



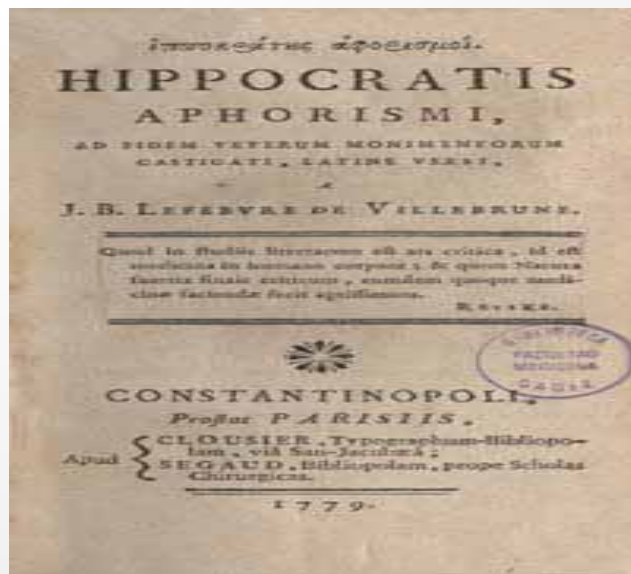
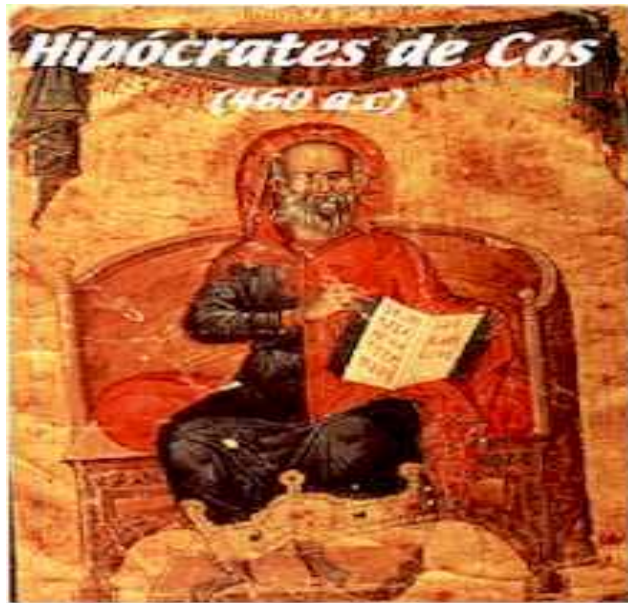
FACTORES PRONÓSTICOS EN LA EPOC, DEL FEV₁ AL ADO.

**P. Almagro.
H. Universitario Mutua
de Terrassa**

FACTORES DE MAL PRONÓSTICO



- ↑Edad
- ↑Sexo
- ↓FEV₁
- ↑Hiperinsuflación pulmonar estática
- ↓Capacidad pulmonar total
- ↓Respuesta broncodilatadora /Hiperreactividad bronquial
- ↓DLCO
- ↓PaO₂
- ↑PaCO₂
- ↑Índice BODE
- ↓Test de marcha / Capacidad física
- ↓esteroides inhalados
- ↑Frecuencia cardiaca, arritmias
- ↑Depresión
- ↓Estatus marital
- ↓IMC / ↓Masa muscular
- ↓Calidad de vida
- ↓Nivel hospitalario
- ↓Albúmina
- ↑Continuar fumando
- ↑Ingresos previos
- ↑Disnea
- ↑Apache
- ↑Oxigenoterapia domiciliaria
- ↑Cor pulmonale/ Hipertensión pulmonar
- ↓Nivel socioeconómico
- ↑Comorbilidad
- ↑Número de exacerbaciones
- ↑Número de medicación usual



“Si el invierno se presenta con viento sur, lluvioso y suave y la primavera seca, y con viento norte en los ancianos se dan catarros que matan inmediatamente”

Hipócrates:460-370
a.C.

Aforismos

¿Para que sirven?



- Mejorar el conocimiento



- Comparar poblaciones



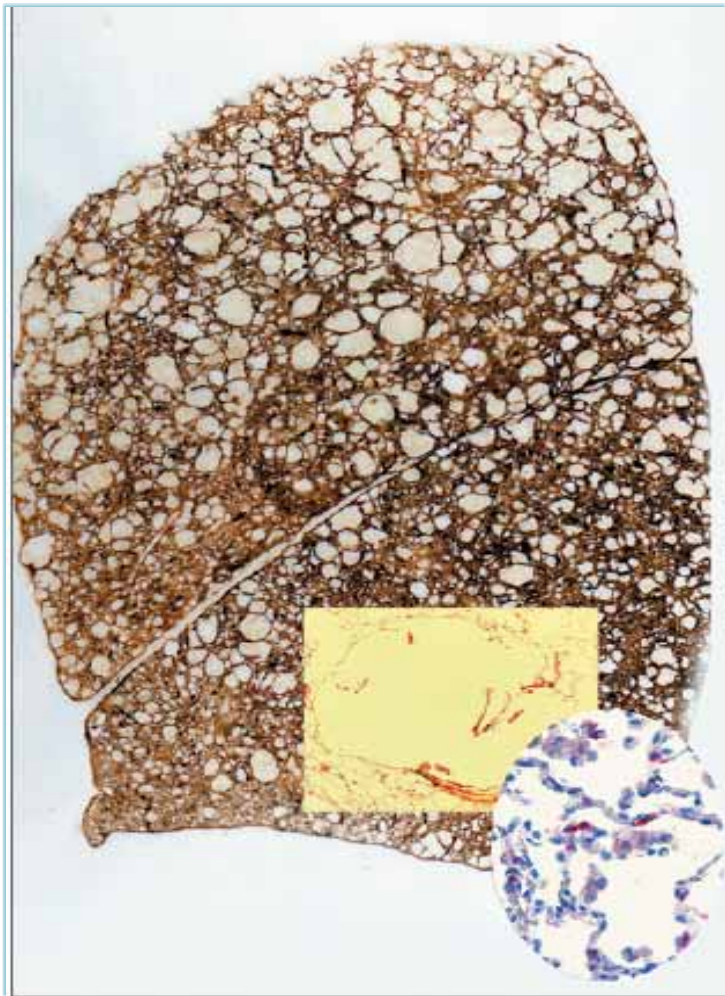
- Valorar respuesta a los



- "hacer predicciones es algo muy difícil... especialmente cuando son sobre el futuro"

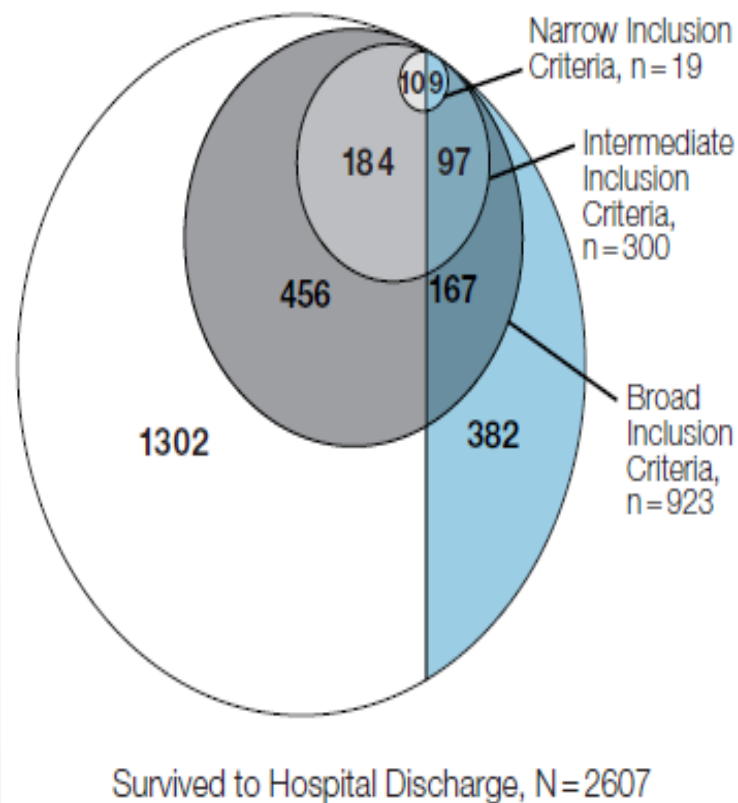
Chronic Obstructive Pulmonary Disease: The Last Year of Life

John Hansen-Flaschen MD



vided by physicians.⁶ Though rarely straightforward for any progressive illness, anticipating death is exceptionally challenging for patients suffering from chronic lung disease. Indeed, among 19 indications for referral to hospice, only dementia has a more uncertain 6-month prognosis than COPD.⁷⁻⁹

Evaluation of Prognostic Criteria for Determining Hospice Eligibility in Patients With Advanced Lung, Heart, or Liver Disease



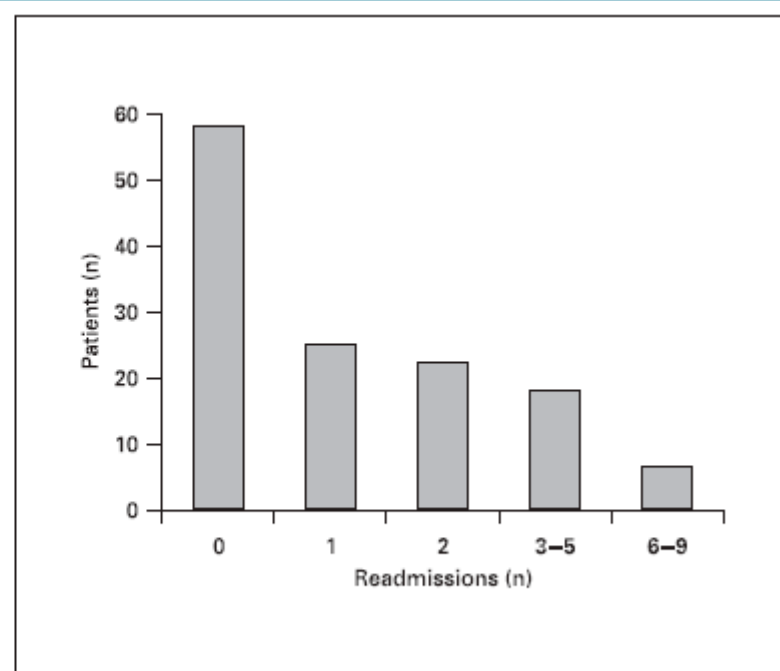
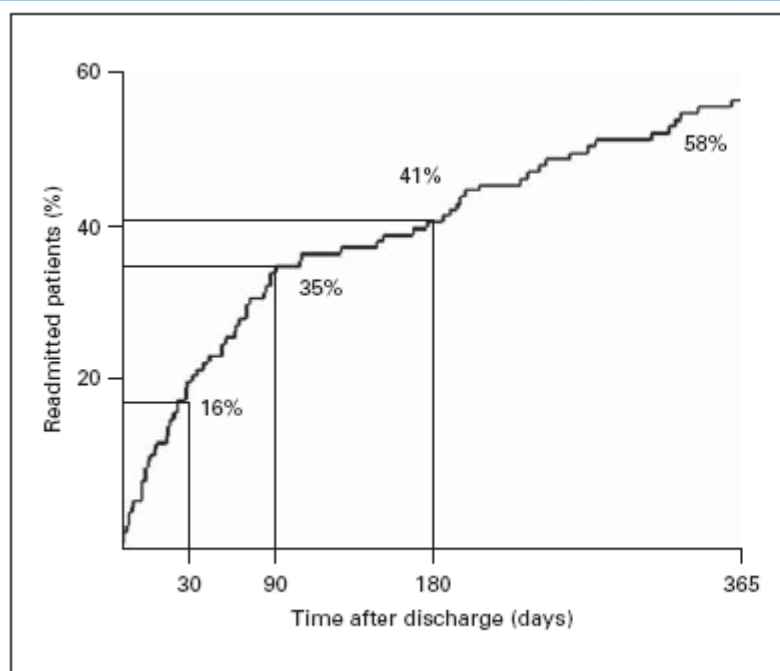
JAMA. 1999;282:1638-1645

The prognostic criteria we used to simulate NHO guidelines were largely ineffective in predicting which seriously ill hospitalized patients with COPD, CHF, or ESD have a prognosis of 6 months or less. Among patients meeting various combinations of criteria, 6-month survival ranged from 53% to 70%.

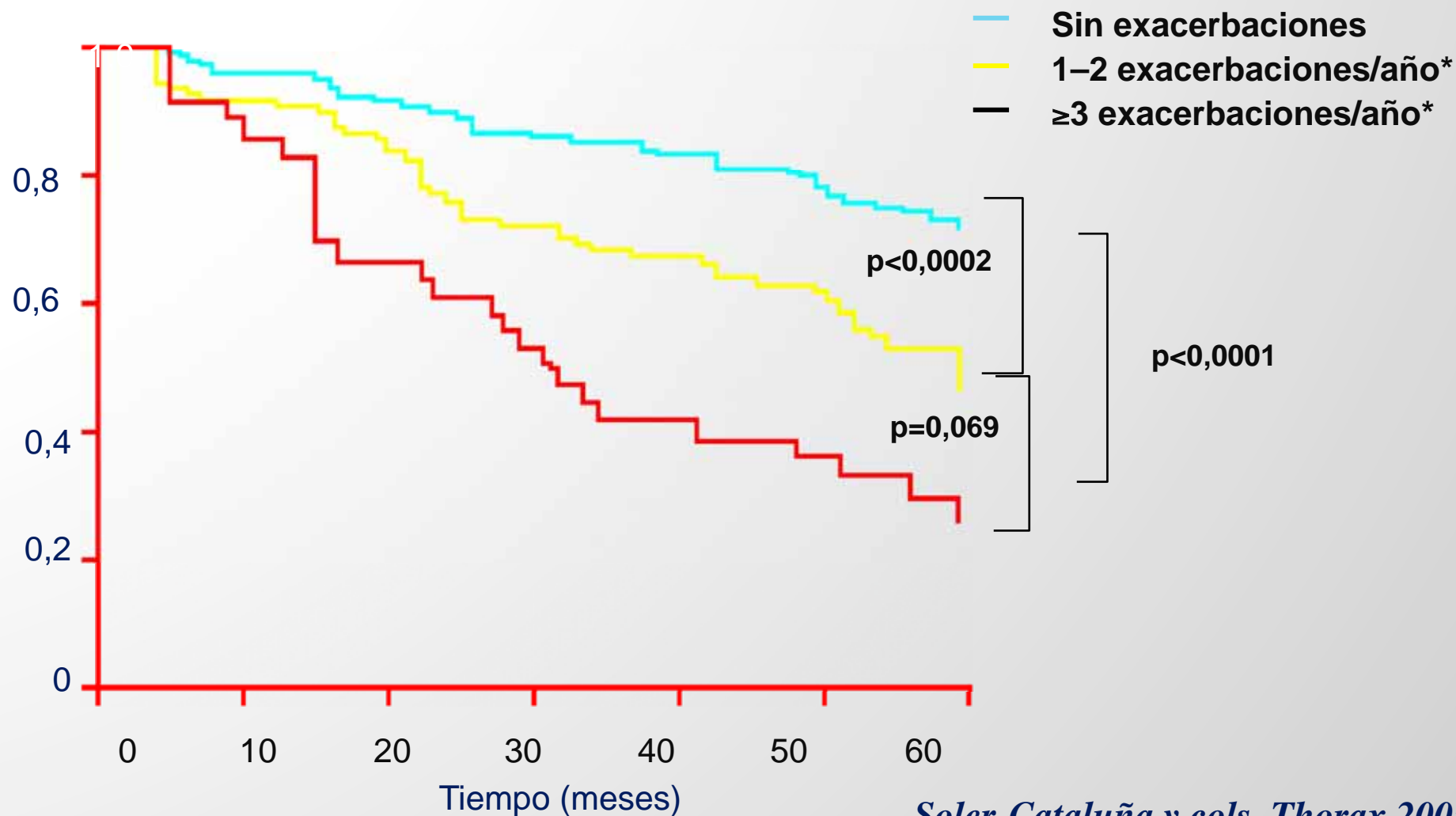
Of all the groups examined in the study, the 55 patients discharged directly to hospice care had the shortest median survival (24 days), as well as the smallest chance of surviving more than 6 months (21%). One possible explanation for this finding is that clinicians were able to identify patients with worse prognoses based on factors other than those analyzed in this study. An-

Risk Factors for Hospital Readmission in Patients with Chronic Obstructive Pulmonary Disease

Pedro Almagro^a Bienvenido Barreiro^b Anna Ochoa de Echagüen^a
Salvador Quintana^c Mónica Rodríguez Carballeira^a José L. Heredia^b
Javier Garau^a

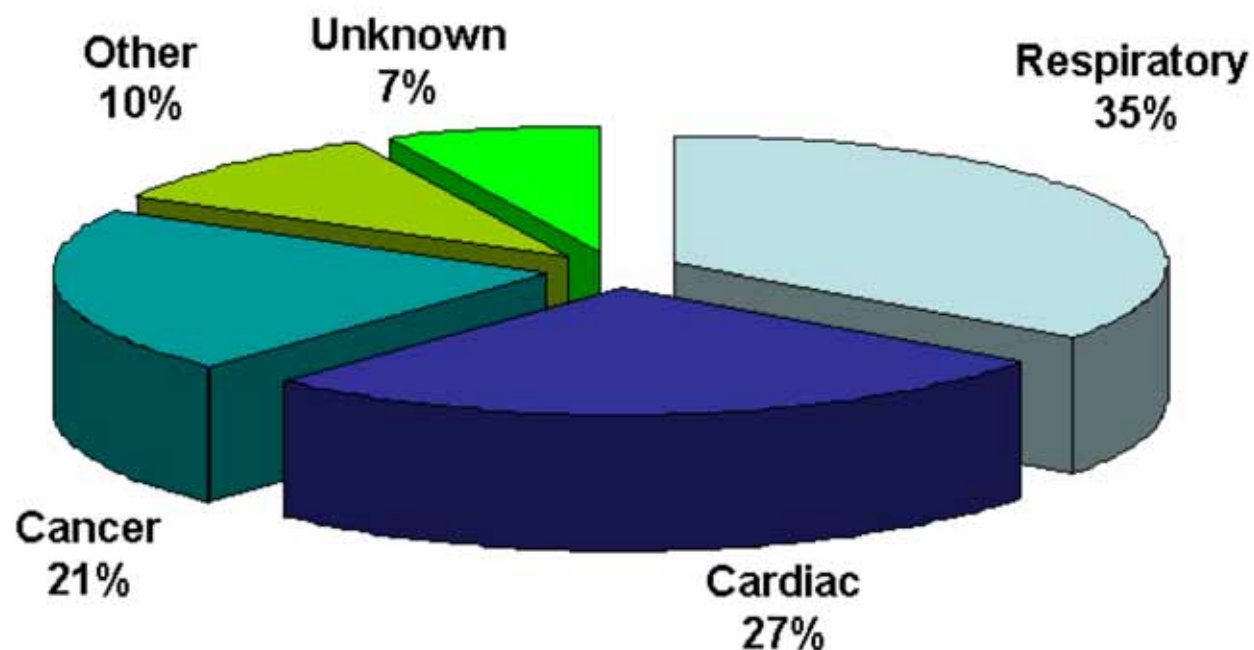


EXACERBACIONES Y MORTALIDAD





Overall Causes of Death in COPD Patients*



*as adjudicated by the TORCH Clinical Endpoint Committee

ESPIROMETRO- CAPACIDAD VITAL

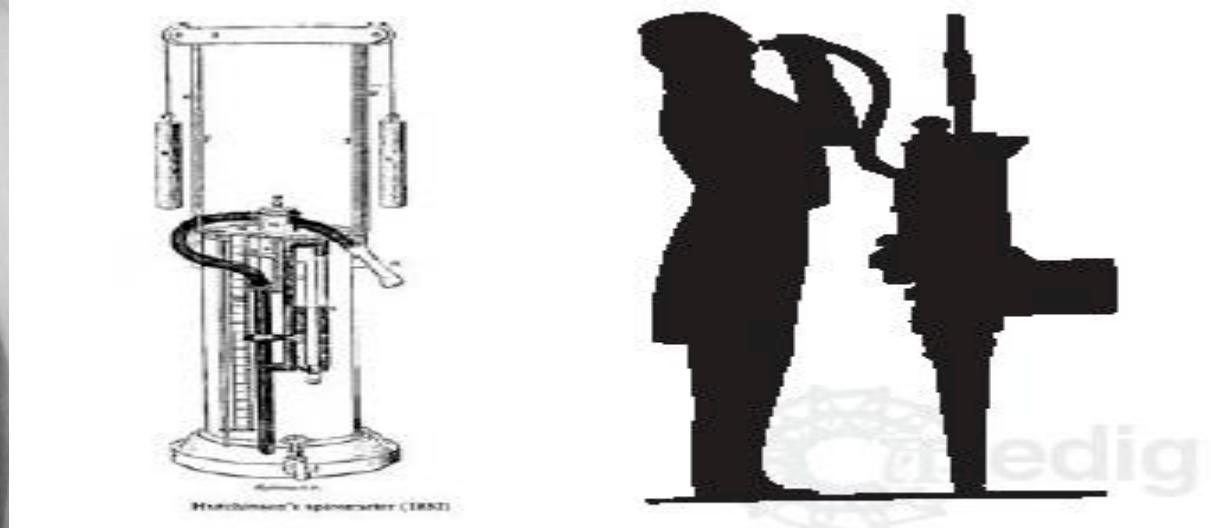
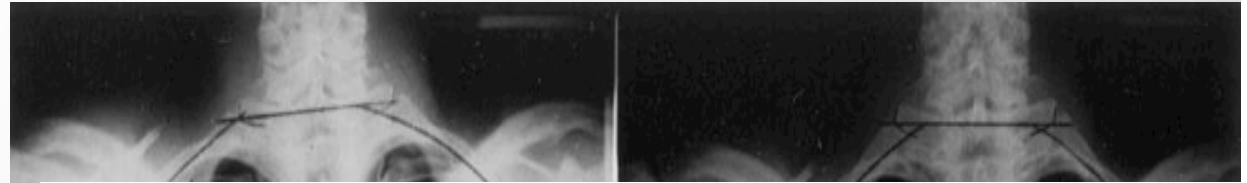
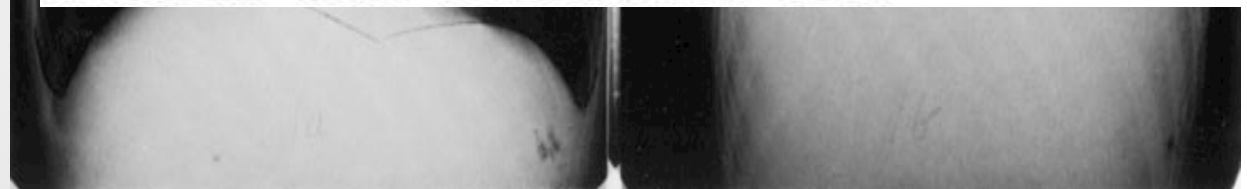
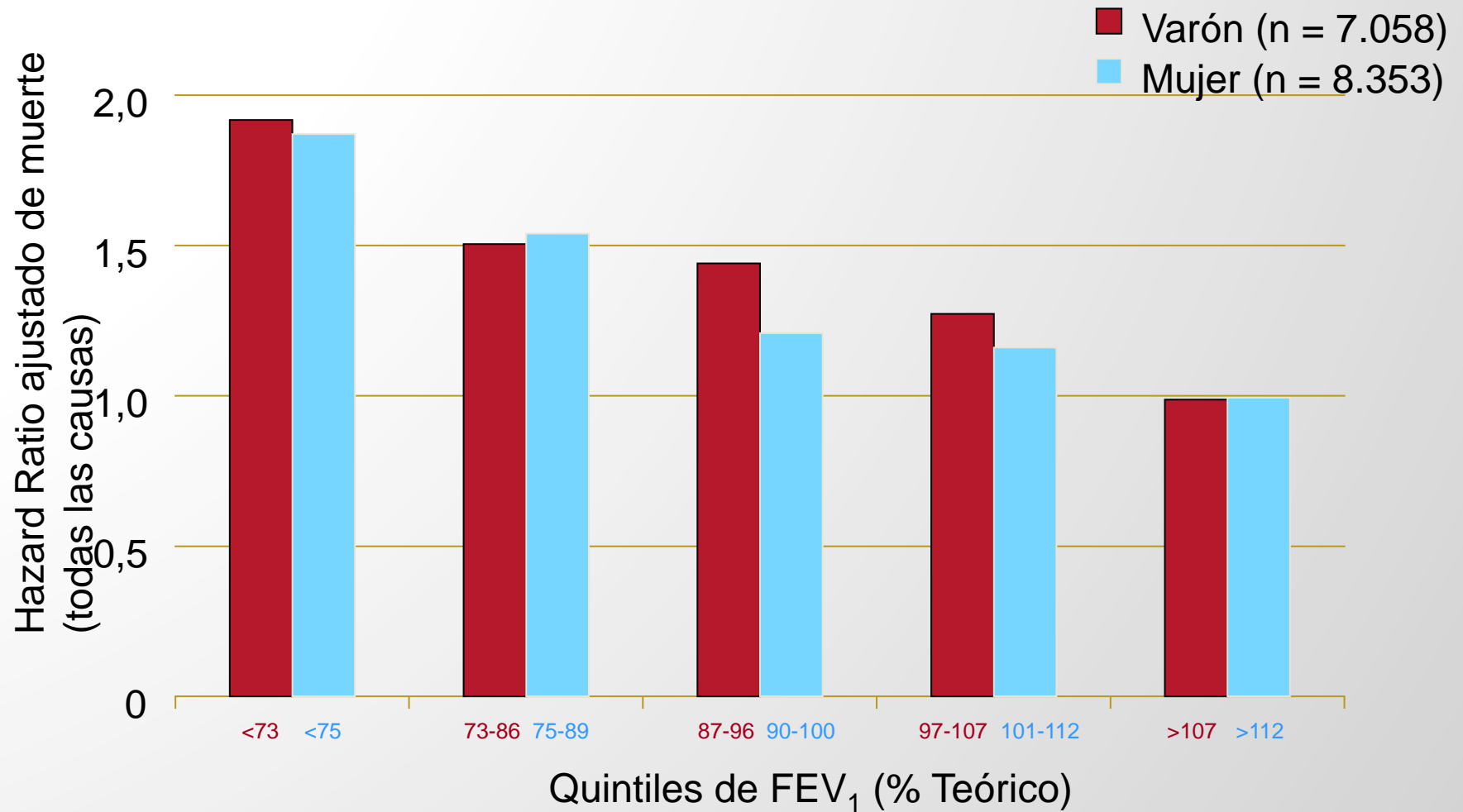


Figura 1. Espirómetro de Hutchinson y la técnica para realizar la prueba (Tomado de Hutchinson J. Med Chir Trans 1846;2(II):137-252.



Hazard Ratios (Mortalidad por cualquier causa)



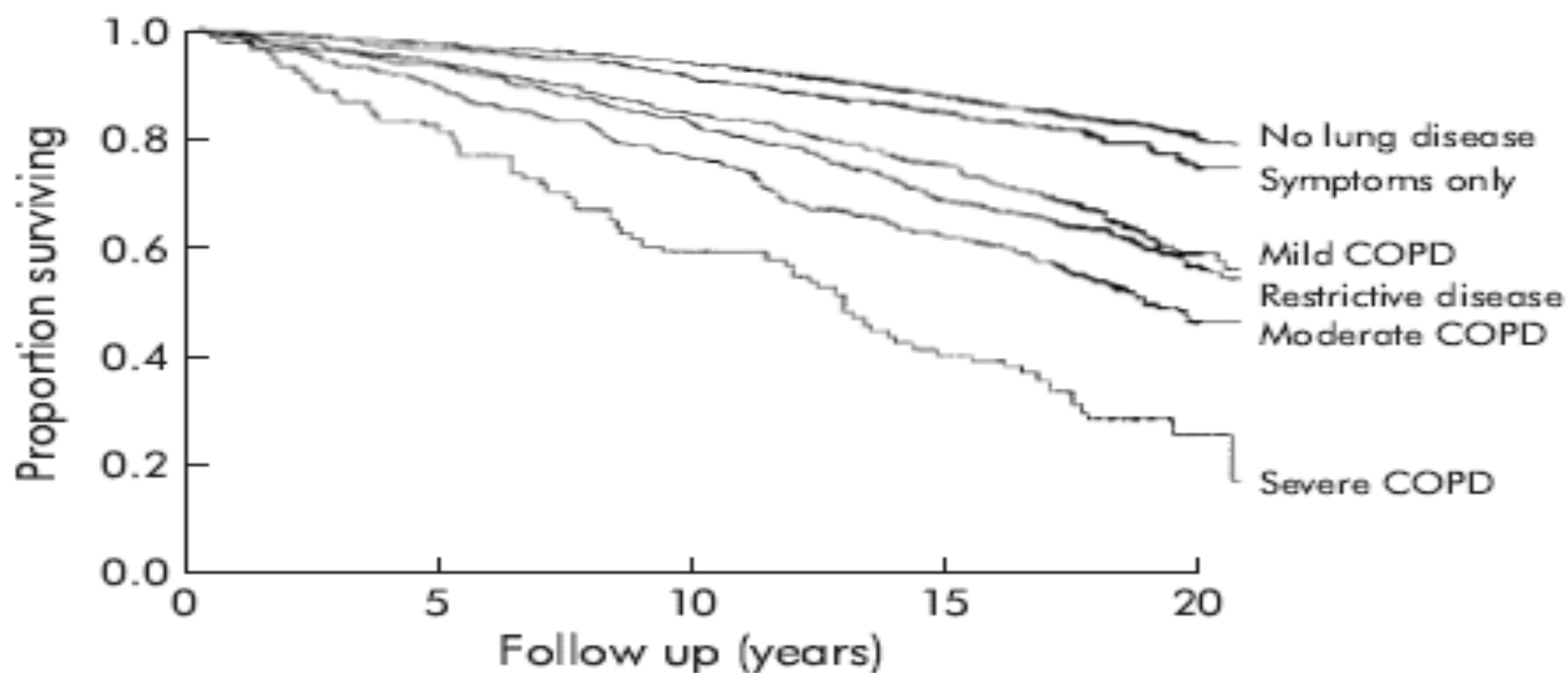
Hole DJ, et al. BMJ 1996

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Lung function and mortality in the United States: data from the First National Health and Nutrition Examination Survey follow up study

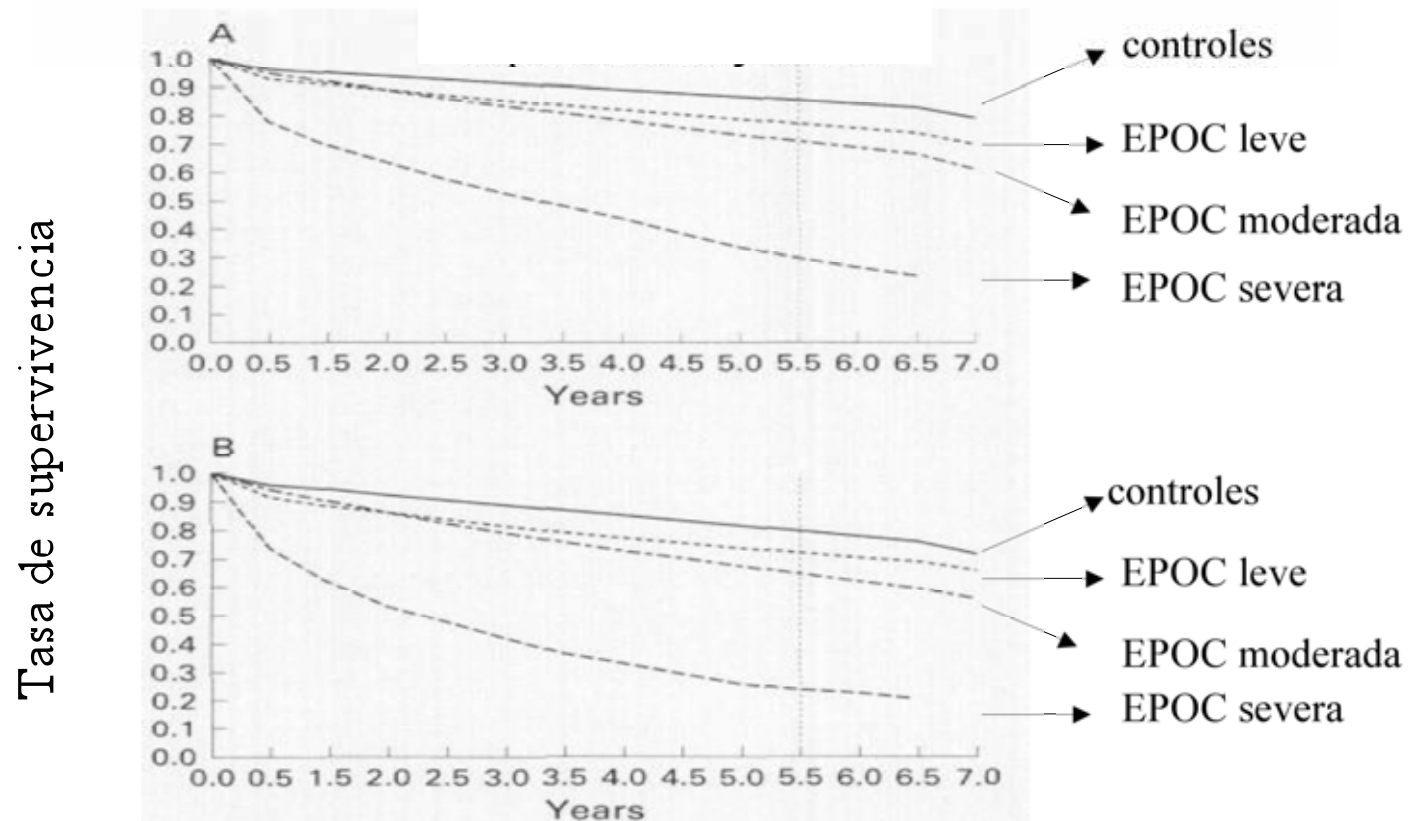
D M Mannino, A S Buist, T L Petty, P L Enright, S C Redd

Thorax 2003;58:388-393



Recent trends in physician diagnosed COPD in women and men in the UK

Joan B Soriano, William C Maier, Peter Egger, George Visick, Bharat Thakrar, Jennie Sykes, Neil B Pride

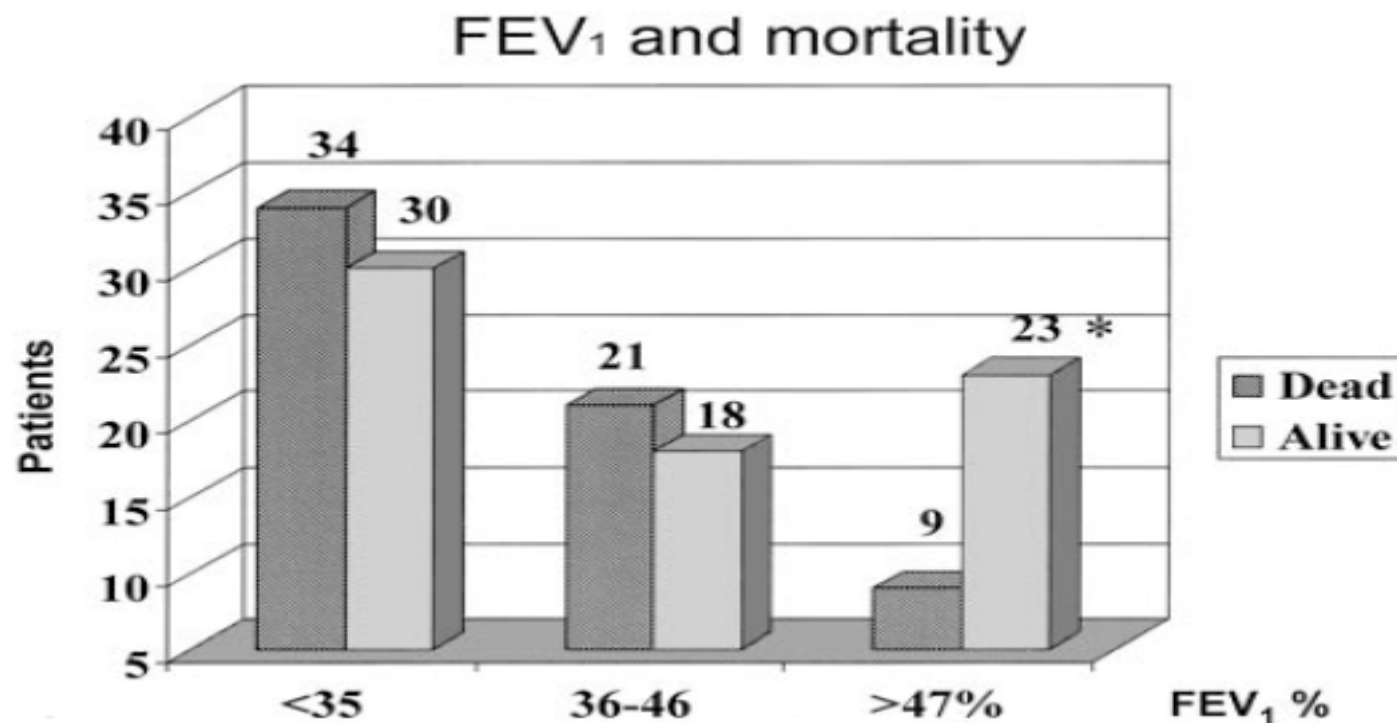


(A) mujeres y (B) hombres.

Soriano et al. Thorax 2000

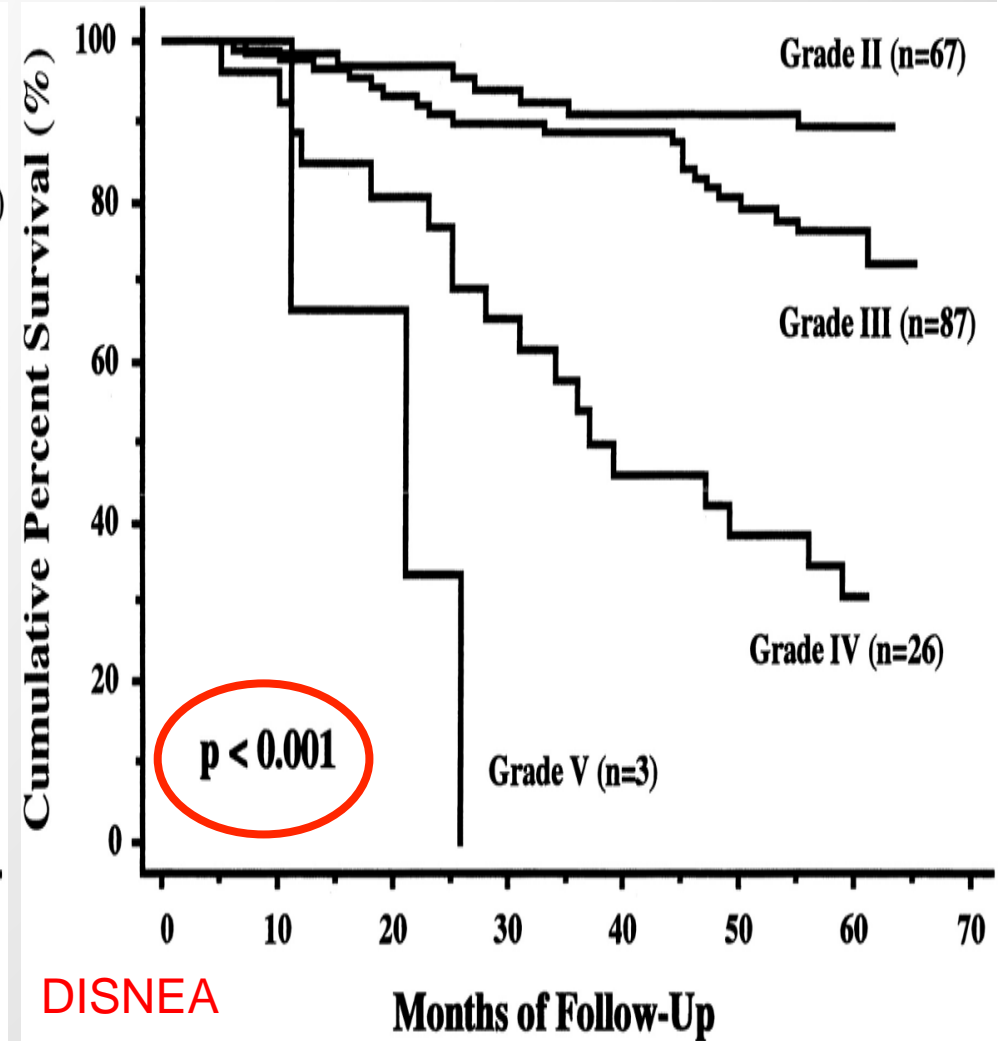
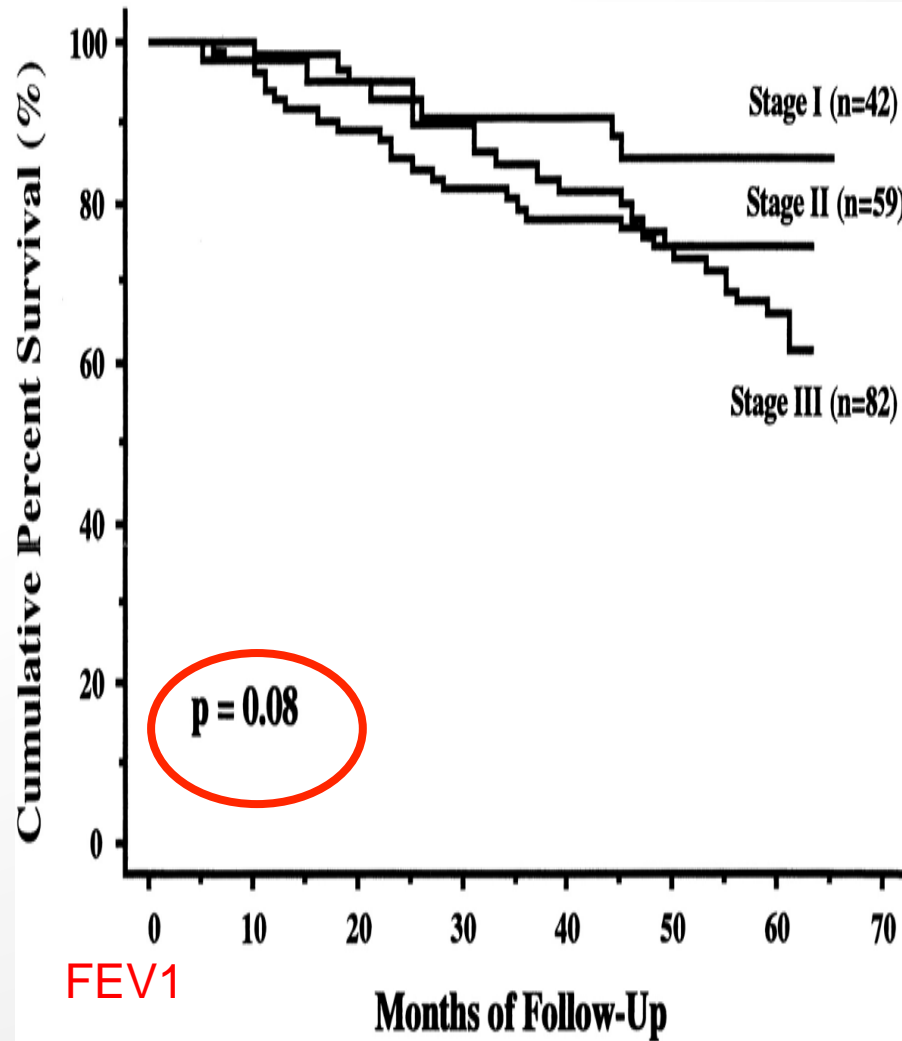
Mortality After Hospitalization for COPD*

Almagro P, et al .Chest 2002



“Sin embargo debemos resaltar que un valor bajo de FEV₁ puede ser compatible con una prolongada supervivencia” **Postma DS et al**
Prognosis of COPD: the Dutch experience. Am Rev Respir Dis 1989.

Disnea



Clasificación de la gravedad de la EPOC según la CTS

Estadio	Síntomas
En riesgo	fumador asintomático, FEV1 > 0,7 y/o FEV1 > 80%
Leve	Disnea por EPOC andando deprisa o subiendo escaleras
Moderada	Disnea por EPOC andando 100 metros o unos minutos
Grave	Disnea que impide salir de casa, o que aparece al lavarse o vestirse, o bien presencia de insuficiencia respiratoria o de cor pulmonale.

*El diagnóstico de EPOC requiere un FEV1 postbroncodilatador < 80% y FEV1/
FVC < 0.7.*

O'Donnell. Can Respir J 2004

NHLBI/WHO Workshop Summary

Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease

NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop Summary

ROMAIN A. PAUWELS, A. SONIA BUIST, PETER M. A. CALVERLEY, CHRISTINE R. JENKINS, and SUZANNE S. HURD, on behalf of the GOLD Scientific Committee

THIS DOCUMENT WAS ENDORSED BY THE EXECUTIVE COMMITTEE OF THE AMERICAN THORACIC SOCIETY, MARCH 2001

COPD is a disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually both progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases.

La EPOC es una enfermedad prevenible y tratable, con un componente extrapulmonar que contribuye a la gravedad en algunos pacientes. El componente pulmonar se caracteriza por una limitación al flujo aéreo que no es completamente reversible y se asocia con una respuesta inflamatoria Pulmonar anormal a partículas o gases nocivos.

GOLD. Diciembre 2009

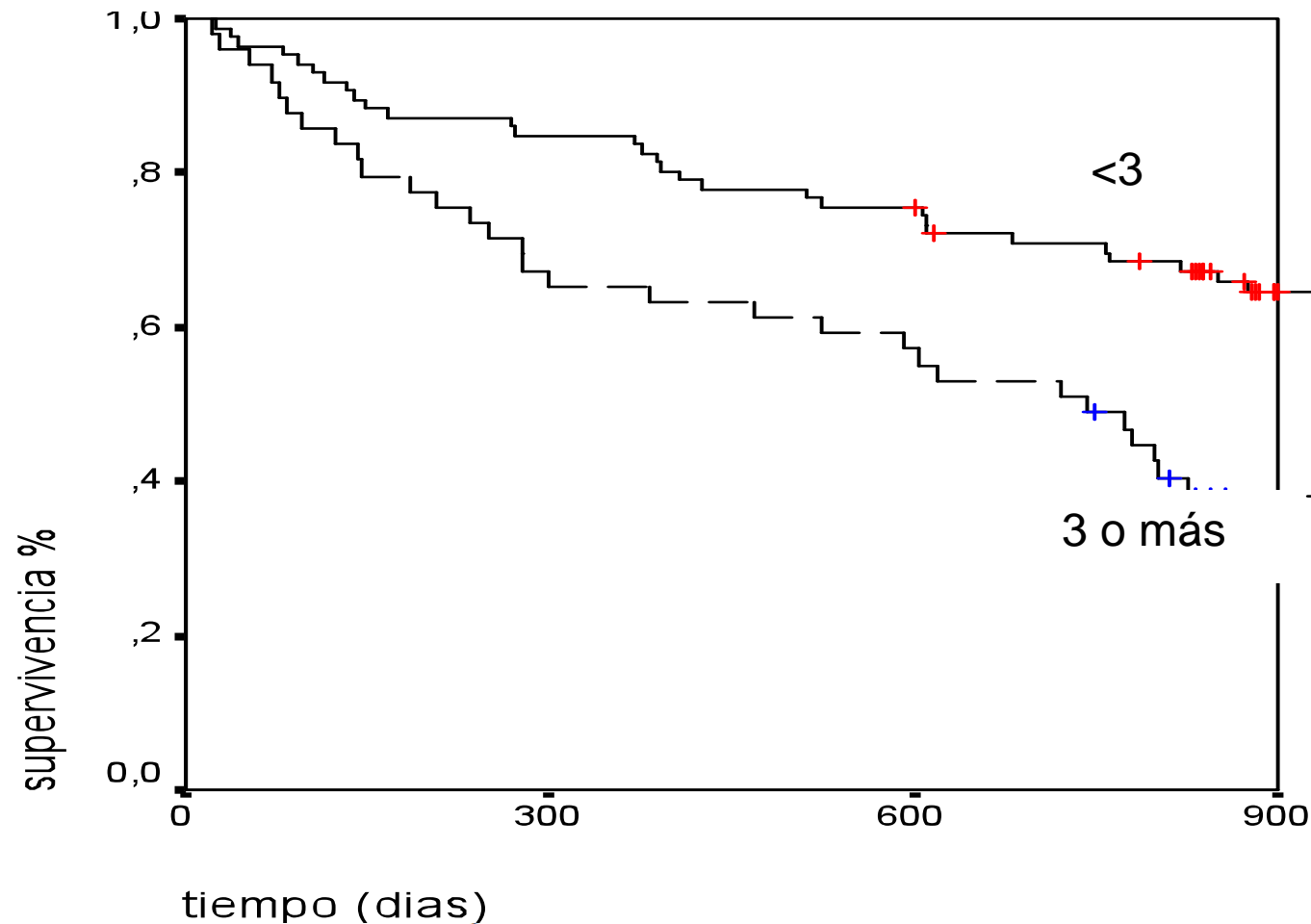
Estudio de las comorbilidades en pacientes hospitalizados por descompensación de la EPOC atendidos en los servicios de medicina interna. Estudio ECCO

P. Almagro^{a*}, F. López García^b, F.J. Cabrera^c, L. Montero^d, D. Morchón^e, J. Díez^f, F. de la Iglesia^g, B. Roca^h, M. Fernández-Ruizⁱ, J. Castiella^j, E. Zubillaga^k, J. Recio^l y J.B. Soriano^m

Tabla 3 Frecuencia de comorbilidades (n = 398)

Comorbilidad	Total
Incluidas en el índice Charlson	
<u>Enfermedad coronaria</u>	68 (17%)
<u>Insuficiencia cardiaca</u>	107 (27%)
Enfermedad vascular periférica	50 (13%)
Enfermedad cerebrovascular	38 (10%)
Demencia	15 (4,4%)
Enfermedad del tejido conectivo	7 (2%)
Úlcus péptico	49 (12%)
Hepatopatía leve	29 (7,3%)
<u>Diabetes sin complicaciones</u>	103 (26%)
Diabetes con daño orgánico	14 (3,5%)
Hemiplejia	4 (1%)
Insuficiencia renal moderada	26 (6,5%)
Tumor sólido sin metástasis	26 (6,5%)
Leucemia	6 (1,5%)
Linfoma	2 (0,5%)
Enfermedad hepática moderada o severa	9 (2,3%)
Tumor sólido con metástasis	71 (18%)
Síndrome de inmunodeficiencia adquirida	1 (0,3%)
Otras comorbilidades	
<u>Infarto de miocardio</u>	34 (9%)
Hipertensión arterial	218 (55%)
Alcoholismo	56 (14%)
Enfermedad tromboembólica	13 (3%)
Arritmia	108 (27%)
Edemas	132 (33%)
Osteoporosis	37 (9,7%)
Anemia	265 (67%)

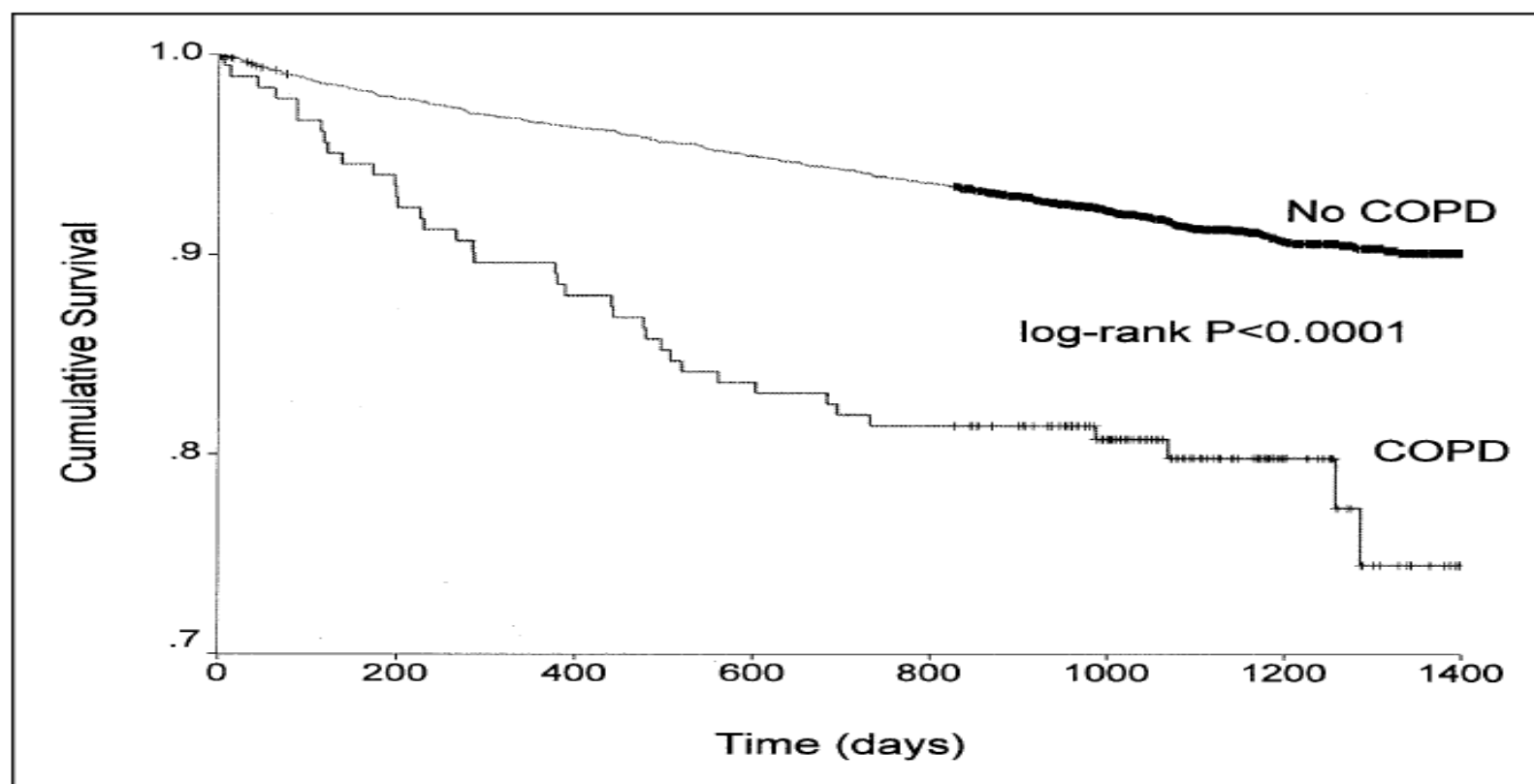
Mortality After Hospitalization for COPD*



rates. The most frequently associated comorbidity was chronic heart failure and the only one that was significant in the bivariate analysis ($p < 0.001$; OR, 2.3; CI, 1.39 to 2.83; Table 3).

Effect of Chronic Obstructive Pulmonary Disease on Survival of Patients With Coronary Heart Disease Having Percutaneous Coronary Intervention

Jeffrey S. Berger, MD, Timothy A. Sanborn, MD, Warren Sherman, MD, and David L. Brown, MD



Chronic Obstructive Pulmonary Disease: The Last Year of Life

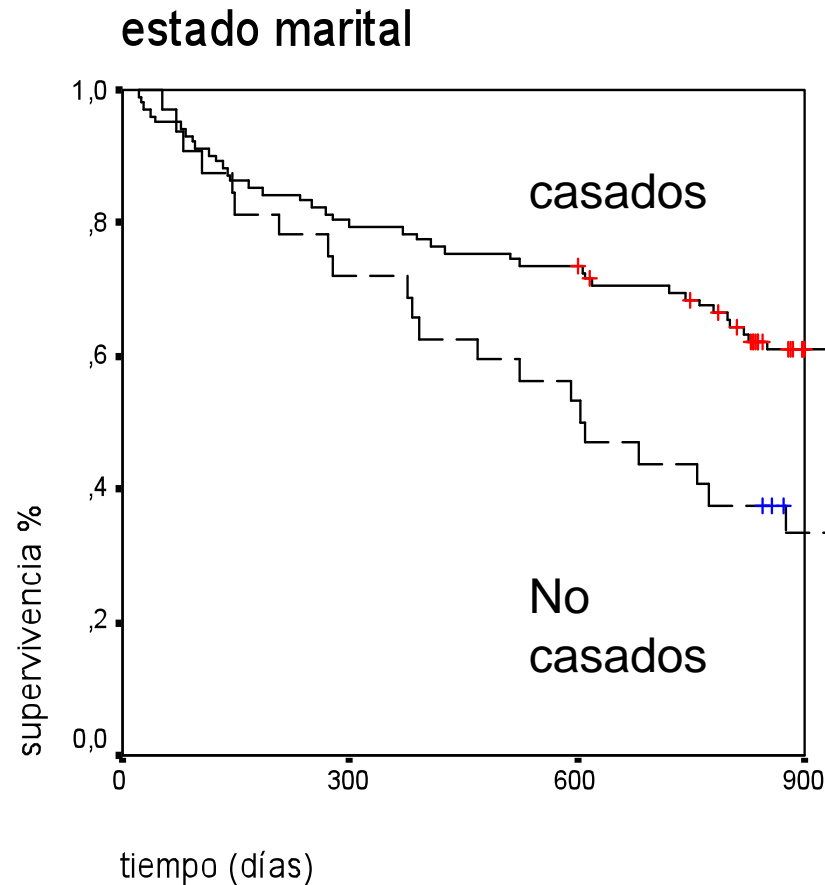
John Hansen-Flaschen MD RESPIRATORY CARE • JANUARY 2004 VOL 49 No 1

dict poor short-term survival. In one noteworthy study, depression and living alone also emerged as strong predictors of death after hospitalization for COPD exacerbation. These results suggest that motivation to survive and the supporting care of a spouse or other care partner may prove to be particularly important determinants of survival in patients with advanced disease.¹⁷

Mannino: Do you recommend marriage or cohabitation for your single, end-stage COPD patients, or do you think the fact that married people survive longer is just a marker for something else?

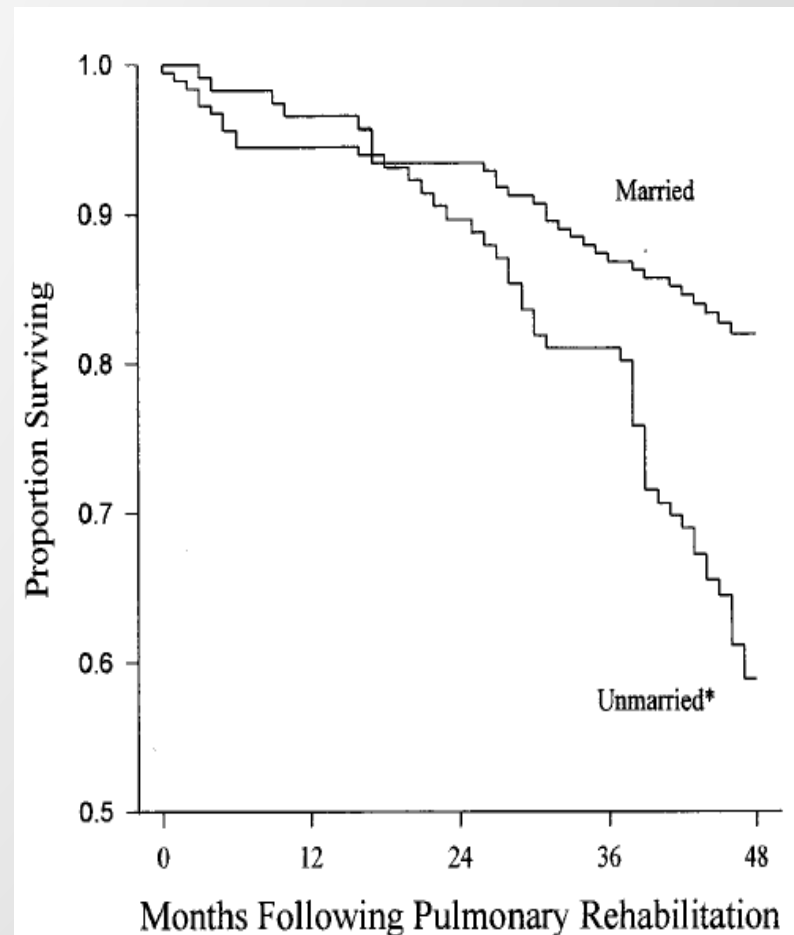
Hansen-Flaschen: That would be great, wouldn't it? I can only speculate, as the authors of that article did, on what that surprising finding meant.¹

Mortality After Hospitalization for COPD*



Almagro P. Chest 2002

Functional Status and Survival Following Pulmonary Rehabilitation*



Bowen JB. Chest 2000



Johnson NJ, Backlund E, Sorlie PD, Loveless CA. Marital status and mortality: the national longitudinal mortality study. *Ann Epidemiol* 2000; 10: 224-38.

Case RB, Moss AJ, Case N, McDermott M, Eberly S. Living alone after myocardial infarction. Impact on prognosis. *JAMA* 1992; 267: 515-9.



Dickens CM, McGowan L, Percival C, Douglas J, Tomenson B, Cotter L, et al. Lack of a close confidant, but not depression, predicts further cardiac events after myocardial infarction. *Heart* 2004; 90: 518-22.



Adherence to inhaled therapy, mortality, and hospital admission in COPD

Jørgen Vestbo, Julie A Anderson, Peter Calverley, Bartolome Celli, Gary T Ferguson, Christine Jenkins, Katharine Knobil, Lisa R Willits, Julie C Yates and Paul Jones

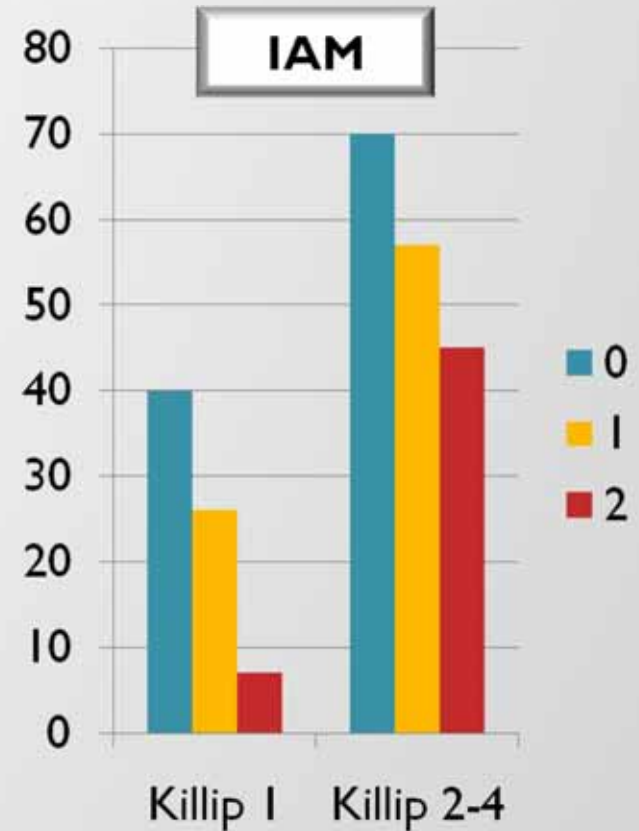
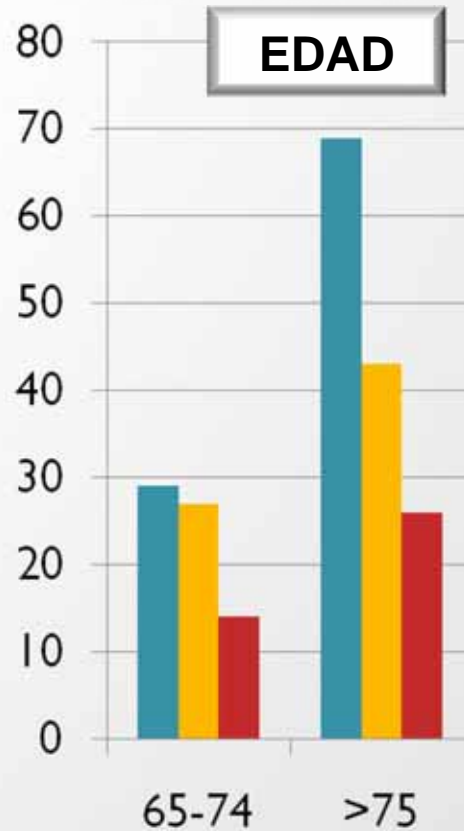
Thorax published online 23 Aug 2009;

	Pb	SMT	FC	SMT/FC
Cumplidores	12%	10.7%	12.9%	9.5%
No cumplidores	26.7%	25.2%	28.7%	24.9%

Intencion de tratar HR 0.4; C.I. 0.35-0.46; p<0.001

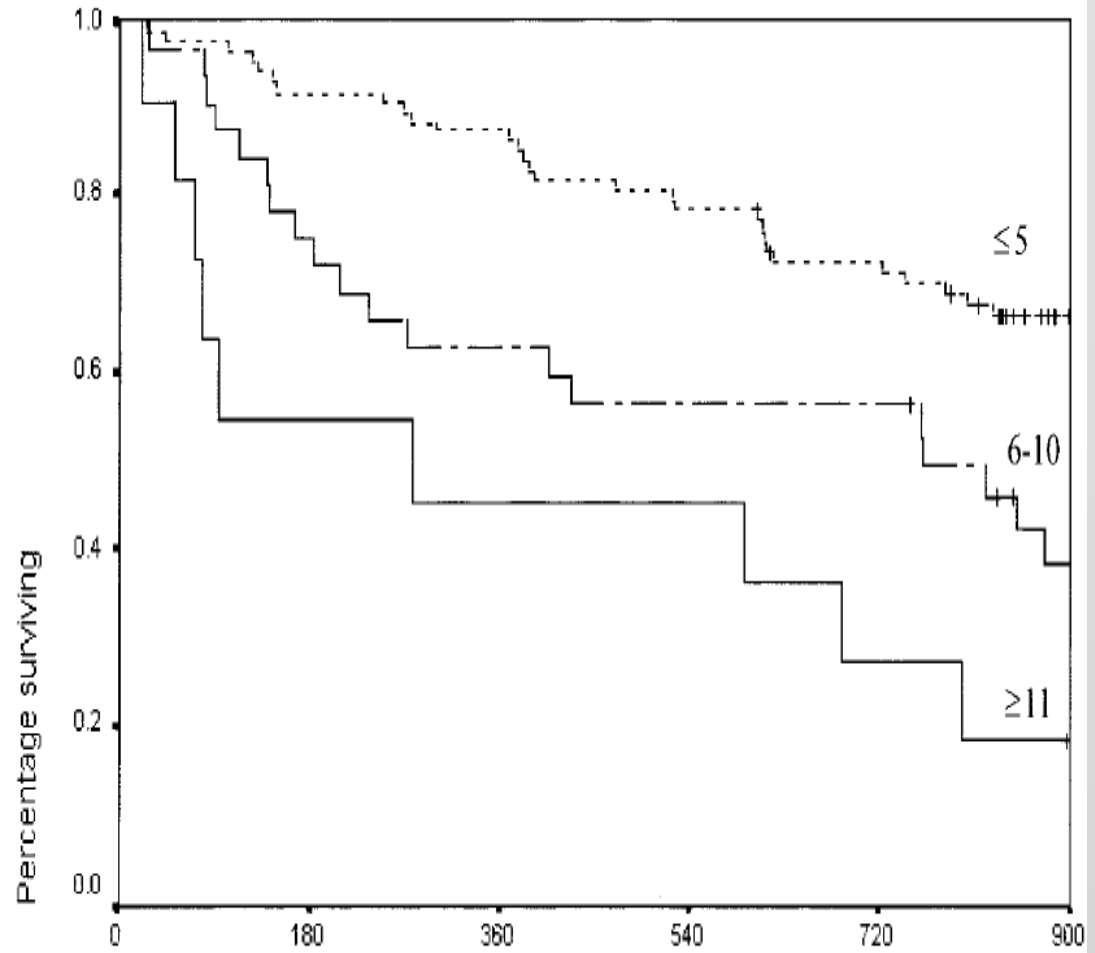
Tratamiento HR 0.25; CI 0.20-0.30

Berkman LF, et al. Emotional support and survival after myocardial infarction. A prospective, population-based study of the elderly. Ann Intern Med 1992; 117:1003-9.





Depression and mortality



Days

Almagro P. Chest 2002

Clinical and Personality Profiles and Survival in Patients With COPD

*Kumar Ashutosh, MD, FCCP; Chetan Haldipur, MD; and
Michael L. Boucher, PhD*

Chest 1997;111:95-98

Depressive Symptoms and 3-Year Mortality in Older Hospitalized Medical Patients

Kenneth E. Covinsky, MD, MPH; Eva Kahana, PhD; Marshall H. Chin, MD, MPH;
Robert M. Palmer, MD, MPH; Richard H. Fortinsky, PhD; and C. Scott ~~Walters~~ ^{Walters}, MD, MPH
Ann Intern Med. 1999;130:563-569.

Sex, Depression, and Risk of Hospitalization and Mortality in Chronic Obstructive Pulmonary Disease

Vincent S. Fan, MD, MPH; Scott D. Ramsey, MD, PhD; Nicholas D. Giardino, PhD; Barry J. Make, MD;
Charles F. Emery, PhD; Phillip T. Diaz, MD; Joshua O. Benditt, MD; Zab Mosenifar, MD;
Robert McKenna Jr, MD; Jeffrey L. Curtis, MD; Alfred P. Fishman, MD; Fernando J. Martinez, MD, MPH;
for the National Emphysema Treatment Trial (NETT) Research Group

Arch Intern Med. 2007.

ORIGINAL ARTICLE

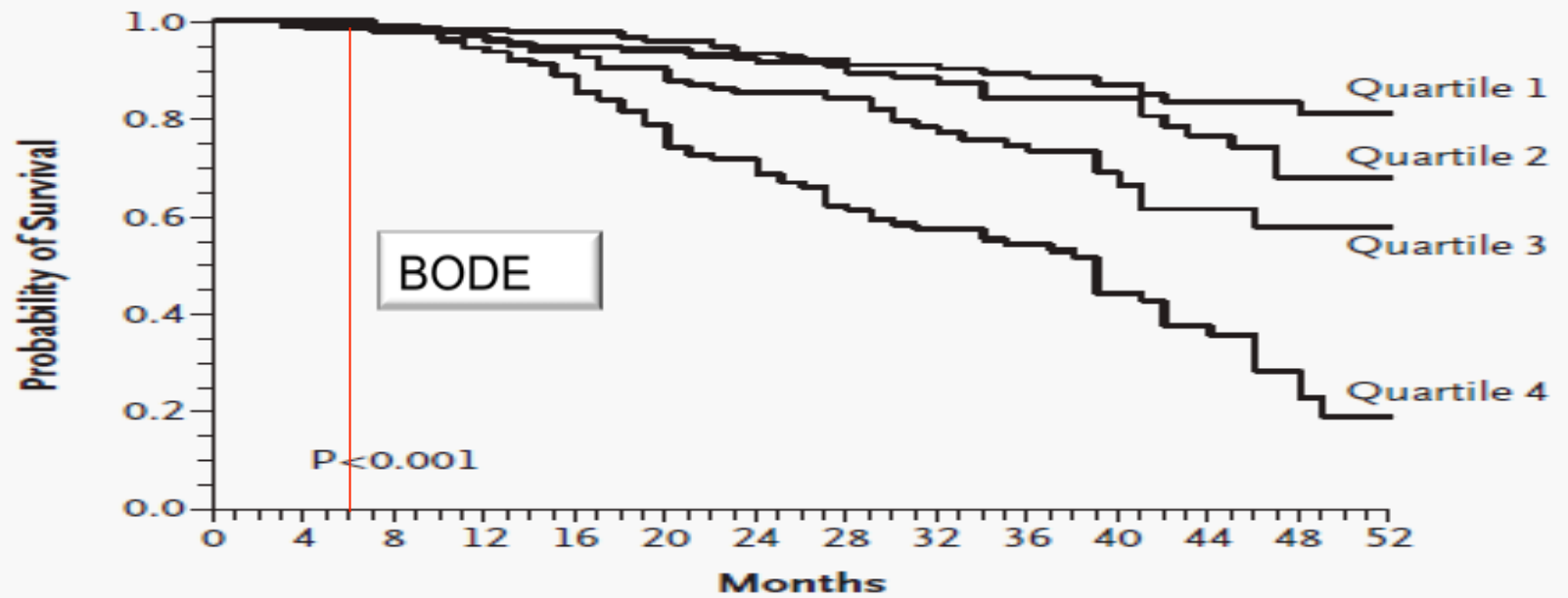
The Body-Mass Index, Airflow Obstruction, Dyspnea, and Exercise Capacity Index in Chronic Obstructive Pulmonary Disease

Bartolome R. Celli, M.D., Claudia G. Cote, M.D., Jose M. Marin, M.D.,
Ciro Casanova, M.D., Maria Montes de Oca, M.D., Reina A. Mendez, M.D.,
Victor Pinto Plata, M.D., and Howard J. Cabral, Ph.D.

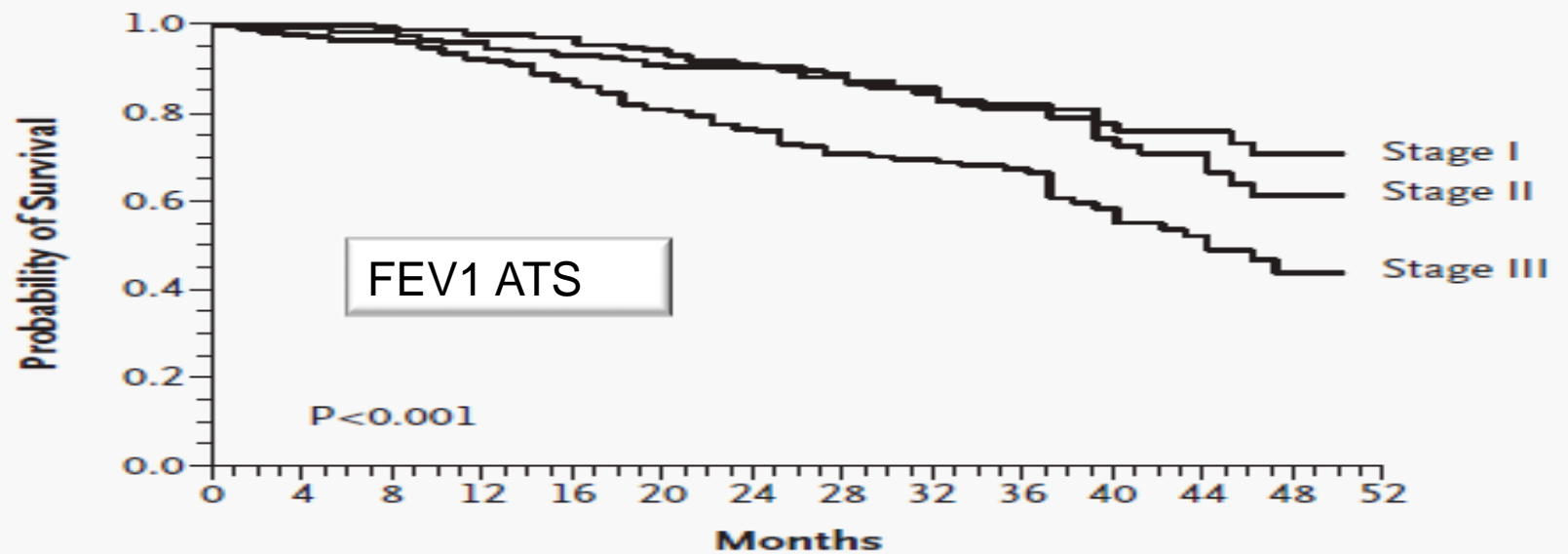
Tabla 1. Variables y puntos de corte utilizados en el índice BODE

Variable	Puntuación			
	0	1	2	3
FEV ₁ (% del teórico)	≥ 65	50-64	36-49	≤ 35
Metros caminados en 6 min	≥ 350	250-349	150-249	≤ 149
Escala de disnea mMRC	0-1	2	3	4
Índice de masa corporal	> 21	≤ 21		

FEV₁: volumen espiratorio máximo en el primer segundo.

A**No. at Risk**

625 611 574 521 454 322 273 159 80

B**No. at Risk**

625 611 574 521 454 322 273 159 80

Pulmonary rehabilitation and the BODE index in COPD

C.G. Cote* and **B.R. Celli#**

Prediction of risk of COPD exacerbations by the BODE index

Jose M. Marin ^{a,*}, Santiago J. Carrizo ^a, Ciro Casanova ^b,
Pablo Martinez-Cambor ^c, Joan B. Soriano ^{c,**},
Alvar G.N. Agusti ^c, Bartolome R. Celli ^d

Mortalidad posthospitalaria en pacientes reingresadores por EPOC. Utilidad del índice BODE

M. Sanjaume^{a,*}, P. Almagro^a, M. Rodríguez-Carballeira^a, B. Barreiro^b,
J.L. Heredia^b y J. Garau^a



Distance and Oxygen Desaturation During the 6-min Walk Test as Predictors of Long-term Mortality in Patients With COPD*

Ciro Casanova, MD; Claudia Cote, MD, FCCP; José M. Marin, MD; Víctor Pinto-Plata, MD, FCCP; Juan P. de Torres, MD; Armando Aguirre-Jaime, PhD; Carlos Vassaux, MD; and Bartolome R. Celli, MD, FCCP

BOD-TORCH

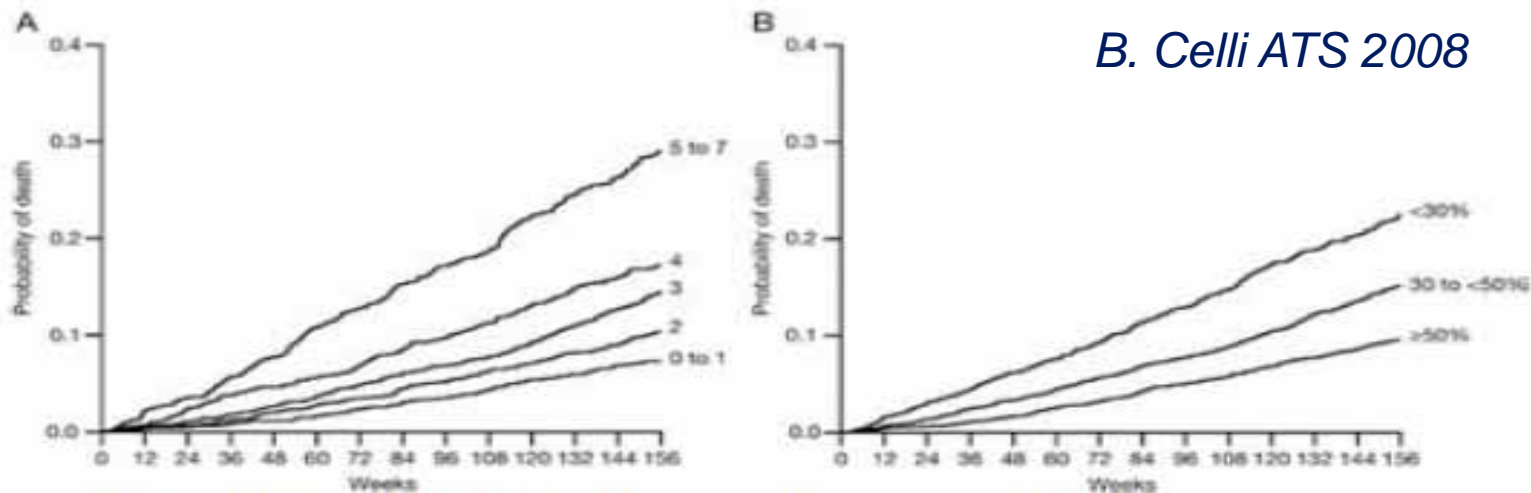


Figure 1. Probability of death. A, by BOD score; B, by % predicted FEV₁

B. Celli ATS 2008

Severe exacerbations and BODE index: Two independent risk factors for death in male COPD patients

Juan José Soler-Cataluña ^{a,*}, Miguel Ángel Martínez-García ^a,
Lourdes Sánchez Sánchez ^b, Miguel Perpiñá Tordera ^c, Pilar Román Sánchez ^d

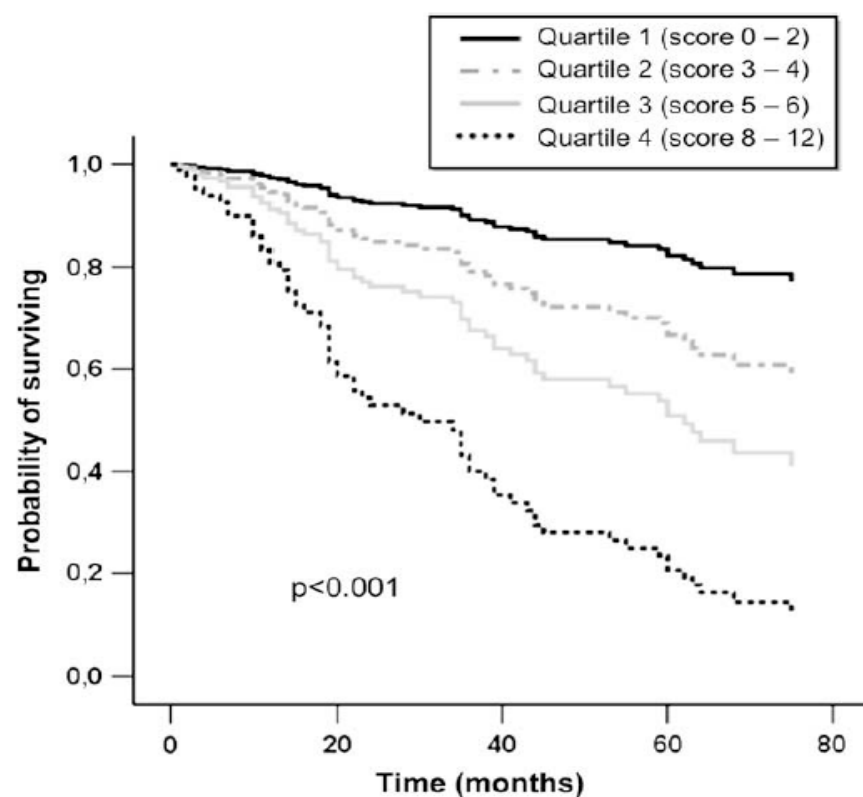


Figure 1 Survival curves by e-BODE index (BODE index plus exacerbation frequency) in patients with COPD, adjusted by confounding variables. The scores range from 0 to 12 points, the highest quartile the highest mortality.

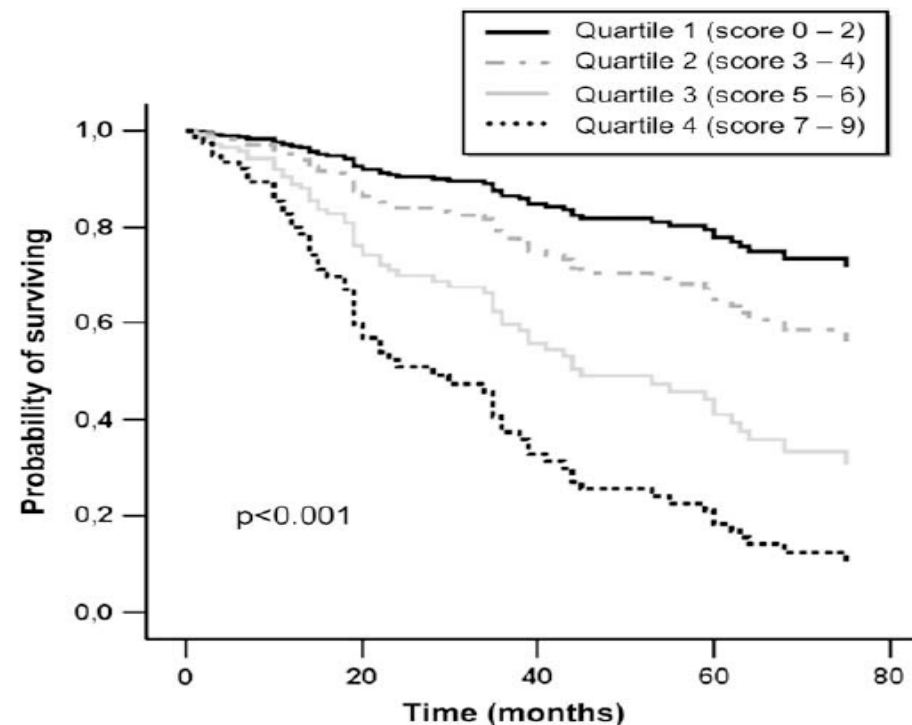


Figure 2 Survival curves by BODEx index (BODE index with exercise capacity replaced by exacerbation frequency) in patients with COPD, adjusted by confounding variables. The scores range from 0 to 9 points, the highest quartile the highest mortality.

Development and Validation of a Prognostic Index for Health Outcomes in Chronic Obstructive Pulmonary Disease

Andrew Briggs, BA, DPhil; Michael Spencer, MSc; Hong Wang, MSc; David Mannino, MD; Don D. Sin, MD, MPH

Arch Intern Med. 2008;168(1):71-79

Table 4. Specific Indexes for the 3 Outcomes and 1 Composite Index

Variable	No.			
	Death	Hospitalization	Exacerbations	Composite
QOL ^a				
< -1	7	18	24	16
-1 to < 0	5	12	16	11
0 to < 1	3	6	8	6
≥ 1	0	0	0	0
FEV ₁ , %pred				
< 30	19	31	35	28
30 to 49	12	20	22	18
50 to 59	5	9	10	8
≥ 60	0	0	0	0
Age range, y				
< 55	0	0	0	0
55 to 64	12	7	2	7
65 to 74	22	14	3	13
≥ 75	31	20	5	19
Female	-5	2	12	3
BMI < 20	17	10	2	10
History of CVD	21	6	4	10
History of ED visits/ exacerbations	0	13	18	16
Index points				
Low	-5	0	0	0
High	95	100	100	102
Width	100	100	100	102

Conclusions: A composite index for COPD prognosis (the COPD Prognostic Index) has been validated in data not used in its development and is capable of predicting not only mortality, but also hospitalizations and exacerbations. All factors included in the index are straightforward to obtain, which should make the index suitable for use in primary as well as secondary care settings.

Expansion of the prognostic assessment of patients with chronic obstructive pulmonary disease: the updated BODE index and the ADO index

Milo A Puhan, Judith Garcia-Aymerich, Martin Frey, Gerben ter Riet, Josep M Antó, Alvar G Agustí, Federico P Gómez, Roberto Rodríguez-Roisín, Karel G M Moons, Alphons G Kessels*, Ulrike Held*

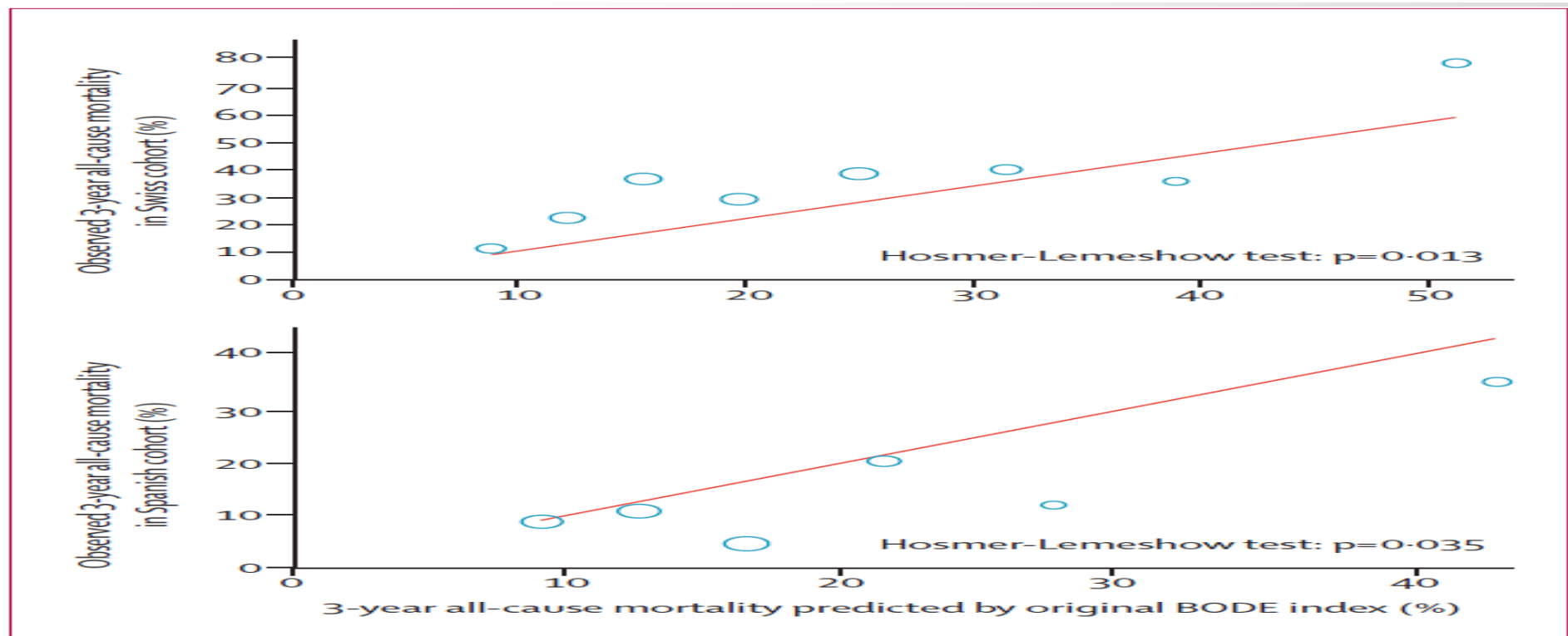


Figure 1: Calibration plot of the original BODE index in the Swiss and Spanish cohorts

The x-axis shows the 3-year risk of mortality as predicted by the original BODE index and the y-axis shows the observed risk. Every circle represents a risk class with a corresponding predicted and an observed risk. The solid line represents perfect agreement between predicted and observed risks. Circles above the solid line mean that the predicted risk was lower than the observed risk (underprediction) and circles below the solid line show overprediction of the risk. The Hosmer-Lemeshow statistic tests whether predicted and observed risk differ significantly across all risk classes.

BODE-up

	0 points	1 point	2 points	3 points	4 points	7 points	9 points
BMI (kg/m ²)	>21	≤21	..	..	..	..	..
FEV ₁ (% predicted)	≥65%	≥36-64%	≤35%	..	..	..	..
Dyspnoea (MRC scale)	0-1	2	3	4	..	..	..
6-min walk distance (m)	≥350	..	..	..	≥250-349	≥150-249	<150

BMI=body-mass index. FEV₁=forced expiratory volume in 1 s. MRC=Medical Research Council.

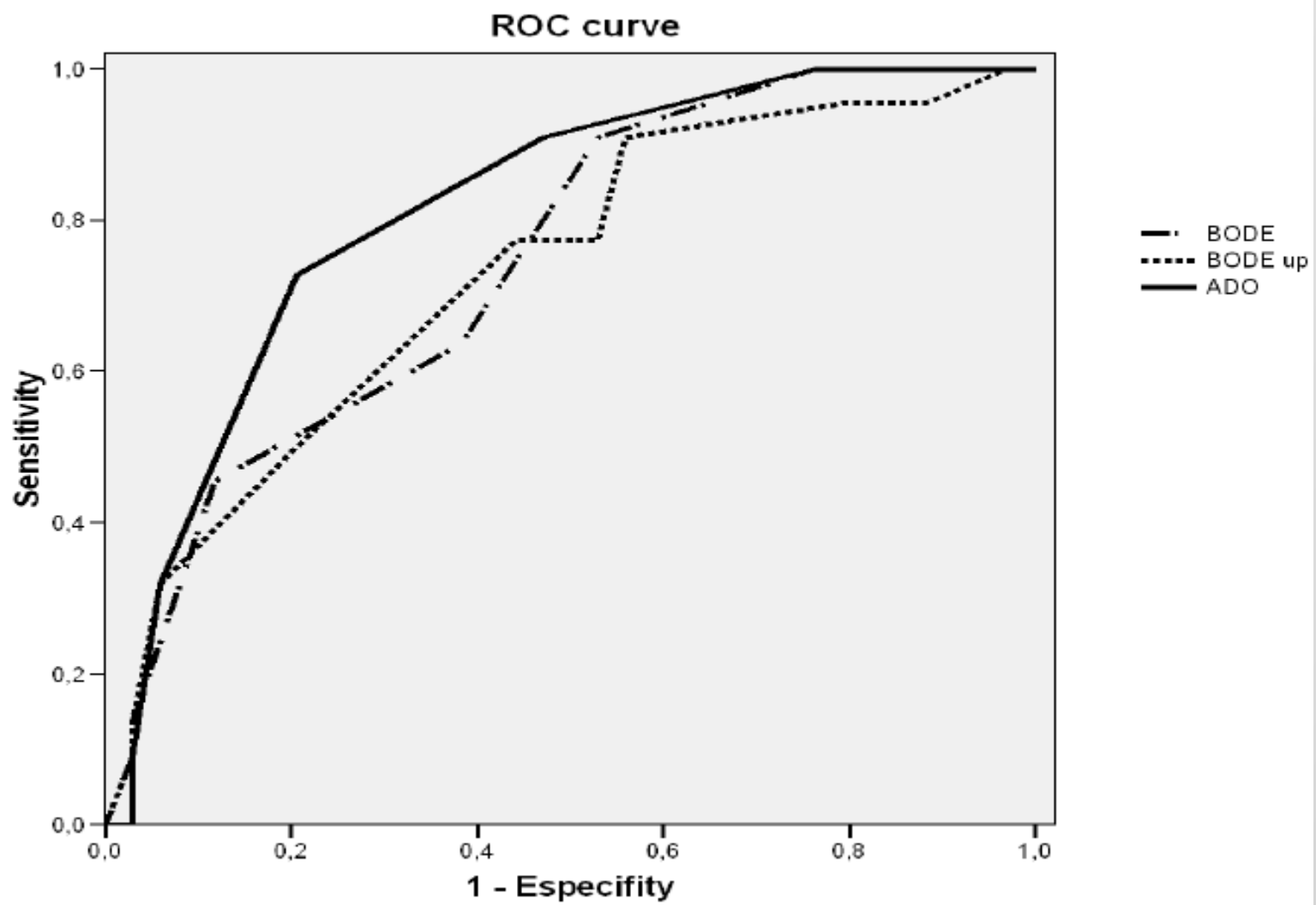
Table 3: Assignment of points for the updated BODE index

ADO

	0 points	1 point	2 points	3 points	4 points	5 points
FEV ₁ (% predicted)	≥65%	≥36-64%	≤35%	..	..	..
Dyspnoea (MRC scale)	0-1	2	3	4	..	..
Age (years)	40-49	50-59	60-69	70-79	80-89	≥90

FEV₁=forced expiratory volume in 1 s. MRC=Medical Research Council.

Table 6: Assignment of points for the ADO index



En conclusión

- El FEV1 sigue siendo el índice pronóstico más utilizado

NINGUNA DE ELLAS SUSTITUYE EL BUEN
JUICIO CLINICO ANTE PACIENTES
INDIVIDUALES

- De las escalas multicomponente sólo el BODE ha alcanzado un alto grado de difusión.



GRACIAS

