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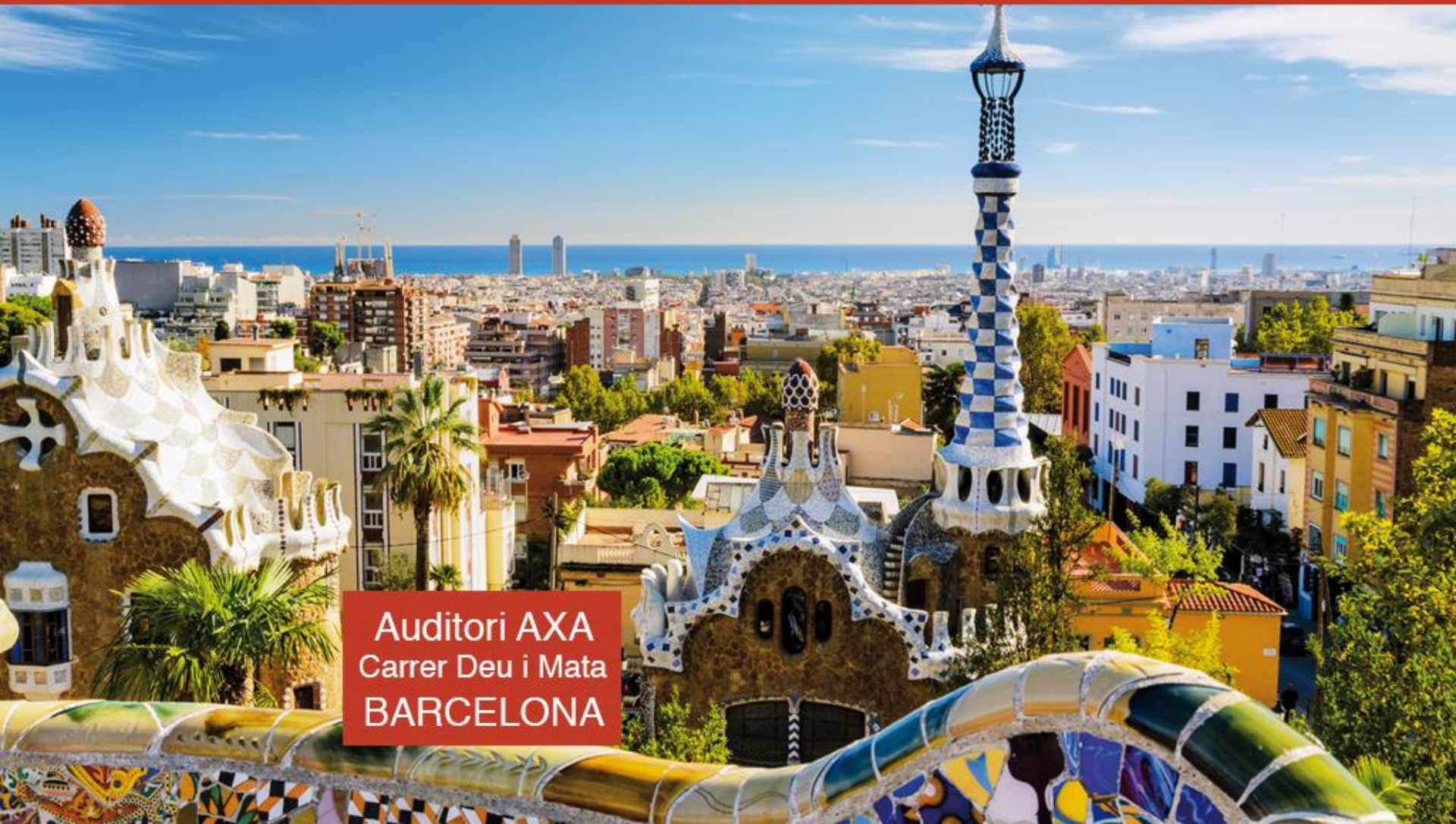
XVI Congres de la Societat Catalano-Balear de Medicina Interna

2 i 3 de juny de 2016



MPOC

MPOC I MULTIMORBILITAT

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Metge adjunt de Medicina Interna
Hospital de Mataró - CSDM

CONSORCI SANITARI DEL MARESME
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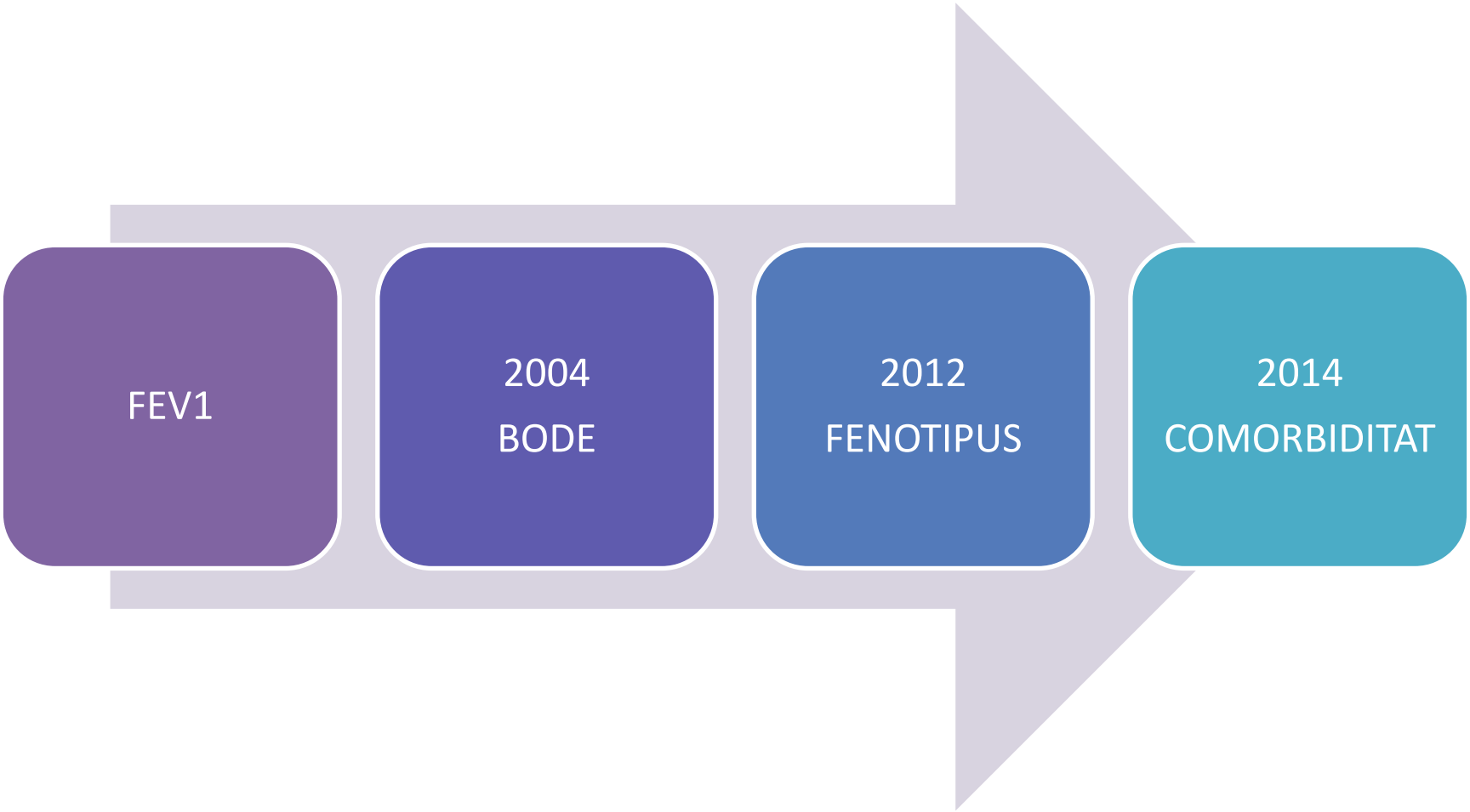

FEV1
2004
BODE
2012
FENOTIPUS
2014
COMORBIDITAT

Malaltia prevenible i tractable que es caracteritza per una obstrucció al fluxe aeri no totalment reversible que s'associa a una resposta inflamatòria anormal a la inhalació de partícules o gasos tòxics, fonamentalment el fum del tabac.

Malaltia **sistèmica** i tractable amb components tant **pulmonars** com **extrapulmonars**

Malalties associades a la MPOC:

A partir de la mateixa causa (tabac)	Càncer de pulmó Cardiopatia isquèmica Insuficència cardíaca esquerra
Com a resultat de les seves complicacions	Hipertensió pulmonar Insuficència cardíaca dreta Osteoporosi
En coincidència	Diabetes mellitus Hipertensió arterial sistèmica Cirrosi hepàtica

La malaltia càrdiovascular i el càncer de pulmó juguen un paper important en la mortlitat dels pacients amb gravetat moderada i severa de la MPOC

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 FEBRUARY 22, 2007 VOL. 356 NO. 8

Salmeterol and Fluticasone Propionate and Survival in Chronic Obstructive Pulmonary Disease

Peter M.A. Calverley, M.D., Julie A. Anderson, M.A., Bartolome Celli, M.D., Gary T. Ferguson, M.D., Christine Jenkins, M.D., Paul W. Jones, M.D., Julie C. Yates, B.S., and Jørgen Vestbo, M.D., for the TORCH investigators*

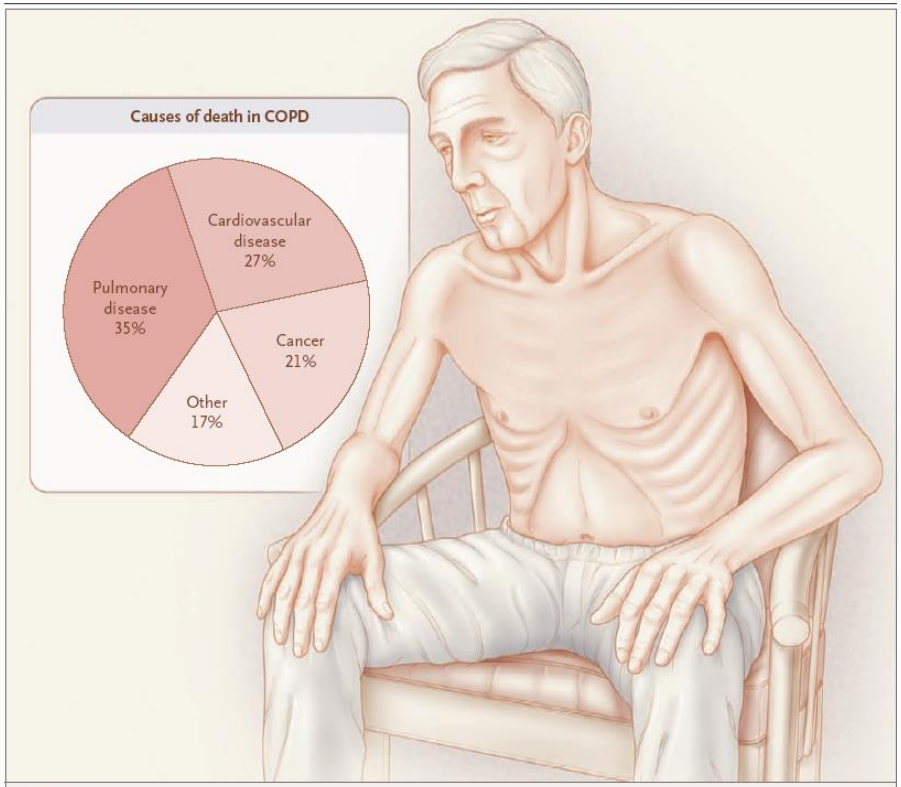


Figure 1. Causes of Death in Patients with COPD.
Among patients with COPD, death can result from causes in a number of disease categories, in part, because of the strong association between COPD and exposure to cigarette smoke. In the Towards a Revolution in COPD Health (TORCH) trial, 35% of deaths were adjudicated as due to pulmonary causes, 27% to cardiovascular disease, and 21% to cancer. Ten percent were attributed to other causes, whereas the primary cause of death could not be determined by the clinical end point committee in 7% of cases.

La pèrdua de pes i massa lliure de greix tenen impacte en el pronòstic en els pacients amb MPOC

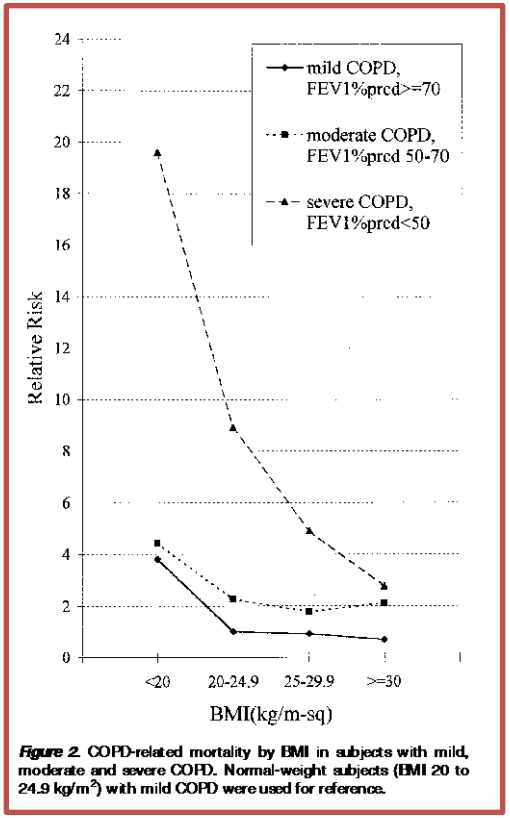


Figure 2. **COPD-related mortality by BMI in subjects with mild, moderate and severe COPD. Normal-weight subjects (BMI 20 to 24.9 kg/m^2) with mild COPD were used for reference.**

Landbo C *et al*. Prognostic value of nutritional status in COPD. Am J Respir Crit Care Med 1999;160:1856–1861.

Els símptomes depressius en els pacients MPOC s'associen a pitjor supervivència, estades hospitalàries més llargues, augment de la càrrega dels símpotmes, i empitjorament de la funció física i social.

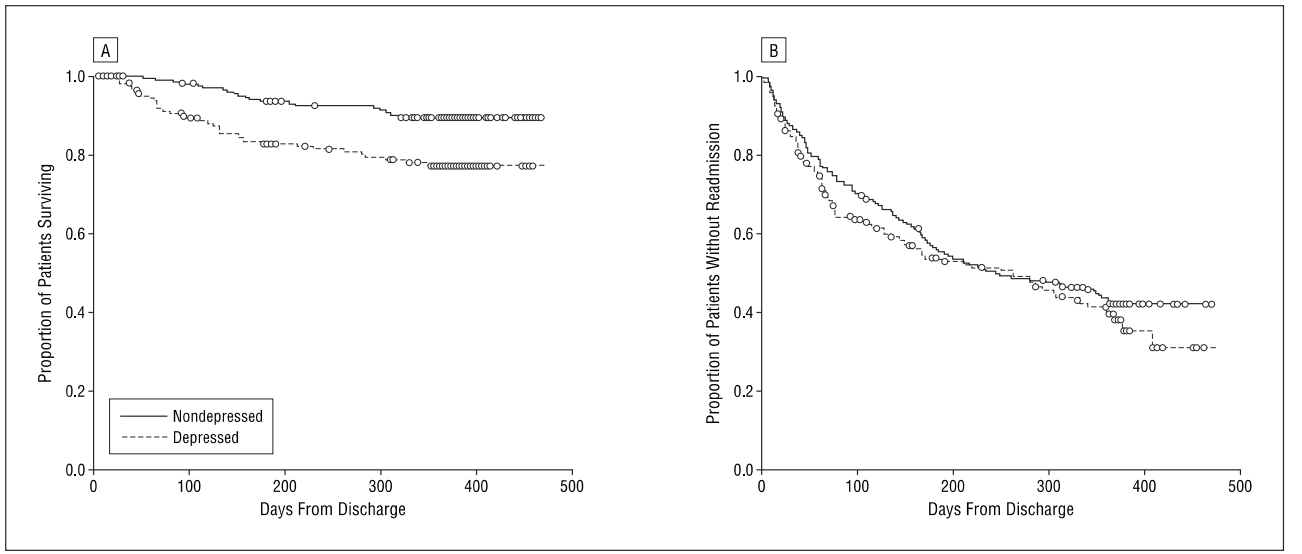
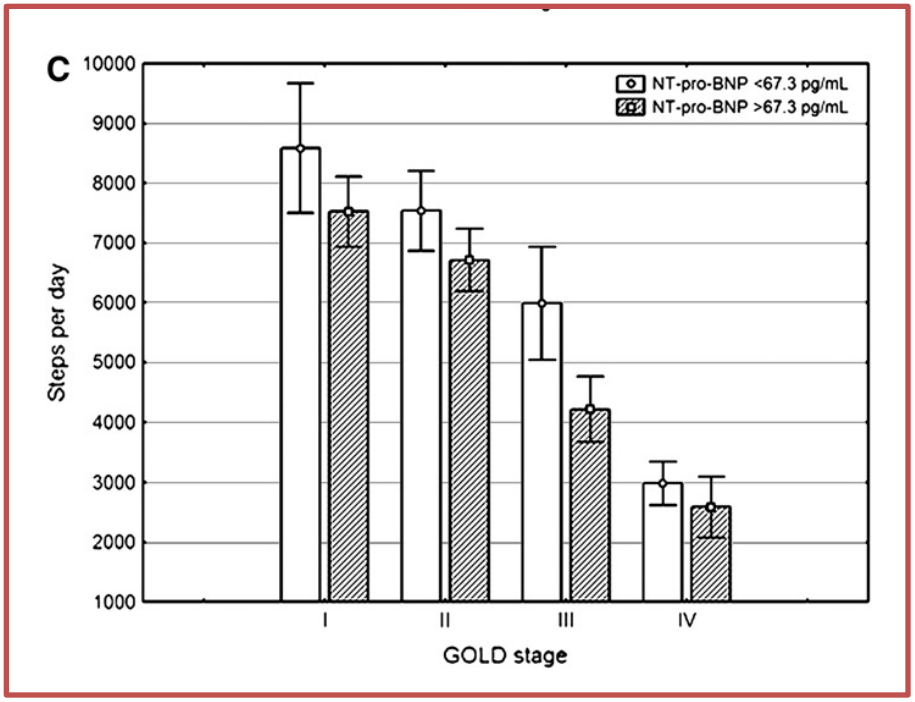


Figure. Kaplan-Meier survival estimates of mortality (A) and readmission after discharge (B) by depression status at baseline.

Ng TP, Niti M, Tan WC, Cao Z, Ong KC, Eng P. Depressive symptoms and COPD: effect on mortality, hos- pital readmission, symptom burden, functional status, and quality of life.
Arch Intern Med 2007;167:60–67.

La disfunció ventricular esquerra s'associa de forma independent a la reducció de l'activitat física en els pacients MPOC amb severtitat diferent



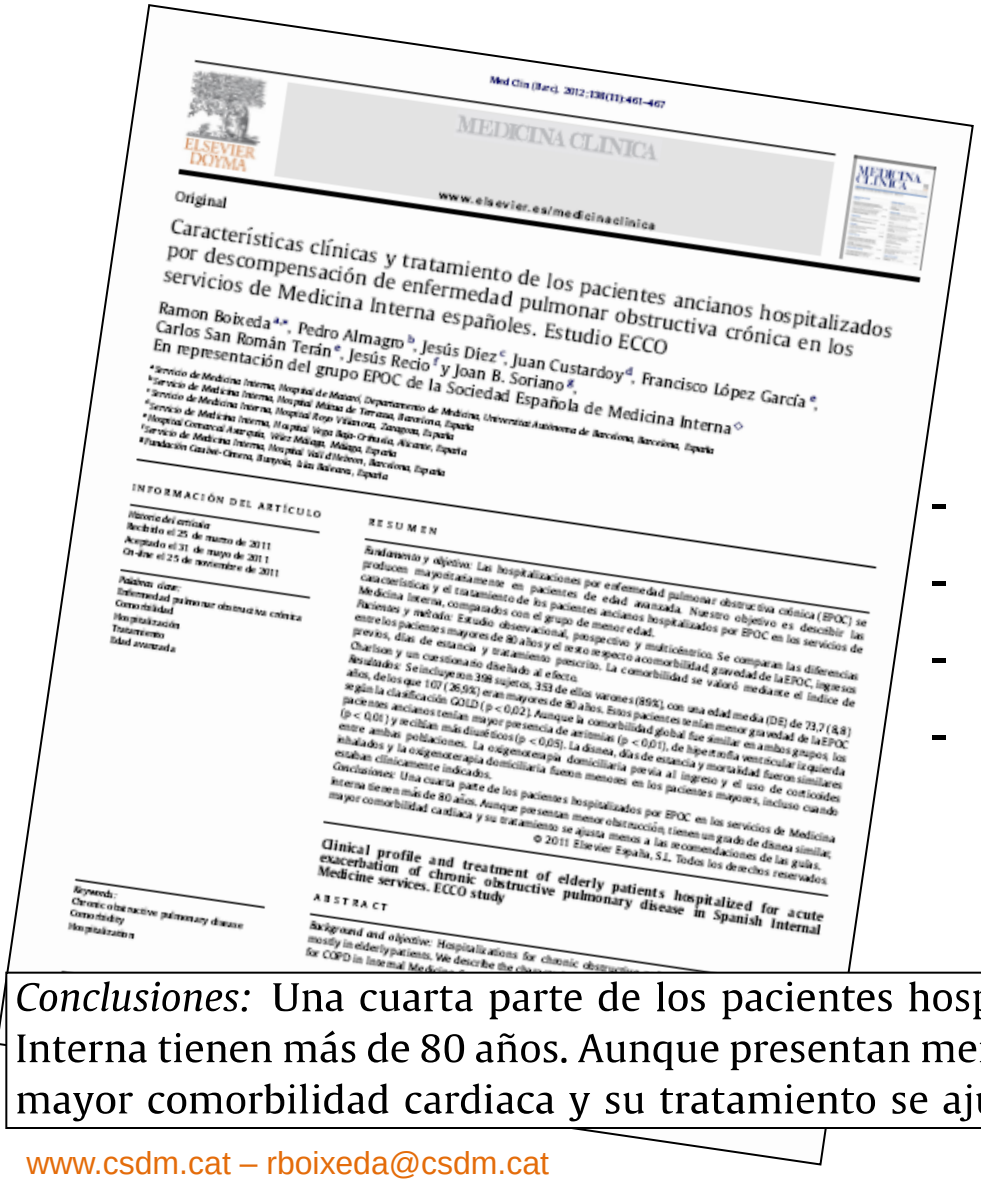
Watz H, Waschki B, Boehme C, Claussen M, Meyer T, Magnussen H. Extrapulmonary effects of chronic obstructive pulmonary disease on physical activity: a cross-sectional study. Am J Respir Crit Care Med 2008;177:743–751.

Els pacients amb MPOC tenen afectació de la qualitat de vida relacionada en la salut per múltiples comorbiditats

ical and Functional Characteristics

orge's Respiratory Questionnaire Score			Total Nottingham Health Profile Score
Activity	Impacts	Total	
40	28	34	21
53	34	42	25
70	47	55	32
<0.001	<0.001	<0.001	<0.001
0.51	0.38	0.45	0.25
22	13	19	9
40	24	32	17
61	42	49	29
75	54	61	39
<0.001	<0.001	<0.001	<0.001
0.73	0.68	0.72	0.54
44	34	39	25
53	37	43	27
65	43	51	30

Ferrer M *et al.* Chronic obstructive pulmonary disease stage and health-related quality of life. The Quality of Life of Chronic Obstructive Pulmonary Disease Study Group. Ann Intern Med 1997; 127:1072–1079.



Med Clin (Barc). 2012;138(11):461–467

MEDICINA CLINICA

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Original

Características clínicas y tratamiento de los pacientes ancianos hospitalizados por descompensación de enfermedad pulmonar obstructiva crónica en los servicios de Medicina Interna españoles. Estudio ECCO

Ramon Boixeda[a,*], Pedro Almagro[b], Jesús Diez[c], Juan Custardoy[d], Francisco López García[e], Carlos San Román Terán[e], Jesús Recio[f] y Joan B. Soriano[g], En representación del grupo EPOC de la Sociedad Española de Medicina Interna[◇]

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[h] Hospital Son Llàtzer, Palma de Mallorca, Baleares, España

INFORMACIÓN DEL ARTÍCULO

Historia del artículo:
Recibido el 25 de marzo de 2011
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On-line el 25 de noviembre de 2011

Palabras clave:
Enfermedad pulmonar obstructiva crónica
Comorbilidad
Hospitalización
Tratamiento
Edad avanzada

RESUMEN

Fundamento y objetivo: Las hospitalizaciones por enfermedad pulmonar obstructiva crónica (EPOC) se producen mayoritariamente en pacientes de edad avanzada. Nuestro objetivo es describir las características y el tratamiento de los pacientes ancianos hospitalizados por EPOC en los servicios de Medicina Interna, comparados con el grupo de menor edad.

Pacientes y métodos: Estudio observacional, prospectivo y multicéntrico. Se comparan las diferencias entre los pacientes mayores de 80 años y el resto respecto a comorbilidad, gravedad de la EPOC, ingresos previos, días de estancia y tratamiento prescrito. La comorbilidad se valoró mediante el índice de Charlson y un cuestionario diseñado al efecto.

Resultados: Se incluyeron 398 sujetos, 353 de ellos varones (89%), con una edad media (DE) de 73,7 (8,8) años, de los que 107 (26,9%) eran mayores de 80 años. Estos pacientes tenían menor gravedad de la EPOC según la clasificación GOLD ($p < 0,02$). Aunque la comorbilidad global fue similar en ambos grupos, los pacientes ancianos tenían mayor presencia de arritmias ($p < 0,01$), de hipertrofia ventricular izquierda ($p < 0,01$) y recibían más diuréticos ($p < 0,05$). La disnea, días de estancia y mortalidad fueron similares entre ambas poblaciones. La oxigenoterapia domiciliaria previa al ingreso y el uso de corticoides inhalados y la oxigenoterapia domiciliaria fueron menores en los pacientes mayores, incluso cuando estaban clínicamente indicados.

Conclusiones: Una cuarta parte de los pacientes hospitalizados por EPOC en los servicios de Medicina Interna tienen más de 80 años. Aunque presentan menor obstrucción, tienen un grado de disnea similar, mayor comorbilidad cardiaca y su tratamiento se ajusta menos a las recomendaciones de las guías.

Clinical profile and treatment of elderly patients hospitalized for acute exacerbation of chronic obstructive pulmonary disease in Spanish Internal Medicine services. ECCO study

Keywords:
Chronic obstructive pulmonary disease
Comorbidity
Hospitalization

ABSTRACT

Background and objective: Hospitalizations for chronic obstructive
mostly in elderly patients. We describe the
for COPD in Internal Medicine

- Pacients ingressats per MPOC a MI
- Edat mitja 73.7 (±8.8)
- 26,9% majors de 80 anys.
- Index de Charlson 2,64 (±1,7)

Conclusiones: Una cuarta parte de los pacientes hospitalizados por EPOC en los servicios de Medicina Interna tienen más de 80 años. Aunque presentan menor obstrucción, tienen un grado de disnea similar, mayor comorbilidad cardiaca y su tratamiento se ajusta menos a las recomendaciones de las guías.

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Comorbiditats més freqüents:

Rev Clín Esp. 2010;210(3):101–108

Revista Clínica Española

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ORIGINAL

Estudio de las comorbilidades en pacientes hospitalizados por descompensación de la enfermedad pulmonar obstructiva crónica 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], F.B. Roca[h], M. Fernández-Ruiz[i], J. Castiella[j], E. Zubillaga[k], J. Recio[l], J.B. Soriano[m] y Grupo EPOC de la Sociedad Española de Medicina Interna[♦]

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Estudio aceptado el 1 de diciembre de 2009

CHEST Original Research

Comorbidities and Short-term Prognosis in Patients Hospitalized for Acute Exacerbation of COPD

The EPOC en Servicios de Medicina Interna (ESMI) Study

*Pedro Almagro, MD; F. J. Cabrera, MD; Jesus Díez, MD; Ramon Boixeda, MD; M. Belen Alonso Ortiz, MD; Cristina Murio, MD; and Joan B. Soriano, MD; for the Working Group on COPD, Spanish Society of Internal Medicine**

Background: Comorbidities are frequent in patients hospitalized for COPD exacerbation, but little is known about their relation with short-term mortality and hospital readmissions. Our hypothesis is that the frequency and type of comorbidities impair the prognosis within 12 weeks after discharge.

Methods: A longitudinal, observational, multicenter study of patients hospitalized for a COPD exacerbation with spirometric confirmation was performed. Comorbidity information was collected using the Charlson index and a questionnaire that included other common conditions not included in this index. Dyspnea, functional status, and previous hospitalization for COPD or other reasons among other variables were investigated. Information on mortality and readmissions for COPD or other causes was collected up to 3 months after discharge.

Results: We studied 606 patients, 594 men (89.9%), with a mean (SD) age of 72.6 (9.9) years and a postbronchodilator FEV_1 of 43.2% (21.2). The mean Charlson index score was 3.1 (2.0). On admission, 63.4% of patients had arterial hypertension, 35.8% diabetes mellitus, 32.8% chronic heart failure, 20.8% ischemic heart disease, 19.3% anemia, and 34% dyslipemia. Twenty-seven patients (4.5%) died within 3 months. The Charlson index was an independent predictor of mortality ($P < .003$; OR,1.23; 95% CI, 1.07-1.40), even after adjustment for age, FEV_1, and functional status measured with the Katz index. Comorbidity was also related with the need for hospitalization from the emergency room, length of stay, and hospital readmissions for COPD causes.

Conclusions: Comorbidities are common in pati… they are related to short-…

ESTUDIO ESMI
Exacerbación de EPOC en los Servicios de Medicina Interna Españoles

Comorbiditats més freqüents:

Tabla 3. Comorbilidades en los pacientes con EPOC

	ECCO (%)	ESMI (%)	
HTA	55	63,4	←
Anemia	33	19,3	
Diabetes mellitus	29,5	35,8	←
Insuficiencia cardíaca	27	32,8	←
Arritmia	27	25,8	←
Cardiopatía isquémica	17	20,8	←
Enfermedad arterial periférica	13	16,8	←
Ulcus péptico	12	10,4	
Tumor sólido	8,3	13,2	
Enfermedad cerebrovascular	10	11,7	
Osteoporosis	9,7	15,8	←
Hepatopatía crónica	9,6	6,3	
Insuficiencia renal	6,5	16,2	

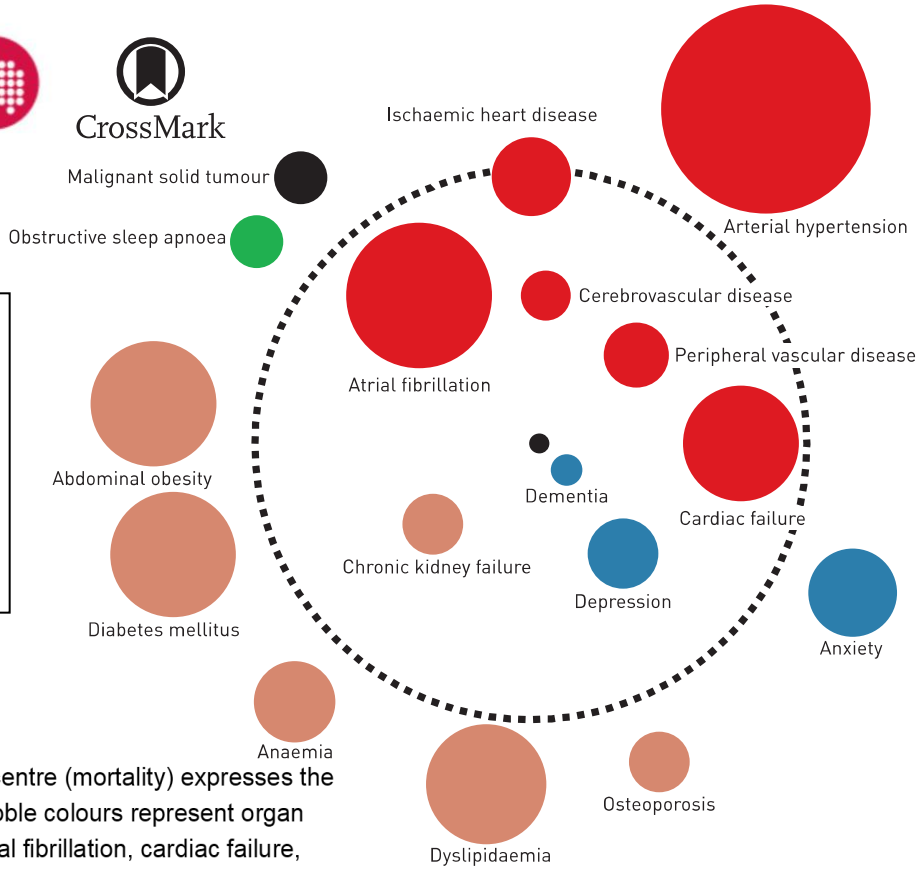
EPOC: enfermedad pulmonar obstructiva crónica; HTA: hipertensión arterial.

Comorbidome and short-term prognosis in hospitalised COPD patients: the ESMI study

In conclusion, our study reinforces the usefulness of a comorbidome as graphical representation of the prevalence and impact of comorbidities in patients hospitalised for COPD.

@ERSpublications
A comorbidome is a useful representation of the prevalence and impact of comorbidities in hospitalised COPD patients http://ow.ly/KYzSF

Pere Almagro[1], Francisco Javier Cabrera[2], Jesus Diez-Manglano[3], Ramon Boixeda[4], Jesus Recio[5], Joan Mercade[1], Sergi Yun[1] and Joan B. Soriano[6] for the Working Group on COPD, Spanish Society of Internal Medicine
[1]Internal Medicine Service, Hospital Universitario Mútua de Terrassa, Barcelona, Spain. [2]Internal Medicine Service, Hospital General Universitario Gregorio Marañón, Madrid, Spain. [3]Internal Medicine Service, Hospital Royo Vilanova, Zaragoza, Spain. [4]Internal Medicine Service, Hospital de Mataró, Barcelona, Spain. [5]Internal Medicine Service, Hospital Universitario Vall d'Hebron, Barcelona, Spain. [6]Instituto de Investigación Sanitaria Princesa (IP), Universidad Autónoma de Madrid, Madrid, Spain.



The area of the circle relates to the prevalence of the disease. The proximity to the centre (mortality) expresses the strength of the association between the disease and risk of death (hazard ratio). Bubble colours represent organ systems: 1) cardiovascular (red): arterial hypertension, ischaemic heart disease, atrial fibrillation, cardiac failure, peripheral artery disease, cerebrovascular disease; 2) metabolic disorders (brown): abdominal obesity, diabetes mellitus, dyslipidaemia, anaemia, chronic kidney failure, osteoporosis; 3) mental disorders (blue): depression, dementia, anxiety; 4) respiratory disease (green): obstructive sleep apnoea; 5) neoplasm (black).

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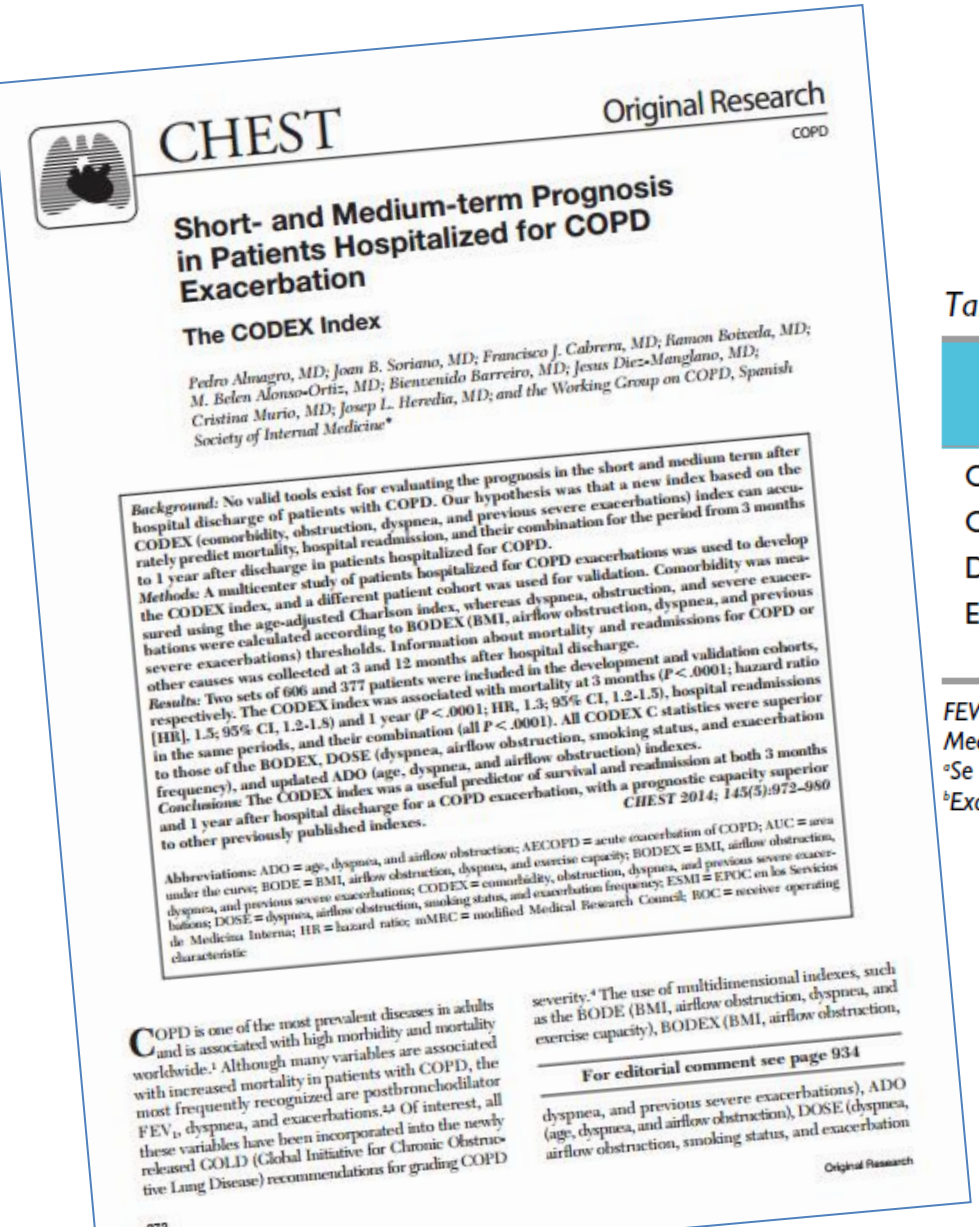

CHEST Original Research COPD

Short- and Medium-term Prognosis in Patients Hospitalized for COPD Exacerbation

The CODEX Index

*Pedro Almagro, MD; Joan B. Soriano, MD; Francisco J. Cabrera, MD; Ramon Boixeda, MD; M. Belen Alonso-Ortiz, MD; Bienvenido Barreiro, MD; Jesus Diez-Manglano, MD; Cristina Murio, MD; Josep L. Heredia, MD; and the Working Group on COPD, Spanish Society of Internal Medicine**

Background: No valid tools exist for evaluating the prognosis in the short and medium term after hospital discharge of patients with COPD. Our hypothesis was that a new index based on the CODEX (comorbidity, obstruction, dyspnea, and previous severe exacerbations) index can accurately predict mortality, hospital readmission, and their combination for the period from 3 months to 1 year after discharge in patients hospitalized for COPD.

Methods: A multicenter study of patients hospitalized for COPD exacerbations was used to develop the CODEX index, and a different patient cohort was used for validation. Comorbidity was measured using the age-adjusted Charlson index, whereas dyspnea, obstruction, and severe exacerbations were calculated according to BODEX (BMI, airflow obstruction, dyspnea, and previous severe exacerbations) thresholds. Information about mortality and readmissions for COPD or other causes was collected at 3 and 12 months after hospital discharge.

Results: Two sets of 606 and 377 patients were included in the development and validation cohorts, respectively. The CODEX index was associated with mortality at 3 months ($P < .0001$; hazard ratio [HR], 1.5; 95% CI, 1.2-1.8) and 1 year ($P < .0001$; HR, 1.3; 95% CI, 1.2-1.5), hospital readmissions in the same periods, and their combination (all $P < .0001$). All CODEX C statistics were superior to those of the BODEX, DOSE (dyspnea, airflow obstruction, smoking status, and exacerbation frequency), and updated ADO (age, dyspnea, and airflow obstruction) indexes.

Conclusions: The CODEX index was a useful predictor of survival and readmission at both 3 months and 1 year after hospital discharge for a COPD exacerbation, with a prognostic capacity superior to other previously published indexes.

CHEST 2014; 145(5):972–980

Abbreviations: ADO = age, dyspnea, and airflow obstruction; AECOPD = acute exacerbation of COPD; AUC = area under the curve; BODE = BMI, airflow obstruction, dyspnea, and exercise capacity; BODEX = BMI, airflow obstruction, dyspnea, and previous severe exacerbations; CODEX = comorbidity, obstruction, dyspnea, and previous severe exacerbations; DOSE = dyspnea, airflow obstruction, smoking status, and exacerbation frequency; ESMI = EPOC en los Servicios de Medicina Interna; HR = hazard ratio; mMRC = modified Medical Research Council; ROC = receiver operating characteristic

COPD is one of the most prevalent diseases in adults and is associated with high morbidity and mortality worldwide.[1] Although many variables are associated with increased mortality in patients with COPD, the most frequently recognized are postbronchodilator FEV_1, dyspnea, and exacerbations.[2,3] Of interest, all these variables have been incorporated into the newly released GOLD (Global Initiative for Chronic Obstructive Lung Disease) recommendations for grading COPD severity.[4] The use of multidimensional indexes, such as the BODE (BMI, airflow obstruction, dyspnea, and exercise capacity), BODEX (BMI, airflow obstruction, dyspnea, and previous severe exacerbations), ADO (age, dyspnea, and airflow obstruction), DOSE (dyspnea, airflow obstruction, smoking status, and exacerbation

For editorial comment see page 934

Tabla 2. Índice CODEx

	Dominio	Variable	Puntuación 0	1	2	3
C	Comorbilidad	Índice de Charlson[a]	0-4	5-7	≥ 8	
O	Obstrucción	FEV_1%	≥ 65	50-64	36-49	≤ 35
D	Disnea	mMRC	0-1	2	3	4
Ex	Exacerbaciones	Exacerbaciones en el año previo[b]	0	1-2	≥ 3	

FEV_1: volumen espirado forzado en el primer segundo; mMRC: escala de disnea modificada del Medical Research Council.
[a]Se añade 1 punto al valor total por cada década de vida por encima de 50 años.
[b]Exacerbaciones graves durante el año previo (hospitalización o visita al servicio de urgencias).

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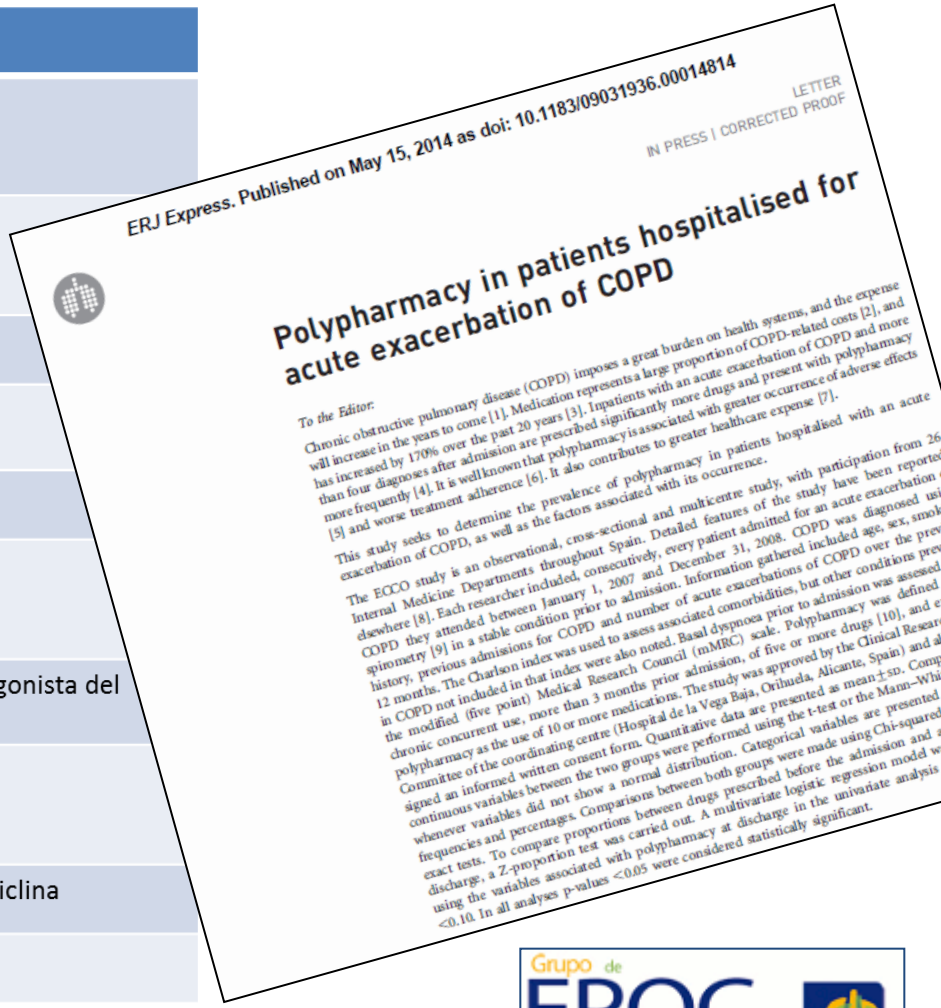
Enfermedad	Tratamiento
EPOC	LAMA LABA Corticoide inhalado
Cardiopatía isquémica	Antiagregante Betabloqueante Estatina
Fibrilación auricular	Anticoagulante
Diabetes mellitus con polineuropatía	Insulina Metformina
Claudicación intermitente	Antiagregante
Insuficiencia cardiaca	IECA o ARA-2 Diurético Betabloqueante
Hipertensión	IECA/ARA-2 ± Diurético ± Antagonista del calcio
Osteoporosis	Bifosfonato Calcio Vitamina D
Tabaquismo	Nicotina / Bupropion / Vareniciclina
Dolor crónico	Analgésico



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LETTER

IN PRESS | CORRECTED PROOF

Polypharmacy in patients hospitalised for acute exacerbation of COPD

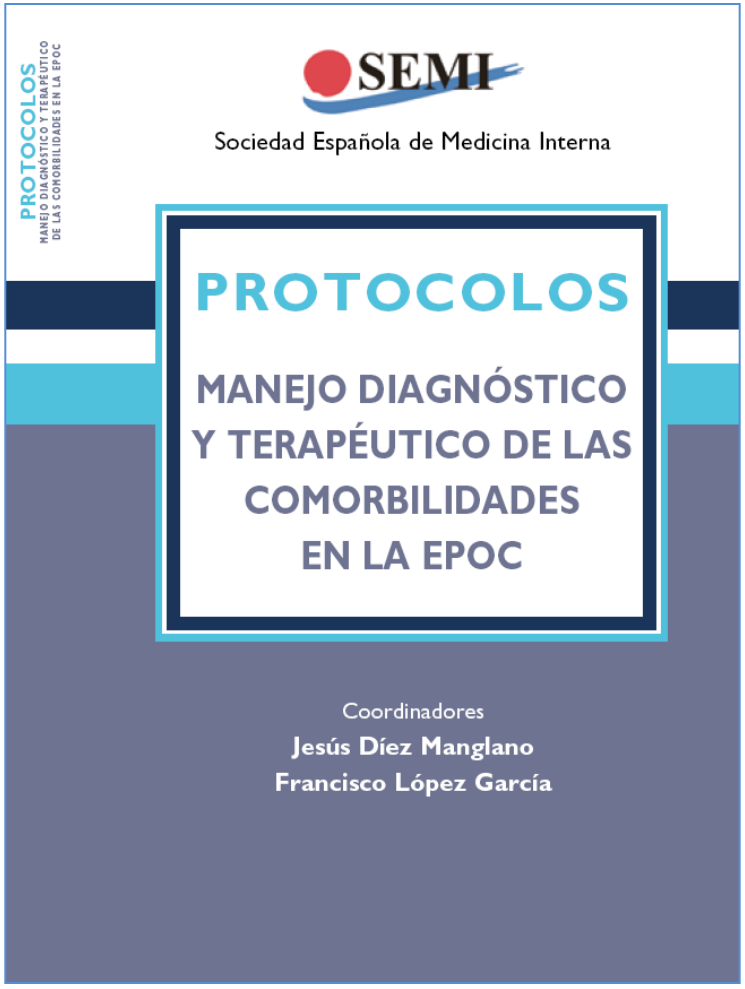
To the Editor:

Chronic obstructive pulmonary disease (COPD) imposes a great burden on health systems, and the expense will increase in the years to come [1]. Medication represents a large proportion of COPD-related costs [2], and has increased by 170% over the past 20 years [3]. Inpatients with an acute exacerbation of COPD and more than four diagnoses after admission are prescribed significantly more drugs and present with polypharmacy more frequently [4]. It is well known that polypharmacy is associated with greater occurrence of adverse effects [5] and worse treatment adherence [6]. It also contributes to greater healthcare expense [7].

This study seeks to determine the prevalence of polypharmacy in patients hospitalised with an acute exacerbation of COPD, as well as the factors associated with its occurrence.

The ECCO study is an observational, cross-sectional and multicentre study, with participation from 26 Internal Medicine Departments throughout Spain. Detailed features of the study have been reported elsewhere [8]. Each researcher included, consecutively, every patient admitted for an acute exacerbation of COPD they attended between January 1, 2007 and December 31, 2008. COPD was diagnosed using spirometry [9] in a stable condition prior to admission. Information gathered included age, sex, smoking history, previous admissions for COPD and number of acute exacerbations of COPD over the previous 12 months. The Charlson index was used to assess associated comorbidities, but other conditions prev in COPD not included in that index were also noted. Basal dyspnoea prior to admission was assessed the modified (five point) Medical Research Council (mMRC) scale. Polypharmacy was defined chronic concurrent use, more than 3 months prior admission, of five or more drugs [10], and e polypharmacy as the use of 10 or more medications. The study was approved by the Clinical Researc Committee of the coordinating centre (Hospital de la Vega Baja, Orihuela, Alicante, Spain) and all signed an informed written consent form. Quantitative data are presented as mean±sd. Comp whenever variables did not show a normal distribution. Categorical variables are presented frequencies and percentages. Comparisons between both groups were made using Chi-squared exact tests. To compare proportions between drugs prescribed before the admission and discharge, a Z-proportion test was carried out. A multivariate logistic regression model w using the variables associated with polypharmacy at discharge in the univariate analysis <0.10. In all analyses p-values <0.05 were considered statistically significant.

Grupo de EPOC
Enfermedad Pulmonar Obstructiva Crónica
SEMI


PROTOCOLOS
MANEJO DIAGNÓSTICO Y TERAPÉUTICO DE LAS COMORBILIDADES EN LA EPOC
SEMI
Sociedad Española de Medicina Interna
PROTOCOLOS
MANEJO DIAGNÓSTICO Y TERAPÉUTICO DE LAS COMORBILIDADES EN LA EPOC
Coordinadores
Jesús Díez Manglano
Francisco López García

ELECCIÓ DE L'ANTIBIÒTIC

Recomendación sobre el uso de antibióticos en la agudización de la EPOC

Gravedad de la agudización	Gérmenes	Antibiótico de elección	Alternativas
Agudización leve	*H. influenzae*, *S. pneumoniae*, *M. catarrhalis*	Amoxicilina-ácido clavulánico	Cefditoren Moxifloxacino Levofloxacino
Agudización moderada	Igual que grupo A + *S. pneumoniae* resistente a penicilina, Enterobacterias	Moxifloxacino Levofloxacino	Amoxicilina-ácido clavulánico
Agudización grave-muy grave sin riesgo de infección por *Pseudomona*	Igual que grupo B	Moxifloxacino Levofloxacino	Amoxicilina-ácido clavulánico Ceftriaxona Cefotaxima
Agudización grave-muy grave con riesgo de infección por *Pseudomona*	Igual que grupo B + *P. aeruginosa*	Ciprofloxacino Levofloxacino a dosis altas[a]	β-lactamasa con actividad antipseudomona[b]

[a]500 mg cada 12 h.

[b]Ceftazidima, piperacilina-tazobactam, imipenem o meropenem, cefepima.

Grupo de EPOC
Enfermedad Pulmonar Obstructiva Crónica

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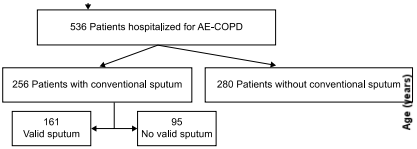
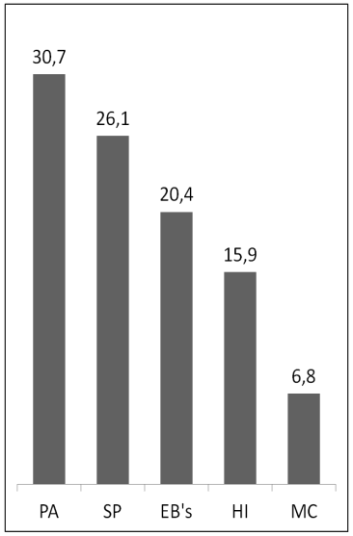
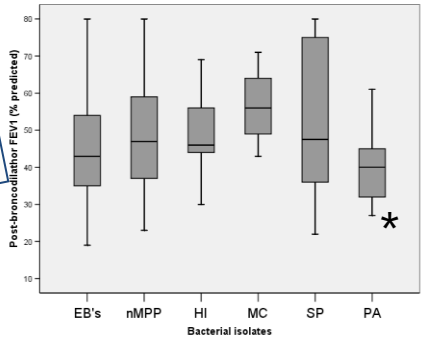
International Journal of COPD 2015:10 1–11

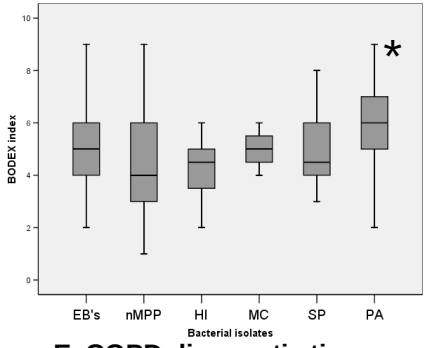




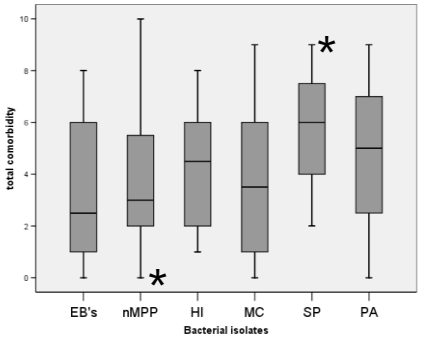
A. Postbronchodilator FEV1%, predicted



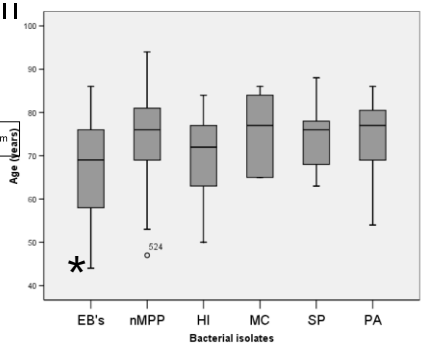
B. BODE index



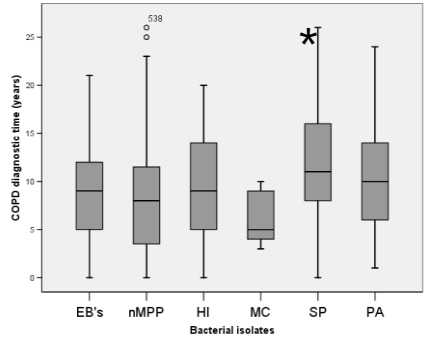
C. Total comorbidities



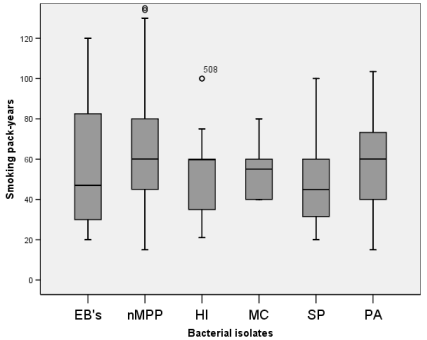
D. Age



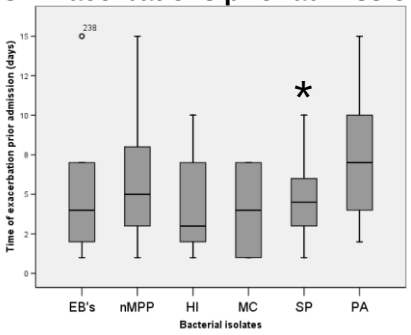
E. COPD diagnostic time



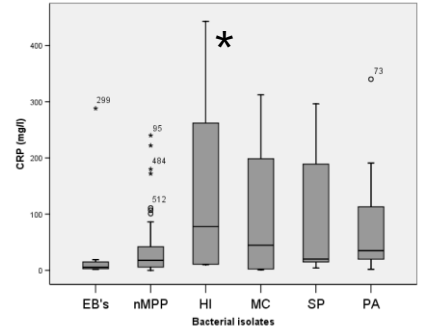
F. Smoking history (pack/years)



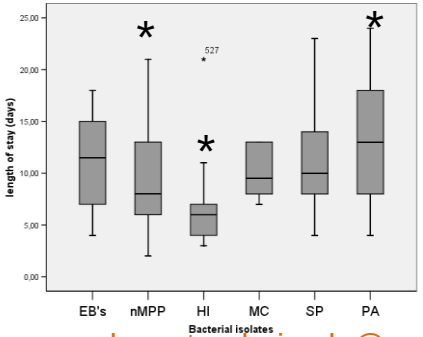
G. Exacerbations prior admission



H. CRP in serum



I. Lenght of stay



ESTUDIO ESMI
Exacerbación de EPOC en los Servicios de Medicina Interna Españoles

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ELECCIÓ DE L'ANTIBIÒTIC

Grupo de EPOC Enfermedad Pulmonar Obstructiva Crónica – SEMI

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	EPOC leve sin comorbilidad	EPOC moderado – grave sin factores de riesgo para *P. aeruginosa*	EPOC moderado – grave con factores de riesgo para *P. aeruginosa*
	H. Influenzae *S. Pneumoniae* *M. Catharralis* *M. pneumoniae* *C. pneumoniae* Virus	Grupo A + enterobacterias	Grupo B + *P. aeruginosa*
ESMI	*S. Pneumoniae* Mayor comorbilidad *(arteriopatía, hipertensión, osteoporosis, depresión)* EPOC evolucionada *H. Influenzae* Rápida resolución EA	Enterobacterias: *Más jóvenes* *VMNI - CPAP*	Gravedad EPOC Ingresos previos MRC-FEV1-BODEx *Comorbilidad*: *Cor pulmonale* *Insuficiencia cardíaca* *Enfermedad cerebrovascular*

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EDITORIALS

Smoking, Not COPD, as the Disease

Leonardo M. Fabbri, M.D.

Smoking causes not only cancer but also cardiovascular diseases such as stroke, coronary heart disease, hypertension, thromboembolism, and peripheral artery disease, lung disease such as chronic obstructive pulmonary disease (COPD), and many other diseases, including (but not limited to) type 2 diabetes, rheumatoid arthritis, cataracts, and macular degeneration.[1] These diseases develop with age and contribute in different measure to the current epidemic of chronic noncommunicable diseases that are associated with smoking and aging.[1,2]

Even though the effects of smoking are broad and devastating, much smoking-related research traditionally focuses on the lung because the lung is considered to be the primary target organ of smoking.[3] Even though COPD is one of the major consequences of smoking, COPD usually does not exist by itself, because it is almost invariably associated with concomitant chronic respiratory and nonrespiratory diseases[3,4] that contribute to the clinical manifestations and severity of the smoking-induced systemic disease.

COPD, as defined by the Global Initiative for Chronic Obstructive Lung Disease, is diagnosed as persistent airflow limitation in smokers.[3] This definition has limitations for clinical practice, because it does not mention symptoms and applies only to smokers in whom airflow limitation has developed. In fact, the only COPD we know well is the one that is defined as airflow limitation in smokers, because most of the data available on the pathophysiology and management of COPD have been derived from smokers with airflow limitation that was defined according to spirometric assessment.[3]

Woodruff and colleagues report in this issue of the Journal[5] on a group of smokers with normal findings on spirometry who have chronic respiratory symptoms, exacerbations (identified as the use of antibiotic agents, systemic glucocorticoids, or both or an event of health care utilization such as an office visit, hospital admission, or emergency department visit for a respiratory flare-up), lower than normal exercise tolerance, and imaging evidence of bronchiolitis. Thus, they conclude that spirometry is not adequate to define the breadth of smoking-induced lung disease. These results confirm and extend the findings of another recent large study that showed that more than 50% of symptomatic smokers with normal findings on spirometry have considerable respiratory-related impairment and evidence of emphysema on imaging.[6] Most of these symptomatic smokers with normal findings on spirometry are often treated (without any evidence) with inhaled bronchodilators and glucocorticoids — that is, they are treated like patients with COPD, but they do not have COPD according to our current definition.

These two studies introduce an important paradigm shift in our approach to smoking-induced disease. Both studies show that patients who have chronic respiratory symptoms without airflow limitation have the same respiratory consequences as those who have mild-to-moderate airflow obstruction and get the official diagnostic label of COPD. This finding tells us that symptoms are at least as sensitive as airflow limitation in establishing a diagnosis of smoking-induced disease. The observation that bronchiolitis and emphysema that are detected by means of computed tomographic scanning may be present in some smokers without airflow limitation lends a firm biologic basis to these inferences and reminds us, once again, that COPD may be a disease of the "lung's quiet zone," as

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