

PREVENCIÓN DE LA INSUFICIENCIA CARDIACA

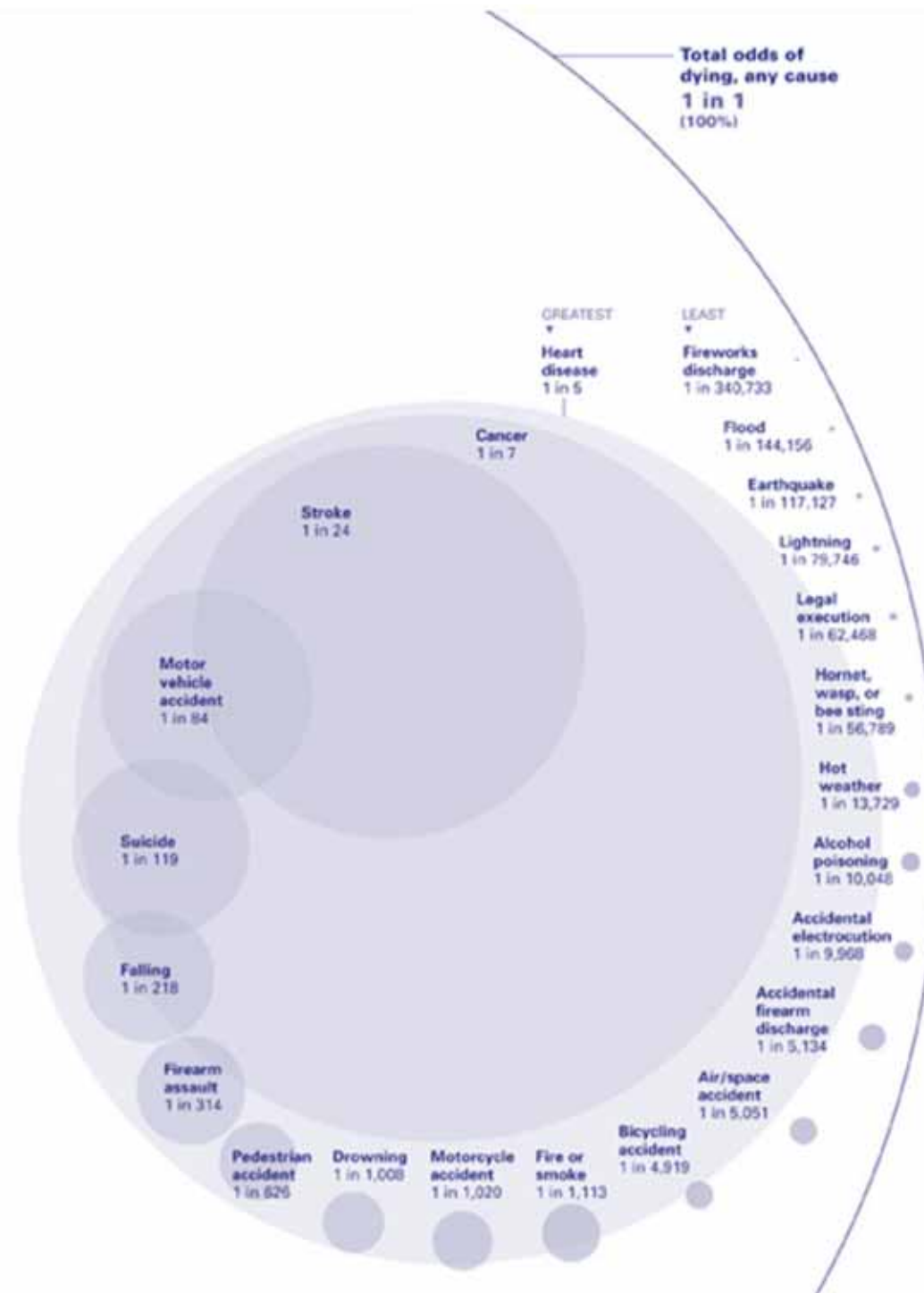
HIPERTENSIÓN ARTERIAL

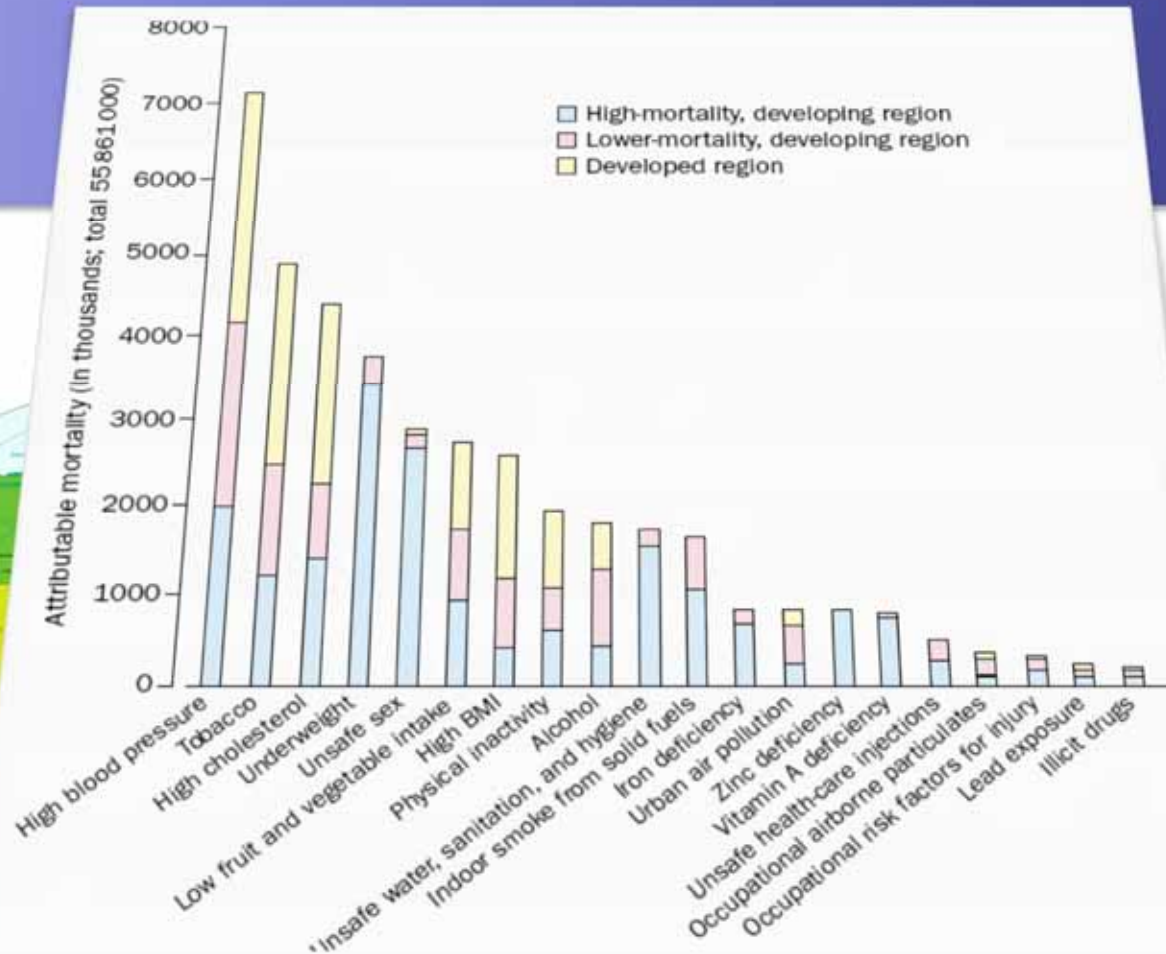
Juan I Pérez Calvo
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"Lozano Blesa" de Zaragoza







Ezzati M, et al. *Lancet*; 2002; 360: 1347-1360

UNA VISIÓN PRONÓSTICA

A

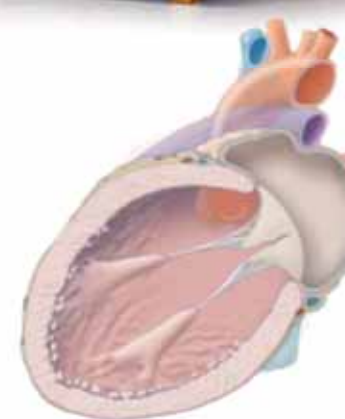
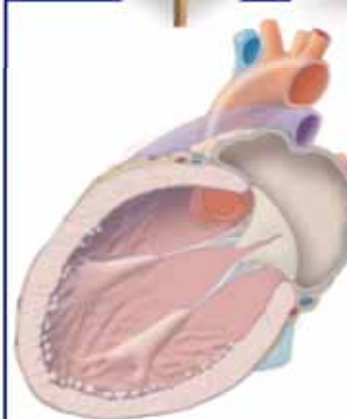
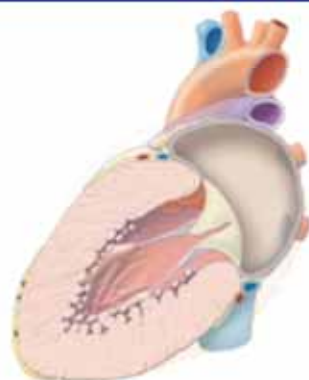
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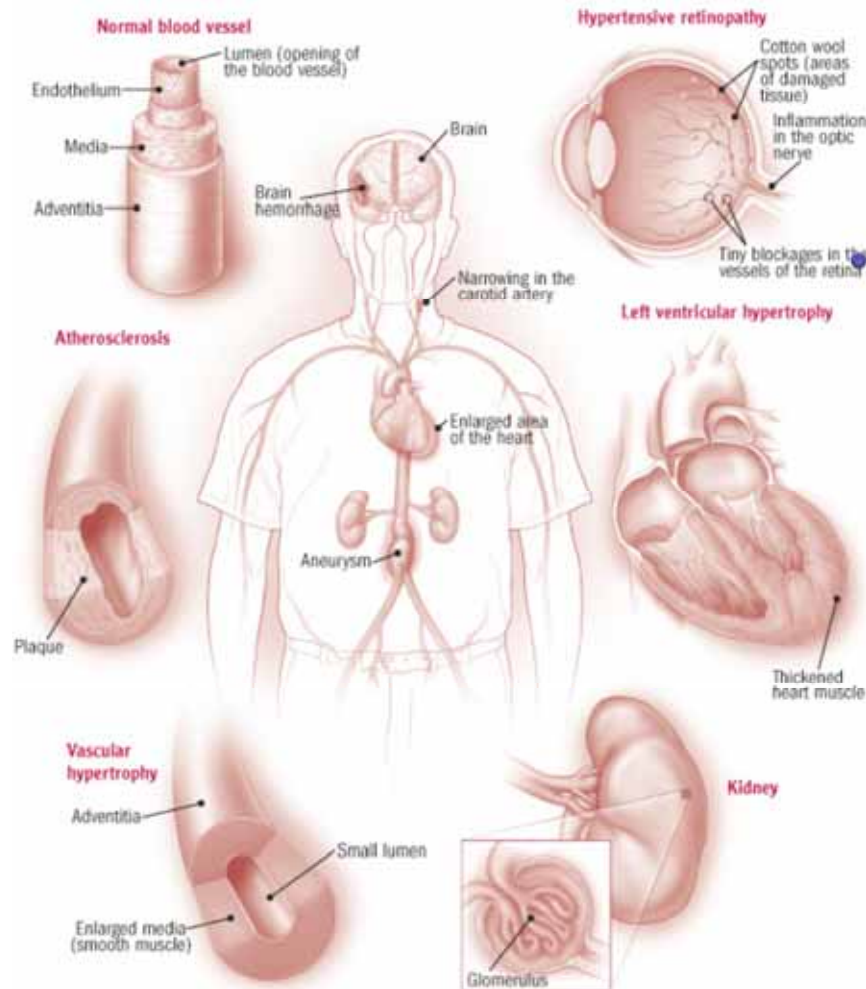


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I
II
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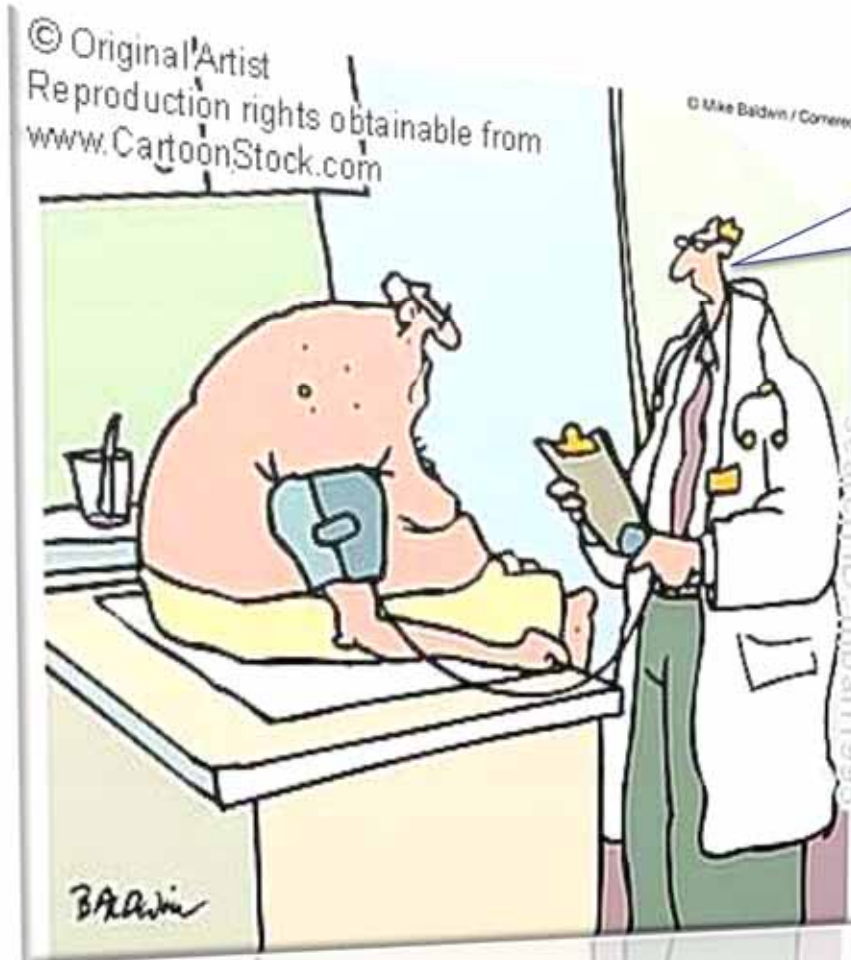
HIPERTENSIÓN ARTERIAL ...



... PREVENCIÓN DE LA INSUFICIENCIA CARDÍACA



¿ QUÉ RELACIÓN TIENEN ?



*Tiene la TA de un
muchacho ...
... que se alimenta de comida
basura, sentado delante del
ordenador y la tele*

FACTOR DE RIESGO

- 1) ASOCIACIÓN ESTADÍSTICA
- 2) RELACIÓN “DOSIS-EFECTO”
- 3) PRELACIÓN EN EL TIEMPO
- 4) MEJORÍA CON LA ATENUACIÓN
- 5) MECANISMO PATOGENICO
- 6) POBLACIONES DISTINTAS

NHANES I

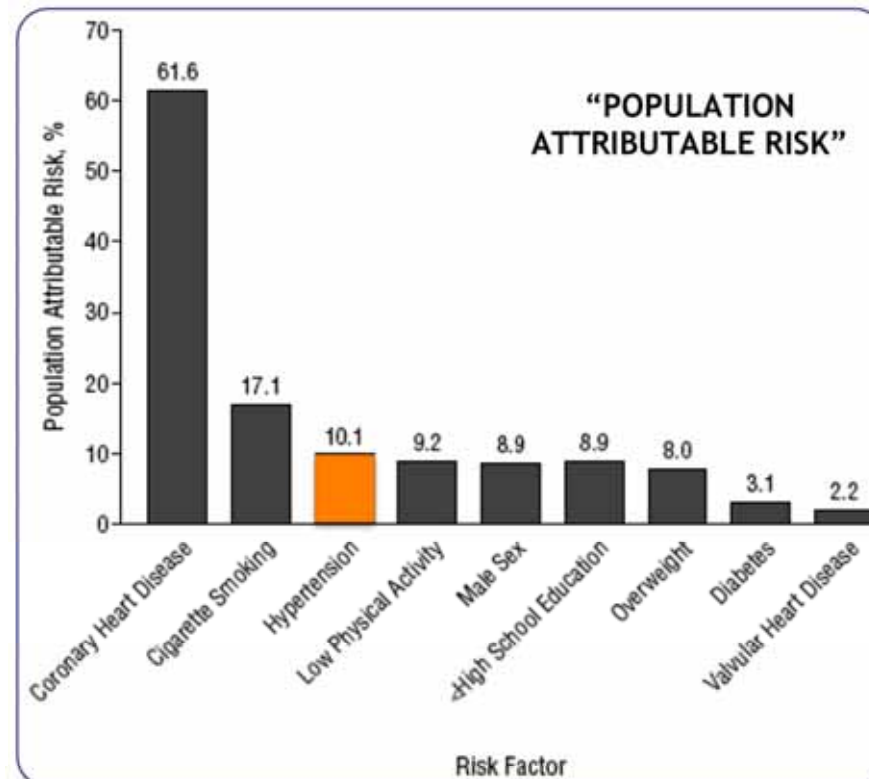
Table 4. Multivariate Relative Risk of Congestive Heart Failure in 13 643 Participants in the NHANES I Epidemiologic Follow-up Study by Socioeconomic and Health Characteristics*

	Men (n = 5545)		Women (n = 8098)		Total (N = 13 643)	
	RR (95% CI)†	P	RR (95% CI)†	P	RR (95% CI)†	P
Male sex	...	...	...	...	1.24 (1.10-1.39)	<.001
Black race	0.95 (0.72-1.26)	.73	1.20 (0.90-1.62)	.21	1.11 (0.89-1.38)	.37
<High school education	1.20 (0.99-1.45)	.06	1.25 (0.99-1.57)	.06	1.22 (1.04-1.42)	.01
Low physical activity	1.14 (0.94-1.38)	.19	1.31 (1.11-1.54)	.002	1.23 (1.09-1.38)	<.001
Current cigarette smoking	1.45 (1.24-1.70)	<.001	1.88 (1.53-2.30)	<.001	1.59 (1.39-1.83)	<.001
Regular alcohol consumption	...	...	0.70 (0.51-0.97)	.03	0.88 (0.75-1.03)	.12
Overweight	1.23 (1.00-1.52)	.05	1.34 (1.10-1.64)	.005	1.30 (1.12-1.52)	.001
Hypertension	1.33 (1.14-1.57)	<.001	1.51 (1.29-1.77)	<.001	1.40 (1.24-1.59)	<.001
Diabetes	1.83 (1.27-2.63)	.002	1.83 (1.38-2.41)	<.001	1.85 (1.51-2.28)	<.001
Valvular heart disease	1.74 (1.31-2.31)	<.001	1.36 (1.00-1.84)	.05	1.46 (1.17-1.82)	.001
Coronary heart disease‡	8.12 (6.68-9.88)	<.001	8.16 (6.79-9.80)	<.001	8.11 (6.95-9.46)	<.001
Coronary heart disease§	8.15 (6.68-9.88)	<.001	8.16 (6.79-9.80)	<.001	8.11 (6.95-9.46)	<.001
Valvular heart disease	1.74 (1.31-2.31)	<.001	1.36 (1.00-1.84)	.05	1.46 (1.17-1.82)	.001
Diabetes	1.83 (1.27-2.63)	.002	1.83 (1.38-2.41)	<.001	1.85 (1.51-2.28)	<.001

NHANES I

IC EN CIFRAS

4,6 millones afectados
 400.000 nuevos casos/año
 43.000 muertes/año
 1.000.000 ingresos/año





Lifetime Risk for CHF

Index Age, y	Men			Women		
	SBP <140 and DBP <90 mm Hg	SBP 140–159 or DBP 90–99 mm Hg	SBP ≥160 or DBP ≥100 mm Hg	SBP <140 and DBP <90 mm Hg	SBP 140–159 or DBP 90–99 mm Hg	SBP ≥160 or DBP ≥100 mm Hg
Treated subjects included in highest blood pressure stratum						
40*	14.8	22.9	27.9	12.0	20.2	28.9
50†	17.3	25.4	27.0	12.4	25.2	26.6
60	17.4	19.6	29.0	14.4	21.3	27.4
70	15.1	20.3	27.8	14.3	17.1	24.5
80	10.1	19.4	27.9	10.7	10.0	23.9
Treatment status ignored						
40*	15.6	23.2	27.4	12.0	20.4	29.5
50†	16.8	27.1	27.4	12.4	26.5	24.4
60	18.1	20.7	30.0	15.9	21.8	27.1
70	18.2	22.0	27.3	15.4	22.6	24.3
80	16.6	23.3	27.0	17.1	17.0	24.4

80	18.8	33.3	33.0	13.1	13.0	34.4
30	18.5	35.0	33.3	12.4	35.8	34.2
60	18.1	30.1	30.0			
30.4	18.0	21.4	33.4	12.4	30.7	34.4

Lloyd-Jones DM, et al. *Circulation* 2002; 106: 3068-3072



¿ PUEDE MODIFICARSE ?



TRATAMIENTO FARMACOLÓGICO EN POBLACIÓN CON RIESGO VASCULAR

Table 3 Prevention of heart failure in various populations

Trial	n	Population	Heart failure	Drug
HOPE (2000)	9297	High-risk	↓ 23%	ramipril vs. p
EUROPA (2003)	12 218	CAD	↓ 39% hospitalization	perindopril vs. p
PROGRESS (2003)	6105	CVA/TIA	↓ 26%	perindopril vs. p
ONTARGET (2008)	8576	High-risk	NS	telmisartan vs. ramipril vs. both
TRANSCEND (2008)	5926	High-risk	NS	telmisartan vs. p
4S (1994)	4444	Angina/MI	↓ 20%	simvastatin vs. p
CURE (2001)	12 562	ACS	↓ 18%	clopidogrel vs. p
SHEP (1991)	4376	Systolic HTN	↓ 54%	chlorthalidone vs. p
HYET (2008)	3845	HTN	↓ 64%	indapamide vs. p
UKDPS (1998)	1148	DM, HTN	↓ 56% ^a	captopril/atenolol vs. p
RENAAL (2001)	13	DM + CKD	↓ 32% hospitalization	losartan vs. p
ID ^a		HTN + DM + CKD	↓ 23% hospitalization	irbesartan vs. amlodipine

39%

TRATAMIENTO FARMACOLÓGICO EN HIPERTENSIÓN ARTERIAL

SYSTOLIC HYPERTENSION IN ELDERLY PROGRAM

*Multicéntrico
Doble ciego
Randomizado
Placebo*

HT Sistólica aislada

2365 HCTZ ± Atenolol

VS

2371 Placebo

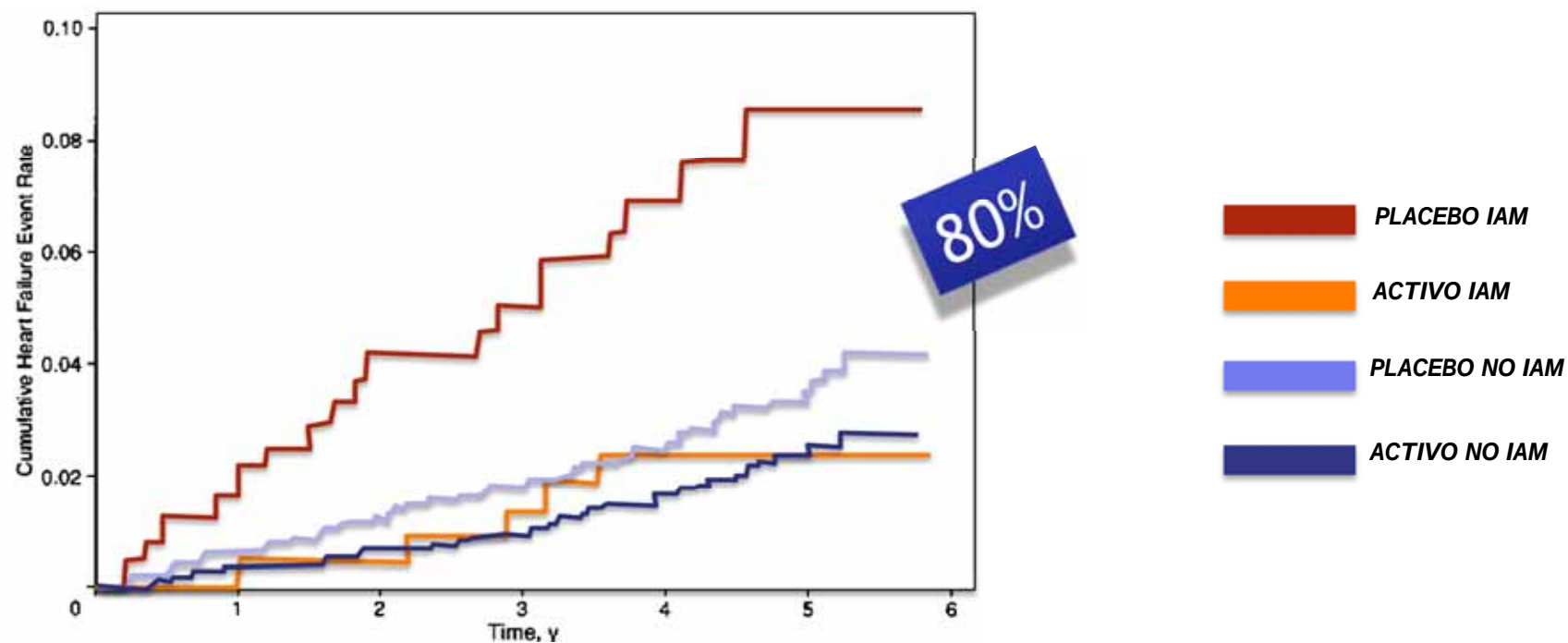
SHEP



SHEP Cooperative Research Group. JAMA. 1991; 265: 3255-3264

SYSTOLIC HYPERTENSION IN ELDERLY PROGRAM (cohortes)

SHEP

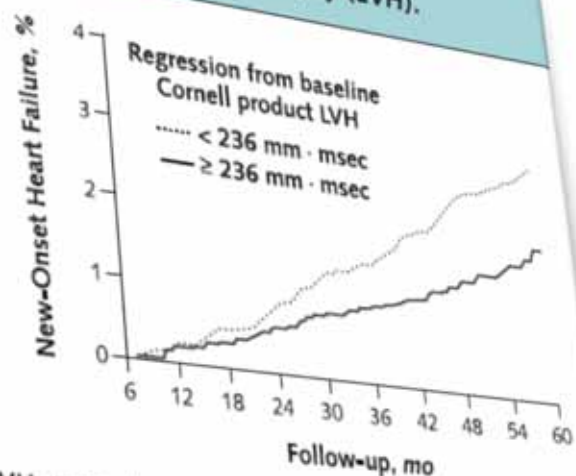


JB Kostis. JAMA. 1997; 278: 2560-2572

HVI Y RIESGO DE IC

Estudio LIFE

Figure. Rate of new-onset heart failure according to presence or absence of a 236-mm · msec reduction in Cornell product left ventricular hypertrophy (LVH).



Cornell product LVH regression < 236 mm · msec						
Cumulative events, n	0	12	39	68	106	128
Patients at risk, n	5331	4632	4094	3905	3868	1439
Cornell product LVH regression ≥ 236 mm · msec						
Cumulative events, n	0	6	20	37	53	73
Patients at risk, n	3012	3671	4033	4025	3887	1649

8749 HTA sin IC
Tx con Losartan o Atenolol
Randomizado y ciego
Seguimiento 4,7 años

Cambios en el producto de Cornell
IC incidente

IECA-ARB > CCB > BB > Diur

No Minoxidil, Hidralacina

PM Okin, et al. Ann Intern Med 2007; 147: 311-319
SM Artham, et al. Prog Cardiovasc Dis 2009; 153-167

The NEW ENGLAND JOURNAL *of* MEDICINE

ESTABLISHED IN 1812

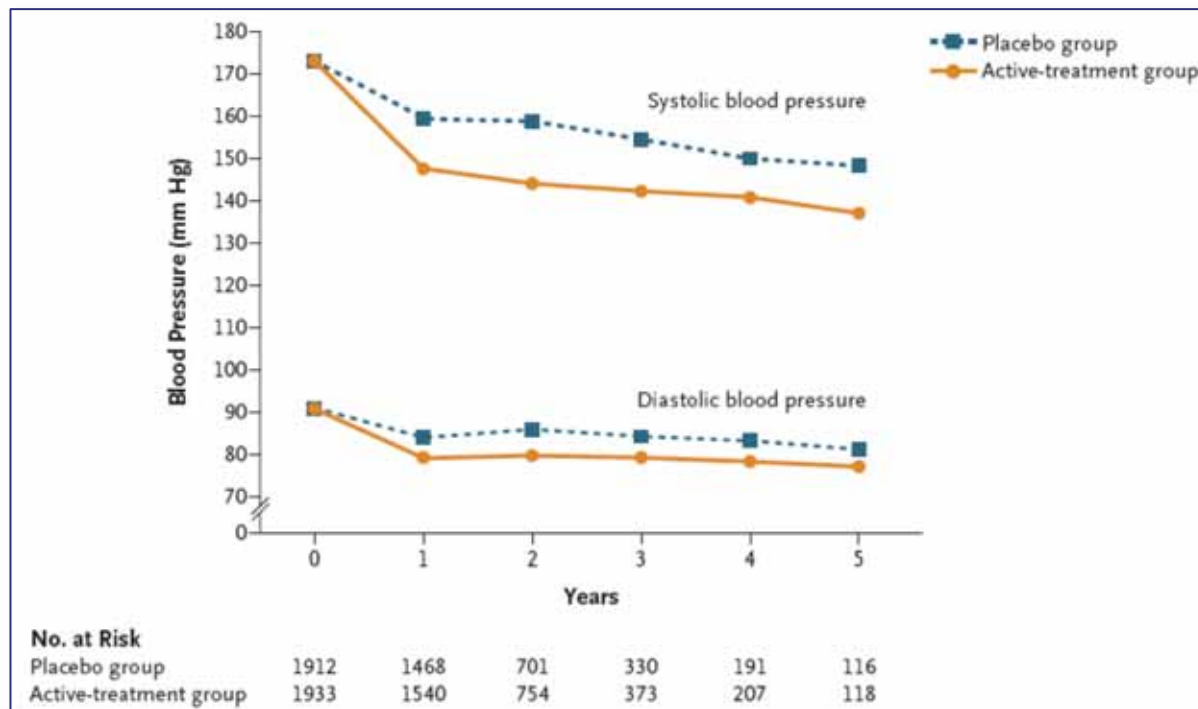
MAY 1, 2008

VOL. 358 NO. 18

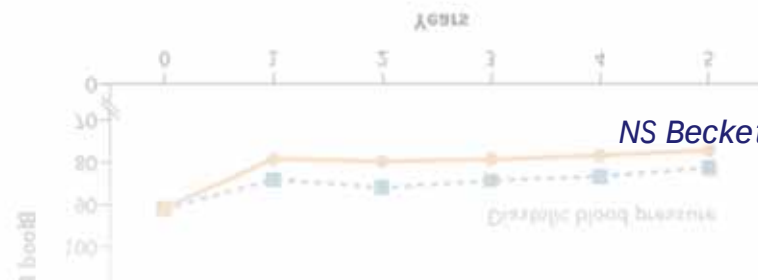
Treatment of Hypertension in Patients 80 Years of Age or Older

Nigel S. Beckett, M.B., Ch.B., Ruth Peters, Ph.D., Astrid E. Fletcher, Ph.D., Jan A. Staessen, M.D., Ph.D.,
Lisheng Liu, M.D., Dan Dumitrascu, M.D., Vassil Stoyanovsky, M.D., Riitta L. Antikainen, M.D., Ph.D.,
Yuri Nikitin, M.D., Craig Anderson, M.D., Ph.D., Alli Belhani, M.D., Françoise Forette, M.D.,
Chakravarthi Rajkumar, M.D., Ph.D., Lutgarde Thijs, M.Sc., Winston Banya, M.Sc.,
and Christopher J. Bulpitt, M.D., for the HYVET Study Group[†]

NS Beckett et al. NEJM. 2008; 358: 1887-1898

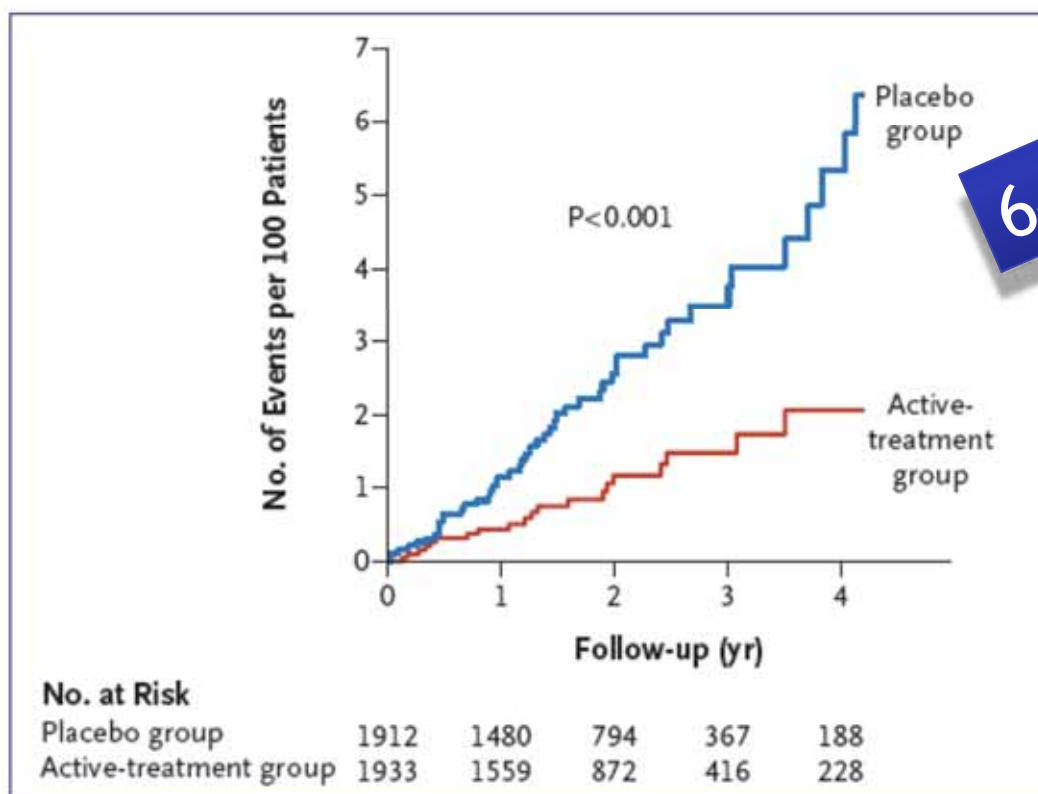


Active-treatment group
 Placebo group
 No. at Risk



NS Beckett et al.. NEJM. 2008; 358: 1887-1898

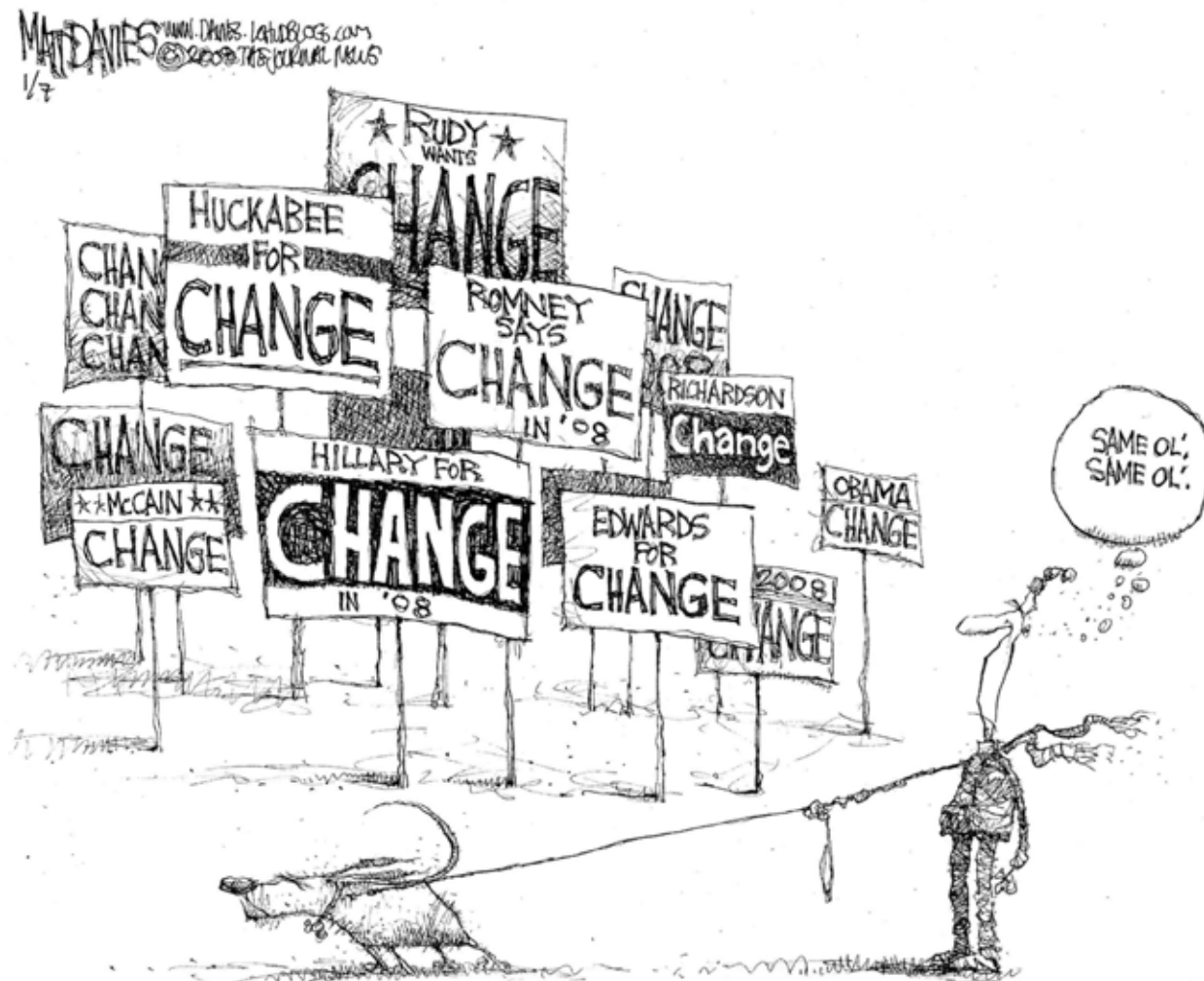
Insuficiencia cardiaca



Active-treatment group	1933	1559	872	416	228
Placebo group	1912	1480	794	367	188
No. at Risk					

NS Beckett et al.. NEJM. 2008; 358: 1887-1898

¿ CÓMO MODIFICARLA ?



Primary prevention of heart failure: what is the evidence?

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No disclosures.

Current Opinion in Cardiology 2009, 24:142–
147

Purpose of review

Heart failure is a worldwide epidemic. Aggressive treatment of patients at risk for heart

There are no trials targeting primary prevention of heart failure

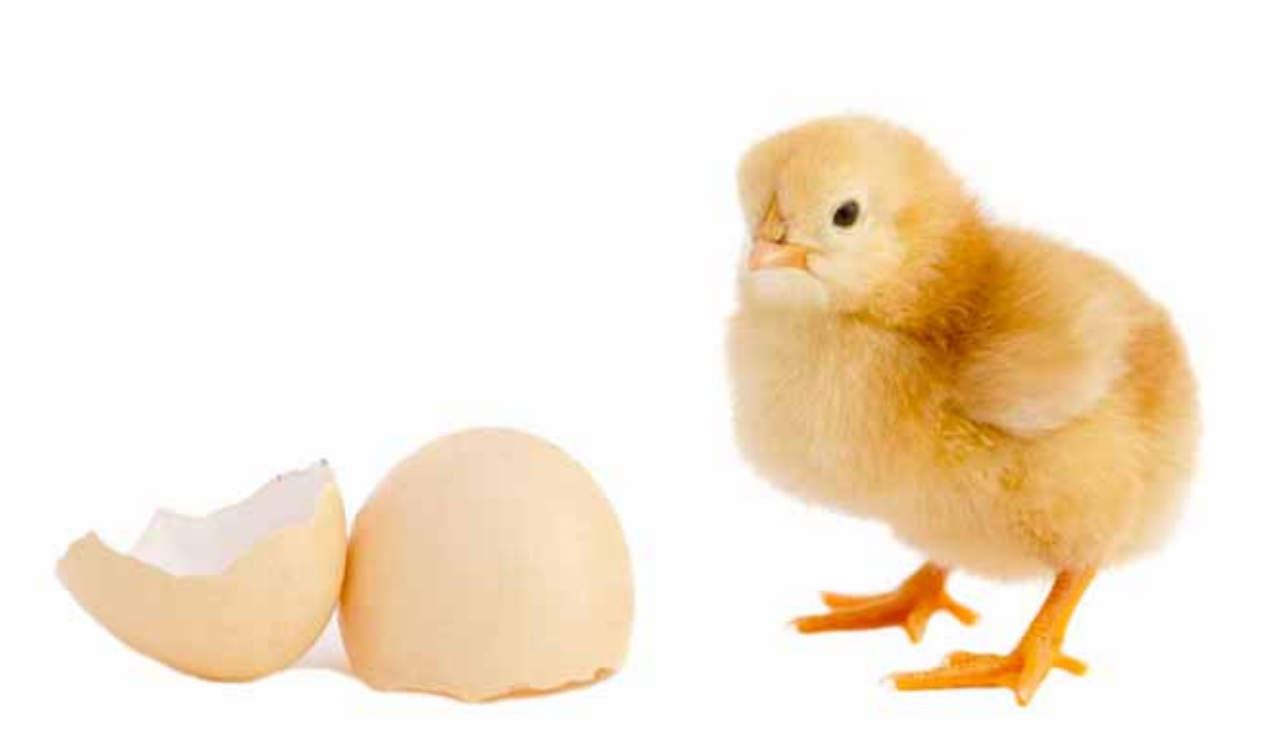
vascular disease, hypertension, and diabetes can prevent heart failure.

Recent findings

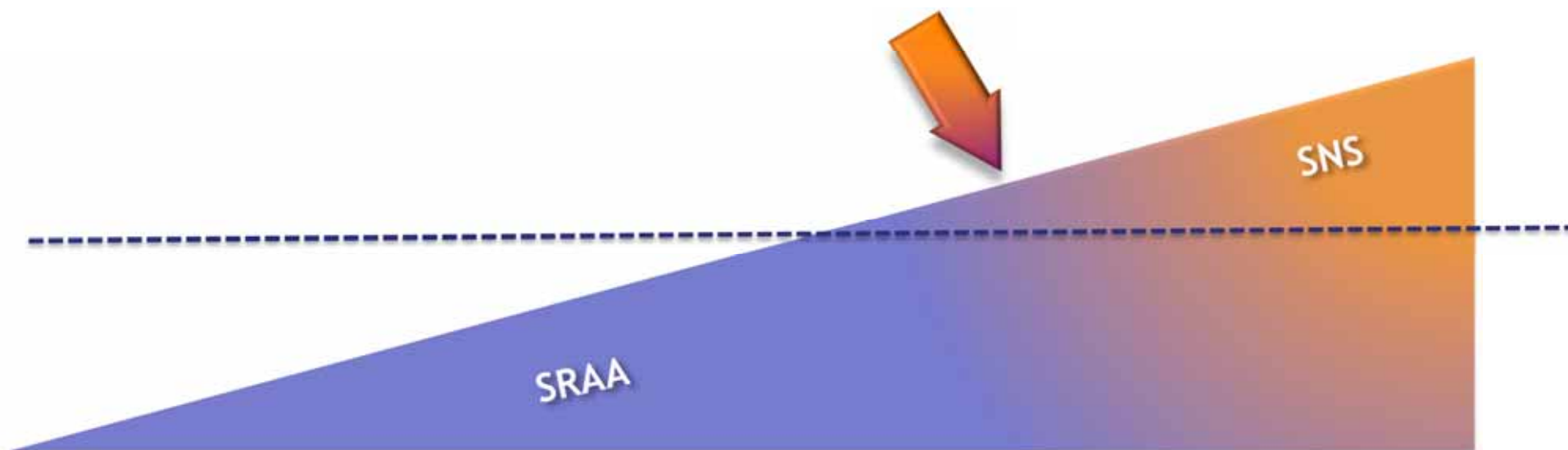
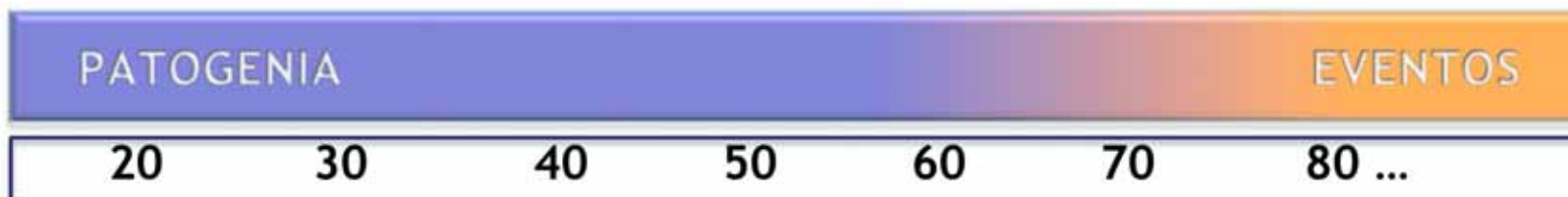
Several recent trials further expand our knowledge of how to best treat high-risk patients. Treatment of hypertensive patients over age 80 with indapamide and an ACE-inhibitor if needed can significantly reduce heart failure and mortality. There is no additional benefit from the combination of an ACE-inhibitor and angiotensin receptor blocker therapy in patients with vascular disease or high-risk diabetic patients. Continued blood pressure control is necessary to maintain beneficial cardiovascular outcomes.

Summary

Identification and treatment of patients at high risk can prevent the development of heart failure and reduce heart failure hospitalization. Thiazide diuretics, ACE-inhibitors or angiotensin receptor blockers if ACE-inhibitor-intolerant are preferred first-line agents.



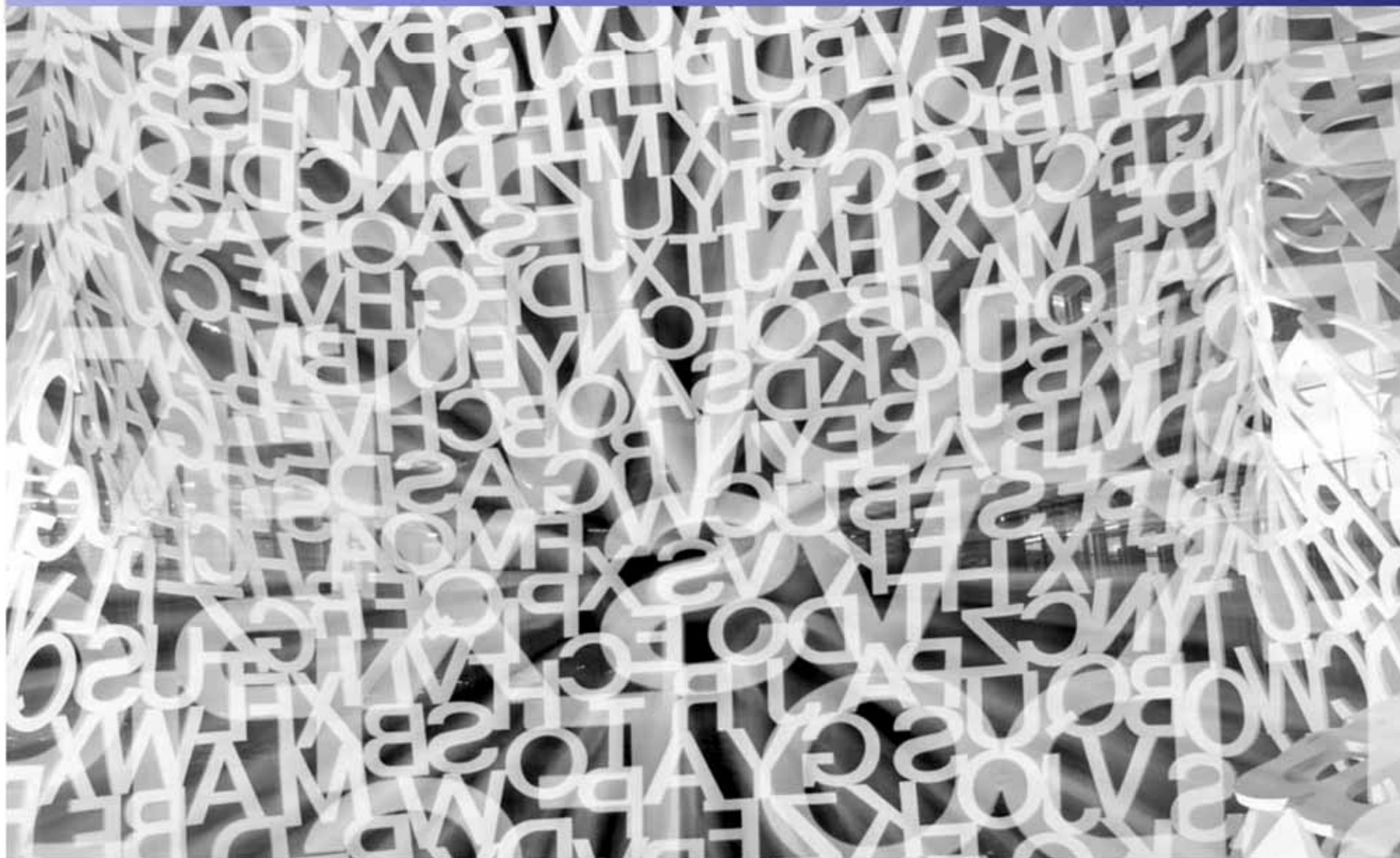
¿PREVENIR LA ENFERMEDAD O LOS EVENTOS?



CONTROVERSIAS

- **¿ Todo depende de la reducción de PA?**
- **¿Hay diferencias en los resultados según los grupos farmacológicos?**
- **¿Son adecuados los marcadores surrogados?**
- **¿Son adecuados los límites de PA establecidos?**
- **¿Es más adecuada una estrategia activa sobre el riesgo vascular independiente de las cifras de PA?**

ENSAYOS CLÍNICOS



JAMA[®]

**Major Outcomes in High-Risk Hypertensive Patients
Randomized to Angiotensin-Converting Enzyme
Inhibitor or Calcium Channel Blocker vs Diuretic: The
Antihypertensive and Lipid-Lowering Treatment to
Prevent Heart Attack Trial (ALLHAT)**

The ALLHAT Officers and Coordinators for the ALLHAT Collaborative
Research Group

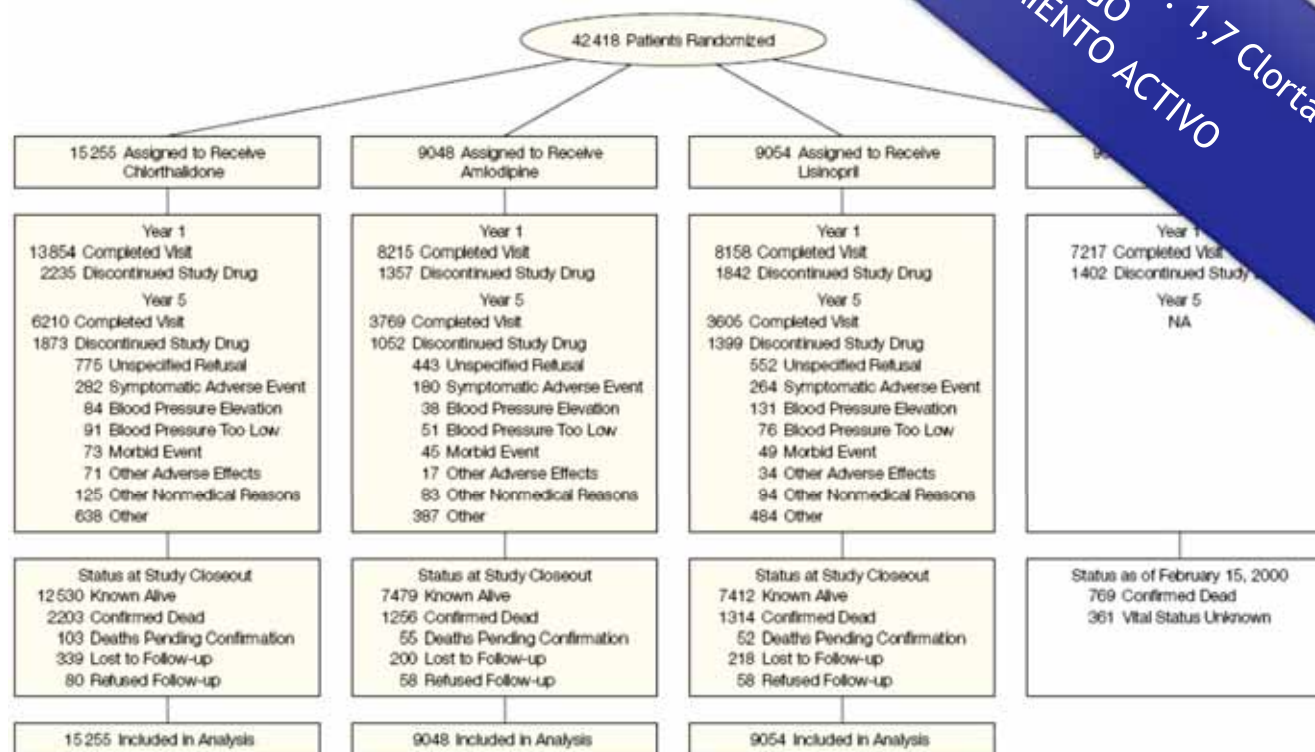
JAMA. 2002;288(23):2981-2997 (doi:10.1001/jama.288.23.2981)

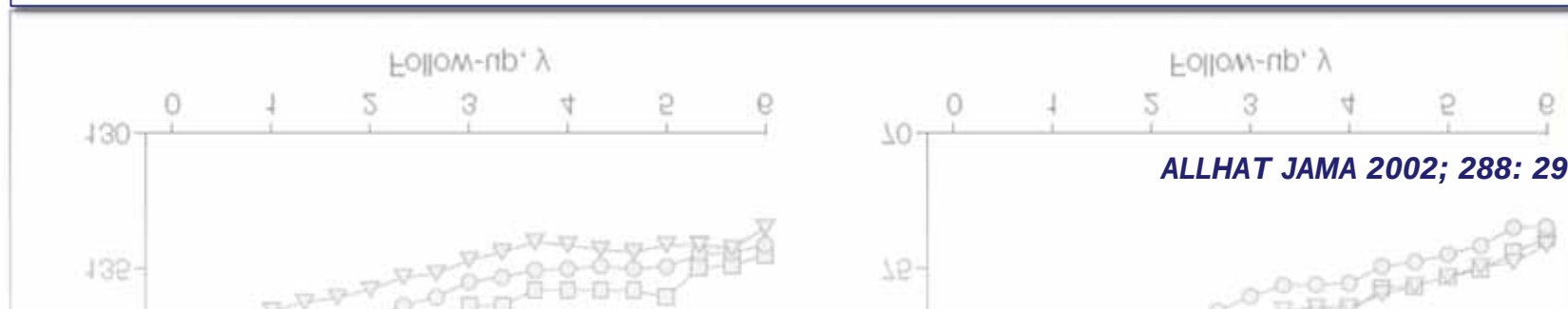
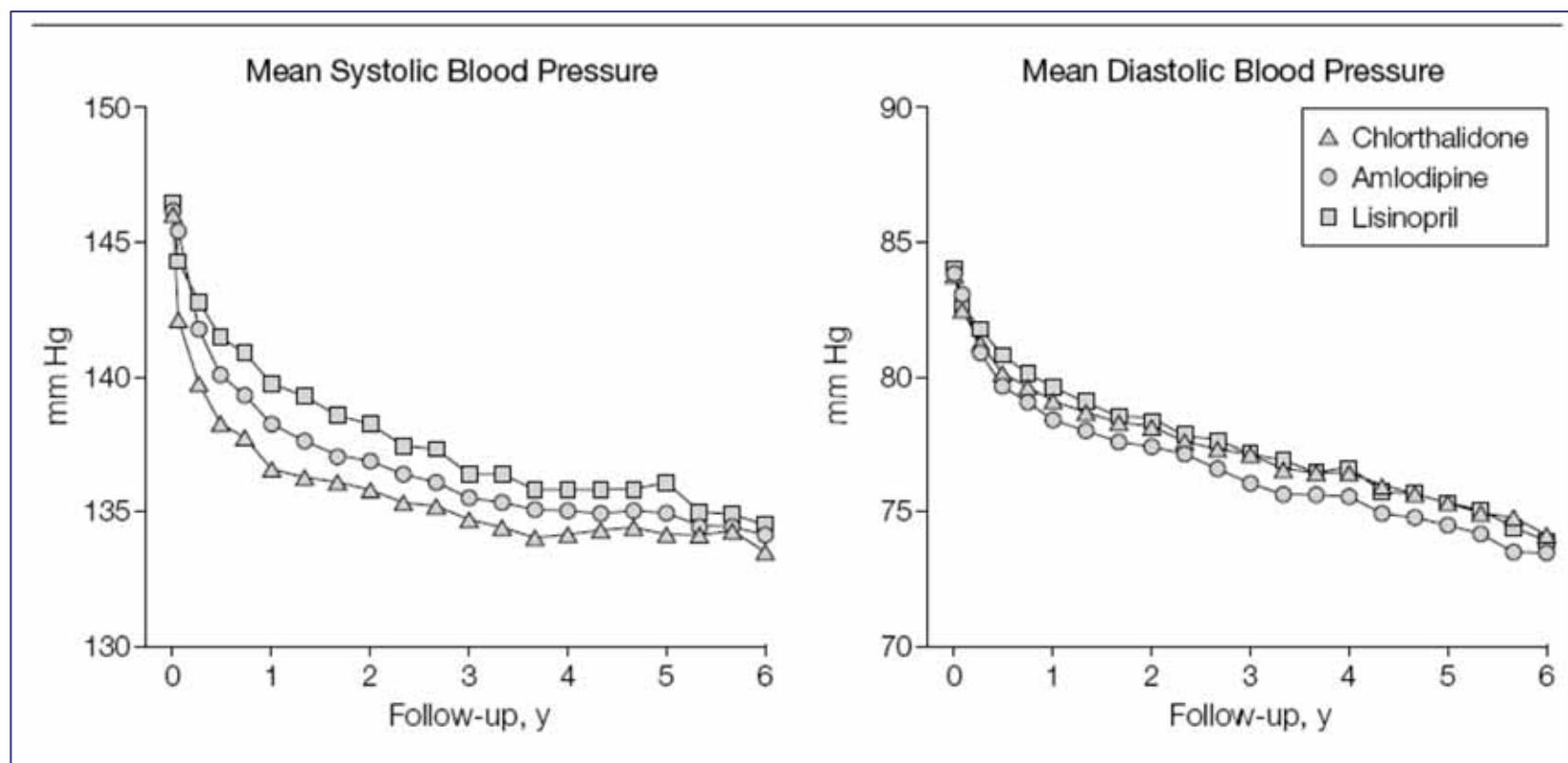
<http://jama.ama-assn.org/cgi/content/full/288/23/2981>



ALLHAT JAMA 2002; 288: 2981-2997

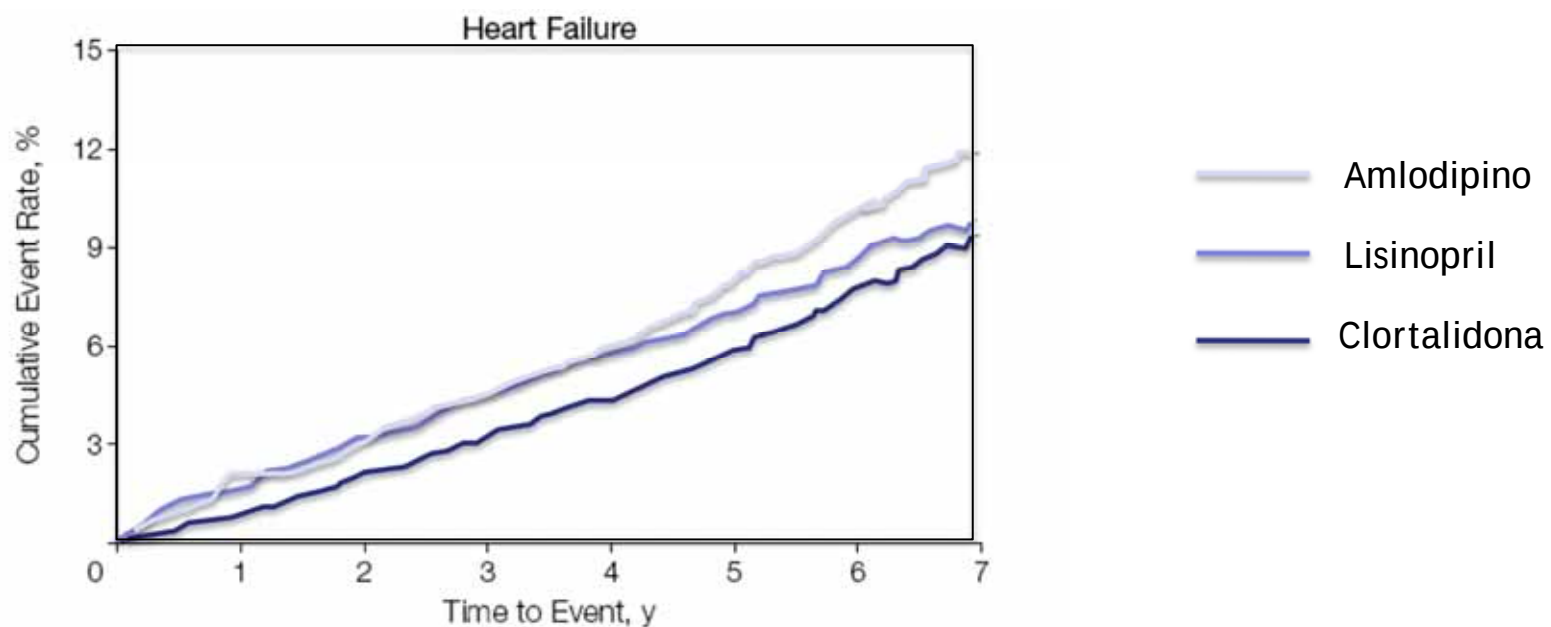
RANDOMIZADO: 1,7 Clortalidona vs 1 Resto
 DOBLE CIEGO
 TRATAMIENTO ACTIVO





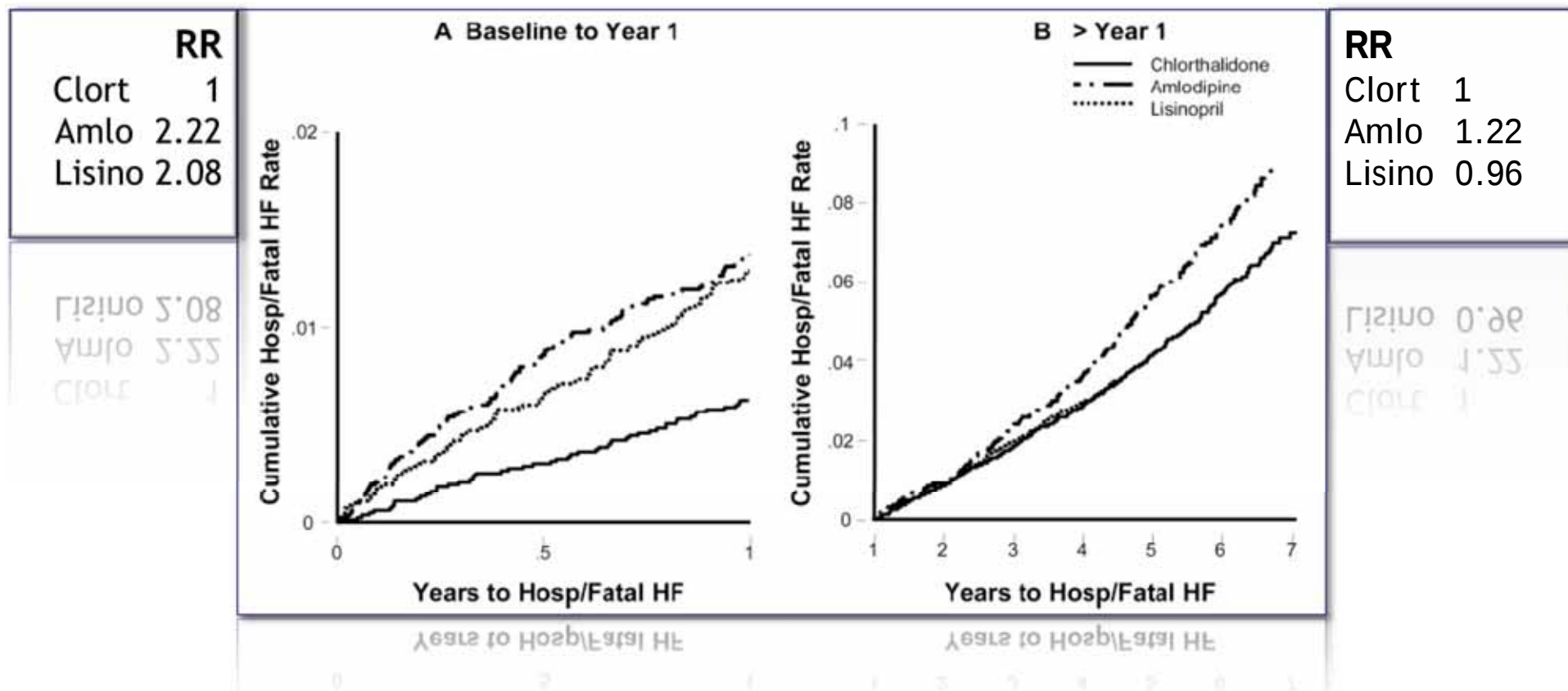
ALLHAT JAMA 2002; 288: 2981-2997

Amlodipine vs Chlorthalidone			Lisinopril vs Chlorthalidone		
RR (95% CI)	Z Score	P Value	RR (95% CI)	Z Score	P Value
1.38 (1.25-1.52)	6.29	<.001	1.19 (1.07-1.31)	3.33	<.001

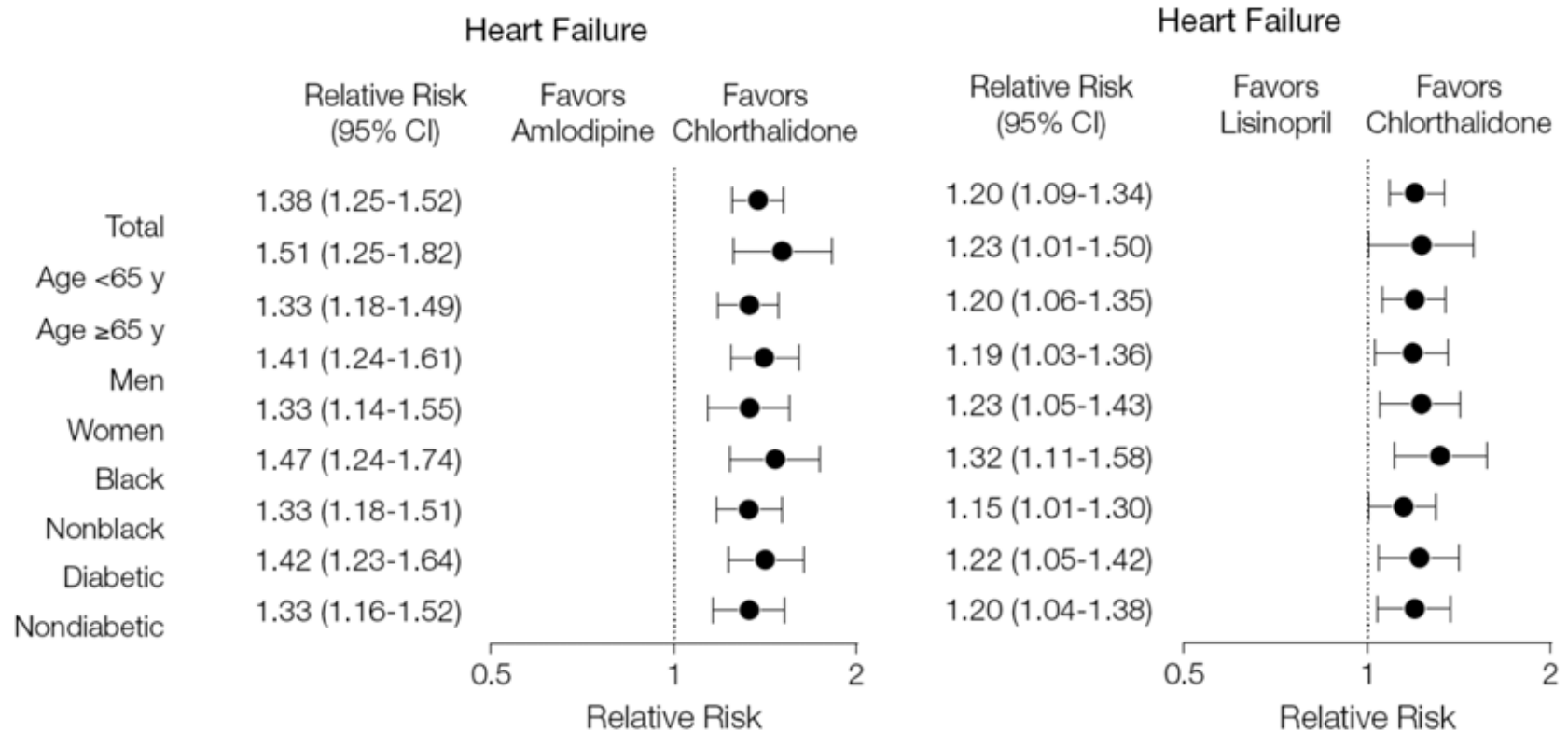


No. at Risk								
Chlorthalidone	15 255	14 528	13 898	13 224	11 511	6 369	3 016	384
Amlodipine	9 048	8 535	8 185	7 801	6 785	3 775	1 780	210
Lisinopril	9 054	8 496	8 096	7 689	6 698	3 789	1 837	313

ALLHAT JAMA 2002; 288: 2981-2997



BR Davis, et al. *Circulation* 2006; 113: 2201-2210



ALLHAT JAMA 2002; 288: 2981-2997
 JT Wright, et al. Arch Intern Med 2009; 169: 832-842

PLACEBO

"NETWORK"

IECAs

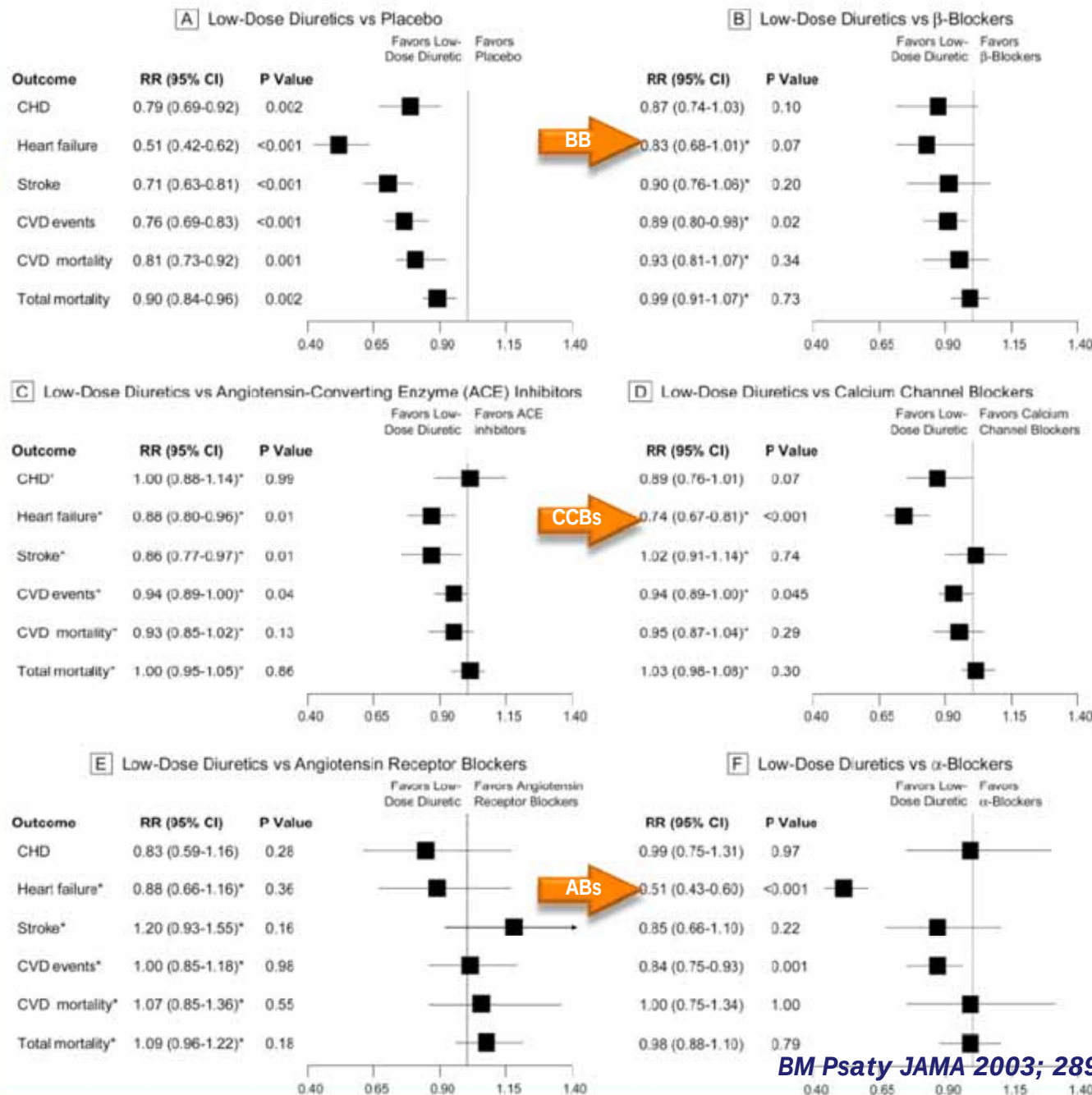
ARBs

BB

CCBs

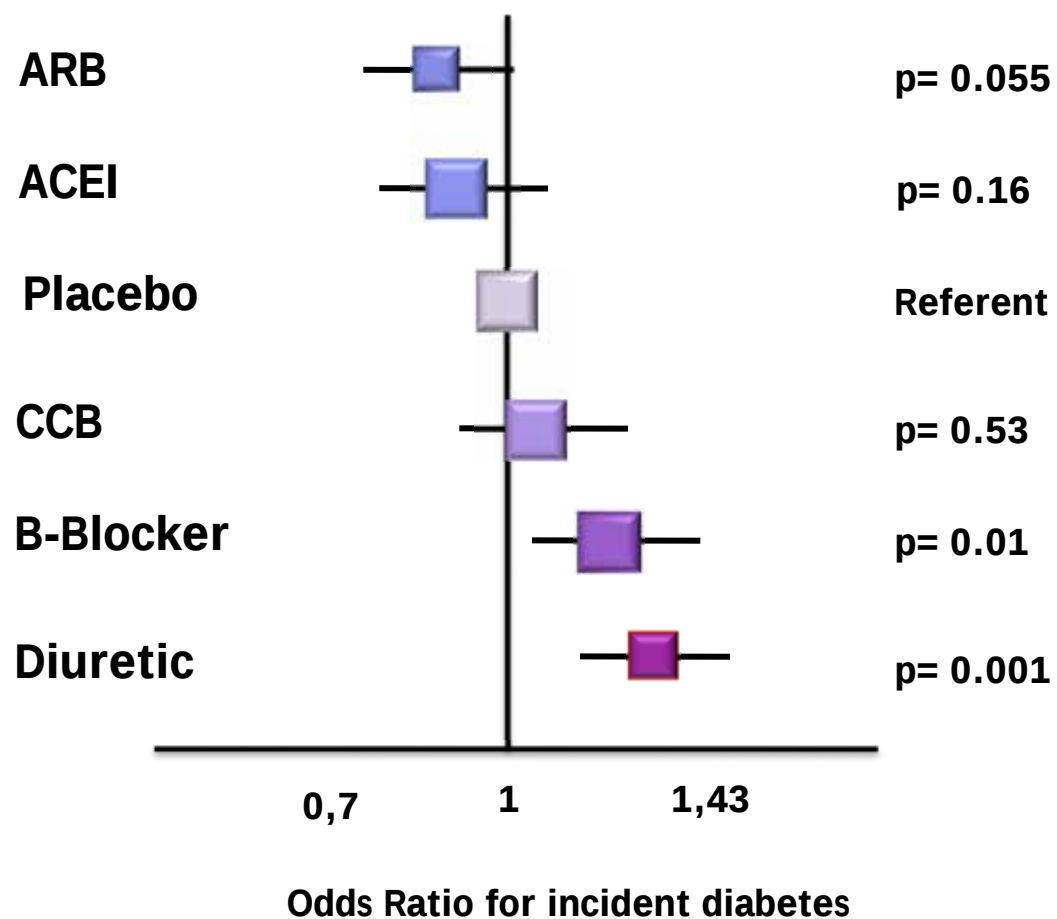
ABs

as de Tx



BM Psaty JAMA 2003; 289: 2534-2544

ANTIHIPERTENSIVOS Y DIABETES



WJ Elliot Lancet; 2007; 369: 201-2017

OBJETIVOS

Evaluar eficacia de los BB para prevención primaria de IC

DISEÑO

Metanálisis de 12 ensayos clínicos randomizados

RESULTADOS

112.177 pacientes hipertensos.

Reducción de la PA 12,6/6,1 mm Hg

Reducción de IC de nueva aparición un 23% $p=0,055$

Comparado con otros grupos $RR= 1$ (IC95% 0,92-1,08)

Incremento riesgo de ACVA en ancianos de un 19%

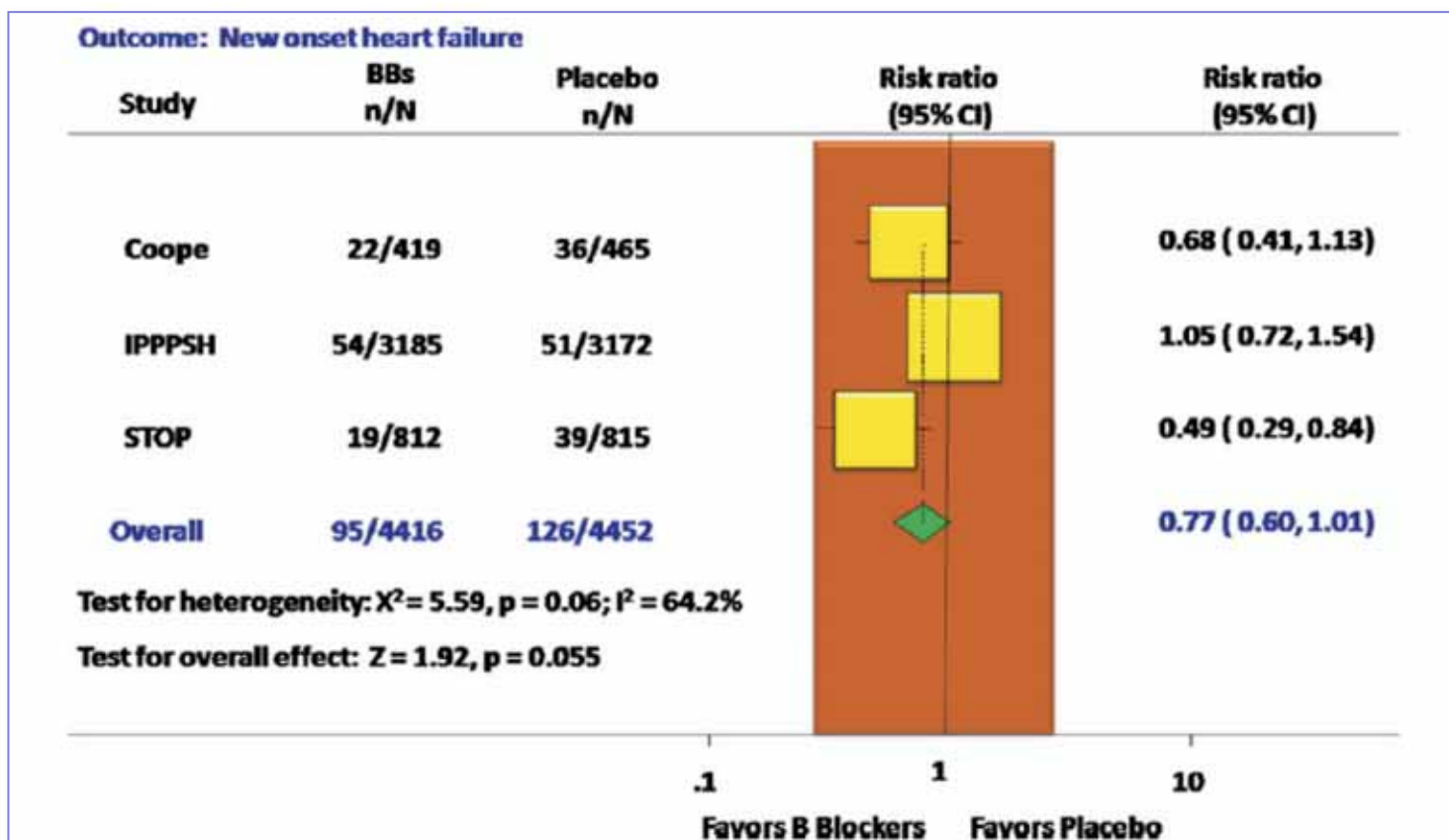
CONCLUSIÓN

La prevención primaria de IC con BB en hipertensos depende de la reducción de la PA

La eficacia de los BB es similar al resto de grupos

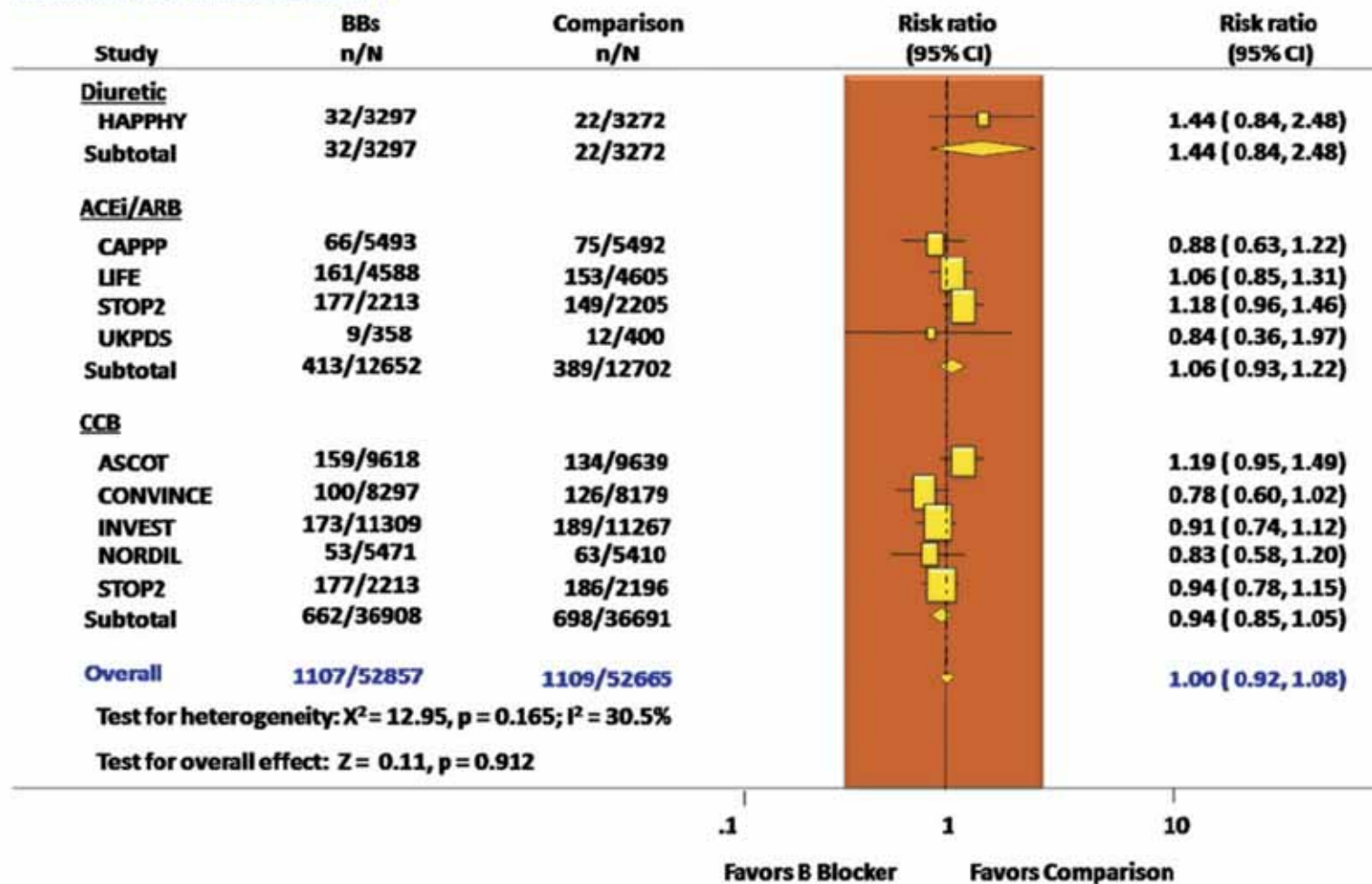
Dado que aumentan el riesgo de ictus en ancianos no deben considerarse agentes de primera línea para prevenir la IC

BB vs PLACEBO

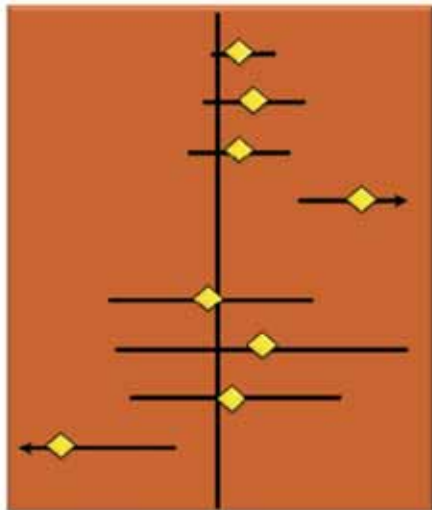


BB vs OTROS

Outcome: New onset heart failure



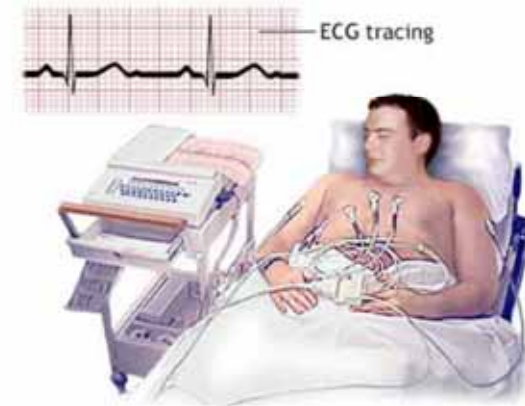
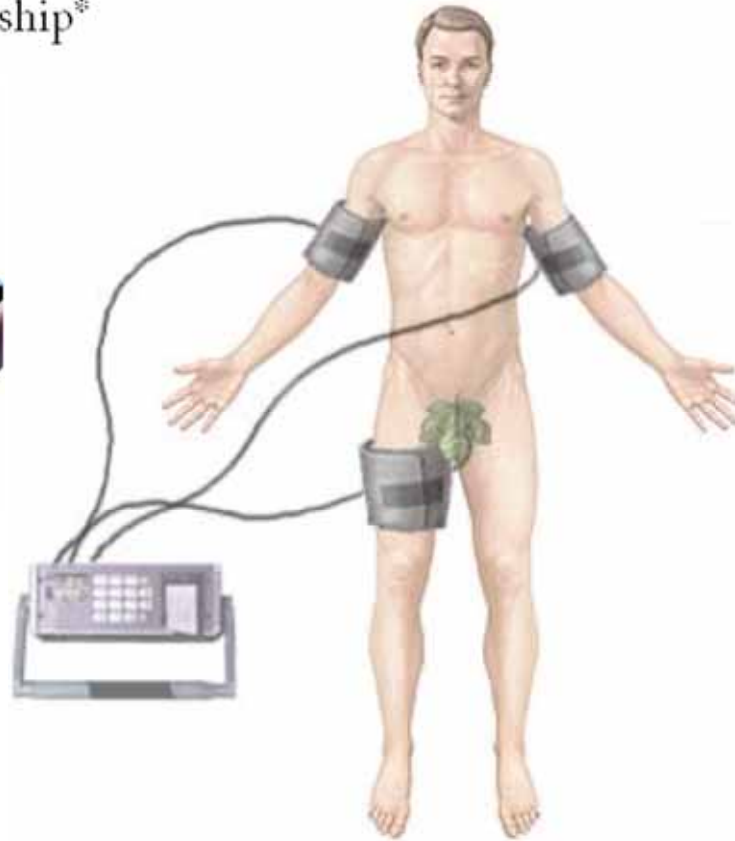
OBJETIVOS SECUNDARIOS

Outcome	No. studies	BB n/N	Comparison n/N	RR (95% CI)	P value	RR (95% CI)	Heterogeneity Chi ²	P Value
ELDERLY (>= 60 y)							7.46	0.281
Death	6	3429/43709	3304/43501	1.03 (0.99-1.08)	0.146			
CV Death	6	1707/43709	1619/43501	1.05 (0.98-1.12)	0.145			
MI	6	1469/43709	1425/43501	1.03 (0.96-1.10)	0.459			
Stroke	6	1608/43709	1346/43501	1.19 (1.11-1.28)	<0.0001			
YOUNG (< 60 y)						0.80	0.669	
Death	3	345/9148	360/9164	0.98 (0.85-1.13)	0.745			
CV Death	3	176/9148	169/9164	1.06 (0.86-1.31)	0.567			
MI	3	341/9148	341/9164	1.01 (0.88-1.17)	0.846			
Stroke	3	198/9148	255/9164	0.78 (0.65-0.94)	0.009			

BP in HF: a love-hate relationship

Blood Pressure in Heart Failure

A Love-Hate Relationship*



FH Messerli Circulation; 2008; 117: 2706-2715

MA Pfeffer JACC; 2007; 49: 40-42



Should β -blockers and diuretics remain as first line therapy for hypertension?

Thiazide-Type Diuretics and β -Adrenergic Blockers as First-Line Drug Treatments for Hypertension

Jeffrey A. Cutler, MD, MPH; Barry R. Davis, MD, PhD

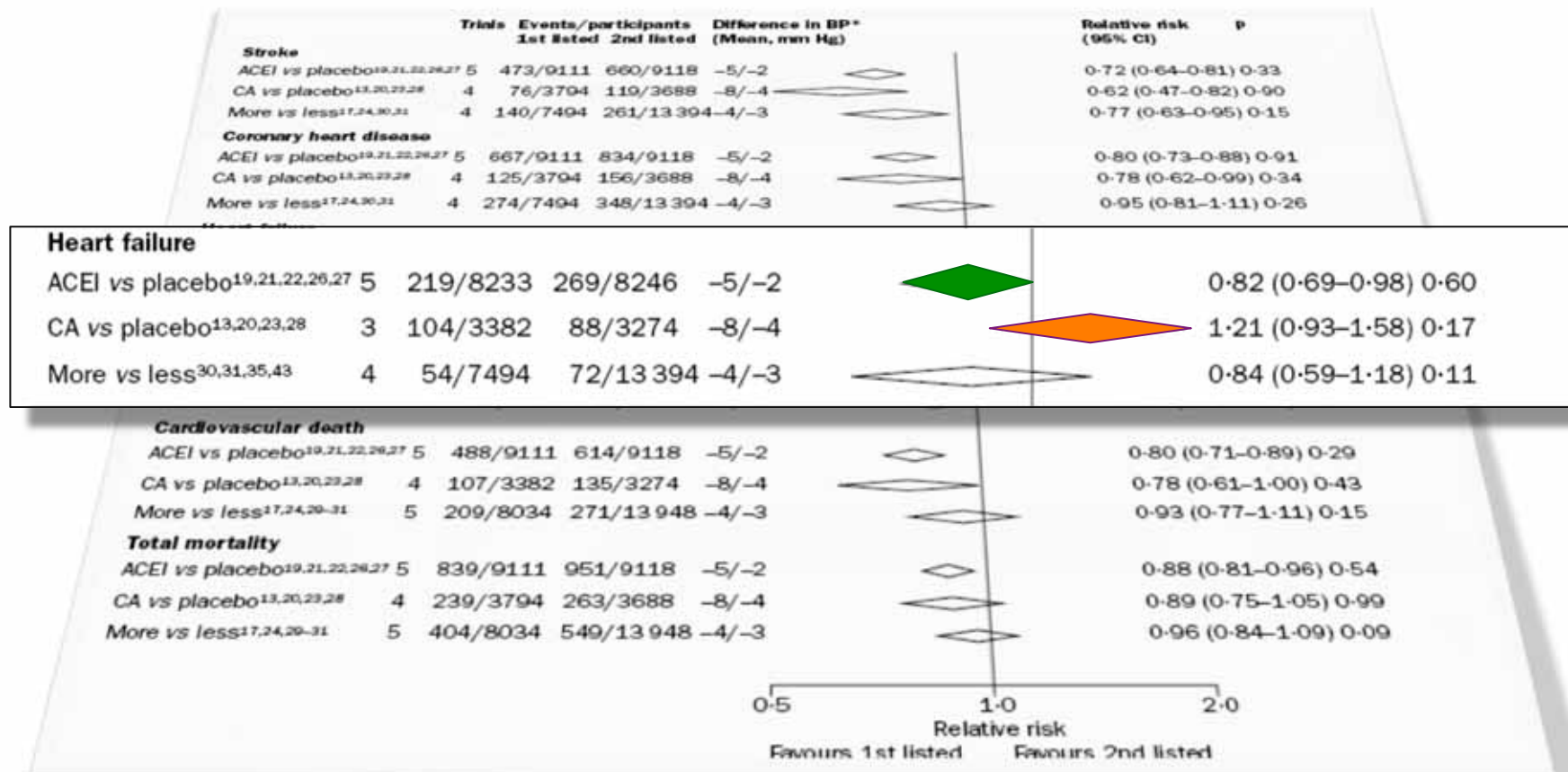
Risk/Benefit Assessment of β -Blockers and Diuretics Precludes Their Use for First-Line Therapy in Hypertension

Franz H. Messerli, MD; Sripal Bangalore, MD, MHA; Stevo Julius, MD

Circulation; 2008; 117: 2706-2715

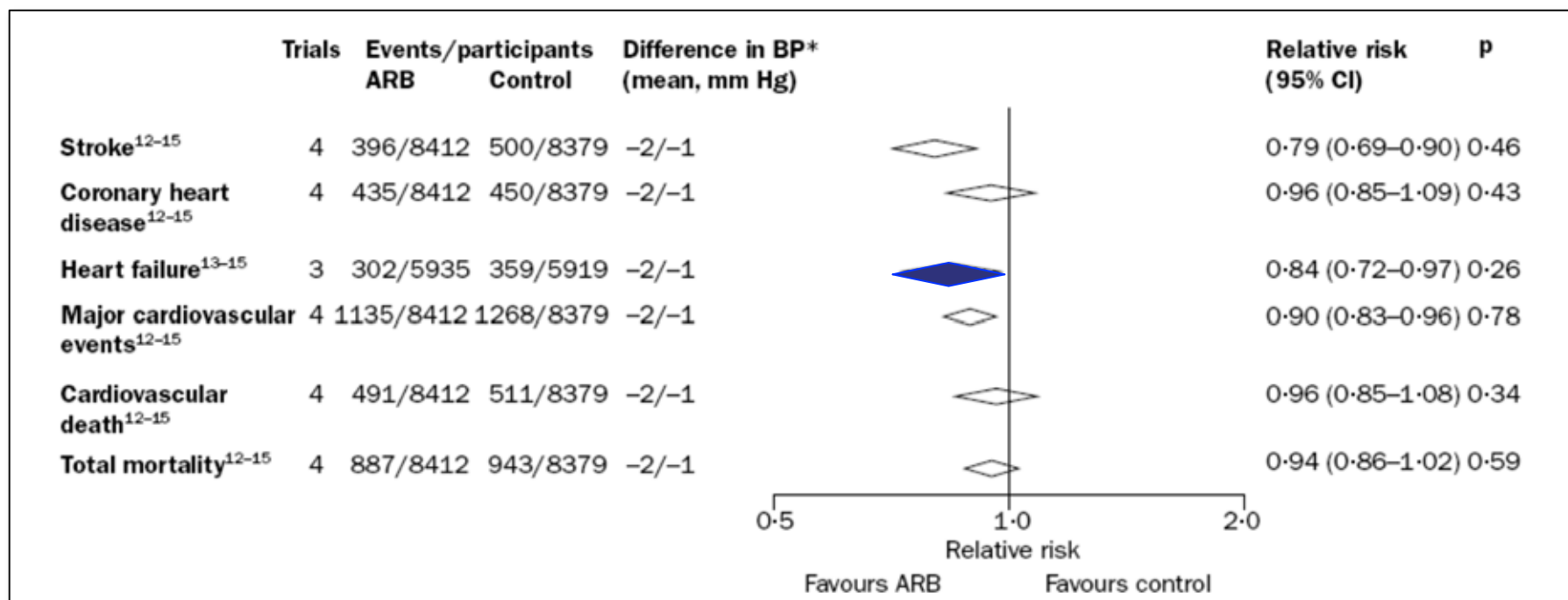


IECAs y CAA



BPLTTC. *Lancet* 2003; 362:1527-1535
 JA Staessen. *J Hypertens* 2003; 21: 1055-1076

ARB



BPLTTC. Lancet 2003; 362:1527-1535
JA Staessen. J Hypertens 2003; 21: 1055-1076

DIUR+BB, IECAs, CAA

Heart failure					
ACEI vs D/BB ^{32,33,44}	3	547/12 498	809/18 652	+2/0	 1.07 (0.96–1.19) 0.43
CA vs D/BB ^{18,25,32,36–38,40}	7	732/23 425	850/29 734	+1/0	 1.33 (1.21–1.47) 0.92
ACEI vs CA ^{30–32,41}	4	502/10 357	609/10 345	+1/+1	 0.82 (0.73–0.92) 0.75
ACEI vs CA ^{30–35,41}	4	205/10 321	208/10 342	+1/+1	 0.85 (0.73–0.95) 0.12
CA vs D/BB ^{18,32,35,36–38,40}	1	135/53 432	820/58 134	+1/0	 1.33 (1.21–1.47) 0.92
ACEI vs D/BB ^{18,25,32,36–38,40}	7	732/23 425	850/29 734	+1/0	 1.07 (0.96–1.19) 0.43

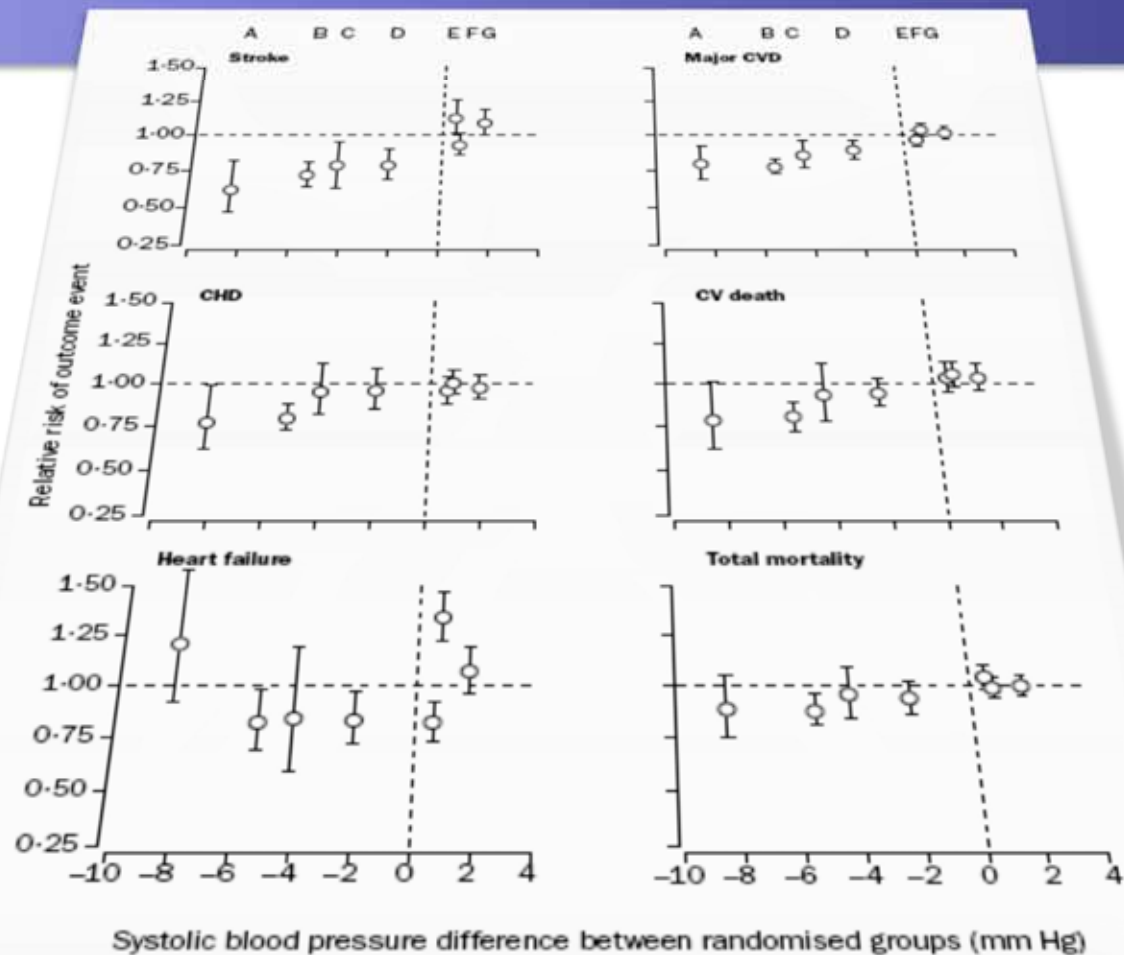
BPLTTC. Lancet 2003; 362:1527–1535
JA Staessen. J Hypertens 2003; 21: 1055–1076

Class of drug	No of trials	No of episodes	Relative risk* (95% CI)
Blood pressure difference trials			
Single drug therapy:			
Calcium channel blockers	13	1519	0.81 (0.69 to 0.94)
Thiazides	5	222	0.59 (0.45 to 0.78)
β blockers	13	2846	0.77 (0.69 to 0.87)
Angiotensin converting enzyme inhibitors	16	3834	0.74 (0.68 to 0.81)
Angiotensin receptor blockers	3	1675	0.82 (0.73 to 0.92)
All drug classes except calcium channel blockers	36†	8553†	0.76 (0.72 to 0.81)
Combination drug therapy	7	144	0.57 (0.36 to 0.92)
Drug comparison trials			
Calcium channel blockers v any other drug class	21	4572	1.22 (1.10 to 1.35)
Drug comparisons not involving calcium channel blockers:			
Thiazides	2	2335	0.91 (0.64 to 1.30)
β blockers	2	335	1.04 (0.84 to 1.29)
Angiotensin converting enzyme inhibitors	9	5063	0.98 (0.91 to 1.06)
Angiotensin receptor blockers	7	2436	1.00 (0.93 to 1.08)
*Relative risk <1.0 indicates specified drug class reduces risk of heart failure; >1.0 increases risk.			
†All trials totals are less than column totals because one trial had two treated groups sharing same placebo group.			

19 %

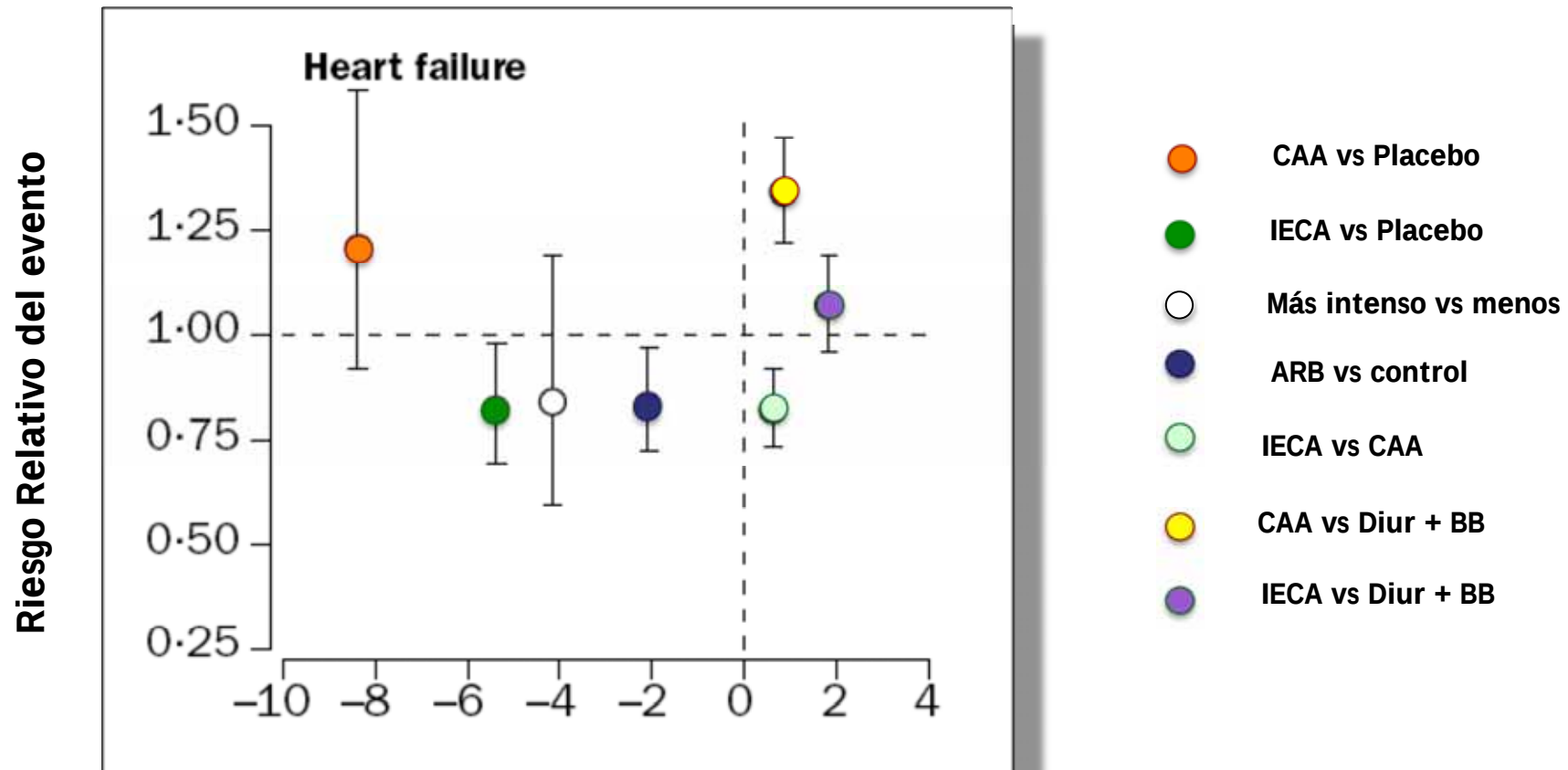
24 %

43 %



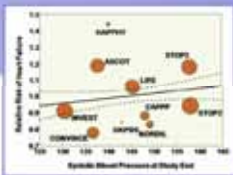
BPLTTC. Lancet 2003; 362:1527-1535

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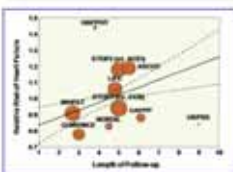


Diferencias en la PAS entre grupos randomizados

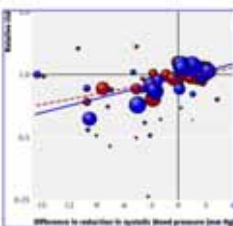




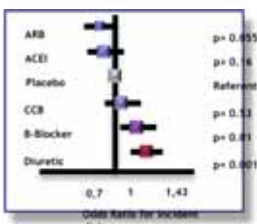
EFICACIA



TOLERANCIA



EDAD INDEPENDIENTE



EFFECTOS METABÓLICOS



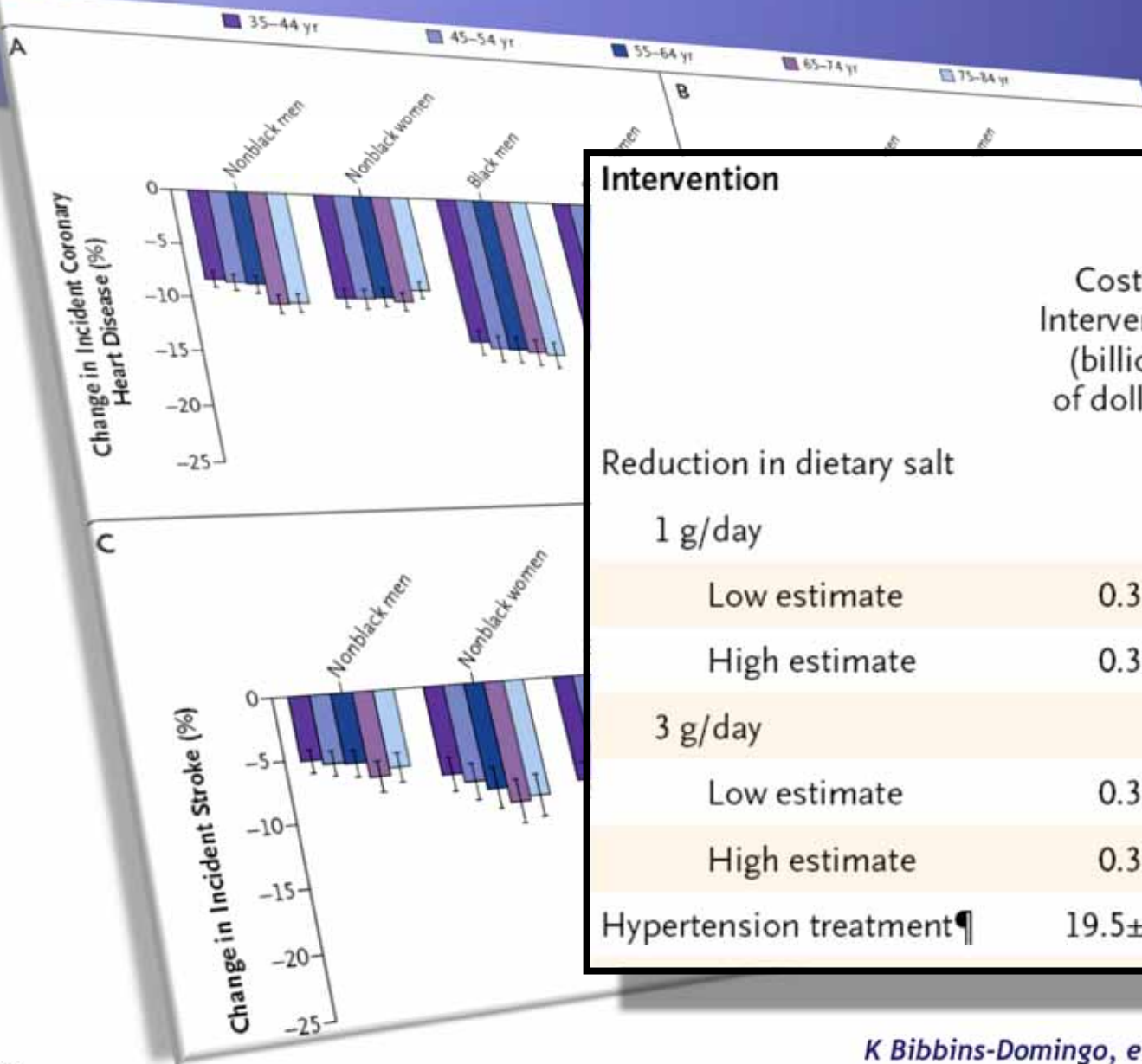
CONTEXTO CLÍNICO



COSTE







Intervention

	Cost of Intervention (billions of dollars)	Reduction in Health Care Costs (billions of dollars) [†]
Reduction in dietary salt		
1 g/day		
Low estimate	0.3§	4.1±0.8
High estimate	0.3§	7.0±1.4
3 g/day		
Low estimate	0.3§	12.1±2.4
High estimate	0.3§	20.4±4.1
Hypertension treatment¶	19.5±0.1	14.2±2.7

K Bibbins-Domingo, et al. NEJM. 2010; 362: 590-599

¿ ... Y DESPUÉS ?







Registro Nacional de Insuficiencia CArdiaca

N = 581 pacientes

