Focus su aspetti diagnostici e discriminanti per la scelta della terapia

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ULSS21 LEGNAGO

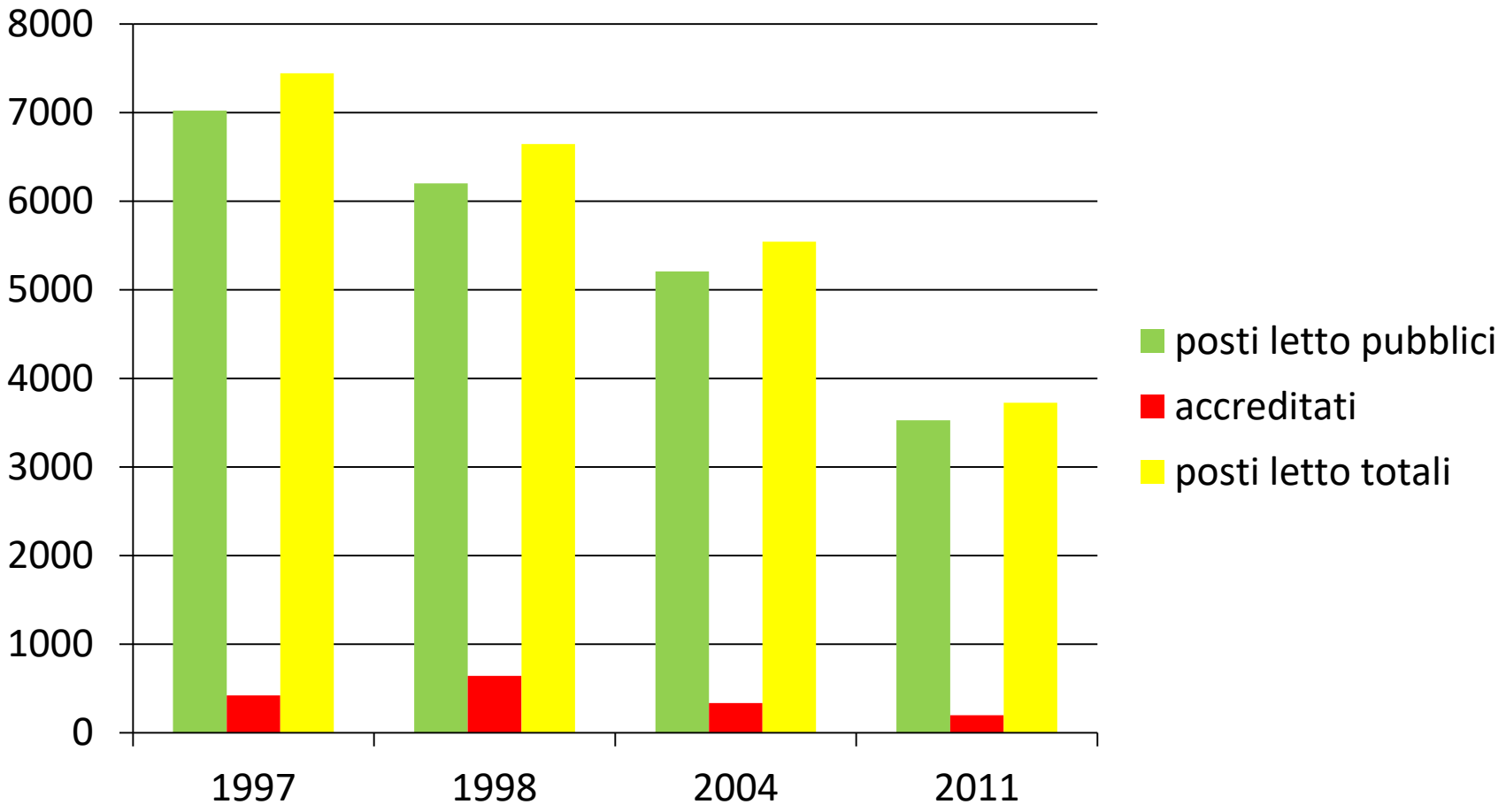
Il sottoscritto Claudio Micheletto
ai sensi dell'art. 3.3 sul Conflitto di Interessi, pag. 17 del Reg. Applicativo dell'Accordo Stato-Regione del 5 novembre 2009,

dichiara

che negli ultimi due anni ha avuto rapporti diretti di finanziamento con i seguenti soggetti portatori di interessi commerciali in campo sanitario:

- *GSK*
- *ASTRAZENECA*
- *GUIDOTTI*

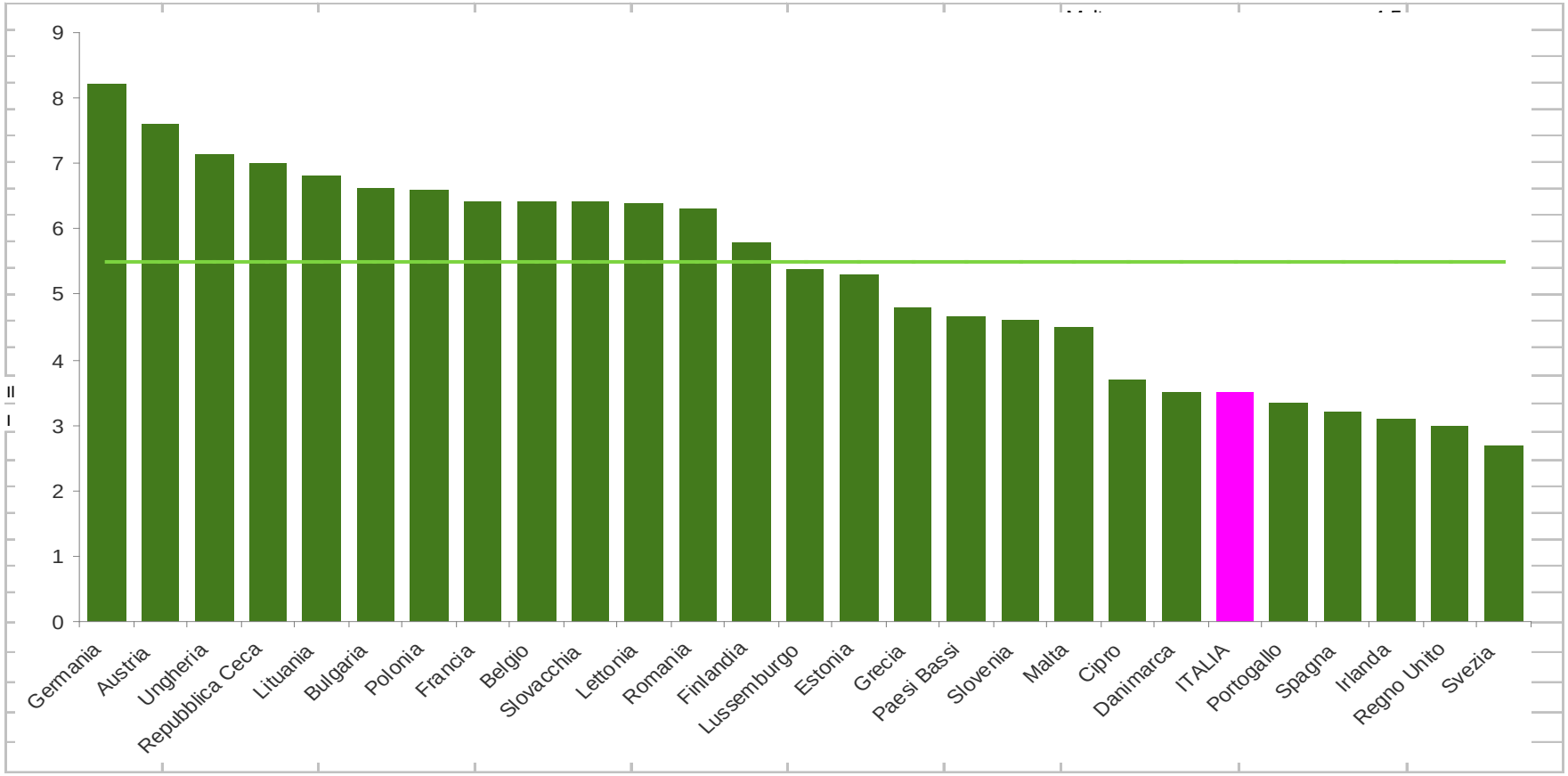
Numero posti letto pneumologia



Dati Ministero della Salute

Posti letto nei paesi Ue

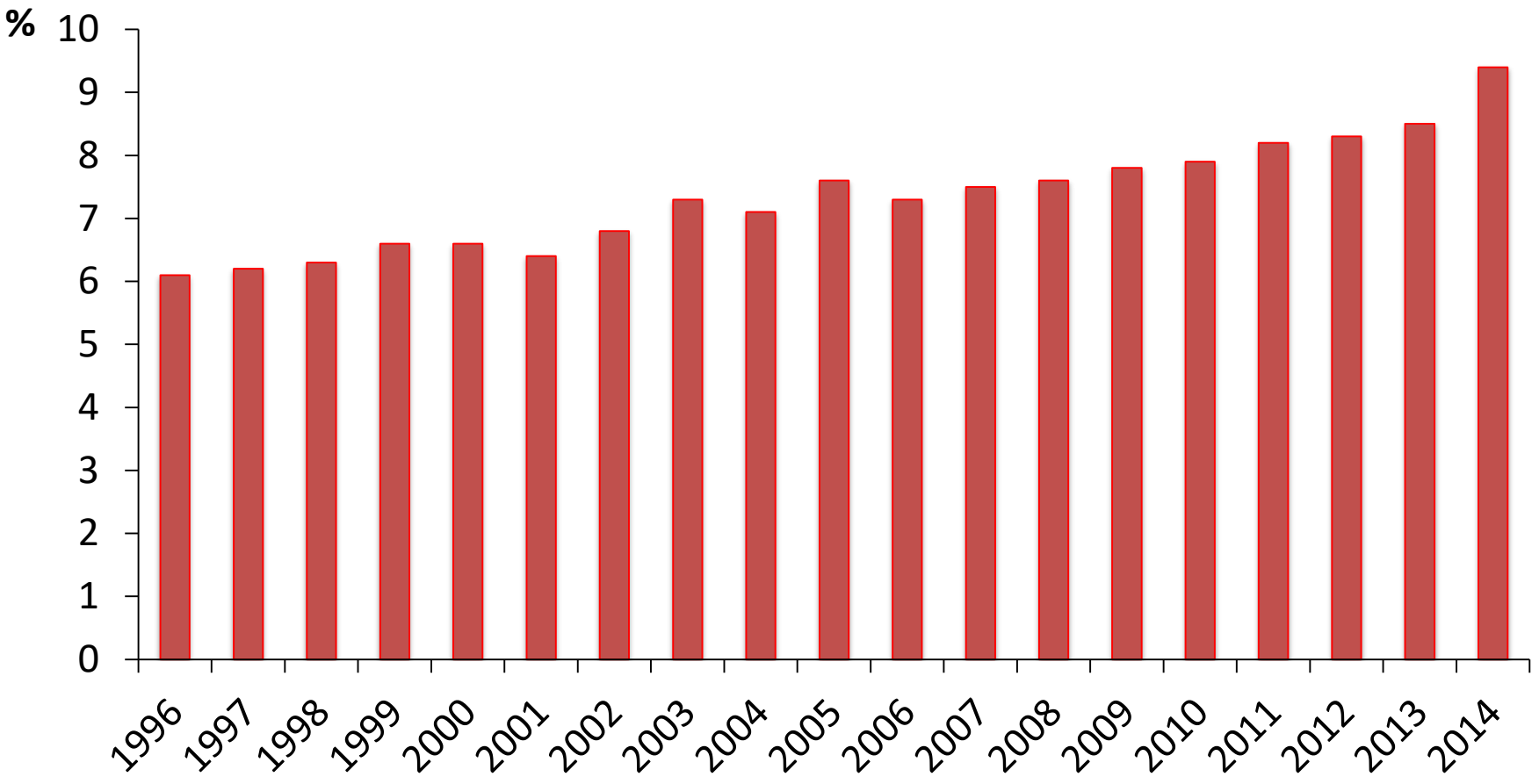
Anno 2010 (per 1.000 abitanti)



MDC	DIMISSIONI	%	GIORNATE DI DEGENZA	DEGENZA MEDIA (giorni)
Malattie e disturbi del sistema nervoso	219.185	6,8	1.784.561	8,1
Malattie e disturbi dell'occhio	41.291	1,3	119.331	2,9
Malattie e disturbi dell'orecchio, del naso della bocca e della gola	113.918	3,6	363.142	3,2
Malattie e disturbi dell'apparato respiratorio	300.077	9,4	2.834.040	9,4
Malattie e disturbi dell'apparato cardiocircolatorio	475.081	14,8	3.395.223	7,1
Malattie e disturbi dell'apparato digerente	295.350	9,2	2.012.367	6,8
Malattie e disturbi epatobiliari e del pancreas	149.835	4,7	1.176.863	7,9
Malattie e disturbi del sistema muscolo-schelettrico e connettivo	407.377	12,7	2.481.418	6,1
Malattie e disturbi della pelle del sottocutaneo e della mammella	89.340	2,8	379.385	4,2
Malattie e disturbi endocrini, nutrizionali e metabolici	82.090	2,6	446.100	5,4
Malattie e disturbi del rene e delle vie urinarie	169.668	5,3	1.153.191	6,8
Malattie e disturbi dell'apparato riproduttivo maschile	56.117	1,7	271.198	4,8
Malattie e disturbi dell'apparato riproduttivo femminile	100.283	3,1	409.106	4,1
Gravidanza, parto e puerperio	296.788	9,2	1.118.328	3,8

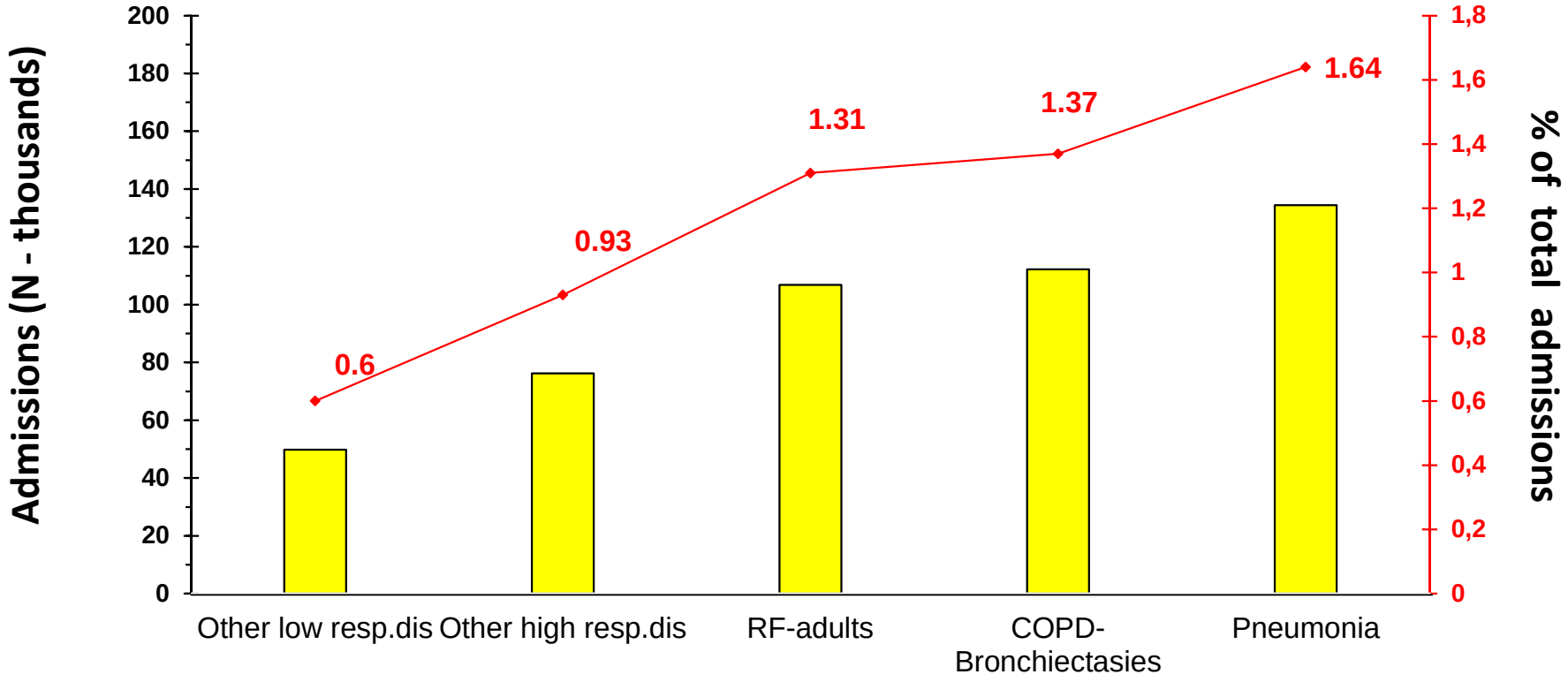
Dipartimento della Programmazione e dell'Ordinamento del SSN. Dicembre 2014

MALATTIE E DISTURBI RESPIRATORI



Dipartimento della Programmazione e dell'Ordinamento del SSN. Dicembre 2014

Italia – Prime 50 diagnosi di malattie respiratorie
Ammissioni per malattie acute – Regime ordinario - 2005



Rank	**49**	**23**	**13**	**11**	**8**

Excluding Pneumonia caused by TBC or sexually transmitted

www.ministerosalute.it

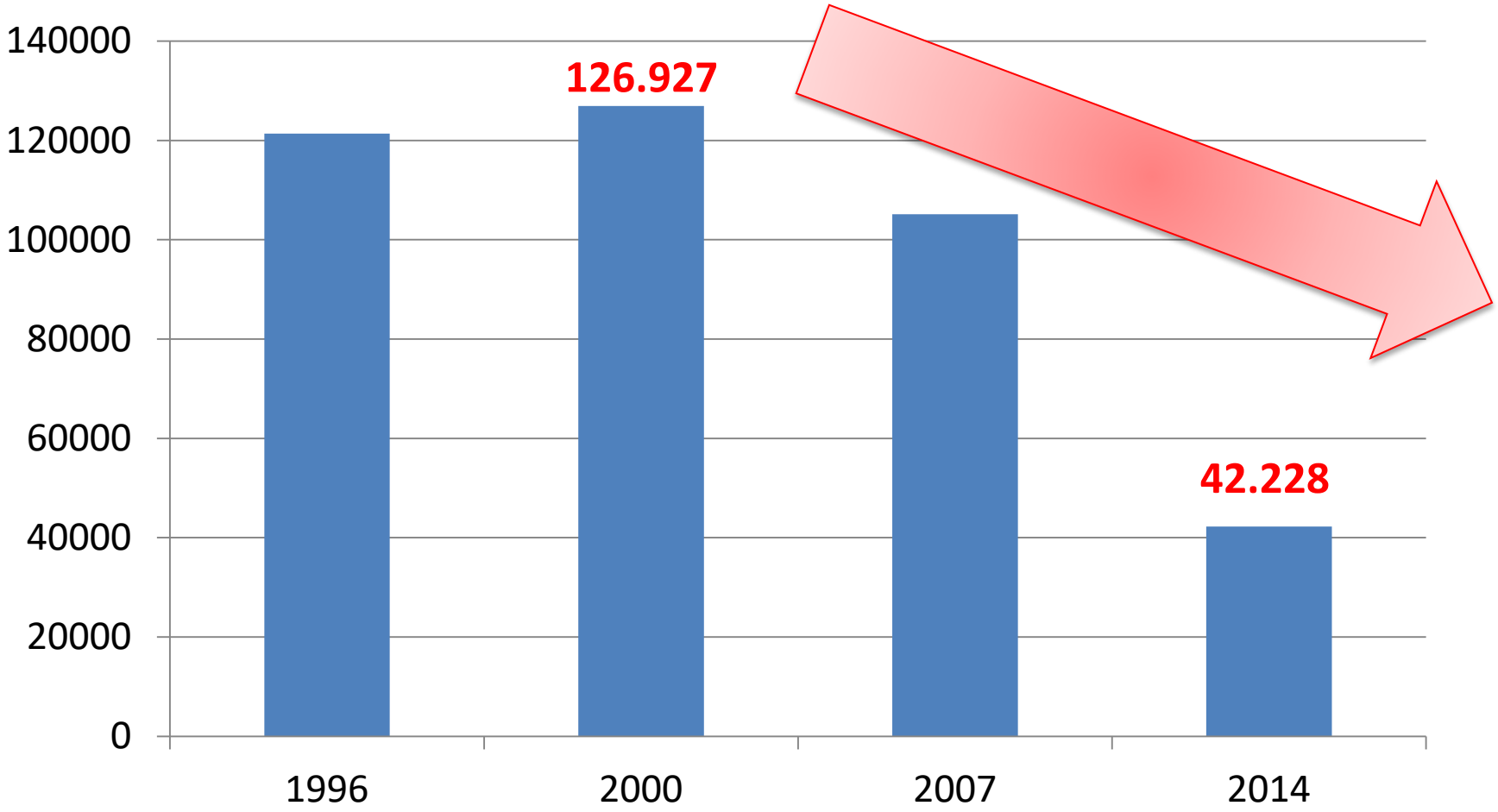
Tavola 3.10 - Primi 50 Drg (Diagnosis related groups) per numerosità delle dimissioni e degenza media: ricoveri per acuti in regime ordinario - Anno 2011

Diagnosis related groups (DRG) (a)		Dimissioni		Degenza media (b)
		Numero	% sul totale	
373 M	Parto vaginale senza diagnosi complicanti	316.814	4,5	3,5
127 M	Insufficienza cardiaca e shock	199.658	2,8	9,1
371 C	Parto cesareo senza CC	187.221	2,7	4,7
544 C	Sostituzione di articolazioni maggiori o reimpianto degli arti inferiori	140.133	2,0	10,1
087 M	Edema polmonare e insufficienza respiratoria	115.958	1,6	9,7
359 C	Interventi su utero e annessi non per neoplasie maligne senza CC	114.293	1,6	3,9
014 M	Emorragia intracranica o infarto cerebrale	92.725	1,3	10,4
430 M	Psicosi	88.536	1,3	13,7
494 C	Colecistectomia laparoscopica senza esplorazione del dotto biliare comune senza CC	78.826	1,1	4,1
410 M	Chemioterapia non associata a diagnosi secondaria di leucemia acuta	75.354	1,1	4,2
316 M	Insufficienza renale	73.964	1,0	9,6
183 M	Esofagite, gastroenterite e miscellanea di malattie dell'apparato digerente, età > 17 anni senza CC	71.772	1,0	4,9
089 M	Polmonite semplice e pleurite, età > 17 anni con CC	69.146	1,0	11,5
503 C	Interventi sul ginocchio senza diagnosi principale di infezione	68.618	1,0	2,2
162 C	Interventi per ernia inguinale e femorale, età > 17 anni senza CC	64.633	0,9	1,9
467 M	Altri fattori che influenzano lo stato di salute	63.561	0,9	4,3
125 M	Malattie cardiovascolari eccetto infarto miocardico acuto, con cateterismo cardiaco e diagnosi non complicata	63.161	0,9	3,5
390 M	Neonati con altre affezioni significative	60.213	0,9	3,9
088 M	Malattia polmonare cronica ostruttiva	58.930	0,8	8,6
225 C	Interventi sul piede	54.376	0,8	2,4
524 M	Ischemia cerebrale transitoria	53.679	0,8	7,0
311 C	Interventi per via transuretrale senza CC	51.729	0,7	4,0
381 C	Aborto con dilatazione e raschiamento, mediante aspirazione o isterotomia	51.545	0,7	1,6
219 C	Interventi su arto inferiore e omero eccetto anca, piede e femore, età > 17 anni senza CC	50.984	0,7	7,3
139 M	Aritmia e alterazioni della conduzione cardiaca senza CC	50.411	0,7	3,9
082 M	Neoplasie dell'apparato respiratorio	48.130	0,7	10,4

DRG	DIMISSIONI	%
Insufficienza cardiaca e shock		
Edema polmonare e insufficienza respiratoria	135.909	2,1
Psicosi		
Polmonite semplice e pleurite, età > 17 anni con CC	73.550	1,1
Insufficienza renale		
Malattie cardiovascolari eccetto infarto acuto		
Esofagite gastroenterite e miscellanea		
Chemioterapia		
Setticemia senza ventilazione meccanica		
Malattia polmonare cronica ostruttiva	42.228	0,7
Intervento cardiovascolare con stent medicato		
Ischemia cerebrale transitoria		
Neoplasie dell'apparato respiratorio	42.247	0,7
Neoplasie maligne dell'apparato epatobiliare e del pancreas		
Anomalie dei globuli rossi età >17 anni		
Aritmia e alterazioni della conduzione cardiaca senza CC		
Polmonite semplice e pleurite età > 17 anni senza CC	32.704	0,5
Altro impianto di pacemaker cardiaco permanente		

Dipartimento della Programmazione e dell'Ordinamento del SSN 2014

N.° ricoveri per BroncoPneumopatia Cronica Ostruttiva



Total and State-Specific Medical and Absenteeism Costs of COPD Among Adults Aged 18 Years in the United States for 2010 and Projections Through 2020

RESULTS: In 2010, total national medical costs attributable to COPD and its sequelae were estimated at $32.1 billion, and total absenteeism costs were $3.9 billion, for a total burden of COPD-attributable costs of $36 billion. An estimated 16.4 million days of work were lost because of COPD. Of the medical costs, 18% was paid for by private insurance, 51% by Medicare, and 25% by Medicaid. National medical costs are projected to increase from $32.1 billion in 2010 to $49.0 billion in 2020. Total state-specific costs in 2010 ranged from $49.1 million in Wyoming to $2.8 billion in California: medical costs ranged from $42.5 million in Alaska to $2.5 billion in Florida and absenteeism costs ranged from $8.4 million in Wyoming to $434.0 million in California.

Ford ES, et al. Chest 2015

Once patients receive a diagnosis of COPD, optimizing their management may limit the costs attributable to COPD by avoiding acute exacerbations of their conditions, slowing the decline in pulmonary function, and reducing adverse symptoms

These steps include eliminating and avoiding exposures known to cause COPD, maximizing the numbers of people who receive indicated vaccinations, and implementing recommended pharmacologic treatment. Because hospitalizations make up a large portion of the costs attributable to COPD, strategies to avoid hospitalizations should have a meaningful impact on costs.[21] For example, evidence suggests that COPD-related hospitalizations can be reduced by appropriate pharmacologic management[22,23] or by strengthening home-based management programs.[24-26]

Ford ES, et al. Chest 2015

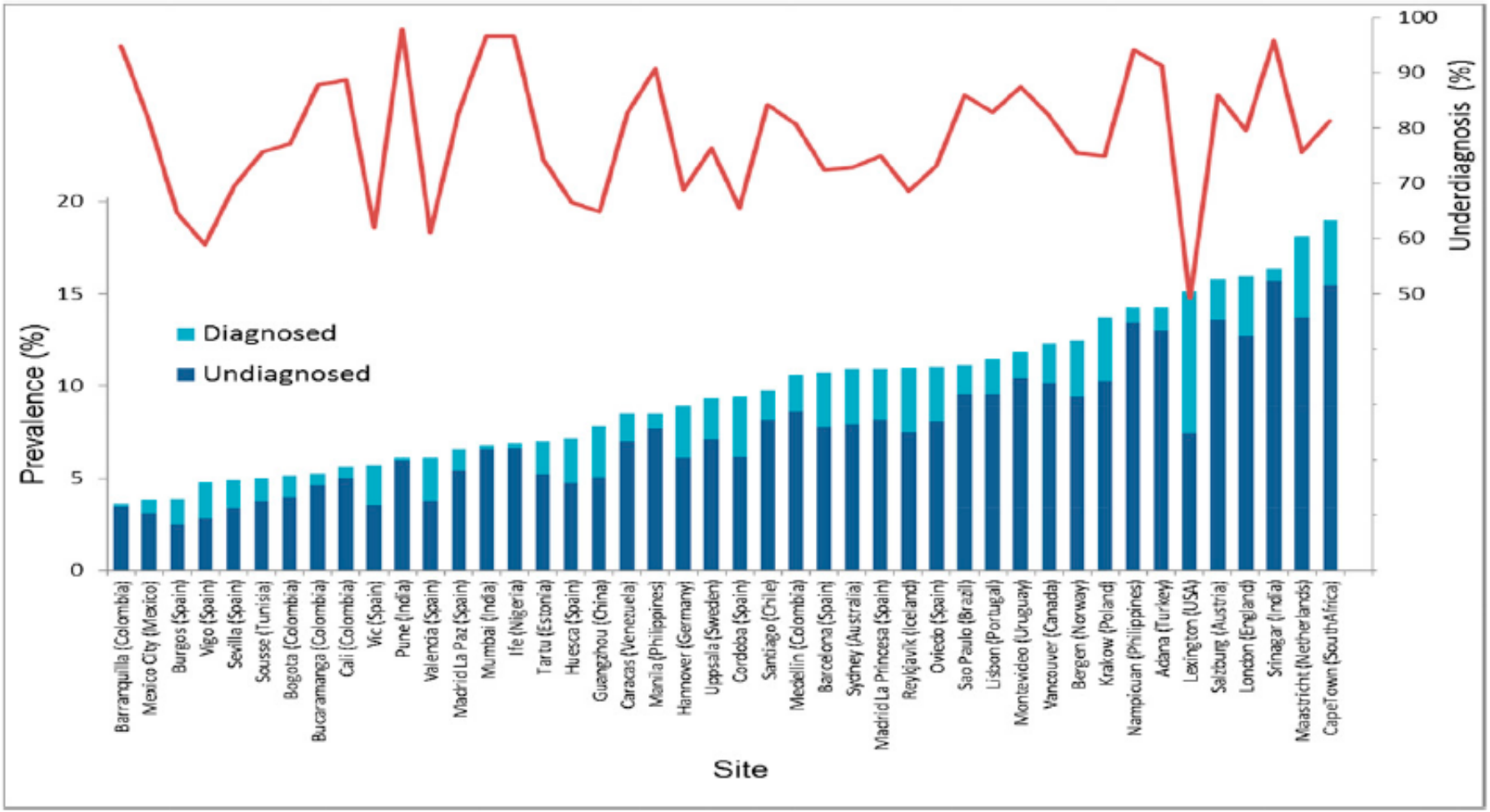


Figure 2 – *Prevalence of diagnosed and undiagnosed COPD (postbronchodilator $FEV_1/FVC < LLN$) and relative underdiagnosis by study site. See Figure 1 legend for expansion of abbreviation.*

Lamprecht B, et al. Chest 2015

Underdiagnosis of COPD

	Criteria of COPD	Diagnosed (%)
• NHANES III, USA	BTS	37
• IBERPOC, Spain	ERS	22
• DIMCA, Netherlands	CNSLD	35
• OLIN, Sweden	BTS	31
• An European assumption	clinical	25

Though being symptomatic, only a half of the subjects with severe COPD are properly labelled;

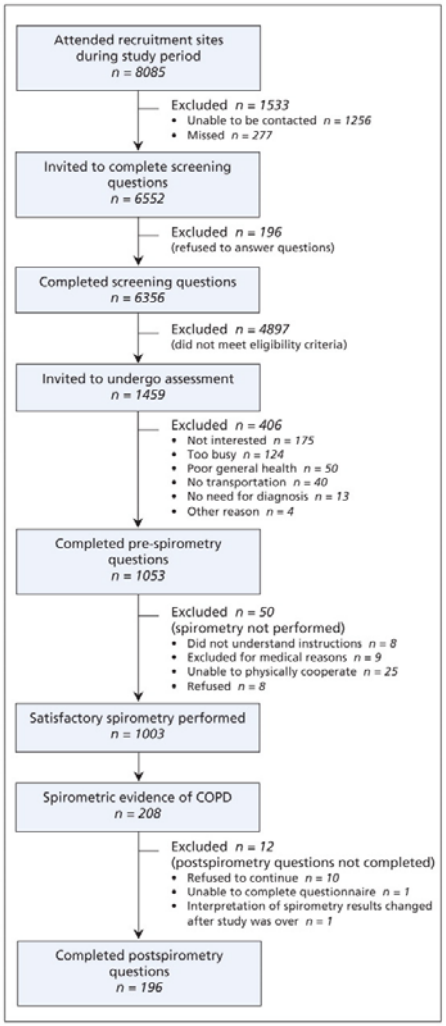
COPD is usually NOT DIAGNOSED until it is clinically apparent and already advanced.

Lindberg A, et al. Resp Med 2005; 100: 264-72

Prevalence and underdiagnosis of COPD among patients at risk in primary care

We suoght to measure the prevalence of spirometrically confirmed COPD in an at-risk population of adults aged 40 years or more with a smoking history of at least 20 pack-years who visited a primary care practioner for any reason and to describe their characteristics.

Hill K, Goldstein RS, Guyatt GH et al. Can Med Ass J 2010; 182 (7), 673-678



Recruitment and flow of participants

Of the **1003** participants who completed spirometry:

- **208** met the spirometric criteria for COPD
- prevalence of **20.7** %
- 67 (**32.7** %) reported having received a prior diagnosis of COPD

CMAJ·JAMC

Hill K et al. CMAJ 2010;182:673-678

Prevalence and underdiagnosis of COPD among patients at risk in primary care

- Among adult patients visiting a primary care practitioner, as many as one in five with known risk factors met spirometric criteria for COPD.
- Although more than three-quarters of the patients with COPD reported at least one respiratory symptom, two-thirds were unaware of their diagnosis.
- These findings suggest that adults who attend a primary care practice with known risk factors for COPD are important targets for screening and early intervention.

Hill K, Goldstein RS, Guyatt GH et al. Can Med Ass J 2010; 182 (7), 673-678

Gestione della BPCO in Medicina Generale, quali sono le sfide ?

- Prevenzione
- Diagnosi precoce e più appropriata
- Valutazione accurata e fenotipizzazione
- Intervento terapeutico appropriato
- Miglioramento dei percorsi di diagnosi e cura

Screening	Case-Finding
A “man on the street”	Patient being seen by a physician
May not have symptoms	Has respiratory symptoms
May be a cigarette smoker	Has COPD risk factors
No cost and no reimbursement	Medicare will pay $ 20 fo the test

Enright P, Kaminsky D. Resp Care 2003; 48 (12): 1194-1201

Criteria for early detection of disease

1. The disease would progress and cause substantial morbidity or mortality
2. Treatment is available and is more effective when used at the early stage
3. There is a feasible, affordable, safe, and relatively simple testing method that is accurate enough to avoid producing large number of false-positive or false-negative results
4. There is an action plan that minimizes adverse effects

Marshall KG. CMAJ 1996; 154 (10): 1493-1499

Eur Respir J 2004; 23: 932–946
DOI: 10.1183/09031936.04.00014304
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European Respiratory Journal
ISSN 0903-1936

ATS/ERS TASK FORCE

Standards for the diagnosis and treatment of patients with COPD: a summary of the ATS/ERS position paper

B.R. Celli*, W. MacNee*, and committee members

Committee members: A. Agusti, A. Anzueto, B. Berg, A.S. Buist, P.M.A. Calverley, N. Chavannes, T. Dillard, B. Fahy, A. Fein, J. Heffner, S. Lareau, P. Meek, F. Martinez, W. McNicholas, J. Muris, E. Austegard, R. Pauwels, S. Rennard, A. Rossi, N. Siafakas, B. Tiep, J. Vestbo, E. Wouters, R. ZuWallack

spirometry is a:

- **reliable**
- **simple**
- **non-invasive**
- **safe**
- **non-expensive procedure**

for detection of airflow obstruction

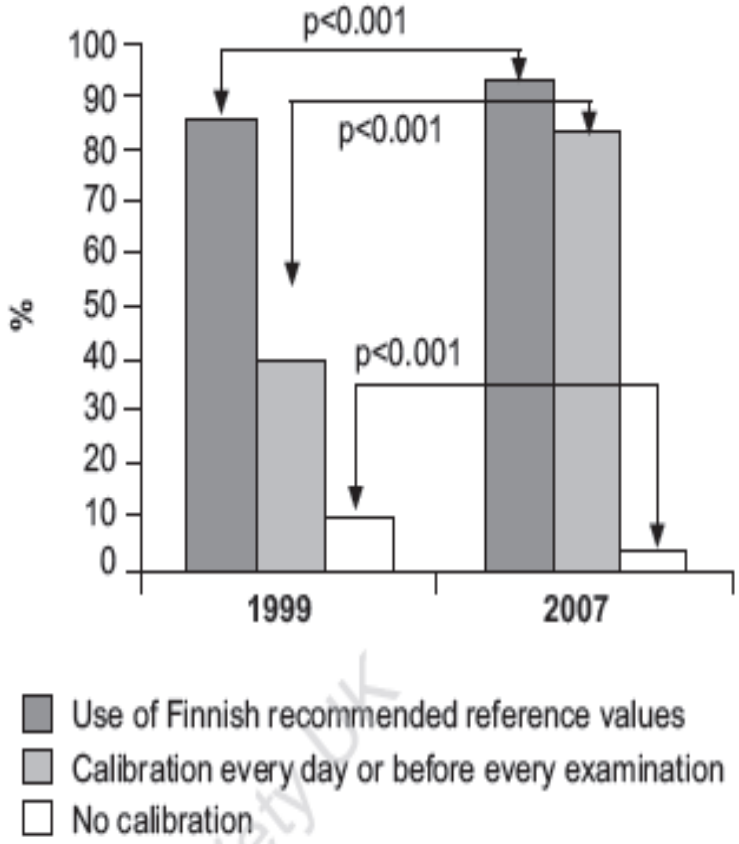
The 10-year COPD programme in Finland: effects on quality of diagnosis, smoking prevalence, hospital admissions and mortality

The major aims of this 10-year Programme in Finland, a country with a population of 5 million, included:

1. A reduction in COPD prevalence
2. Improvement in COPD diagnosis, especially in primary care
3. A reduction in the number of moderate to severe cases of the disease
4. Reduction in the number of COPD-related hospitalizations
5. Reduction in treatment costs due to COPD

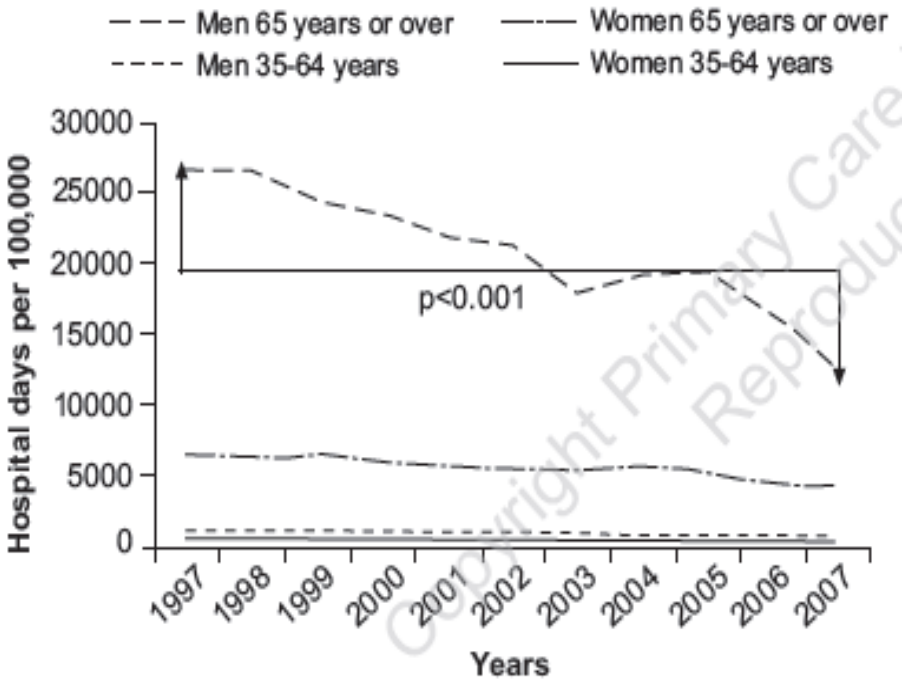
Kinnula LV, et al. Prim Care Resp J 2011; 20 (2): 178-83

Figure 1. Quality of spirometry in the Finnish health care: use of recommended reference values and calibration of the equipment in 1999[11] and 2007.[12]



Kinnula LV, et al. Prim Care Resp J 2011; 20 (2): 178-83

Figure 3. COPD-induced hospital treatment days in the age group 35-64 years for men and for women and in the age group 65 years or older for men and for women in relation to the population in 1997-2007.



- 52.9 %

Kinnula LV, et al. Prim Care Resp J 2011; 20 (2): 178-83

Recent trends in COPD prevalence in Spain: a repeated cross-sectional survey 1997-2007

	IBERPOC 1997	EPISCAN 2007	
Underdiagnosis	78 %	73 %	Same
Undertreatment	81 %	54 %	**Better**
Undertreatment in severe COPD	50 %	10 %	**Better**
Previous spirometry ?	17 %	59 %	**Better**

Soriano JB, et al. Eur Resp J 2010; 36: 758-765

Recent trends in COPD prevalence in Spain: a repeated cross-sectional survey 1997-2007

- To further reduce underdiagnosis, the implementation and wider use of spirometry screening in all setting, including quality spirometry in primary care, pharmacies, and elsewhere, require further research and resources.

Soriano JB, et al. Eur Resp J 2010; 36: 758-765

Early detection of COPD in general practice

In conclusion, the present study showed that early detection of COPD in general practice by offering spirometry to individuals with relevant exposure and airway symptoms is not only feasible, but identified a high proportion of individuals with airway obstruction. Furthermore, the majority of subjects with signs of COPD appeared to have mild to moderate disease, and secondary preventive measures may reduce the future burden of COPD, for both morbidity and mortality.

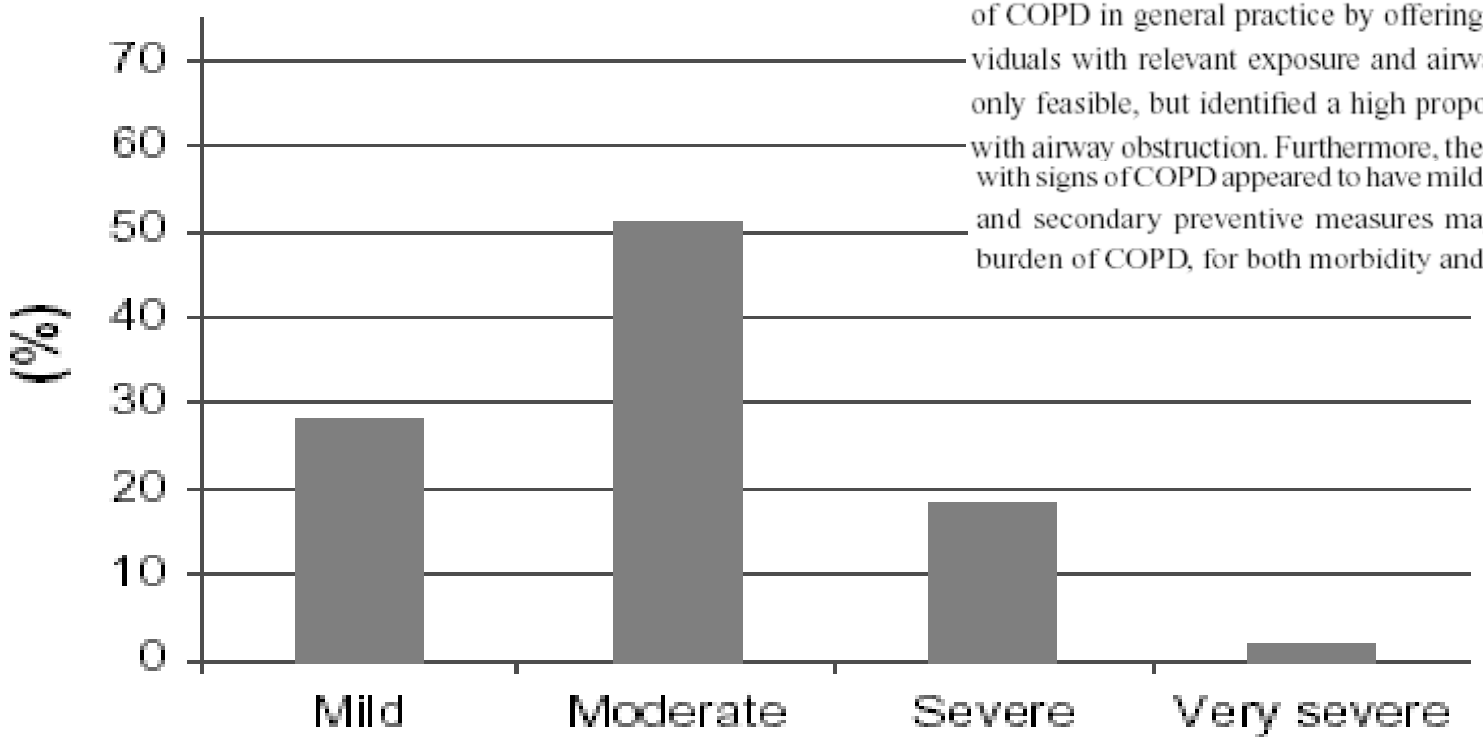


Figure 3 Distribution of enrolled subjects with airway obstruction ($FEV_1/FVC \leq 70\%$) (n = 1078) according to severity of COPD (based on FEV_1% predicted).

Ulrich SC, et al. Int J of COPD 2011

Agenzia Italiana del Farmaco
AIFA

Indicatore	Descrizione dell'indicatore	Lug2013-giu2014	Lug2012-giu2013	Lug2011-giu2012
H-DB 4.2	Percentuale di pazienti con ricovero per BPCO in trattamento con LABA e/o LAMA	54,4	53,4	53,0
H-DB 4.3	Percentuale di pazienti in trattamento con ICS senza esacerbazioni	52,5	52,2	52,2
H-DB 4.4	Percentuale di pazienti in trattamento con farmaci per le sindromi ostruttive delle vie respiratorie aderenti al trattamento	13,9	14,1	13,6
H-DB 4.5	Percentuale di pazienti in trattamento con farmaci per le sindromi ostruttive delle vie respiratorie occasionali al trattamento	61,5	61,4	62,0

From: **Temporal Trends in Mortality in the United States, 1969-2013**

JAMA. 2015;314(16):1731-1739. doi:10.1001/jama.2015.12319

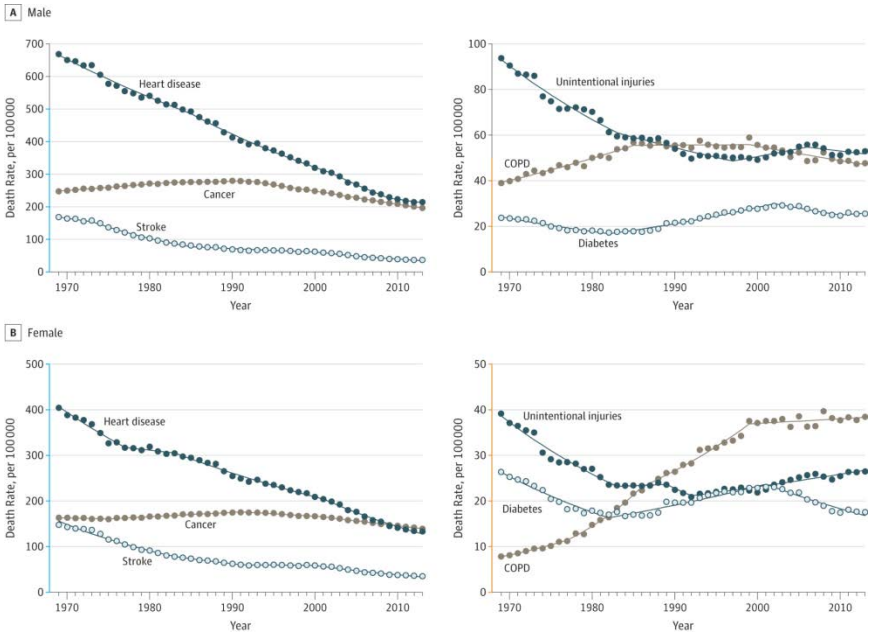


Figure Legend:

Age-Standardized Death Rate by Sex and Cause of Death in the United States, 1969-2013.COPD indicates chronic obstructive pulmonary disease.

Trends in Mortality From COPD Among Adults in the United States

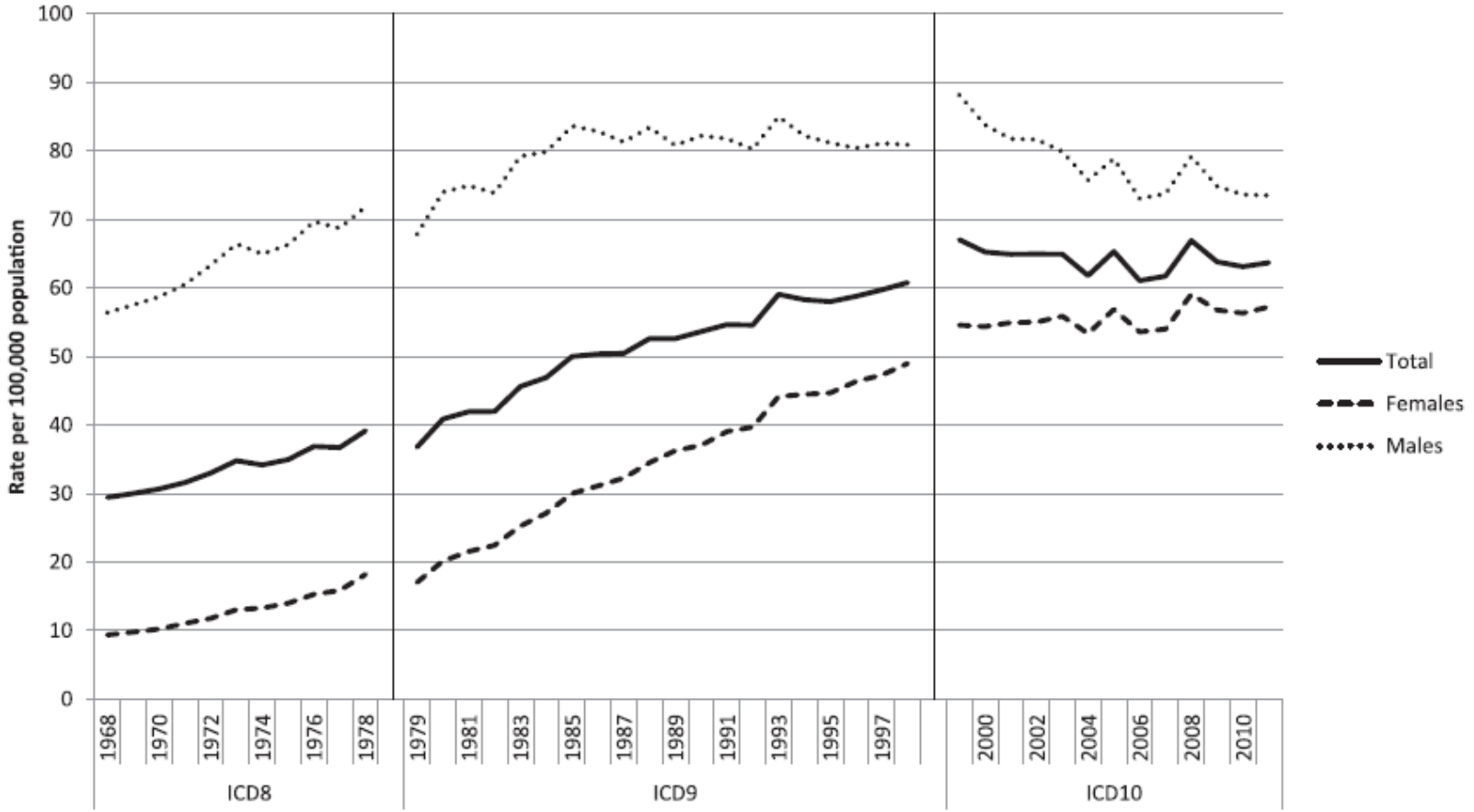
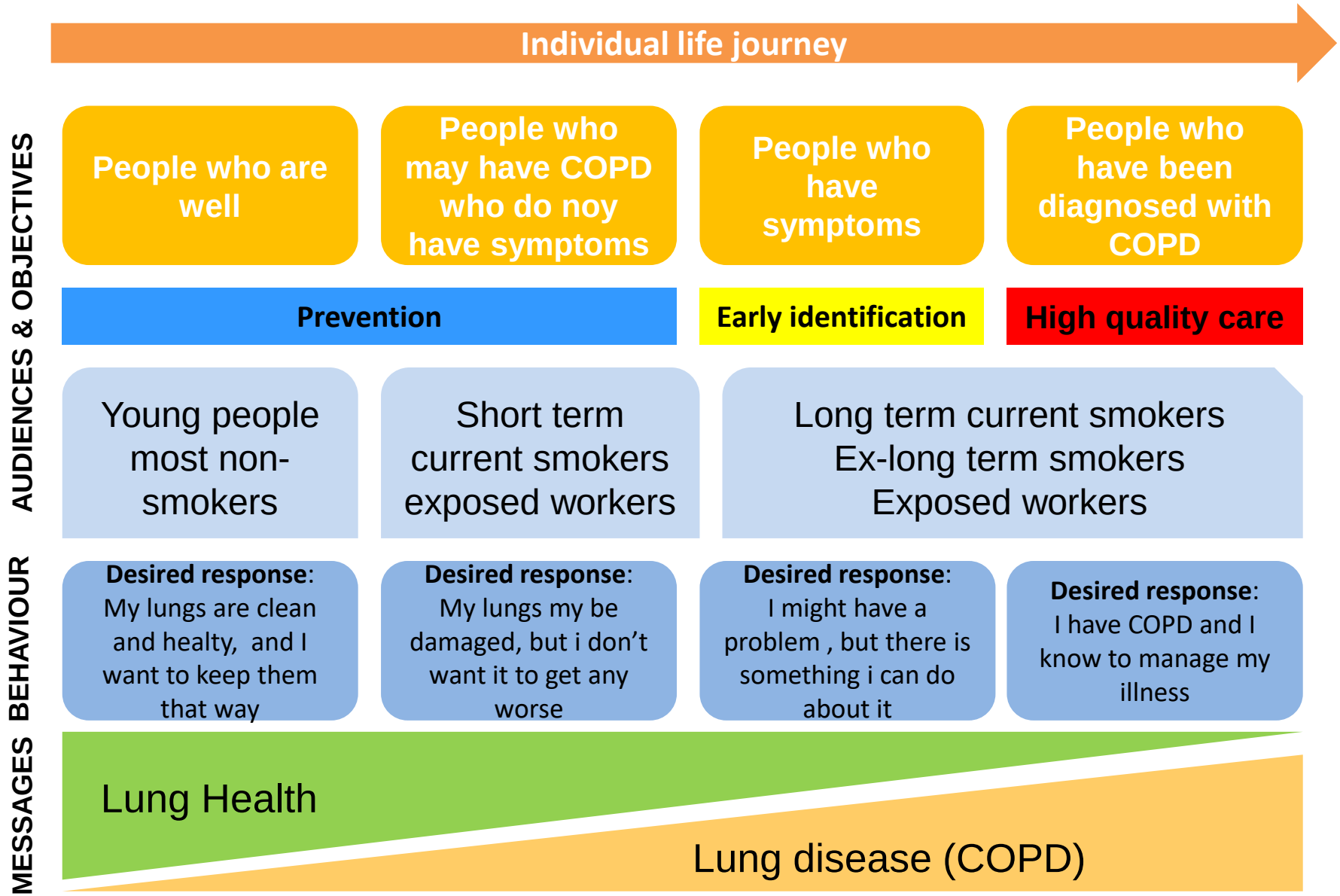


Figure 1 – *Age-adjusted COPD mortality rate among US adults aged ≥ 25 y, United States 1968 to 2011. ICD8* = Eighth Revision, International Classification of Diseases, Adapted for Use in the United States; *ICD9* = International Classification of Diseases, Ninth Revision; *ICD10* = International Classification of Diseases, 10th Revision.

Earl S . Ford. Chest 2015

Strategies per cambiare il peso della malattia



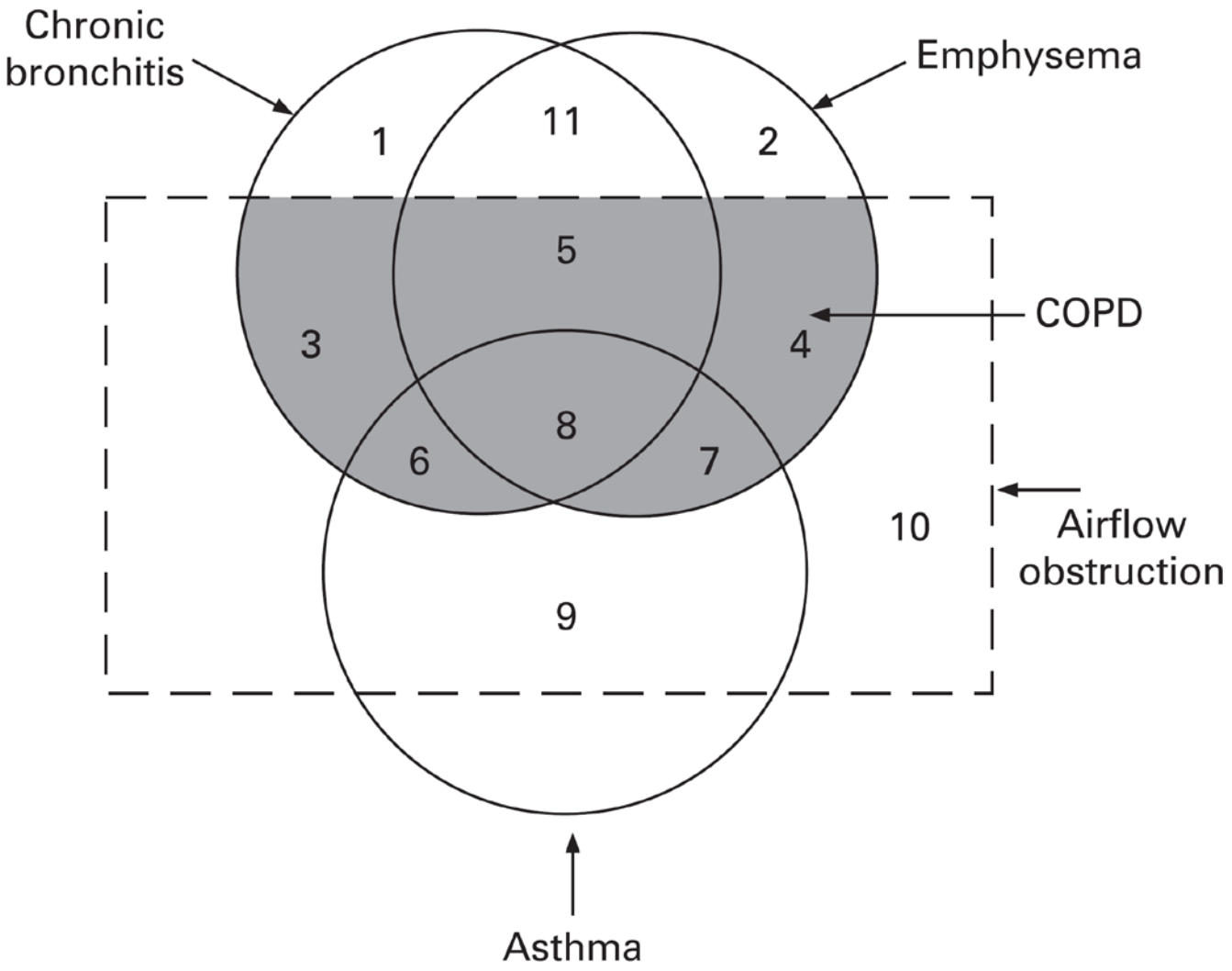
Focus sul miglioramento

Prevenzione
Riduzione del rischio

Trovare i pazienti mancanti
Precoce indentificazione

Cura e supporto di alta qualità
Gestione proattiva ed integrata

Gestione del fine vita



Am J Resp Crit Care Med 1995

The COPD dilemma

COPD is defined by the presence of airflow limitation that is not fully reversible, and its treatment is mostly guided by the severity of this limitation.

Severity	Postbrochodilator FEV1/FVC	FEV1 % pred
At risk	>0.7	> 80
Mild COPD	>0.7	< 80
Moderate COPD	>0.7	50–80
Severe COPD	>0.7	30–50
Very severe COPD	>0.7	< 30

Han AJRCC 2010

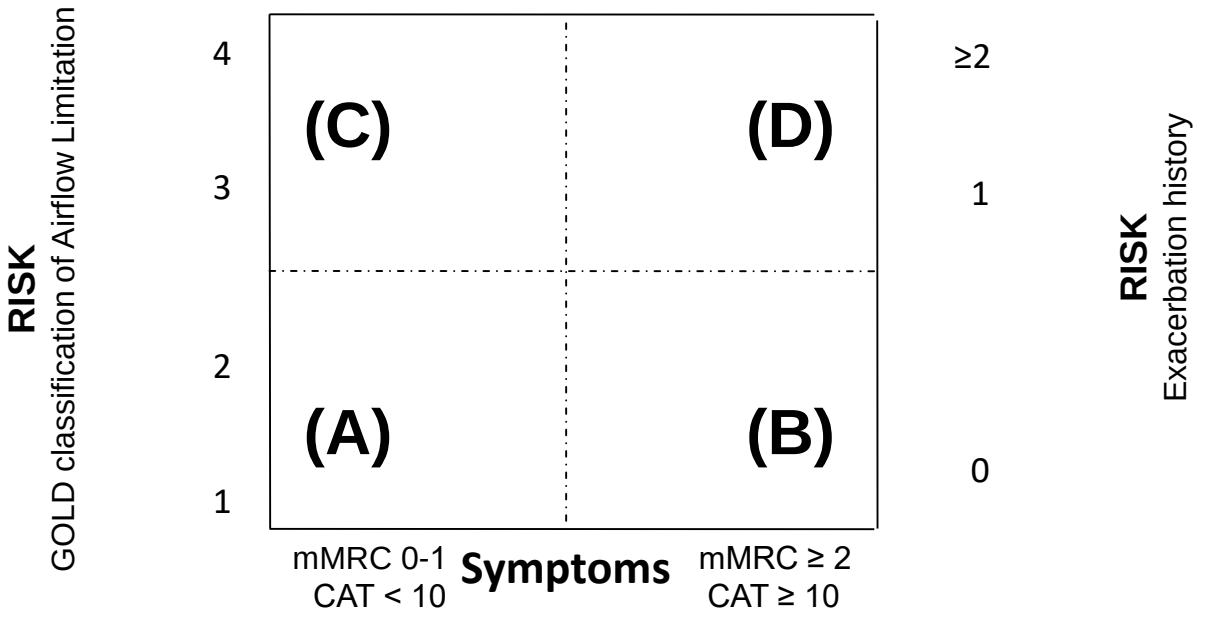
The COPD dilemma

it is now widely recognized that COPD is a complex syndrome with pulmonary and extrapulmonary components. Importantly, significant heterogeneity exists with respect to clinical presentation, physiology, imaging, response to therapy, decline in lung function, and survival.

Han AJRCC 2010

The COPD dilemma

There is consensus that FEV_1 by itself does not adequately describe the complexity of the disease and that FEV_1 cannot be used in isolation for the optimal diagnosis, assessment, and management of the disease.



Vestbo J, et al. AJRCCM 2013

Clinical Commentary

Chronic Obstructive Pulmonary Disease Phenotypes

The Future of COPD

MeiLan K. Han[1], Alvar Agusti[3], Peter M. Calverley[4], Bartolome R. Celli[5], Gerard Criner[6], Jeffrey L. Curtis[1,7], Leonardo M. Fabbri[8], Jonathan G. Goldin[9], Paul W. Jones[10], William MacNee[11], Barry J. Make[12], Klaus F. Rabe[13], Stephen I. Rennard[14], Frank C. Sciurba[15], Edwin K. Silverman[5,16], Jørgen Vestbo[17], George R. Washko[5], Emiel F. M. Wouters[18], and Fernando J. Martinez[2]

The identification and subsequent grouping of key elements of the COPD syndrome into clinically meaningful and useful subgroups (phenotypes) that can guide therapy more effectively is a potential solution of the dilemma

Han KM, et al. Am J Respir Crit Care Med 2010; 182, 598-564

Phenotypes – an operational definition

“a single or combination of disease attributes that describe differences between individuals with COPD as they relate to clinically meaningful outcomes (symptoms, exacerbations, response to therapy, rate of disease progression, or death).”

Han KM, et al. Am J Respir Crit Care Med 2010; 182, 598-564

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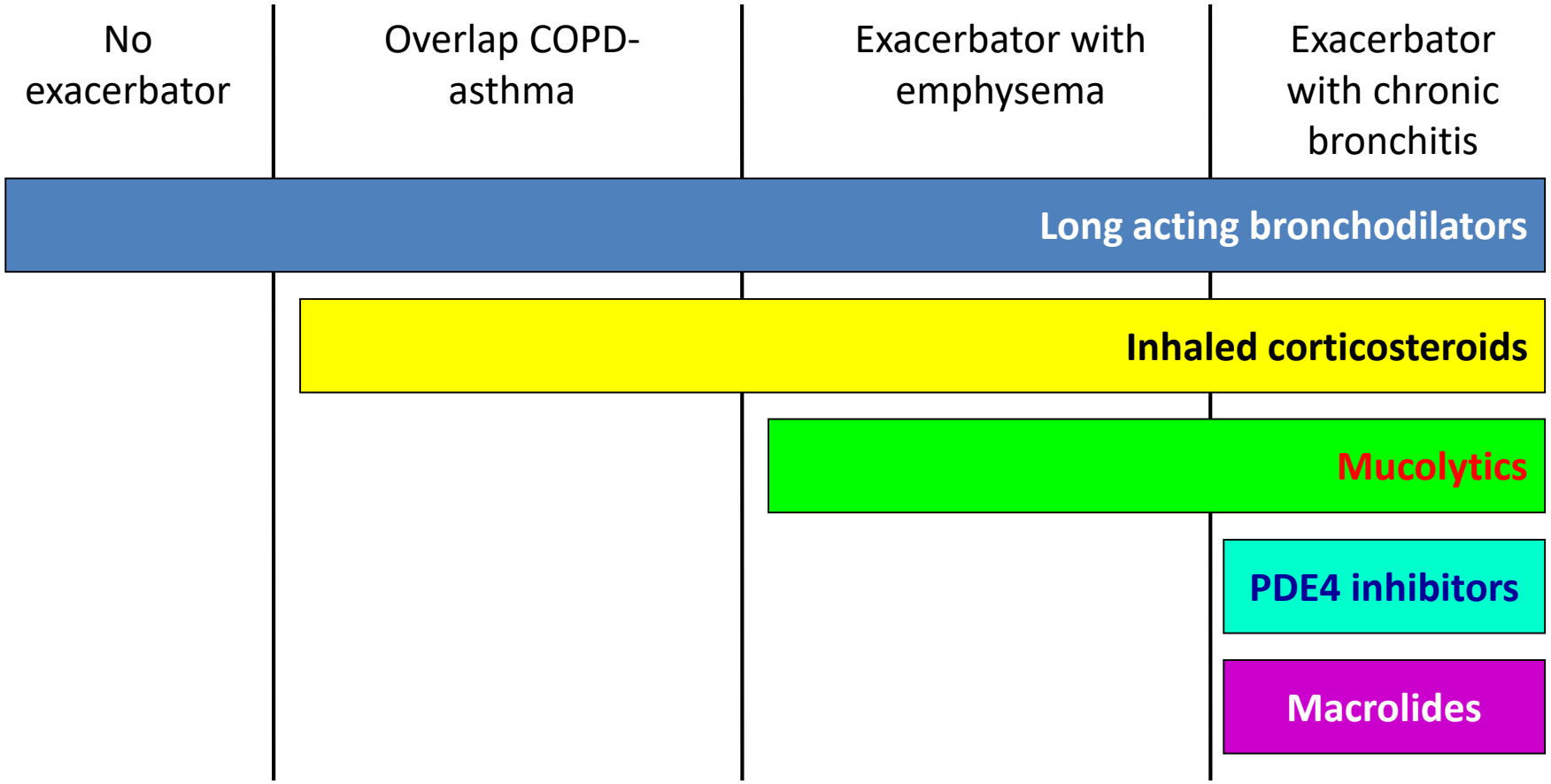

M Miravitlles, et al. Eur Resp J 2013

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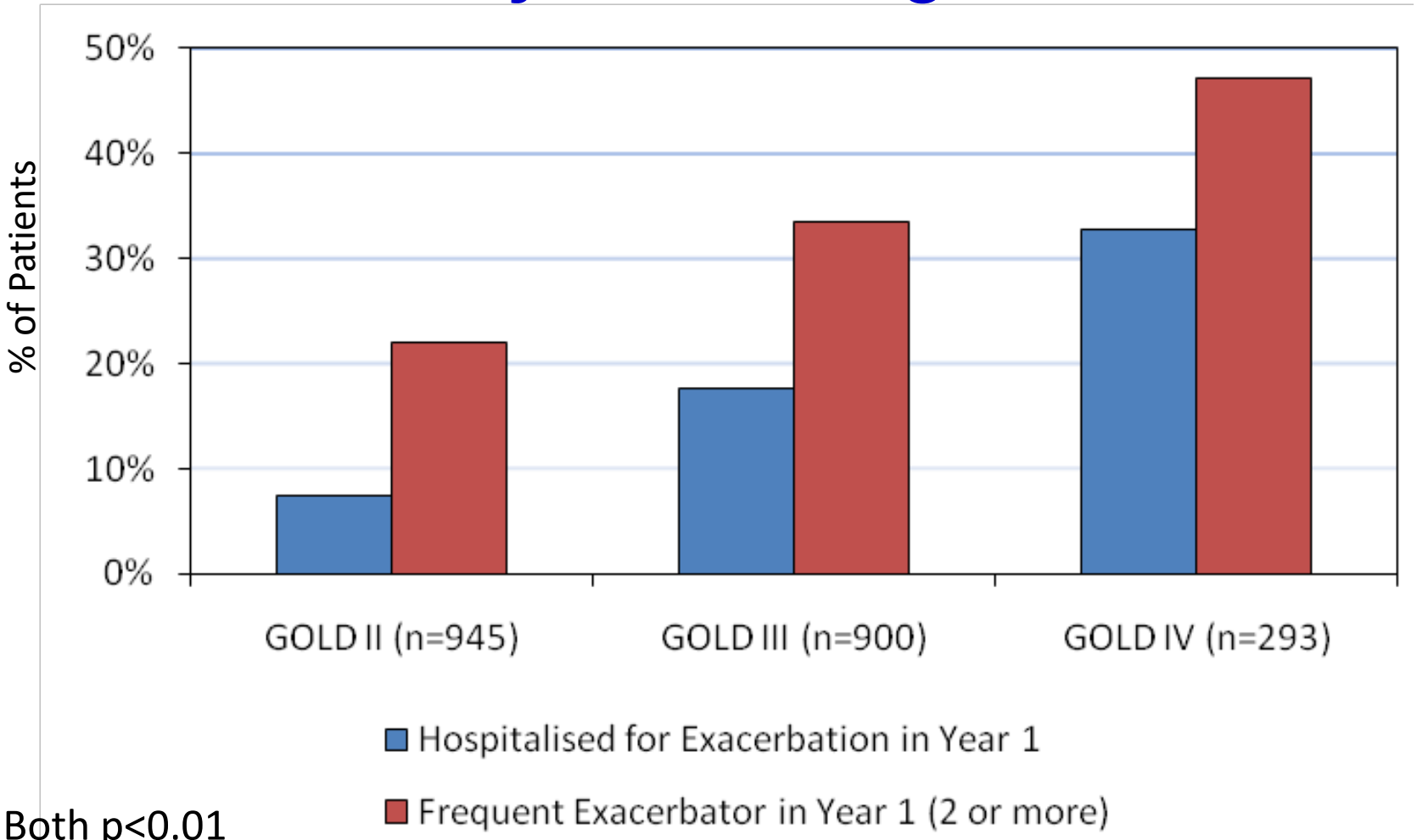
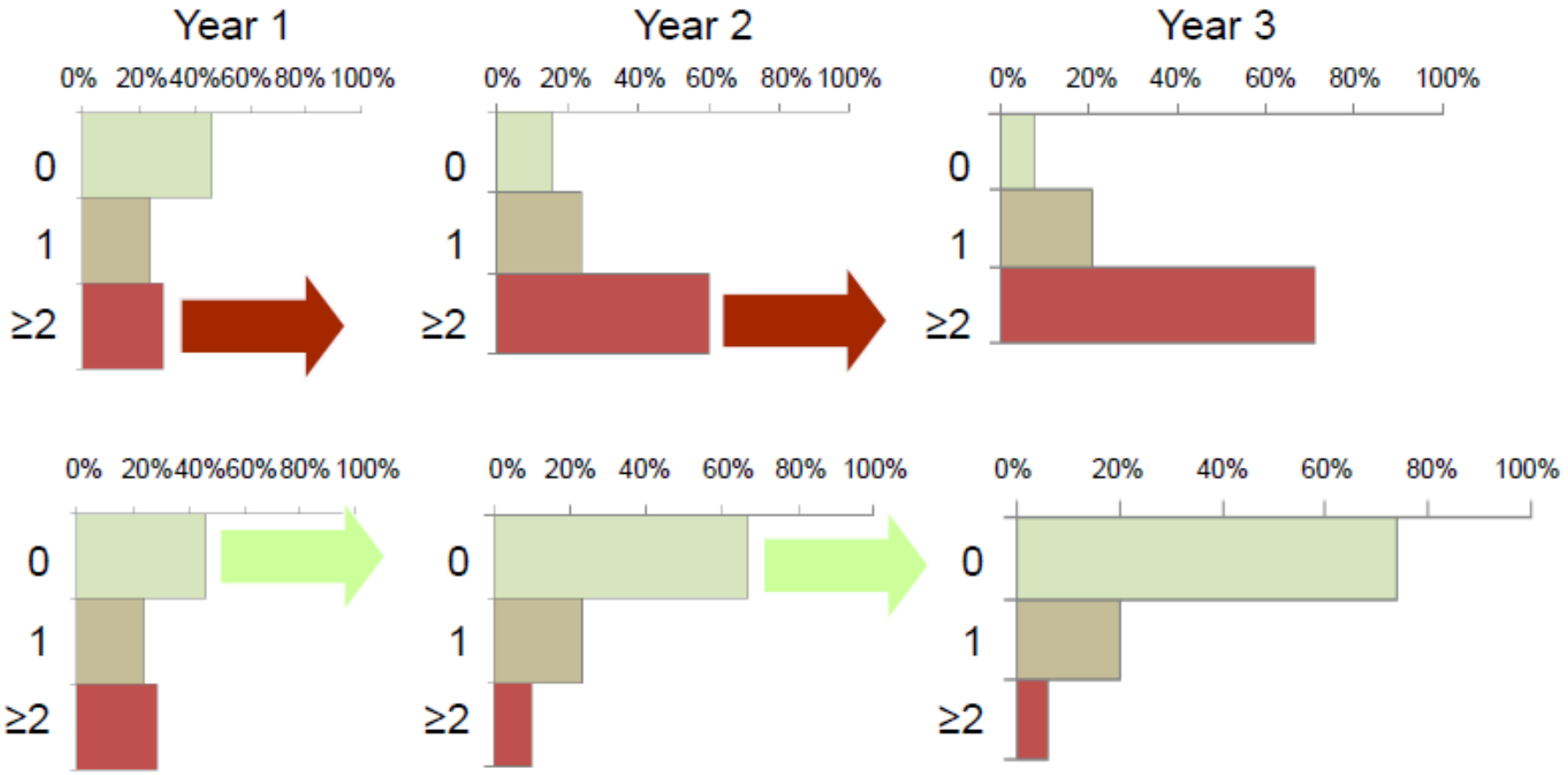
Frequency and Severity of Exacerbations by GOLD stage



Both p<0.01

Hurst J et al. NEJM 2010

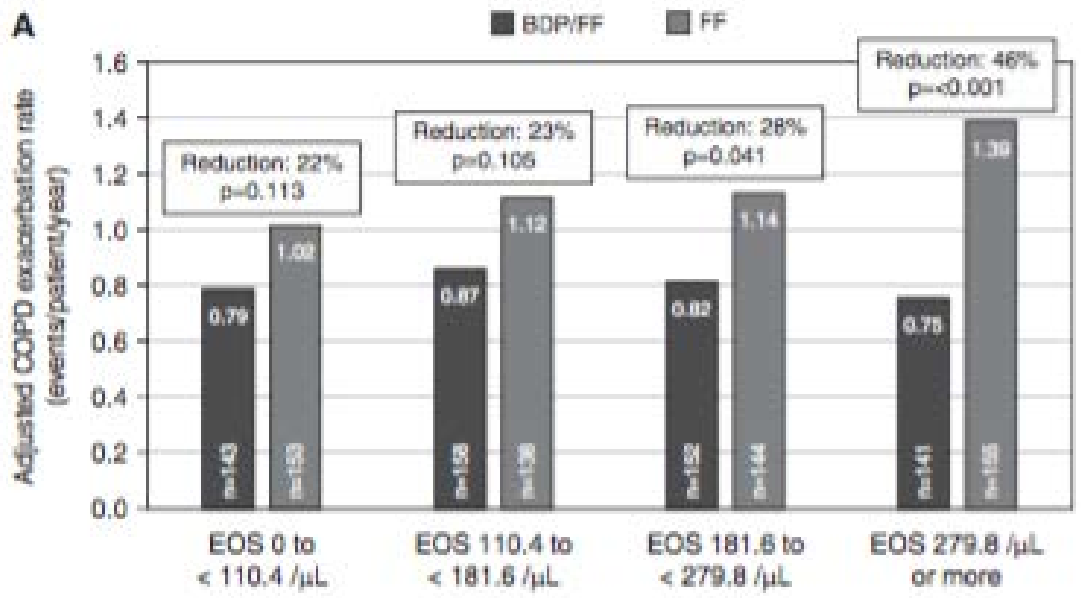
Stability of the Exacerbator Phenotype



74% of patients having no exacerbations in Years 1 and Year 2 had no exacerbations in Year 3

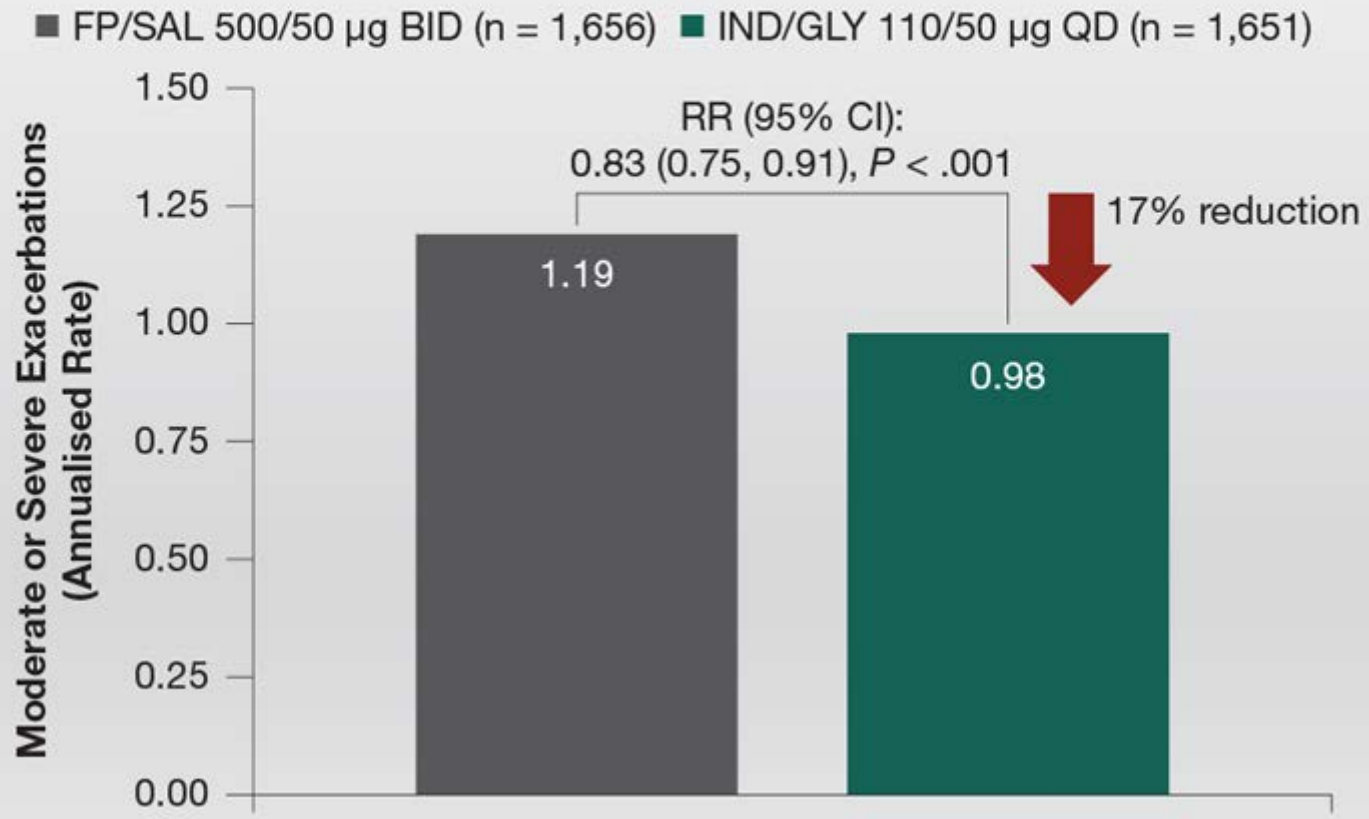
Hurst J et al. NEJM 2010

Blood eosinophils: a biomarkers of response to extrafine beclomethasone/formoterol



Siddiqui et al. Am J Resp Crit Care Med 2015

FLAME: Rate of Moderate and Severe Exacerbations (Requiring Healthcare Utilisation), IND/GLY Versus FP/SAL



Analysis of the full analysis set.

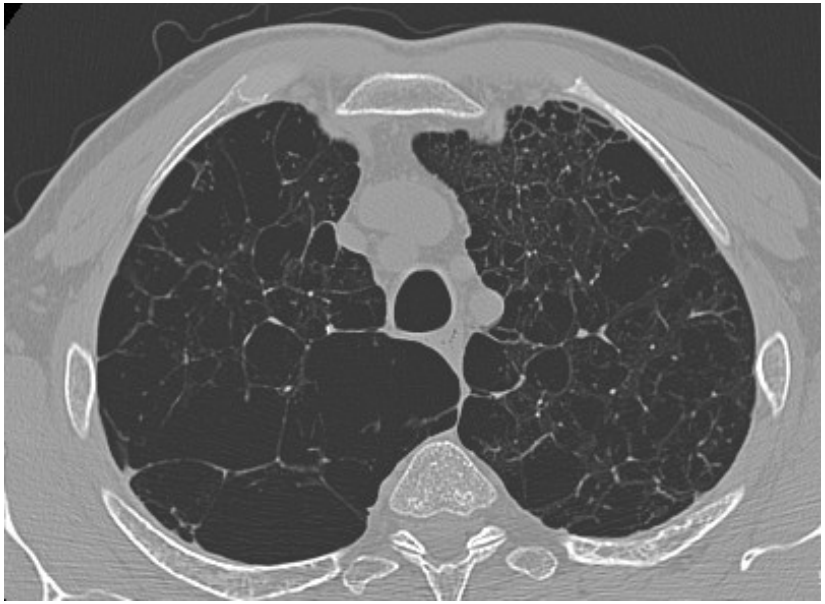
Wedzicha et al. New Engl J Med 2016

Phenotypes – an operational definition

“a single or combination of disease attributes that describe differences between individuals with COPD as they relate to clinically meaningful outcomes (symptoms, exacerbations, response to therapy, rate of disease progression, or death).”

Han KM, et al. Am J Respir Crit Care Med 2010; 182, 598-564

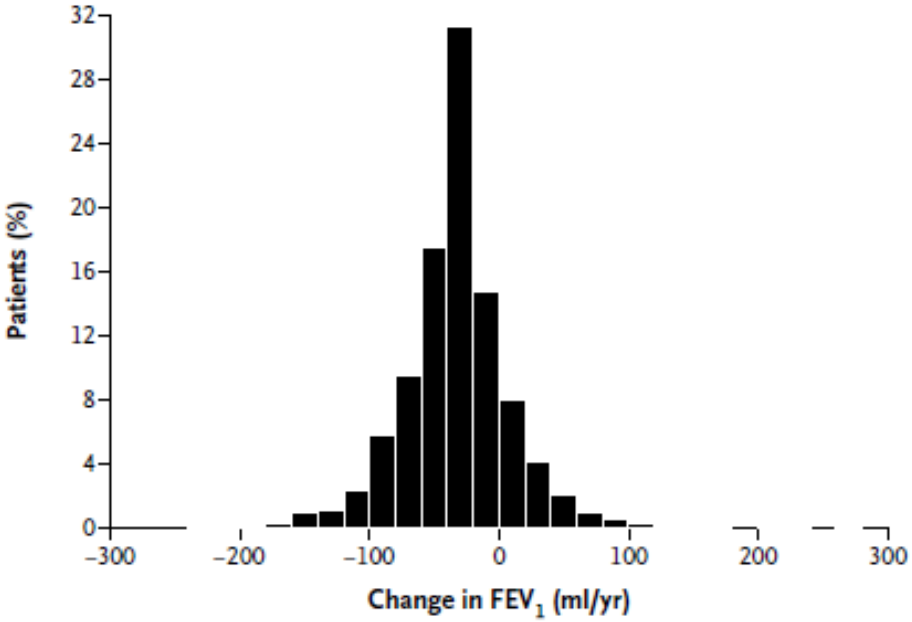
The classical phenotypes: emphysema



Ridotta CPT
Ridotto VR
Ridotta diffusione

Changes in FEV_1 over time in COPD

COPD is not invariably progressive. In more than half the patients of the study, the rate of decline in FEV_1 over a period of 3 years was no greater than that which has been observed in people without lung disease.



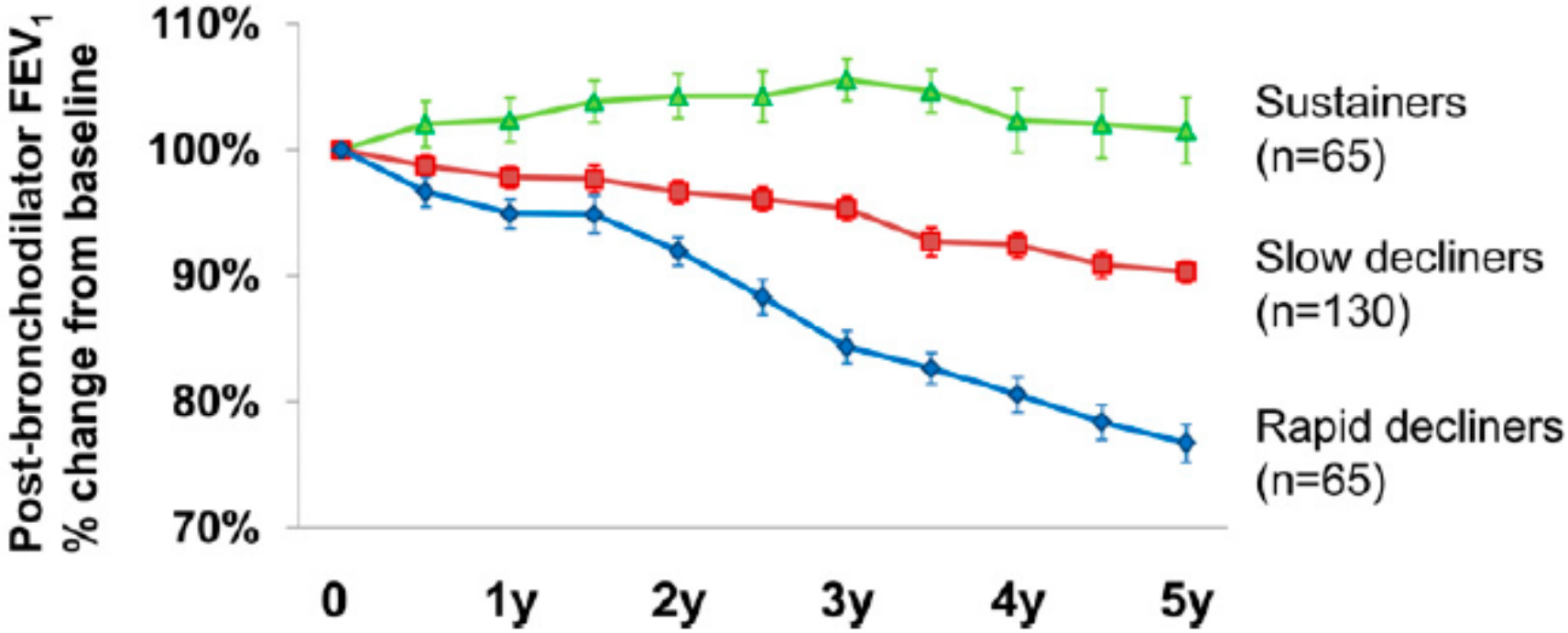
Vestbo J,et al. NEJM 2011.

COPD subgroups

Subgroup	Effect on baseline FEV1	P	Effect on annual rate of change in FEV1	P
Exacerbations (per exacerbation)	-		-2±0.5	<0.001
Bronchodilator reversibility*	220±22.4	<0.001	-17±4.2	<0.001
Emphysema**	**-327±21.2**	**<0.001**	**-13±4.2**	**0.002**
Chronic bronchitis #	-43±20.2	0.033	-2±3.8	0.67
CVD # #	11±19.7	0.57	1±3.6	0.77

* 12% and 200mL, ** >10% lung volume with density -950 HU
# MRC definition, # # Self-reported

Vestbo J, et al. NEJM 2011.



Annual changes in post-bronchodilator FEV1 varied widely, with the mean (SD) post-bronchodilator FEV1 being - 32 (24) ml/yr.

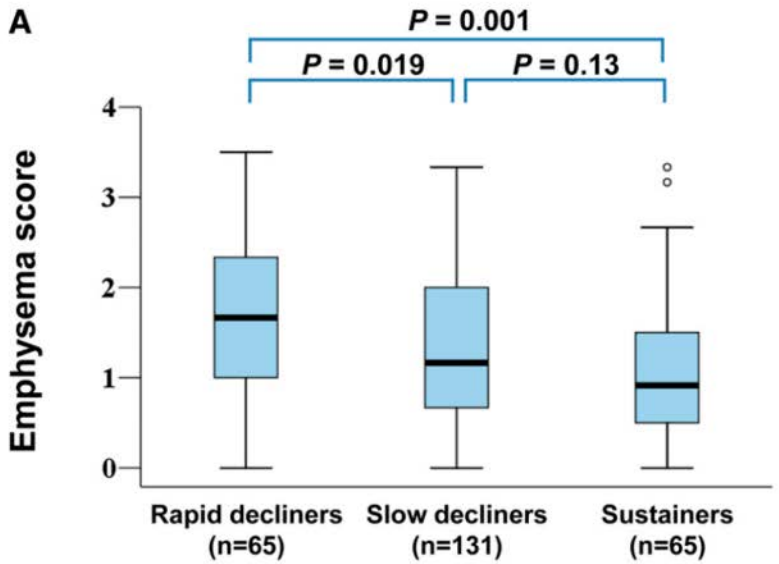
The subjects were categorized into three groups using the 25th percentile and the 75th percentile:

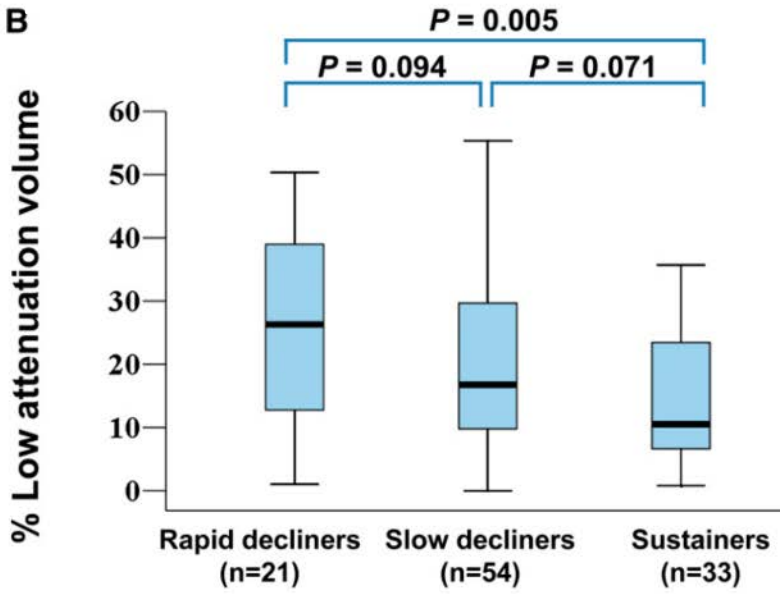
less than the 25th percentile as **Rapid decliners** (- 63 ± 2 ml/y);

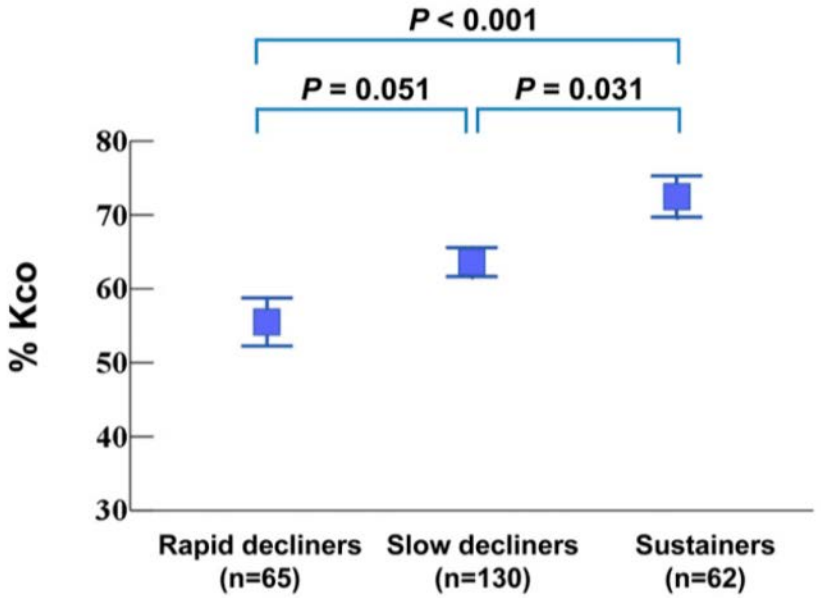
the 25th to 75th percentile as **Slow decliners** (- 31 ± 1 ml/yr);

greater than the 75th percentile as **Sustainers** (- 2 ± 1 ml/yr).

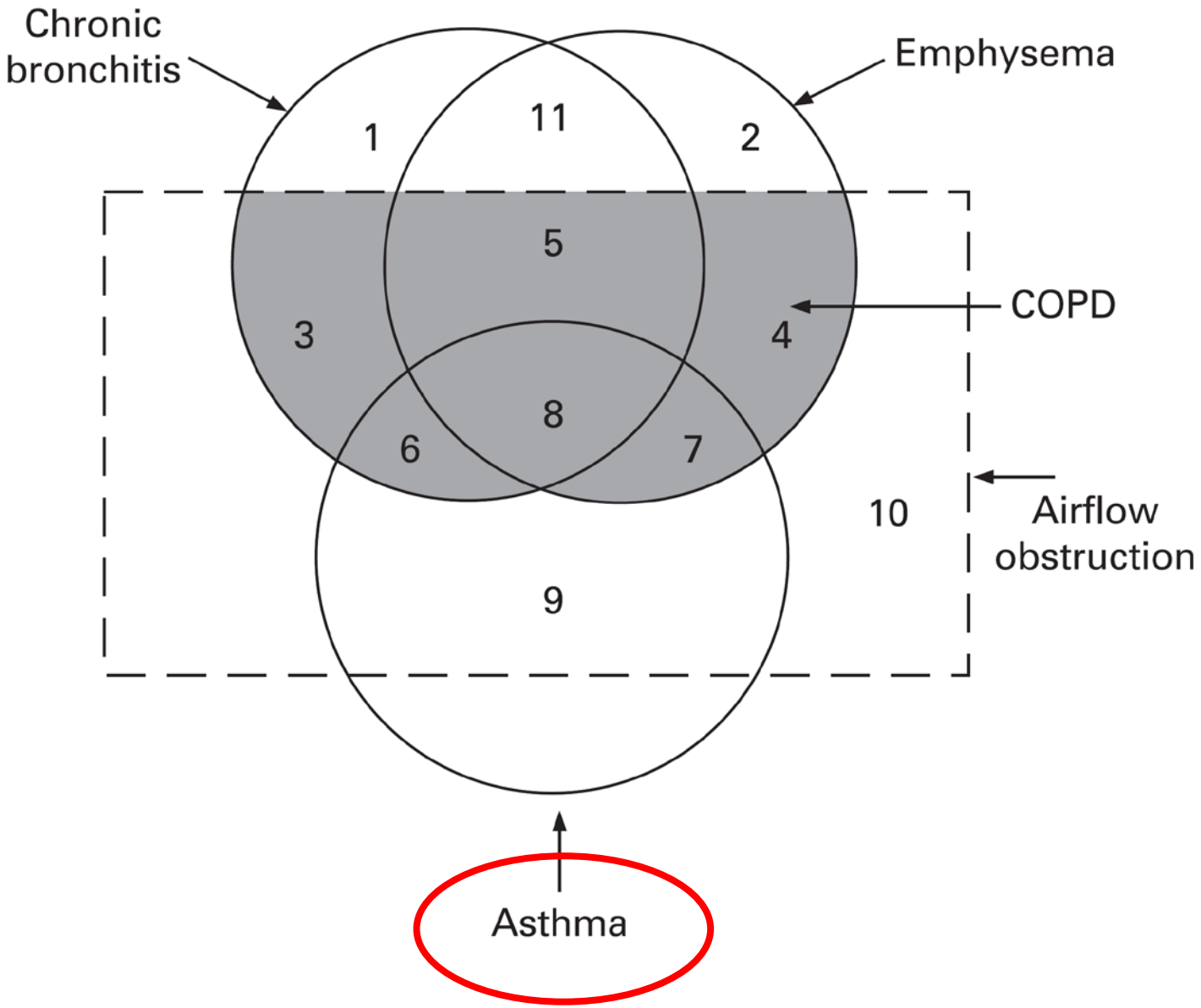
Nishimura et al, AJRCCM 2012.







Nishimura et al, AJRCCM 2012.


Chronic bronchitis
Emphysema
1
11
2
5
3
4
COPD
8
6
7
10
Airflow obstruction
9
Asthma

Phenotypes – an operational definition

"a single or combination of disease attributes that describe differences between individuals with COPD as they relate to clinically meaningful outcomes (symptoms, exacerbations, response to therapy, rate of disease progression, or death)."

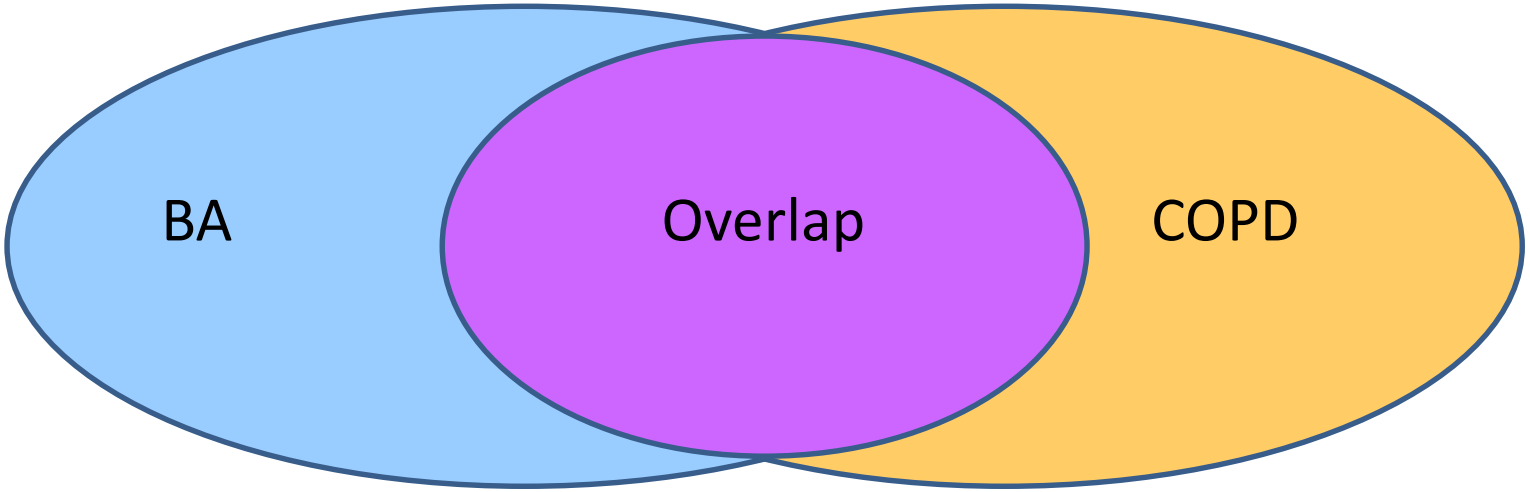
Han KM, et al. Am J Respir Crit Care Med 2010; 182, 598-564

Overlap COPD-asthma phenotype

- Enhanced response to ICS due to predominance of eosinophilic bronchial inflammation
- These patients should be prescribed ICS together with long-acting bronchodilators irrespective of the severity of the airflow obstruction
- Diagnostic criteria: history of asthma, eosinophilic inflammation, enhanced reversibility.

Miravitlles M, et al. Eur Resp J 2013

Overlap syndrome diagnosis



Patient must fulfill 2 major criteria or 1 major and 2 minor*

Major criteria:

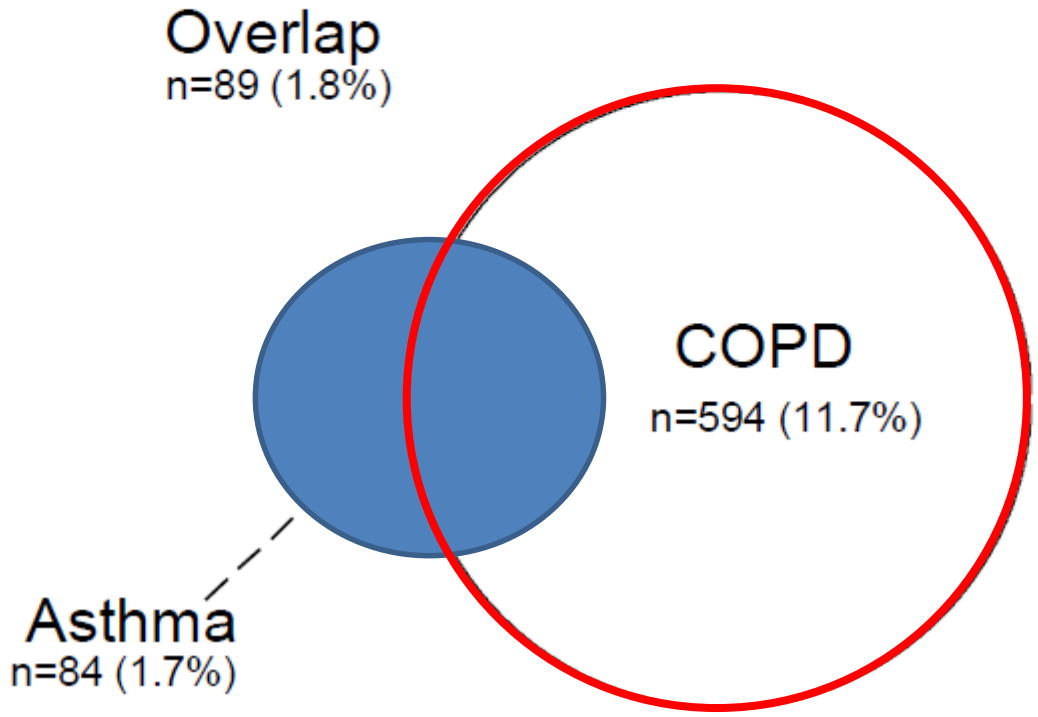
- very positive bronchodilator response: > 400 ml and>15% in FEV1
- sputum eosinophilia
- previous diagnosis of asthma

Minor criteria:

- increased total serum IgE
- previous history of atopy
- positive bronchodilator test: > 200 mL and >12% in FEV1 on at least two occasions

Arch Bronconeumol 2012; 48 (9): 331-337

No COPD and no Asthma = 4,277 (84.8%)



Total = 5,044

Asthma: presence of wheezing in the last year and a minimum post-BD increase in FEV1 or FVC of 12 % and 200 ml; Overlap COPD-Asthma: the combination of the two

Menezes AM B, et al. Chest 2014

Increased risk of exacerbation and hospitalization in subjects with an overlap phenotype: COPD-asthma.

- Subjects with COPD-Asthma overlap had more respiratory symptoms, worse lung function, used more respiratory medication, more hospitalization and exacerbations, and worse GHS. After adjusting for confounders, the COPD-Asthma overlap was associated with higher risks for exacerbations (PR 2.11; 95%CI 1.08-4.12), hospitalizations (PR 4.11; 95%CI 1.45-11.67) and worse GHS (PR 1.47; 95%CI 1.18-1.85), compared to those with COPD.
- **Conclusion:** The coexisting COPD-Asthma phenotype is possibly associated with increased disease severity.

Menezes AM B, et al. Chest 2014

CHEST

Editorials

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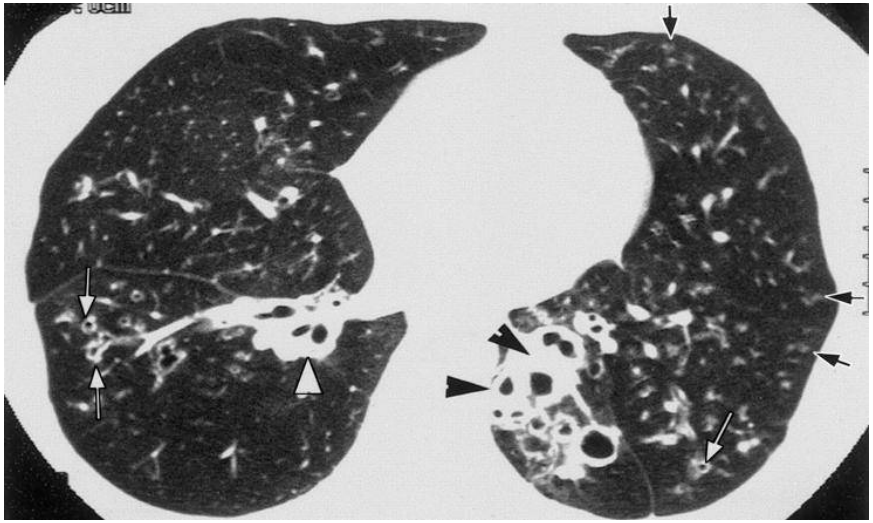
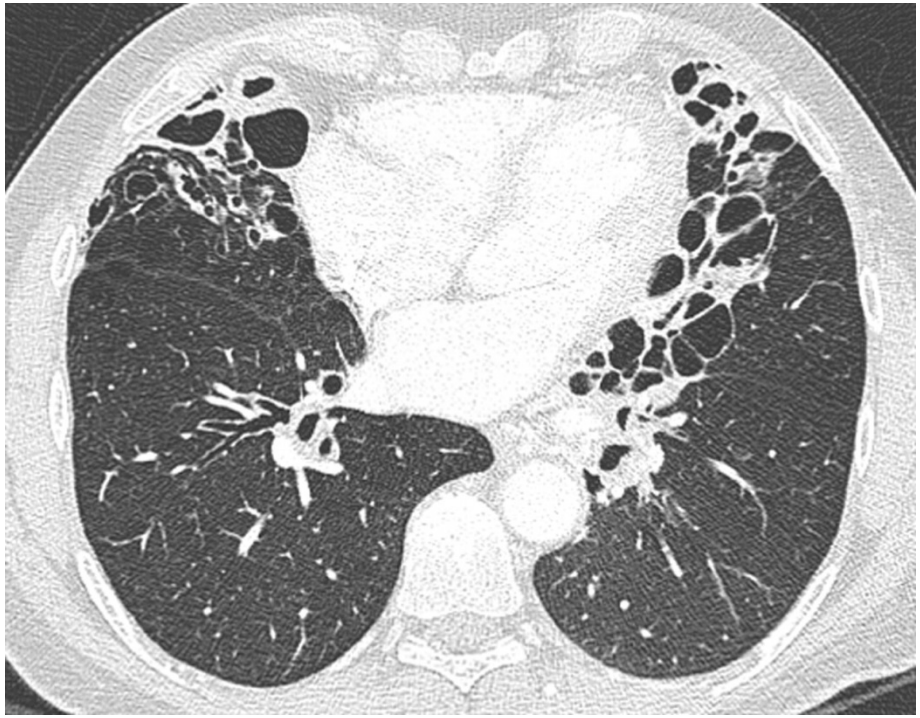
Bronchiectasis in Patients With COPD

A Distinct COPD Phenotype?





Anne E. O'Donnell, MD, FCCP
Washington, DC

Factors associated with bronchiectasis in patients with COPD

	Whole group	COPD with bronchiectasis	COPD without bronchiectasis	p value
Exacerbations, previous y				
PC visits	1.6 (2.2)	1.96 (2.9)	1.13 (1.7)	.04
Outpatient UC visits	0.87 (1.55)	1.08 (1.78)	0.59 (1.1)	.03
ED hospital visits	0.93 (1.3)	1.26 (1.47)	0.49 (0.99)	.005
Hospital admissions	0.39 (0.8)	0.57 (0.95)	0.15 (0.36)	.01
Acute antibiotic treatments	1.85 (1.93)	2.34 (2.17)	1.18 (1.29)	.004
Acute oral steroid treatments	1.12 (1.5)	1.45 (0.67)	0.67 (1.13)	.01

Table 4—*PPMs Found During the Study*

	COPD With Bronchiectasis		COPD Without Bronchiectasis	
PPM	Isolation[a] (n = 25)	Chronic Colonization (n = 18)	Isolation[a] (n = 14)	Chronic Colonization (n = 2)
Haemophilus influenzae	12	8	6	2
Streptococcus pneumoniae	6	3	4	0
Moraxella catarrhalis	4	2	3	0
Pseudomonas aeruginosa	2	4	1	0
Haemophilus parainfluenzae	0	1	0	0
Klebsiella pneumoniae	1	0	0	0

42.4 % had PPM

21.7 % presented chronic PPM colonization

Martìnez-Garzia MA, et al. Chest 2011

Factors associated with bronchiectasis in patients with COPD

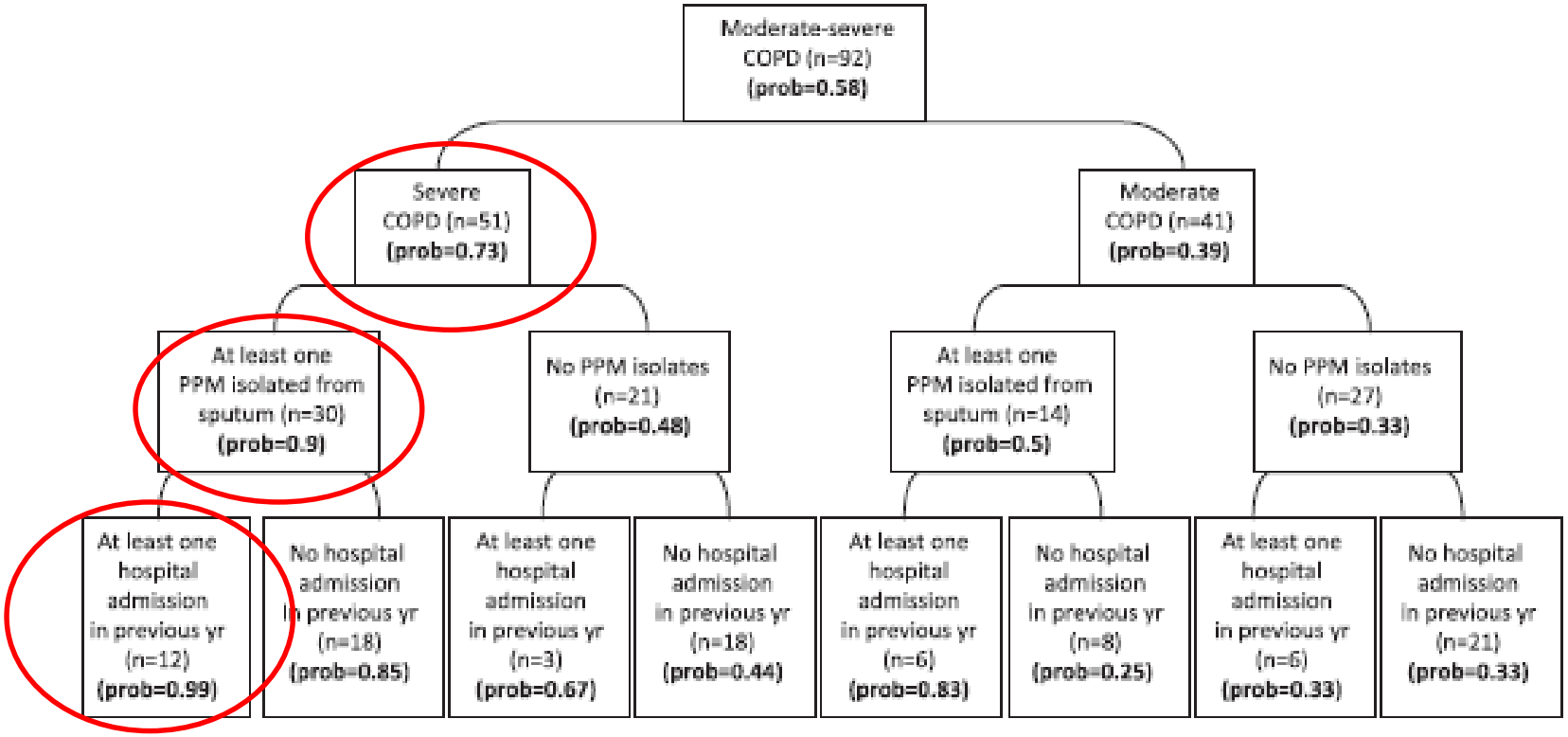
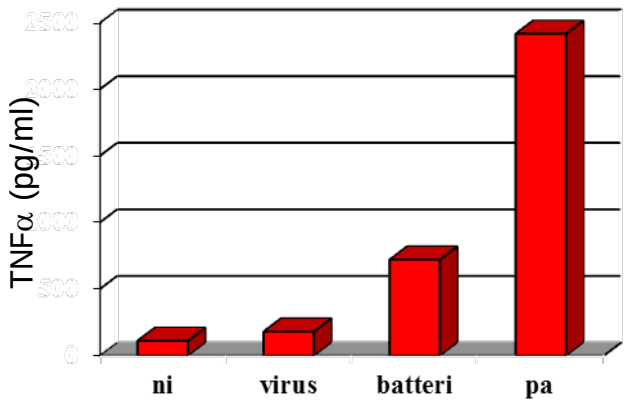
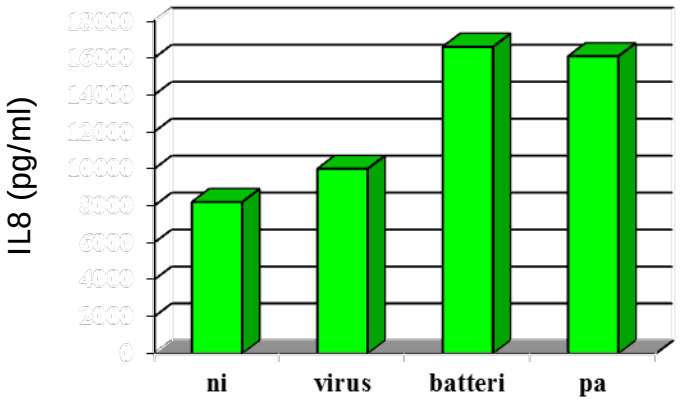


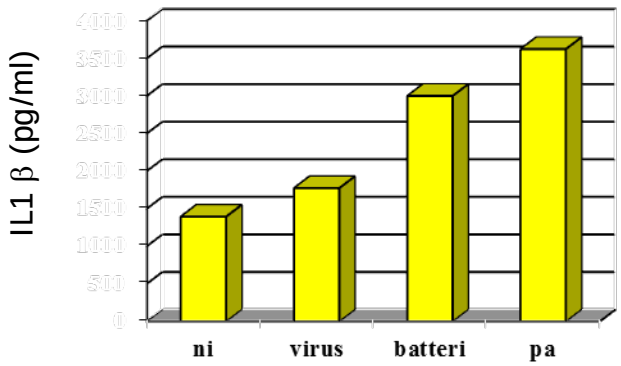
FIGURE 1. Probability of the presence of bronchiectasis in patients with moderate to severe COPD, by patient characteristics. PPM = potentially pathologic microorganism; prob = probability.

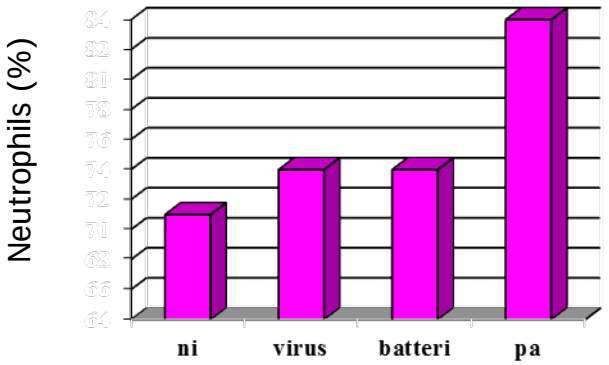
Martìnez-Garzia MA, et al. Chest 2011

A two-stage logistic model based on the measurement of pro-inflammatory cytokines in bronchial secretions for assessing bacterial, viral and non-infectious origin of COPD exacerbations

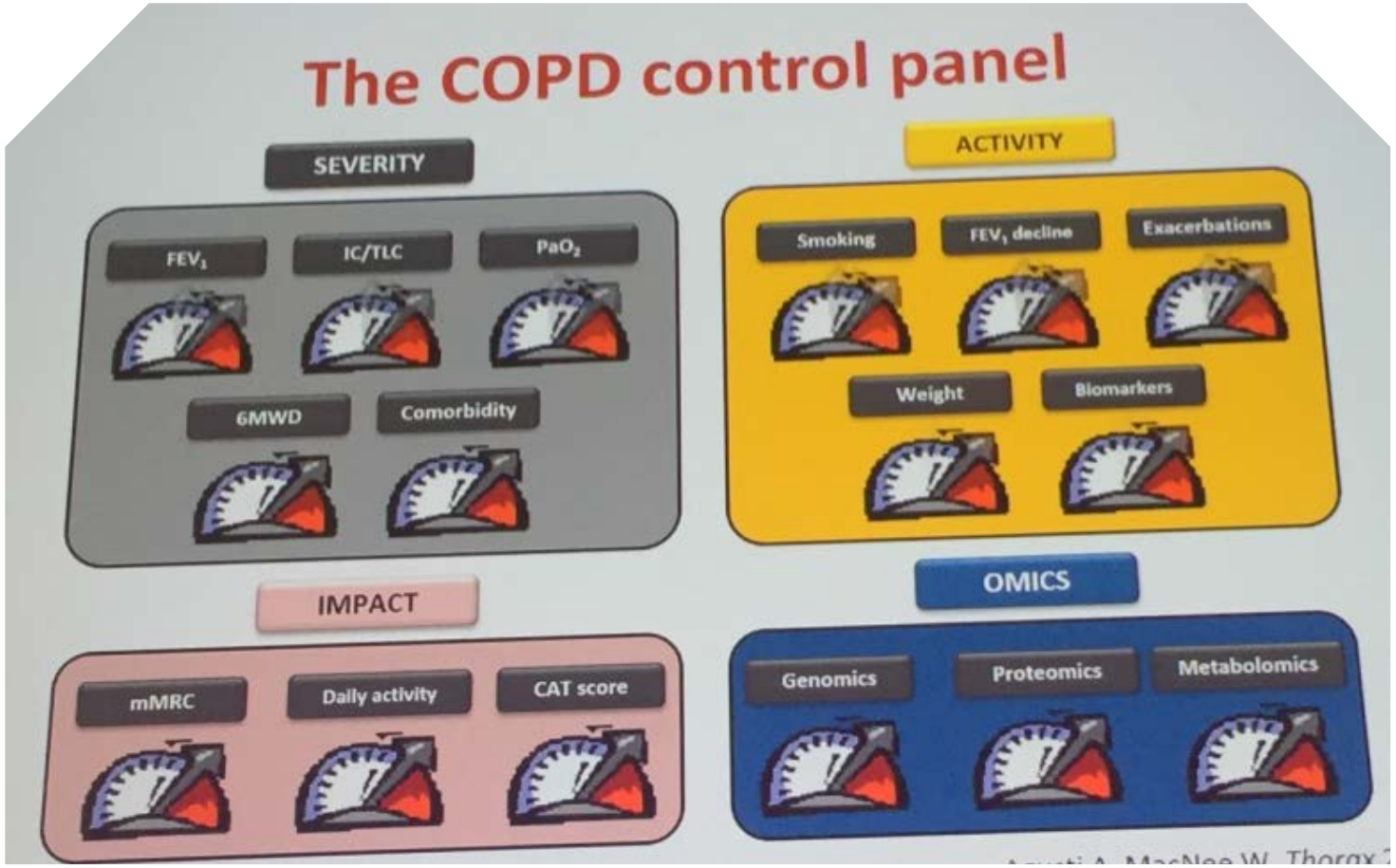








RW Dal Negro, C Micheletto, et al. Journal of COPD 2005; 2: 7-16



Augusti Thorax 2014

Conclusioni:

- La BPCO è chiaramente più di un'unica entità patologici ed i fenotipi possono essere un modo per personalizzare la valutazione e la gestione della BPCO
- I frequenti esacerbatori, i pazienti con enfisema, i pazienti con bronchite cronica ed i pazienti con l'overlap asma-BPCO dovrebbero essere considerati individualmente.