Insuffisance cardiaque
Risques CV perio-opératoire
cours pour les résidents d'anésthésie
2 octobre 2013

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CHUM

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Objectifs

1-Comprendre l'importance de l'insuffisance cardiaque dans la population générale.

2-Apprécier les étiologies, la classification, les traitements (grandes études Rx et devices) et le pronostique

3-Réviser la prise en charge d'un patients avec insuffisance cardiaque devant subir une chirurgie non-cardiaque.

Questions:

- Quel est le risque de mortalité à 5 ans chez un patient avec cardiomyopathie ischemique et une classe fonctionnelle NYHA 4/4?

Choix: 10%--20%--30%--40%--50%-- >50%

- Il n'y a pas d'indication d'ajouter la resynchronisation aux patients (sous traitement médical optimal) avec cardiomyopathie ischémique (FEVG < 30%) et avec classe fonction NYHA 2/4

Choix: vrai ou faux

Questions:

78 ans ♂

Chx à subir: colectomie gauche pour néo du colon

ATCD: CMP ischémique, FEVG 40%,

PCI il y a un 6 mois dans IVA avec BMS.

Pas d'angor depuis PCI, CF ¼, sous ASA, plavix

Risque périop? Ok pour chx? Soins intensifs post op?

Question

75 ans Homme

Fx de hanche post chute

Connu: MCAS, HTA, DSL et FA ACO sous pradax

Jamais eu coro. Angor 2/4, stable depuis un an

FSC normal, créat normal, Trop légèrement +

Cliniquement pas de DRS, pas de surcharge

Chx? Coro? Bb?

Si trop négative

Chx? Coro? Bb?

Question

67 ans F

CMP hypertrophique avec un gradient sous aortique de 30mmHg au repos. VG normale, présence de SAM

Pas de MCAS, pas de HTA, Créat normale

Vient pour appendicite perforé

Risque opératoire?

Quoi faire si hypotension

Définition: Insuffisance cardiaque

- Syndrome clinique qui suggère l'incapacité du cœur pour supporter la circulation physiologique du corps
- Symptômes
- Signes
- Causes

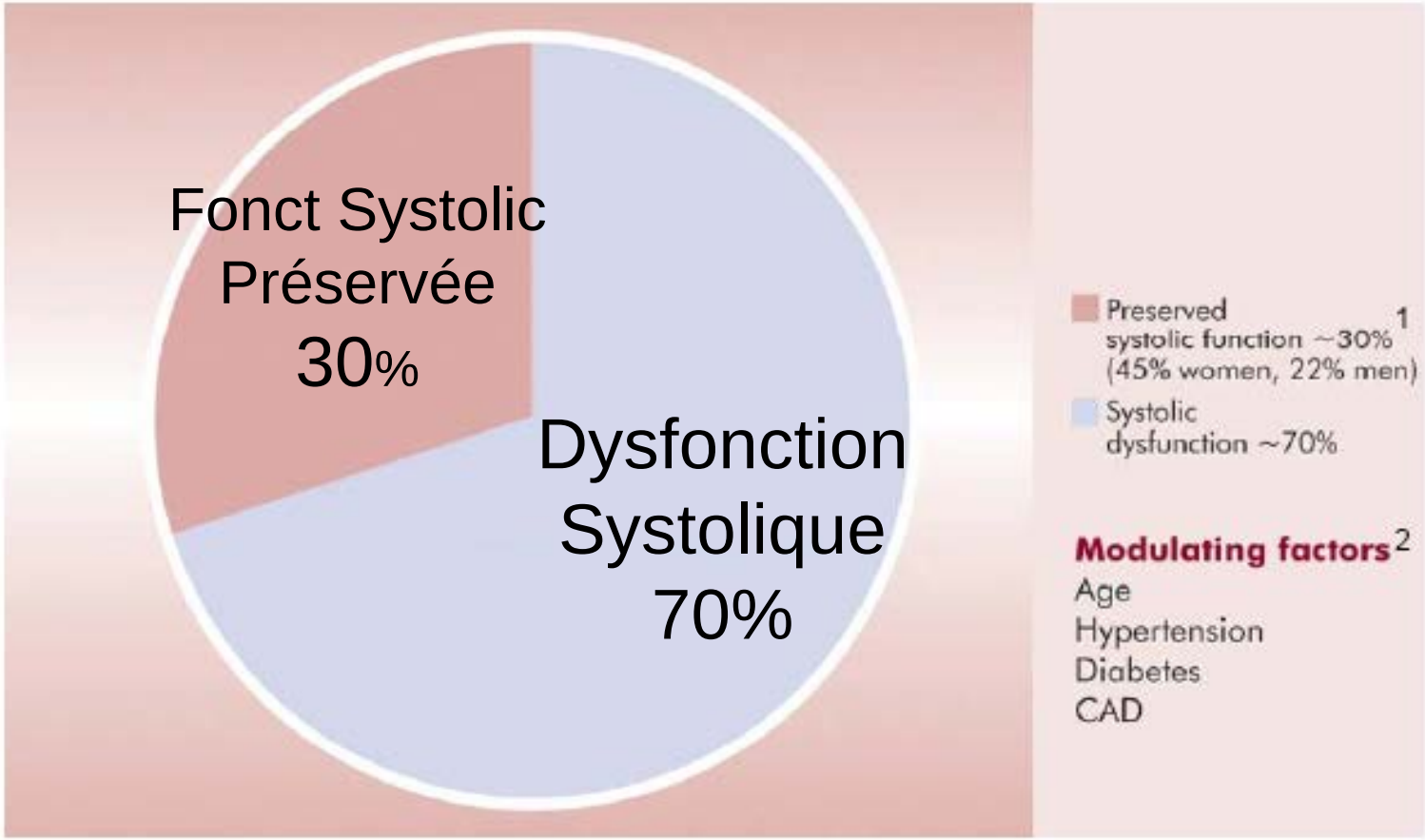
Définition

Dysfonction VG ≠ IC

IC ≠ Bas débit cardiaque

IC ≠ Dysfonction VG

Statistiques



1. Cleland JG *et al. Eur Heart J* 2003;24:442-63. 2. Yancy *et al. J Am Coll Cardiol* 2006;47(1):76-84.

Quelques chiffres inquiétants

500 000 Canadiens souffrent d'IC

50 000 nouveaux cas d'IC chaque année

Mortalité varie de 10-50% sur 5 ans

Mortalité >50% annuelle chez les IC avec NYHA IV.

1. Heart and Stroke foundation
2. CCS consensus on congestive heart failure 2006

- L’incidence et la prévalence continuent à augmenter chaque année:
  1. Population vieillissante
  2. Beaucoup de patients survivent à leur infarctus du myocarde, à leur décompensation d’IC, à leur arrêt cardiaque

Impact Économique

- 100 000 Hospit par année d'IC
- Durée de séjour moyenne : 10 jours
- Taux de réadmission élevé : 15% (1 mois) et 50% (1an)
- 1.4 à 2.3 milliards de dollars dépensés pour traiter les patients avec IC en 2006

Cause no 1 de l'IC: infarctus du myocarde

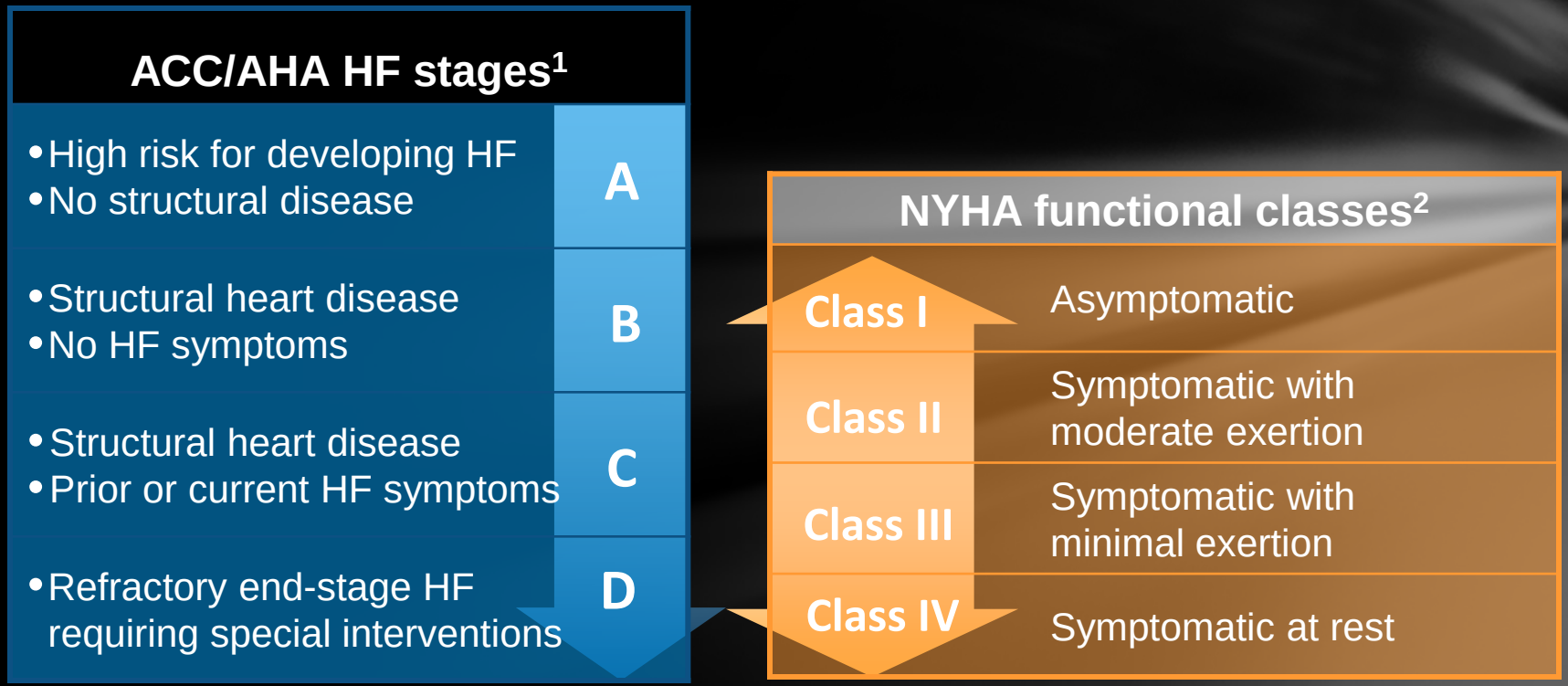
- Au Canada, on dénombre 70 000 IM par année.
- La cause principale de l'insuffisance cardiaque
- Dans quelques 40 % des cas, l'IM s'accompagne d'une dysfonction ventriculaire gauche (DVG), avec ou sans insuffisance cardiaque clinique.

Étiologies

Coronary artery disease
Hypertension
Valvular disease
Cardiomyopathy
- Idiopathic cardiomyopathy
- Alcoholic cardiomyopathy
- Toxin-related cardiomyopathy (e.g., adriamycin)
- Postpartum cardiomyopathy
- Hypertrophic obstructive cardiomyopathy (HOCM)
- Tachyarrhythmia-induced cardiomyopathy

Infiltrative disorders (e.g., amyloid)
Congenital heart disease
Pericardial disease
Hyperkinetic states
- Anemia
- Arteriovenous fistula
- Thyroid disease
- Beri-beri

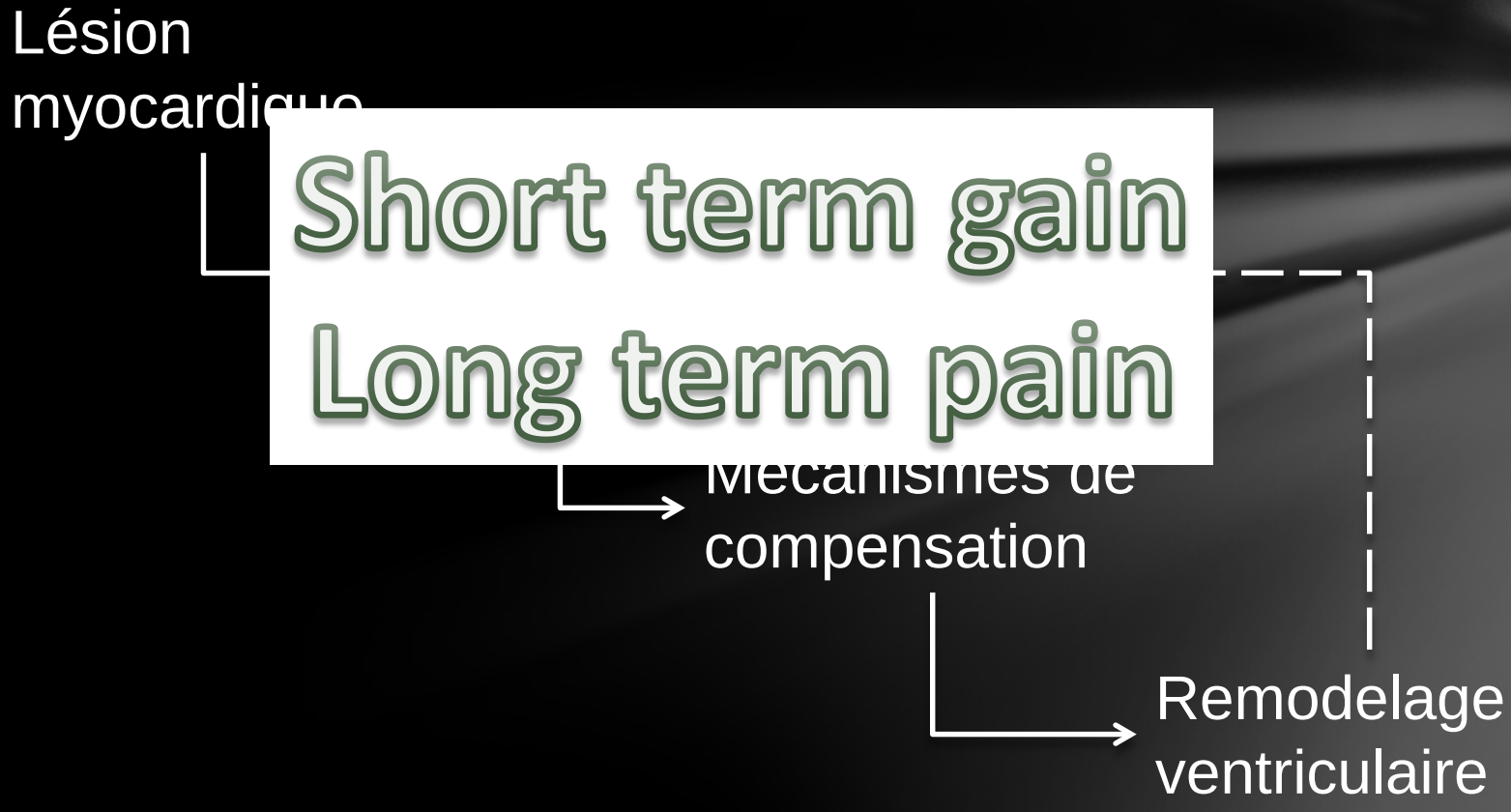
Classification of HF: ACC/AHA HF stages vs. NYHA functional classes



[1] Hunt SA et al. *J Am Coll Cardiol.* 2001;38:2101–2113.

[2] Criteria Committee of the New Year Heart Association. *Nomenclature and Criteria for Diagnosis of Diseases of the Heart and Great Vessels*. 7th ed. Boston: Little, Brown, 1973:286.

Pathophysiologie de l'insuffisance cardiaque



Mécanisme de compensation

Aiguë

- Activation sympathique
- Activation Rénine-Angiotensine-Aldostérone-Endothéline
- Retrait parasympathique, inhibition des kinines

Chronique

- Activation neurohormonale (Cathécolamines, R-A-A et Endothéline)

Traitements

Anti-ischémique

- Rx et/ou revascularisation

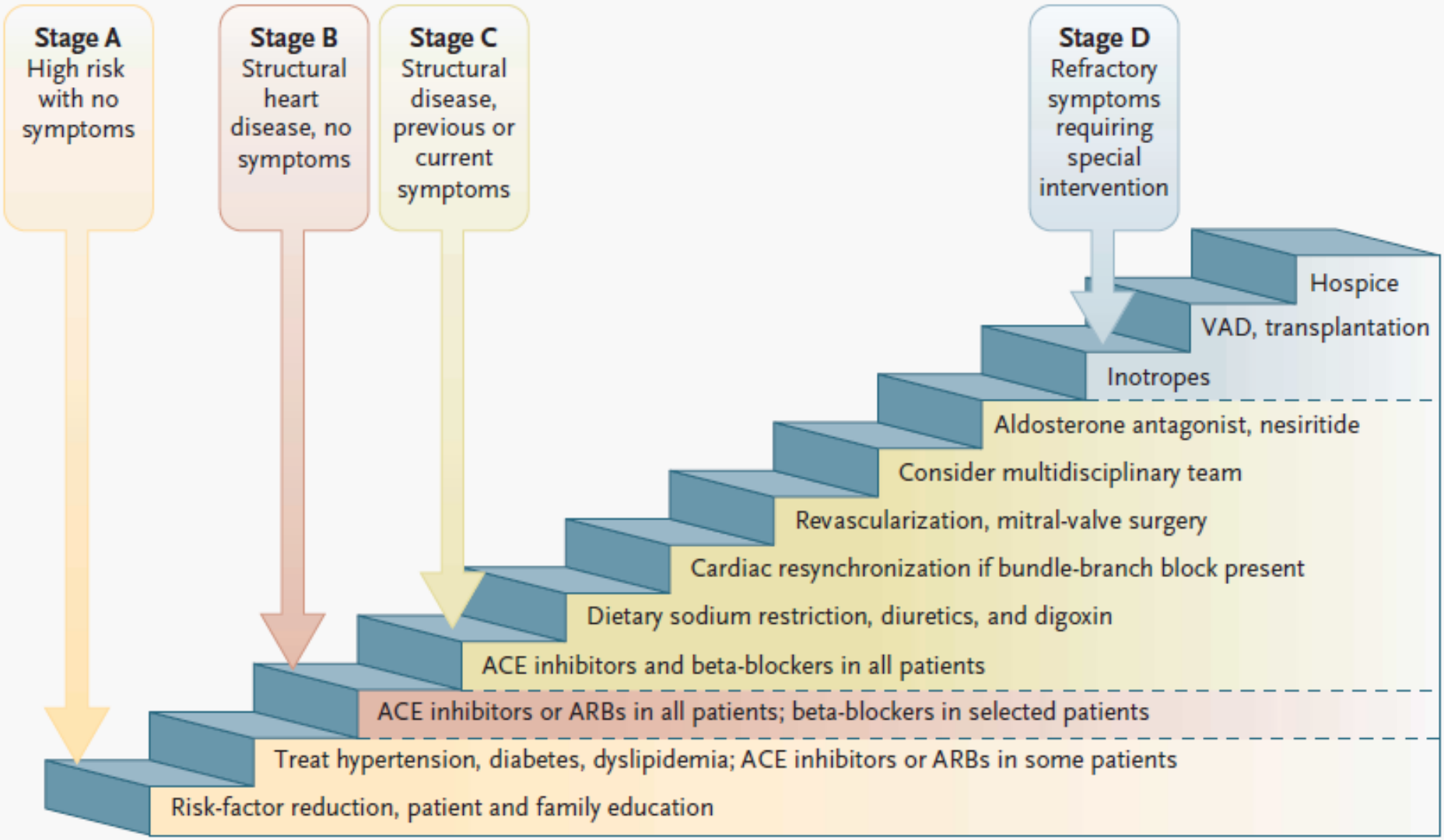
Rx soulager les sx

- Lasix, nitro

Anti-remodelage

- IECA ou BRA
- Beta-bloqueur
- Anti aldostérone

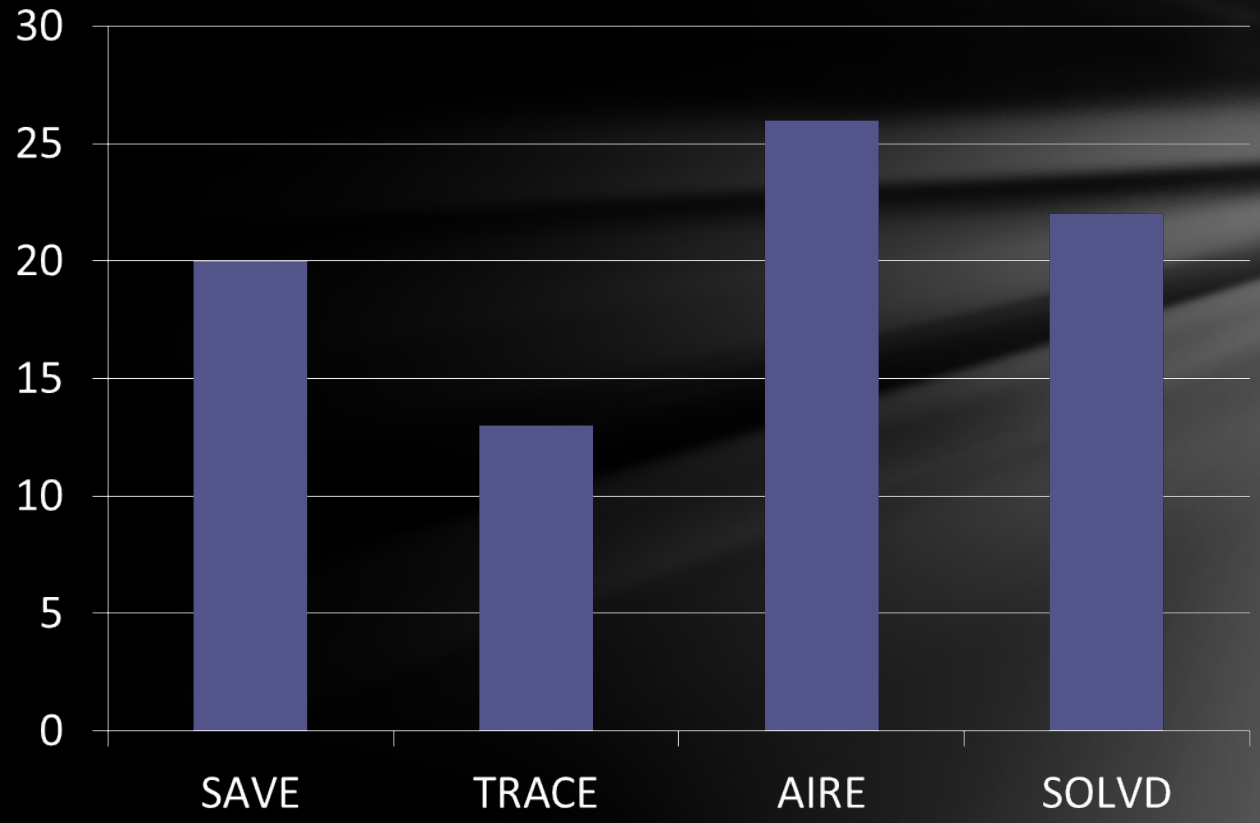
ICD +/- CRT


Stage A
High risk with no symptoms
Stage B
Structural heart disease, no symptoms
Stage C
Structural disease, previous or current symptoms
Stage D
Refractory symptoms requiring special intervention
Hospice
VAD, transplantation
Inotropes
Aldosterone antagonist, nesiritide
Consider multidisciplinary team
Revascularization, mitral-valve surgery
Cardiac resynchronization if bundle-branch block present
Dietary sodium restriction, diuretics, and digoxin
ACE inhibitors and beta-blockers in all patients
ACE inhibitors or ARBs in all patients; beta-blockers in selected patients
Treat hypertension, diabetes, dyslipidemia; ACE inhibitors or ARBs in some patients
Risk-factor reduction, patient and family education

IECA/BRA

Drug	Study (Reference)	Renal Function Exclusion Criteria: Creatinine Level, μmol/L (mg/dL)	Mean Creatinine Level, μmol/L (mg/dL)	Relative Risk (95% CI)	
				All-Cause Mortality	Heart Failure Hospitalizations
ACE inhibitors					
Enalapril	CONSENSUS (11)	>300 (3.4)	124 (1.4)†	0.73	NA
Enalapril	SOLVD Prevention (9)	>175 (2.0)	106 (1.2)	0.92 (0.79–1.08)	0.80 (0.70–0.91)‡
Enalapril	SOLVD Treatment (10)	>175 (2.0)	106 (1.2)	0.84 (0.74–0.95)	0.74 (0.66–0.72)‡
Captopril	SAVE (13)	>221 (2.5)	117 (1.3)	0.81 (0.68–0.97)	0.78 (0.63–0.96)
Trandolapril	TRACE (14)	>200 (2.3)	NA	0.78 (0.67–0.91)	0.71 (0.56–0.89)
Ramipril	AIRE (15)	NA	NA	0.73 (0.60–0.89)	NA
Angiotensin-receptor blocker					
Valsartan	Val-HeFT (16)	NA	NA	1.02 (0.88–1.18)	0.87 (0.77–0.97)

NNT pendant 48 mois

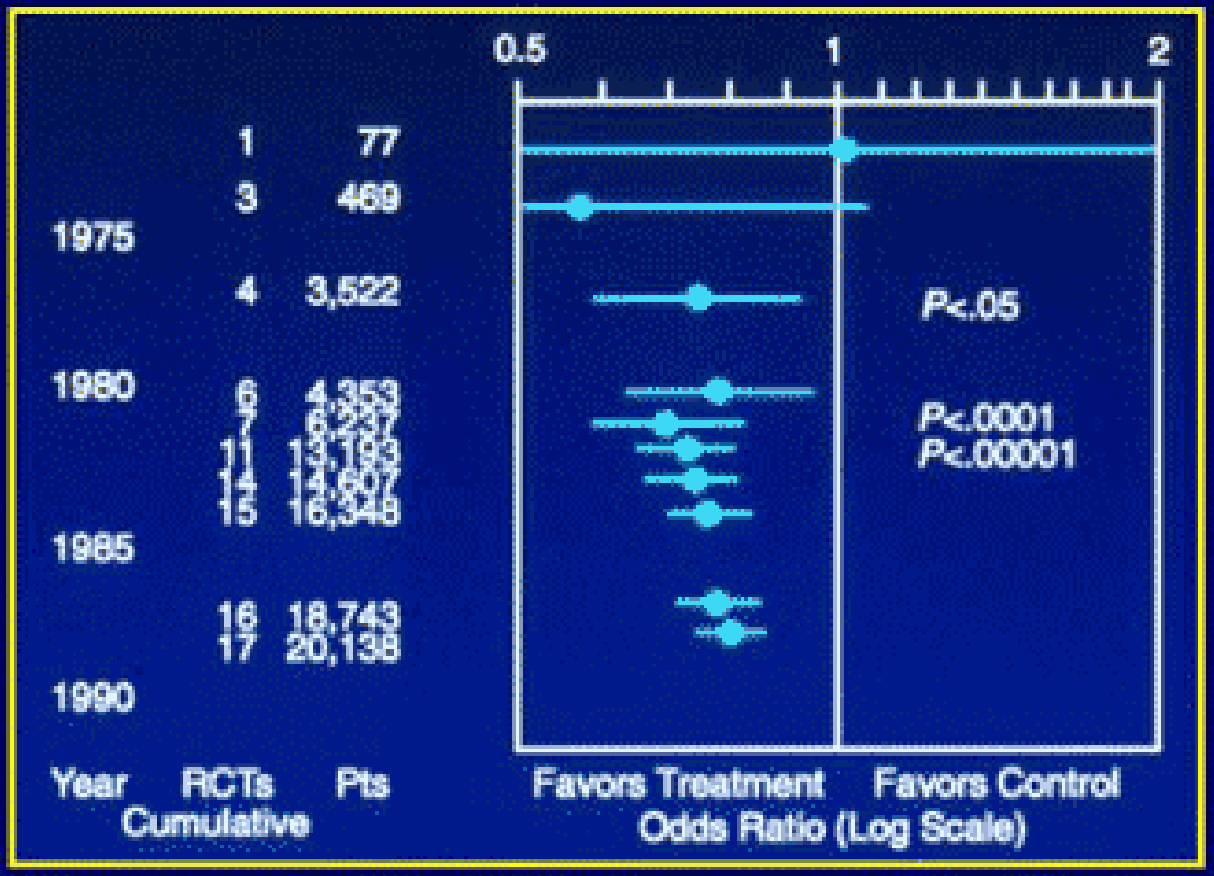


Patients With Reduced Left Ventricular Ejection Fraction

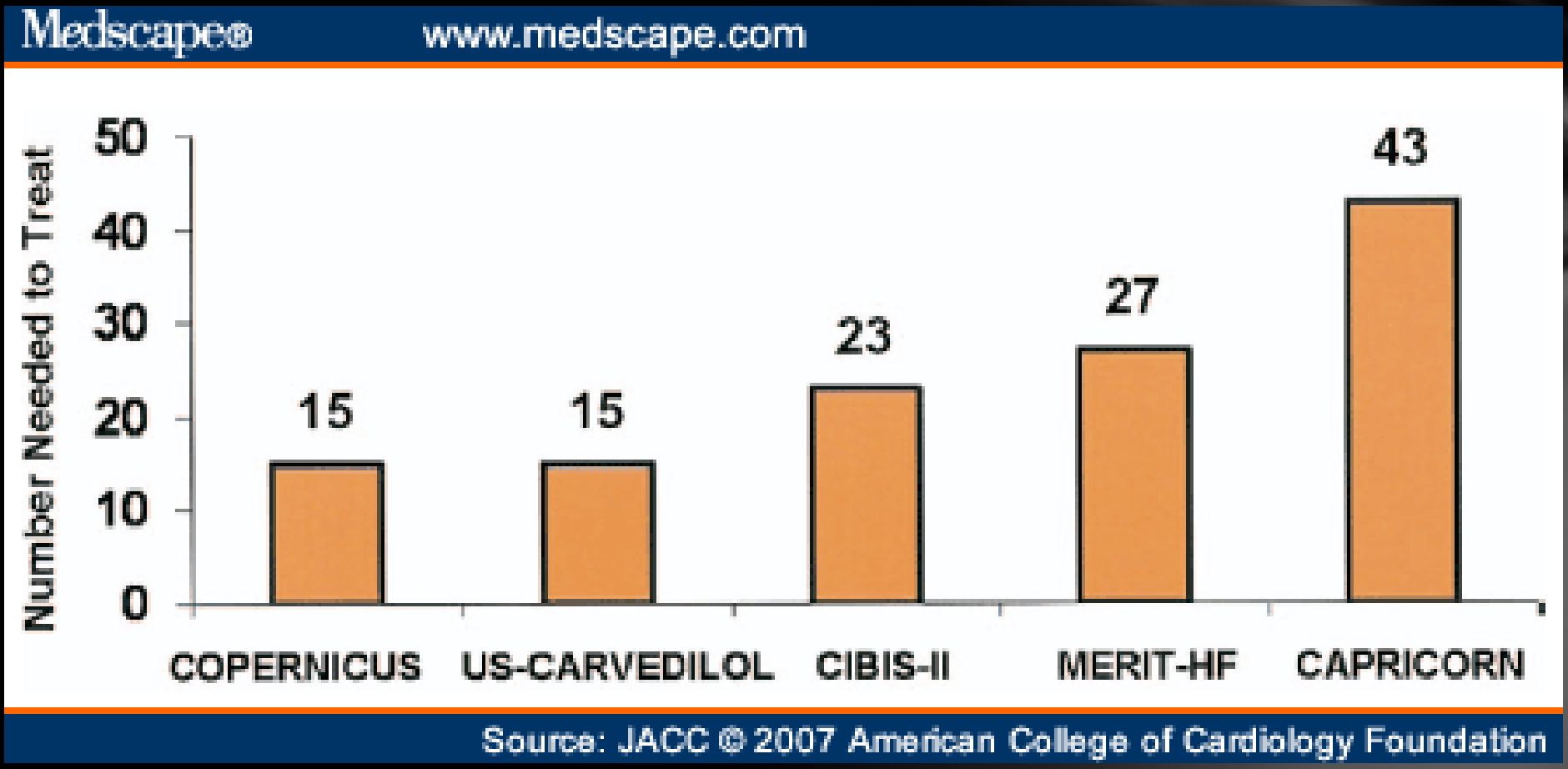
Angiotensin-converting enzyme (ACE) inhibitors are recommended for all patients with current or prior symptoms of HF and reduced LVEF, unless contraindicated .

Angiotensin II receptor blockers are recommended in-patient with current or prior symptoms of HF and reduced LVEF who are ACE- inhibitor intolerant (see full text guidelines).

Cumulative Meta-analysis
Beta-blockers in Chronic MI



Antman et al. JAMA 1992;288.

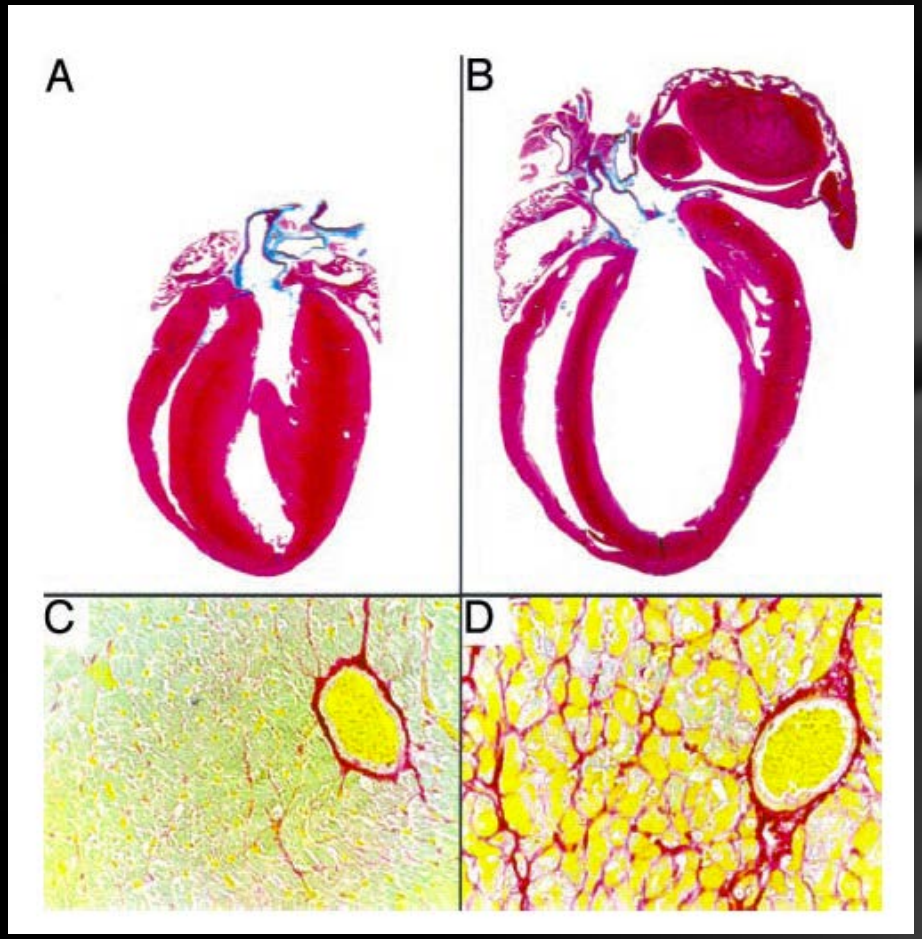

Medscape®
www.medscape.com
Number Needed to Treat
50
40
30
20
10
0
15
15
23
27
43
COPERNICUS
US-CARVEDILOL
CIBIS-II
MERIT-HF
CAPRICORN
Source: JACC © 2007 American College of Cardiology Foundation

Class I

4. Use of 1 of the 3 beta blockers proven to reduce mortality (i.e., bisoprolol, carvedilol, and sustained release metoprolol succinate) is recommended for all stable patients with current or prior symptoms of HF and reduced LVEF, unless contraindicated (see Table 3).[158–176] (*Level of Evidence: A*)

Excès d'aldostérone → cardiomyopathie

Normal

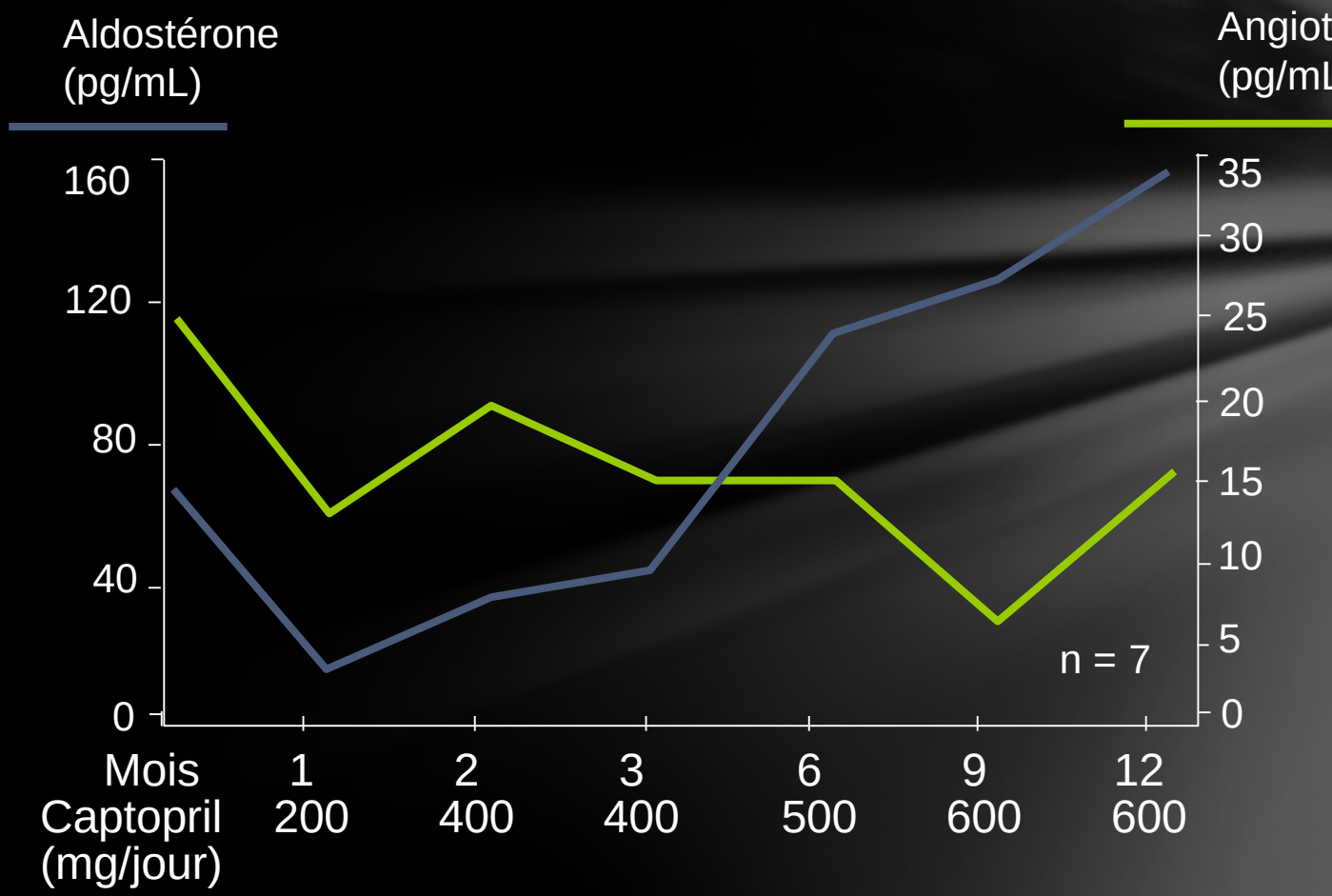


Excès d'aldostérone

Qin W *et al. Circ Res* 2003; 93(1):69-76.

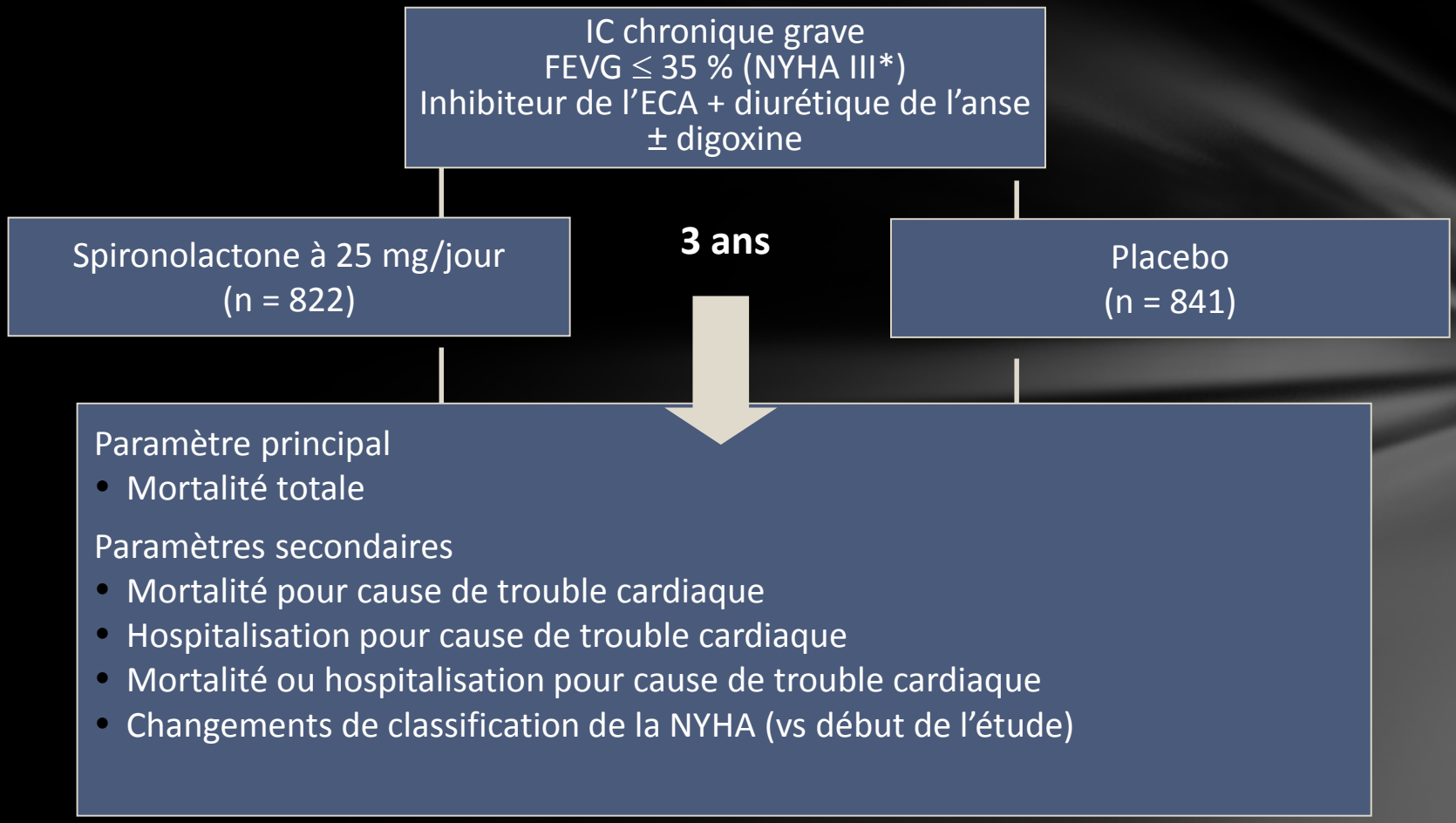
« Échappement » de l'aldostérone malgré l'inhibition de l'ECA

Hypertension : augmentation de la dose de captopril (200-600 mg/jour)



Staessen J *et al. J Endocrinol* 1981;91(3):457-65.

Protocole de l'étude RALES



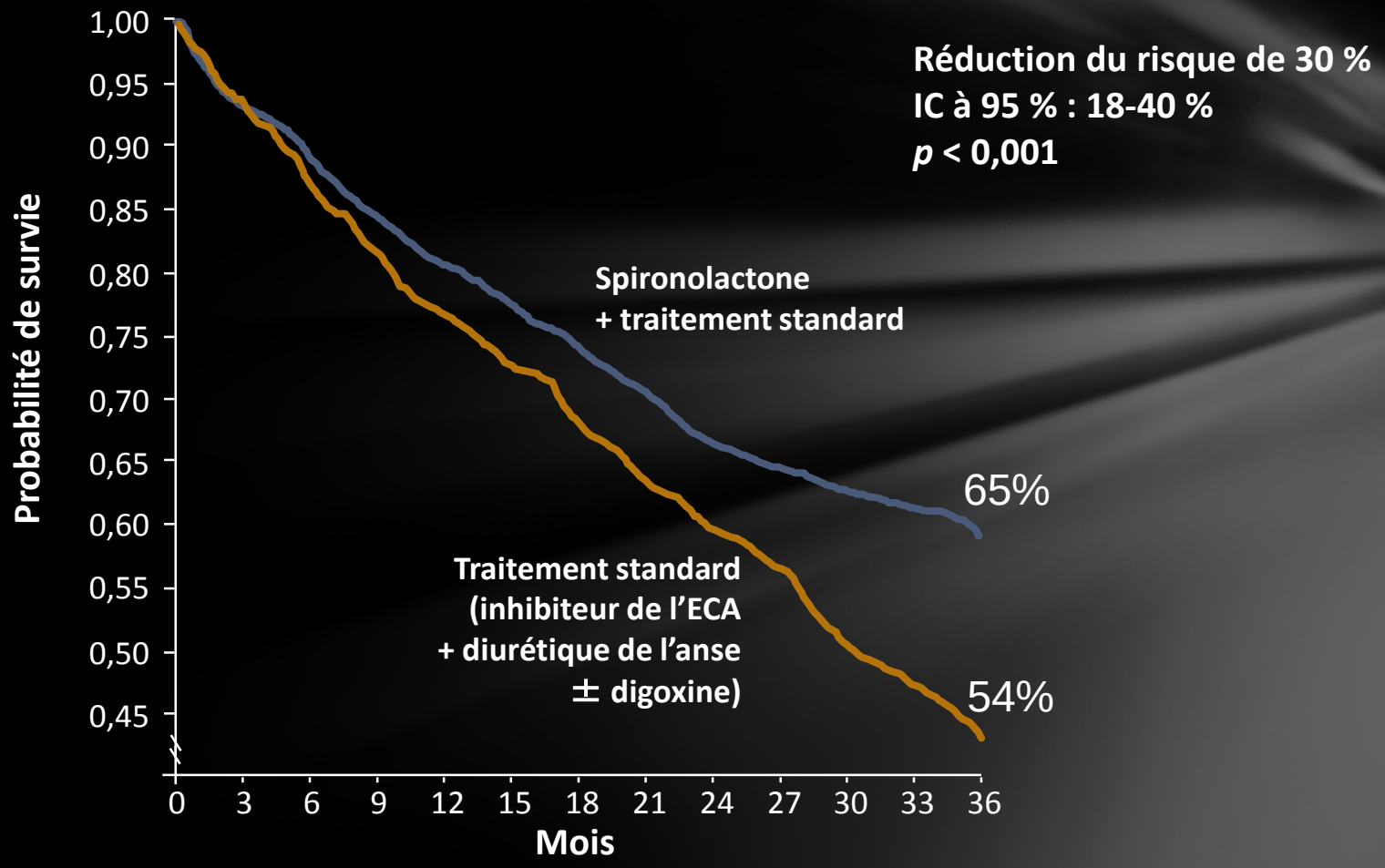
Note : Au départ, 10 % des patients du groupe spironolactone et 11 % des patients du groupe placebo étaient sous bêtabloquants, alors que 94 % et 95 %, respectivement, étaient sous inhibiteurs de l'ECA.

*Antécédents de classe IV de la NYHA dans les 6 mois ayant précédé la première dose

RALES = *Randomized Aldactone Evaluation Study*

NYHA = New York Heart Association Pitt B *et al. N Engl J Med* 1999; 341(10):709-17.

RALES : mortalité toutes causes confondues



Pitt B *et al. N Engl J Med* 1999; 341(10):709-17.

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Eplerenone in Patients with Systolic Heart Failure and Mild Symptoms

Faiez Zannad, M.D., Ph.D., John J.V. McMurray, M.D., Henry Krum, M.B., Ph.D., Dirk J. van Veldhuisen, M.D., Ph.D., Karl Swedberg, M.D., Ph.D., Harry Shi, M.S., John Vincent, M.B., Ph.D., Stuart J. Pocock, Ph.D., and Bertram Pitt, M.D., for the EMPHASIS-HF Study Group*

HYPOTHÈSE

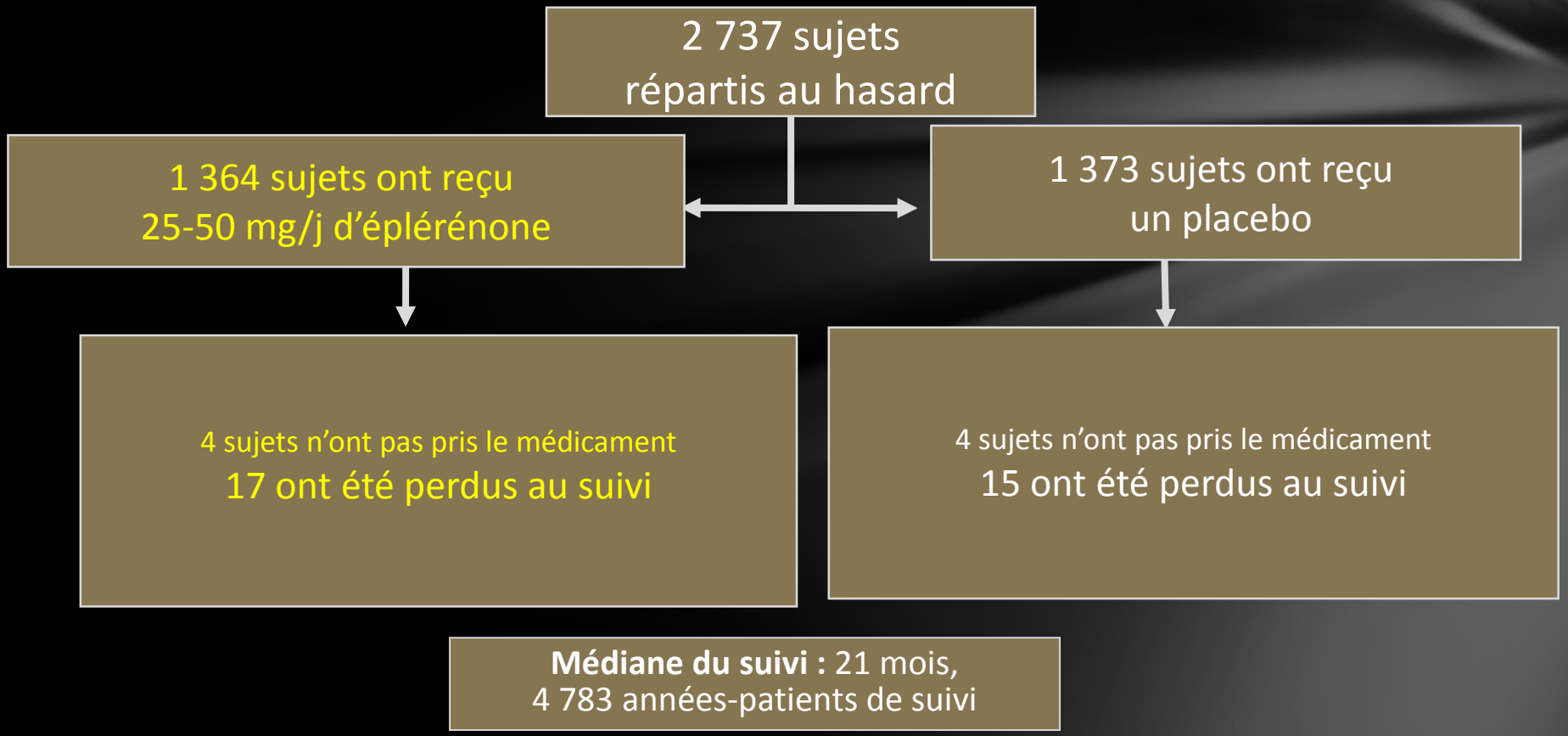
L'ajout de l'éplérénone au traitement standard, aurait un effet bénéfique sur le pronostic des patients qui présentent une dysfonction systolique ventriculaire et des signes légers d'insuffisance cardiaque.

Critère d'inclusion

- Âge > 55 ans
- Capacité fonctionnelle : classe II de la NYHA
- Fraction d'éjection ≤ 30 % (ou, si comprise entre 31 % et 35 %, QRS > 130 msec)
- Traitement par la dose recommandée ou la dose maximale tolérée d'un inhibiteur de l'ECA (ou d'un ARA, ou des deux) et d'un ß-bloquant (sauf contre-indication)
- Hospitalisée dans les six derniers mois pour une cause cardiovasculaire [ou, à défaut d'une hospitalisation, un taux de BNP ≥ 250 pg/mL ou de NT-pro-BNP ≥ 500 pg/mL [hommes] ou ≥ 750 pg/mL [femmes])

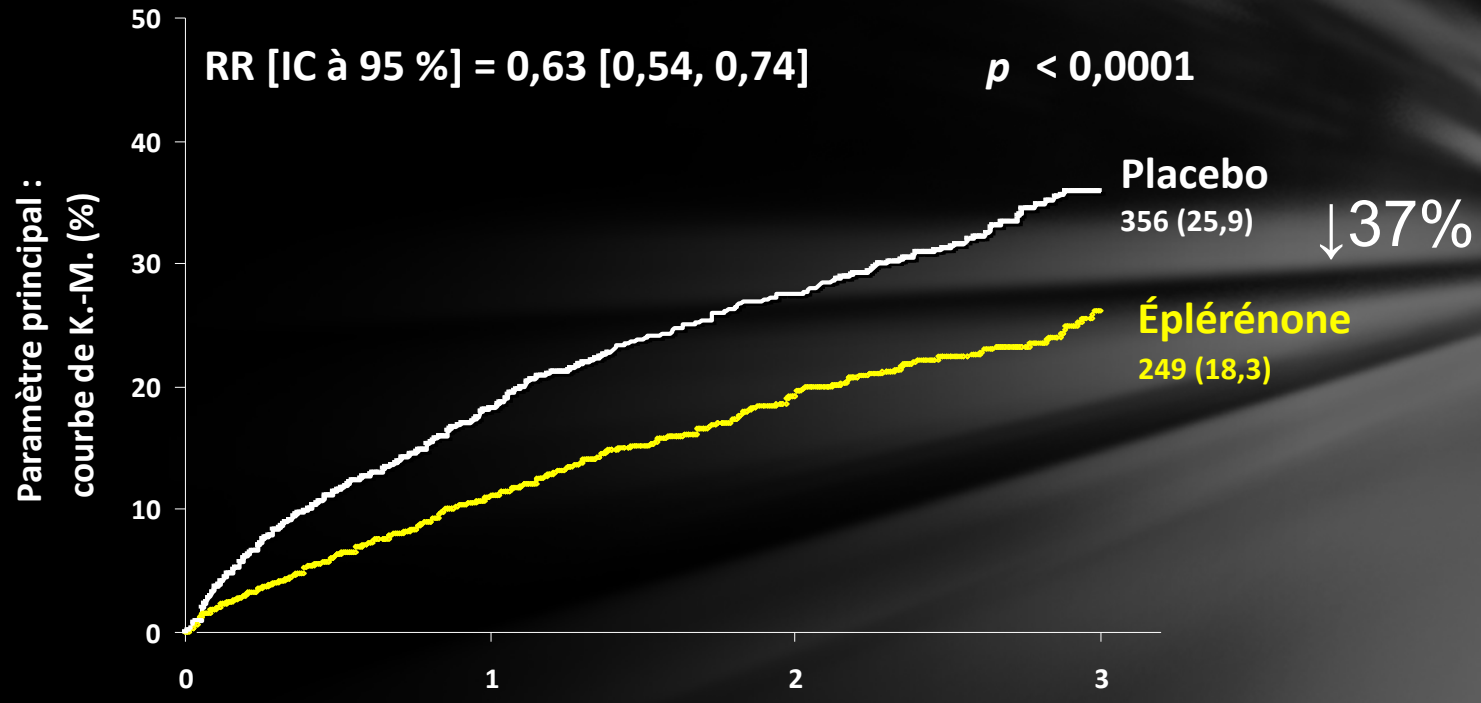
Répartition des patients

Investigateurs d'EMPHASIS-HF (29 pays, 278 centres)



	Éplérénone	Placebo
Medication at randomization visit — no. (%)		
Diuretic	1150 (84.3)	1176 (85.7)
ACE inhibitor	1068 (78.3)	1055 (76.8)
ARB	261 (19.1)	266 (19.4)
ACE inhibitor, ARB, or both	1282 (94.0)	1275 (92.9)
Beta-blocker	1181 (86.6)	1193 (86.9)
Digitalis glycosides	363 (26.6)	377 (27.5)
Antiarrhythmic drug	196 (14.4)	192 (14.0)
Antithrombotic drug (antiplatelet or oral anticoagulant)	1205 (88.3)	1214 (88.4)
Lipid-lowering agent	857 (62.8)	856 (62.3)

Paramètre principal : mortalité cardiovasculaire ou hospitalisation pour cause d'insuffisance cardiaque



N^bre de patients à risque				
Placebo	1373	848	512	199
Éplérénone	1364	925	562	232

* RR non corrigé, 0,66; 0,56, 0,78; $p < 0,0001$

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Canadian Journal of Cardiology 27 (2011) 319–338

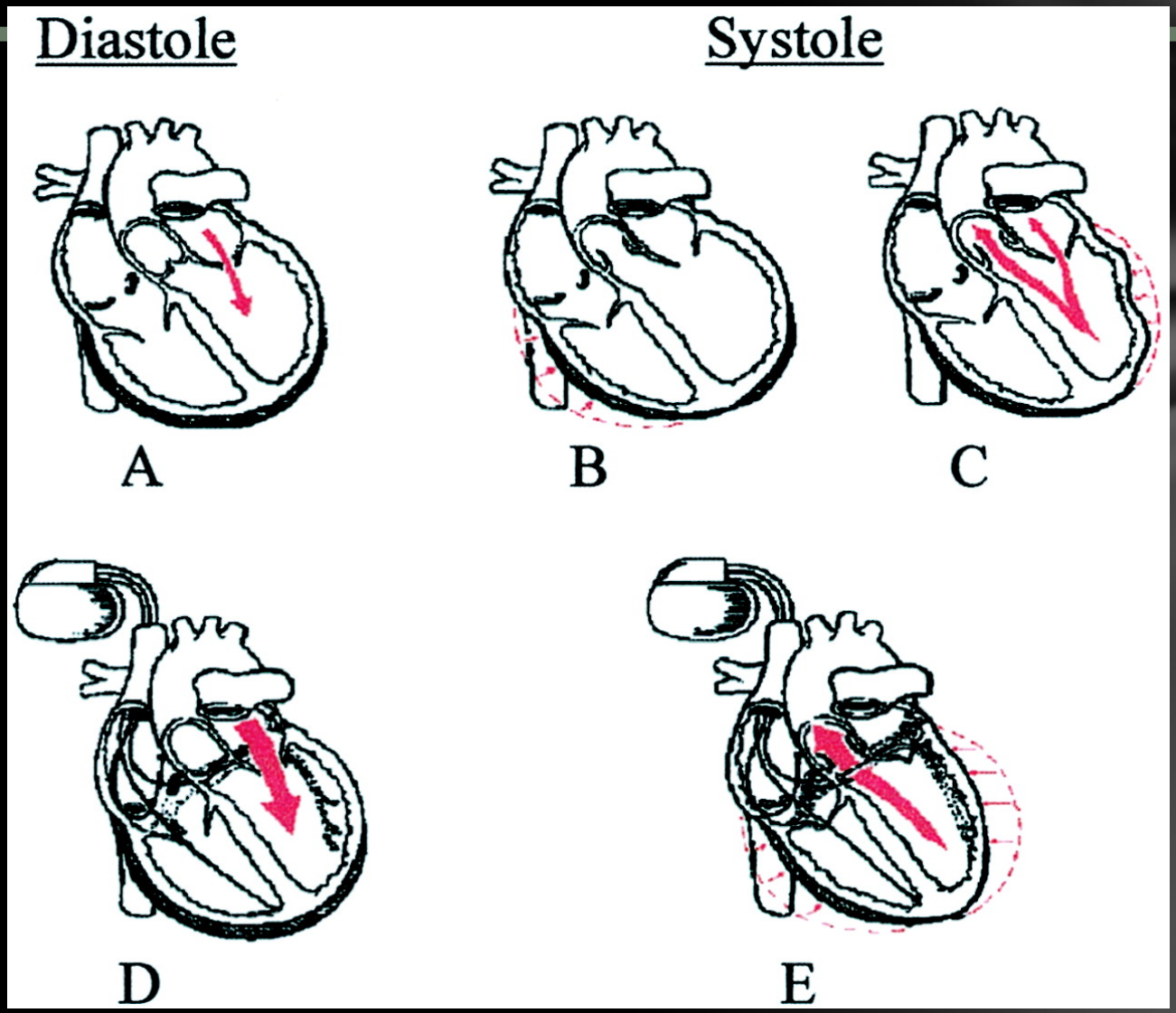
Society Guidelines

The 2011 Canadian Cardiovascular Society Heart Failure Management Guidelines Update: Focus on Sleep Apnea, Renal Dysfunction, Mechanical Circulatory Support, and Palliative Care

RECOMMENDATION

We recommend that an aldosterone receptor blocking agent such as eplerenone be considered for patients with mild to moderate (NYHA II) HF, aged > 55 years with LV systolic dysfunction (LVEF ≤ 30%, or if LVEF > 30% and ≤ 35% with QRS duration > 130 ms), and recent hospitalization for CVD or elevated BNP/NT-pro-BNP levels, who are on standard HF therapy (Strong Recommendation, High-Quality Evidence).

Thérapie de resynchronisation Rationale



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Cardiac Resynchronization Therapy in Patients With Minimal Heart Failure

A Systematic Review and Meta-Analysis

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Minneapolis, Minnesota; and Rochester, New York

Study Acronym (Ref. #)	Year	N	Participants	Design	Follow-Up, Months
RAFT (10)	2010	1,798*	NYHA II/III heart failure Left ventricular EF ≤30% QRS duration ≥120 ms Paced QRS duration ≥200 ms	CRT+ICD vs. ICD alone	40
MADIT-CRT (11)	2009	1,820	NYHA I/II heart failure Left ventricular EF ≤30% QRS duration ≥130 ms	CRT+ICD vs. ICD alone	29
REVERSE (12)	2008	610	NYHA I/II heart failure Left ventricular EF ≤40% QRS duration ≥120 ms LVEDD ≥55 mm	CRT ON+ICD vs. CRT OFF+ICD	12
MIRACLE ICD II (13)	2004	186	NYHA II heart failure Left ventricular EF ≤35% QRS duration ≥130 ms LVEDD ≥55 mm	CRT ON+ICD vs. CRT OFF+ICD	6
CONTAK CD (14)	2003	490†	NYHA I/IV heart failure Left ventricular EF ≤35% QRS duration ≥120 ms	CRT ON+ICD vs. CRT OFF+ICD	6

Table 3 Pooled Mortality and HF Events/Hospitalizations With CRT Among Asymptomatic or Mildly Symptomatic Patients With HF

	CRT	ICD	RR	95% CI	p Value	NNT
NYHA functional class I/II						
Mortality	8.0%	11.5%	0.81	0.65–0.99	0.04	29
HF hospitalization	11.6%	18.2%	0.68	0.59–0.79	<0.001	15
Combined	17.5%	26.4%	0.72	0.65–0.81	<0.001	
NYHA functional class II						
Mortality	9.6%	13.1%	0.78	0.65–0.95	0.011	28
HF hospitalization	14.6%	21.5%	0.67	0.57–0.79	<0.001	14
Combined	20.7%	29.3%	0.73	0.64–0.83	<0.001	
NYHA functional class I						
Mortality	6.0%	7.1%	0.85	0.36–2.01	0.71	88
HF hospitalization	11.9%	20.5%	0.57	0.34–0.97	0.04	12
Combined	15.5%	22.1%	0.70	0.44–1.13	0.14	

CI = confidence interval; HF = heart failure; NNT = number needed to treat; RR = relative risk; other abbreviations as in Table 1.

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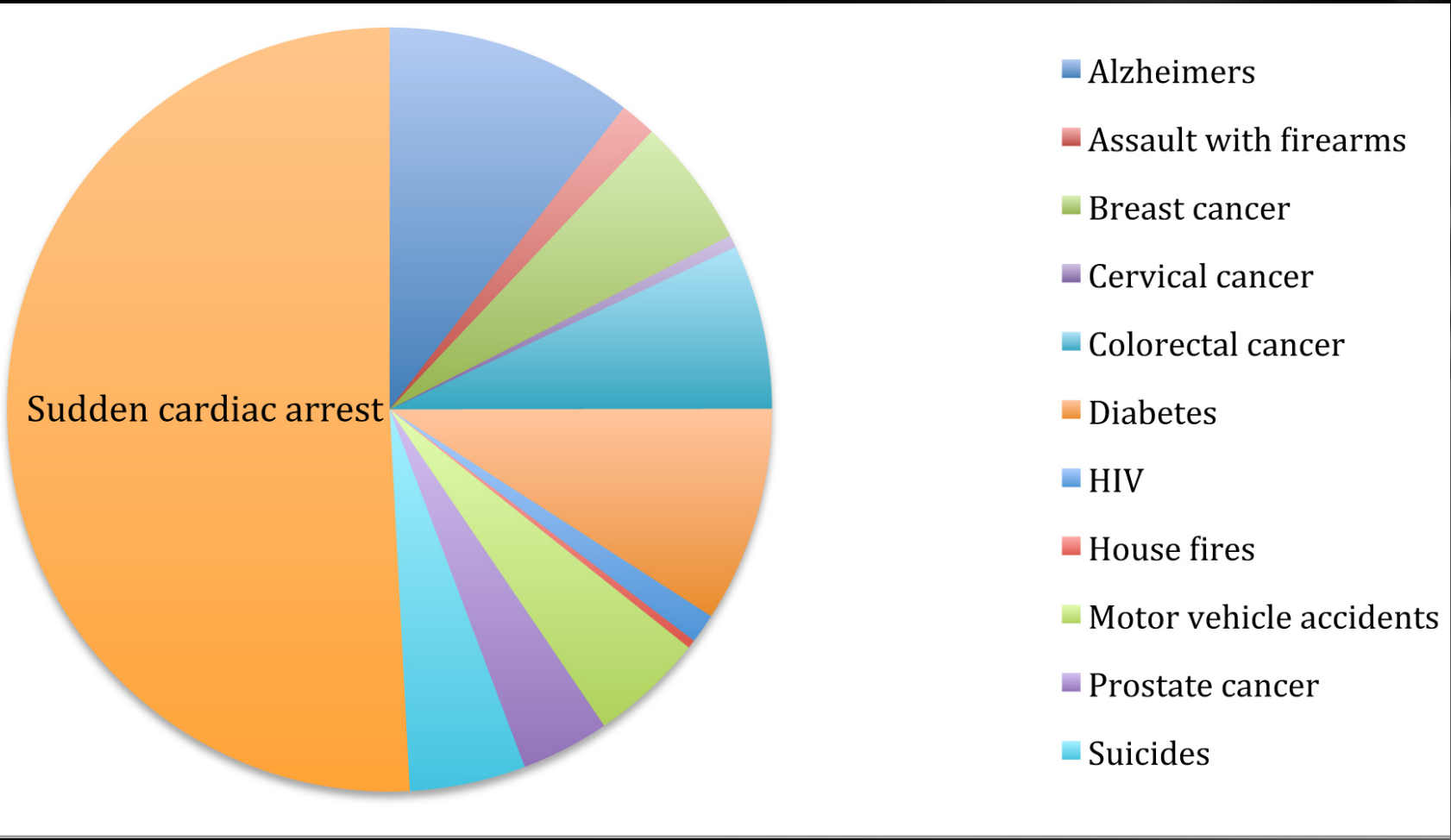
Canadian Journal of Cardiology 27 (2011) 319–338

Society Guidelines

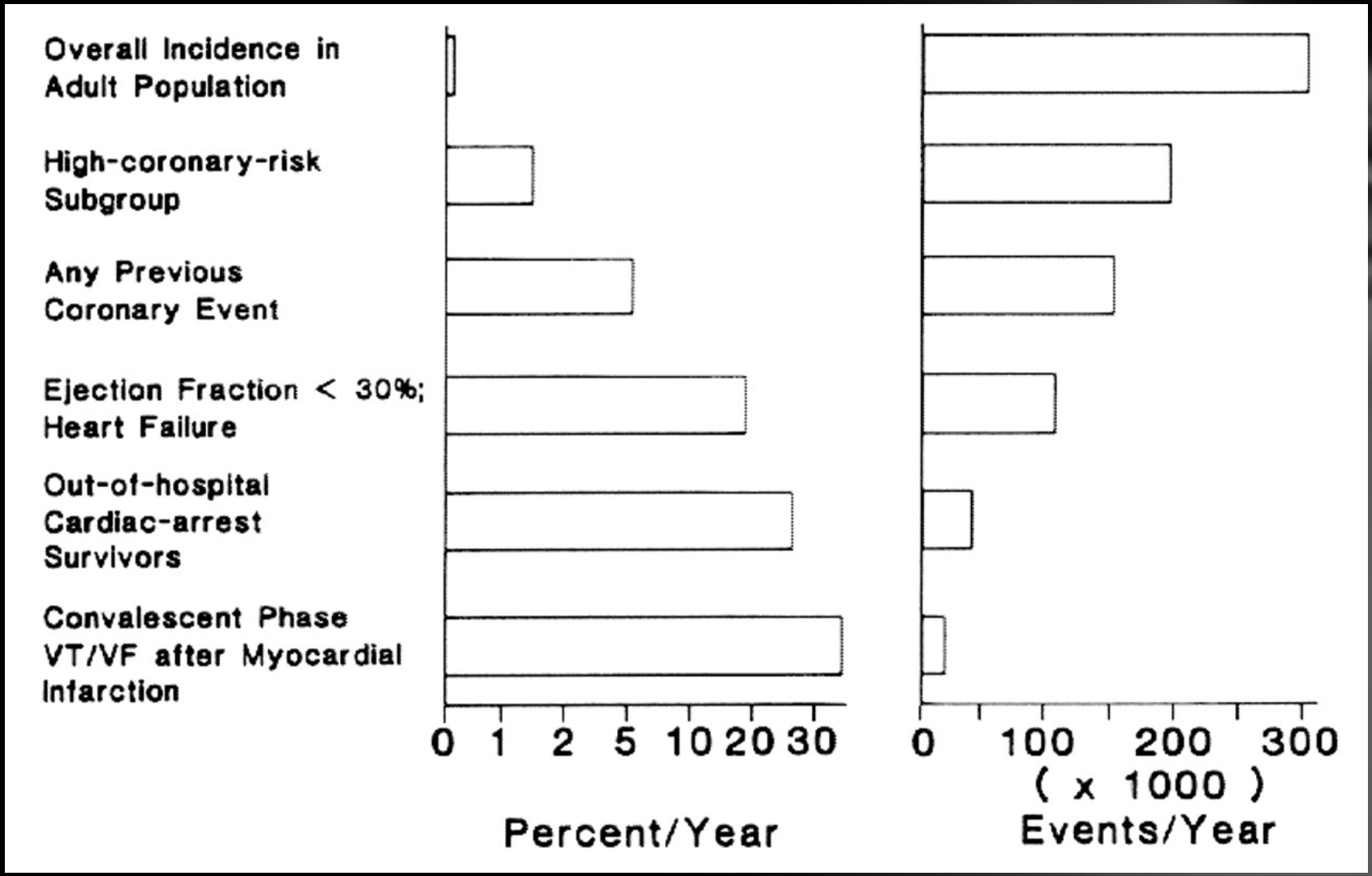
The 2011 Canadian Cardiovascular Society Heart Failure Management Guidelines Update: Focus on Sleep Apnea, Renal Dysfunction, Mechanical Circulatory Support, and Palliative Care

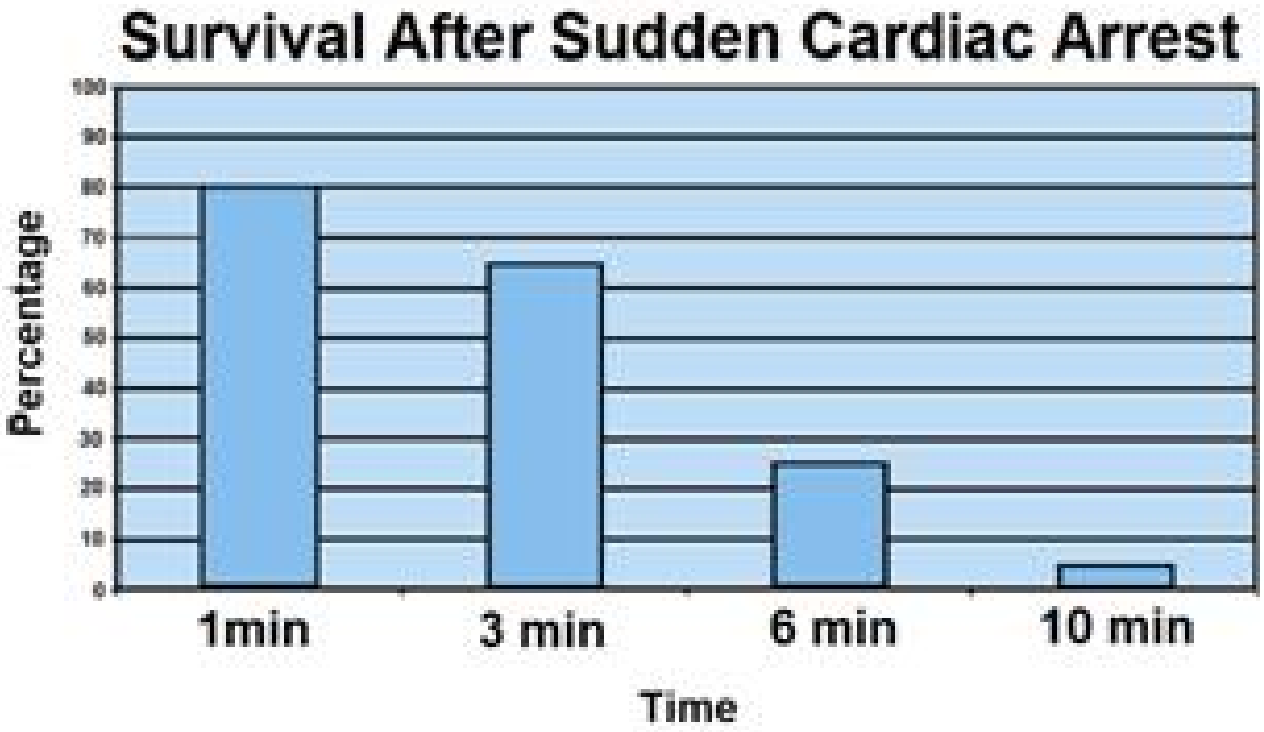
RECOMMENDATION

We recommend the use of CRT in combination with an ICD for HF patients on optimal medical therapy with NYHA II HF symptoms, LVEF $\leq$ 30%, and QRS duration $\geq$ 150 ms (Strong Recommendation, High-Quality Evidence).

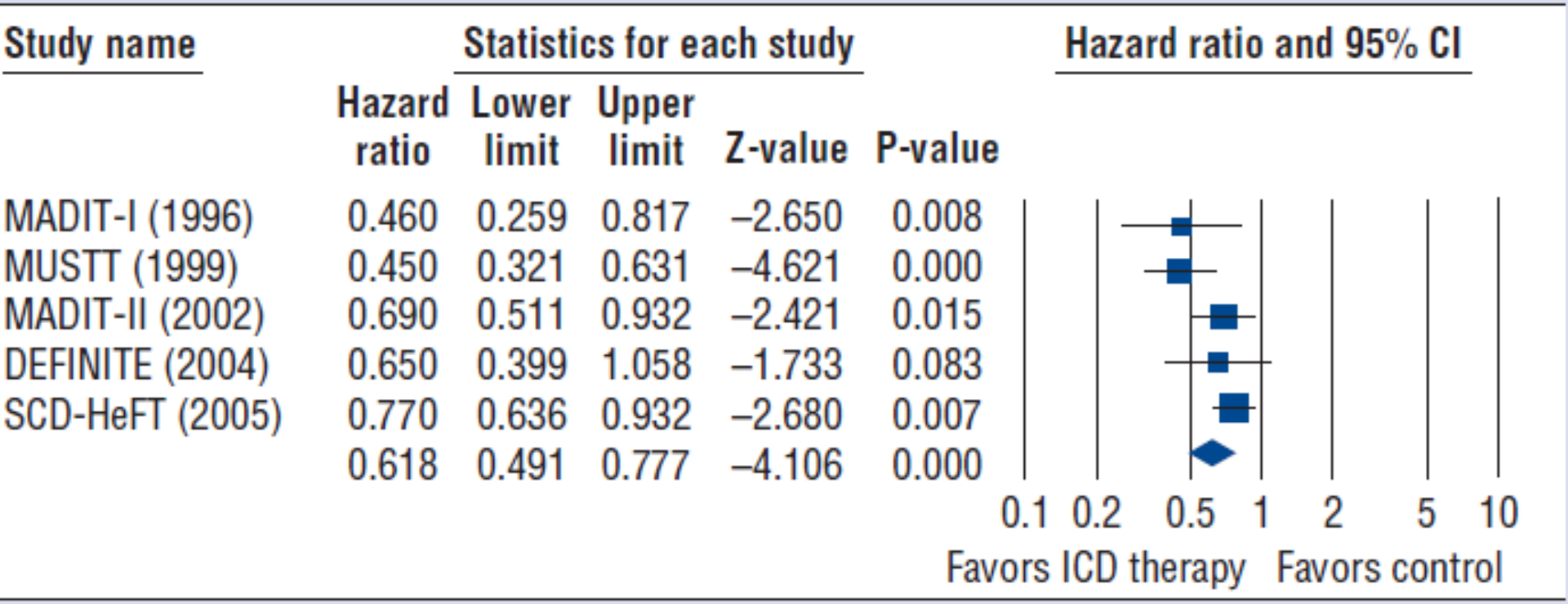

Sudden cardiac arrest
Alzheimers
Assault with firearms
Breast cancer
Cervical cancer
Colorectal cancer
Diabetes
HIV
House fires
Motor vehicle accidents
Prostate cancer
Suicides

Sudden cardiac death




Survival After Sudden Cardiac Arrest
Percentage
100
90
80
70
60
50
40
30
20
10
0
1min
3 min
6 min
10 min
Time

Trial (year)	Treatment group	Patients	Mean age (years)	Patients ≥ 65 y/o (%)	Hazard ratio for effect of ICD therapy on all-cause mortality (95% CI)
MADIT-I (1996) [5]	Total	196	63 ± 9*	53.5	0.46 (0.26–0.82)
	ICD	95	62 ± 9	53.5	
	Control	101	64 ± 9	53.5	
CABG-PATCH (1997) [4]	Total	900	64 ± 9*	49.89	1.07 (0.81–1.42)
	ICD	446	64 ± 9	50.0	
	Control	454	63 ± 9	50.0	
MUSTT (1999) [7]	Total	704	66.5*†	55.97	0.45 (0.32–0.63)
	ICD	161	65.4 (8.52)‡	56.9	
	Control	543	64.9 (9.65)‡	54.1	
CAT (2002) [14]	Total	104	52 ± 11	NR	0.83 (0.45–1.52)
	ICD	50	52 ± 12	NR	
	Control	54	52 ± 10	NR	
MADIT-II (2002) [6]	Total	1,232	64 ± 10*	48.0	0.69 (0.51–0.93)
	ICD	742	64 ± 10	44.2	
	Control	490	65 ± 10	51.4	
AMIOVIRT (2003) [15]	Total	103	NR	NR	NR
	ICD	51	58 ± 11	NR	
	Control	52	60 ± 12	NR	
DINAMIT (2004) [3]	Total	674	62 ± 11*	NR	1.08 (0.76–1.55, p = 0.66)
	ICD	332	61.5 ± 10.9	NR	
	Control	342	62.1 ± 10.6	NR	
DEFINITE (2004) [8]	Total	458	58.3	34.28	0.65 (0.40–1.06, p = 0.08)
	ICD	229	58.4	35.4	
	Control	229	58.1	33.2	
SCD-HeFT (2005) [9]	Total	2,521	60*†	34.49	0.77 (0.62–0.96, p = 0.007)§
	ICD	829	60.1†	35.5	
	Control (amiodarone)	845	60.4†	33.5	
	Control (placebo)	847	59.7†		


Study name
Statistics for each study
Hazard ratio and 95% CI
Hazard ratio
Lower limit
Upper limit
Z-value
P-value
MADIT-I (1996) 0.460 0.259 0.817 –2.650 0.008
MUSTT (1999) 0.450 0.321 0.631 –4.621 0.000
MADIT-II (2002) 0.690 0.511 0.932 –2.421 0.015
DEFINITE (2004) 0.650 0.399 1.058 –1.733 0.083
SCD-HeFT (2005) 0.770 0.636 0.932 –2.680 0.007
0.618 0.491 0.777 –4.106 0.000
0.1 0.2 0.5 1 2 5 10
Favors ICD therapy
Favors control

2008 ACC/AHA Guidelines

40 days post-MI, LVEF < 35%, and NYHA II or III.

40 days post-MI, LVEF < 30%, and NYHA I.

Non-ischemic DCM, LVEF ≤ 35%, and NYHA II or III.

NSVT due to prior MI, LVEF < 40%, and inducible VF/ sustained VT at EP study.

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

Évaluation du risque CV pour une Chx non cardique

- Évaluation périop = opportunité d'évaluer le risque CV à court terme et à long terme
- Investigation pour améliorer le pronostic.
- Deux types de risques à considérer
  - Risque relié au type et à l'urgence de la chx
  - Risque relié au profil de risque CV du patient
- Deux réponses à donner aux chirurgiens
  - oui ou non à la chx
  - Soins intensifs ou pas en post opératoire

Table 3 Change in numbers of discharges for surgical procedures by age for the time periods 1994/95 and 2004/05 as reported from the 2005 US National Hospital Discharge Survey (non-federal short-stay hospitals)[15]

Age (years)	Number of procedures (in thousands)		% change
	1994/95	2004/05	
18–44	7311	7326	+2.1
45–64	4111	5210	+26.7
65–74	3069	3036	−1.1
75 and over	3479	4317	+24.1
18 and over	17 969	19 889	+10.7

Table 4 Surgical risk[a] estimate (modified from Boersma et *al.*[6])

Low-risk <1%	Intermediate-risk 1–5%	High-risk >5%
• Breast • Dental • Endocrine • Eye • Gynaecology • Reconstructive • Orthopaedic—minor (knee surgery)	• Abdominal • Carotid • Peripheral arterial angioplasty • Endovascular aneurysm repair • Head and neck surgery • Pulmonary renal/ liver transplant • Urologic—major	• Aortic and major vascular surgery • Peripheral vascular surgery

Chx urgente = risque élevé

Modèles de score de risque du patient

- Goldman (1977)
- Detsky (1986)
- Eagle (1989)
- Revised Cardiac risk index (Goldman 1999)

Category and Study	No. of Patients	Myocardial Infarction	Death due to Cardiac Causes	All Major Cardiac Events*
		percent		
Large series of unselected patients older than 40				
Goldman et al.[4]	1001	1.8	1.9	5.8
Zeldin[5]	1140	NR†	1.2	3.1
Larsen et al.[6]	2609	1.2	0.8	2.6
Ashton et al.[17]	1487	NM‡	0.6	NM‡
Pooled average	—	1.4	1.0	—
Large series of consecutive surgical patients, with some selection criteria				
Detsky et al.[7]§	455	3.1	2.4	7.9
Raby et al.[9]¶	176	2.3	0.6	7.4
Mangano et al.[10]‖	474	2.5	1.2	17.5
Ashton et al.[17]**	579	2.6	1.4	NM‡
Shah et al.[18]††	688	4.7	2.2	NM‡
Baron et al.[19]‡‡	457	4.8	2.2	18.8
Foster et al.[20]§§	458	1.1	1.3	NM‡
Pooled average	—	3.2	1.7	—
Largest studies of patients selected to undergo preoperative thallium scintigraphy				
Eagle et al.[21]¶¶	200	4.5	3.0	15.0
Brown and Rowen[22]‖‖	231	3.0	2.2	8.2
Hendel et al.[23]	327	6.7	2.1	NM‡
Lette et al.[24]	415	7.7	6.3	NM‡
Bry et al.[25]	237	5.9	1.3	NM‡
McFalls et al.[26]	116	19.0	1.7	NM‡
Pooled average	—	6.9	3.2	—

Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION

Derivation and Prospective Validation of a Simple Index for Prediction of Cardiac Risk of Major Noncardiac Surgery

Thomas H. Lee, Edward R. Marcantonio, Carol M. Mangione, Eric J. Thomas, Carisi A. Polanczyk, E. Francis Cook, David J. Sugarbaker, Magruder C. Donaldson, Robert Poss, Kalon K. L. Ho, Lynn E. Ludwig, Alex Pedan and Lee Goldman

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Print ISSN: 0009-7322. Online ISSN: 1524-4539

Méthode

- > 50ans
- Chx non urgente non cardiaque avec un sejours postop > 48h
- 1 centre Brigham and women entre 1989-1994
- Identifie les facteurs de risque qui prédisent les complication cardiovasculaires
- Deux groupes: une cohorte de dérivation (2893 pts) et une cohorte de validation (1422 pts)

TABLE 1. Clinical Characteristics of Patients in Derivation and Validation Cohorts

	Derivation Cohort (n=2893)	Validation Cohort (n=1422)	Relative Risks for Major Cardiac Complications and 95% CIs in Derivation Cohort
Male sex*, n (%)	1374 (47)	722 (51)	2.6 (1.5, 4.6)
Age >70 y, n (%)	998 (35)	475 (33)	1.9 (1.1, 3.2)
Mean±SD age, y	66.4±10.1	66.3±9.0	
Type of procedure, n (%)			
Thoracic	346 (12)	184 (13)	1.1 (0.5, 2.3)
Orthopedic	1026 (35)	463 (33)	0.4 (0.2, 0.8)
Abdominal aortic aneurysm	110 (4)	64 (5)	3.6 (1.7, 7.8)
Other vascular	498 (17)	226 (16)	3.9 (2.3, 6.5)
Other abdominal	324 (11)	184 (13)	0.8 (0.3, 1.9)
Other	578 (20)	292 (21)	0.1 (0.04, 0.6)
High-risk procedures (intraperitoneal, intrathoracic, or suprainguinal vascular procedures)*	894 (31)	490 (34)	2.1 (1.2, 3.5)

TABLE 2. Major Cardiac Complications in Derivation and Validation Cohorts

	Derivation Set (n=2893)	Validation Set (n=1422)	*P*
Any major cardiac complication, n (%)	56 (2)	36 (2.5)	NS
Ventricular fibrillation/cardiac arrest	9 (0.3)	7 (0.5)	NS
Complete heart block	2 (0.1)	2 (0.1)	NS
Acute myocardial infarction	28 (1.0)	18 (1.3)	NS
Pulmonary edema	24 (0.8)	18 (1.3)	NS
Cardiac death during admission, n (%)	8 (0.3)	4 (0.3)	NS
Total (cardiac and noncardiac) mortality during admission, n (%)	22 (0.8)	21 (1.5)	<0.05

TABLE 4. Rates of Major Cardiac Complications and Multivariate ORs* Among Patients With Individual Risk Factors in Derivation and Validation Sets

	Derivation Set (n=2893)		Validation Set (n=1422)	
	Crude Data	Adjusted OR (95% CI)	Crude Data	Adjusted OR (95% CI)
Revised Cardiac Risk Index				
1. High-risk type of surgery	27/894 (3%)	2.8 (1.6, 4.9)	18/490 (4%)	2.6 (1.3, 5.3)
2. Ischemic heart disease	34/951 (4%)	2.4 (1.3, 4.2)	26/478 (5%)	3.8 (1.7, 8.2)
3. History of congestive heart failure	23/434 (5%)	1.9 (1.1, 3.5)	19/255 (7%)	4.3 (2.1, 8.8)
4. History of cerebrovascular disease	17/291 (6%)	3.2 (1.8, 6.0)	10/140 (7%)	3.0 (1.3, 6.8)
5. Insulin therapy for diabetes	7/112 (6%)	3.0 (1.3, 7.1)	3/59 (5%)	1.0 (0.3, 3.8)
6. Preoperative serum creatinine >2.0 mg/dL	9/103 (9%)	3.0 (1.4, 6.8)	3/55 (5%)	0.9 (0.2, 3.3)

*Based on logistic regression models including these 6 variables

	Derivation Cohort (n=2893)		Validation Cohort (n=1422)	
	Events/Pop	Rate (95% CI)	Events/Pop	Rate (95% CI)
Revised Cardiac Risk Index				
Class I	5/1071	0.5 (0.2, 1.1)	2/488	0.4 (0.05, 1.5)
Class II	14/1106	1.3 (0.7, 2.1)	5/567	0.9 (0.3, 2.1)
Class III	18/506	3.6 (2.1, 5.6)	17/258	6.6 (3.9, 10.3)
Class IV	19/210	9.1 (5.5, 13.8)	12/109	11.0 (5.8, 18.4)
ROC area (SE)	0.759 (0.032)*		0.806 (0.034)†	

Pitfalls

- Les chx urgentes sont exclues
- D'autres facteurs de risque ne sont pas considérés:
  - Obésité
  - MVAS
  - Syndrome métabolique
  - Db non insulinotx
  - MPOC significative
- Tolérance à l'effort (Classe fonctionnelle)
- Rx: ASA, plavix, statine, beta-bloqueur, IECA
- Condition aiguë du patients (infection aiguë, choc septique, hémorragie, embolie pulmonaire, etc.)

ACC guidelines

Facteurs de risque

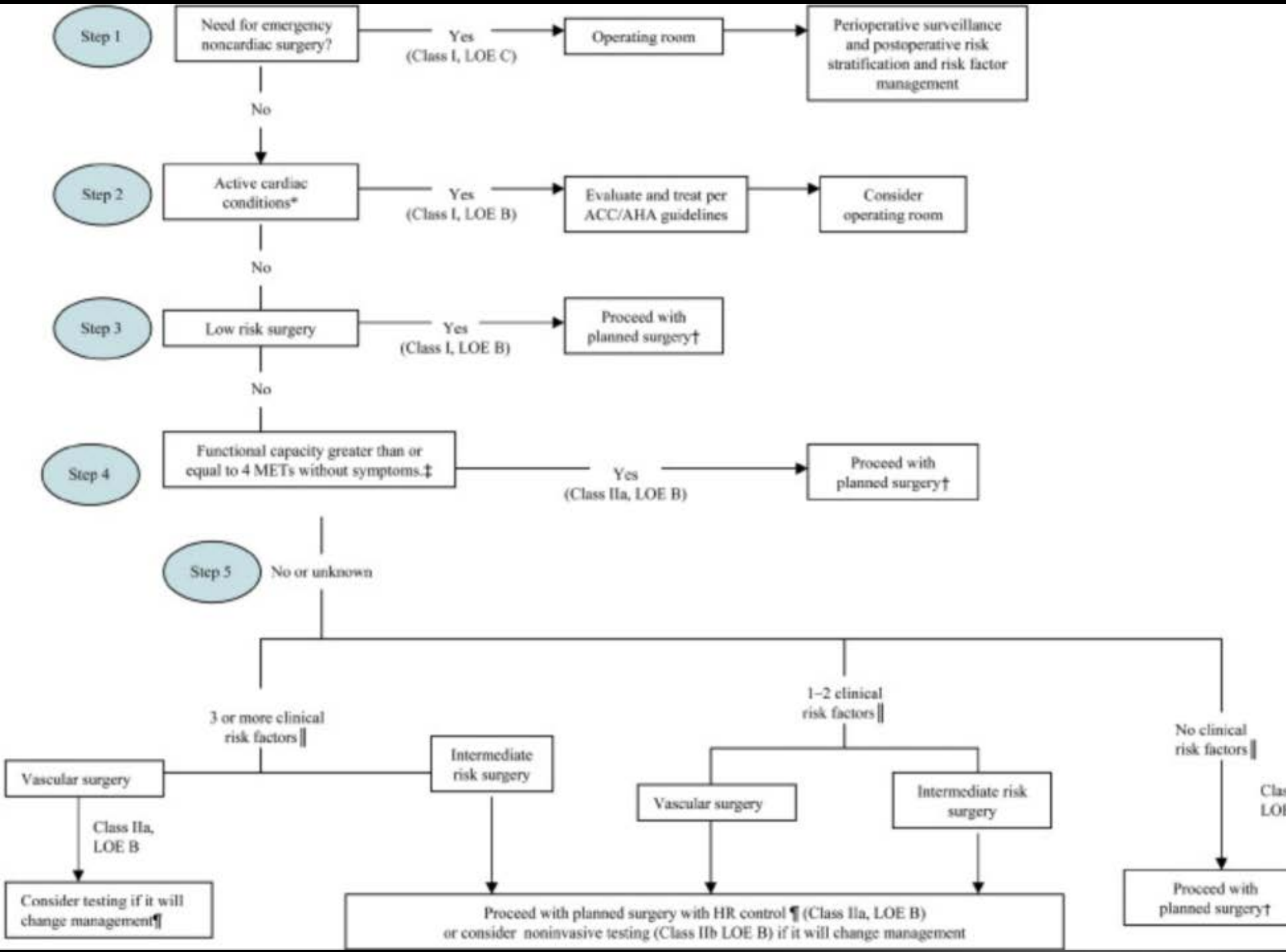
- unstable coronary syndromes;
  - unstable or severe angina,
  - recent MI,
- decompensated HF;
- significant arrhythmias; and
- severe valvular disease.

- history of ischemic heart disease;
- history of compensated or prior HF;
- history of cerebrovascular disease;
- diabetes mellitus; and
- renal insufficiency (4).

- Age > 70ans
- ECG anormal (HVG, BBG, ANST-T)
- rythme autre sinusal
- HTA non contrôlée

Table 3. Estimated Energy Requirements for Various Activities

1 MET	Can you . . .
↓	Take care of yourself?
↓	Eat, dress, or use the toilet?
↓	Walk indoors around the house?
↓	Walk a block or 2 on level ground at 2 to 3 mph (3.2 to 4.8 kph)?
4 METs	Do light work around the house like dusting or washing dishes?
4 METs	Can you . . .
↓	Climb a flight of stairs or walk up a hill?
↓	Walk on level ground at 4 mph (6.4 kph)?
↓	Run a short distance?
↓	Do heavy work around the house like scrubbing floors or lifting or moving heavy furniture?
↓	Participate in moderate recreational activities like golf, bowling, dancing, doubles tennis, or throwing a baseball or football?
Greater than 10 METs	Can you . . .
	Participate in strenuous sports like swimming, singles tennis, football, basketball, or skiing?


Step 1
Need for emergency noncardiac surgery?
Yes
(Class I, LOE C)
Operating room
Perioperative surveillance and postoperative risk stratification and risk factor management
No
Step 2
Active cardiac conditions*
Yes
(Class I, LOE B)
Evaluate and treat per ACC/AHA guidelines
Consider operating room
No
Step 3
Low risk surgery
Yes
(Class I, LOE B)
Proceed with planned surgery†
No
Step 4
Functional capacity greater than or equal to 4 METs without symptoms.‡
Yes
(Class IIa, LOE B)
Proceed with planned surgery†
Step 5
No or unknown
3 or more clinical risk factors‖
1–2 clinical risk factors‖
No clinical risk factors‖
Vascular surgery
Intermediate risk surgery
Vascular surgery
Intermediate risk surgery
Class IIa, LOE B
Consider testing if it will change management¶
Proceed with planned surgery with HR control ¶ (Class IIa, LOE B)
or consider noninvasive testing (Class IIb LOE B) if it will change management
Proceed with planned surgery†

Pitfalls

- Le risque des chx urgente pas détaillé
- Maladie congénitale cardiaque
- Âge >8oans non spécifié
- Condition aiguë du patients (infection aiguë, choc septique, hémorragie, embolie pulmonaire, etc.)

Beta bloqueur

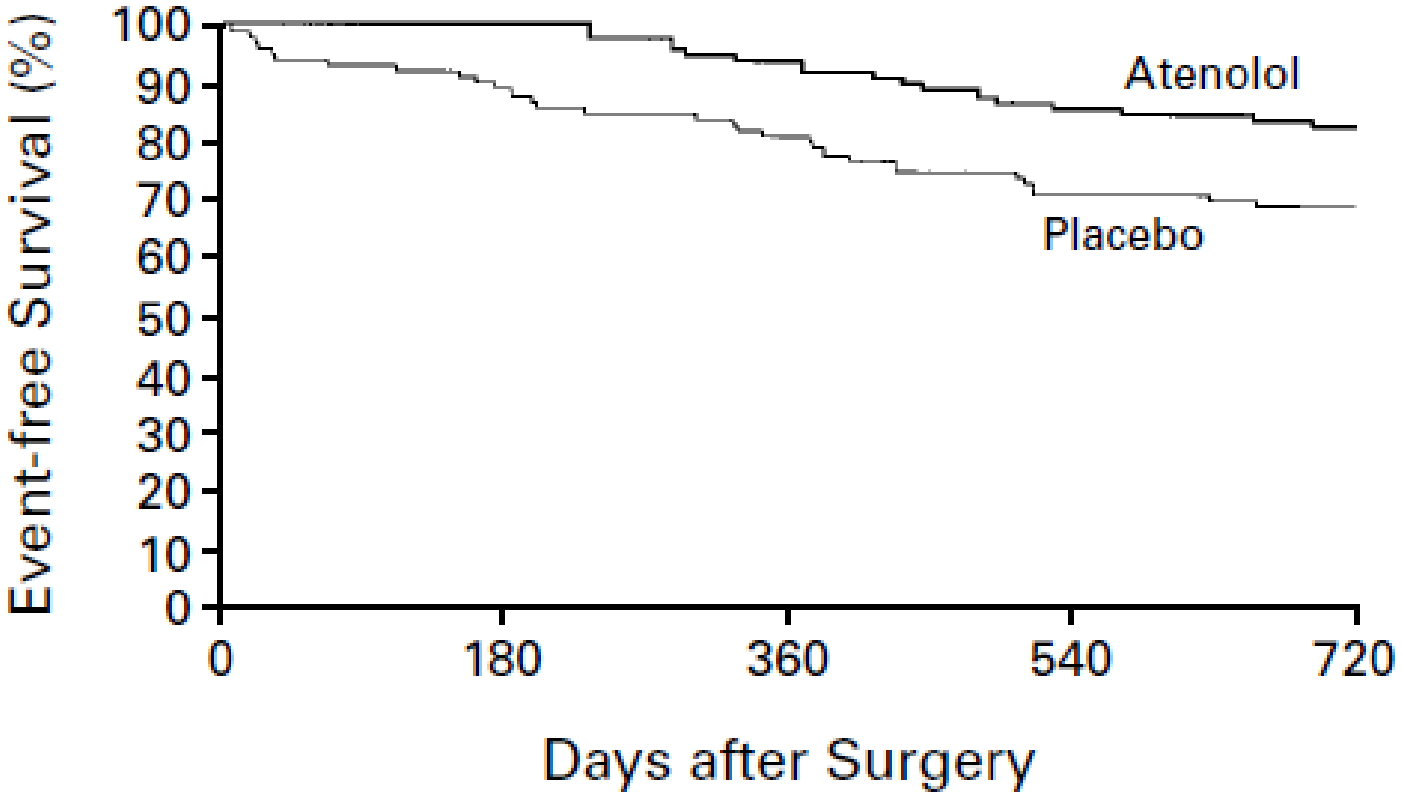
The New England Journal of Medicine

Facteur de risque
>65ans
HTA
DM
Fumeur
LDL >6.2

VOLUME 335 DECEMBER 5, 1996 NUMBER 23

EFFECT OF ATENOLOL ON MORTALITY AND CARDIOVASCULAR MORBIDITY AFTER NONCARDIAC SURGERY

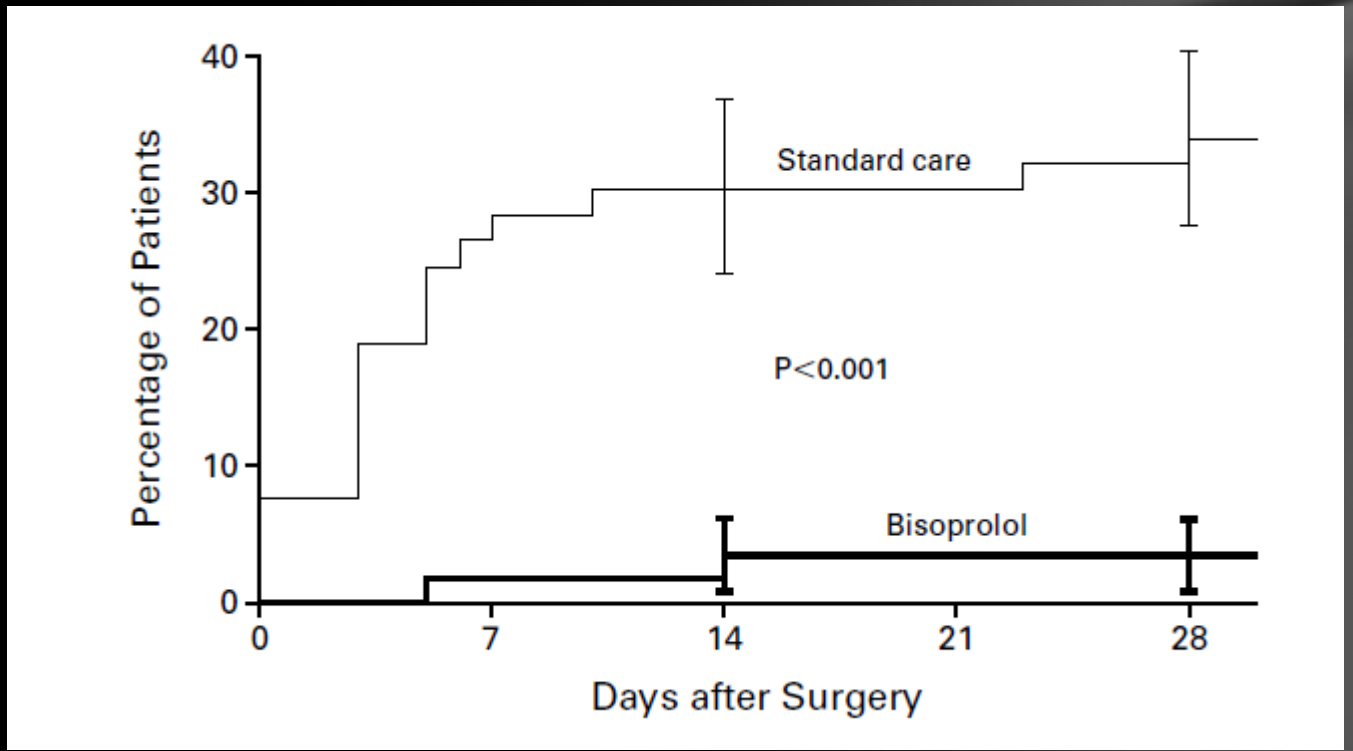
DENNIS T. MANGANO, PH.D., M.D., ELIZABETH L. LAYUG, M.D., ARTHUR WALLACE, PH.D., M.D., AND IDA TATEO, M.S., FOR THE MULTICENTER STUDY OF PERIOPERATIVE ISCHEMIA RESEARCH GROUP*


Event-free Survival (%)
100
90
80
70
60
50
40
30
20
10
0
0
180
360
540
720
Days after Surgery
Atenolol
Placebo

THE EFFECT OF BISOPROLOL ON PERIOPERATIVE MORTALITY AND MYOCARDIAL INFARCTION IN HIGH-RISK PATIENTS UNDERGOING VASCULAR SURGERY

DON POLDERMANS, PH.D., ERIC BOERSMA, PH.D., JEROEN J. BAX, PH.D., IAN R. THOMSON, PH.D., LOUIS L.M. VAN DE VEN, PH.D., JAN D. BLANKENSTEIJN, PH.D., HUBERT F. BAARS, M.D., TIK-IEN YO, PH.D., GIUSEPPE TROCINO, M.D., CARLO VIGNA, M.D., JOS R.T.C. ROELANDT, PH.D., AND HERO VAN URK, PH.D., FOR THE DUTCH ECHOCARDIOGRAPHIC CARDIAC RISK EVALUATION APPLYING STRESS ECHOCARDIOGRAPHY STUDY GROUP*

Mortalité



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Should Major Vascular Surgery Be Delayed Because of Preoperative Cardiac Testing in Intermediate-Risk Patients Receiving Beta-Blocker Therapy With Tight Heart Rate Control?

Don Poldermans, MD, PhD,* Jeroen J. Bax

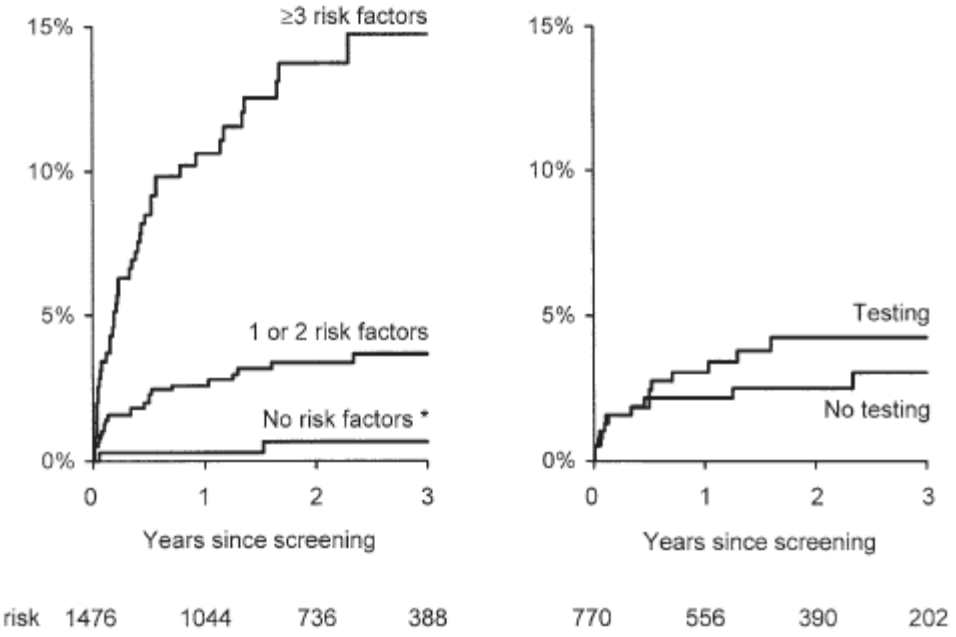


Figure 3. Incidence of cardiac death or myocardial infarction (MI) during 3-year follow-up according to the number of cardiac risk factors **(left)** and allocated strategy in patients with 1 or 2 cardiac risk factors only **(right)**. The incidence of cardiac death or MI was associated with the number of cardiac risk factors at screening (log-rank $p < 0.001$). There was no significant difference in the long-term incidence of cardiac events between patients allocated to cardiac testing or no testing (log-rank $p = 0.30$).

Poldermans update: Magazine cites lack of informed consent, bogus patient surveys, invented data and more

The professor is accused of faking academic data and compromising patient trust, the paper says. In particular, he failed to obtain patient consent for carrying out research and recorded results ‘which cannot be resolved to patient information,’ the university said.

Perioperative β blockers in patients having non-cardiac surgery: a meta-analysis

Sripal Bangalore, Jørn Wetterslev, Shruthi Pranesh, Sabrina Sawhney, Christian Gluud, Franz H Messerli

Summary

Background American College of Cardiology and American Heart Association (ACC/AHA) guidelines on perioperative assessment recommend perioperative β blockers for non-cardiac surgery, although results of some clinical trials seem not to support this recommendation. We aimed to critically review the evidence to assess the use of perioperative β blockers in patients having non-cardiac surgery.

Methods We searched Pubmed and Embase for randomised controlled trials investigating the use of β blockers in non-cardiac surgery. We extracted data for 30-day all-cause mortality, cardiovascular mortality, non-fatal myocardial infarction, non-fatal stroke, heart failure, and myocardial ischaemia, safety outcomes of perioperative bradycardia, hypotension, and bronchospasm.

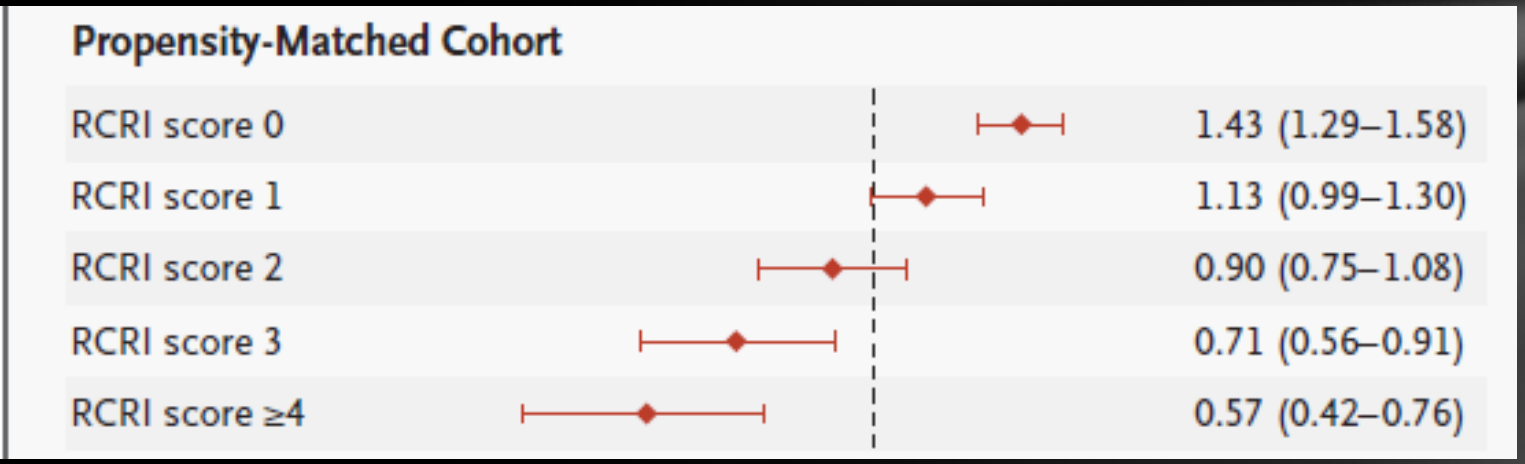
Findings 33 trials included 12 306 patients. β blockers were not associated with any significant reduction in the risk of all-cause mortality, cardiovascular mortality, or heart failure, but were associated with a decrease (odds ratio [OR] 0·65, 95% CI 0·54–0·79) in non-fatal myocardial infarction (number needed to treat [NNT] 63) and decrease (OR 0·36, 0·26–0·50) in myocardial ischaemia (NNT 16) at the expense of an increase (OR 2·01, 1·27–3·68) in non-fatal strokes (number needed to harm [NNH] 293). The beneficial effects were driven mainly by trials with high risk of bias. For the safety outcomes, β blockers were associated with a high risk of perioperative bradycardia requiring treatment (NNH 22), and perioperative hypotension requiring treatment (NNH 17). We recorded no increased risk of bronchospasm.

Interpretation Evidence does not support the use of β-blocker therapy for the prevention of perioperative clinical outcomes in patients having non-cardiac surgery. The ACC/AHA guidelines committee should soften their advocacy for this intervention until conclusive evidence is available.

ORIGINAL ARTICLE

Perioperative Beta-Blocker Therapy and Mortality after Major Noncardiac Surgery

Peter K. Lindenauer, M.D., Penelope Pekow, Ph.D., Kaijun Wang, M.S., Dheeresh K. Mamidi, M.B., B.S., M.P.H., Benjamin Gutierrez, Ph.D., and Evan M. Benjamin, M.D.



Perioperative β-blockade (POBBLE) for patients undergoing infrarenal vascular surgery: Results of a randomized double-blind controlled trial

POBBLE Trial Investigators, *London, United Kingdom*

Objective: To assess whether a pragmatic policy of perioperative β-blockade, with metoprolol, reduced the 30-day cardiovascular morbidity and mortality and reduced the length of hospital stay in average patients undergoing infrarenal vascular surgery.

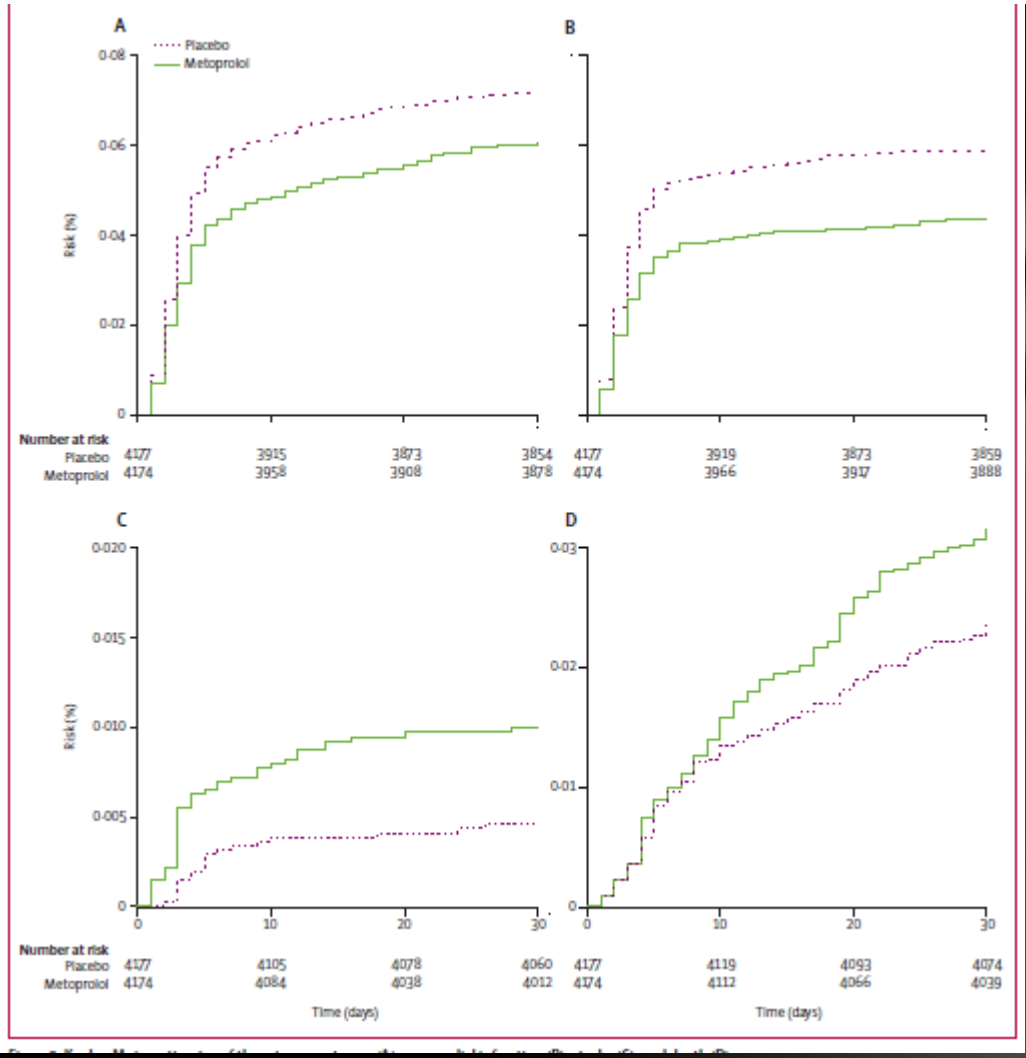
Methods: This was a double-blind randomized placebo-controlled trial that occurred in vascular surgical units in four UK hospitals. Participants were 103 patients without previous myocardial infarction who had infrarenal vascular surgery between July 2001 and March 2004. Interventions were oral metoprolol (50 mg twice daily, supplemented by intravenous doses when necessary) or placebo from admission until 7 days after surgery. Holter monitors were kept in place for 72 hours after surgery.

Results: Eighty men and 23 women (median age, 73 years) were randomized, 55 to metoprolol and 48 to placebo, and 97 (94%) underwent surgery during the trial. The most common operations were aortic aneurysm repair (38%) and distal bypass (29%). Intraoperative inotropic support was required in 64% and 92% of patients in the placebo and metoprolol groups, respectively. Within 30 days, cardiovascular events occurred in 32 patients, including myocardial infarction (8%), unstable angina (9%), ventricular tachycardia (19%), and stroke (1%). Four (4%) deaths were reported. Cardiovascular events occurred in 15 (34%) and 17 (32%) patients in the placebo and metoprolol groups, respectively (unadjusted relative risk, 0.94; 95% confidence interval, 0.53-1.66; adjusted [for age, sex, statin use, and aortic cross-clamping] relative risk, 0.87; 95% confidence interval, 0.48-1.55). Time from operation to discharge was reduced from a median of 12 days (95% confidence interval, 9-19 days) in the placebo group to 10 days (95% confidence interval, 8-12 days) in the metoprolol group (adjusted hazard ratio, 1.71; 95% confidence interval, 1.09-2.66; $P < .02$).

Conclusions: Myocardial ischemia was evident in a high proportion (one third) of the patients after surgery. A pragmatic regimen of perioperative β-blockade with metoprolol did not seem to reduce 30-day cardiovascular events, but it did decrease the time from surgery to discharge. (J Vasc Surg 2005;41:602-9.)

Effects of extended-release metoprolol succinate in patients undergoing non-cardiac surgery (POISE trial): a randomised controlled trial

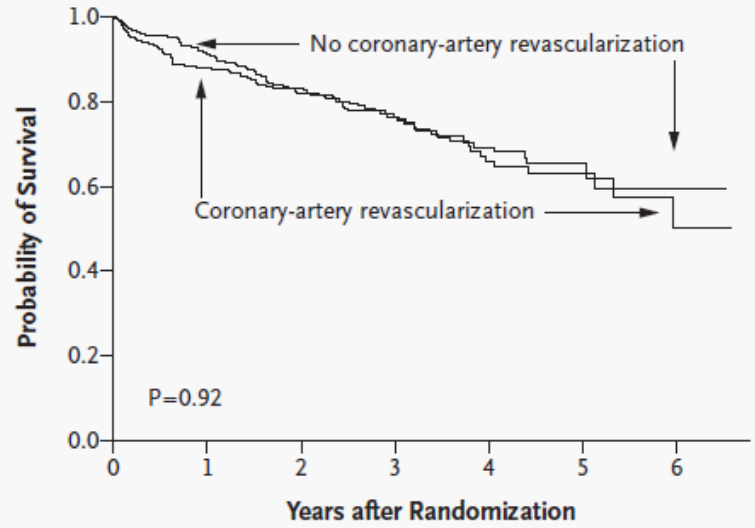
POISE Study Group*



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 DECEMBER 30, 2004 VOL. 351 NO. 27

Coronary-Artery Revascularization before Elective Major Vascular Surgery



No. at Risk						
Revascularization	226	175	113	65	18	7
No revascularization	229	172	108	55	17	12

Figure 1. Long-Term Survival among Patients Assigned to Undergo Coronary-Artery Revascularization or No Coronary-Artery Revascularization before Elective Major Vascular Surgery.

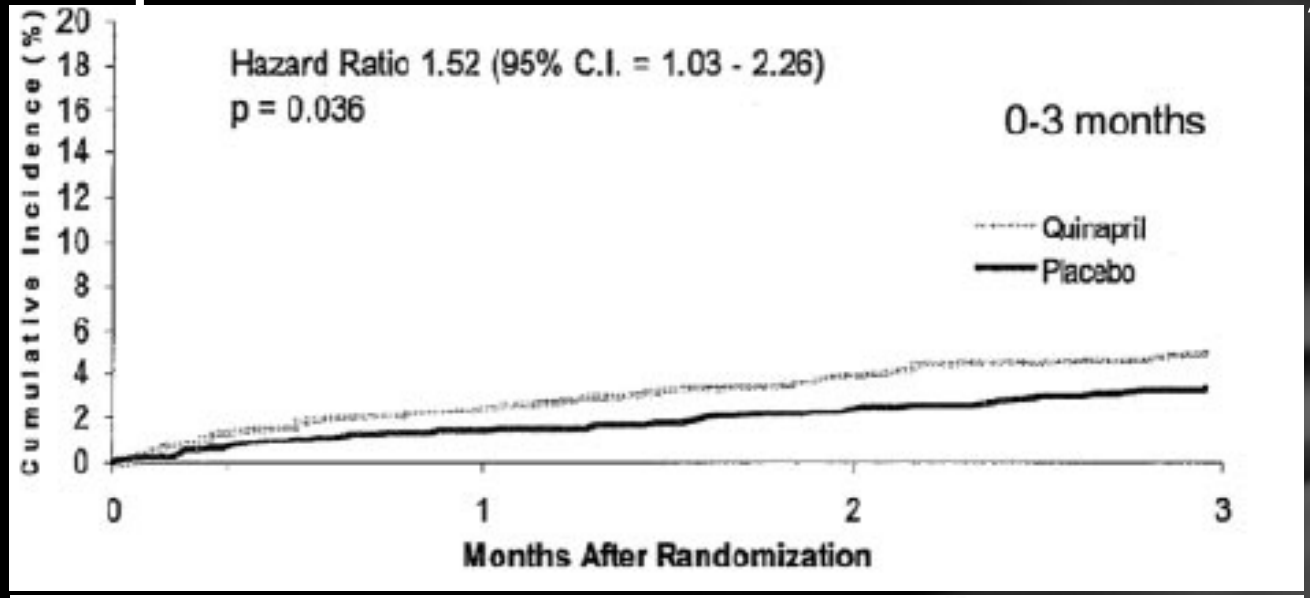
Kaplan–Meier estimates were used to generate survival curves, from the time of randomization, for all study patients.

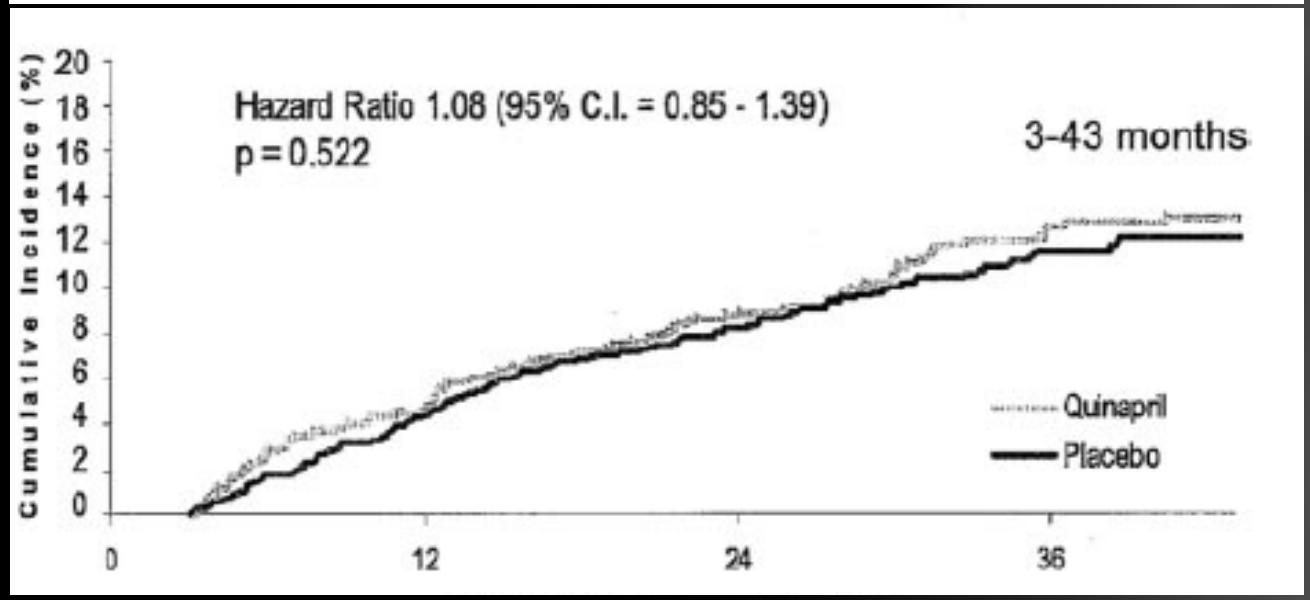
Risque perioperatoire pour chx cardiaque

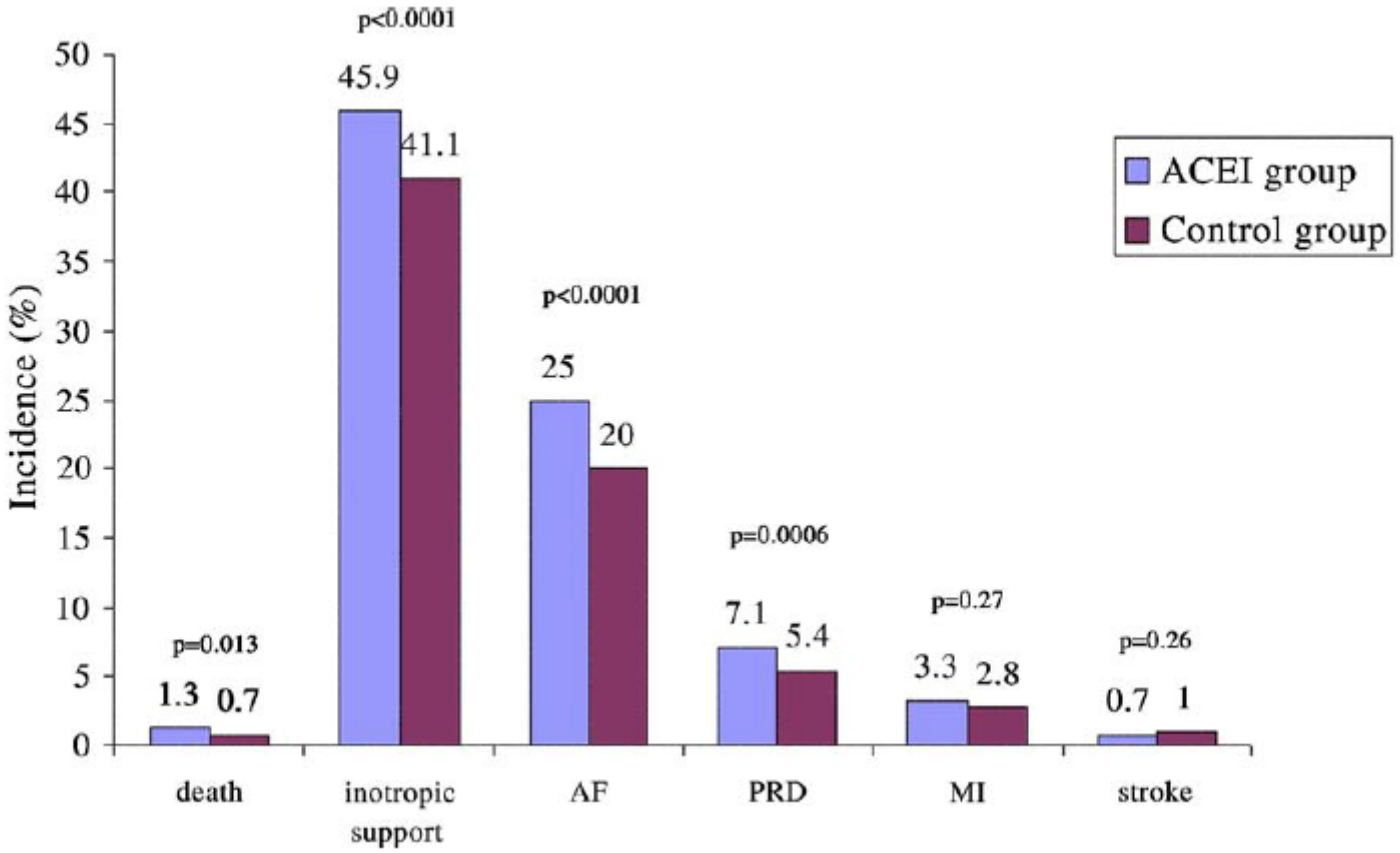
Plusieurs modèles de risque

- Parsonet
- STS
- Euroscore
- New England
- Ontario
- Un nouveau score canadian en cours

ACEI pré CABG? : IMAGINE study







(J Am Coll Cardiol 2009;54:1778–84)

Conclusion

Évaluation préop:

Opportunité d'évaluer le risque CV à court terme et à long terme

Investigation seulement si on peut améliorer le prognostic du patient à court et à long terme chez les patients à haut risque

Revascularisation ne semble pas avoir un effet bénéfique chez les patients asx

Beta bloqueur semble avoir un effet bénéfique chez les patients à haut risque opératoire et semble néfaste chez les patients à bas risque opératoire

ACEi ne semble pas avoir un effet bénéfique chez les patients à bas risque subissant chx PAC

Questions:

- Quel est le risque de mortalité à 5 ans chez un patient avec cardiomyopathie ischemique et une classe fonctionnelle NYHA 4/4?

Choix: 10%--20%--30%--40%--50%-- >50%

- Il n'y a pas d'indication d'ajouter la resynchronisation aux patients (sous traitement médical optimal) avec cardiomyopathie ischémique (FEVG < 30%) et avec classe fonction NYHA 2/4

Choix: vrai ou faux

Questions:

78 ans ♂

Chx à subir: colectomie gauche pour néo du colon

ATCD: CMP ischémique, FEVG 40%,

PCI il y a un 6 mois dans IVA avec BMS.

Pas d'angor depuis PCI, CF ¼, sous ASA, plavix

Risque périop? Ok pour chx? Soins intensifs post op?

Question

75 ans Homme

Fx de hanche post chute

Connu: MCAS, HTA, DSL et FA ACO sous pradax

Jamais eu coro. Angor 2/4, stable depuis un an

FSC normal, créat normal, Trop légèrement +

Cliniquement pas de DRS, pas de surcharge

Chx? Coro? Bb?

Si trop négative

Chx? Coro? Bb?

Question

67 ans F

CMP hypertrophique avec un gradient sous aortique de 30mmHg au repos. VG normale, présence de SAM

Pas de MCAS, pas de HTA, Créat normale

Vient pour appendicite perforé

Risque opératoire?

Quoi faire si hypotension

SYMPOSIUM RÉGIONAL DE SOINS CRITIQUES

MAURICIE | CENTRE-DU-QUÉBEC

7 décembre 2013
Campus Mauricie de
l'Université de Montréal

Sous le thème :

HÉMATO-ONCOLOGIE EN CONDITION CRITIQUE

Société des Intensivistes de Trois-Rivières

En partenariat avec :

Centre de santé et de services sociaux de Trois-Rivières
Centre hospitalier affilié universitaire régional

Agence de la santé et des services sociaux de la Mauricie et du Centre-du-Québec
Québec

Université de Montréal