HUG
Hôpitaux Universitaires de Genève

Prophylaxie primaire par le DAI

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DAI en prévention primaire

- Cardiopathie ischémique
- Cardiopathie non-ischémique
- Les indications
- Quelques questions….

MADIT/MUSTT/MADIT-II Study Criteria Comparison

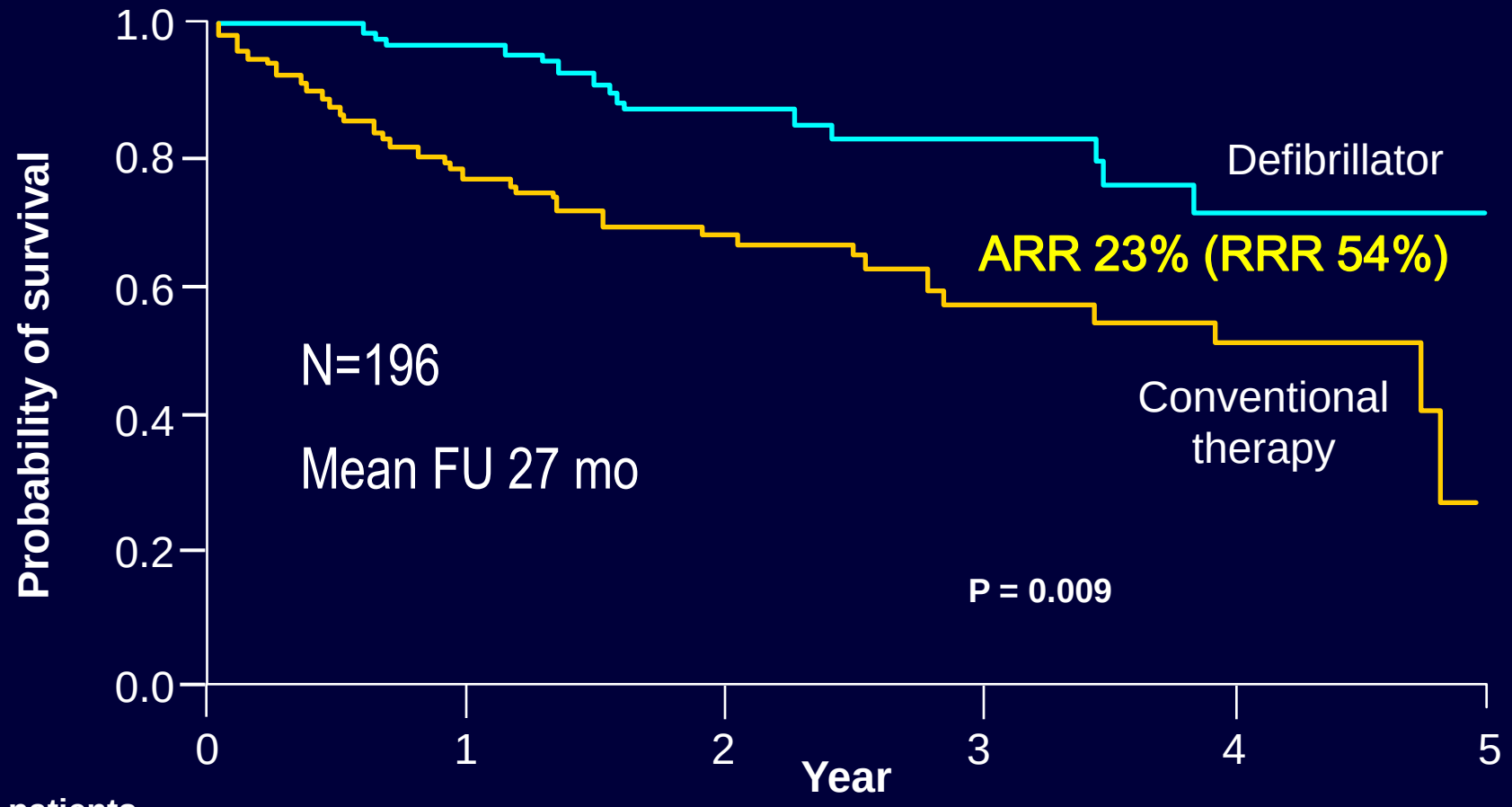
Inclusion Criteria	MADIT[1] (196 patients)	MUSTT[2] (704 patients)	MADIT II[3] (1232 patients)
CAD/Post-MI	✓	✓	✓
LV Dysfunction	✓ (≤35%)	✓ (≤40%)	✓ (≤30%)
NSVT	✓	✓	
Inducible VT on EPS	✓	✓	

[1] Moss AJ. *N Engl J Med*. 1996;335:1933-40.

[2] Buxton AE. *N Engl J Med*. 1999;341:1882-90.

[3] Moss AJ. *N Engl J Med*. 2002; 346:877-83.

MADIT Survival Results



No. of patients						
Defibrillator	95	80	53	31	17	3
Conventional therapy	101	67	48	29	17	0

Moss AJ. *N Engl J Med*. 1996;335:1933-40.

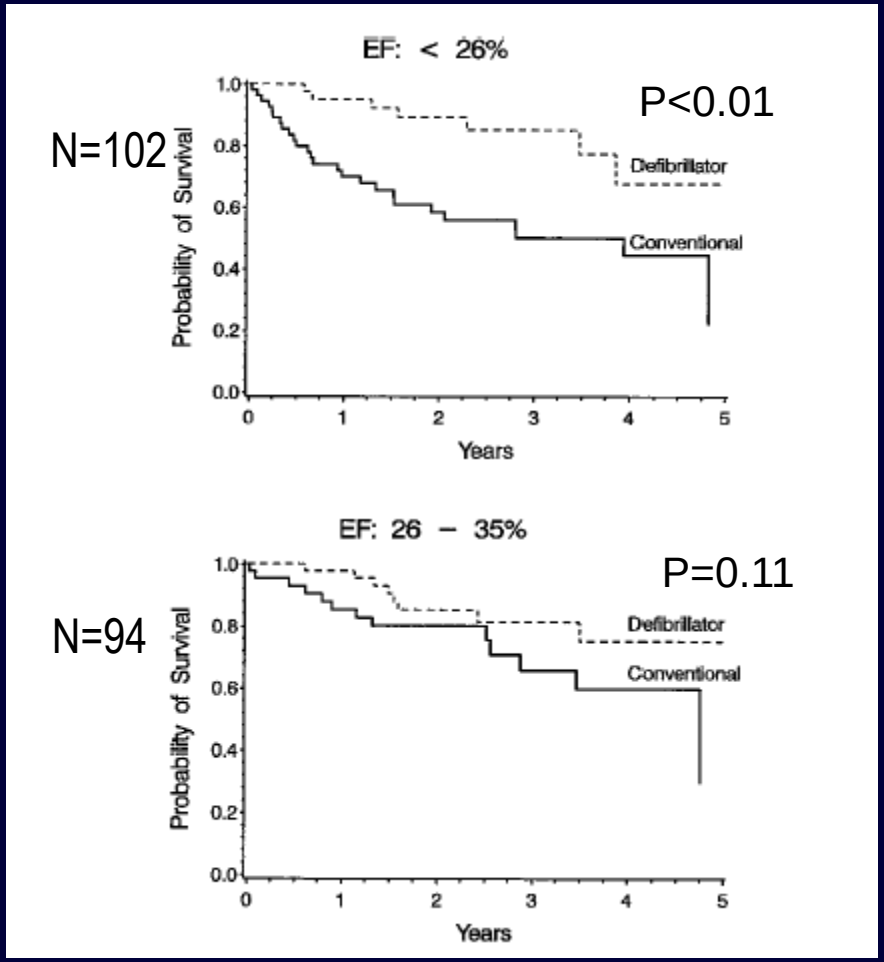
Editorial

Implantable Cardioverter Defibrillator Therapy

The Sickest Patients Benefit the Most

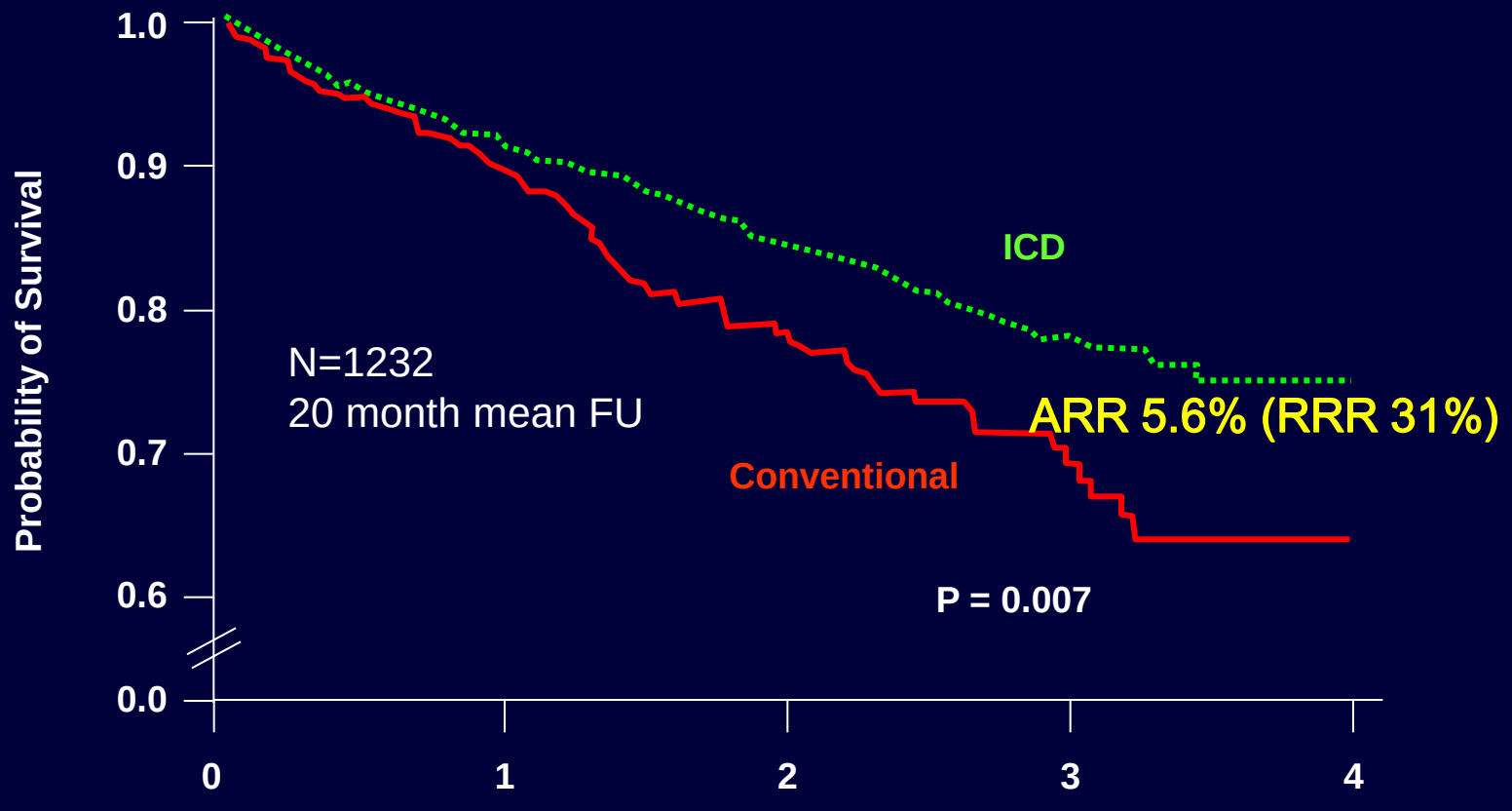
Arthur J. Moss, MD

MADIT study



Moss AJ, Circulation 2000;101:138.40

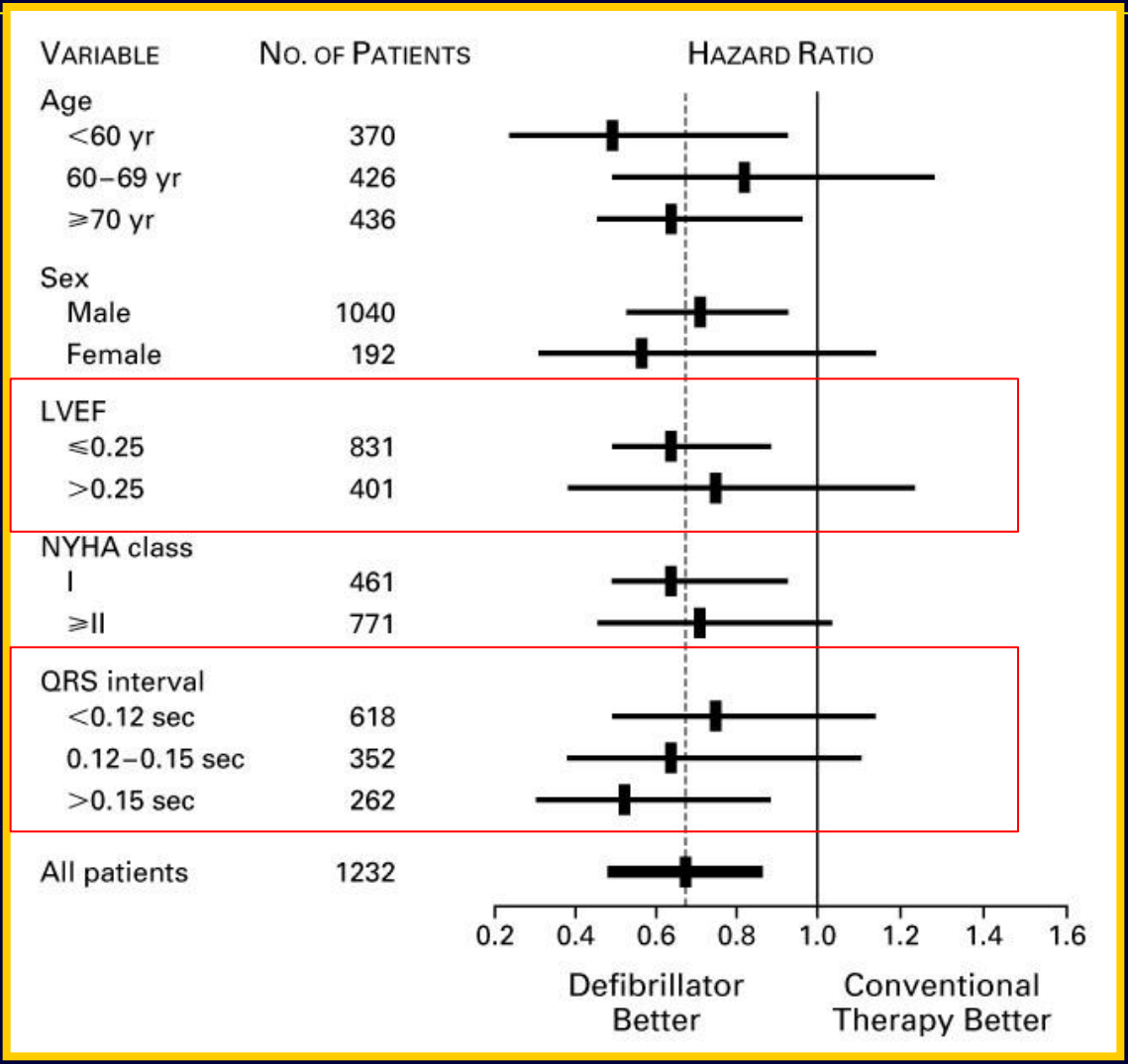
MADIT-II : mortalité totale



No. At Risk					
Defibrillator	742	502 (0.91)	274 (0.94)	110 (0.78)	9
Conventional	490	329 (0.90)	170 (0.78)	65 (0.69)	3

Moss AJ. *N Engl J Med*. 2002;346:877-83.

MADIT-II
Survival Results – Subgroup Analyses



Moss AJ. *N Engl J Med*. 2002;346:877-83.

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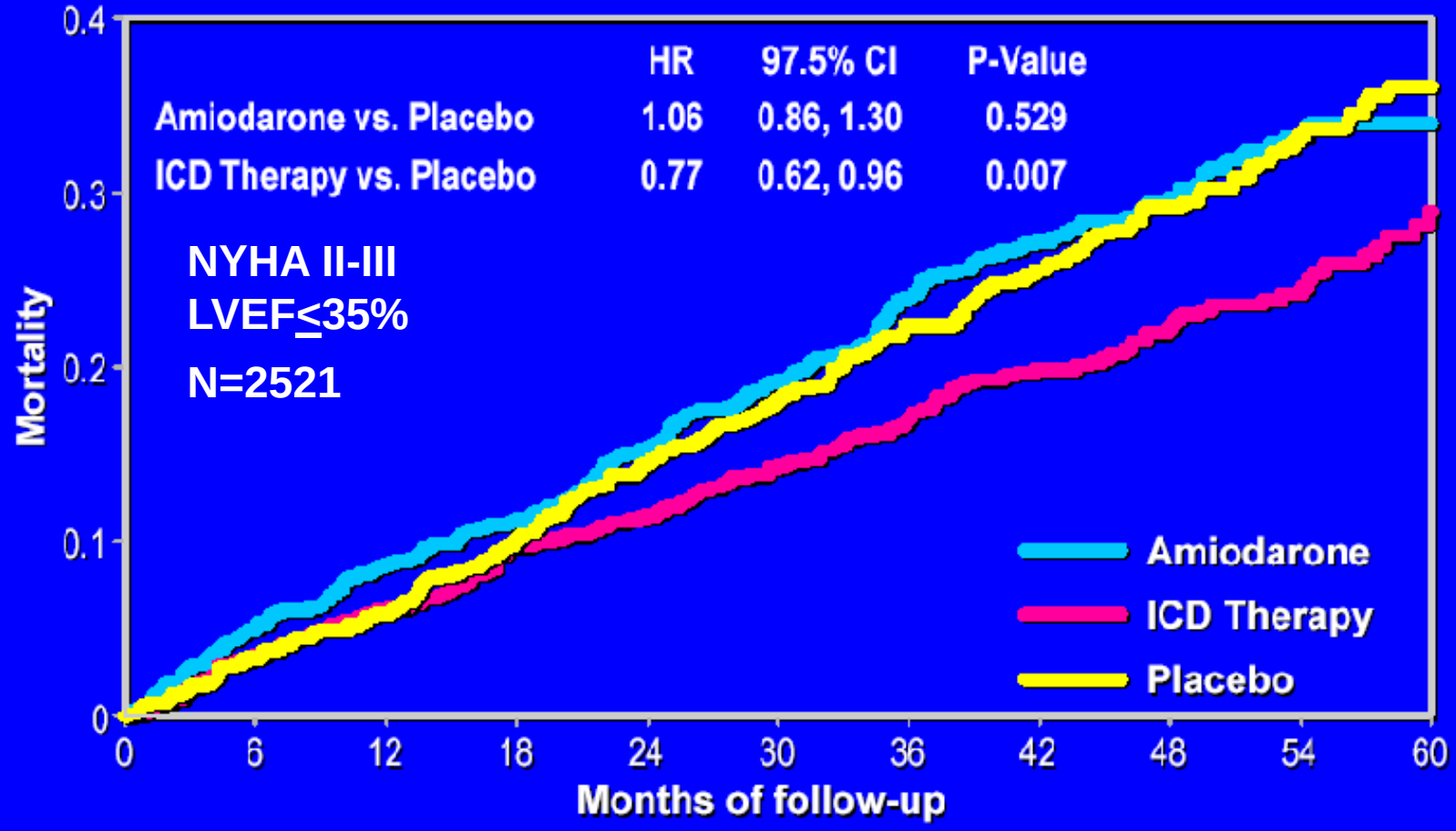
ICD et prévention primaire : CMD

	CAT	AMIOVIRT	DEFINITE	SCD-HFT
	Circulation 2002	JACC 2003	NEJM 2004	NEJM 2005
n	104	103	458	2521
Design	ICD vs control	ICD vs amio	ICD vs control	ICD vs amio vs placebo
EF	≤ 30%	≤ 35%	≤ 35%	≤ 35%
Arrhythmia	0	NSVT	NSVT / VES	0
Mean FU	5 yr	2 yr	2 yr	3.5yr
Total ✞	8 vs 4%* (NS)	10 vs 4%* (NS)	14 vs 8%** (NS)	22 vs 17 %*** P=0.007

* At 1 year ** At 2 years*** at 3 years

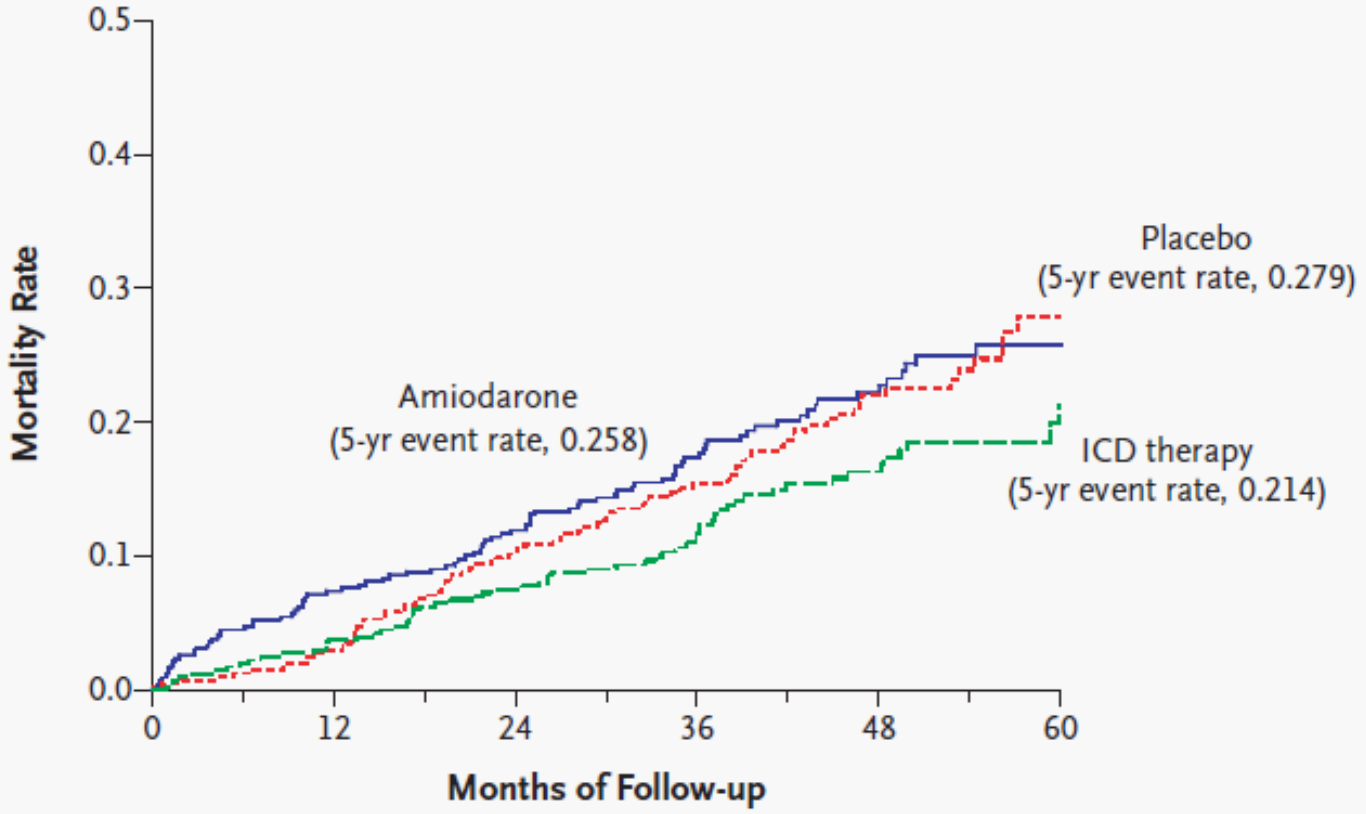
Sudden Cardiac Death
SCD-HeFT
Heart Failure Trial

Mortality by Intention-to-treat



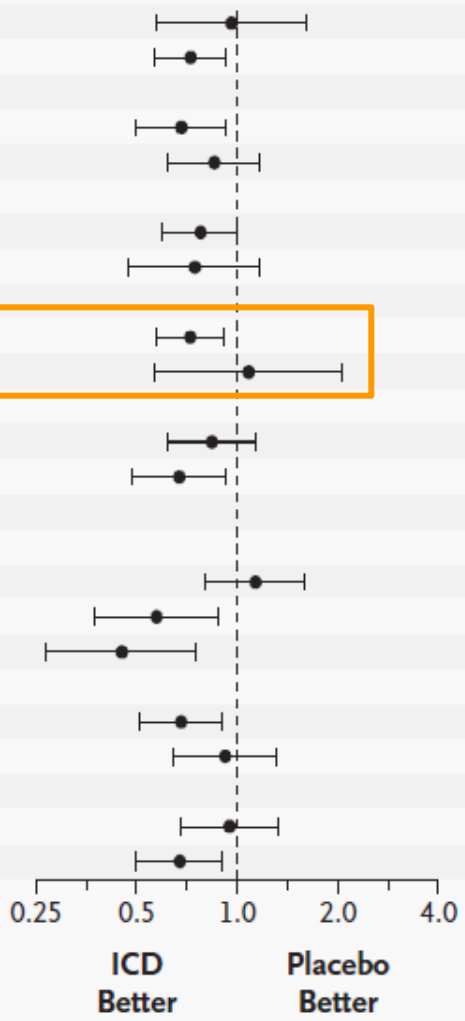
B **Nonischemic CHF**

	Hazard Ratio (97.5% CI)	P Value
Amiodarone vs. placebo	1.07 (0.76–1.51)	0.65
ICD therapy vs. placebo	0.73 (0.50–1.07)	0.06



No. at Risk						
Amiodarone	419	388	369	257	150	51
Placebo	394	382	354	261	152	41
ICD therapy	398	383	368	257	160	55

Amiodarone vs. Placebo		Subgroup	ICD Therapy vs. Placebo	
No.	Hazard ratio (97.5% CI)		No.	Hazard ratio (97.5% CI)
398	1.17 (0.72–1.90)	Female sex	382	0.96 (0.58–1.61)
1294	1.04 (0.83–1.30)	Male sex	1294	0.73 (0.57–0.93)
1119	1.00 (0.76–1.32)	Age <65 yr	1098	0.68 (0.50–0.93)
573	1.13 (0.83–1.52)	Age ≥65 yr	578	0.86 (0.62–1.18)
1292	1.06 (0.84–1.34)	White race	1283	0.78 (0.61–1.00)
400	1.08 (0.71–1.62)	Nonwhite race	393	0.75 (0.48–1.17)
1407	1.04 (0.84–1.29)	LVEF ≤30%	1390	0.73 (0.57–0.92)
285	1.24 (0.66–2.31)	LVEF >30%	285	1.08 (0.57–2.07)
999	1.06 (0.80–1.41)	QRS <120 msec	977	0.84 (0.62–1.14)
692	1.05 (0.78–1.41)	QRS ≥120 msec	699	0.67 (0.49–0.93)
		6-Min walk test		
517	1.61 (1.17–2.23)	<950 ft	526	1.14 (0.81–1.60)
547	0.82 (0.56–1.20)	950–1275 ft	536	0.57 (0.38–0.88)
545	0.72 (0.46–1.12)	>1275 ft	526	0.45 (0.27–0.76)
1162	1.10 (0.85–1.42)	Beta-blocker	1157	0.68 (0.51–0.91)
530	0.98 (0.69–1.38)	No beta-blocker	519	0.92 (0.65–1.30)
514	1.20 (0.87–1.65)	Diabetes	524	0.95 (0.68–1.33)
1178	1.00 (0.77–1.30)	No diabetes	1152	0.67 (0.50–0.90)



DAI en prévention primaire

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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)

Circulation. 2008;117:e350-e408.)

Class I indication for primary prevention of sudden death

1. Patients with LVEF < 35% due to prior MI who are at least 40 days post-MI and are in NYHA functional Class II or III. *(Level of evidence A)*

2. Patients with nonischemic DCM who have an LVEF ≤ 35% and who are in NYHA functional Class II or III. *(Level of evidence B)*

3. Patients with LV dysfunction due to prior MI who are at least 40 days post-MI, have an LVEF < 30%, and are in NYHA functional Class I. *(Level of evidence A)*

4. Patients with nonsustained VT due to prior MI, LVEF < 40%, and inducible VF or sustained VT at electrophysiological study. *(Level of evidence B)*

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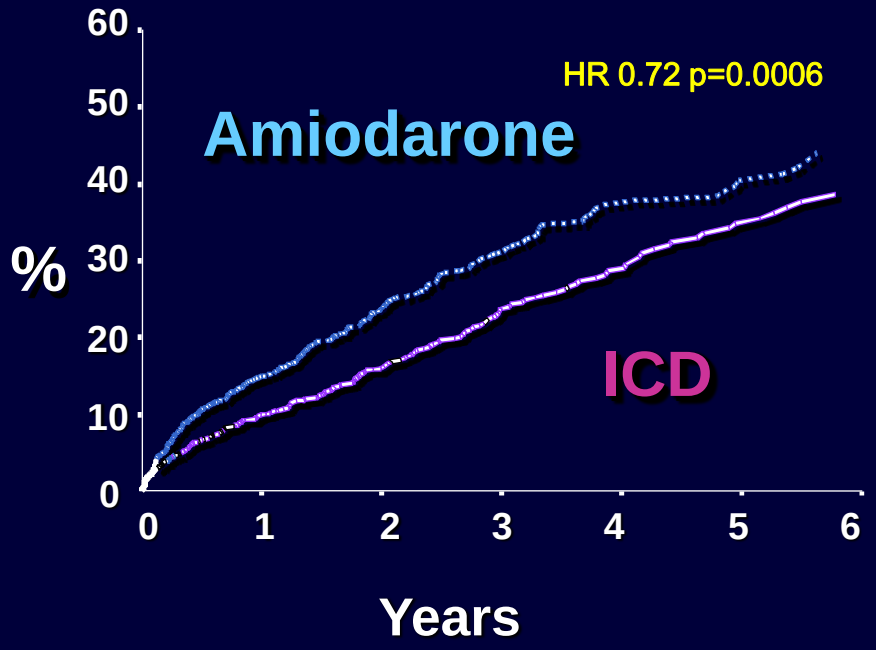
Qui bénéficierait le plus d'un DAI?

A. H 64 ans, cardiopathie ischémique, FEVG 40%, mort subit récupéré (prévention II)

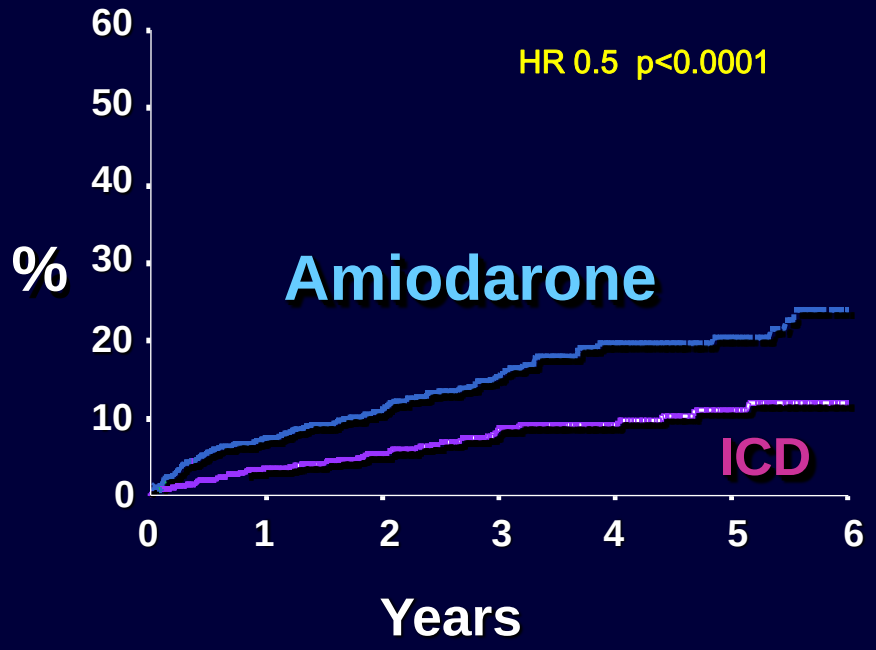
B. H 72 ans, cardiopathie ischémique, FE VG 25%, asymptomatique (prévention I)

Prévention secondaire: Méta-analyse AVID/CASH/CIDS

Mortalité totale

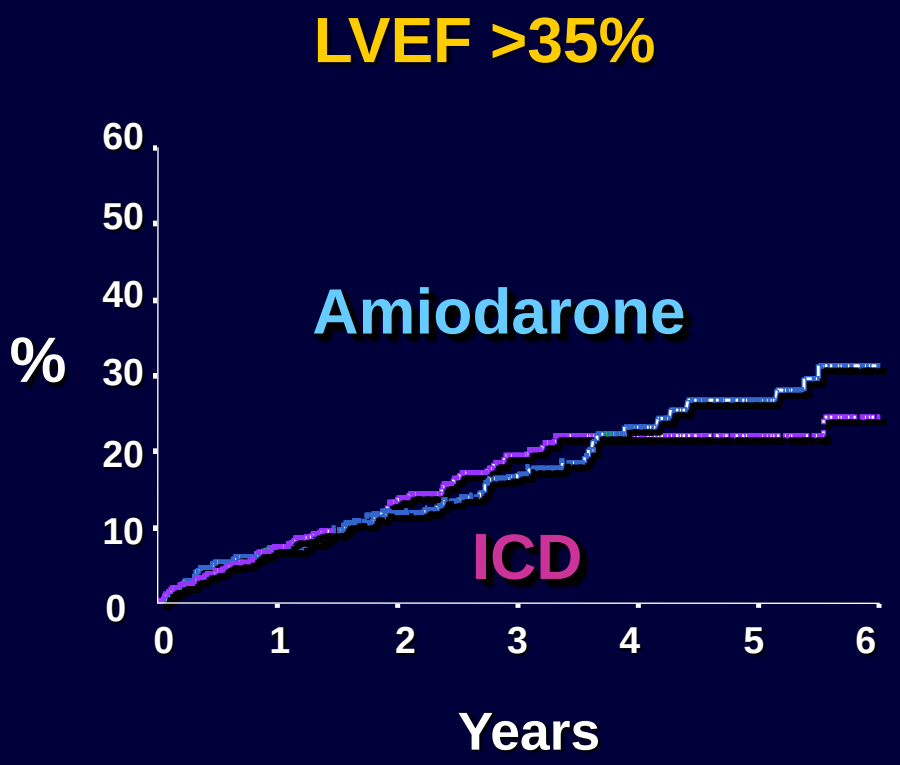


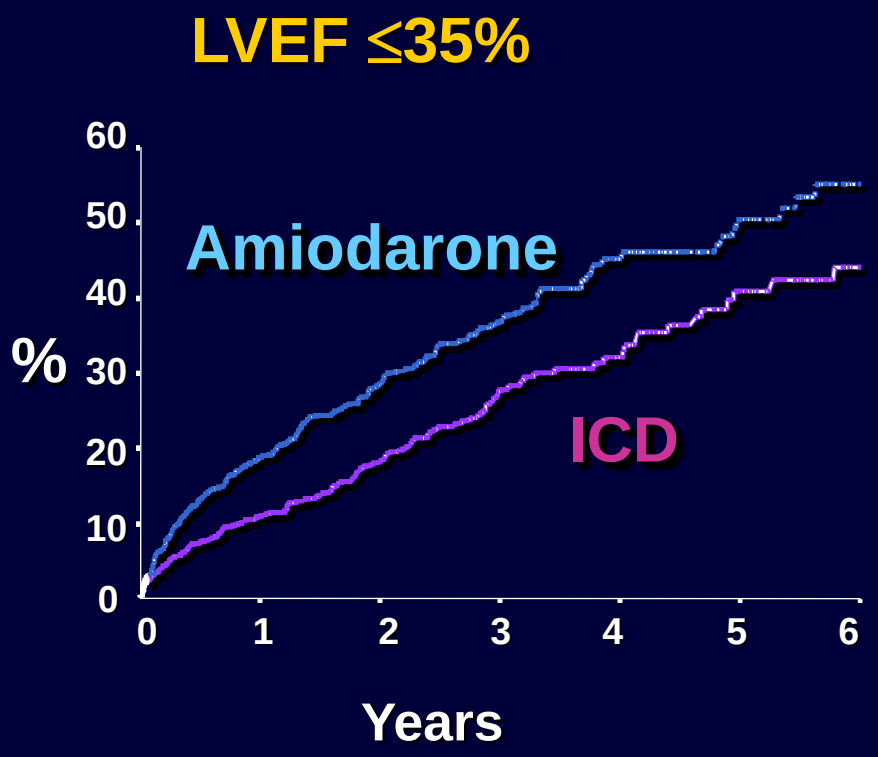
Mort subite



Connolly et al. Eur Heart J 2000;21:2071-8.

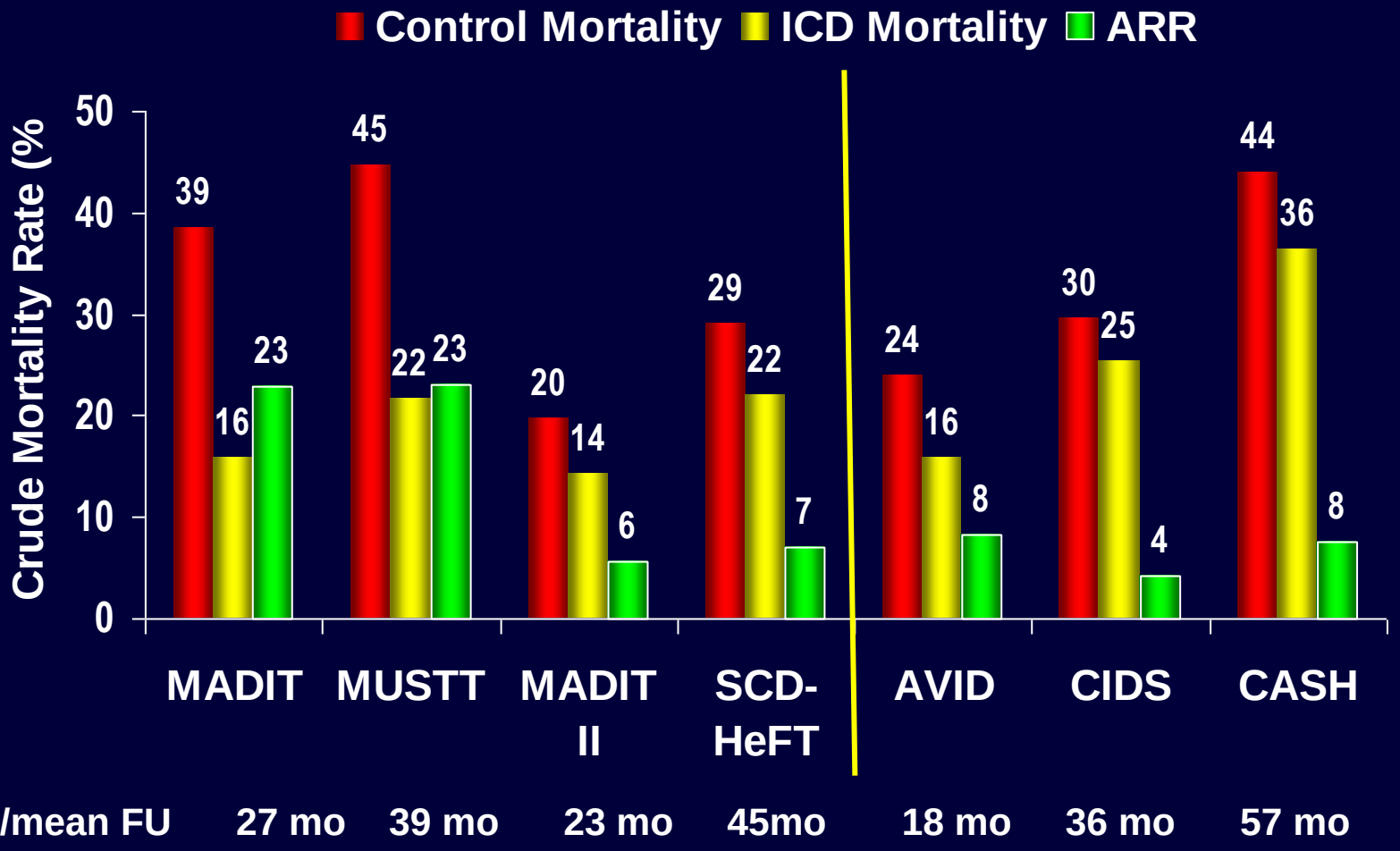
Prévention secondaire: Meta-analyse AVID/CASH/CIDS





Connolly et al. Eur Heart J 2000;21:2071-8.

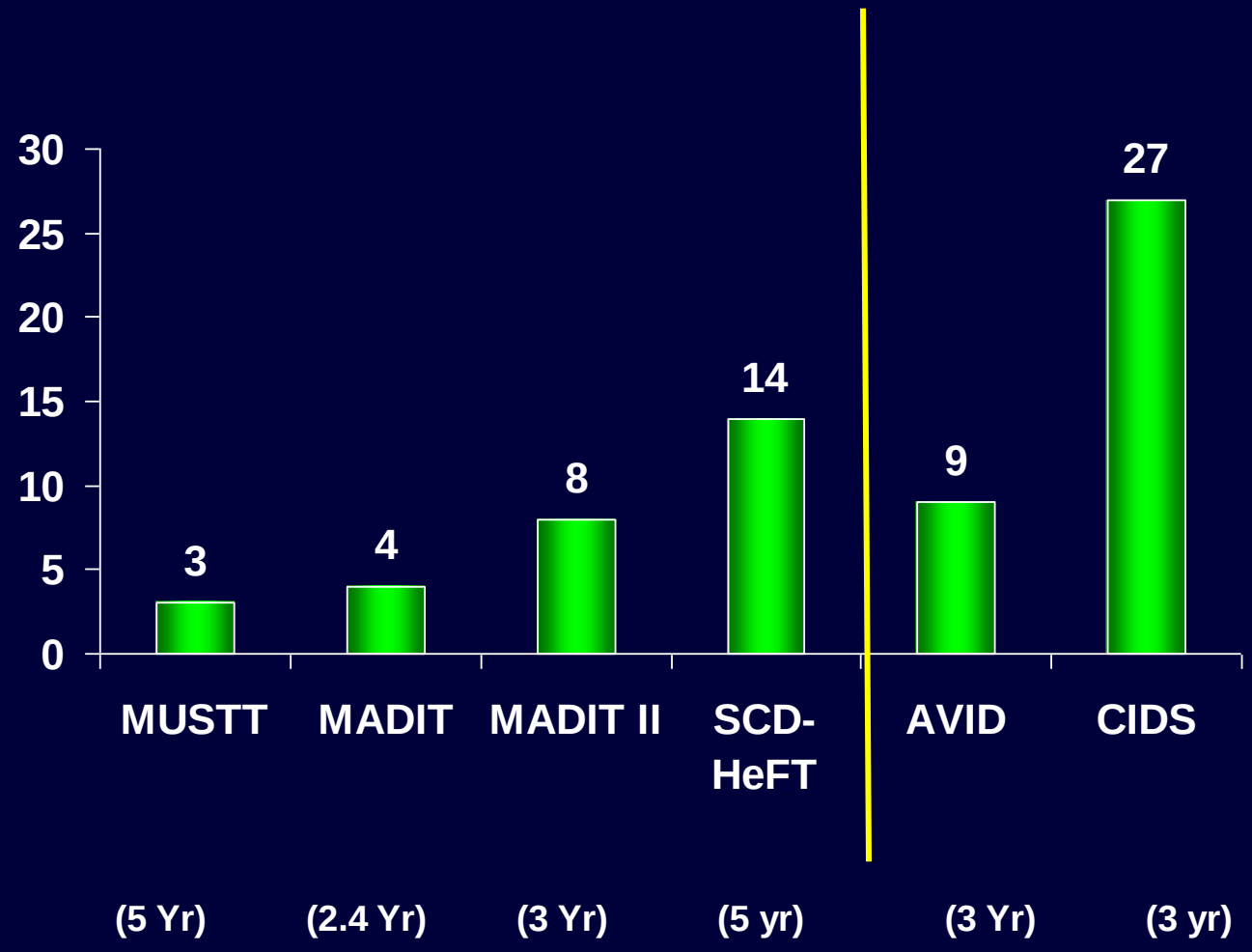
Efficacité des DAI: prévention primaire et secondaire



Moss AJ. *N Engl J Med*. 1996;335:1933-40.
Buxton AE. *N Engl J Med.* 1999;341:1882-90.
Moss AJ. *N Engl J Med*. 2002;346:877-83

Bardy NEJM 2005, 352(3):225-37
The AVID Investigators. *N Engl J Med*. 1997;337:1576-83.
Kuck K. *Circ*. 2000;102:748-54.
Connolly S. Circ. 2000:101:1297-1302.

NNT

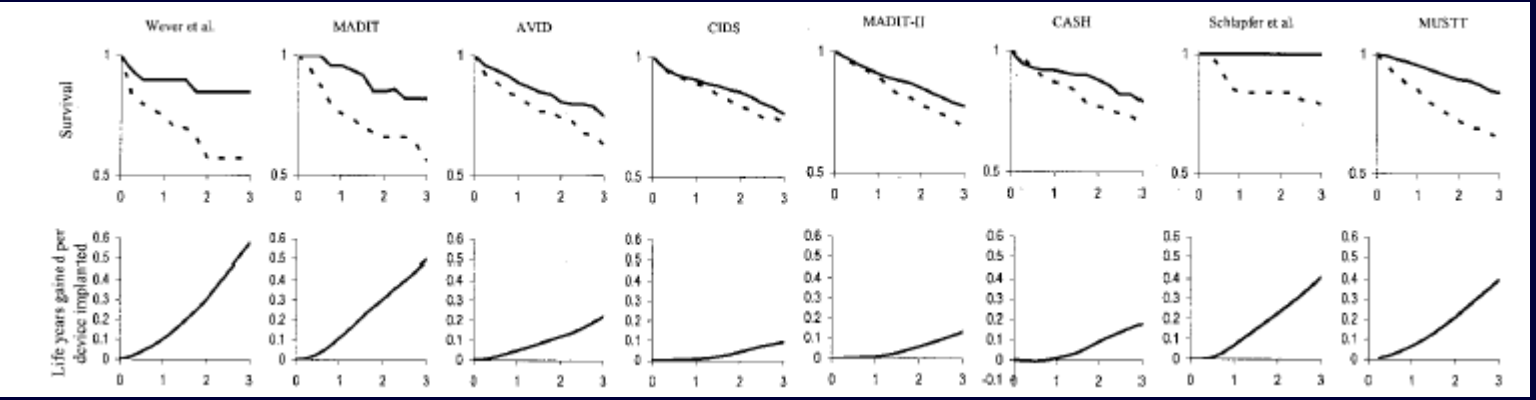

30
25
20
15
10
5
0
3
4
8
14
9
27
MUSTT
MADIT
MADIT II
SCD-HeFT
AVID
CIDS
(5 Yr)
(2.4 Yr)
(3 Yr)
(5 yr)
(3 Yr)
(3 yr)

Life-Years Gained From Defibrillator Implantation

Markedly Nonlinear Increase During 3 Years of Follow-Up and Its Implications

Tushar V. Salukhe, BSc, MRCP; Konstantinos Dimopoulos, MD; Richard Sutton, DMedSci; Andrew J. Coats, MA, DM; Massimo Piepoli, MD, PhD; Darrel P. Francis, MA, MRCP

(*Circulation*. 2004;109:1848-1853.)



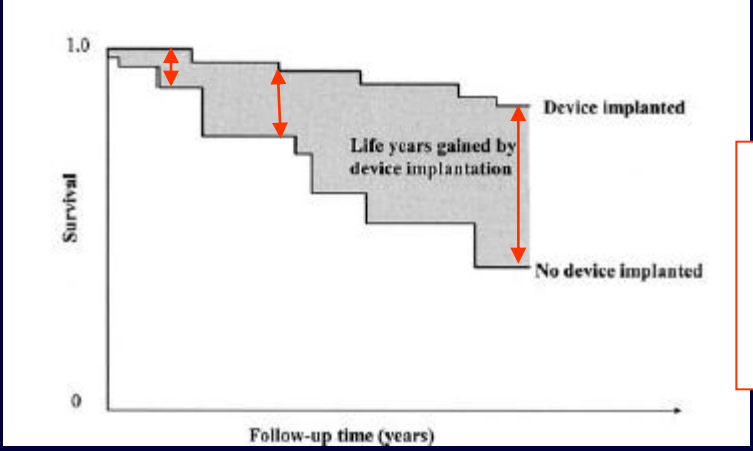


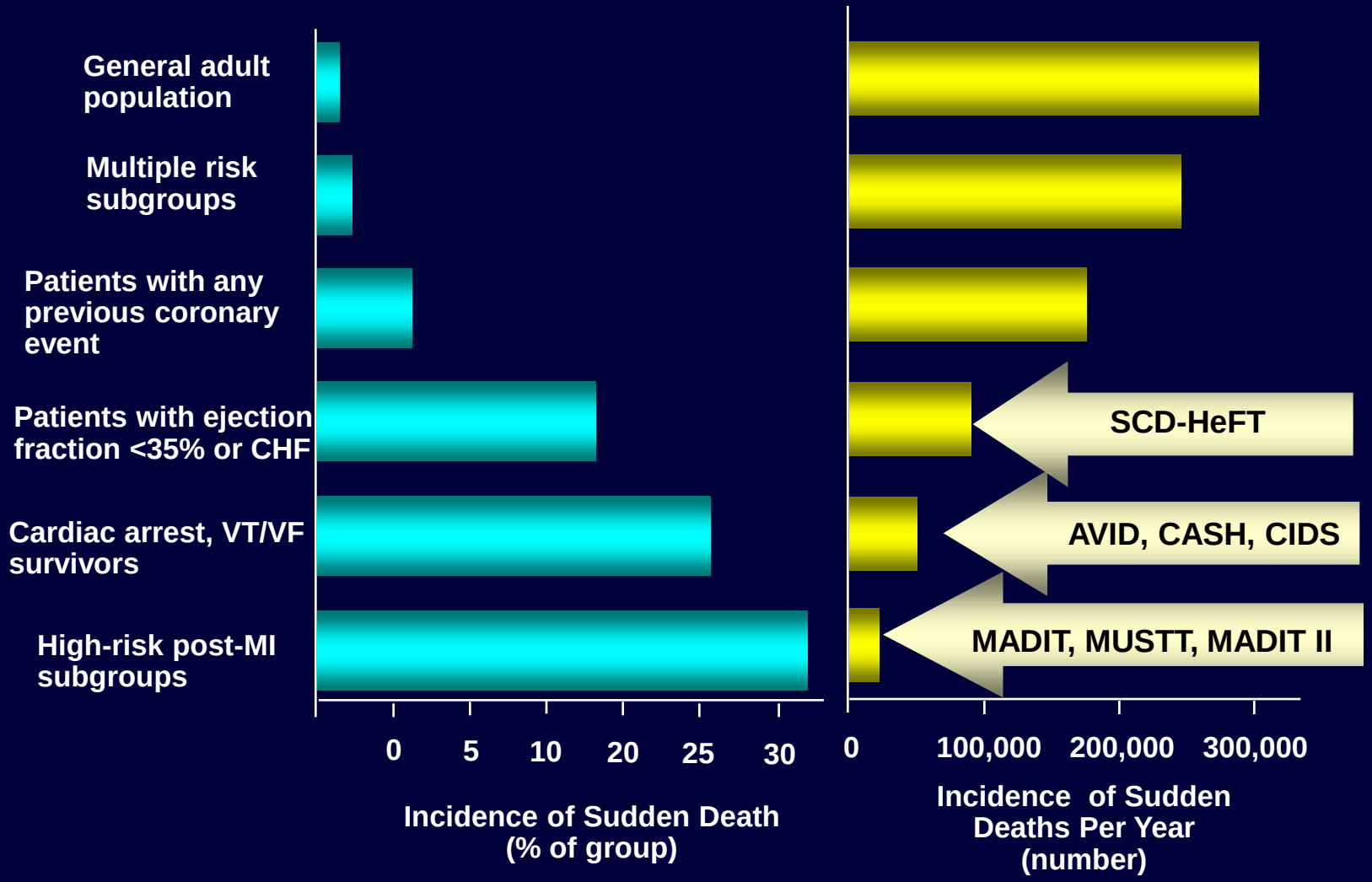
TABLE 2. Individual Trial Data Demonstrating Impact of Follow-Up Time on Observed Benefit (Life-Years Gained per Device Implanted) and on Observed Number Needed to Treat to Gain 1 Life-Year

	Life-Years Gained per Device Implanted			Size of Number Needed to Treat to Gain 1 Life-Year		
NNT	1 Year	2 Years	3 Years			
MADIT II[7]	133	17	8			
MUSTT[4]	0.07	0.21	0.40	15	4.7	2.5

Quel est le profil cardiaque le plus fréquent du patient atteint d'une mort subite?

A. Cardiopathie non-ischémique, FE VG<35%
B. Post-infarctus, FEVG < 35%
C. Post-infarctus, FEVG < 20%
D. Vous et moi

Sudden death



Adapted from: Myerburg RJ.. *J Cardiovasc Electrophysiol* 2001 Vol. 12, pp. 369-381

Quand implanter le DAI après un infarctus chez un patient avec une FE VG < 35%?

A. Dès que possible

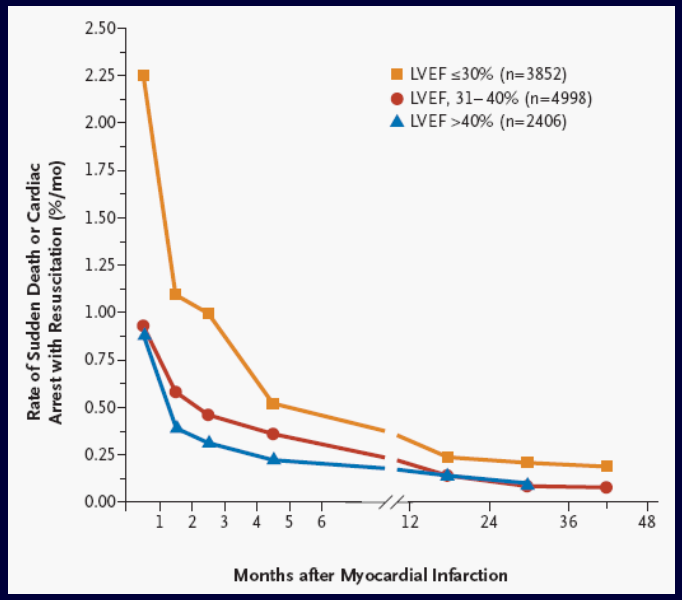
B. > 1-2 mois

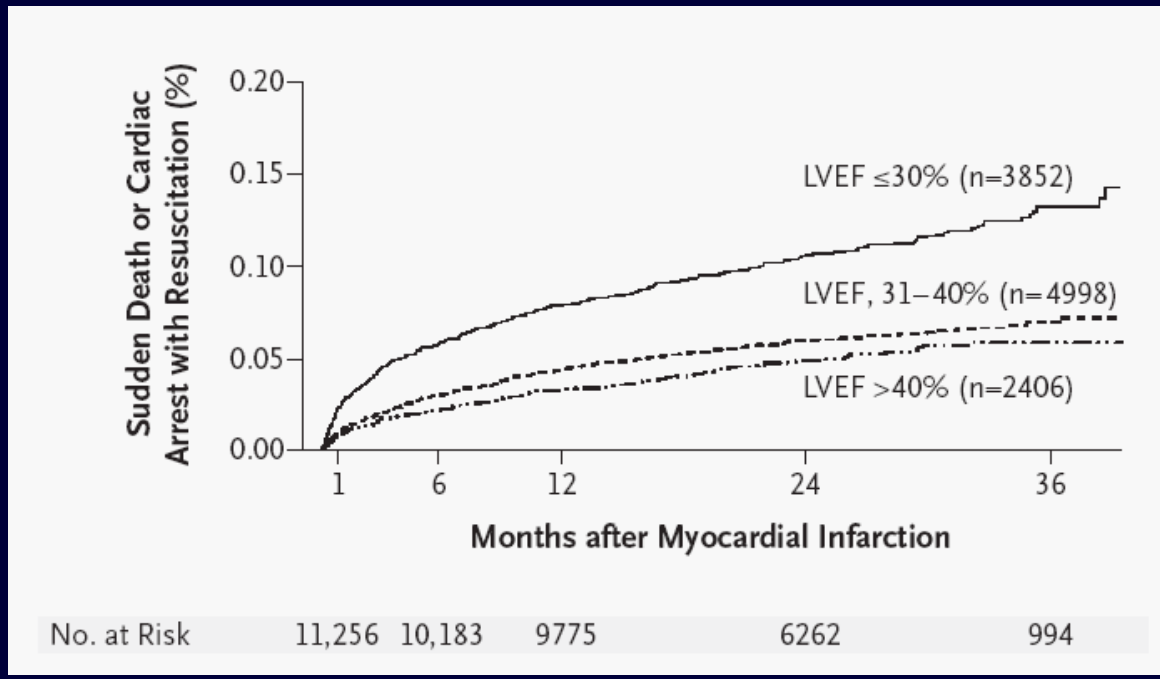
C. > 1 an

Mortality after AMI: VALIANT study

N=14’609

AMI with HF and/or LVEF≤ 40%



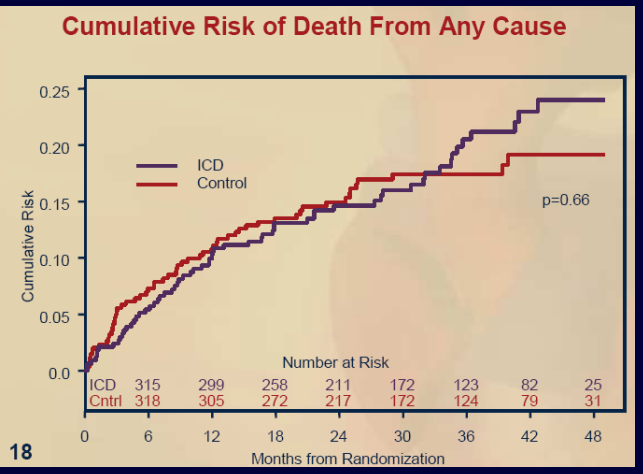


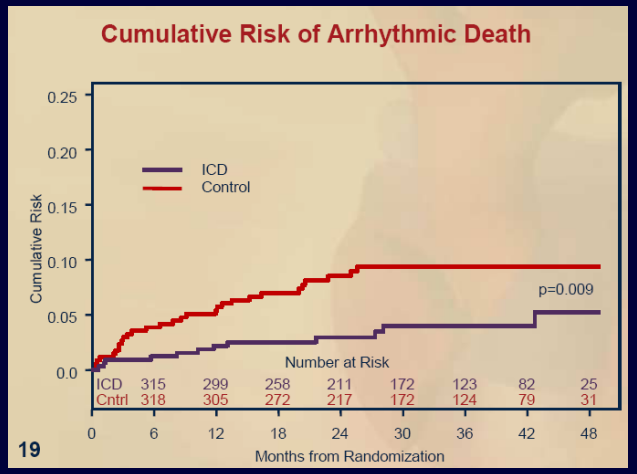
Solomon *N Engl J Med* 2005;352:2581-8.

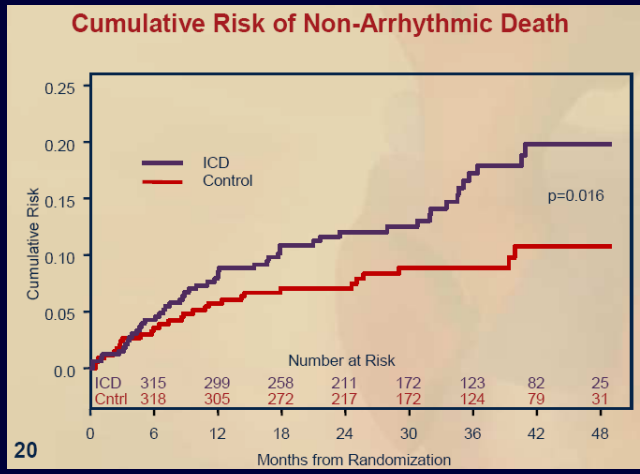
DINAMIT study

AMI <40 days + LVEF<0.35 + abnormal HRV
Randomization ICD vs medical

N=674







« ..ICDs might, by shocking ventricular fibrillation, merely transform sudden death to eventual death from pump failure,without significantly prolonging life. »

Hohnloser, NEJM 2004;351:2481-8.

Defibrillator Implantation Early after Myocardial Infarction

Gerhard Steinbeck, M.D., Dietrich Andresen, M.D., Karlheinz Seidl, M.D., Johannes Brachmann, M.D., Ellen Hoffmann, M.D., Dariusz Wojciechowski, M.D., Zdzisława Kornacewicz-Jach, M.D., Beata Sredniawa, M.D., Géza Lupkovics, M.D., Franz Hofgärtner, M.D., Andrzej Lubinski, M.D., Mårten Rosenqvist, M.D., Alphonsus Habets, Ph.D., Karl Wegscheider, Ph.D., and Jochen Senges, M.D., for the IRIS Investigators*

N Engl J Med 2009;361:1427-36

898 pts with MI within 5-31 d
- LVEF ≤40% + HR >90bpm
- and/or NSVT (>150bpm)

Mean LVEF ~ 35%

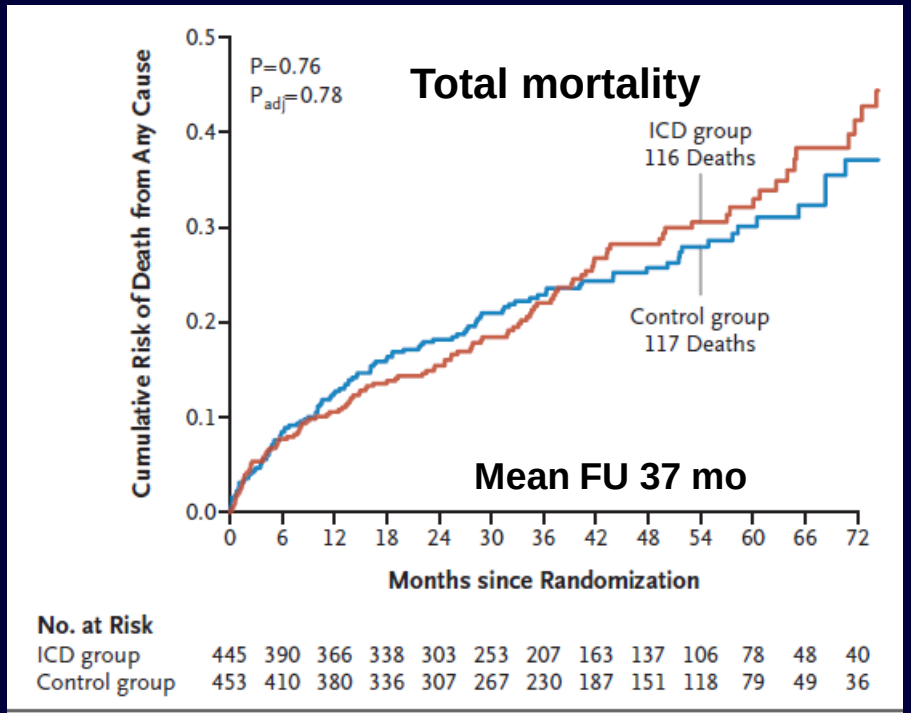
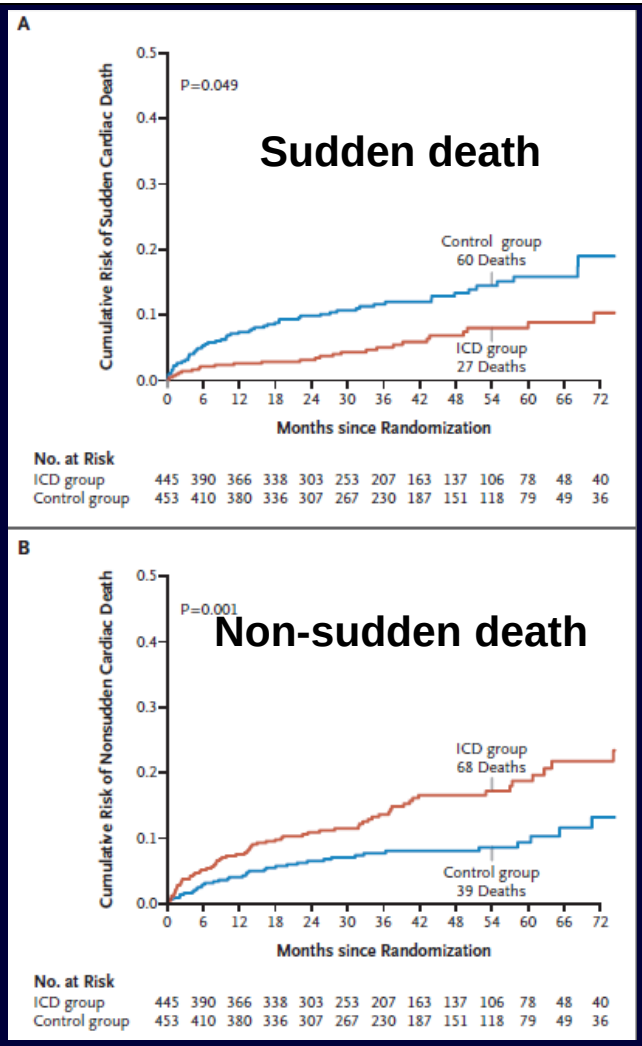


Figure 1. Cumulative Risk of Death from Any Cause According to Study Group.

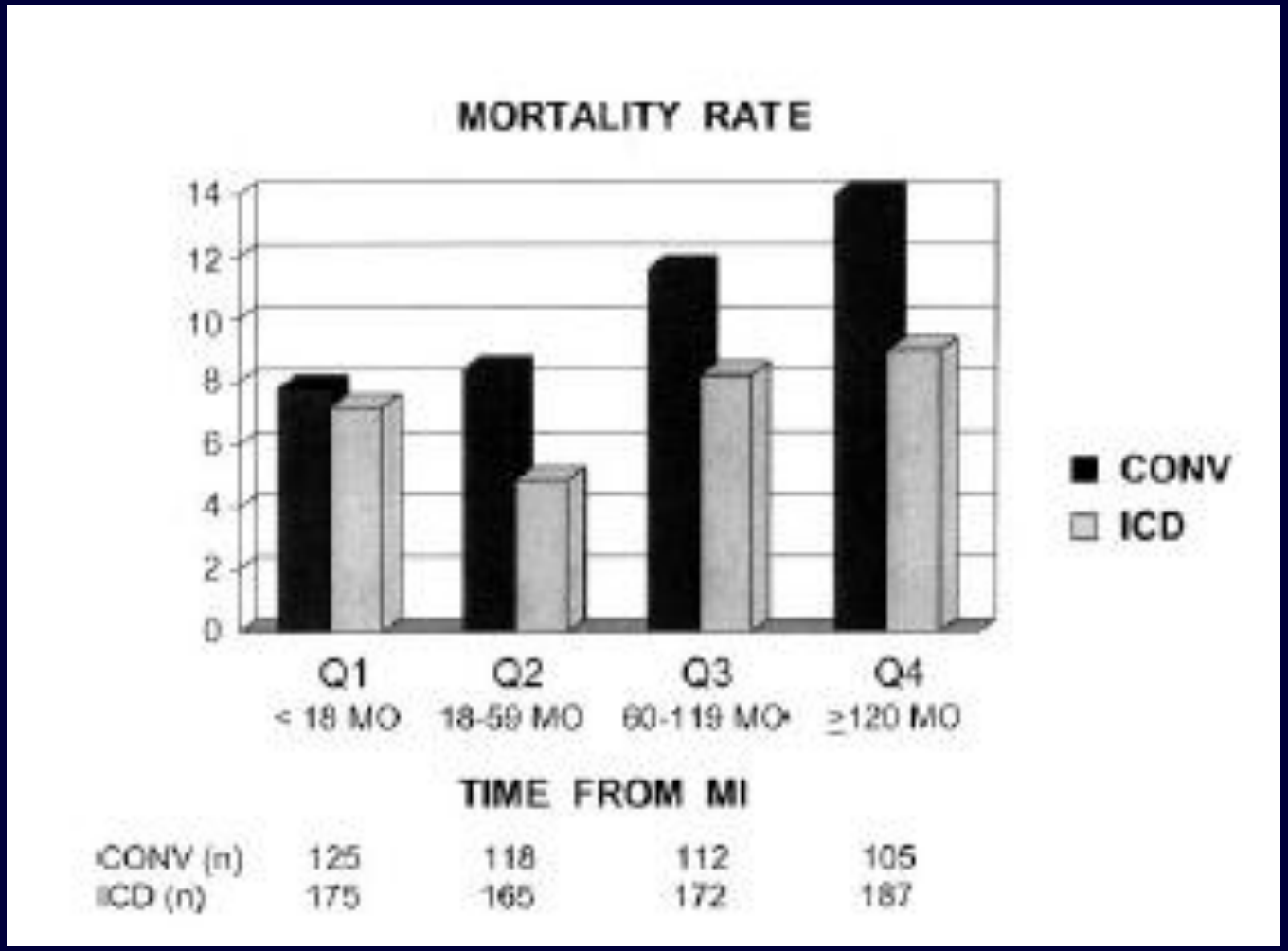


Indication ICD chez patient avec un infarctus datant de 12 ans, FE VG 30%, absence de TV/syncope

A. Non (il a fait preuve de survie)

B. Oui

Efficacité du DAI en cas d'ancien infarctus: MADIT-II



Wilber Circulation 2004;109:1082-4

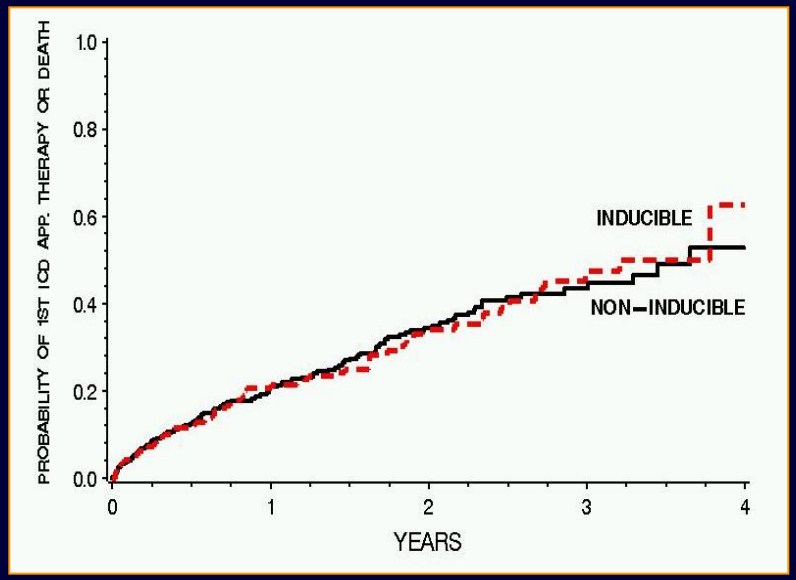
Utilité de l'étude électrophysiologique pour stratifier le risque de mort subite?

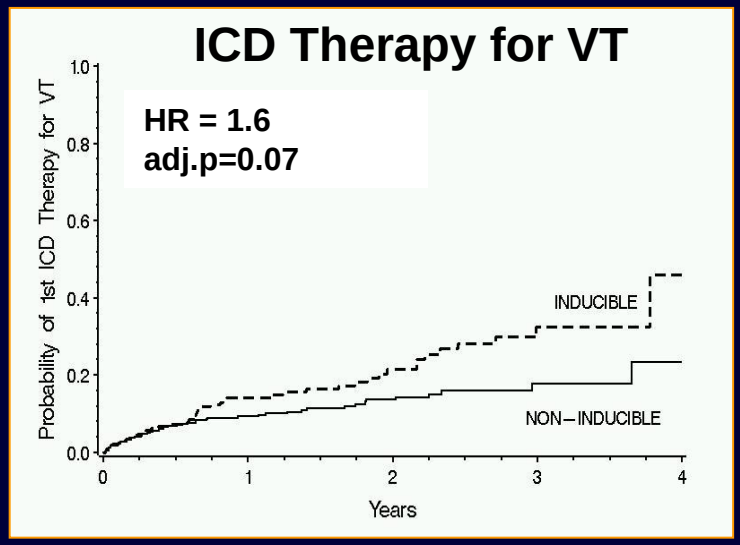
A. Cardiopathie non-ischémique, FE VG< 35%
B. Cardiopathie ischémique, FE VG < 30%
C. Cardiopathie ischémique, FE VG 35-40%
D. Cardiopathie hypertrophique

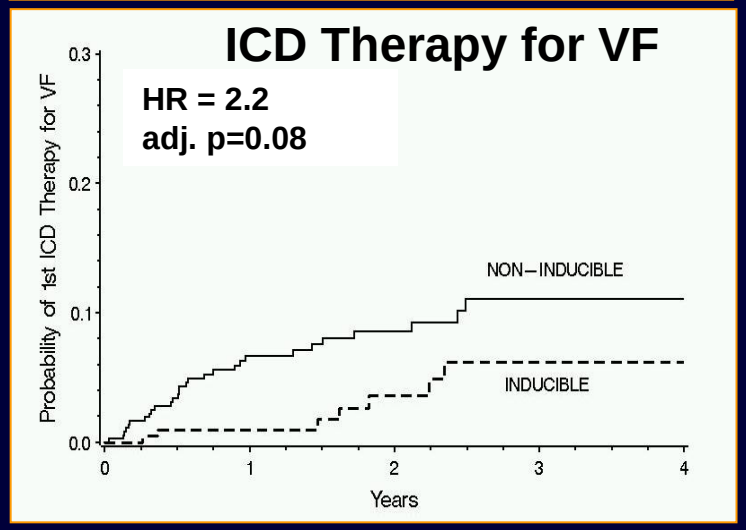
EPS in MADIT-II

EPS in 583/742 ICD patients

Inducible n=210 (36%)







Moss, A.J. et al Card. EP Rev 2002;6:463-5

Guidelines for EP Testing

- **Class I**
  - Remote MI:
    - diagnostic evaluation of patients with symptoms suggestive of ventricular tachyarrhythmias including palpitations, presyncope, and syncope (LOE: B)
  - Congenital heart disease:
    - Recommended to guide and assess efficacy of VT ablation (LOE: B)
    - Useful for the diagnostic evaluation of WCTs of unclear mechanisms (LOE: C)
- **Class IIa**
  - Reasonable for risk stratification in patients with remote MI, NSVT, and LVEF ≤40%

AHA/ACC/ESC Guidelines EHJ 2006;27:2099-2140

Risque individuel

Economie

Demande du patient

Risques du DAI

Age

Comorbidités


HUG
Hôpitaux Universitaires de Genève
Merci!