SEMI
SOCIEDAD ESPAÑOLA DE MEDICINA INTERNA
LA VISIÓN GLOBAL DE LA PERSONA ENFERMA

FEMI
FUNDACIÓN ESPAÑOLA DE MEDICINA INTERNA

Grupo de Riesgo Vascular

Mesa redonda:

Actualización: ¿qué ha habido de NUEVO en 2010?

VII Reunión de Riesgo Vascular

Palacio de Congresos. Valencia
5 y 6 de Mayo 2011

Estratificación de Riesgo

José I. Cuende

Servicio de Medicina Interna. Complejo Asistencial de Palencia


PROBLEMAS
SOLUCIONES
QUÉ NUEVAS PUBLICACIONES TENEMOS EN 2010

¿QUÉ PROBLEMAS TIENEN LAS TABLAS?

1.- Múltiples tablas y ecuaciones.

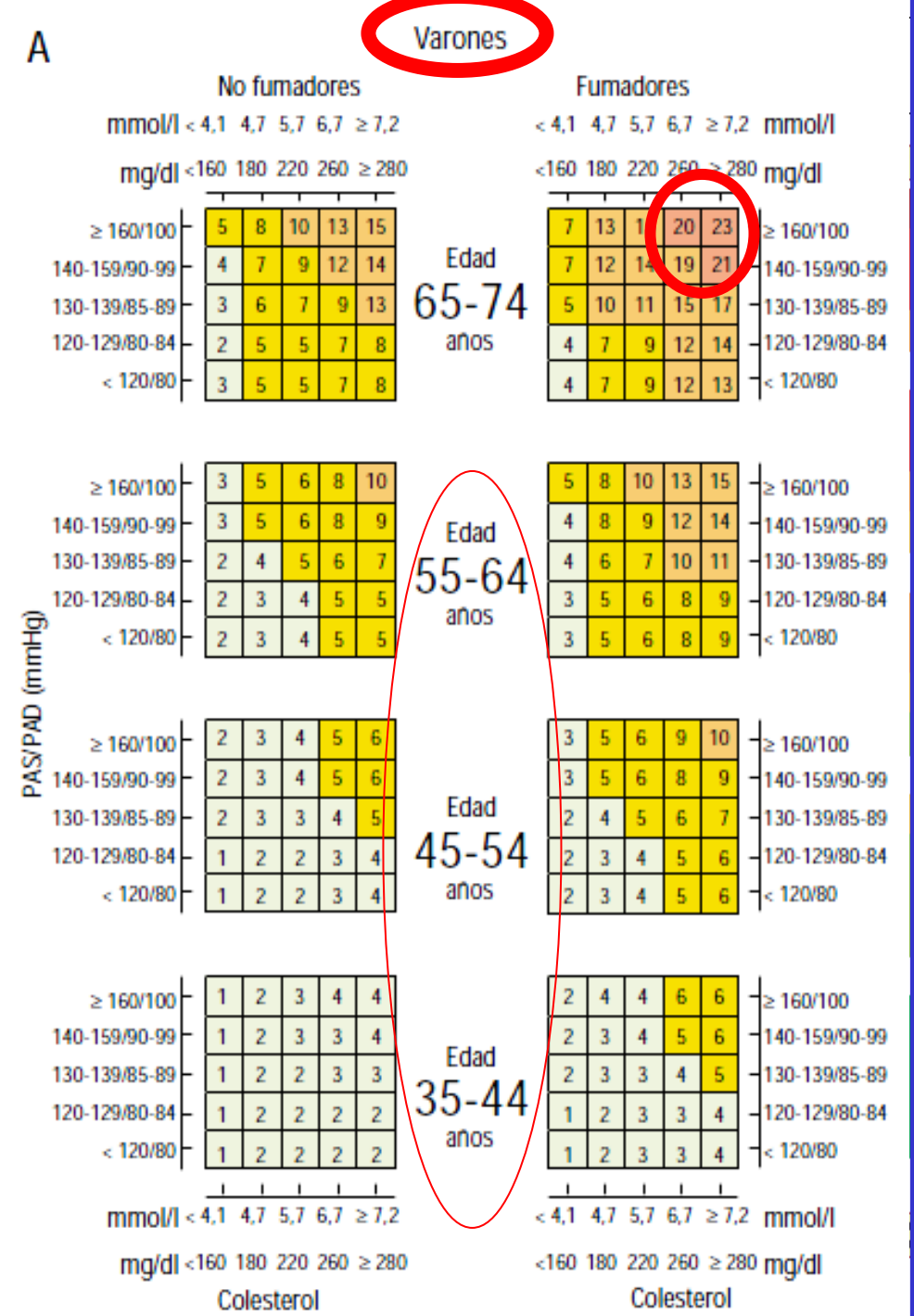
2.- Sensibilidad y especificidad no óptimas.

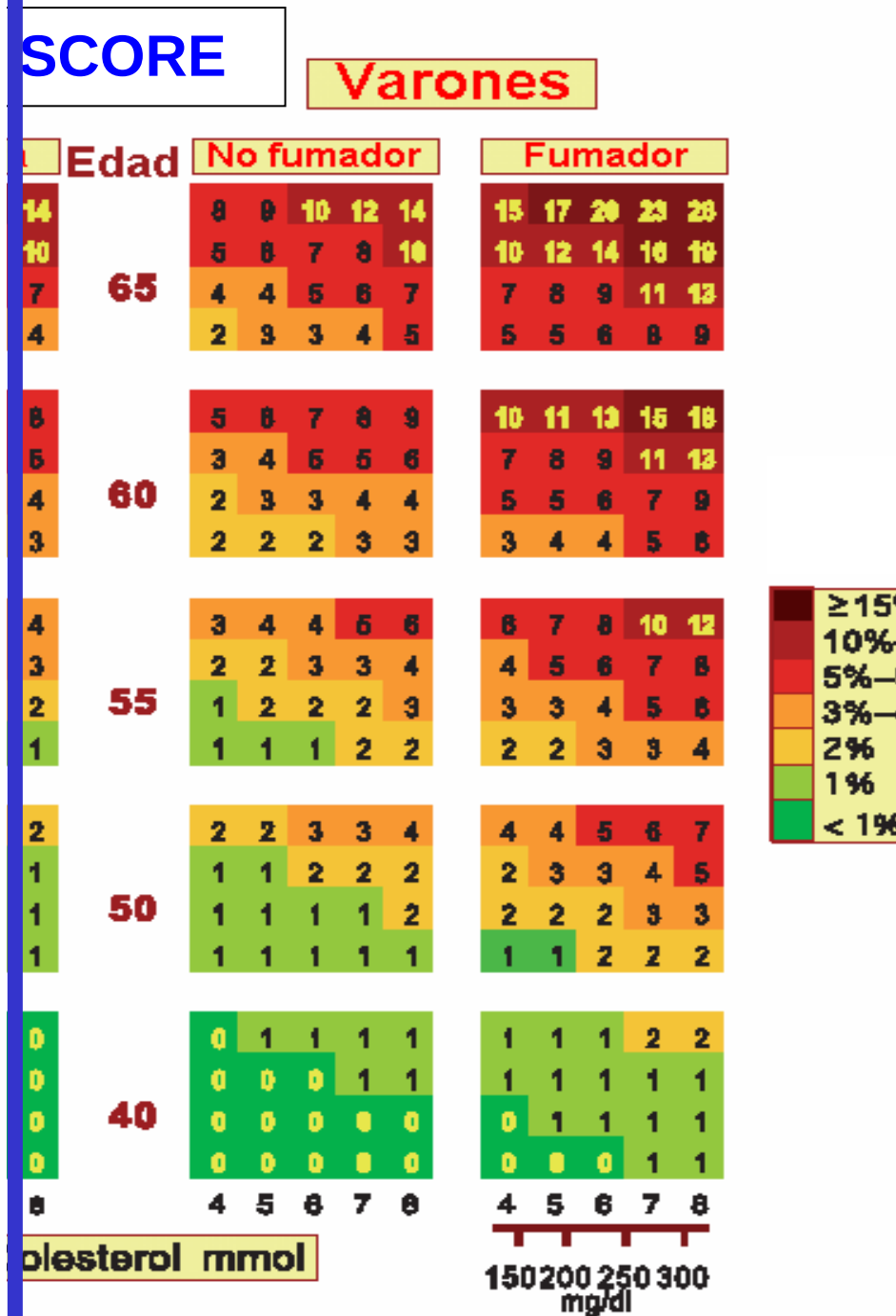
3.- Baja concordancia entre las tablas.

4.- Poca utilización por los facultativos.

5.- “El riesgo absoluto es relativo.” La edad es el principal predictor.

6.- Dudosa comprensión por el paciente.


A
Varones
No fumadores
Fumadores
mmol/l < 4,1 4,7 5,7 6,7 ≥ 7,2
mg/dl <160 180 220 260 ≥ 280
≥ 160/100
140-159/90-99
130-139/85-89
120-129/80-84
< 120/80
Edad 65-74 años
Edad 55-64 años
Edad 45-54 años
Edad 35-44 años
PAS/PAD (mmHg)
Colesterol


SCORE
Varones
Edad
No fumador
Fumador
65
60
55
50
40
4 5 6 7 8
olesterol mmol
150 200 250 300
mg/dl
≥15
10%
5%–
3%–
2%
1%
< 1%

Barriers to cardiovascular disease risk scoring and

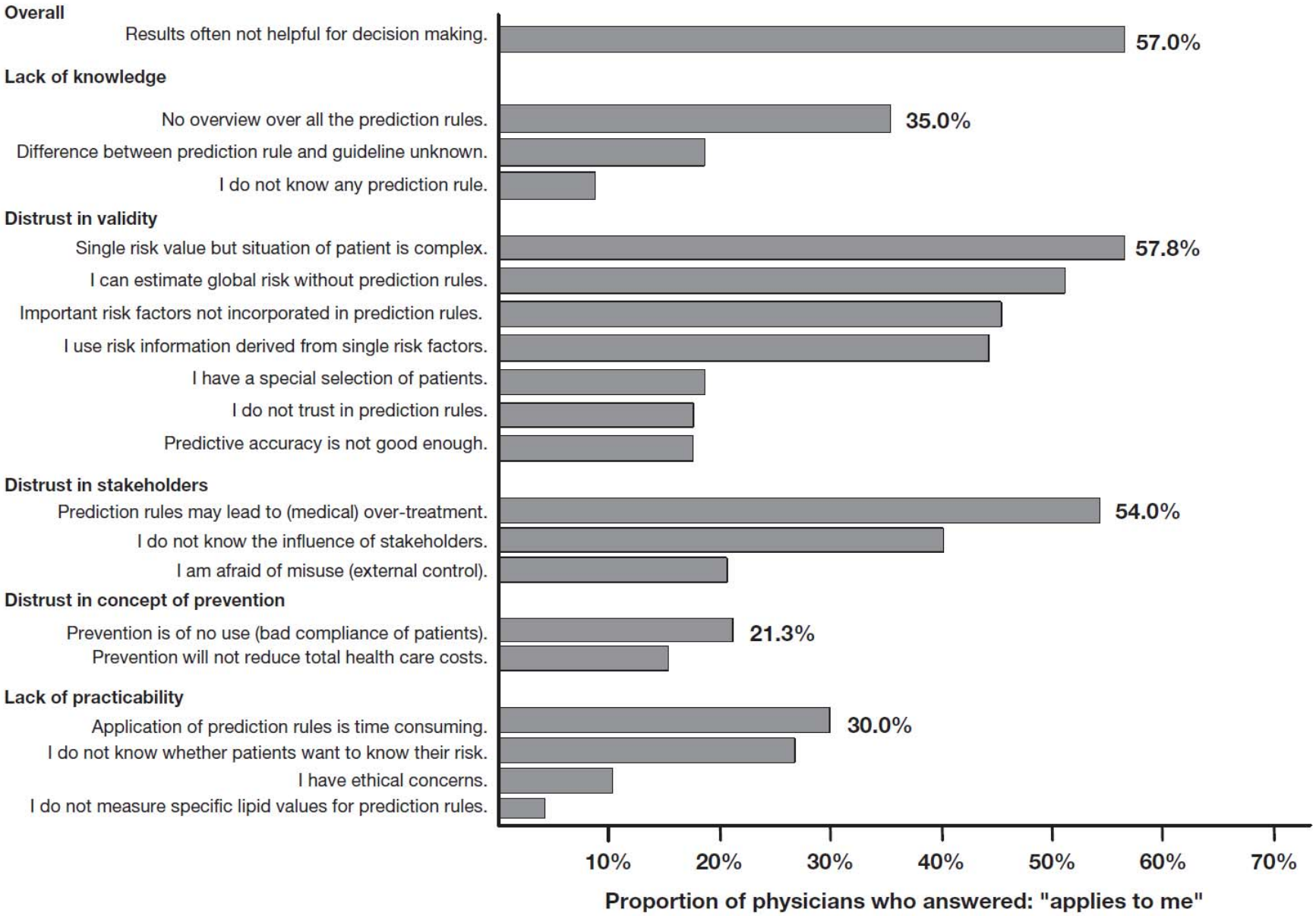


Figure 3. Barriers to implementation of cardiovascular prediction rules. Adapted with permission from Eichler *et al.*[80]

DUDOSA COMPRENSIÓN POR EL PACIENTE.

-No está claro qué entienden los pacientes respecto al riesgo absoluto, respondiendo más a las emociones que a los datos:

TOLERANCIA SEGÚN DISTINTAS DIMENSIONES DEL RIESGO		
MENOR	TOLERANCIA	MAYOR
FRECUENTE		INFRECUENTE
GRAVE		LEVE
INMEDIATO		RETRASADO
INVOLUNTARIO		VOLUNTARIO
PRESCINDIBLE		IMPRESCINDIBLE
NO CONTROLABLE		CONTROLABLE
NUEVO		FAMILIAR
CATÁSTROFE		DIARIO
HUMANO		NATURAL

DUDOSA COMPRENSIÓN POR EL PACIENTE.

-“Su riesgo cardiovascular global fatal es del 6 % y eso es alto, es mucho” (SCORE).

-”¿Y eso que significa?”

-”Que tiene 6 de 100 posibilidades de morir en los próximos 10 años.”

-”Hmmm... O sea, que tengo 94 de 100 de seguir vivo. ¡Fantástico, voy a seguir fumando y practicando el sillón-ball!”

¿QUÉ SOLUCIONES TENEMOS? (I)

-La sensibilidad, la especificidad y la concordancia entre escalas mejorarán en la medida en que se puedan desarrollar escalas más precisas, mediante:

Solución 1.- Introducción de nuevas variables

Solución 2.- Nuevos modelos de cálculo

¿QUÉ SOLUCIONES TENEMOS? (II)

-La edad es el principal determinante del riesgo absoluto.

Estos resultados pueden llevar a infratratar a los jóvenes y sobretratar a los mayores.

Solución 3.- Se están buscando alternativas como el riesgo relativo, los percentiles de riesgo y la edad vascular, para adaptar el riesgo a las distintas edades.

¿QUÉ SOLUCIONES TENEMOS? (III)

-La interpretación del riesgo absoluto por parte del paciente es muy subjetiva. Depende del nivel cultural del paciente y de su experiencia vital.

Solución 4.- Se deben presentar los resultados de forma más asequible para el paciente.

SOLUCIÓN 1. INCLUSIÓN DE NUEVOS FACTORES O MARCADORES DE RIESGO.

-Biomarcadores (metabólicos, inflamatorios, coagulación...)

-Marcadores genéticos

-Psicosociales

Biomarcadores

Annals of Internal Medicine

REVIEW

Narrative Review: Assessment of C-Reactive Protein in Risk Prediction for Cardiovascular Disease

Donald M. Lloyd-Jones, MD, ScM; Kiang Liu, PhD; Lu Tian, ScD; and Philip Greenland, MD

2006

JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 1, 2004 VOL. 350 NO. 14

2004

C-Reactive Protein and Other Circulating Markers of Inflammation in the Prediction of Coronary Heart Dis

John Danesh, M.B., Ch.B., D.Phil., Jeremy G. Wheeler, M.Sc., Gideon M. Hirschfield, M. Gudny Eiriksdottir, M.Sc., Ann Rumley, Ph.D., Gordon D.O. Lowe, M.D., F.R.C.P., Ma and Vilmundur Gudnason, M.D., Ph.D.

The NEW ENGLAND JOURNAL of MEDICINE

2006

ORIGINAL ARTICLE

Multiple Biomarkers for the Prediction of First Major Cardiovascular Events and Death

Thomas J. Wang, M.D., Philimon Gona, Ph.D., Martin G. Larson, Sc.D.,

Annals of Internal Medicine

ARTICLE

The Effect of Including C-Reactive Protein in Cardiovascular Risk Prediction Models for Women

2006

Nancy R. Cook, ScD; Julie E. Buring, ScD; and Paul M. Ridker, MD

Contribution of 30 Biomarkers to 10-Year Cardiovascular Risk Estimation in 2 Population Cohorts

The MONICA, Risk, Genetics, Archiving, and Monograph (MORGAM) Biomarker Project

Stefan Blankenberg, MD; Tanja Zeller, PhD; Olli Saarela, MSc; Aki S. Havulinna, MSc; Frank Kee, MD; Hugh Tunstall-Pedoe, MD; Kari Kuulasmaa, PhD; John Yarnell, MD; Renate B. Schnabel, MD; Philipp S. Wild, MD; Thomas F. Münzel, MD; Karl J. Lackner, MD; Laurence Tiret, PhD; Alun Evans, MD*; Veikko Salomaa, MD*; for the MORGAM Project

Circulation 2010;121:2388-2397; originally published online May 24, 2010;
DOI: 10.1161/CIRCULATIONAHA.109.901413

Methods and Results—Thirty novel biomarkers from different pathophysiological pathways were evaluated in 7915 men and women of the FINRISK97 population cohort with 538 incident cardiovascular events at 10 years (fatal or nonfatal coronary or stroke events), from which a biomarker score was developed and then validated in the 2551 men of the Belfast Prospective Epidemiological Study of Myocardial Infarction (PRIME) cohort (260 events).

Lipid-related markers

- Apolipoprotein A-I, g/L
- Apolipoprotein B100, g/L
- Apolipoprotein B100/apolipoprotein A-I ratio
- Phospholipase A_2 activity, nmol/min per mL
- Phospholipase A_2 mass, ng/mL
- Paraoxonase-1, nmol/min per mL

Markers of vascular function and neurohumoral activity

- BNP, pg/mL
- C-terminal pro-vasopressin, pmol/L
- C-terminal pro-endothelin-1, pmol/L
- Mid regional pro-adrenomedullin, nmol/L
- Mid regional pro-atrial natriuretic peptide, pmol/L
- NT-proBNP, pg/mL
- Tissue inhibitor metalloproteinase-1, ng/mL

Inflammatory markers

- C-reactive protein, mg/L
- Interleukin-18, pg/mL
- Interleukin-1 receptor antagonist, pg/mL
- Neopterin, nmol/L

Metabolic markers

- Adiponectin, ng/mL
- Ferritin, ng/mL
- Glucose, mmol/L
- Insulin, μU/mL
- Leptin, pg/mL

Renal function markers

- Creatinine, mg/dL
- Cystatin C, mg/L

Markers of oxidative stress and antioxidants

- Active vitamin B_{12}, pmol/L
- Homocysteine, μmol/L
- Myeloperoxidase, ng/mL
- Vitamin B_{12}, pg/mL

Necrosis markers

- Creatine kinase—MB, ng/mL
- Troponin I, n (%) $\geq$0.032 ng/mL

Angiogenesis marker

- Placental growth factor, pg/mL

Coagulation marker

- D-dimer, ng/mL

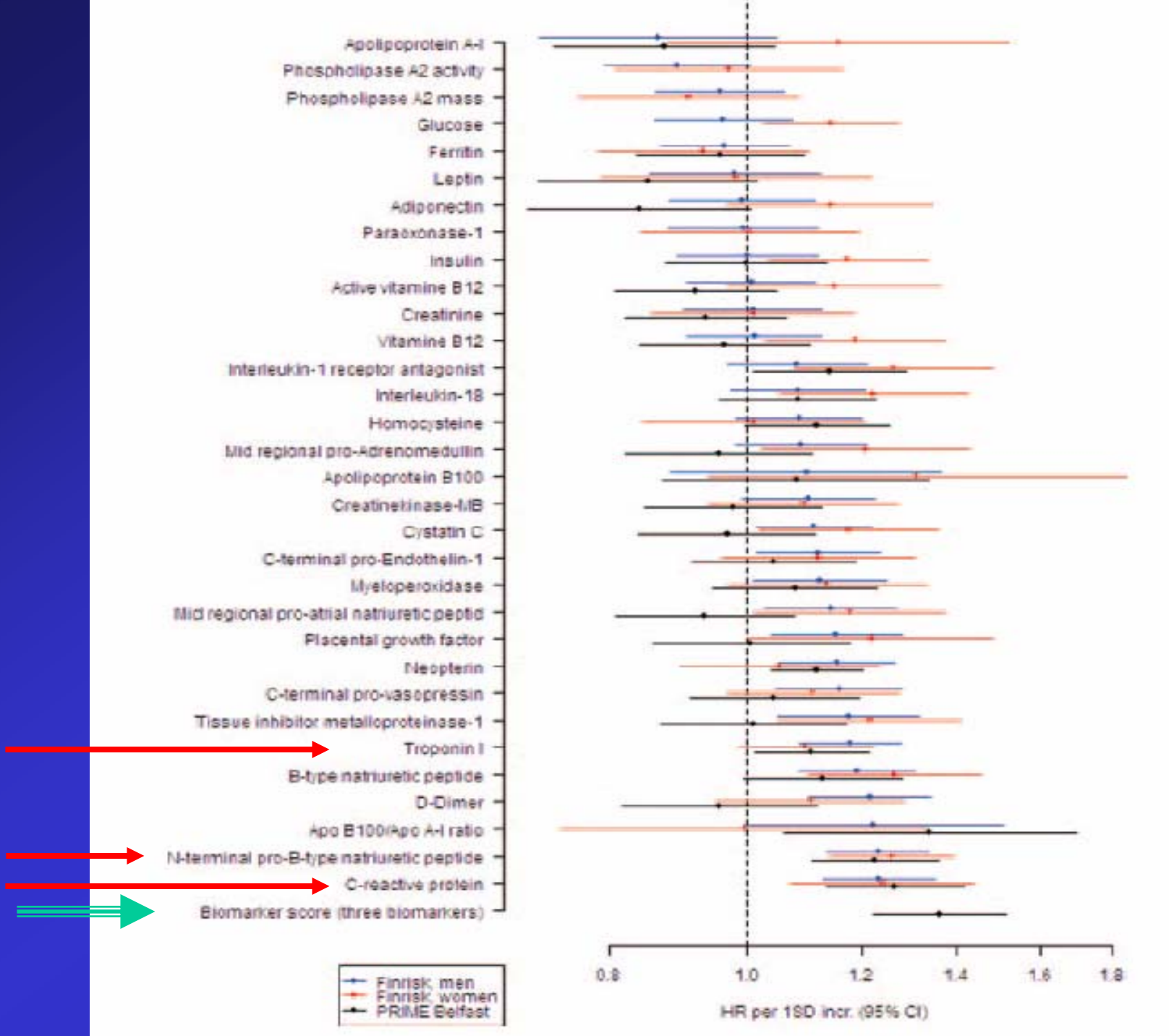

Apolipoprotein A-I
Phospholipase A2 activity
Phospholipase A2 mass
Glucose
Ferritin
Leptin
Adiponectin
Paraoxonase-1
Insulin
Active vitamine B12
Creatinine
Vitamine B12
Interleukin-1 receptor antagonist
Interleukin-18
Homocysteine
Mid regional pro-Adrenomedullin
Apolipoprotein B100
Creatinekinase-MB
Cystatin C
C-terminal pro-Endothelin-1
Myeloperoxidase
Mid regional pro-atrial natriuretic peptid
Placental growth factor
Neopterin
C-terminal pro-vasopressin
Tissue inhibitor metalloproteinase-1
Troponin I
B-type natriuretic peptide
D-Dimer
Apo B100/Apo A-I ratio
N-terminal pro-B-type natriuretic peptide
C-reactive protein
Biomarker score (three biomarkers)
Finrisk men
Finrisk women
PRIME Belfast
0.8
1.0
1.2
1.4
1.6
1.8
HR per 1SD incr. (95% CI)

Table 2. Discrimination Criteria

Biomarkers Added to Baseline Model	c-Index			IDI	
	New	Difference	*P*	Value	*P*
FINRISK 97 men*					
C-reactive protein	0.8199	0.0031	0.1123	0.0100	0.0008
NT-proBNP	0.8200	0.0032	0.0716	0.0157	0.0002
Troponin I	0.6697	0.0039	0.2039	0.0019	0.1610

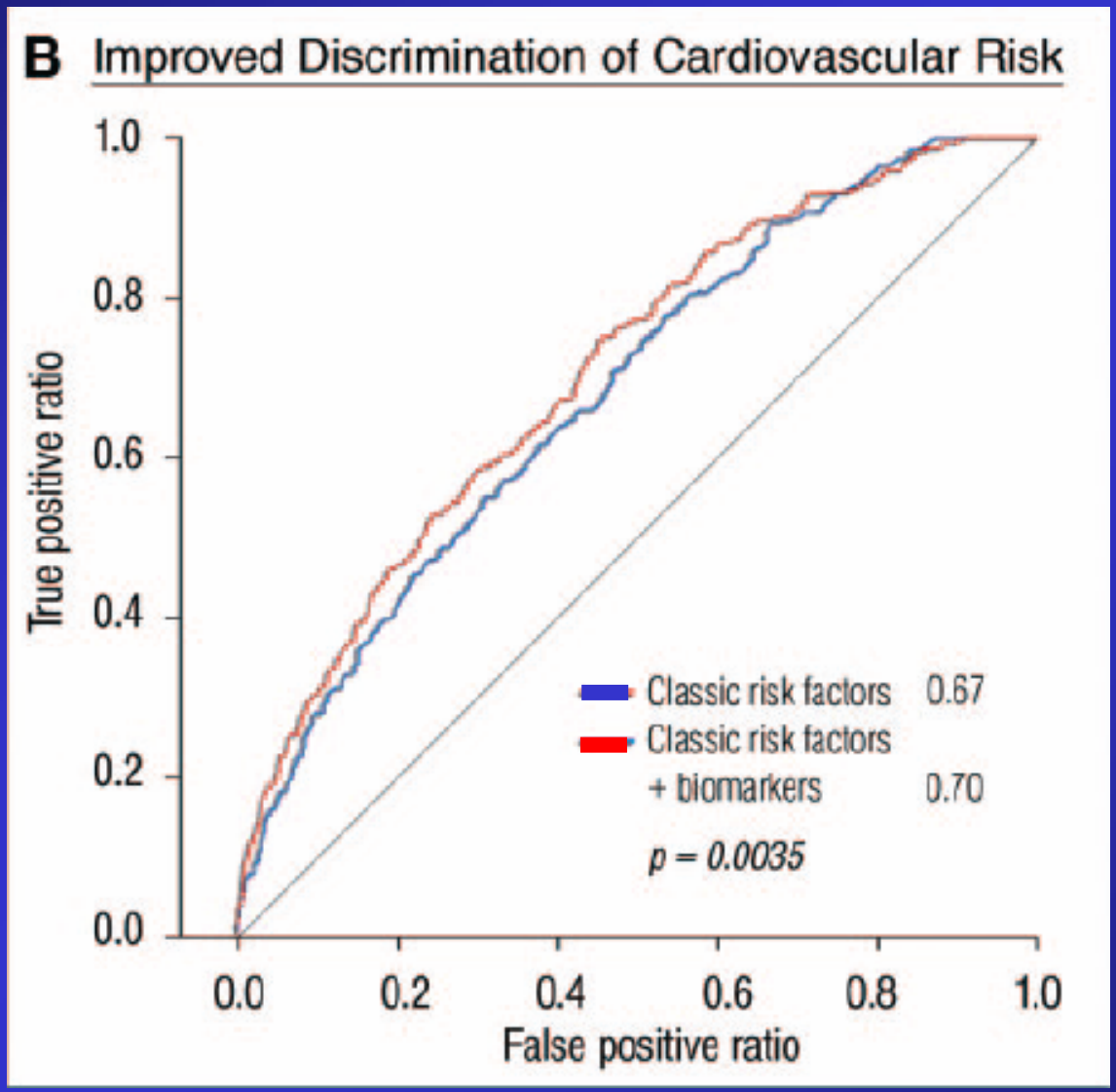
*c-Index baseline=0.8168; †c-Index baseline=0.8757; ‡c-Index baseline=0.6658.

Table 3. HRs of Future Cardiovascular Events According to Optimal Cut Points

Biomarker	FINRISK 97 Men		Belfast PRIME Men		
	Data-Derived Optimal Cut Point*	Percentile	Percentile	HR (95% CI)	*P*
C-reactive protein	6.81 mg/L	93.1	91.0	1.948 (1.392–2.726)	0.0004
NT-proBNP	187 pg/mL	94.5	97.2	2.289 (1.393–3.759)	0.0011
Troponin I	0.008 ng/mL	91.9	97.6	1.870 (1.017–3.438)	0.0440
Score: $0.38468 \times \text{C-reactive protein}^{1/3} + 0.11005 \times \text{NT-proBNP}^{1/3} + 1.27006 \times \text{troponin I}^{1/3}$	1.35686	92.5	95.7	2.346 (1.564–3.520)	<0.0001

CI indicates confidence interval.
*Cut point giving the best discrimination by the IDI criterion when added into fully adjusted baseline model.

. No single biomarker consistently improved risk estimation in FINRISK97 men and FINRISK97 women and the Belfast PRIME Men cohort after allowing for confounding factors;


B Improved Discrimination of Cardiovascular Risk
True positive ratio
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
False positive ratio
Classic risk factors 0.67
Classic risk factors
+ biomarkers 0.70
p = 0.0035

RECLASSIFICATION OF RISK

Predicted Risk Without Biomarker Score	Predicted Risk With Biomarker Score				
271 With Events	<5%	5-10%	10-20%	>20%	
<5%	0	0	0	0	
5-10%	2	66	20	2	Up : 43
10-20%	0	20	99	21	Down : 27
>20%	0	0	4	37	

2280 W/O Events	<5%	5-10%	10-20%	>20%	
<5%	152	33	1	0	
5-10%	80	869	101	6	Up : 190
10-20%	0	197	702	49	Down : 300
>20%	0	0	24	66	

Net reclassification 0,11 (SE: 0,03); p=0,0008

Conclusions—The addition of a biomarker score including N-terminal pro-brain natriuretic peptide, C-reactive protein, and sensitive troponin I to a conventional risk model improved 10-year risk estimation for cardiovascular events in 2 middle-aged European populations. Further validation is needed in other populations and age groups. (***Circulation.* 2010;121:2388-2397.**)

Genetic Loci Associated With C-Reactive Protein Levels and Risk of Coronary Heart Disease

Paul Elliott, FRCP
John C. Chambers, PhD
Weihua Zhang, PhD

Context Plasma levels of C-reactive protein (CRP) are independently associated with risk of coronary heart disease, but whether CRP is causally associated with coronary heart disease or merely a marker of underlying atherosclerosis is uncertain.

Conclusion The lack of concordance between the effect on coronary heart disease risk of *CRP* genotypes and CRP levels argues against a causal association of CRP with coronary heart disease.

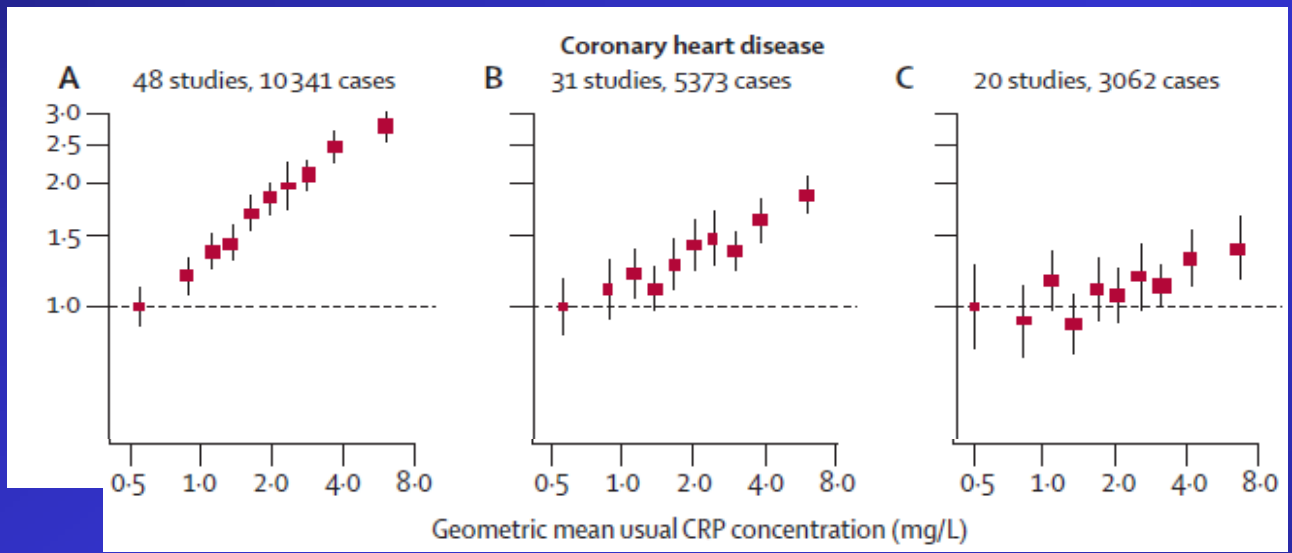
JAMA. 2009;302(1):37-48

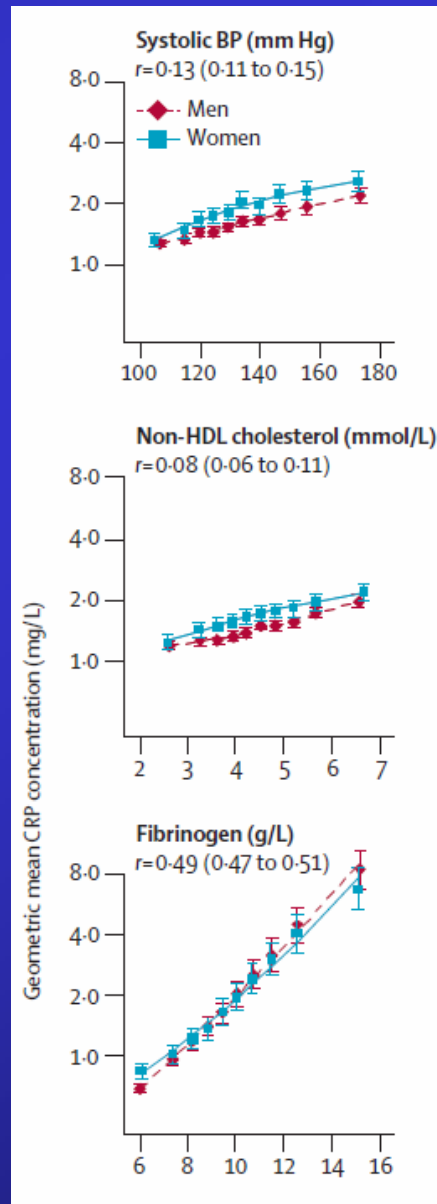
www.jama.com

C-reactive protein concentration and risk of coronary heart disease, stroke, and mortality: an individual participant meta-analysis

Lancet 2010; 375: 132–40

*The Emerging Risk Factors Collaboration**





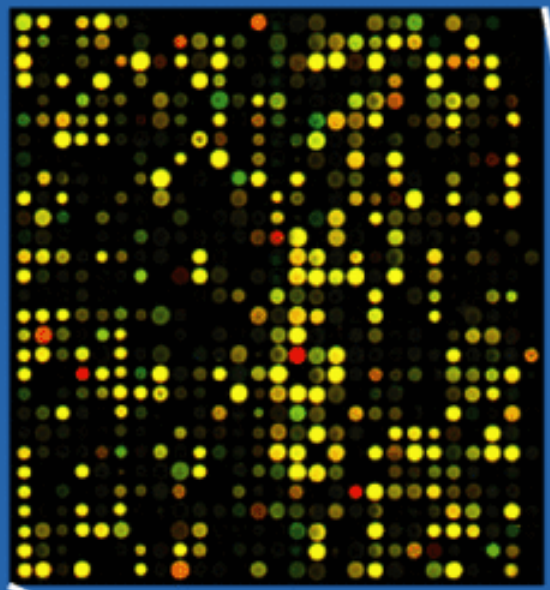
Interpretation CRP concentration has continuous associations with the risk of coronary heart disease, ischaemic stroke, vascular mortality, and death from several cancers and lung disease that are each of broadly similar size. The relevance of CRP to such a range of disorders is unclear. Associations with ischaemic vascular disease depend considerably on conventional risk factors and other markers of inflammation.

Marcadores genéticos

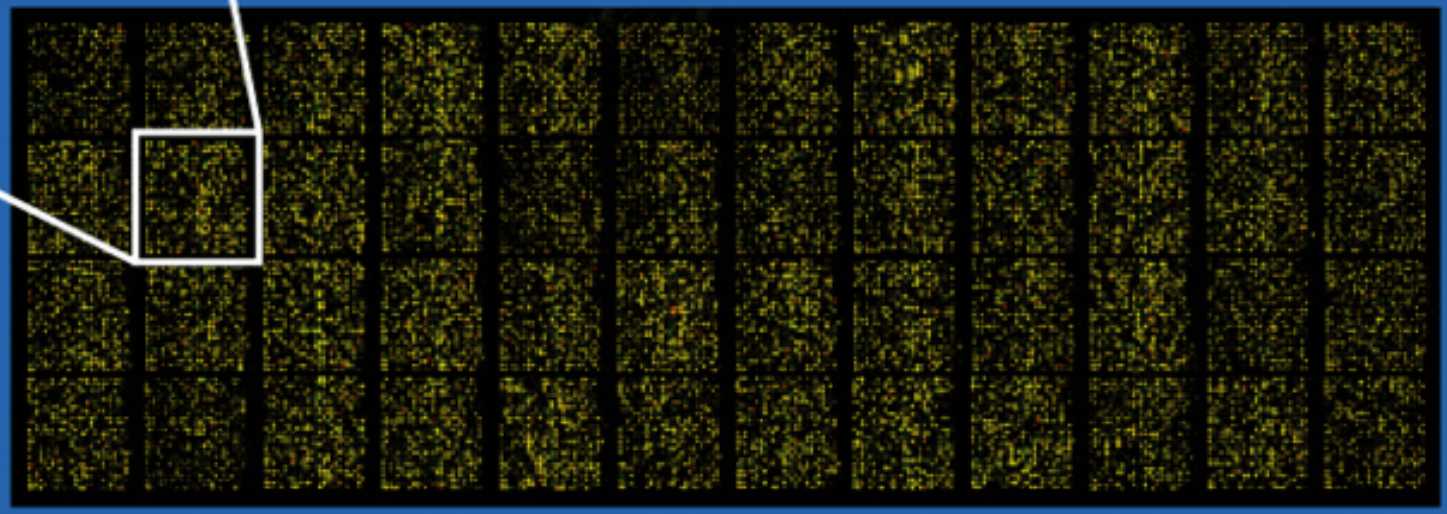
- Estudios clásicos de genes
- GWAS (Genome Wide Association Studies)

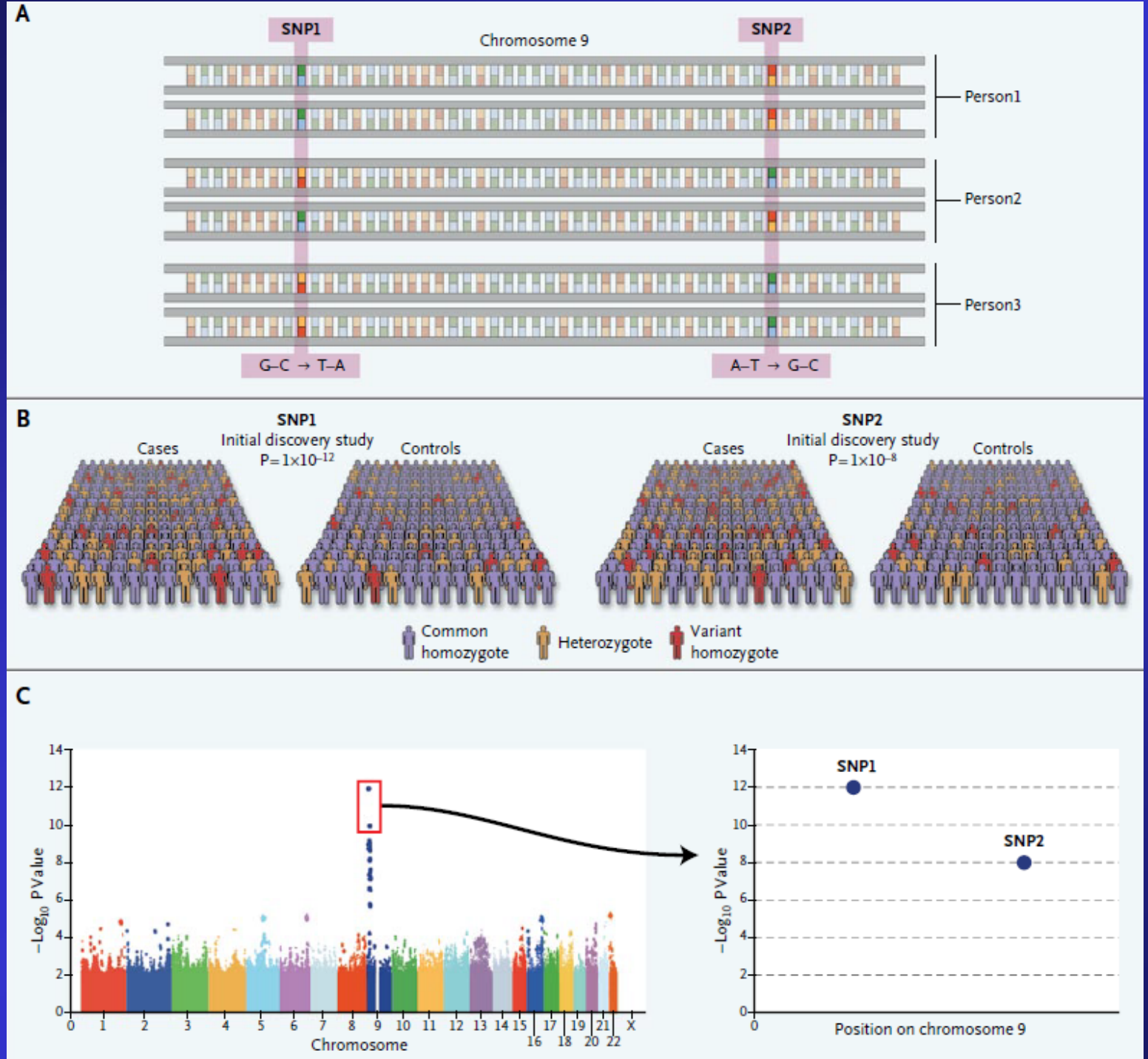
http://www.gwascentral.org
http://hapmap.ncbi.nlm.nih.gov/

N Engl J Med 2010;363:166-76.




AFFYMETRIX
GeneChip®
Human Genome
U133 Plus 2.0
P/N: 520019
Lot #: 4010008
Exp. Date: 05/07/06
For Research Use Only
AFFYMETRIX
GeneChip®
Mouse Genome
430 2.0 Array
P/N: 520029
Lot #: 4015112
Exp. Date: 11/24/06
For Research Use Only




A
SNP1
Chromosome 9
SNP2
Person1
Person2
Person3
G–C → T–A
A–T → G–C
B
SNP1
Initial discovery study
P=1×10–12
Cases
Controls
SNP2
Initial discovery study
P=1×10–8
Cases
Controls
Common homozygote
Heterozygote
Variant homozygote
C
−Log10 PValue
Chromosome
SNP1
SNP2
−Log10 PValue
Position on chromosome 9

Estadísticamente significativo y clínicamente relevante

	SNP+	SNP-	
CASOS: Con enfermedad vascular	30	29970	30000
CONTROLES: sin enfermedad vascular	15	29985	30000

p=0,025

OR=2,001 IC95%=1.0764 a 3.7197

Circ Cardiovasc Genet. 2010 October 1; 3(5): 475–483. doi:10.1161/CIRCGENETICS.109.899443.

Design of the Coronary ARtery DIsease Genome-Wide Replication And Meta-Analysis (CARDIoGRAM) Study:

A Genome-Wide Association Meta-analysis Involving More Than 22 000 Cases and 60 000 Controls

NATURE GENETICS ADVANCE ONLINE PUBLICATION

published online 6 March 2011; doi:10.1038/ng.784

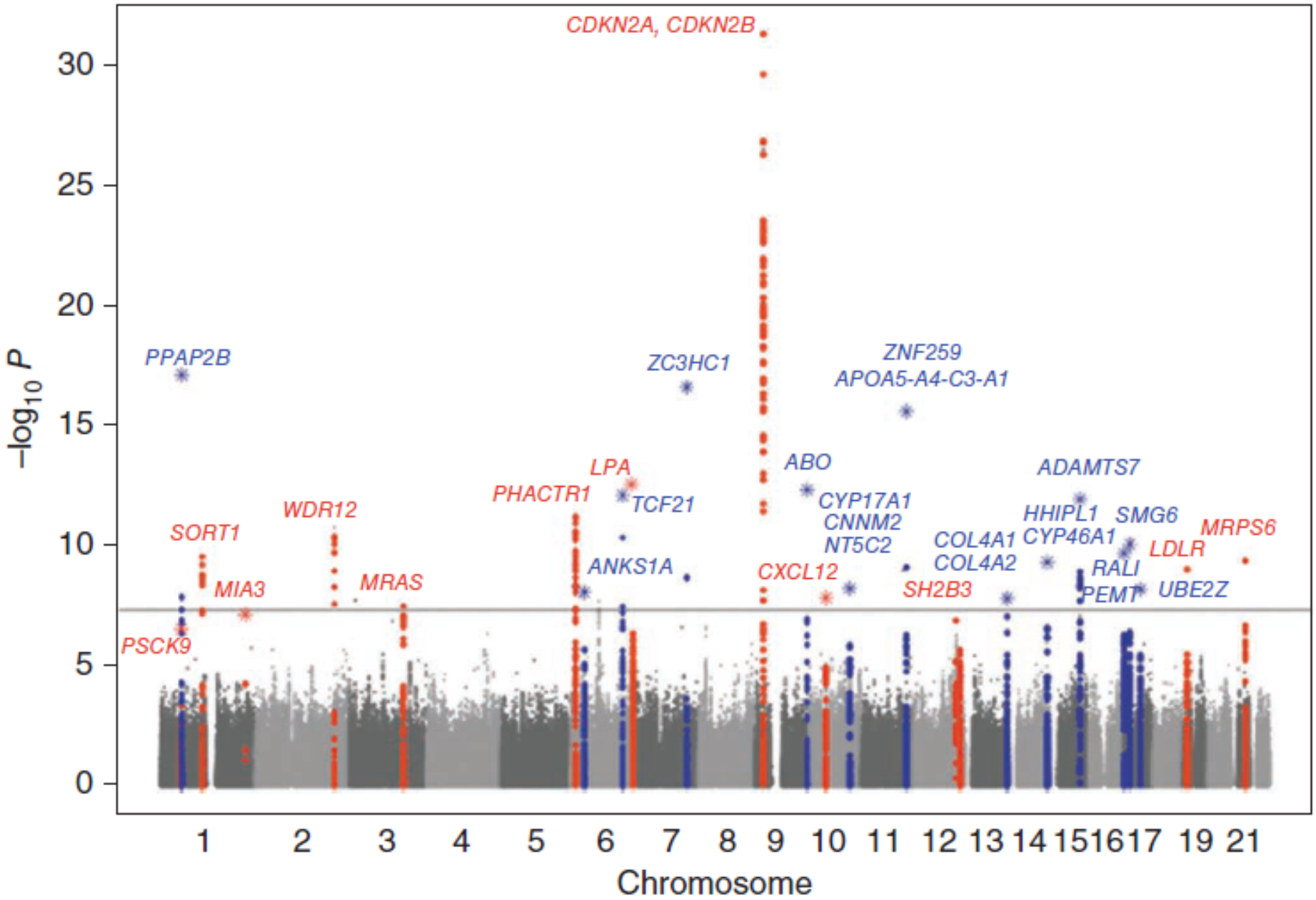
Large-scale association analysis identifies 13 new susceptibility loci for coronary artery disease

-Meta-análisis de 14 GWAS. 22.233 casos y 64.762 controles.

-Identifican 13 nuevos loci.

-3 relacionados con FRCV clásicos.

-5 con posibles efectos pleoitrópicos, con fuerte asociación con otras enfermedades o condiciones.


CDKN2A, CDKN2B
PPAP2B
ZC3HC1
ZNF259
APOA5-A4-C3-A1
LPA
ABO
ADAMTS7
PHACTR1
TCF21
CYP17A1
HHIPL1
SMG6
WDR12
CNNM2
CYP46A1
MRPS6
SORT1
NT5C2
COL4A1
LDLR
ANKS1A
COL4A2
RALI
MIA3
MRAS
CXCL12
SH2B3
PEMT
UBE2Z
PSCK9
30
25
20
15
10
5
0
−log10 P
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
19
21
Chromosome

Marcadores psicosociales

An independent and external validation of QRISK2 cardiovascular disease risk score: a prospective open cohort study

Cite this as: *BMJ* 2010;340:c2442
doi:10.1136/bmj.c2442

Gary S Collins, senior medical statistician,[1] Douglas G Altman, director, professor of statistics in medicine[1]

Conclusions QRISK2 is more accurate in identifying a high risk population for cardiovascular disease in the United Kingdom than the NICE version of the Framingham equation. Differences in performance between QRISK2 and QRISK1 were marginal.

QRISK2

Age (continuous)

Ratio of total serum cholesterol:high density lipoprotein (continuous)

Systolic blood pressure (continuous)

Smoking status (current smoker/non-smoker (including former smoker))

Body mass index (continuous)

Family history of coronary heart disease in first degree relative under 60 years (yes/no)

Townsend deprivation score (output area level 2001 census data evaluated as continuous variable)

Treated hypertension (diagnosis of hypertension and at least one current prescription of at least one antihypertensive agent) (yes/no)

Self assigned ethnicity (white (or not recorded)/Indian/Pakistani/Bangladeshi/other Asian/black African/black Caribbean/other (including mixed))

Type 2 diabetes (yes/no)

Rheumatoid arthritis (yes/no)

Atrial fibrillation (yes/no)

Renal disease (yes/no)

Age × body mass index

Age × Townsend score

Age × systolic blood pressure

Age × family history of cardiovascular disease

Age × smoking current

Age × treated hypertension

Clin Chem Lab Med 2010;48(12):1703–1711 © 2010 by Walter de Gruyter • Berlin • New York. DOI 10.1515/CCLM.2010.340

Review

Michael J. Pencina[1,4,5,*], Ralph B. D'Agostino[2,4] and Ramachandran S. Vasan[3,4,*]

Statistical methods for assessment of added usefulness of new biomarkers

- Indicadores estadísticos para valorar la utilidad de nuevos biomarcadores:
  - p-valor. HR (OR, RR). AUC (estadístico c).
  - Tabla de reclasificación. Diferencias entre curvas de predicción.
  - NRI: Net Reclassification Improvement (con categorías)
    - NRI(>0): NRI sin categorías
  - IDI: Integrated Discrimination Improvement
    - rIDI: relative IDI

Journal of the American College of Cardiology
Vol. 56, No. 25, 2010

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ISSN 0735-1097/$36.00
doi:10.1016/j.jacc.2010.09.001

PRACTICE GUIDELINES

2010 ACCF/AHA Guideline for Assessment of Cardiovascular Risk in Asymptomatic Adults

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines

Developed in Collaboration With the American Society of Echocardiography, American Society of Nuclear Cardiology, Society of Atherosclerosis Imaging and Prevention, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance

2. Recommendation for Global Risk Scoring

CLASS I

1. Global risk scores (such as the Framingham Risk Score) that use multiple traditional cardiovascular risk factors should be obtained for risk assessment in all asymptomatic adults without a clinical history of CHD. These scores are useful for combining individual risk factor measurements into a single quantitative estimate of risk that can be used to target preventive interventions (12). *(Level of Evidence: B)*

- 1.-**Global Risk Scoring.** Clase I. Evidencia B: SI
- 2.-**Family History**. Clase I. Evidencia B: SI
- 3.-**Genomic Testing**. Clase III. Evidencia B: NO
- 4.-**Lipoprotein and Apolipoprotein.**
  Clase III. Evidencia C: NO
- 5.- **Natriuretic Peptides** Clase III. Evidencia B: NO
- 6.- **C-Reactive Protein**
  -Clase IIa. Evidencia B: SI en varones>=50 o mujeres >=60 con LDL<130 mg/dl, para iniciar estatinas.
  -Clase IIb. Evidencia B: SI en hombres<=50 o Mujeres<=60 con riesgo intermedio.
  -Clasae III. Evidencia B: NO en sujetos de alto riesgo o en varones<50 o mujeres<60 en bajo riesgo.
- 7.- **Hemoglobin A1C**
  -Clase IIb. Evidencia B: SI en sujetos sin diabetes.
- 8.- **Microalbuminuria**
  -Clase IIa. Evidencia B: SI en sujetos con diabetes o hipertensión.
  -Clase IIb. Evidencia B: SI en sujetos sin diabetes ni hipertensión con riesgo intermedio.

- 9.-**Lipoprotein-Associated Phospholipase A2.**
  Clase IIb. Evidencia B: SI en sujetos con riesgo intermedio.
- 10.-**Resting Electrocardiogram**.
  Clase IIa. Evidencia B: SI en sujetos con diabetes o hipertensión.
  Clase IIb. Evidencia C: SI es razonable en sujetos sin hipertensión ni diabetes.
- 11.-**Transthoracic Echocardiography**.
  Clase IIb. Evidencia B: SI en hipertensos.
  Clase III. Evidencia C: NO en sujetos sin hipertensión.
- 12.-**Measurement of Carotid Intima-Media Thickness.**
  Clase IIa. Evidencia B: SI en sujetos con riesgo intermedio.
- 13.-**Brachial/Peripheral Flow-Mediated Dilation**.
  Clase III. Evidencia B: NO
- 14.-**Specific Measures of Arterial Stiffness**.
  Clase III. Evidencia C: NO
- 15.- **Ankle-Brachial Index**.
  Clase IIa. Evidencia B: SI en sujetos con riesgo intermedio.

SOLUCIÓN 2. NUEVOS MODELOS DE CÁLCULO

Prediction of Lifetime Risk for Cardiovascular Disease by Risk Factor Burden at 50 Years of Age

Donald M. Lloyd-Jones, MD, ScM; Eric P. Leip, PhD; Martin G. Larson, ScD;
Ralph B. D'Agostino, PhD; Alexa Beiser, PhD; Peter W.F. Wilson, MD;
Philip A. Wolf, MD; Daniel Levy, MD

Conclusions—The absence of established risk factors at 50 years of age is associated with very low lifetime risk for CVD and markedly longer survival. These results should promote efforts aimed at preventing development of risk factors in young individuals. Given the high lifetime risks and lower survival in those with intermediate or high risk factor burden at 50 years of age, these data may be useful in communicating risks and supporting intensive preventive therapy. (***Circulation***. 2006;113:791-798.)

The Lifetime Risk of Stroke: Estimates From the Framingham Study

Sudha Seshadri, Alexa Beiser, Margaret Kelly-Hayes, Carlos S. Kase, Rhoda Au,
William B. Kannel and Philip A. Wolf

Stroke 2006;37;345-350; originally published online Jan 5, 2006;

Circulation
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Predicting the 30-Year Risk of Cardiovascular Disease

The Framingham Heart Study

Circulation 2009;119:3078-3084

Michael J. Pencina, PhD; Ralph B. D'Agostino, Sr, PhD; Martin G. Larson, ScD;
Joseph M. Massaro, PhD; Ramachandran S. Vasan, MD

- 4 MÉTODOS DE CÁLCULO DE RIESGO A 30 AÑOS:

  -Multiplicar por 3 el riesgo a 10 años.

  -Sumar el riesgo a 10 años más el riesgo a 10 años con 10 años más de edad y sumar el riesgo a 10 años con 20 años de edad más.

  -Calcular el riesgo a 30 años sin considerar la mortalidad competitiva.

  -Calcular el riesgo a 30 años considerando la mortalidad competitiva.

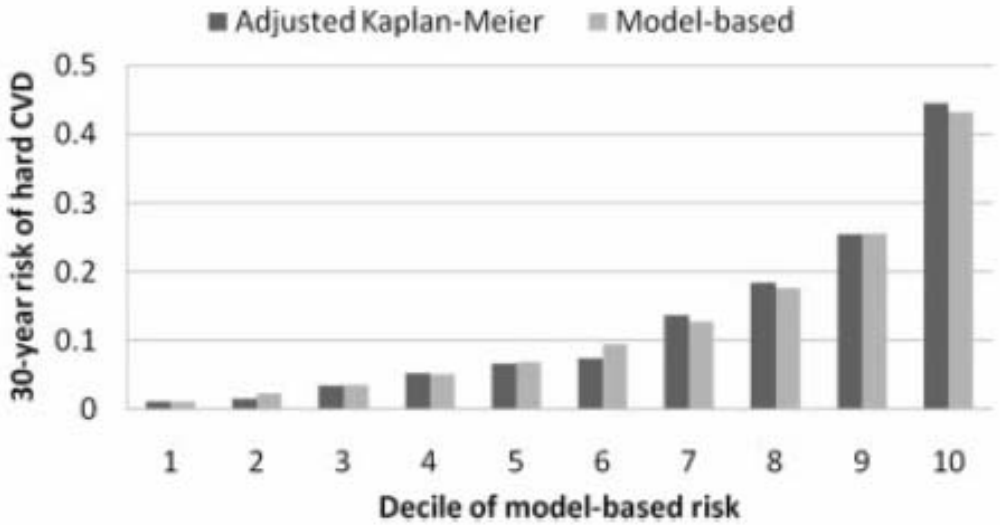

Figure 2. Calibration by decile, adjusted for the competing risk of noncardiovascular death.

30-year risk score for cardiovascular disease

WITH LIPIDS

RISK FACTORS	UNITS	PLEASE ENTER THE VALUES	NOTES
SEX	m/f	m	
AGE	years	36,8	
SBP	mmHg	110	
TCL	mg/dL	160	
HDL	mg/dL	60	
SMOKE	y/n	n	
TRTBP	y/n	n	
DIAB	y/n	n	

Full CVD ⇨	Your Risk	9%
	Optimal	9%
	Normal	9%
Hard CVD ⇨	Your Risk	5%
	Optimal	5%
	Normal	4%

WITH BMI

RISK FACTORS	UNITS	PLEASE ENTER THE VALUES	NOTES
SEX	m/f	f	
AGE	years	28	
SBP	mmHg	128	
SMOKE	y/n	y	
TRTBP	y/n	n	
BMI	kg/m²	21,633	
DIAB	y/n	n	

Full CVD ⇨	Your Risk	9%
	Optimal	4%
	Normal	5%
Hard CVD ⇨	Your Risk	4%
	Optimal	2%
	Normal	2%

Hard CVD: coronary death, myocardial infarction, fatal or non-fatal stroke
Full CVD: hard CVD or coronary insufficiency, angina pectoris, transient ischemic attack, intermittent claudication or congestive heart failure

SOLUCIÓN 3.- ALTERNATIVAS AL RIESGO ABSOLUTO.

-Proyectar el riesgo a los 60 años.

-Cálculo del riesgo relativo.

-Utilización de percentiles de riesgo.

-Edad vascular.

CVD-2003:

Se puede estimar también el *riesgo* ***cardiovascular proyectado a los 60 años*** de edad, lo que puede ser de particular importancia para aconsejar adultos jóvenes con bajo riesgo cuando tienen 20 ó 30 años de edad pero que tienen un perfil de riesgo que les elevará mucho el riesgo cuando envejezcan.

... ***estimar el riesgo relativo*** que, conjuntamente con el cálculo del riesgo, puede ser interesante en algunos casos particulares.

CVD-2007:

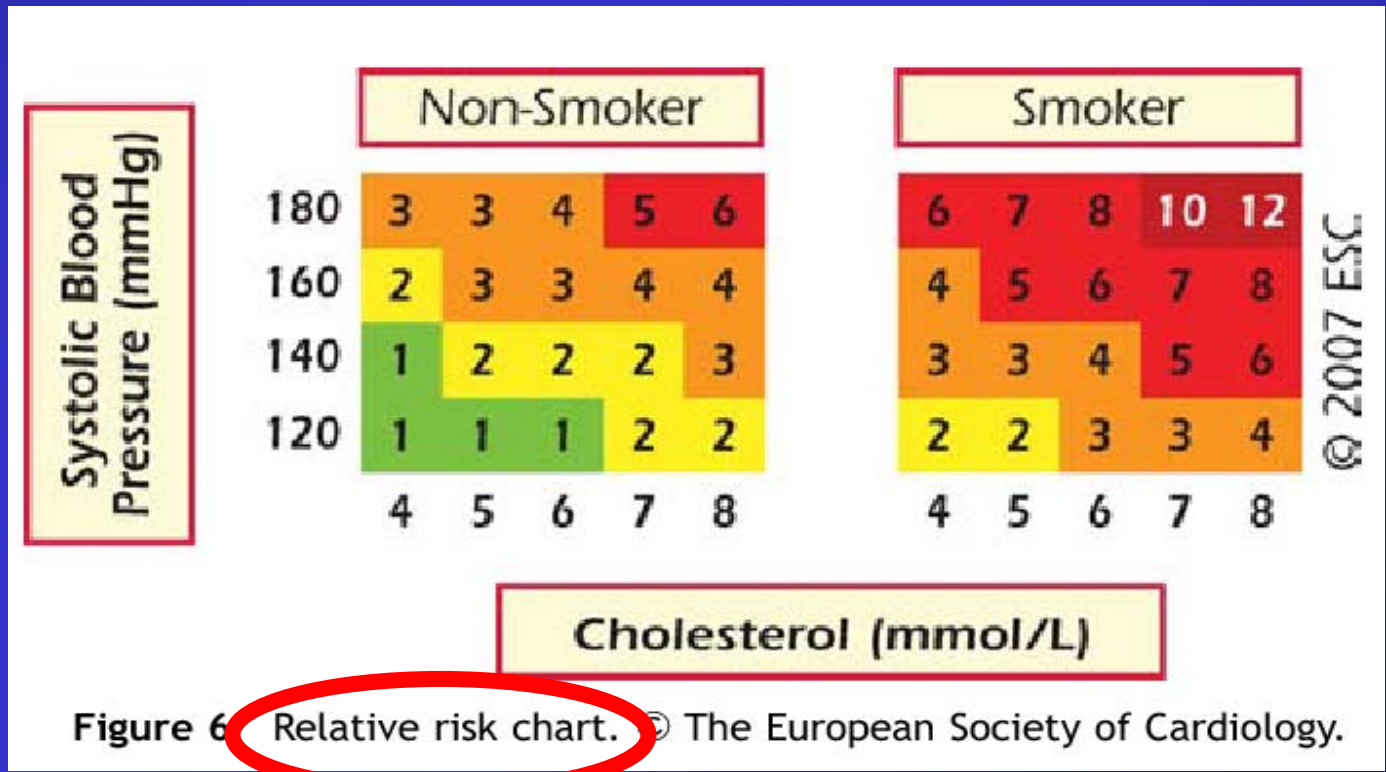

Figure 6 Relative risk chart. © The European Society of Cardiology.

Percentiles de riesgo coronario: una nueva forma de adaptar las escalas de riesgo. Estudio ERVPA

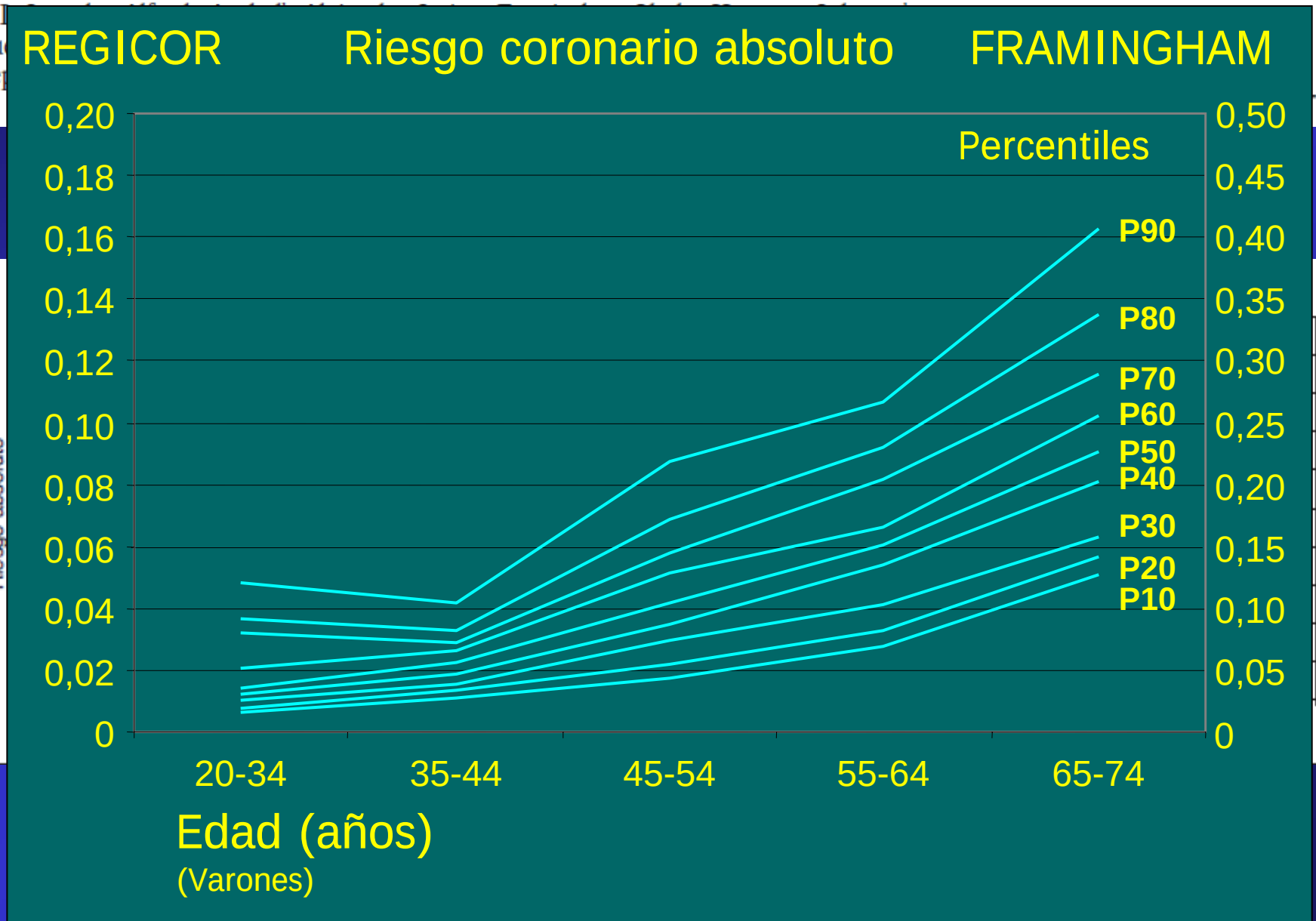

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Table 8. CVD Risk for Men

Points	Risk, %
≤−3 or less	<1
−2	1.1
−1	1.4
0	1.6
1	1.9
2	2.3
3	2.8
4	3.3
5	3.9
6	4.7
7	5.6
8	6.7
9	7.9
10	9.4
11	11.2
12	13.2
13	15.6
14	18.4
15	21.6
16	25.3
17	29.4
18+	>30

Table 10. Heart Age/Vascular Age for Men

Points	Heart Age, y
<0	<30
0	30
1	32
2	34
3	36
4	38
5	40
6	42
7	45
8	48
9	51
10	54
11	57
12	60
13	64
14	68
15	72
16	76
≥17	>80

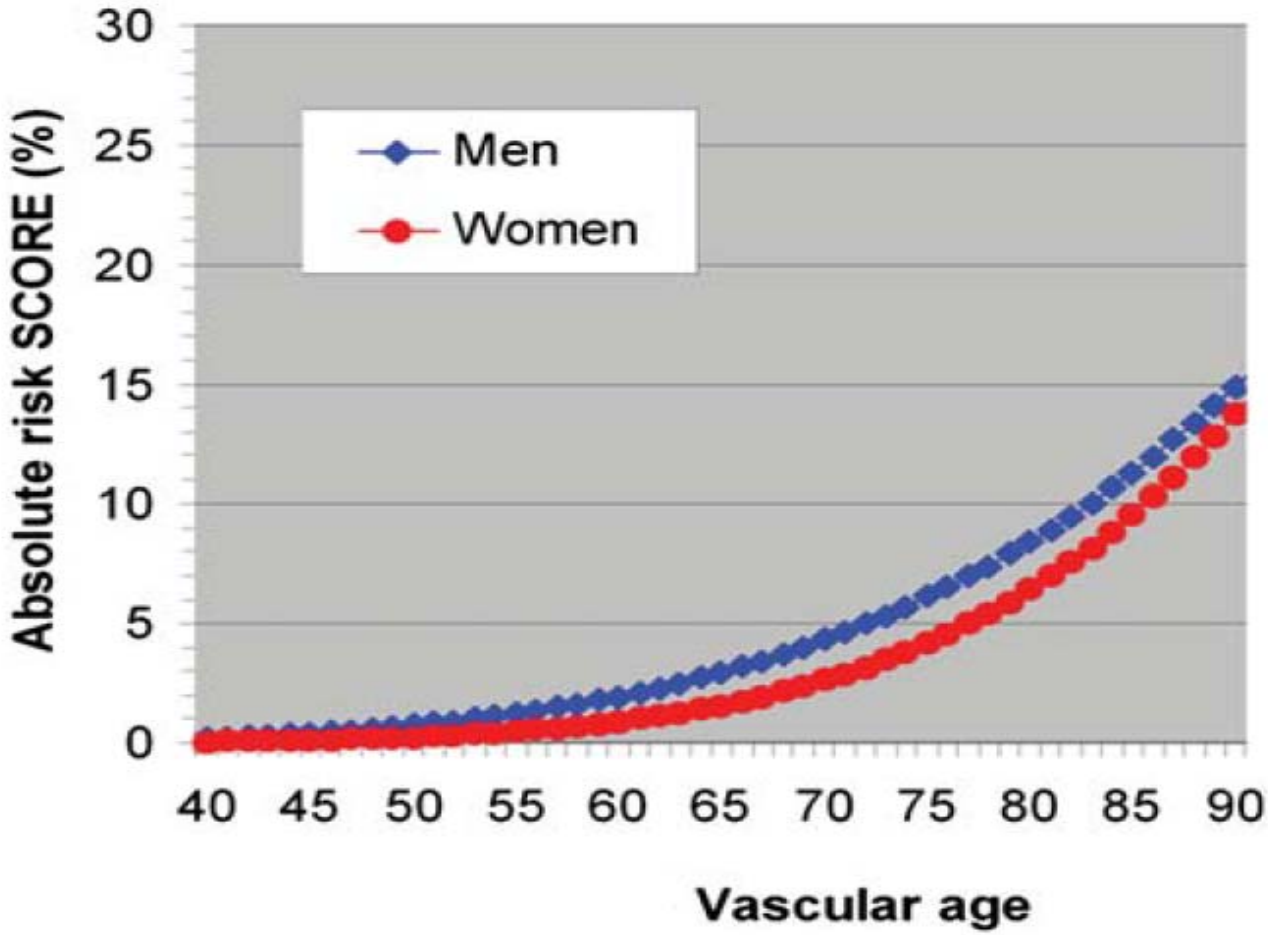
Points allotted

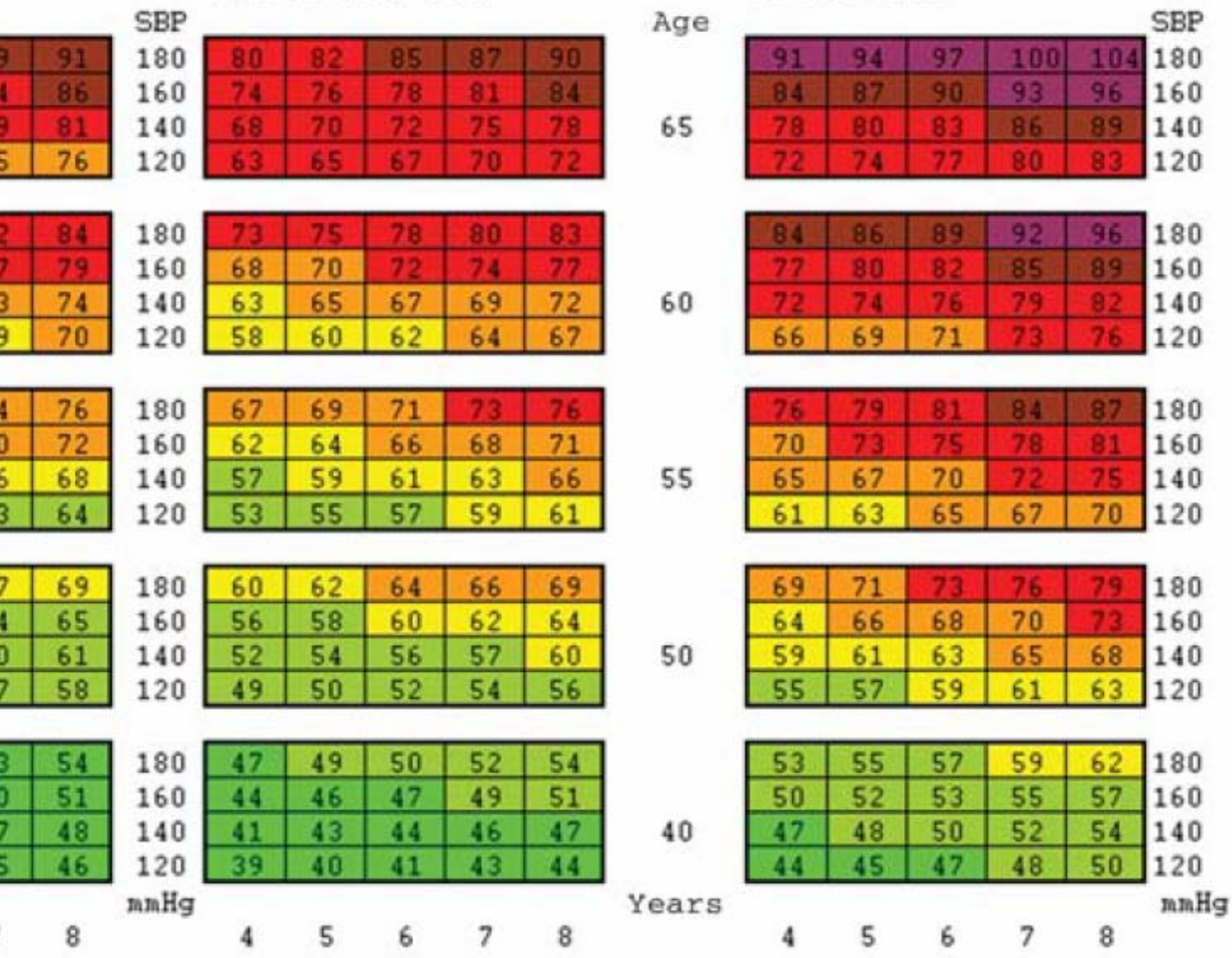
Total

European Heart Journal (2010) **31**, 2351–2358
doi:10.1093/eurheartj/ehq205

How to calculate vascular age with the SCORE project scales: a new method of cardiovascular risk evaluation

José I. Cuende [1]*, Natividad Cuende [2], and Javier Calaveras-Lagartos [3]




SBP
Age
SBP
180 80 82 85 87 90 91 94 97 100 104 180
160 74 76 78 81 84 84 87 90 93 96 160
140 68 70 72 75 78 78 80 83 86 89 140
120 63 65 67 70 72 72 74 77 80 83 120
65
180 73 75 78 80 83 84 86 89 92 96 180
160 68 70 72 74 77 77 80 82 85 89 160
140 63 65 67 69 72 72 74 76 79 82 140
120 58 60 62 64 67 66 69 71 73 76 120
60
180 67 69 71 73 76 76 79 81 84 87 180
160 62 64 66 68 71 70 73 75 78 81 160
140 57 59 61 63 66 65 67 70 72 75 140
120 53 55 57 59 61 61 63 65 67 70 120
55
180 60 62 64 66 69 69 71 73 76 79 180
160 56 58 60 62 64 64 66 68 70 73 160
140 52 54 56 57 60 59 61 63 65 68 140
120 49 50 52 54 56 55 57 59 61 63 120
50
180 47 49 50 52 54 53 55 57 59 62 180
160 44 46 47 49 51 50 52 53 55 57 160
140 41 43 44 46 47 47 48 50 52 54 140
120 39 40 41 43 44 44 45 47 48 50 120
40
mmHg
Years
mmHg
4 5 6 7 8
4 5 6 7 8

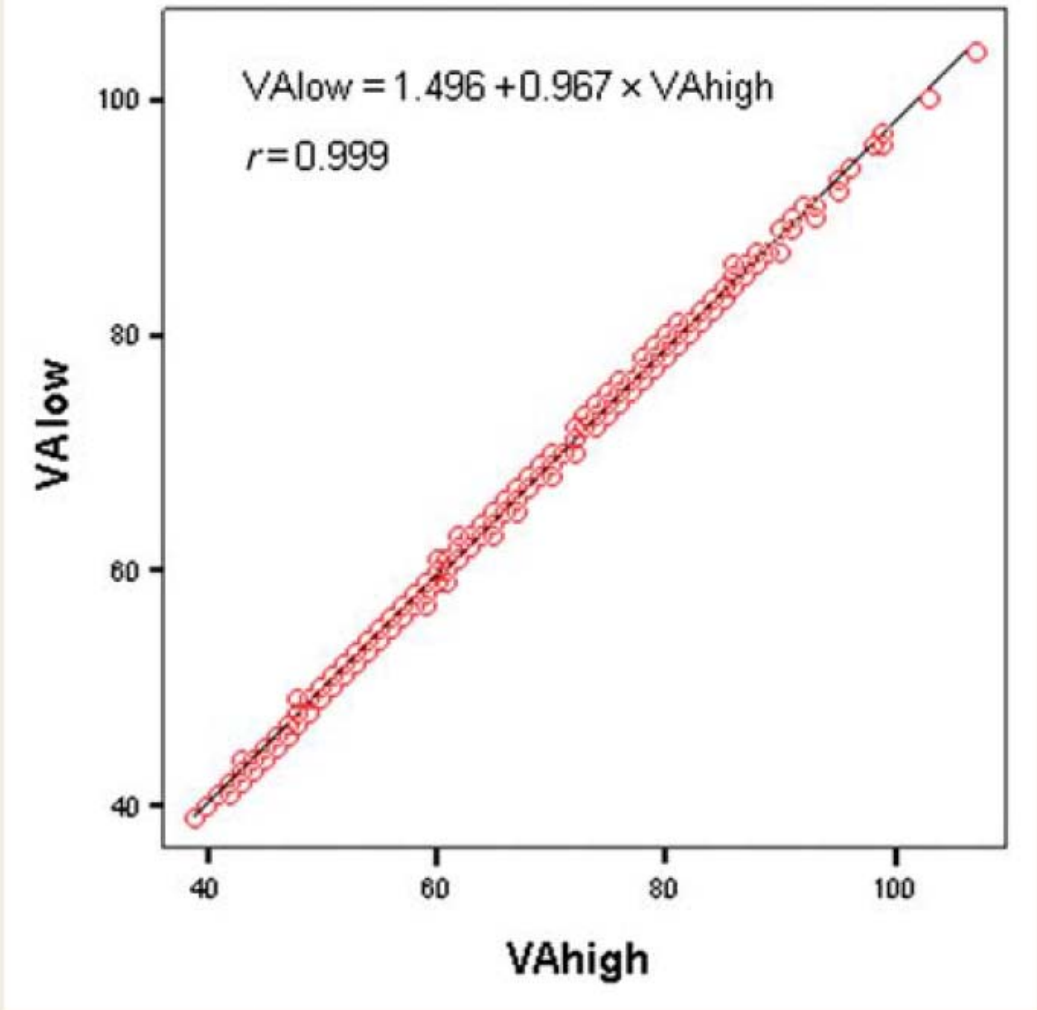


Figure 7 Correlation between vascular age calculated with the equations for high-risk countries (VAhigh) and for low-risk countries (VAlow).

Kappa~1

CCI~1

RR=5

Envejecimiento:

Mujer=25%

Varón=36%

SOLUCIÓN 4.- PRESENTACIÓN DE RESULTADOS MÁS ASEQUIBLES PARA EL PACIENTE.

- FORMATOS INTELIGIBLES
- CONCEPTOS INTELIGIBLES

Project RedCar: Cardiovascular Disease Risk Communication for People With Type 2 Diabetes *Combining the Power of Electronic Health Records and Computer-Based Multimedia Technology*

Paris Roach, MD, Olena Klindukhova, MD, Chandan Saha, PhD, Brenda Hudson, MS, Melissa Cantrell, and David Marrero, PhD

Diabetes Spectrum Volume 23, Number 3, 2010

- Material educacional con 10 módulos multimedia.
- En la primera visita se presenta gráficamente el riesgo del paciente diabético (según UKPDS) junto con el riesgo de un sujeto sin fdactores de riesgo (según Framingham)
- Se adjuntan gráficas con los niveles de los factores de riesgo.

Preliminary analyses indicate that the intervention increases the likelihood of patients discussing CVD risk with their physicians and makes it easier for them to participate in these discussions.

Welschen *et al. BMC Public Health* 2010, **10**:457
http://www.biomedcentral.com/1471-2458/10/457

BMC Public Health

STUDY PROTOCOL Open Access

The @RISK Study: Risk communication for patients with type 2 diabetes: design of a randomised controlled trial

Laura MC Welschen[1*], Sandra DM Bot[1,2], Jacqueline M Dekker[2], Daniëlle RM Timmermans[3], Trudy van der Weijden[4], Giel Nijpels[1]

Discussion: This innovative risk communication method based on two behavioural theories might improve patient's appropriateness of risk perception and attitude concerning lifestyle change. With a better understanding of their CVD risk, patients will be able to make informed choices concerning diabetes care.

- En la rama de intervención:
  - Se explica el riesgo absoluto
  - Se presenta un diagrama del riesgo absoluto
  - Se explica positivamente cómo el cambio de estilos de vida puede mejorar su riesgo
  - "Pensar en alto": Se solicita que el paciente explique su riesgo

Evaluation of a cardiovascular disease risk assessment tool for the promotion of healthier lifestyles

Anastasia Soureti[a], Robert Hurling[a], Peter Murray[a], Willem van Mechelen[b] and Mark Cobain[a]

European Journal of Cardiovascular Prevention and Rehabilitation 2010, 17:519–523

[a]Unilever Discover, Colworth House, Sharnbrook, Bedfordshire, UK

Riesgo real

Riesgo percibido

Conclusion This study found that the Heart-Age message significantly differed from perceptage CVD risk score in risk perceptions and was more emotionally impactful in those participants at higher actual CVD risk levels. Eur J Cardiovasc Prev Rehabil 17:518–523 © 2010 The European Society of Cardiology

-“Su riesgo cardiovascular global fatal es del 6% y eso es alto, es mucho” (SCORE).

-”¿Y eso que significa?”

-”Que tiene 6 de 100 posibilidades de morir en los próximos 10 años.”

-”Hmmm… O sea, que tengo 94 de 100 de seguir vivo. ¡Fantástico, voy a seguir fumando y practicando el sillón-ball!”

-No, significa que aunque tenga 50 años, su corazón tiene 75 años. Está perdiendo 25 años por fumar, no cuidarse y tener la presión arterial y el colesterol elevados.

-¡Ah! ¿Entonces, qué tengo que hacer ahora?...

“Cada uno tiene la edad de su corazón”

(A. D´Houdetot)