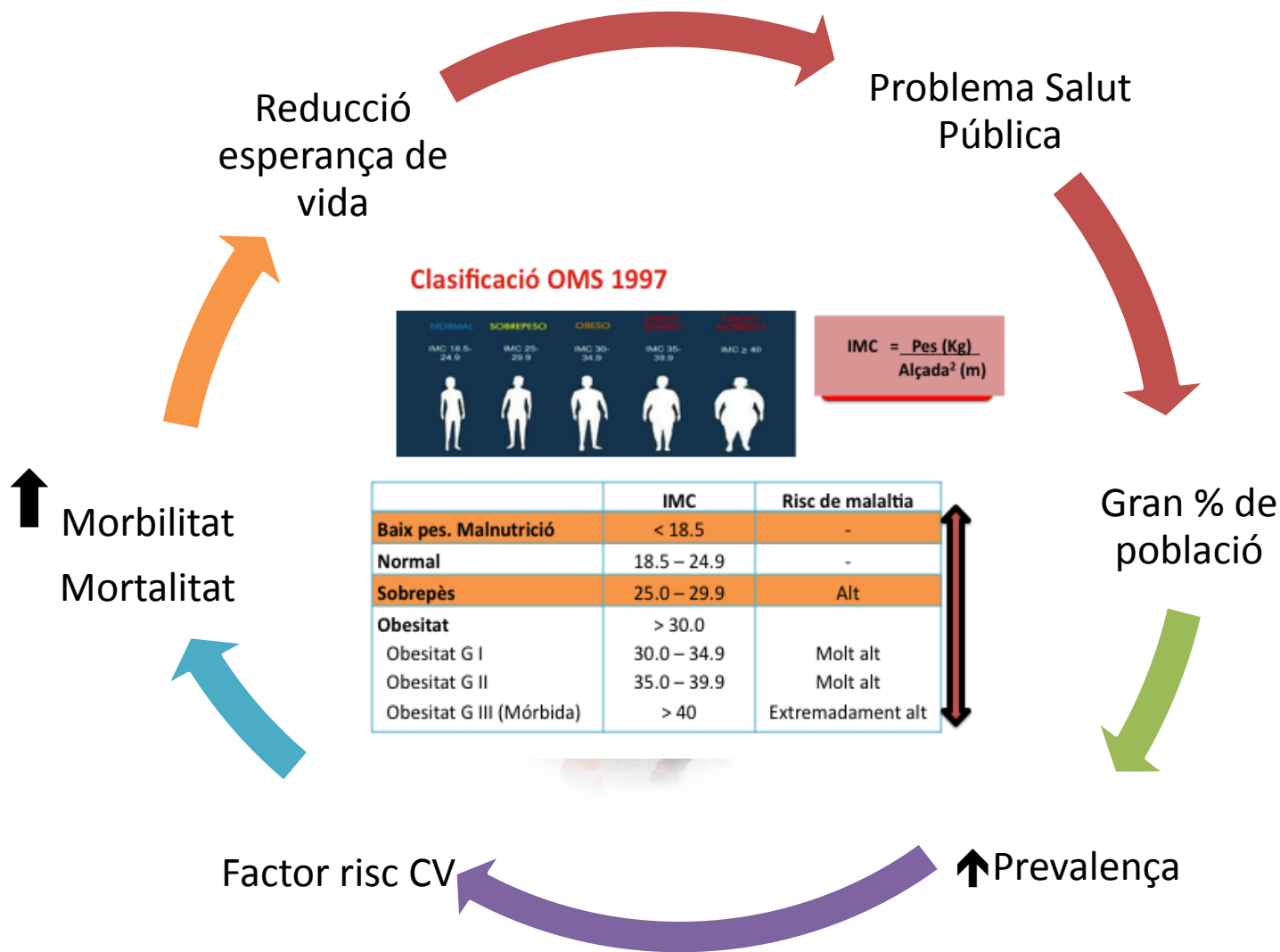


OBESITAT i morbi-mortalitat cardiovascular.

Cardiopatia isquèmica

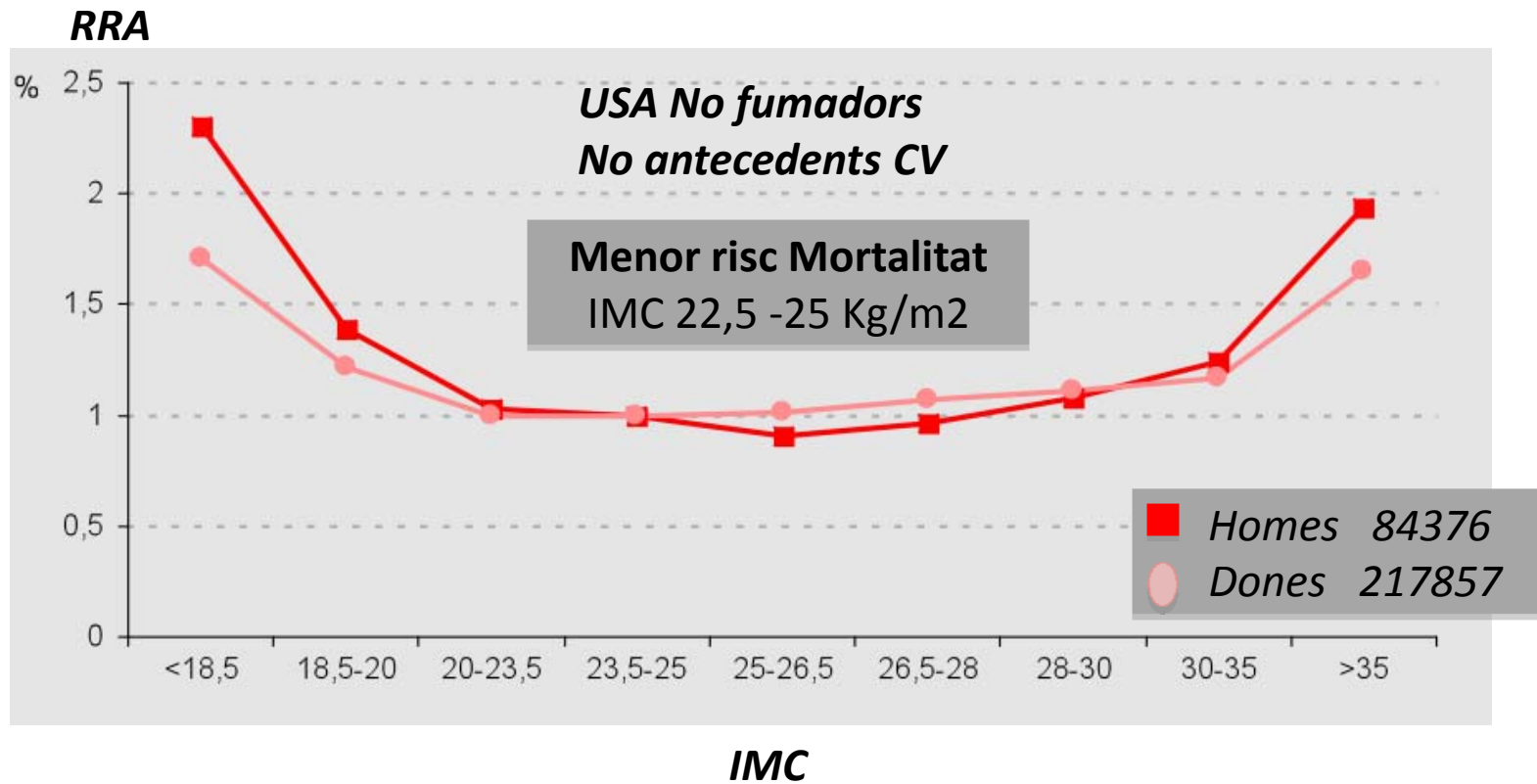
Dra. Mercè Camprubí
Servei de Cardiologia
Hospital Universitari Joan XXIII
Tarragona

Obesitat i morbimortalitat cardiovascular



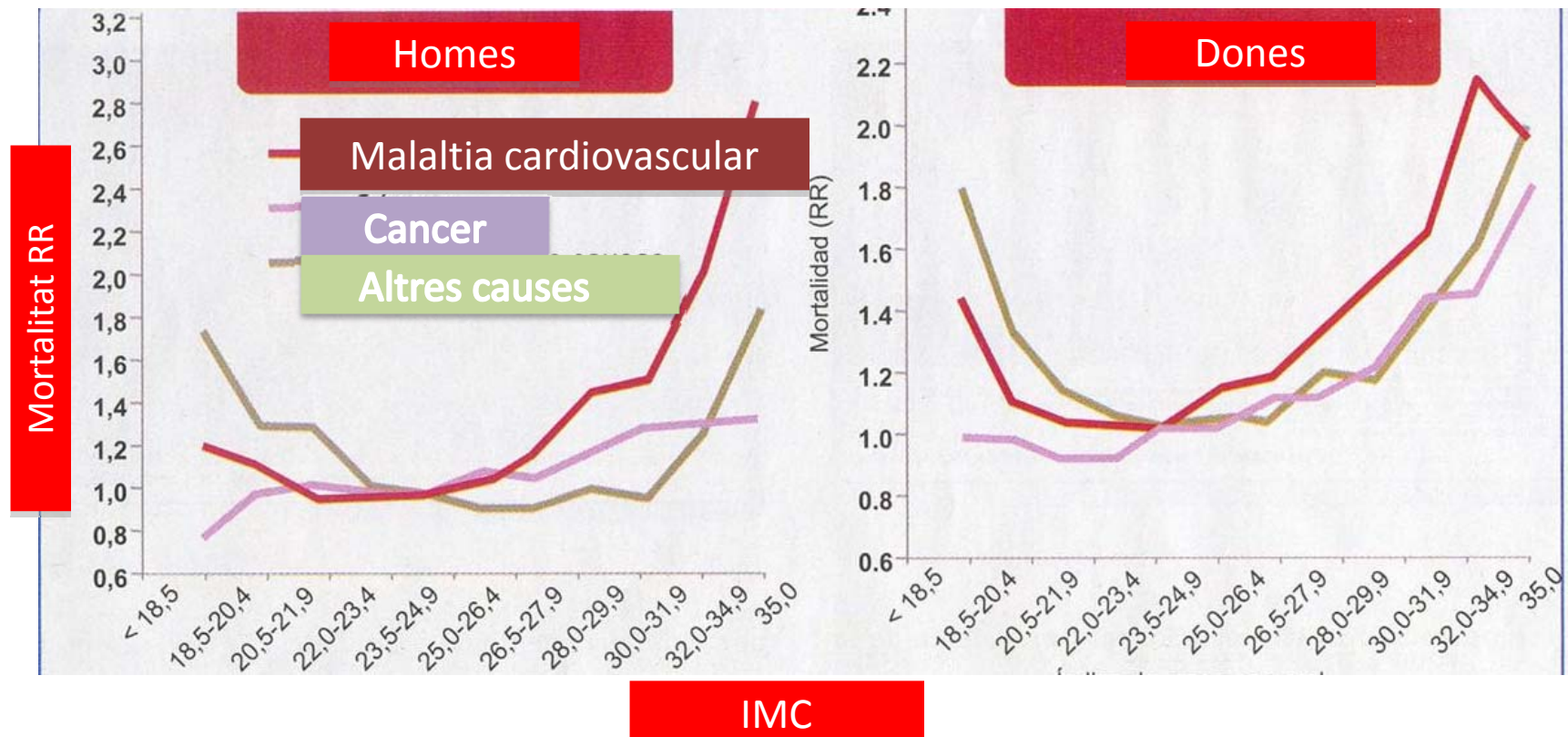
IMC factor predictor de mortalitat

BODY-MASS INDEX AND MORTALITY IN A PROSPECTIVE COHORT OF USA ADULTS
Callee E NEJM 1999; 341:1097-1105



Major mortalitat per IMC deguda a malaltia cardiovascular

BODY-MASS INDEX AND MORTALITY IN A PROSPECTIVE COHORT OF USA ADULTS
Calfee E NEJM 1999; 341:1097-1105



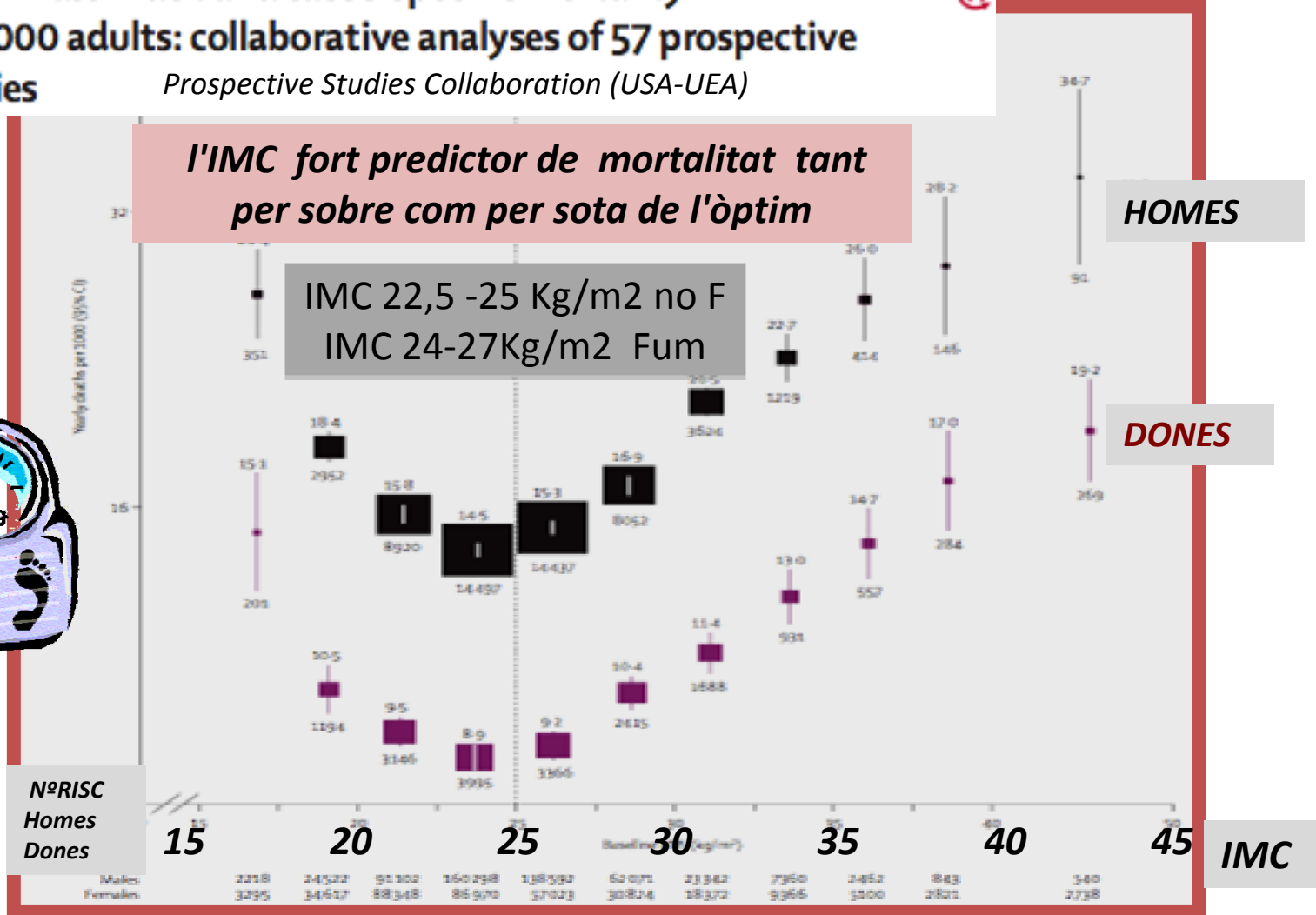
IMC és un fort predictor de mortalitat

Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies
 Prospective Studies Collaboration (USA-UEA)



L'IMC fort predictor de mortalitat tant per sobre com per sota de l'òptim

**IMC 22,5 -25 Kg/m2 no F
 IMC 24-27Kg/m2 Fum**



NºRISC
 Homes
 Dones

HOMES

DONES

IMC

Lancet 2009; 373: 1083-96

IMC i mortalitat per cardiopatia isquèmica

Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies



Lancet 2009; 373: 1083–96

	15–25 kg/m ²		25–50 kg/m ²	
	Deaths	HR (95% CI)	Deaths	HR (95% CI)
Ischaemic heart disease	7461	1.22 (1.13–1.32)	10783	1.39 (1.34–1.44)
Stroke	2964	0.92 (0.82–1.03)	3164	1.39 (1.31–1.48)
Other vascular disease	2648	0.84 (0.75–0.95)	3396	1.47 (1.39–1.56)
Diabetes	171	0.96 (0.59–1.55)	393	2.16 (1.89–2.46)
Kidney disease (non-neoplastic)	197	1.14 (0.74–1.77)	217	1.59 (1.27–1.99)
Liver disease (non-neoplastic)	489	0.69 (0.52–0.91)	603	1.82 (1.59–2.09)
Lung cancer	2959	0.71 (0.63–0.79)	2040	0.98 (0.88–1.09)
Upper aerodigestive cancer	685	0.49 (0.39–0.61)	471	0.98 (0.79–1.20)
Other specified cancer	6134	0.94 (0.87–1.02)	6190	1.12 (1.06–1.18)
Respiratory disease*	2426	0.31 (0.28–0.35)	1344	1.20 (1.07–1.34)
Other specified disease	2049	0.62 (0.54–0.71)	1823	1.20 (1.10–1.31)
External cause	2112	0.82 (0.71–0.95)	1720	1.19 (1.08–1.32)
Unknown cause†	4961	0.72 (0.66–0.79)	5349	1.22 (1.16–1.28)
All causes	35 256	0.79 (0.77–0.82)	37 493	1.29 (1.27–1.32)

70 anys

Hazard ratio per 5 kg/m² higher BMI (HR). HR less than 1 if BMI inversely associated with risk. Analyses exclude the first 5 years of follow-up, and adjust for study, sex, age at risk (in 5-year groups), and baseline smoking status. For analyses restricted to those who had never smoked, see webappendix p 17. *HR 0.37 (95% CI 0.30–0.44) in the range 15–25 kg/m² after exclusion of the first 15 years of follow-up (leaving 956 deaths). †Includes 4113 deaths from cancer of unspecified site.

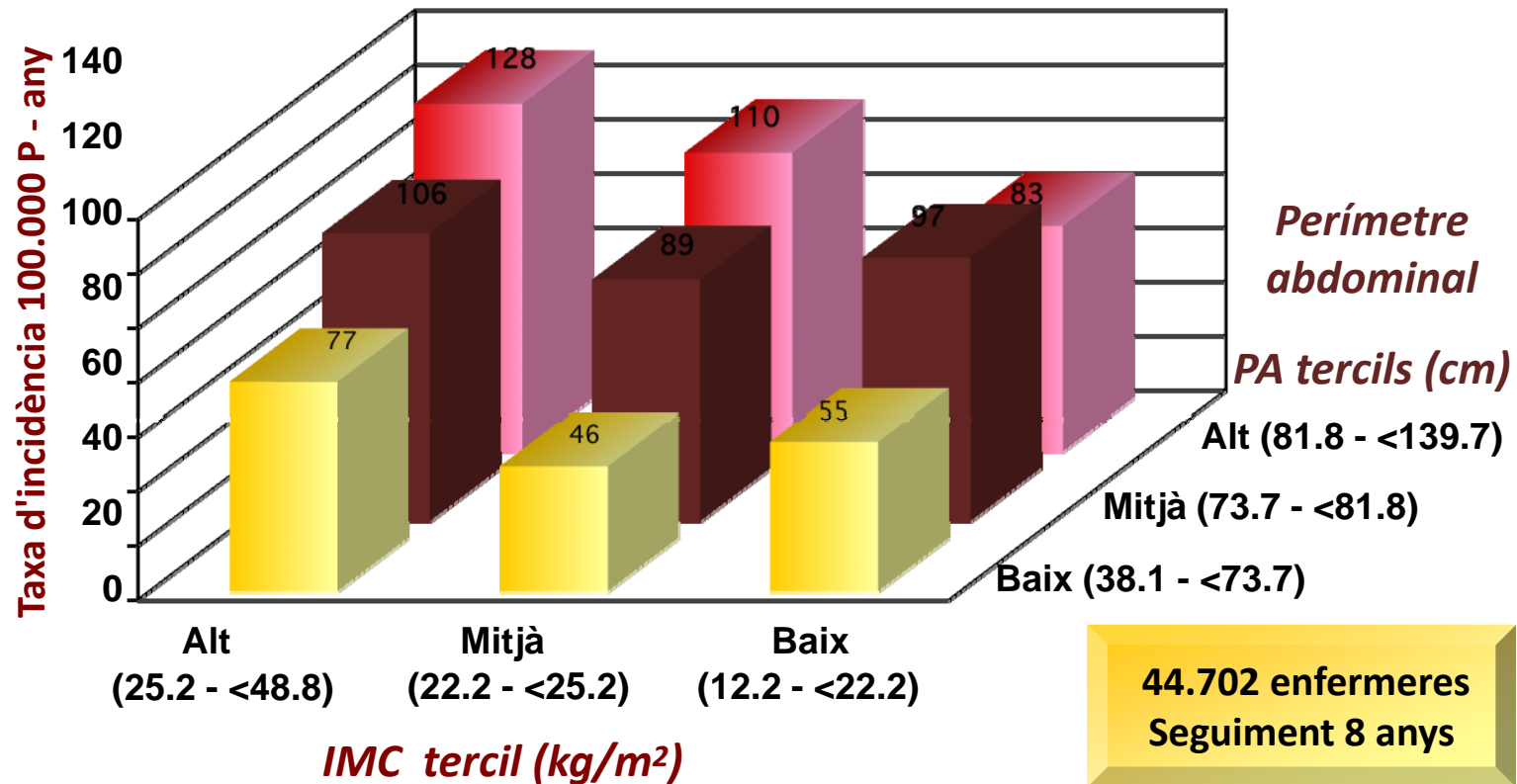
Table 2: Cause-specific mortality versus baseline BMI in the ranges 15–25 kg/m² and 25–50 kg/m²

Obesos major risc Mortalitat per CIsquèmica

Obesitat abdominal i malaltia coronària en dones

The Nurses' Health Study

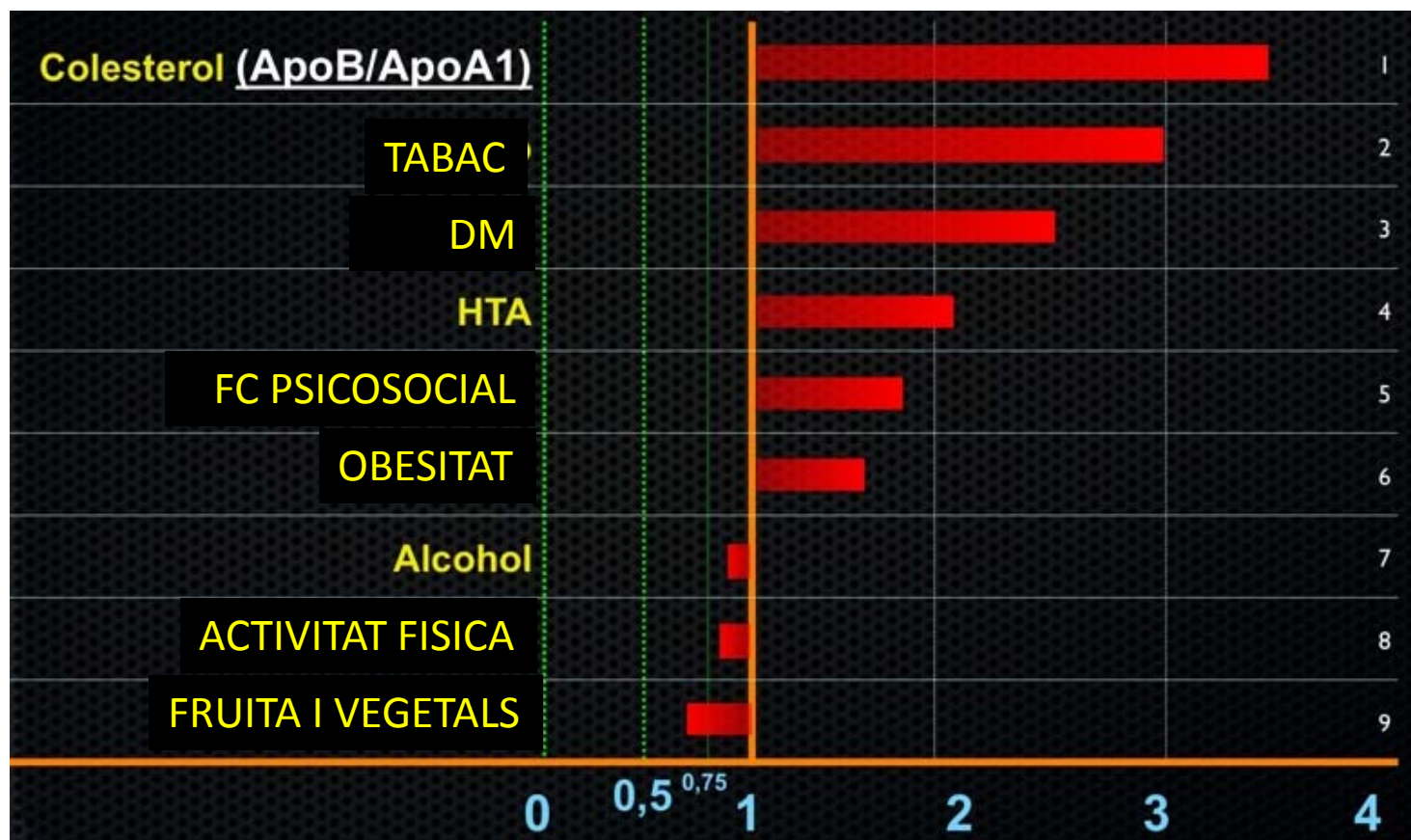
Rexrode KM. JAMA 1998; 280: 1843-8



Independentment del tercil IMC, les dones amb major tercil de PA van tenir major risc de malaltia coronària

Obesitat abdominal augmenta risc IAM: INTERHEART

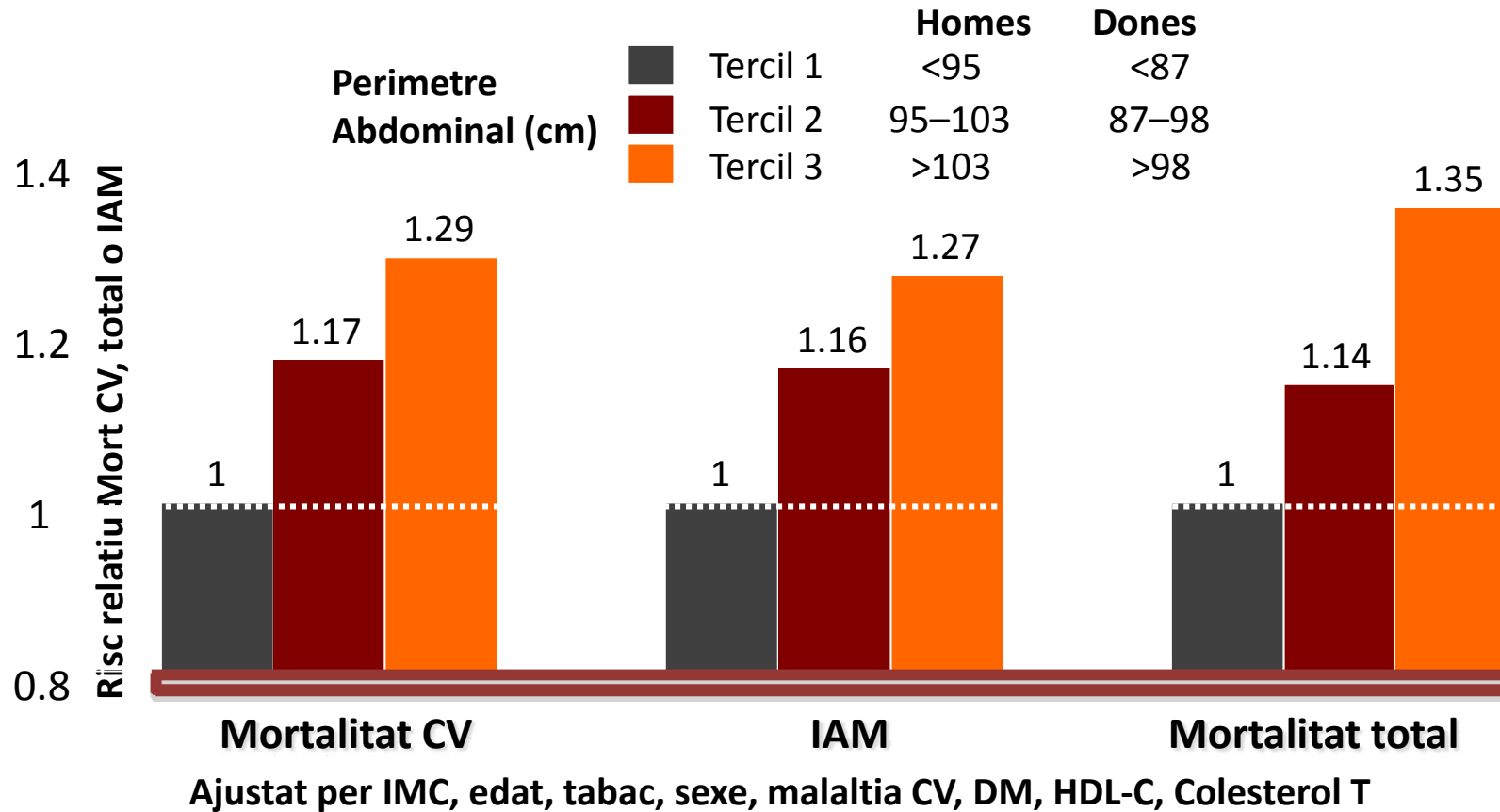
29.972 participants 52 països



Yusuf S et al. Lancet. 2004;364:937-52.

Obesitat abdominal incrementa risc de IAM

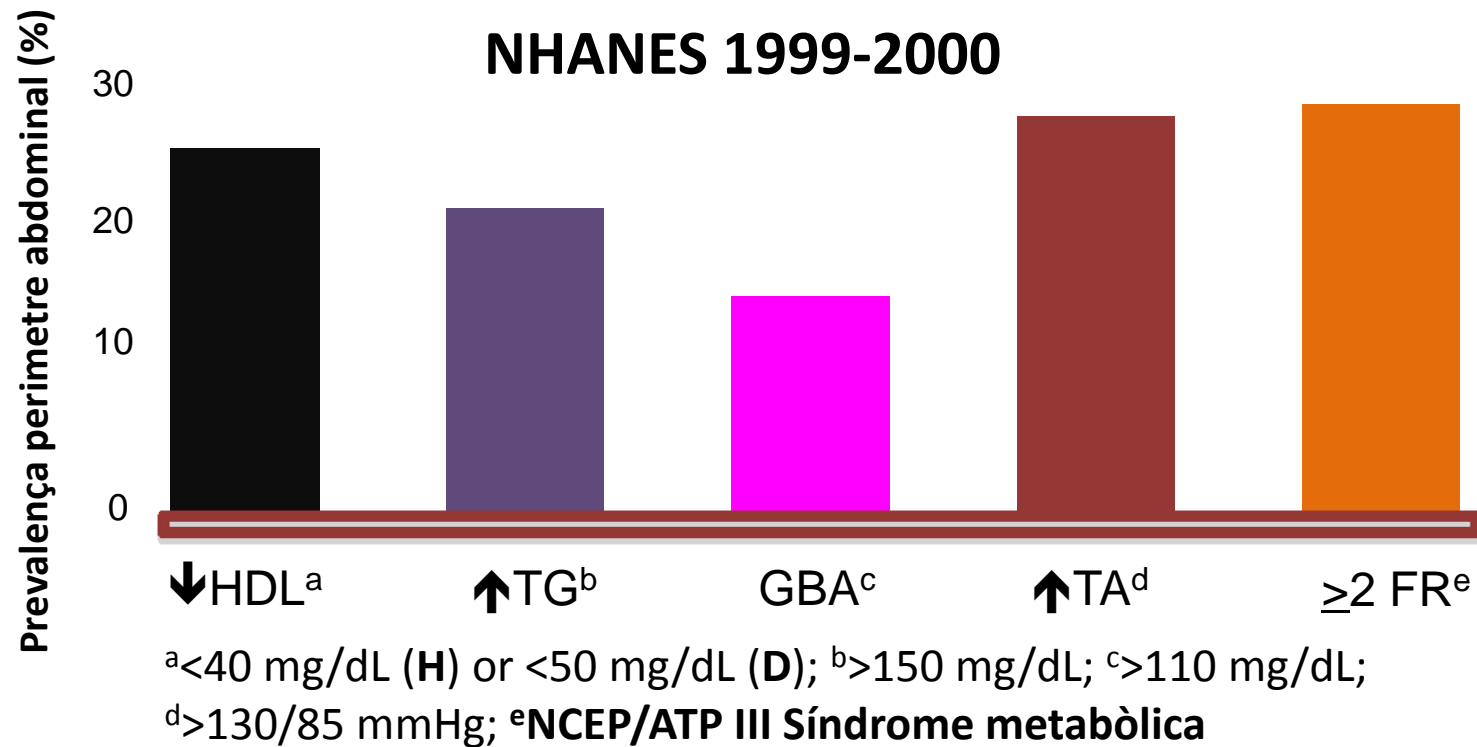
Estudi HOPE 6620 homes i 2182 dones M 4,5 anys



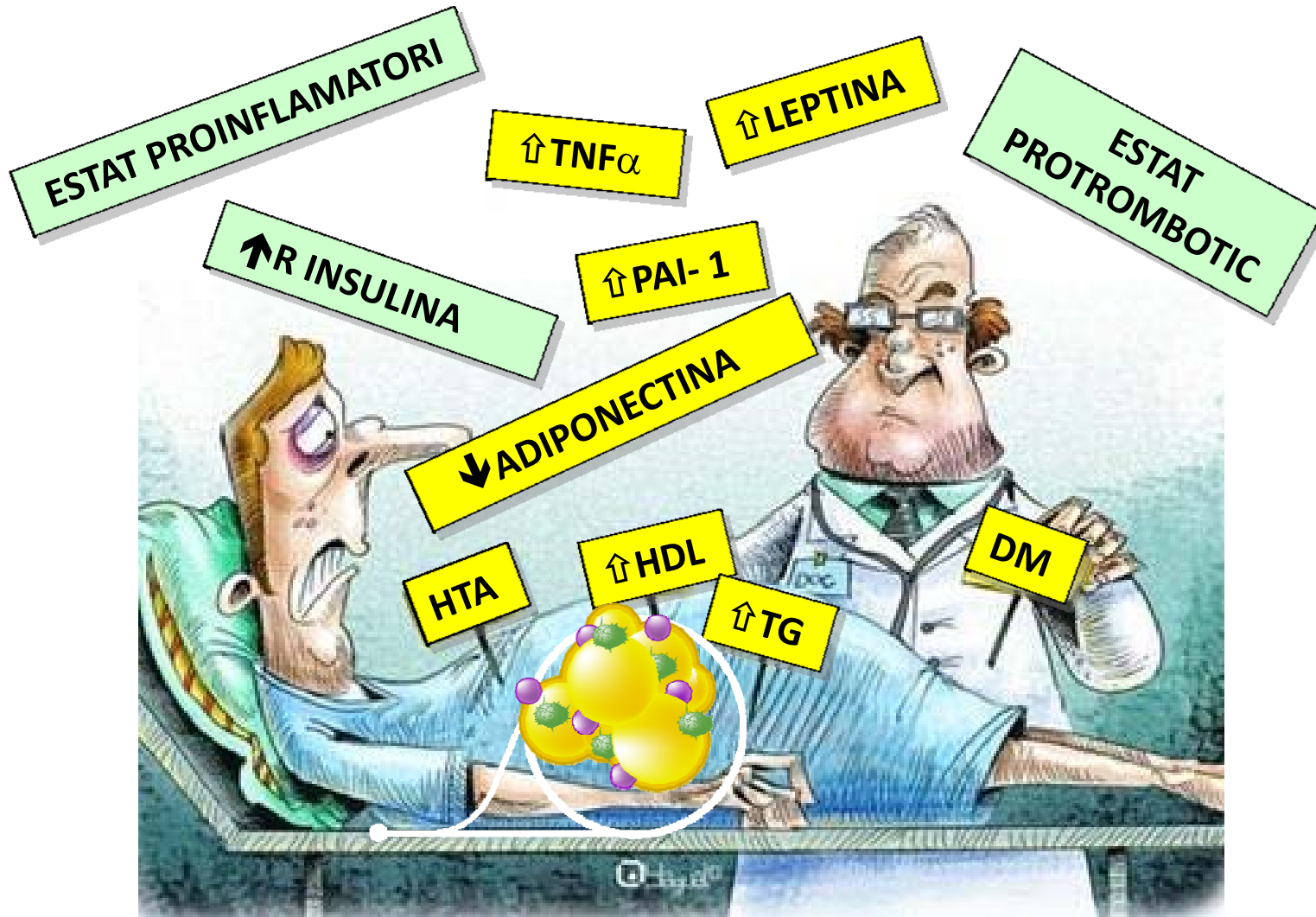
Dagenais Am Heart J 2005;149:54-60

Per què és nociva l'obesitat e incrementa risc de IAM?

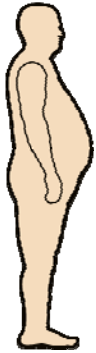
Obesitat abdominal s'associa a FRCV



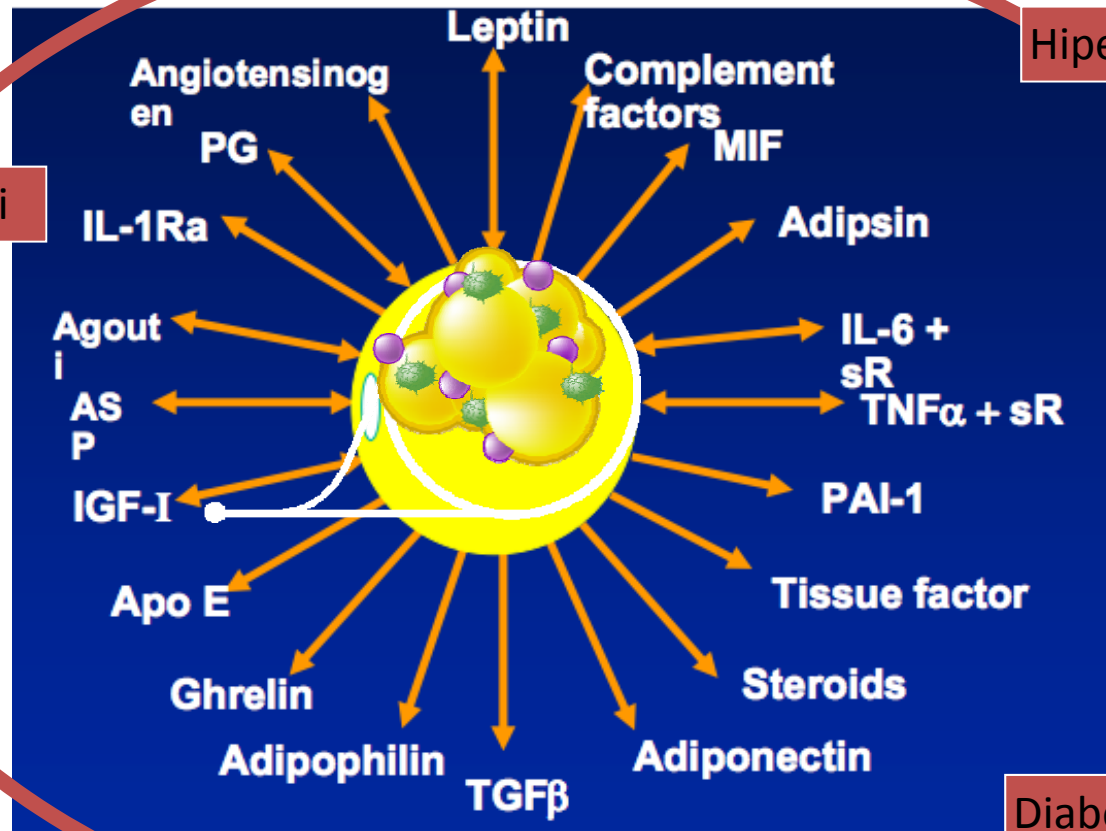
Perquè és nociva l'obesitat abdominal?



Per què és nociva l'obesitat abdominal ?



Ateroesclerosi



Hipertensió

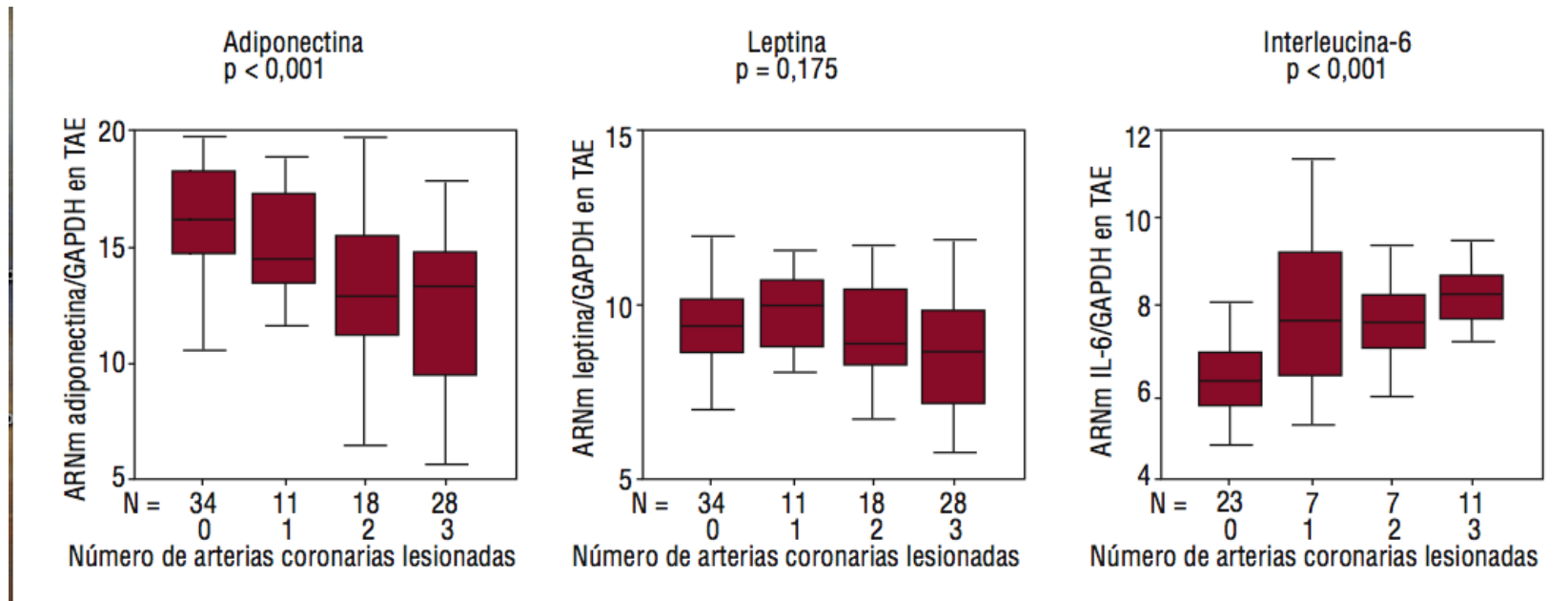
Dislipèmia

Trombosi

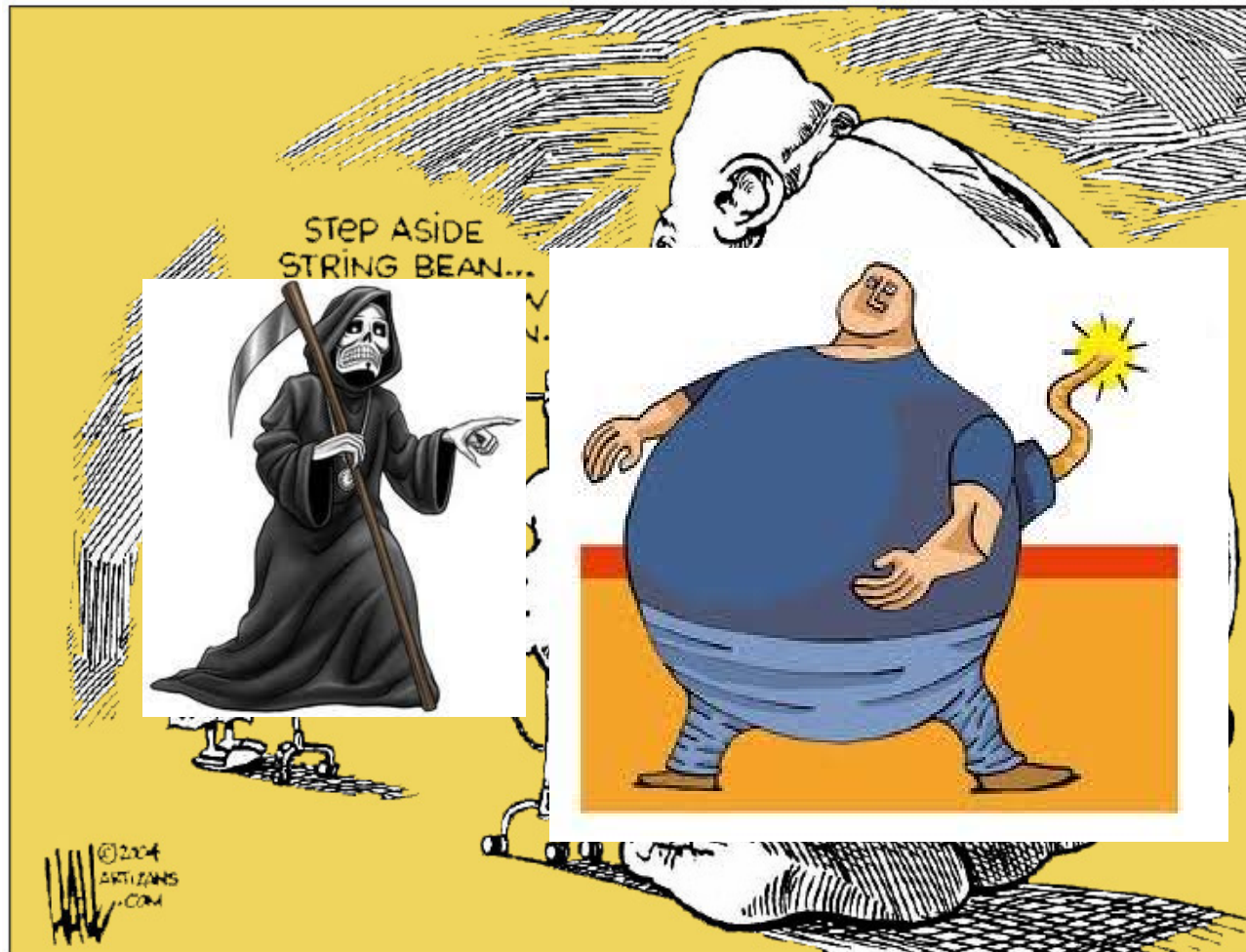
Diabetis

Inflamació

Adipocitocines, nous marcadors de malaltia coronaria?



Relació obesitat i Cardiopatia isquèmica

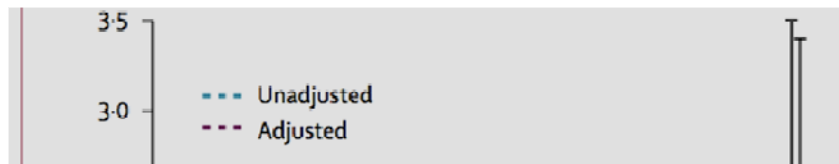


Relació Cardiopatia isquèmica i obesitat

Obesitat i mortalitat en pacients amb CIsquèmica

➤ Association of bodyweight with total mortality and with cardiovascular events in coronary artery disease: a systematic review of cohort studies

Romero Corral A, Lancet 2006;368: 666-678



Interpretation The better outcomes for cardiovascular and total mortality seen in the overweight and mildly obese groups could not be explained by adjustment for confounding factors. These findings could be explained by the lack of discriminatory power of BMI to differentiate between body fat and lean mass.

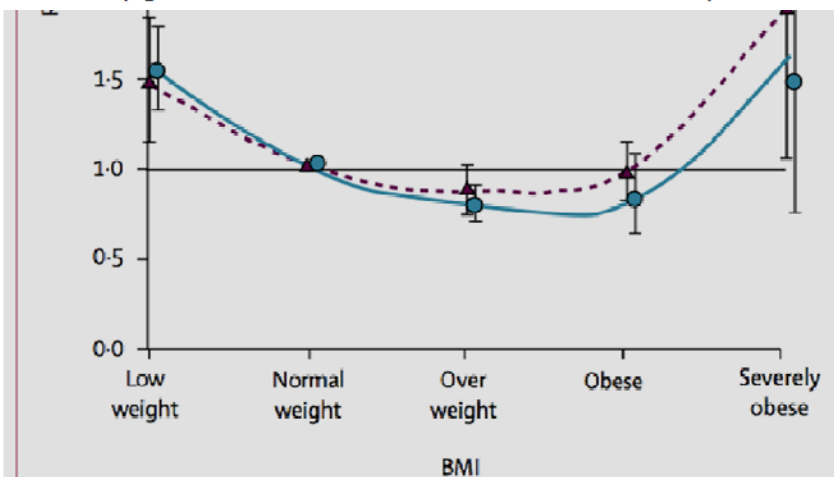


Figure 7: Unadjusted and adjusted RR for cardiovascular mortality in patients with CAD by BMI groups

40 estudis
250.152 P
Seguiment M 3,8 anys

Paradoxa de l'obesitat: BIP

Relation of Body Mass Index to Mortality Among Men With
Coronary Heart Disease

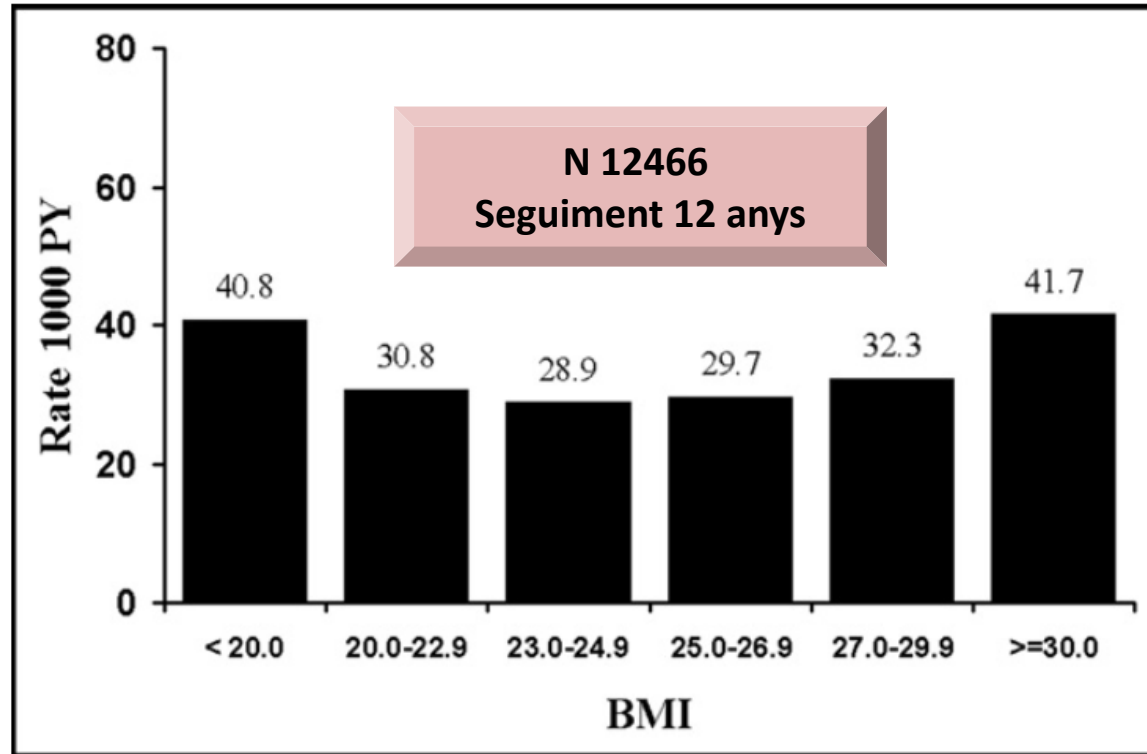


Figure 1. Age-adjusted mortality rate per 1,000 patient-years (PY) by BMI class in 12,466 men with CHD.

Benderly M, Am J Cardiol 2010;106: 297-304

Paradoxa de l'obesitat en SCASEST: CRUSADE

Diercks D, Am Heart J 2006;152:140- 148

N 80.845

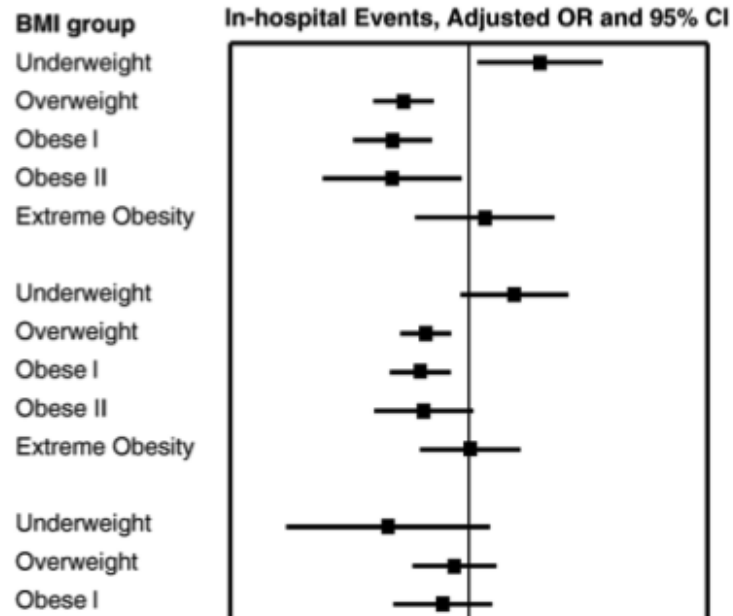
70% Obesos

Underweight (BMI 18.5) 2307,
Normal (BMI 18.5-24.9) 21470,
Overweight (BMI 25-29.9) 29063,
Obese I (BMI 30-34.9) 1685,
Obese II (BMI 35-39.9) 6728,
Extremely Obese (BMI ≥ 40) 4427

Mort

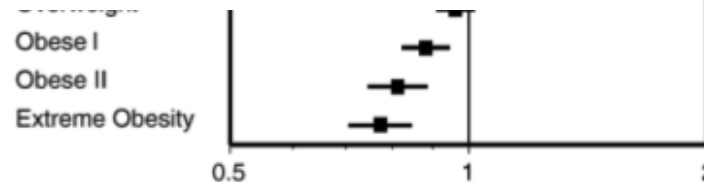
M/IAM

Shock C



Conclusions Most patients with NSTEMI ACS are overweight or obese. These patients receive more aggressive treatment, and, except for the extremely obese, have less adverse outcomes compared with underweight and normal-weight patients. Although obesity appears to be a risk factor for developing ACS at a younger age, it also appears to be associated with more aggressive ACS management and, ultimately, improved outcomes. (Am Heart J 2006;152:140-8.)

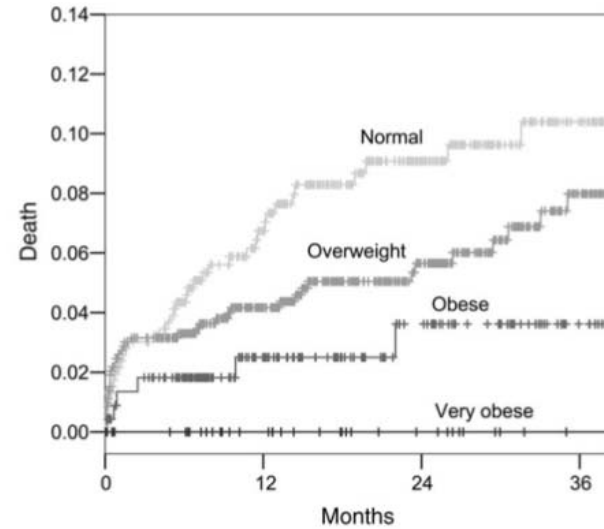
(c) H



ORs for in-hospital adverse events by BMI category. RBC, Red blood cell.

Paradoxa de l'obesitat en SCASEST

The impact of obesity on mortality in UA/non-ST-segment elevation myocardial infarction



Number at risk					
	0	12	24	36	
551	337	201	104		Normal
824	508	312	165		Overweight
244	135	84	43		Obese
48	28	16	7		Very obese

Figure 1 Cumulative rates of death in relation to body mass index (log-rank $P = 0.043$).

1676p SCASEST
Obesos més joves
Més FRCV

Coronariografia tots
Afectació coronària similar
Seguiment 3 anys

Normal (BMI 18.5-24.9)551,
Overweight (BMI 25-29.9)824,
Obese (BMI 30-34.9) 244,
Very Obese (BMI >35) 48

Buettner HJ, EHJ (2007) 28, 1694–1701

Paradoxa de l'obesitat en IAM ST

Acute Myocardial Infarction

Impact of Body Weight and Extreme Obesity on the Presentation, Treatment, and In-Hospital Outcomes of 50,149 Patients With ST-Segment Elevation Myocardial Infarction

Results From the NCDR (National Cardiovascular Data Registry)

Sandeep R. Das, MD, MPH,* Karen P. Alexander, MD,† Anita Y. Chen, Tiffany M. Powell-Wiley, MD, MPH,* Deborah B. Diercks, MD, MHSC, Eric D. Peterson, MD, MPH,† Matthew T. Roe, MD, MHSC,† James A. *Dallas, Texas; Durham, North Carolina; and Sacramento, California*

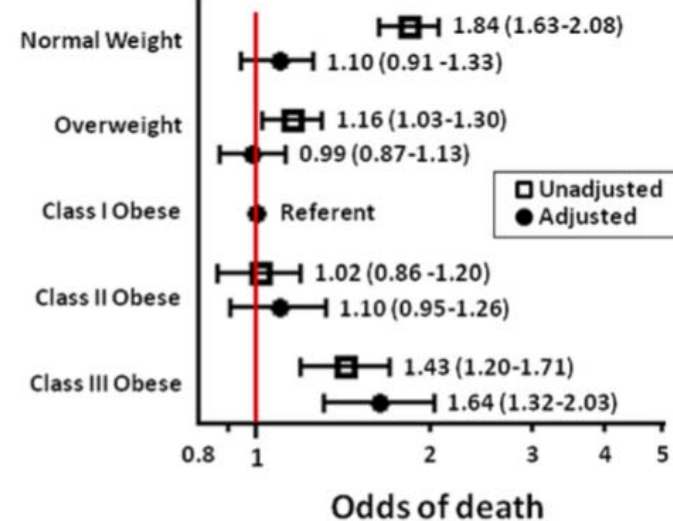


Figure 1. In-Hospital Mortality by BMI

Conclusions

Patients with extreme obesity present with STEMI at younger ages and have less extensive coronary artery disease, better left ventricular systolic function, and similar processes and quality of care. Despite these advantages, extreme obesity remains independently associated with higher in-hospital mortality. (J Am Coll Cardiol 2011;58:2642-50) © 2011 by the American College of Cardiology Foundation

ss index
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Paradoxa de l'obesitat



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Original

Índice de masa corporal como factor pronóstico en pacientes tras un primer infarto de miocardio

Miquel Fiol^{a,b,c,*}, Rocío Amézaga^{b,c}, Fernando Arós^d, Bartolome Burguera^{b,c}, Joan Sala^e, Jordi Bruguera^f, Vicente Valle^g, Gines Sanz^{h,i}, María-Isabel Covas^{a,j}, Montserrat Fitó^{a,j}, Helena Martí^k, Roberto Elosua^{k,l}, Helmut Schröder^{a,j} y Jaume Marrugat^k

1.063 p 15 H
Seguiment 6m

Tabla 3

Mortalidad y acontecimientos a 6 meses según los grupos de índice de masa corporal (IMC)

	IMC < 25 kg/m ²	IMC 25 ≤ 30 kg/m ²	IMC ≥ 30 kg/m ²	p
Mortalidad intrahospitalaria	6 (2,1%)	5 (1,0%)	3 (1,2%)	0,382
Re-IAM o angor hospitalario	27 (9,9%)	62 (12,0%)	30 (12,0%)	0,633
Muerte o reingreso a 6m ^a	21 (8,6%)	28 (5,9%)	20 (8,8%)	0,247
Mortalidad total	9 (3,6%)	6 (1,3%)	6 (2,6%)	0,104

IAM: Infarto agudo de miocardio.

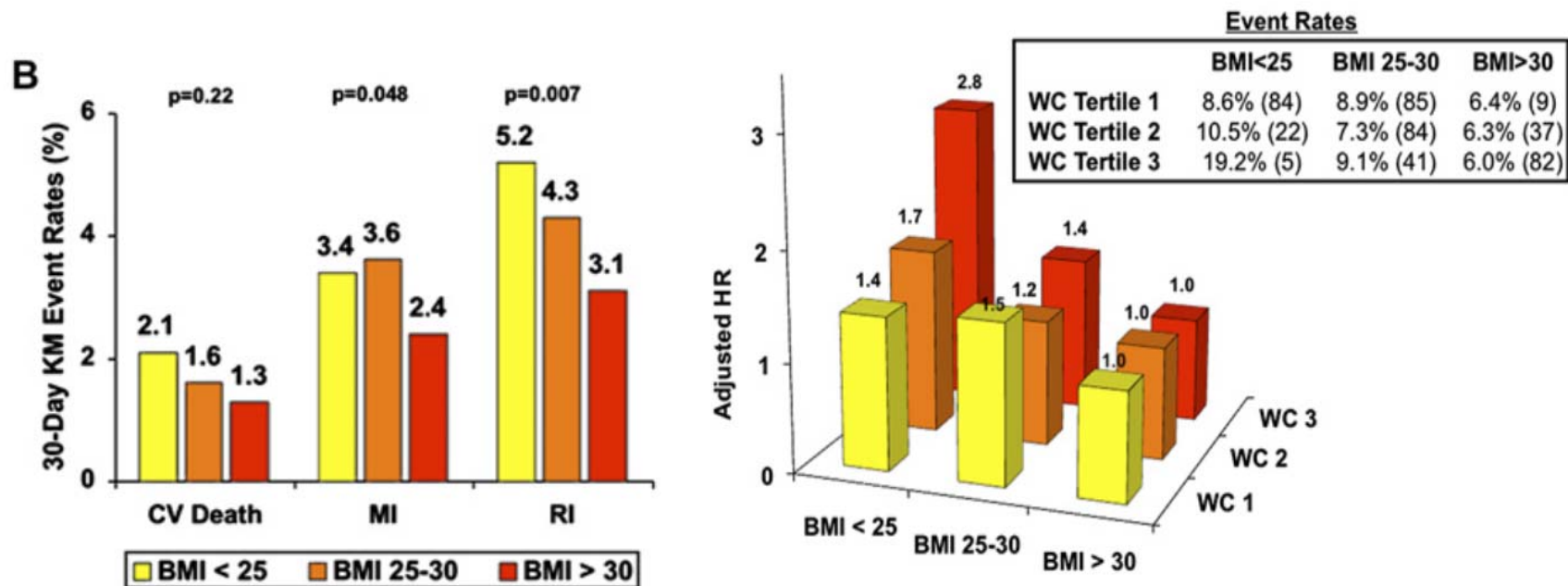
^a En los superviventes a la fase aguda.

Fiol et al, Med Clin 2010;135(14):631–636

Paradoxa de l'obesitat SCASEST: MERLIN-TIMI 36

Heart 2011;97:1782-1787

N 6560 SCASEST

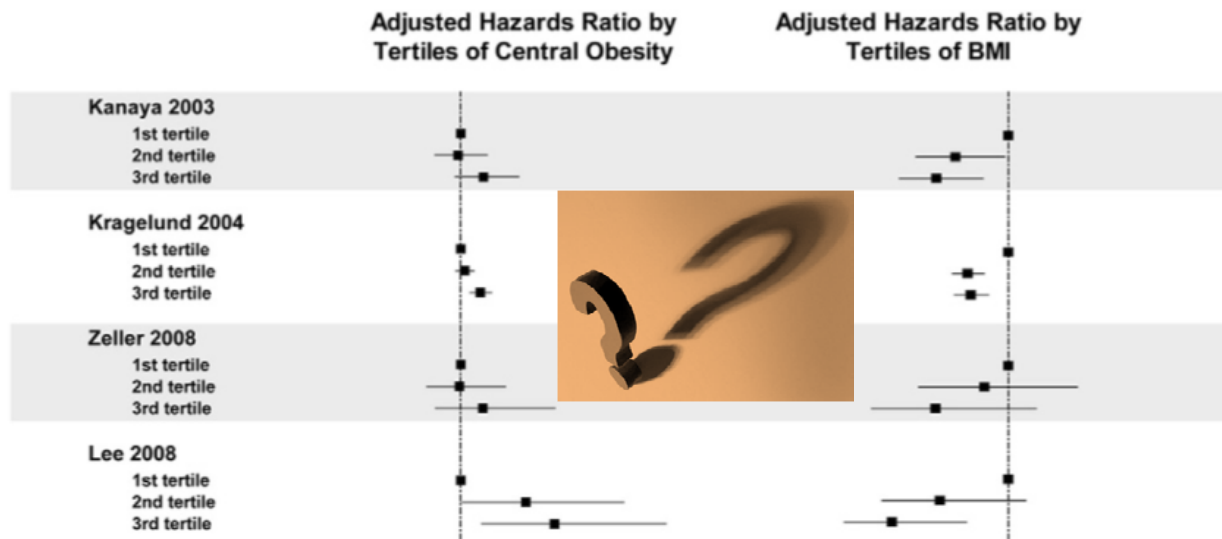


Conclusions Obesity is associated with more favourable short-term outcomes after ACS. However, in the longer term the obesity paradox is no longer present and may reverse. Those with WC out of proportion to BMI suggestive of significant central adiposity may be at highest risk following ACS.

Paradoxa de l'obesitat

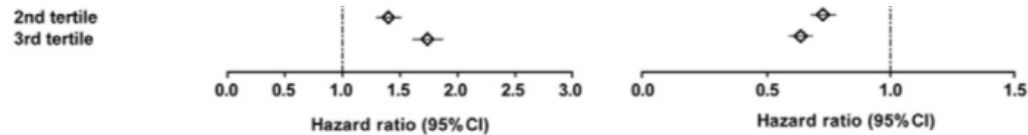
Central Obesity and Survival in Subjects With Coronary Artery Disease

15923 persones



Conclusions

In subjects with CAD, including those with normal and high BMI, central obesity but not BMI is directly associated with mortality. (J Am Coll Cardiol 2011;57:1877-86) © 2011 by the American College of Cardiology Foundation



Cotinho T et al J Am Coll Cardiol 2011;57:1877-86

Paradoxa de l'obesitat HJ23

Associació IMC i mortalitat H en pacients ingressats per SCA durant un període de 2 anys, en HJ23 RENACI

Cohort retrospectiva 824 p
26,5% ♀ i 73,5% ♂
Edat mitjana= 65,8 anys
(25 i 95 anys)

Mortalitat hospitalaria
35 pacients 4,2%

Predictors de mortalitat

Variable	p	Odds ratio	IC 95%
Edat	<0,0001	1,088	1,051-1,128
IMC	0,009	0,876	0,793-0,968
Antecedent CV	0,054	2,403	0,985-5,860
Tabac	0,016	0,256	0,084-0,775
Diabetis	0,012	2,398	1,213-4,740
Vasculopatia	0,001	3,792	1,706-8,429
IRenal	0,016	2,740	1,203-6,241
PAS	<0,0001	0,970	0,95-0,98
Killip III ingrès	<0,0001	9,422	3,92-22,64
Killip IV ingrès	<0,0001	31,406	6,48-152,0
Creatinina	<0,0001	1,696	1,29-2,23
1 ^o Glucemia	<0,0001	1,006	1,004-1,009
Pitjor Grace	<0,0001	1,024	1,015-1,03
Pitjor FE	<0,0001	20,206	7,15-57,08
Coronario	<0,0001	0,162	0,08-0,32
Angioplastia	0,016	0,392	0,18-0,83
Killip III Hosp	<0,0001	8,327	3,28-21,08
Killip IV Hosp	<0,0001	61,154	20,77-180,03

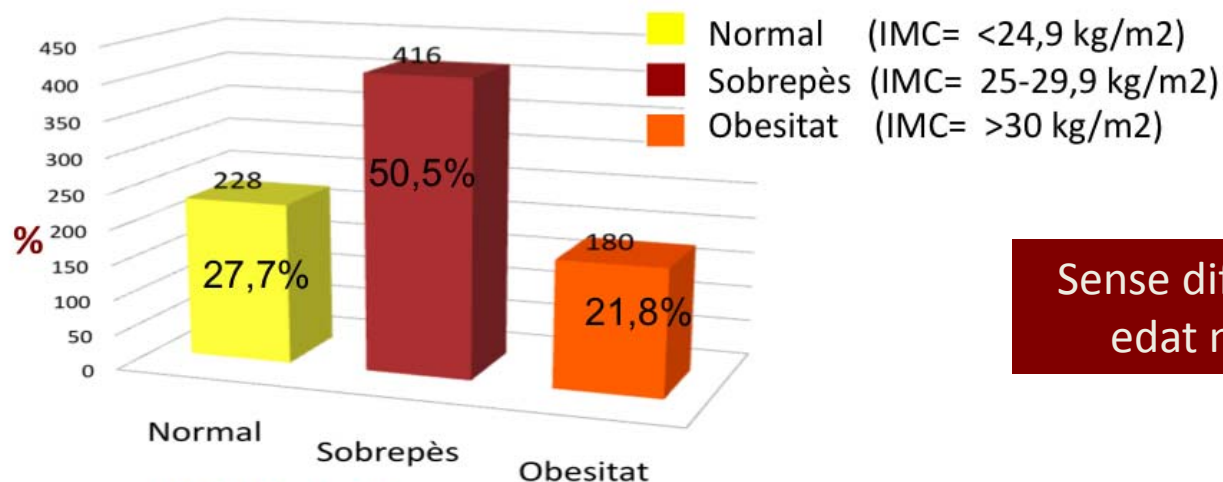
IMC i mortalitat hospitalaria HJ23

IMC predictor independent de mortalitat

Variable	p	Odds ratio	IC 95%
Edat	0,003	1,122	1,041-1,208
Diabetis	0,047	3,813	1,019-14,275
IMC	0,006	0,739	0,597-0,916
Pitjor Grace	0,002	1,037	1,013-1,061
Killip ingrès IV	<0,0001	88,520	8,950-875,517

Paradoxa de l'obesitat

IMC i mortalitat hospitalaria HJ23



Sense diferències
edat ni sexe

	IMC (kg/m ²)	TOTAL	IMC normal	Sobrepès	Obès	P
FRCV		789 (95,8%)	218 (95,6%)	399 (95,9%)	172 (95,6%)	0,88
Tabac		241 (29,2%)	85 (37,4%)	136 (32,9%)	47 (26,4%)	0,09
DM		279 (33,8%)	61 (26,8%)	143 (34,4%)	75 (41,7%)	0,016
HTA		543 (65,8%)	133 (58,3%)	280 (67,3%)	129 (71,7%)	0,063
Dislipèmia		480 (58,2%)	120 (52,6%)	247 (59,4%)	112 (62,2%)	0,24
Ant CV		556 (67,5%)	144 (63,2%)	275 (66,1%)	137 (76,1%)	0,015
MPOC		116 (14,1%)	22 (9,6%)	60 (14,4%)	34 (18,9%)	0,027

No diferències tractament previ a l'ingrés HJ23 (ARA2-diurètics)

IMC, dades hemodinàmiques, ECG i analítiques ingrès HJ23

	TOTAL	IMC normal	Sobrepès	Obès	P
FC	77,2+ 18,8	75,2+ 18,4	77,6+18	78,7+18,6	0,15
TA	140+30	135+27	141+32	144+29	0,005
KILLIP 3-4	56 (6,7%)	12 (5,3%)	30 (6,2%)	14 (7,8%)	0,001
TIMI	3,88 + 1,41	3,71+1,46	3,88+1,41	4,07+1,33	0,044
GRACE	127+38	130+41	127+37	124+35	0,34

Elevació ST	247 (30%)	72 (31,6%)	125 (30%)	50 (27,8%)	0,84
Descens ST	164 (19,9%)	43 (18,9%)	83 (20%)	38 (21,1%)	0,89
Troponines	678 (82,3%)	198 (86,8%)	329 (79,1%)	151 (83,9%)	0,1

Creatinina	1,15+0.7	1,15+0,75	1,17+0,70	1,11+0,63	0,68
MDRD	77,11+31,47	78,1 +31,62	76,36+30,27	77,59+34,05	0,78
CT	173,15+41	166+40	175+43	176+37	0,024
LDL	105+34	101+35	107+36	106+30	0,14
HDL	38+12	39+12	38+14	37+9	0,29
Glucemia	160+82	145+68	162+85	173+89	0,002

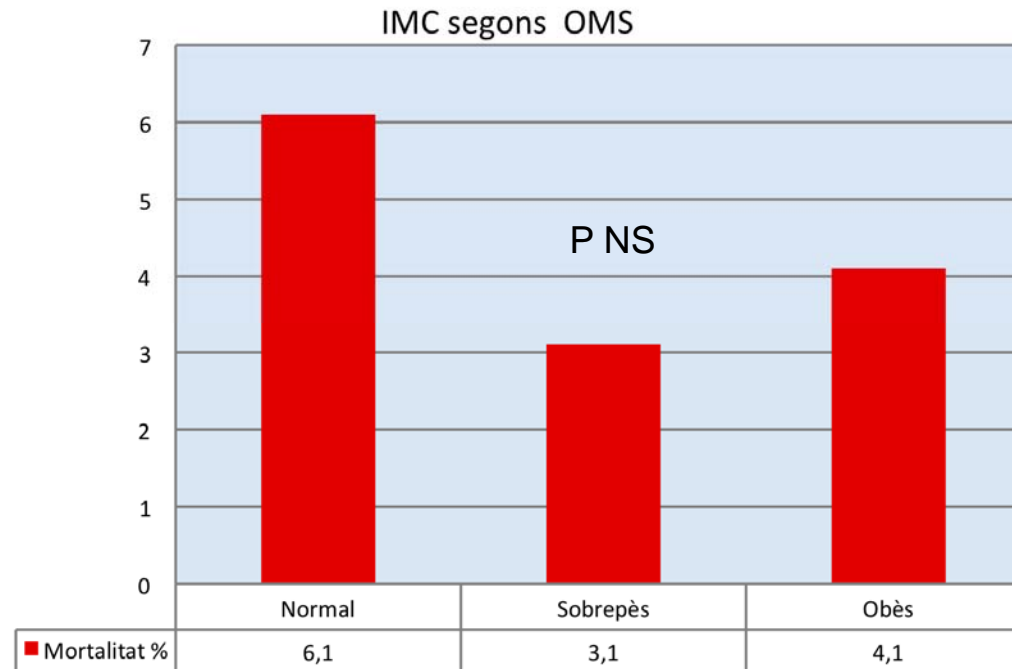
IMC, proves C i tractament HJ23

	TOTAL	IMC normal	Sobrepès	Obès	P
FE normal	524 (63,5%)	142 (62,3%)	271 (65,1%)	111 (61,7%)	0,55
CORONARIO	631 (76,6%)	174 (76%)	316 (76%)	141 (78,3%)	0,89
2 vasos	161 (19,5%)	34 (14,9%)	85 (20,4%)	42 (23,3%)	0,09
3 vasos	98 (11,9%)	18 (7,9%)	54 (13%)	26 (14,4%)	0,06
ICP	424 (51,3%)	124 (54,4%)	210 (50,5%)	89 (49,4%)	0,85
Bypass	6 (0,7%)	2(0,4%)	4(0,9%)	0	0,61

No diferències tractament administrat HJ23

COMPLICAC	203 (24,61%)	61 (26,8%)	105 (25,2%)	37 (20,6%)	0,32
Angor	72 (8,7%)	23 (10,1%)	37 (8,9%)	12 (6,7%)	0,47
Re IAM	38 (4,6%)	12 (5,3%)	18 (4,3%)	8 (4,4%)	0,85
AVC	7 (0,8%)	5 (2,2%)	1 (0,2%)	1 (0,6%)	0,03
Pitjor Killip	649 (78,8%)	171 (75%)	341 (82%)	137(76,1%)	0,03
Hemorragia	14 (1,7%)	4 (1%)	9 (2,1%)	1 (0,5%)	0,24
C.Mecàniq.	8 (0,9%)	1 (0,4%)	5 (1%)	2 (1,1%)	0,32

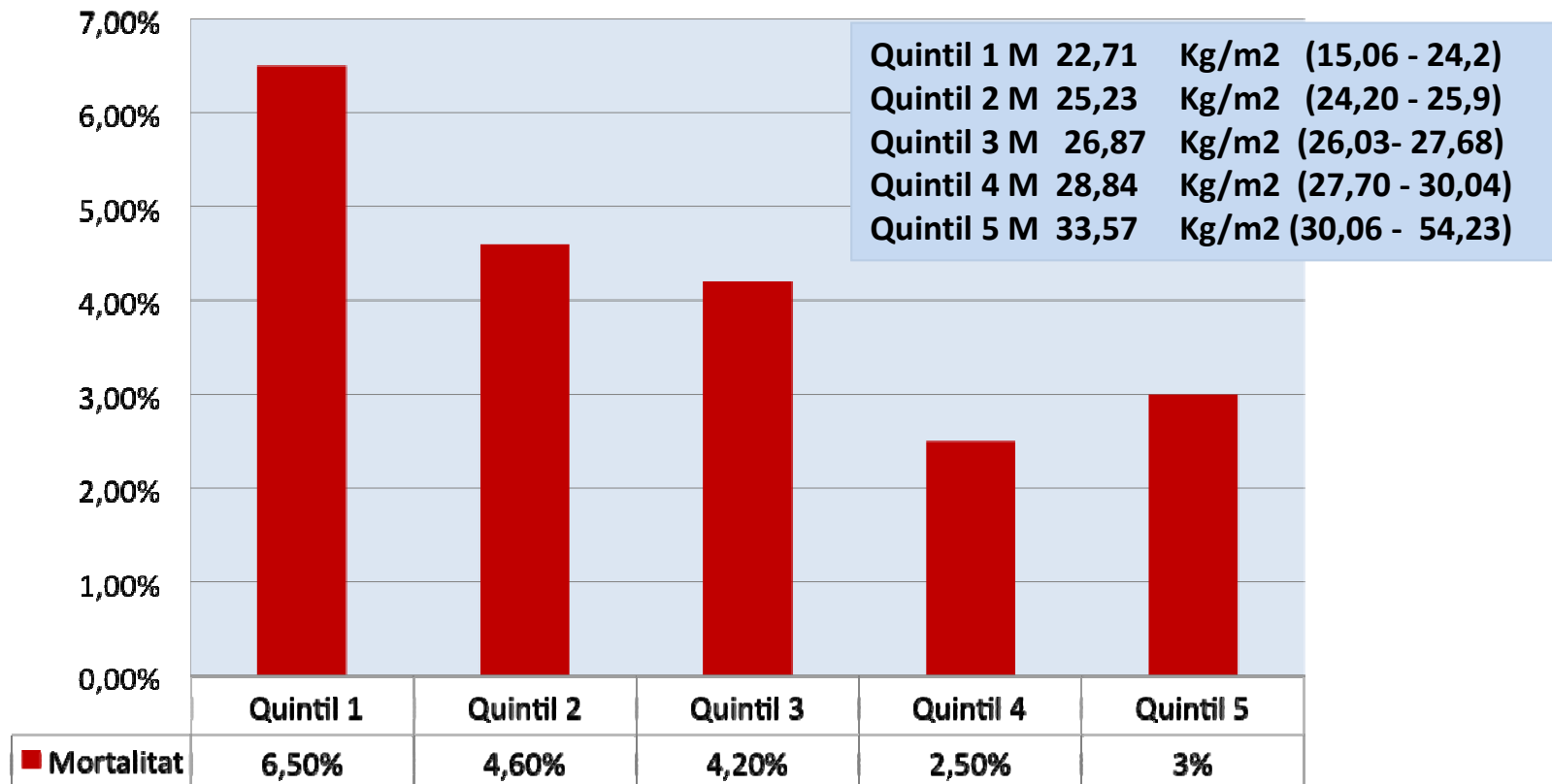
IMC i mortalitat hospitalaria HJ23



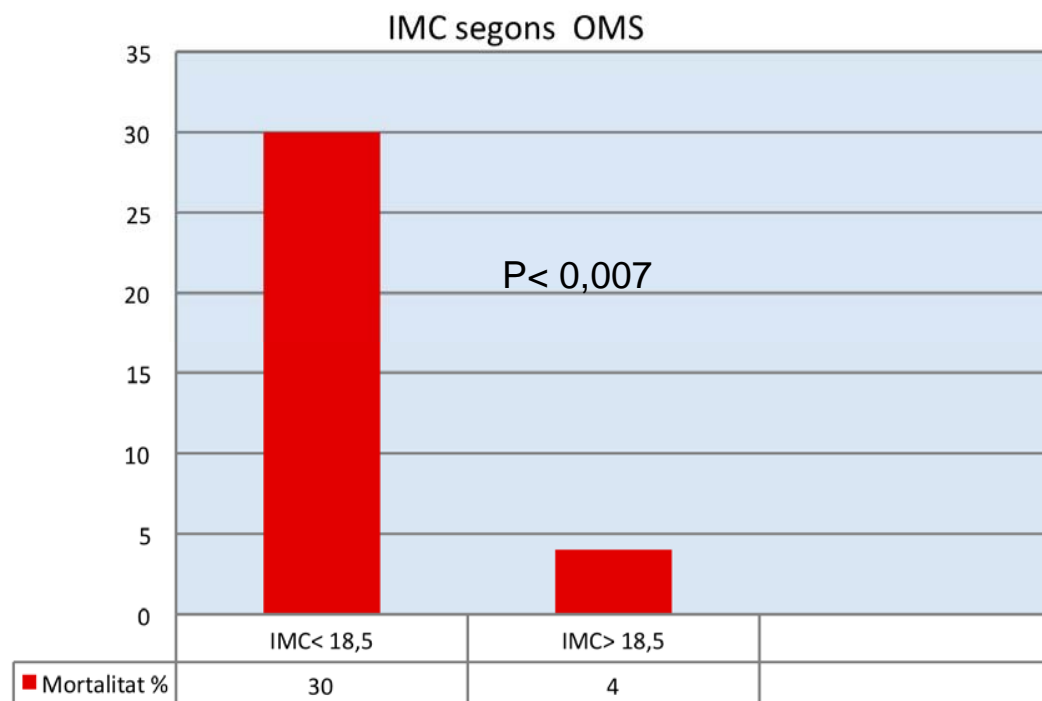
Tendència però no significació

IMC i mortalitat hospitalaria HJ23

IMC segons Quintils



IMC i mortalitat hospitalaria HJ23



Susceptibilitat del baix pes.

