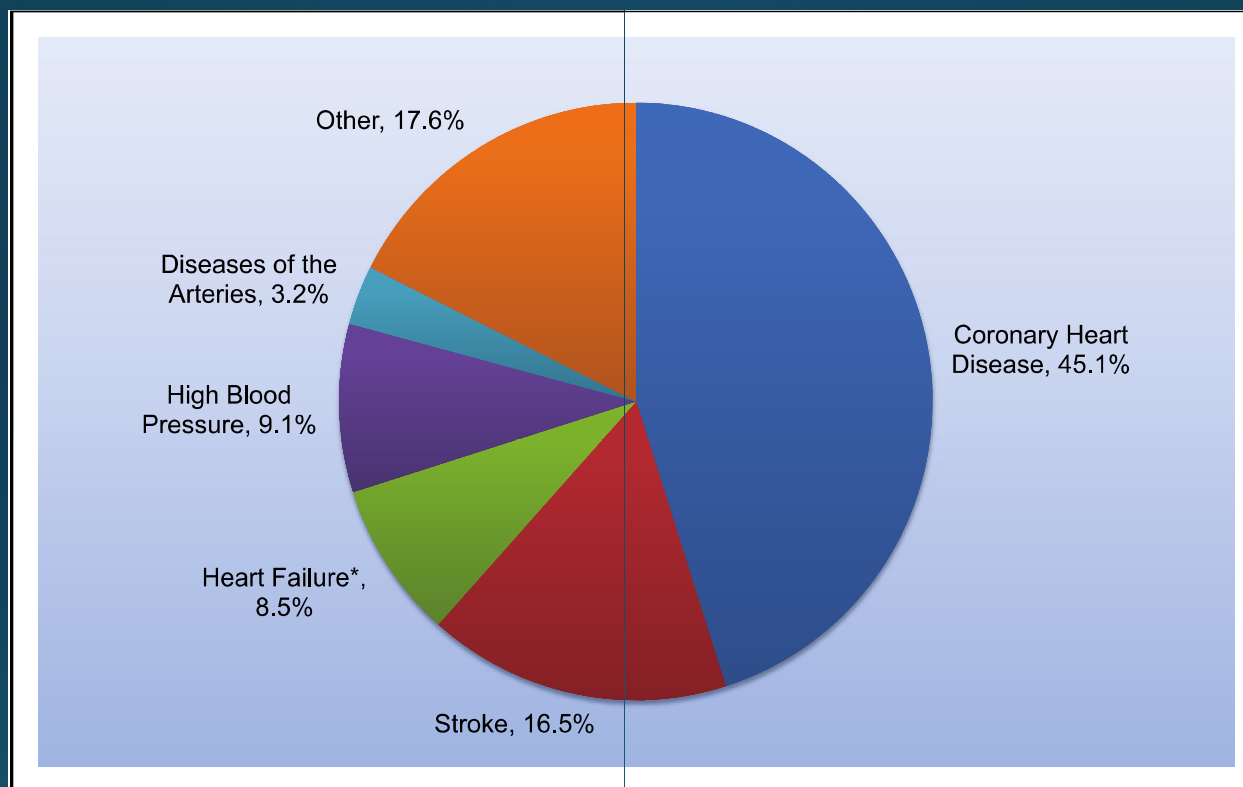
Contato: luizjose.junior@uol.com.br



**Cárdio
Pulmonar**

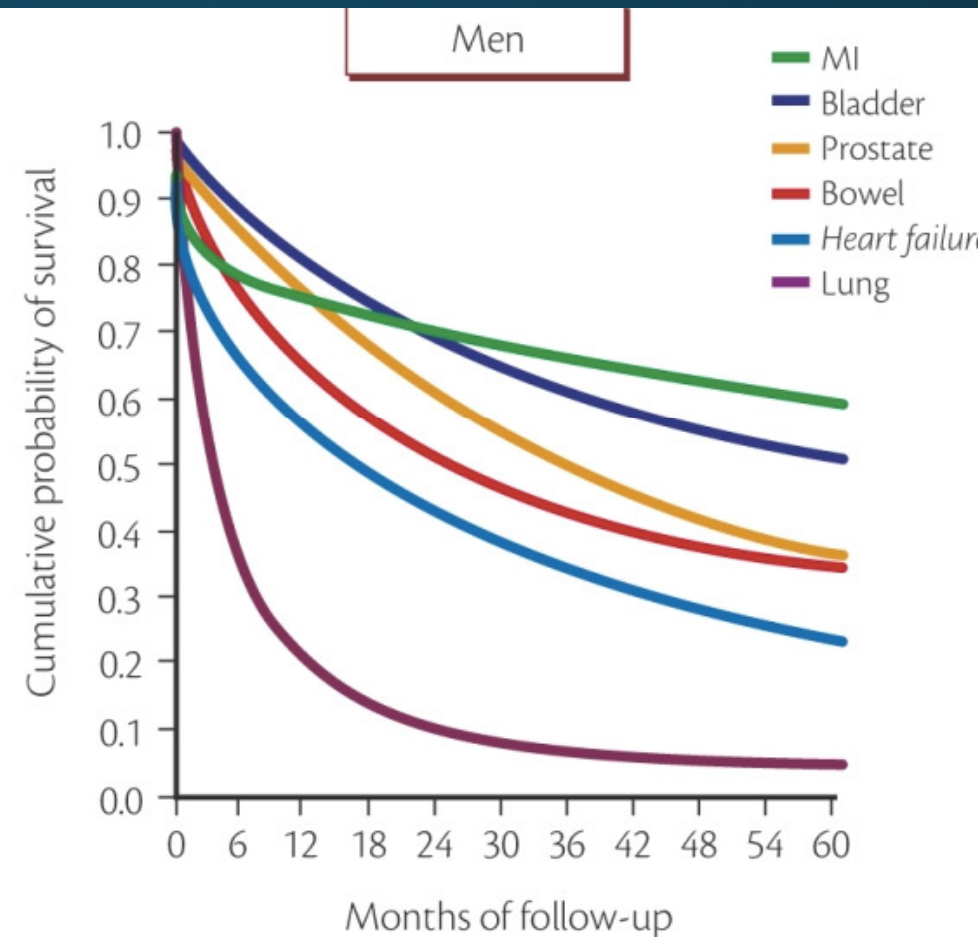
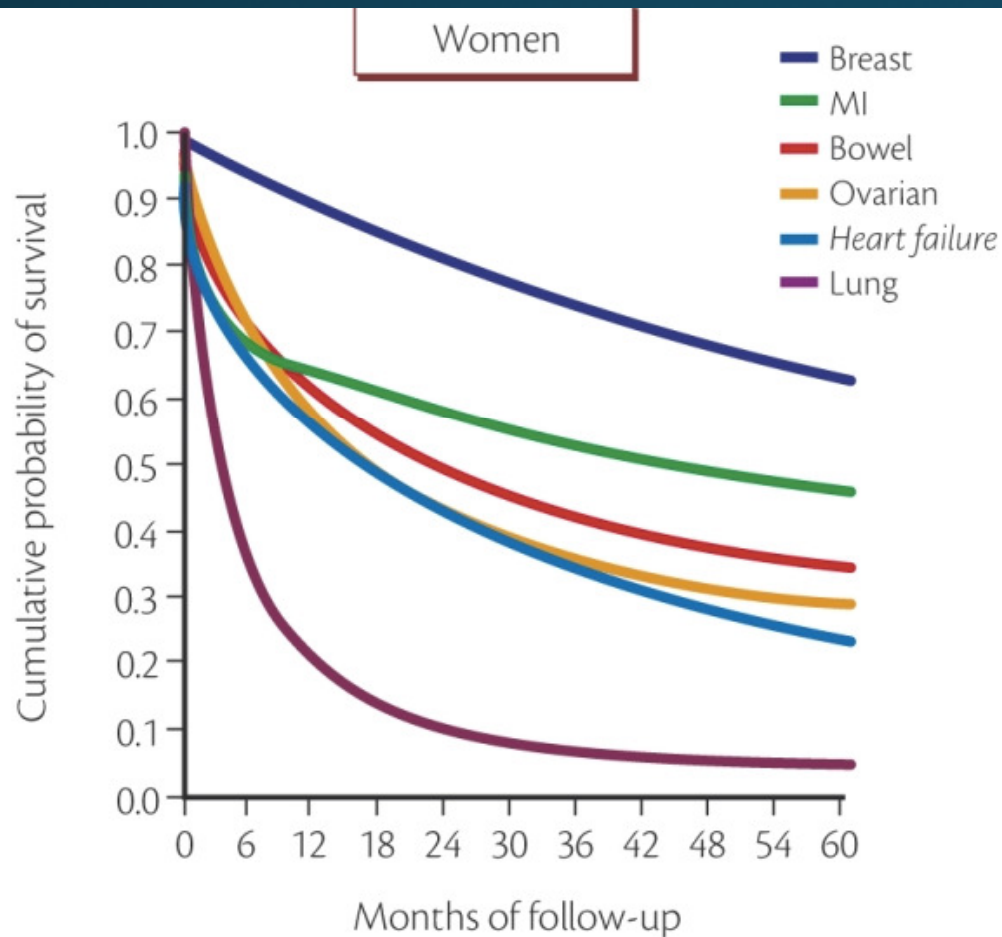


Percentage breakdown of deaths attributable to cardiovascular disease (United States: 2014).



may not add to 100 because of rounding.*Not a true underlying cause. With any-mention deaths, heart failure accounts for 36% of cardiovascular disease deaths. Source: National Heart, Lung, and Blood Institute from National Center for Health Statistics reports and data sets.

Five-year survival following a first admission to any Scottish hospital in 1991 for heart failure, myocardial infarction, and the four most common sites of cancer specific to men and women.



Stewart S et al. Eur J Heart Fail 2001; 3: 315–22.