"OBESIDAD Y DIABETES: UNA EPIDEMIA ACTUAL"

D

Global death ranks 1990 and 2010

1990				2010
Mean rank (95% UI)	**Disorder**		**Disorder**	**Mean rank (95% UI)**
1·0 (1 to 2)	1 Ischaemic heart disease		1 Ischaemic heart disease	1·0 (1 to 1)
2·0 (1 to 2)	2 Stroke		2 Stroke	2·0 (2 to 2)
3·0 (3 to 4)	3 Lower respiratory infections		3 COPD	3·4 (3 to 4)
4·0 (3 to 4)	4 COPD		4 Lower respiratory infections	3·6 (3 to 4)
5·0 (5 to 5)	5 Diarrhoea		5 Lung cancer	5·8 (5 to 10)
6·1 (6 to 7)	6 Tuberculosis		6 HIV/AIDS	6·4 (5 to 8)
7·3 (7 to 9)	7 Preterm birth complications		7 Diarrhoea	6·7 (5 to 9)
8·6 (7 to 12)	8 Lung cancer		8 Road injury	8·4 (5 to 11)
9·4 (7 to 13)	9 Malaria		9 Diabetes	9·0 (7 to 11)
10·4 (8 to 14)	10 Road injury		10 Tuberculosis	10·1 (8 to 13)
10·8 (8 to 14)	11 Protein–energy malnutrition		11 Malaria	10·3 (6 to 13)
12·8 (11 to 16)	12 Cirrhosis		12 Cirrhosis	11·8 (10 to 14)
13·2 (9 to 18)	13 Stomach cancer		13 Self-harm	14·1 (11 to 20)
15·6 (12 to 20)	14 Self-harm		14 Hypertensive heart disease	14·2 (12 to 18)
15·8 (13 to 19)	15 Diabetes		15 Preterm birth complications	14·4 (12 to 18)

Communicable, maternal, neonatal, and nutritional disorders
Non–communicable diseases
Injuries

WHO mortality. Lancet 2012; 380: 2095–128

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Patrones de mortalidad en España, 2012

Principales causas de muerte en España en 2014. Tasa de mortalidad bruta por 100.000 habitantes, según causa de muerte.

2012			2014		
Rango	Causa	Tasa de mortalidad bruta	Rango	Causa	Tasa de mortalidad bruta
	Total	872,9			852,1
1	Cáncer	231,5	1	Cáncer	228,8
2	Enfermedades del corazón	176,1	2	Enfermedades del corazón	171,6
3	Enfermedades cerebrovasculares	63,9	3	Enfermedades cerebrovasculares	59,4
6	Diabetes mellitus	21,6	7	Diabetes mellitus	20,7

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Microangiopatía

Retinopatía

Nefropatía
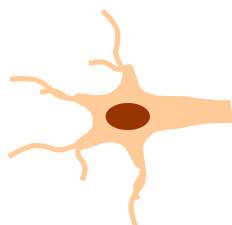
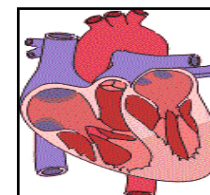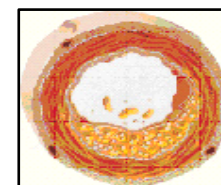**Neuropatía**

Polineuropatía
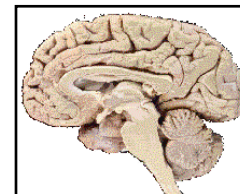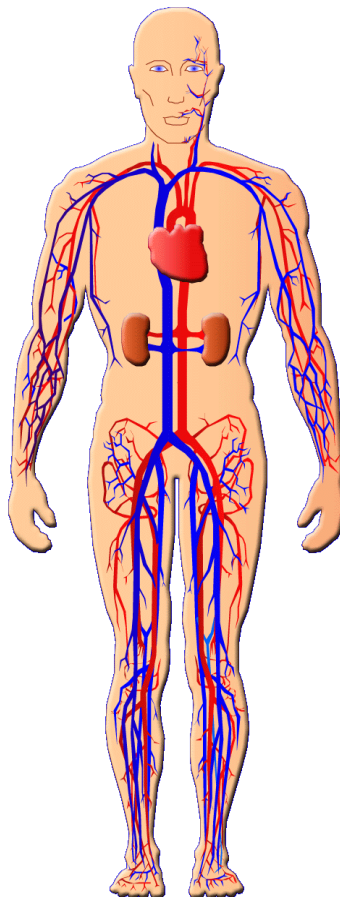
Ictus

ECV

E. vascular periférica
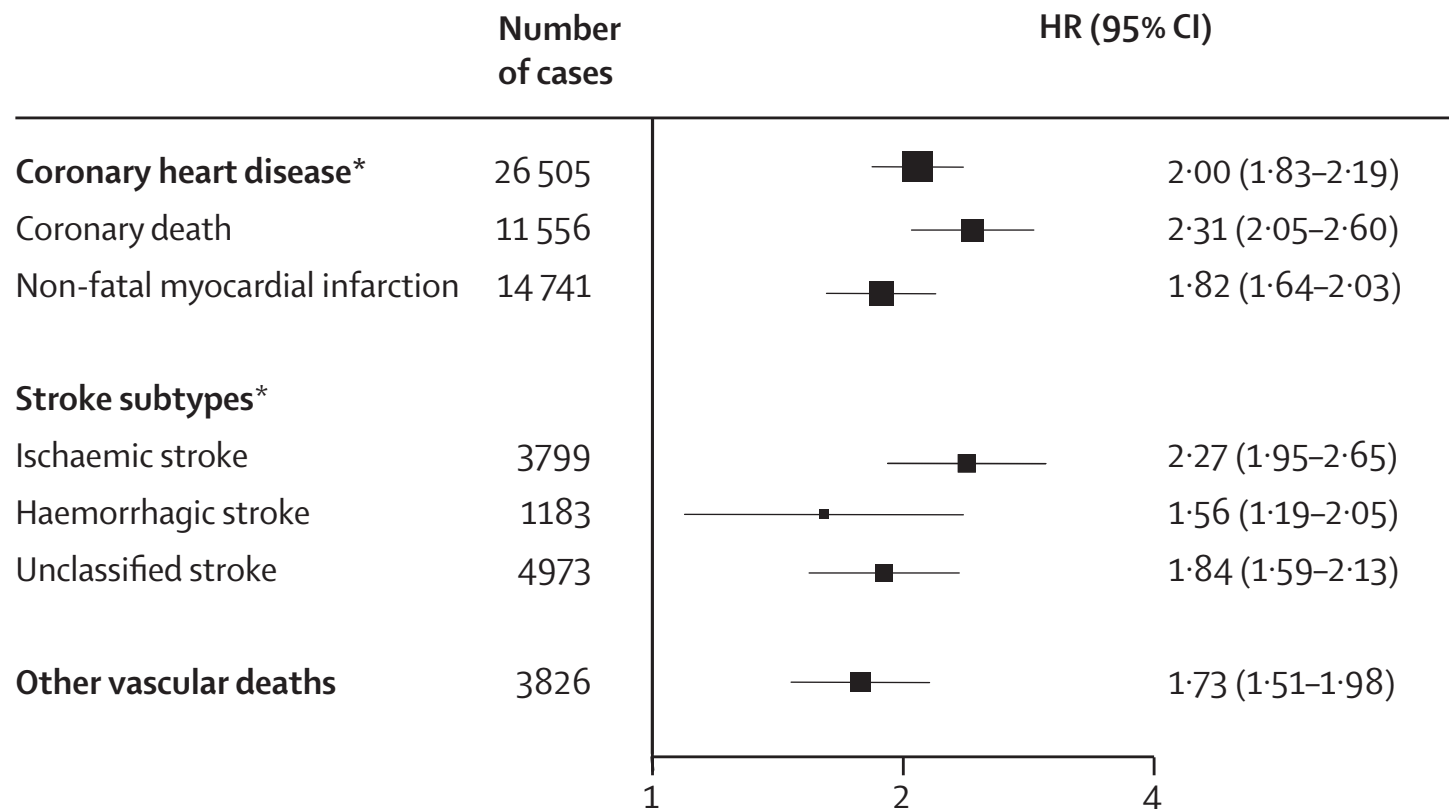
Macroangiopatía o arteriosclerosis

Las complicaciones micro y macrovasculares de la diabetes están relacionadas con alta morbi-mortalidad

El 70% de los sujetos con diabetes >65 años mueren por ECV

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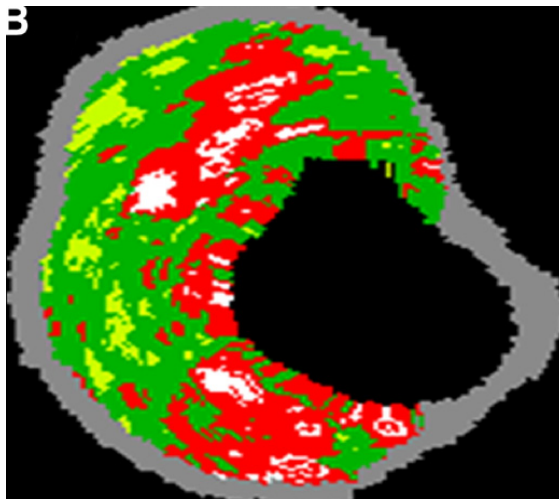# Diabetes: a meta-analysis of 102 prospective studies

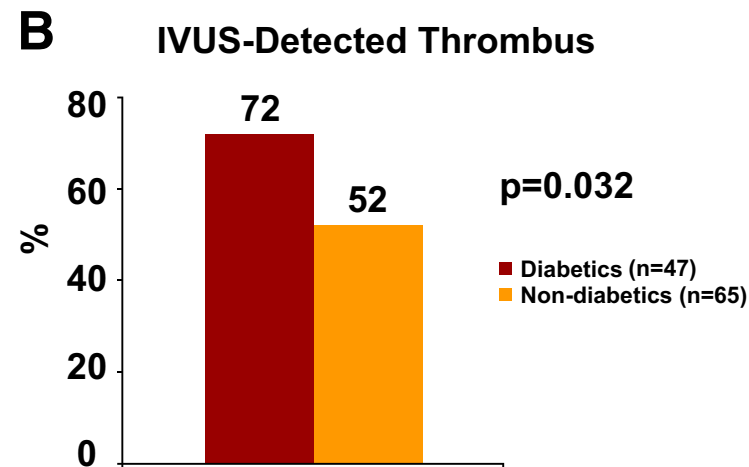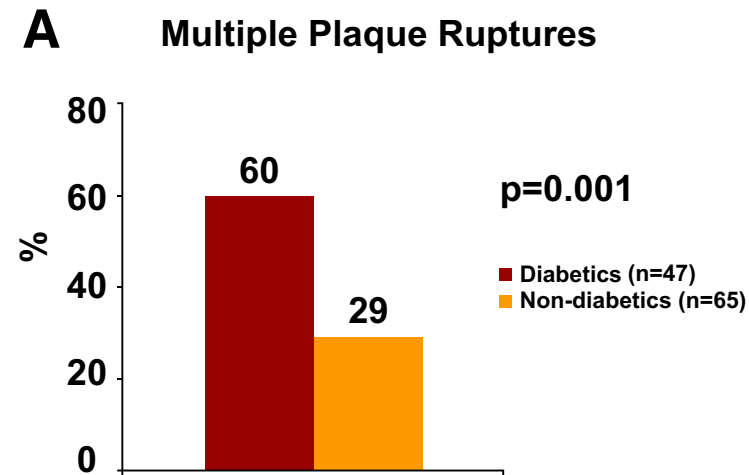## HRs for vascular outcomes in people with versus those without diabetes at baseline

	Number of cases	HR (95% CI)
Coronary heart disease*	26 505	2·00 (1·83–2·19)
Coronary death	11 556	2·31 (2·05–2·60)
Non-fatal myocardial infarction	14 741	1·82 (1·64–2·03)
Stroke subtypes*		
Ischaemic stroke	3799	2·27 (1·95–2·65)
Haemorrhagic stroke	1183	1·56 (1·19–2·05)
Unclassified stroke	4973	1·84 (1·59–2·13)
Other vascular deaths	3826	1·73 (1·51–1·98)

The Emerging Risk Factors Collaboration. Lancet. 2010; 375(9733): 2215–2222.

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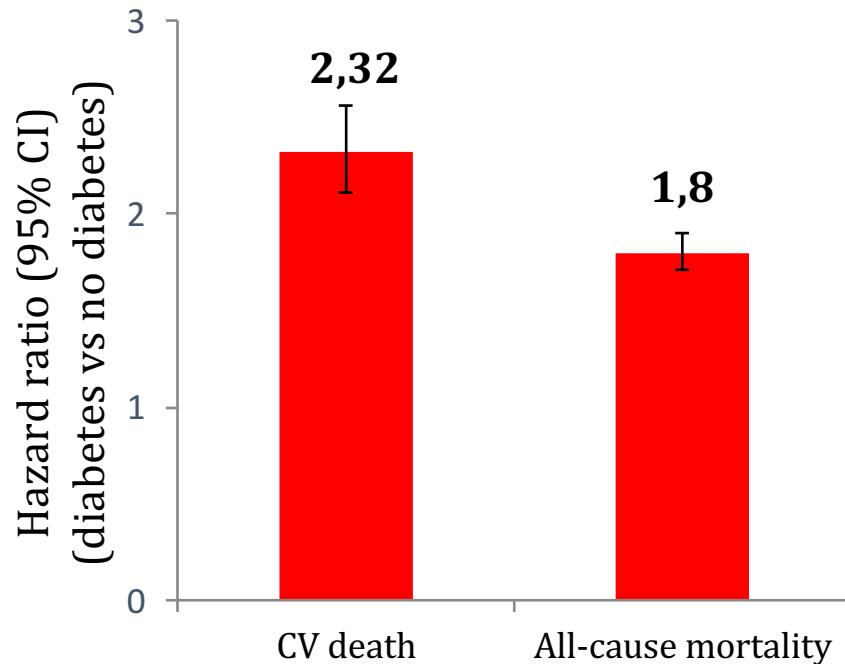# *The Incidences of Multiple Plaque Ruptures and Thrombus*

green (fibrotic)
yellow-green (fibro-fatty)
white (dense cal- cium)
red (necrotic core).

J Am Coll Cardiol Img 2009;2:339 – 49

A **Multiple Plaque Ruptures**

p=0.001

■ Diabetics (n=47)
■ Non-diabetics (n=65)

B **IVUS-Detected Thrombus**

p=0.032

■ Diabetics (n=47)
■ Non-diabetics (n=65)
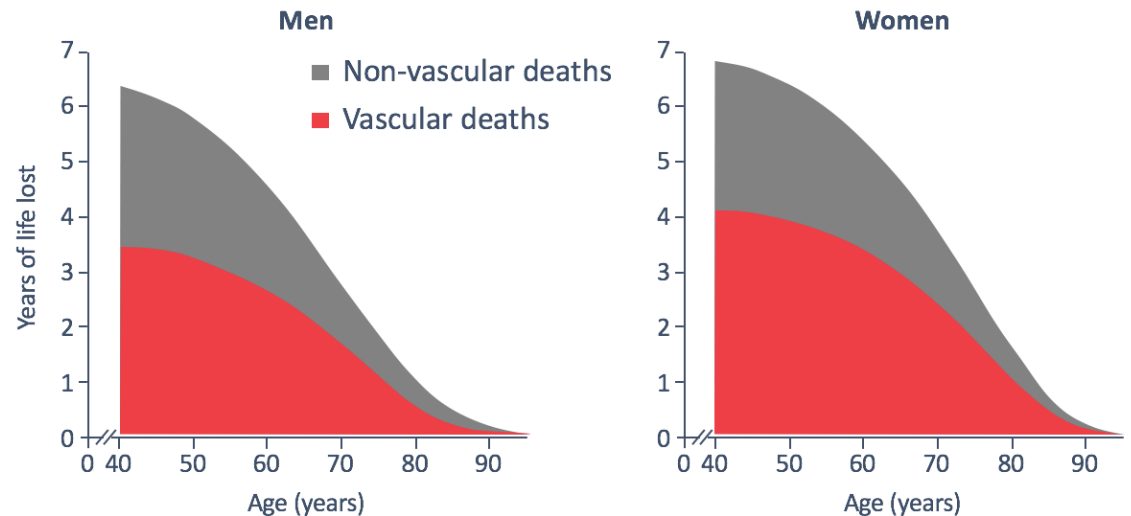
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Type 2 diabetes

Mortality risk associated with diabetes (n=820,900)

Diabetes is associated with significant loss of life years


On average, a 50-year-old individual with diabetes and no history of vascular disease will die 6 years earlier compared to someone without diabetes

Seshasai et al. N Engl J Med 2011;364:829-41

Centers for Disease Control and Prevention 2011
*Seshasai et al. N Engl J Med 2011;364:829-41*

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T2DM is associated to higher In-Hospital Mortality after major cardiovascular events.
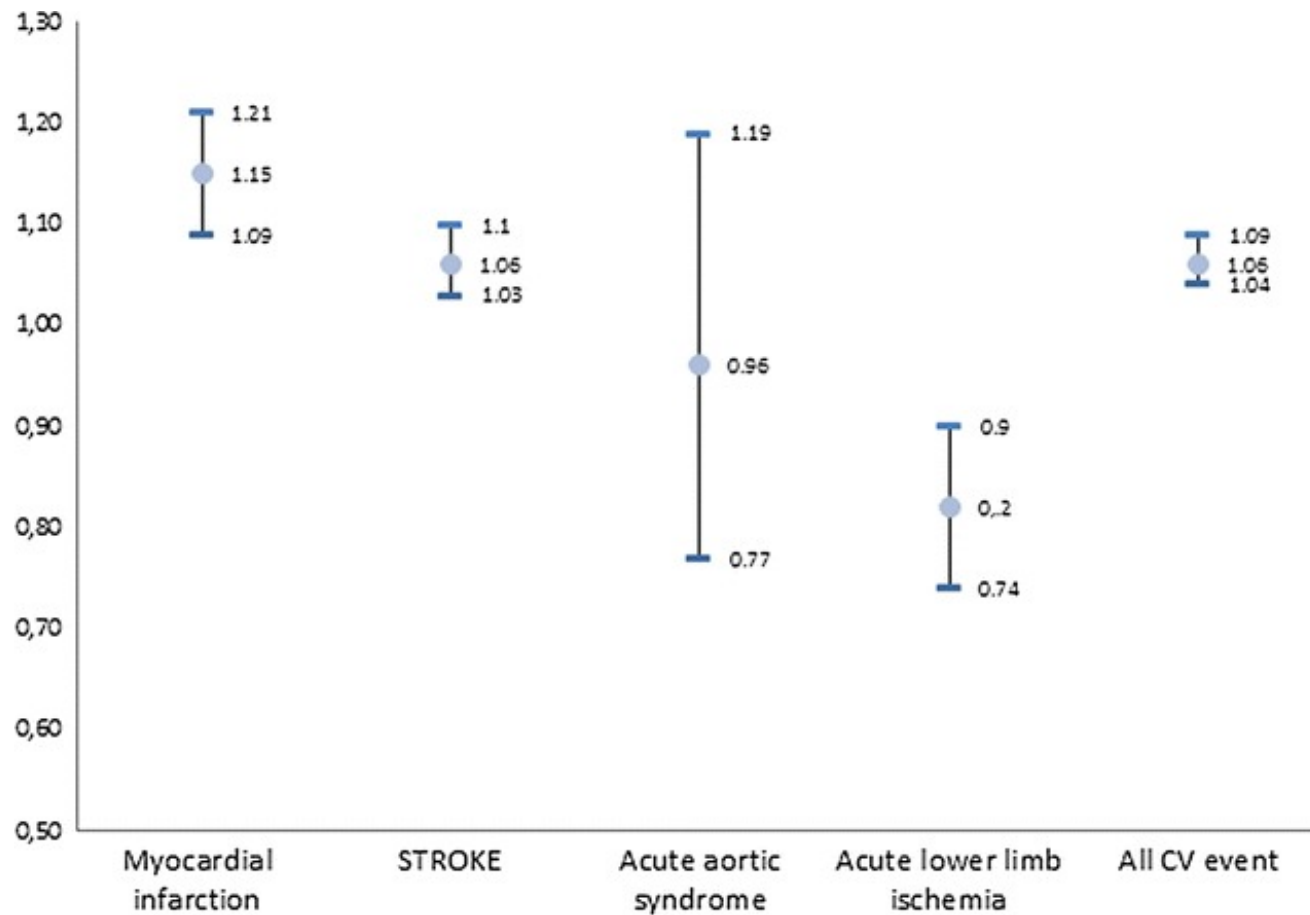
Macroangiopatía o arteriosclerosis diabética

- Frecuencia ECV x 2-5

    - Cardiopatía isquémica x2-4

    - Enf. vascular cerebral x2-4

    - Enf. vascular periférica x8-10

- Mortalidad en IAM y post-IAM x 2 H y x3 M

- Mas difusa, distal, más lesiones graves

- No protección en mujeres

- Riesgo mortalidad CV SCORE >5 (Alto riesgo)

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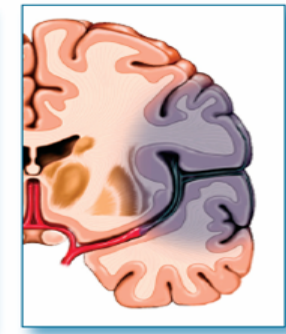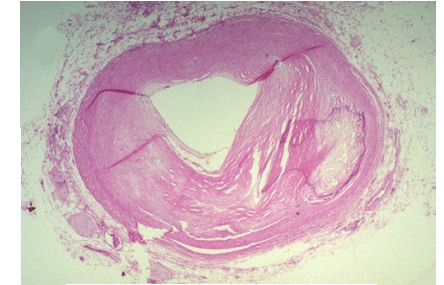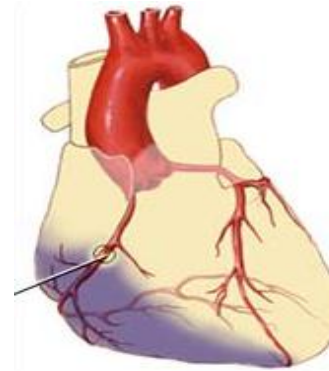
Survival curves according to the presence of diabetes or history of cardiovascular disease (CVD).
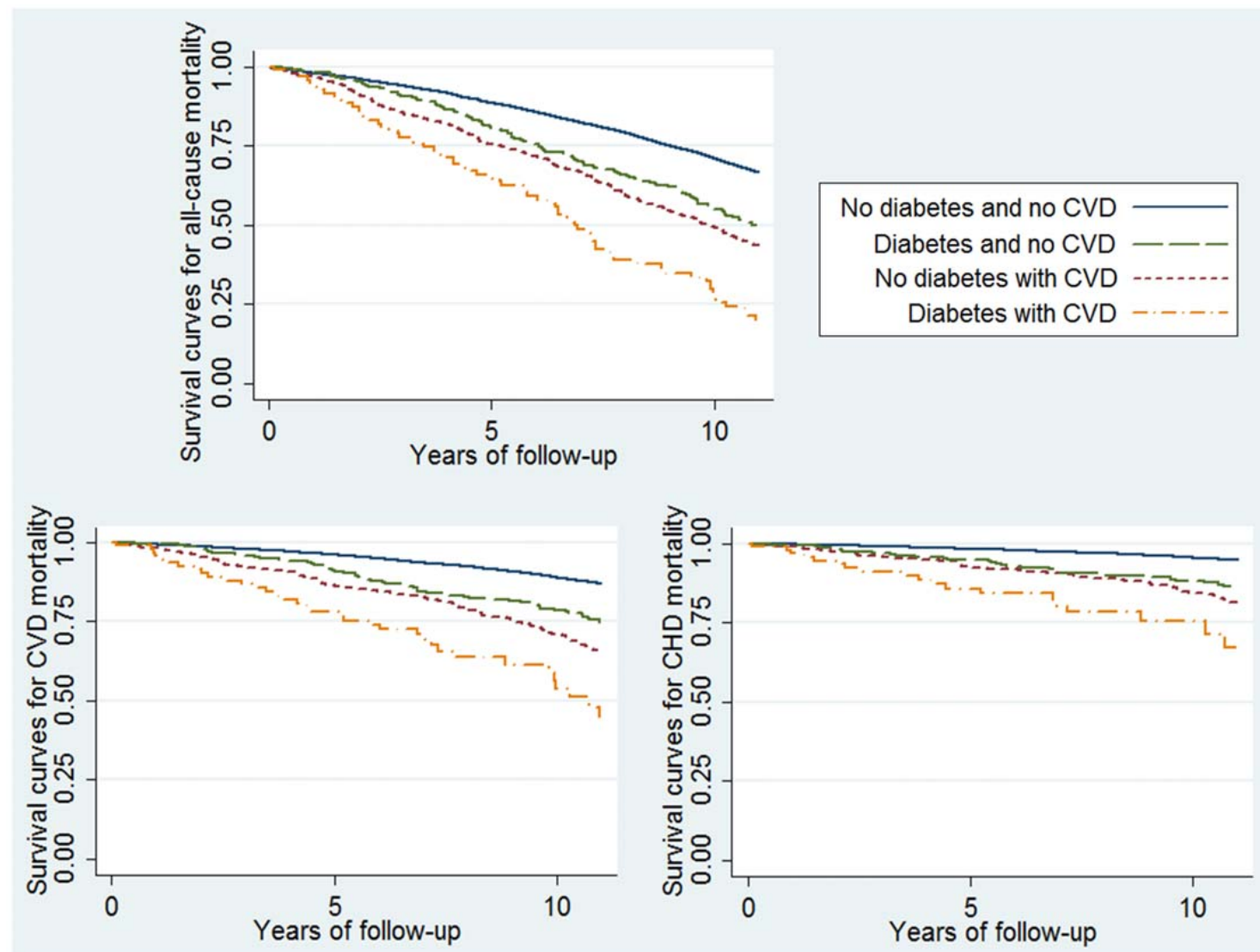
Trends in Age-Standardized Rates of Diabetes-Related Complications among U.S. Adults with and without Diagnosed Diabetes, 1990–2010.

National Health Interview Survey, the National Hospital Discharge Survey, the U.S. Renal Data System, and the U.S. National Vital Statistics System

Gregg EW et al. NEJM 2014;370:1514-1523.

J.F. Ascaso. HC-UV
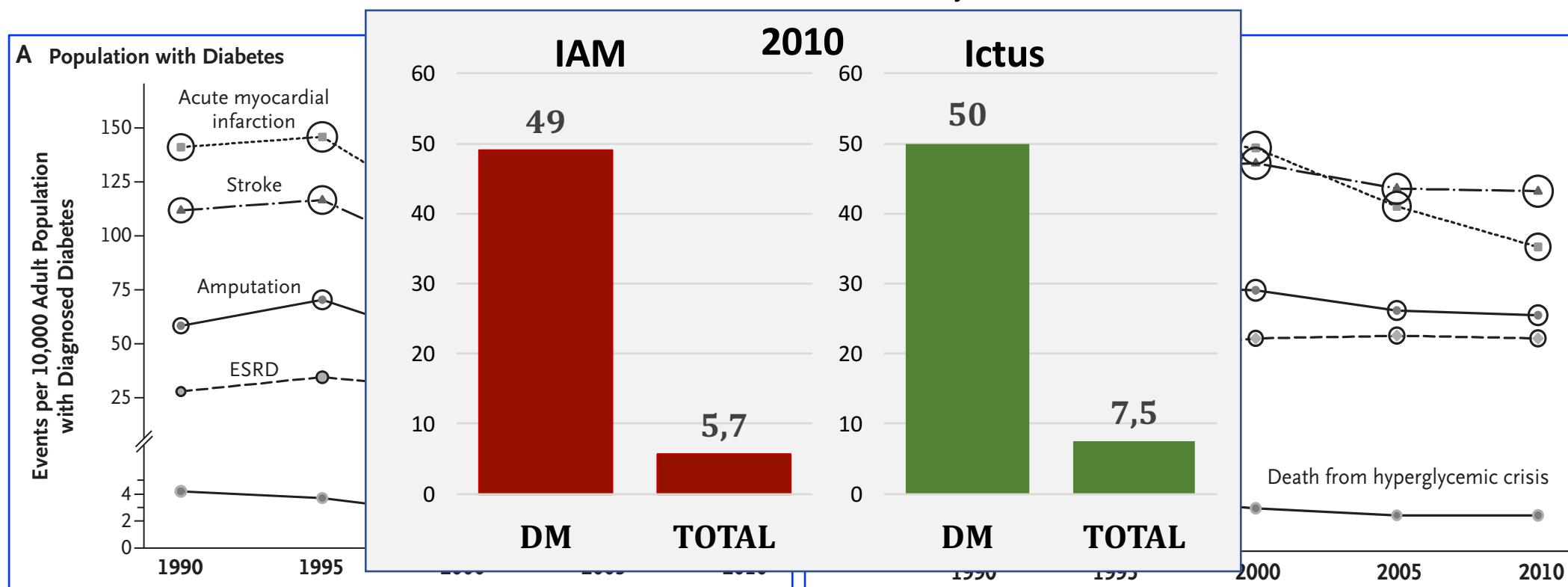
Trends in death and hospitalization for cardiovascular disease in T1DM and T2DM

Figure 1. Major Cardiovascular Outcomes in Patients with Type 1 Diabetes and Matched Controls.

Figure 2. Major Cardiovascular Outcomes in Patients with Type 2 Diabetes and Matched Controls.

Raswhani et al. N Engl J Med 2017; 376:1407-1418

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Riesgo cardiovascular en la Diabetes

Alto

| Excepción DMT1 <40 años y sin FRCV acompañantes |

Muy alto

FRCV

Lesión órgano diana

IRC

Placas o calcificación

~~**Extremo**~~

| ECV activa |
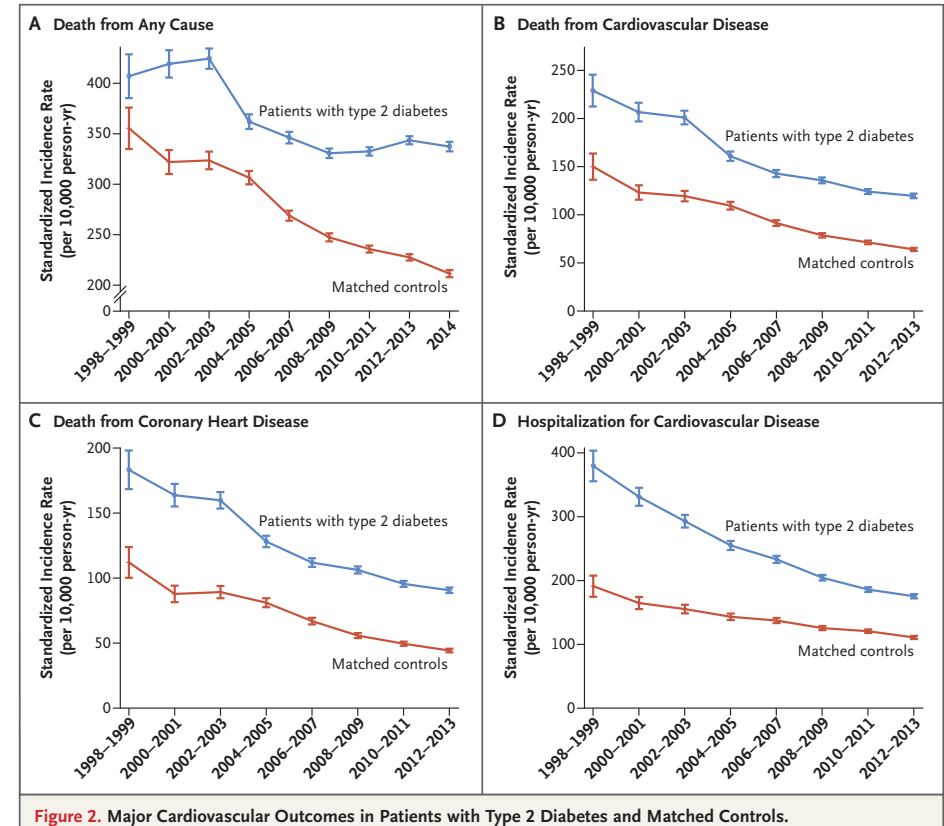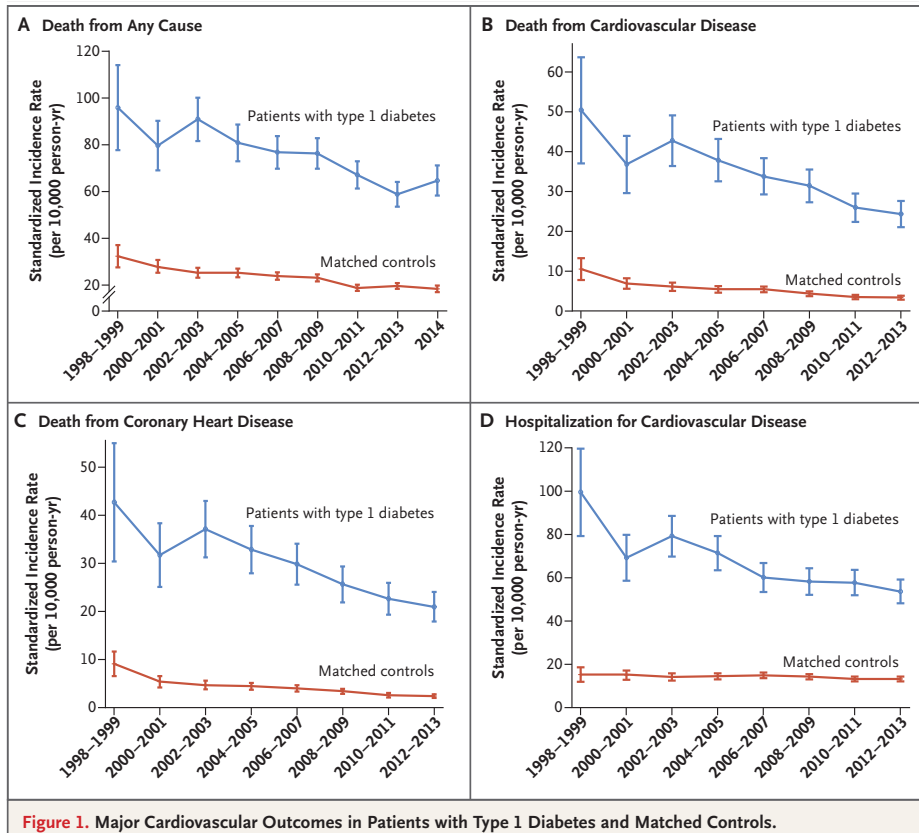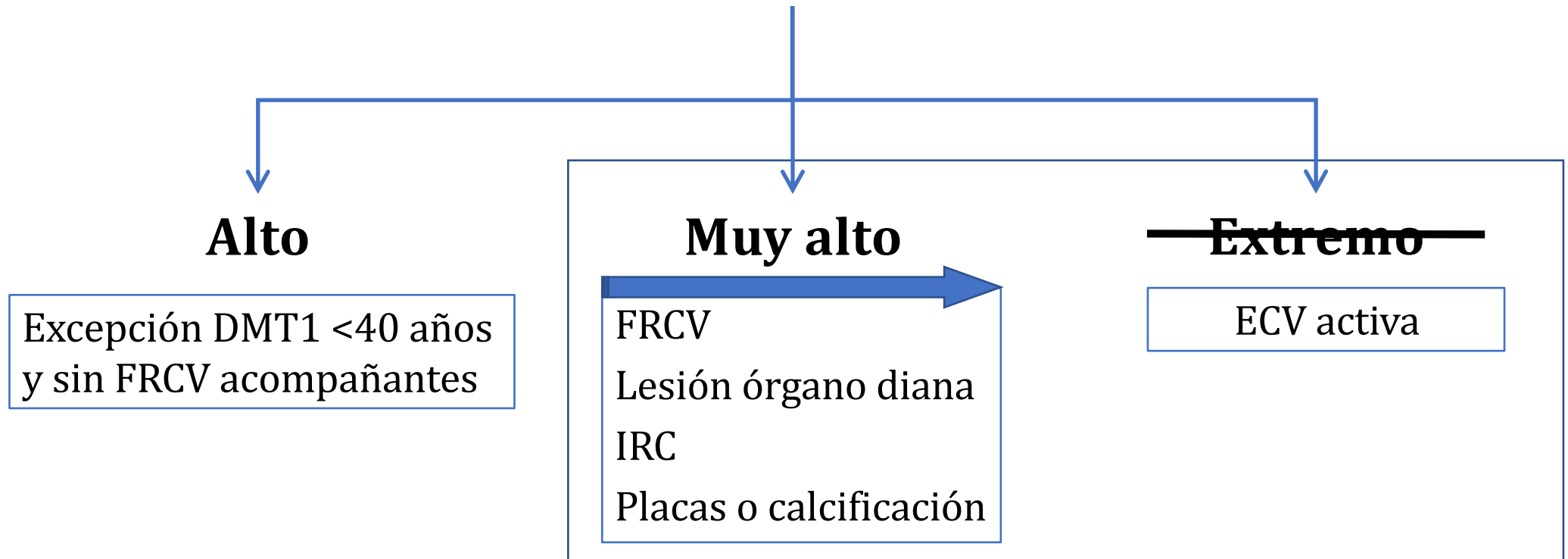
✓ *ESC/EAS Guidelines. Eur Heart J. 2016; 37:2999-3058*
✓ *ADA. Diabetes Care 2017; 40(Suppl. 1):S75–S87 | DOI: 10.2337/dc17-S012*
✓ *AACE 2017 Guidelines. Endocrine Practice. 2017. DOI:10.4158/EP171764.GL*
✓ *AACE/ACE Consensus T2DM. Endocrine Practice. 2017. doi: 10.4158/EP161682.CS*

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Riesgo cardiovascular en la diabetes
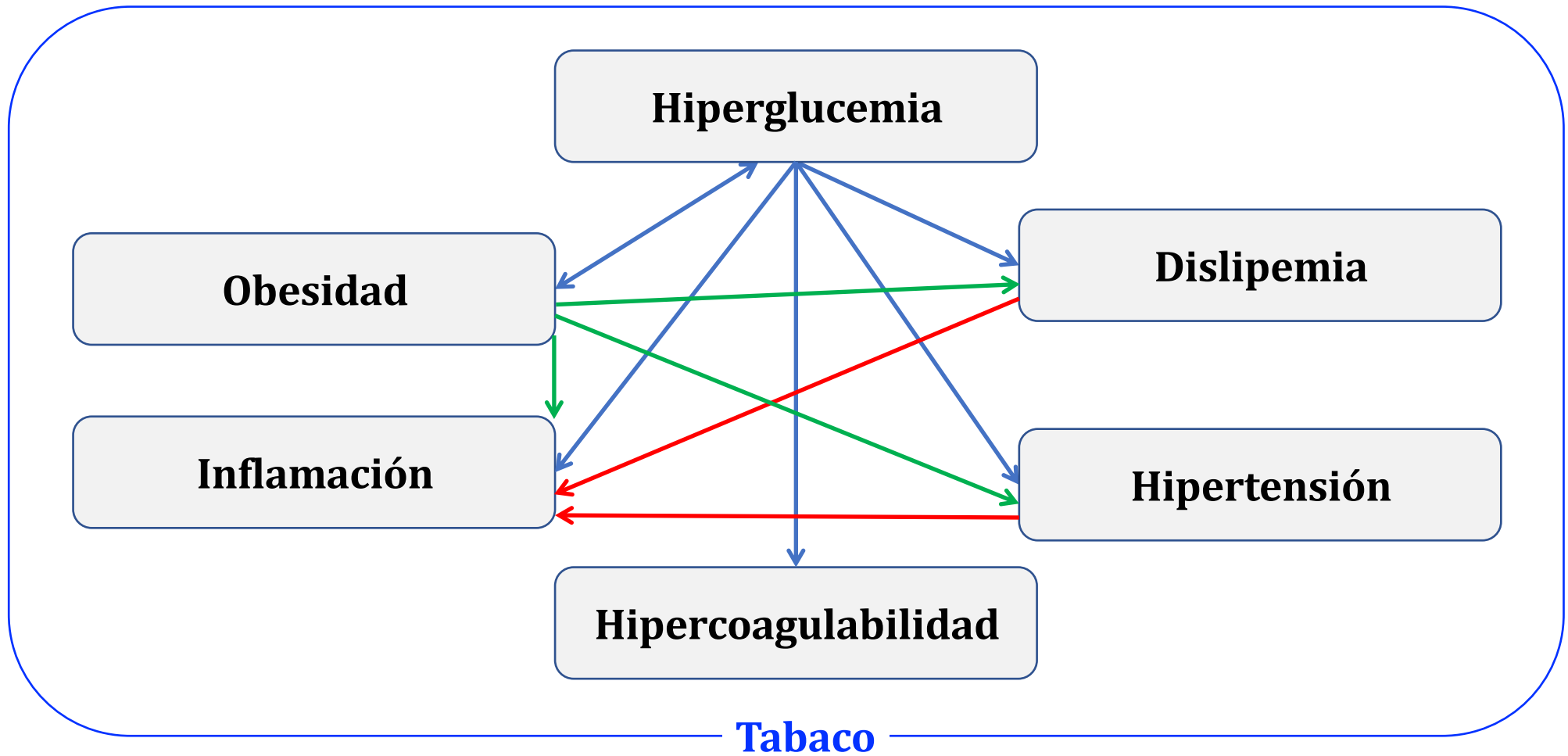
Riesgo absoluto de IAM
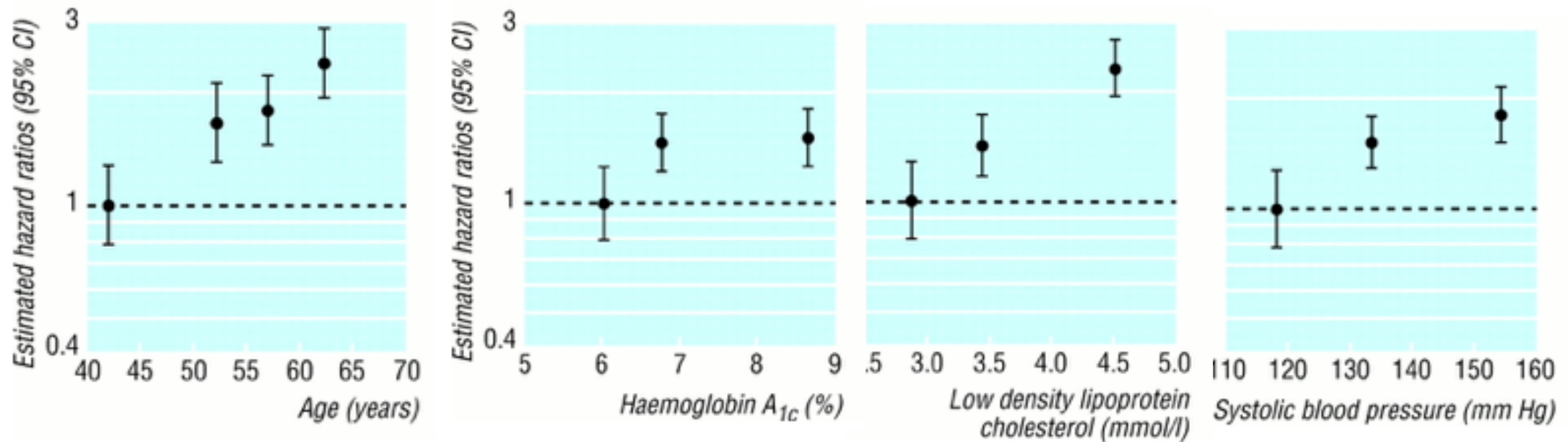
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Intensidad de un FRCV

Riesgo de complicación CV (eje vertical)

Intensidad del FR (eje horizontal)

Factor A

Factor 2A

Tiempo de permanencia de un FRCV

Riesgo de complicación CV (eje vertical)

Tiempo de evolución (eje horizontal)

Factor A

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Tiempo de permanencia de un FRCV

Riesgo de complicación CV

Factor A

Factor A modificado

Tiempo de evolución
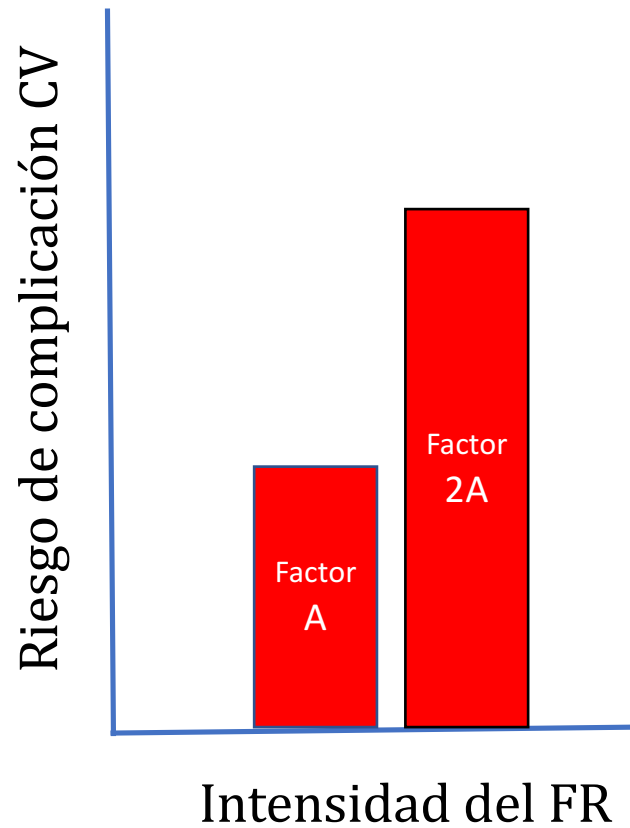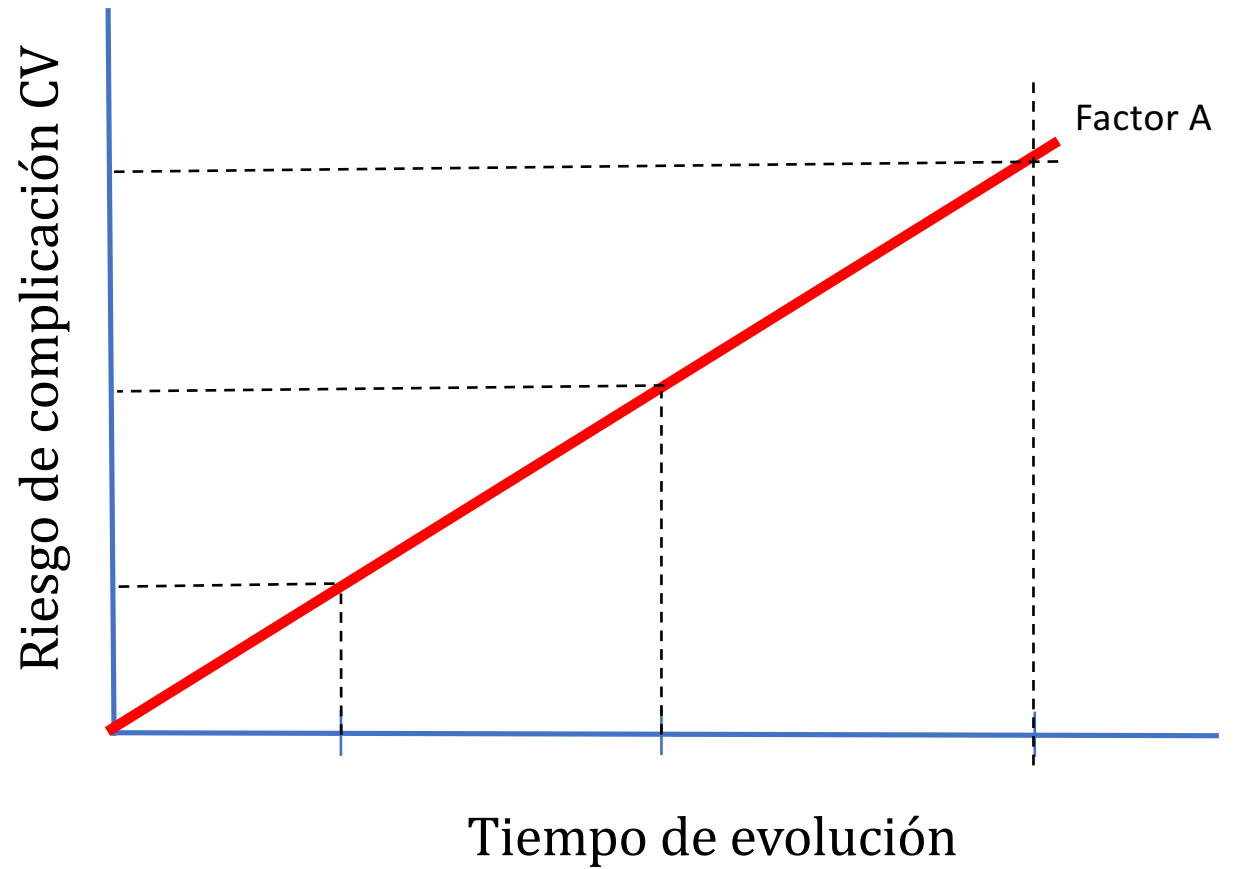
JF Ascaso HCU-UV
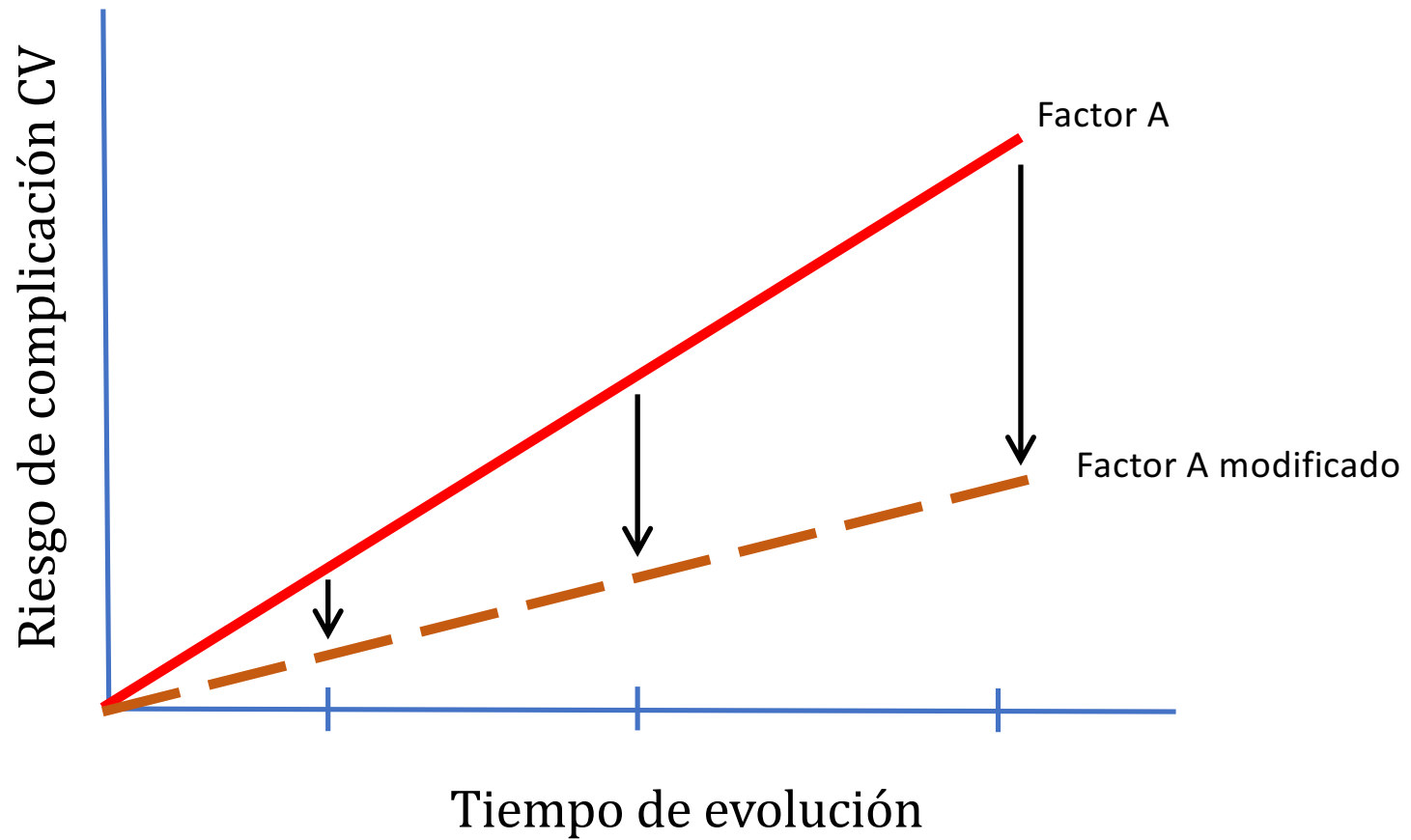
Cholesterol Treatment Trialists' Collaboration regression lines by duration of statin therapy.
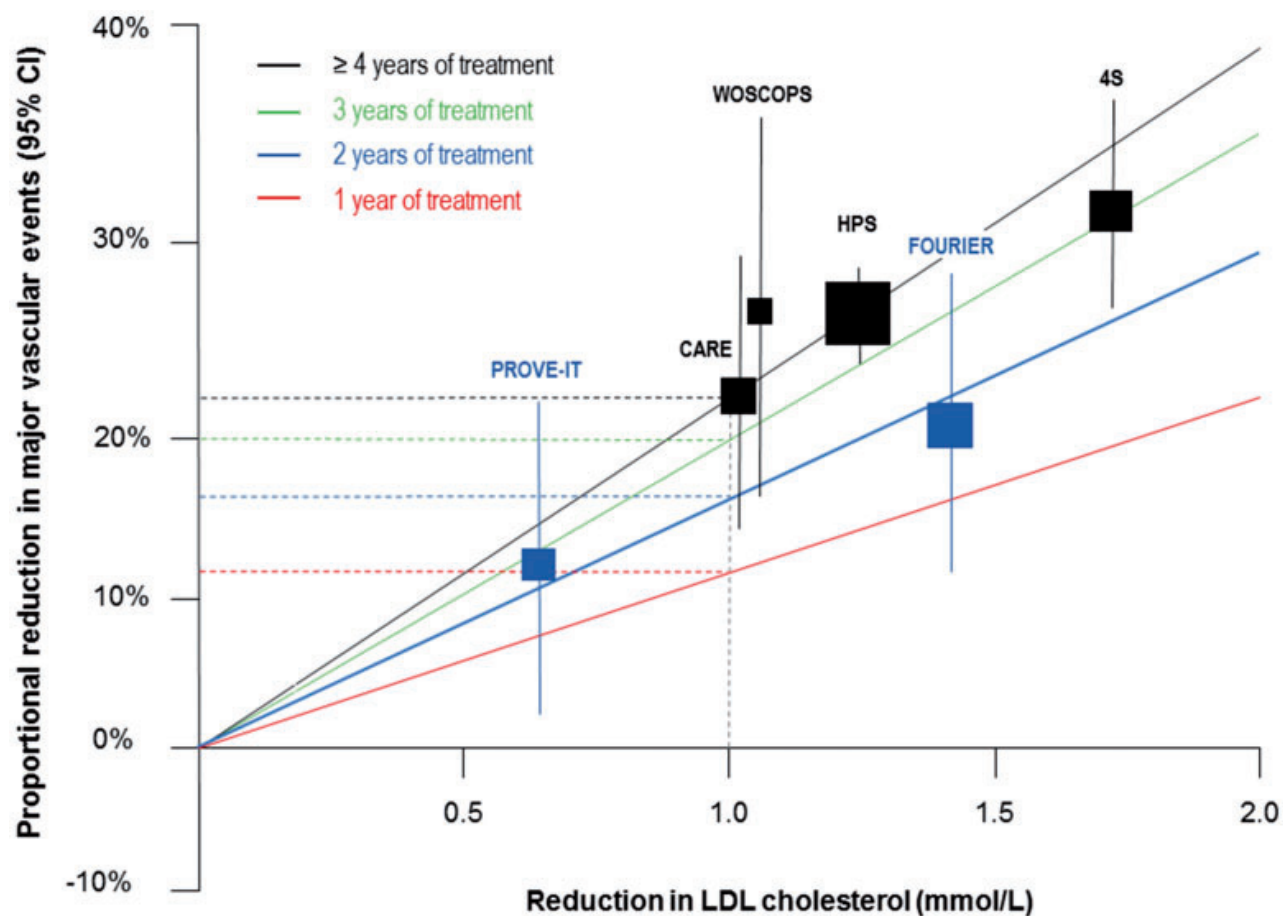
Cardiovascular (CV) risk factors associated with premature versus (vs) late-onset coronary artery disease (CAD).

Data from 15,381 consecutive patients (mean age, 62.3 ± 11.7 years; female, 33.8%) hospitalized with CAD

	Group 1 (n = 5725)	Group 2 (n = 9656)	P-value
Conventional risk factors			
Dyslipidemia (%)	92.7	91.8	0.04
Arterial hypertension (%)	71.4	87.0	<0.001
Current smoker (%)	31.5	9.4	<0.001
Former smoker (%)	48.7	40.0	<0.001
Family history (%)	43.6	26.5	<0.001
Diabetes mellitus (%)	23.5	30.1	<0.001

Group 1
mean age, 50.5 ± 7.2 years
males <55 years and females <65 years

Group 2
mean age, 69.4 ± 7.4 years)
males aged >55 years and females >65 years

Family history of CAD and Dyslipidemia
Cigarette smoking
were dominant risk factors in the younger group.

Arterial hypertension
Diabetes
were dominant risk factors in the older group.

Reibis et al. Vascular Health and Risk Management 2012:8 473–481

Composite Endpoint: CV Death, Nonfatal MI, CABG, PCI, Nonfatal Stroke, Amputation, or Surgery for PAD: STENO-2b

Objetivos:
CT <175 mg/dL
PA <130/80 mmHg
HbA1c <6,5%

P=0.007

Hazard ratio = 0.47 (95% CI, 0.24–0.73; P=0.008)

Conventional Therapy

53%

Intensive Therapy

Primary Composite Endpoint (%)

Months of Follow-up
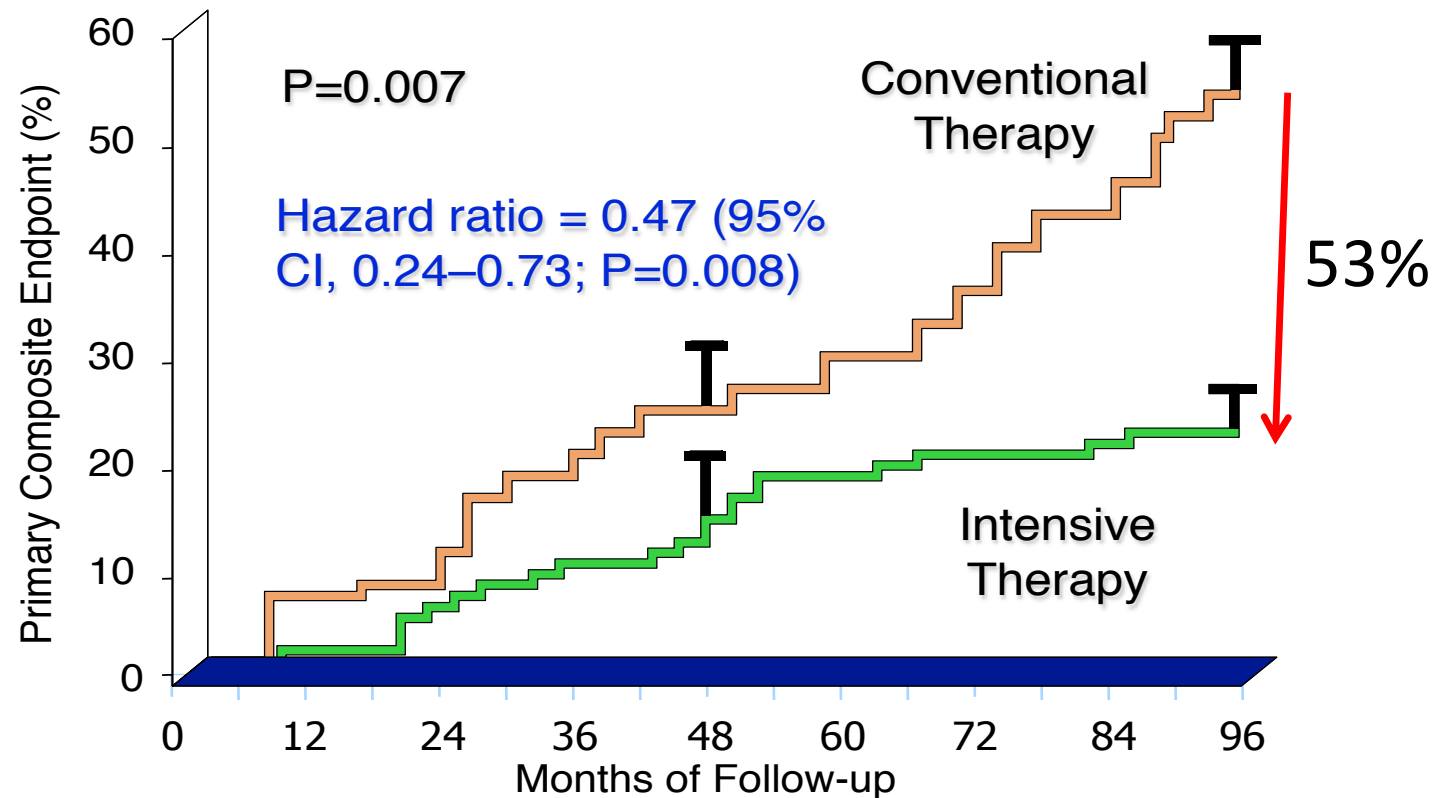
Gæde P et al. N Engl J Med 2003;348:383-393.

Steno-2: Effect of a multifactorial intervention on Mortality and Macrovascular Complications

Gaede P et al. NEJM 2003;248:383-93

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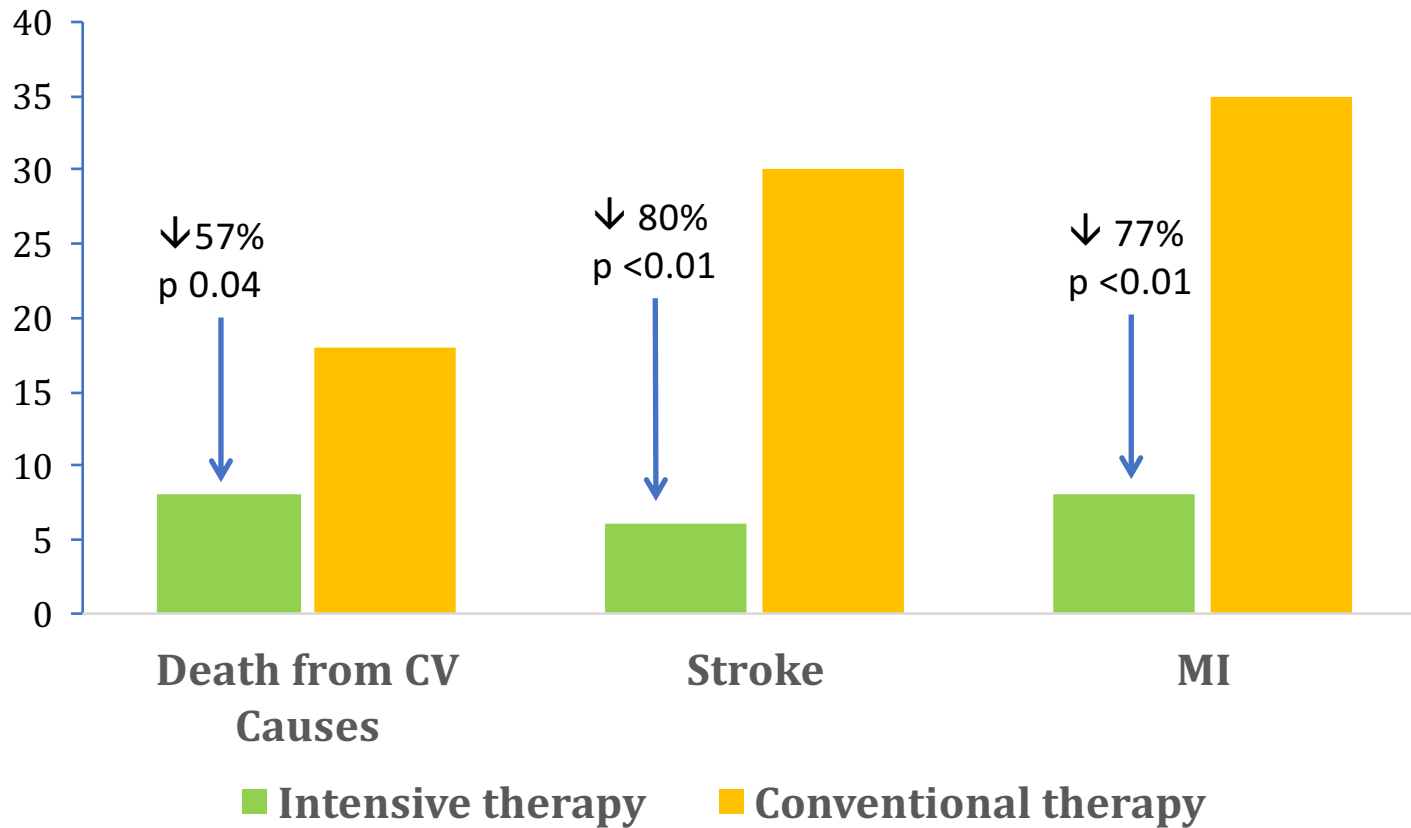
Cumulative mortality and incidence of the composite cardiovascular or death endpoint

intensive-therapy group ———
conventional-therapy group - - - - -

Left panel — y-axis: Cumulative mortality (%); x-axis: Years since randomisation

Number at risk

Intensive	80	76	66	58	54	43
Conventional	80	78	65	45	34	24

Right panel — y-axis: Death or CVD event (%); x-axis: Years since randomisation

Number at risk

Intensive	80	66	56	49	41	31
Conventional	80	61	40	27	18	13

21 years follow-up on the Steno-2 randomised trial

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Incident rate per 1,000 person-years of first cardiovascular disease hospitalization
adjusted for age, sex, and duration of diabetes.

Control: SBP <130 mmHg; LDL-C <100 mg/dL y HbA1c < 7 %

Reducción 66%

Rate per 1,000 person-years

None In Control (n=3,796)	18.2
Only A1C in Contro (n=2,784)	16.9
Only SBP in Control (n=2,390)	11.1
Only LDL in Control (n=4,788)	9.6
A1C/SBP in Control (n=1,965)	10.3
A1C/LDL in Control (n=3,834)	10.9
SBP/LDL in Control (n=3,485)	6.1
All 3 in Control (n=3,594)	7.2

Nichols et al. J Gen Intern Med 2013;28(5):691–7

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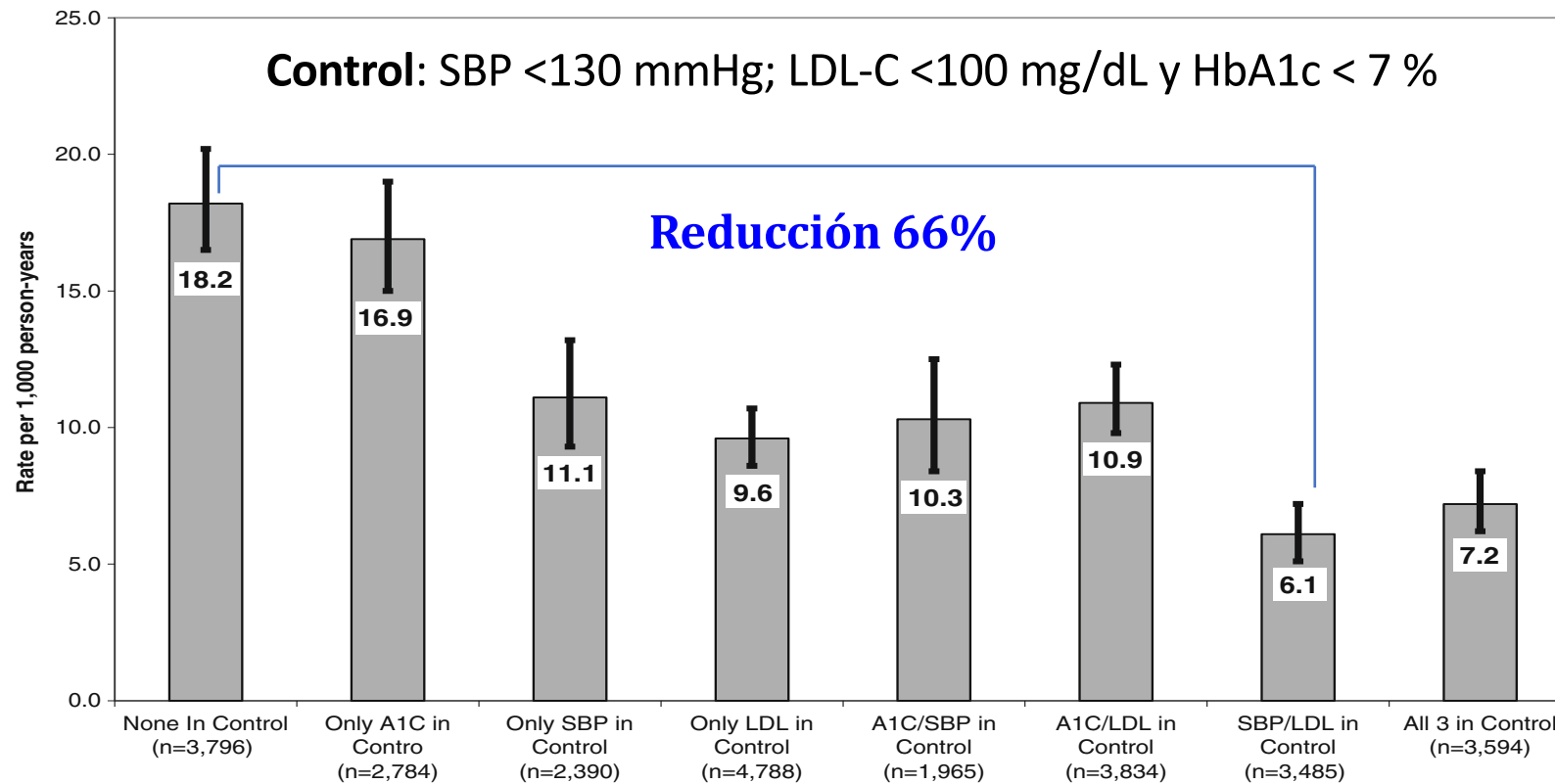
Descenso de la HbA1c en DM2 y beneficios en RCV

Trial	Years	n (at start)	All cause mortality	HR (95% CI)	P	Incident cardiovascular events	HR (95% CI)	P
Multifactorial intervention trial								
Steno-2[1]	21	160		0.55 (0.36–0.83)	0.005		0.55 (0.39–0.77)	<0.001
Steno-2[4]	13.3	160		0.54 (0.32–0.89)	0.02		0.41 (0.25–0.67)	<0.001
Glucose lowering intervention trials								
UKPDS (SU-insulin group)[3]	10	3,867		0.87 (0.79–0.96)	0.007		0.85 (0.74–0.97)	0.01
UKPDS (metform group)[3]	10	753		0.73 (0.59–0.89)	0.002		0.67 (0.51–0.89)	0.005
ACCORDION[5]	9	8,601		1.01 (0.92–1.10)	0.91		0.94 (0.88–1.00)	0.05
ADVANCE-ON[6]	10	8,494		1.00 (0.92–1.08)	0.91		1.00 (0.92–1.08)	0.93
VADT[7]	11.8	1,791		1.05 (0.89–1.25)	0.54		0.83 (0.70–0.99)	0.04
DCCT/EDIC[2]	30	1,441		0.67 (0.45–0.99)	0.048		0.70 (0.52–0.93)	0.016

0.00 0.50 1.00 1.50 2.00
Favours intensive — Hazard ratio (95% CI) — Favours conventional

0.00 0.50 1.00 1.50 2.00
Favours intensive — Hazard ratio (95% CI) — Favours conventional

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All-cause mortality based on different levels of HbA1c at baseline and during follow-up
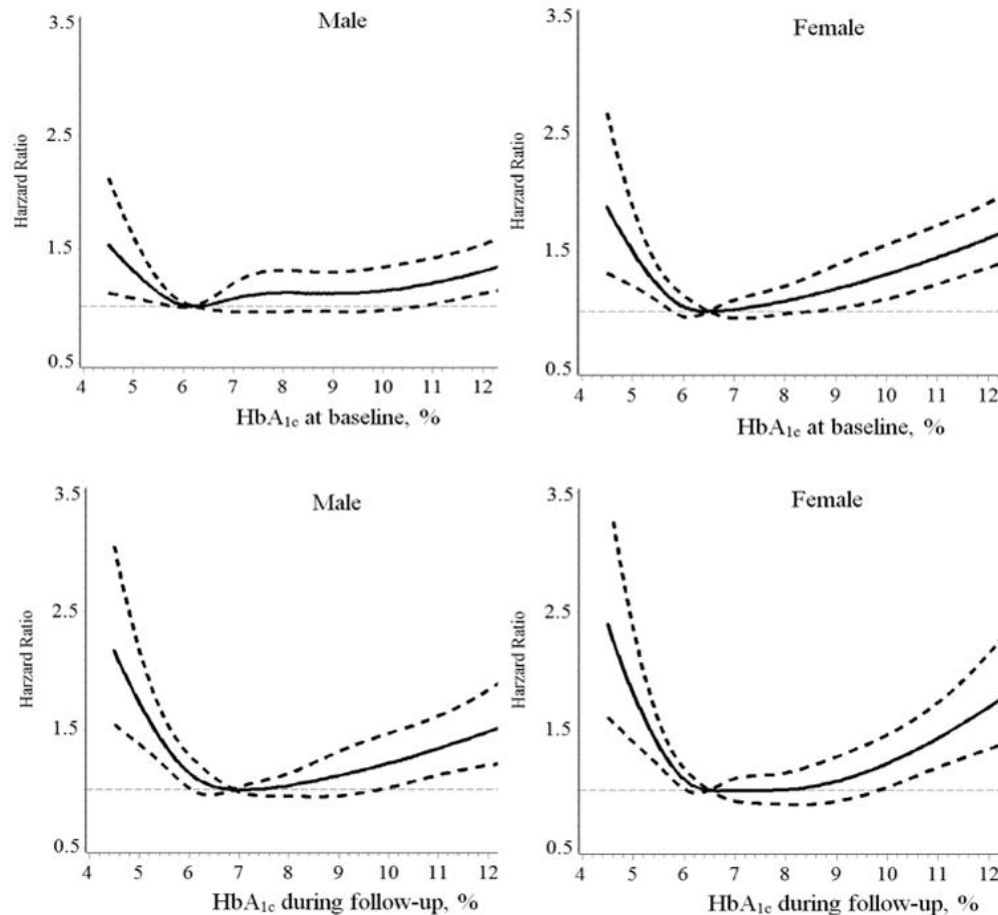
Adjusted for age, race, types of insurance, income, smoking, body mass index, low-density lipoprotein cholesterol, systolic blood pressure, glomerular filtration rate, use of antihypertensive drugs, glucose-lowering agents, and cholesterol-lowering agents.

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National Trends in US Hospital Admissions for Hyperglycemia and Hypoglucemia among Medicare Beneficiares, 1999-201
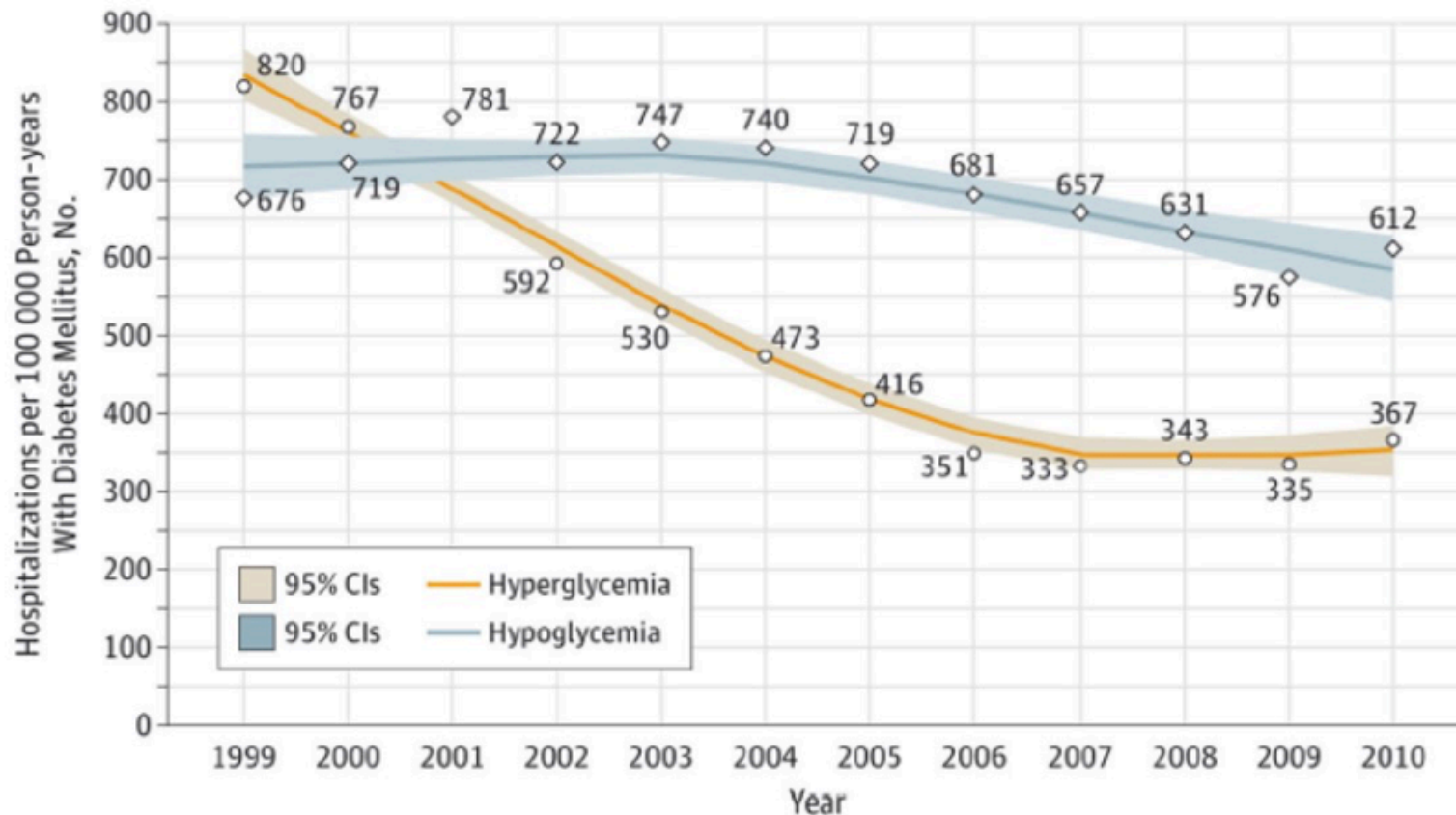
Lipsaka KJ et al. JAMA 2014; 174:1116-24

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Diabetes y ECV

Cambios a estilo de vida saludable. ↓ peso (si exceso)

Control de:

Dislipemia

Objetivo LDL-C
Riesgo CV
- Alto   <100 mg/dL
- Muy alto   <70 mg/dL
- Extremo   <55 mg/dL

Hipertensión

Objetivo cifras de PA:
<140/90 mm Hg
<130/80 mm Hg

Hiperglucemia (HbA1c)

Otros FRCV

Tabaco, obesidad, estrés, etc.

Objetivo HbA1c:
6-7%
7-8%, en personas mayores, dependientes y frágiles, ECV activa, ictus, hipoglucemias de repetición, etc

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Diabetes

Malas noticias

La ECV es frecuente, grave, cara y alta mortalidad.

Buenas noticias

La ECV es prevenible, con un tratamiento correcto, puede reducirse un 70-80%.

Podemos conseguir supervivencia similar al no diabético

Esperanza de vida calculada al nacer

años

■ Hombres ● Mujeres

Nuevos hipoglucemiantes 2015

Penicilina (primer antibiótico, descubierto por **Alexander Fleming** en 1928, uso en tratamiento en 1930)

Lovastatina 1979

Captopril 1974

Insulina 1921
Biguanidas 1922
Sulfonilureas 1942

Mujeres: 36, 42, 43, 53, 54, 64, 72, 75, 79, 81, 83, 85, 86, 88, 90, 93, 95

Hombres: 34, 41, 41, 49, 48, 60, 67, 69, 74, 74, 77, 79, 80, 82, 85, 87, 90

Esperanza de vida 2015		
	Hombres	**Mujeres**
CV	79,8	84,9
España	79,4	85,4

1901 1911 1921 1931 1941 1951 1961 1971 1981 1991 2001 2011 2015 2021 2031 2041 2051

Modificado del INE

IN **Instituto Nacional de Estadística**

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