



COPD Guidelines

Recommendations 2018

Byron Thomashow MD

Professor of Medicine at Columbia University Medical Center

NewYork-Presbyterian Hospital

Chairman of Board COPD Foundation

COIs

Consultant Boehringer Ingelheim

Advisory Boards: GSK, AZ

Chairman of Board COPDFoundation

- 15 million Americans diagnosed
- Estimates suggest 12 million more undiagnosed
- 70% of COPD sufferers are in workforce
- 43.2% saw physician re COPD in last year
- 17.7% had ER visit or hospitalization in last year
- COPD is now 3rd leading cause of disability in US
- COPD is now 4th leading cause of death in US trailing Heart Disease, Cancer, Unintentional Injuries
- Cost of care now over 50 billion dollars a year

What did the BRFSS tell us?

- Prevalence in 18 and up age group: 6.1%
- Prevalence in 45 and up age group 9.0%
- Women reported higher COPD rates: 6.5% vs 5.3%
- 24.9% of those with COPD never smoked
- Health disparities in COPD: 9.9% reported in individuals with income less than \$25,000
- Rural residents experienced higher age adjusted COPD prevalence, hospitalizations, and deaths than residents of urban areas: 8.2% vs 4.7%

2016 BRFSS/CDC Data

COPD CHALLENGES

- Identify more of the 12 million estimated to have COPD but as yet undiagnosed.
- Make sure those already diagnosed have been correctly diagnosed.
- Aim to have those appropriately diagnosed on appropriate therapy
- Move away from treating all COPD the same!

GUIDELINES

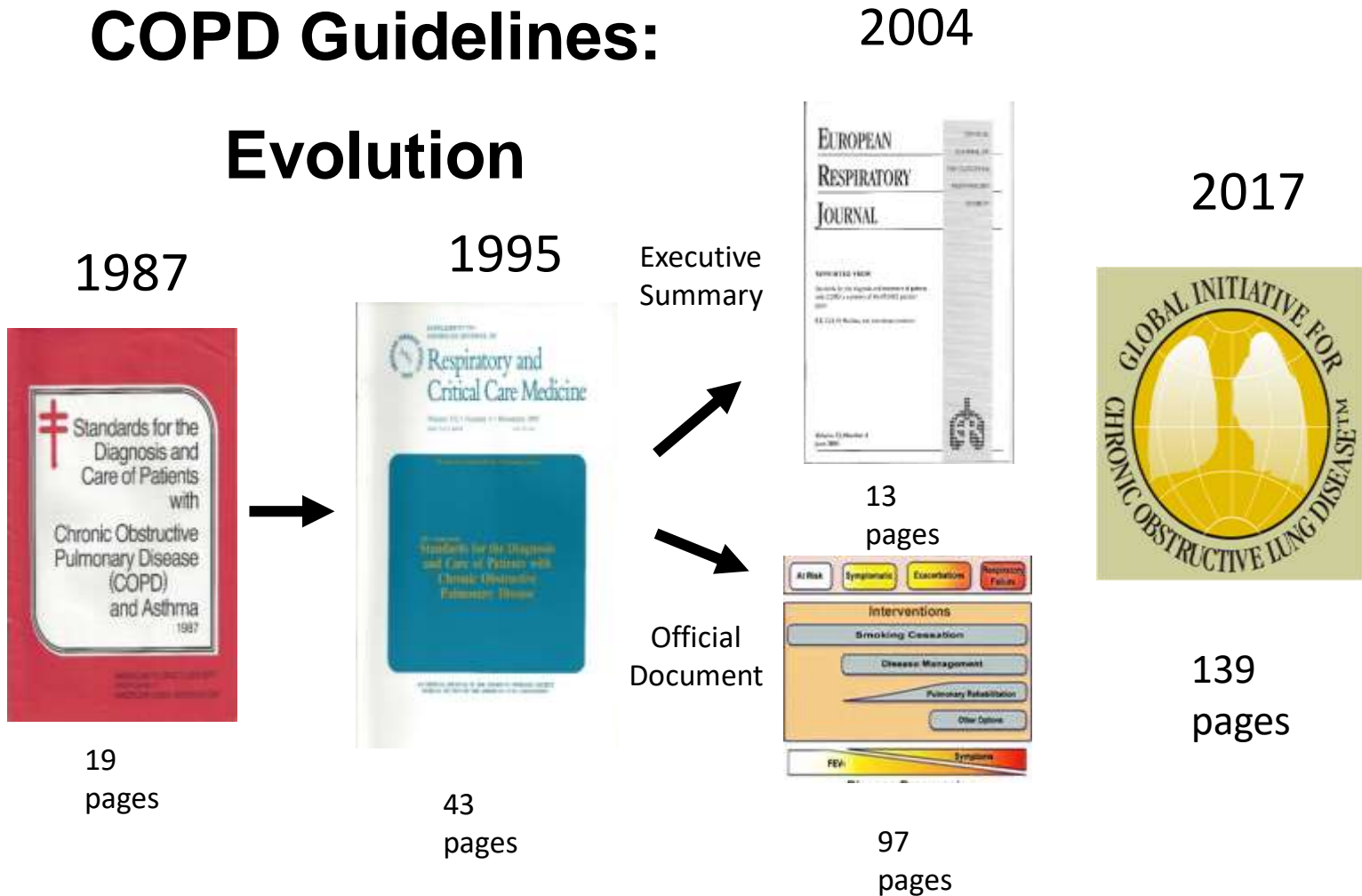
- **Definition**
- ***Guidelines:*** *A statement by which to determine a course of action. A guideline aims to streamline particular processes according to a set routine or sound practice. By definition, following a guideline is never mandatory. Guidelines are not binding and are not enforced.*
- U.S. Dept. of Veterans Affairs

GRADE systematic approach to clinical guidelines

- Systematic collection of evidence
- The quality of evidence across studies for each important outcome
- Which outcomes are critical to a decision
- The overall quality of evidence across these critical outcomes
- The balance between benefits and harms
- The strength of recommendations.

COPD Guidelines:

Evolution



Rate of increase = 240 lines/year or 4 pages/year

GOLD 2017 Definition and Overview

- Chronic Obstructive Pulmonary Disease (COPD) is a common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases.
- The most common respiratory symptoms include dyspnea, cough and/or sputum production. These symptoms may be under-reported by patients.
- COPD may be punctuated by periods of acute worsening of respiratory symptoms, called exacerbations.
- In most patients, COPD is associated with significant concomitant chronic diseases, which increase morbidity and mortality.



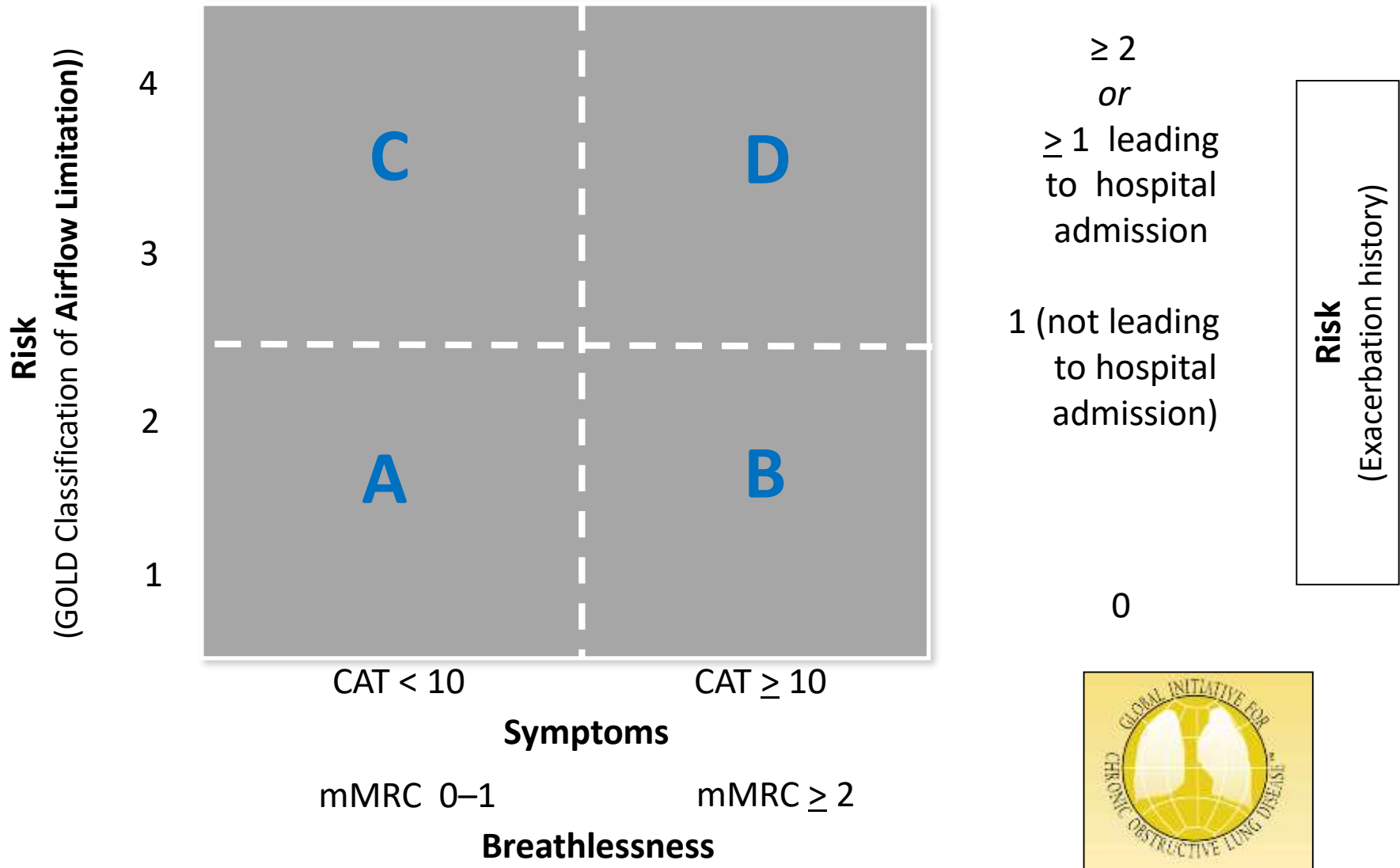
COPD definition – some aspects regarding symptoms

- Chronic respiratory symptoms may precede the development of airflow limitation and may be associated with the development of acute respiratory events³
- Chronic respiratory symptoms also exist in individuals with normal spirometry^{3,4}
- A significant percentage have structural evidence of lung disease manifested by the varying presence of emphysema, airway wall thickening and gas trapping^{3,4}

3. PG Woodruff PG et al. N Engl J Med 2016; 374: 1811-21

4. EA Regan et al. JAMA Intern Med 2015; 175: 1539-49.

Combined Assessment of COPD



ABCD classification

- Pluses

- “ABCD” assessment tool of the 2011 GOLD update was a major advancement from the simple spirometric grading system of earlier GOLD versions
- Incorporated patient-reported symptoms
- Highlighted the importance of exacerbation prevention in the management of COPD



- Minuses

- + Performed no better than spirometric grades for mortality prediction or other important health outcomes
- + Unable to assess the individual contributions of severity of airflow limitation from exacerbation frequency or severity
- + Hindered initial ABCD assessment in subjects without spirometry (ER, hospitalized patient, initial outpatient assessment)

The GOLD refined ABCD assessment tool

Diagnosis

=

Assessment
of airflow
limitation

+

Assessment of
symptoms/risk of
exacerbations

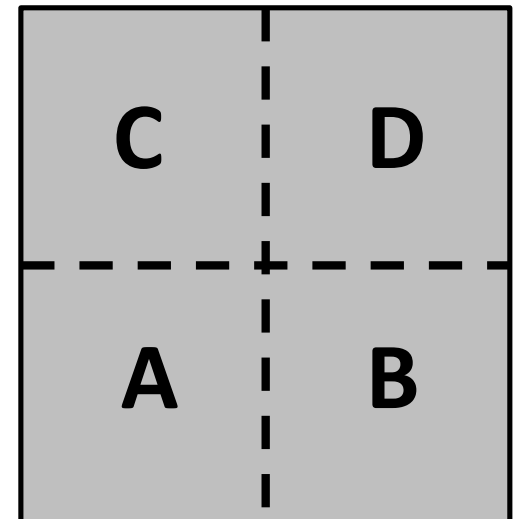
FEV1/FVC < 0.7

Grade	FEV ₁ (% pred.)
1	≥80
2	50-79
3	30-49
4	<30

Exacerbation
History

≥ 2 or
≥1 leading
to hospitalization

0 or 1 (not leading
to hospital
admission)

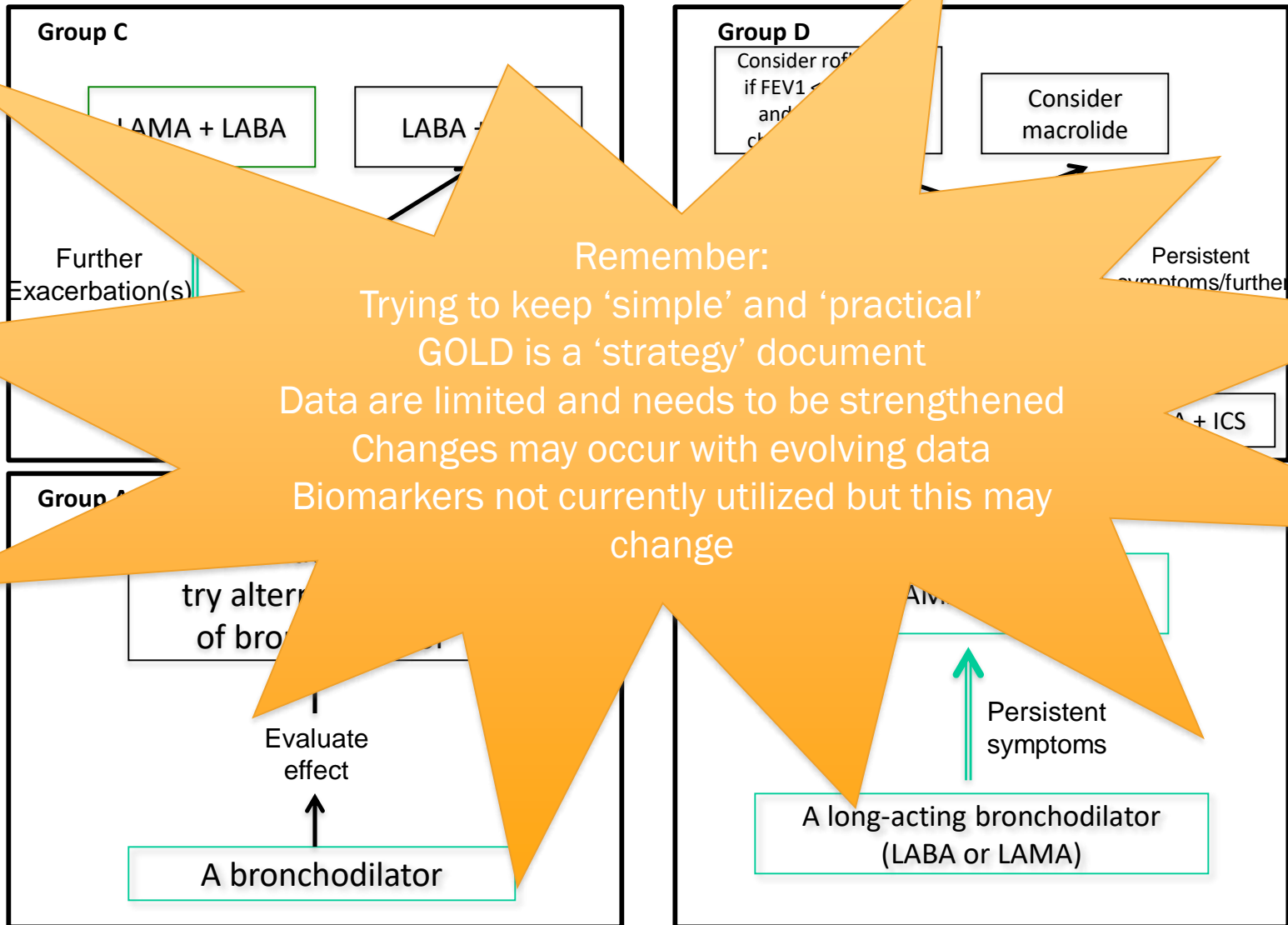


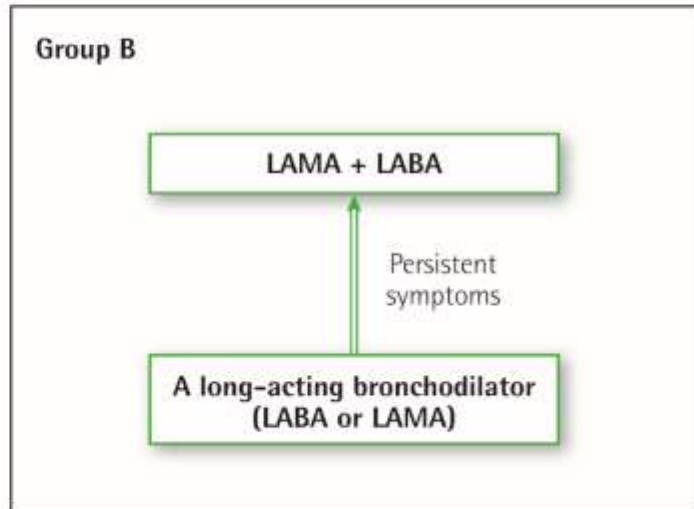
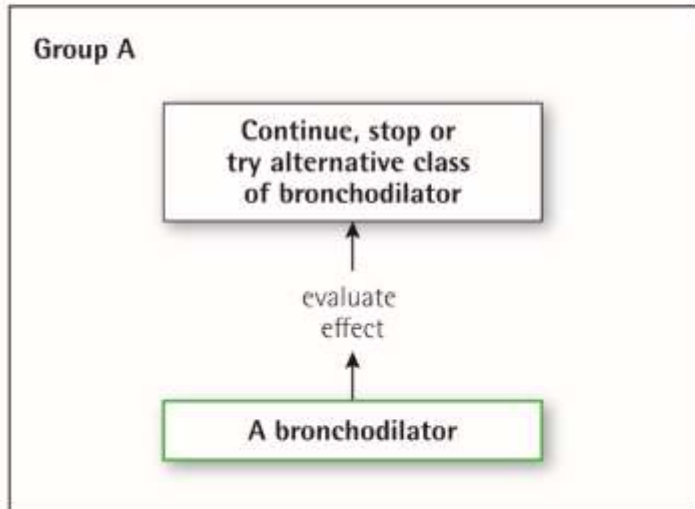
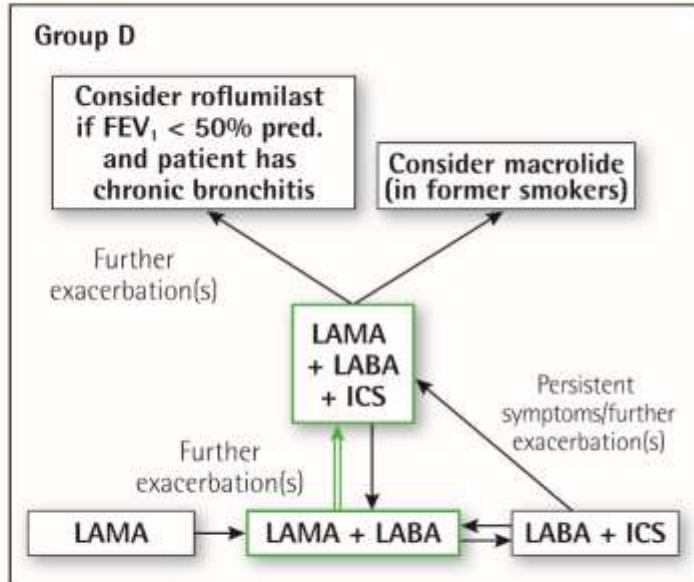
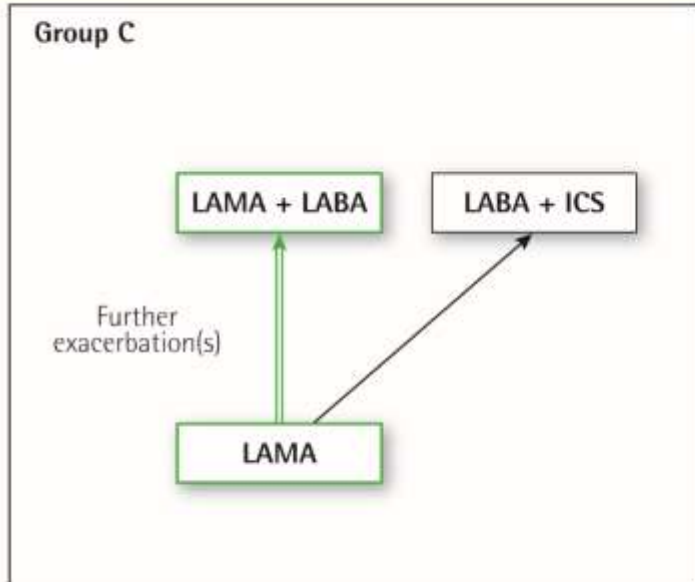
mMRC 0-1
CAT < 10
CCQ < 1

mMRC 2+
CAT 10+
CCQ 1+



A modification of therapeutic recommendations





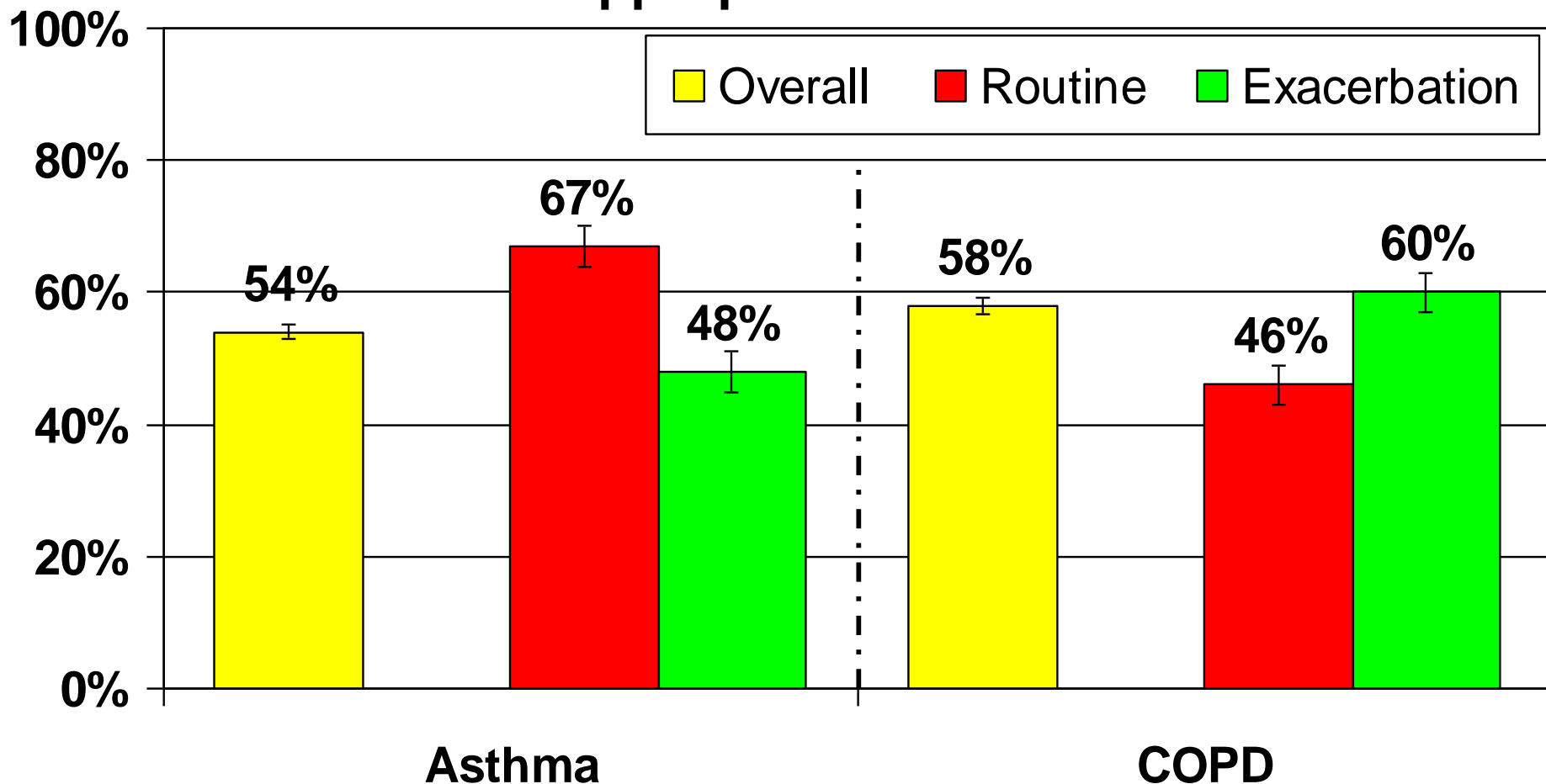
Preferred treatment = →

In patients with a major discrepancy between the perceived level of symptoms and severity of airflow limitation, further evaluation is warranted.



Americans with Obstructive Lung Disease Receive

55% of Appropriate Health Care



4058 EPISODES OF CARE

Mularski RA et al. Chest 2006; 130(6):1844-1850



RESULTS OF CAPPs: COPD- ASSESSMENT OF PRACTICE IN PRIMARY CARE



- Random sample of patients (50-150 per site) aged 40-89 with diagnosed COPD
- 1157 patients from 11 US primary care sites
- Main outcome measures were adherence to GOLD guidelines, assessed via 3 components:

Spirometry dx documented-27%

Are comorbidities if present treated appropriately-25%

Are adequate risk reduction measures being taken-32%

Only 3% of patients met all components

Belletti et al Current Medical Research and Opinion 2013;29:8

- 426 PCPs, 148 NPs/PAs
- In 2014 about half of responders reported awareness and use of COPD guidelines (49% of PCPs, 46% of NPs/PAs)
- 31% of PCPs and 27% of NPs/PAs reported lack of awareness or use of any COPD guidelines
- Most striking difference between 2007-2014 marked increase in beliefs of all clinicians in ability of COPD treatments to reduce symptoms (75%) and exacerbations (85%)



Guide to COPD Diagnosis

COPD is defined by post bronchodilator FEV₁/FVC ratio < 0.7 on spirometry. This helps to differentiate from asthma. A significant bronchodilator response (increase in FEV₁ > 12% and > 200cc) can be seen in both COPD and asthma.

Spirometry is indicated if symptoms present (dyspnea, chronic cough/sputum).

Spirometry should be considered if risk factors are present (smoking, other exposures, asthma history, childhood infections, prematurity, family history) **and** if one or more comorbidities present (including but not limited to heart disease, metabolic syndrome, osteoporosis, sleep apnea, depression, lung cancer, premature skin wrinkling).

SEVERITY DOMAINS

Each domain may have therapeutic implications.

Spirometry Grades:

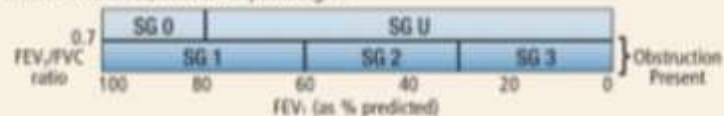
SG 0 Normal spirometry does not rule out emphysema, chronic bronchitis, asthma, or risk of developing either exacerbations or COPD.

SG 1 Mild: Post bronchodilator FEV₁/FVC ratio < 0.7, FEV₁ ≥ 60% predicted.

SG 2 Moderate: Post bronchodilator FEV₁/FVC ratio < 0.7, 30% ≤ FEV₁ < 60% predicted.

SG 3 Severe: Post bronchodilator FEV₁/FVC ratio < 0.7, FEV₁ < 30% predicted.

SG U Undefined: FEV₁/FVC ratio > 0.7, FEV₁ < 80% predicted. This is consistent with restriction, muscle weakness, and other pathologies.



Regular Symptoms: dyspnea at rest or exertion, cough, sputum.

Exacerbations: two or more in the past year, especially if FEV₁ < 50% predicted suggests high risk.

Oxygenation: severe hypoxemia: resting O₂ sat < 88% or arterial pO₂ < 55 mmHg
episodic hypoxemia: exercise or nocturnal desaturation.

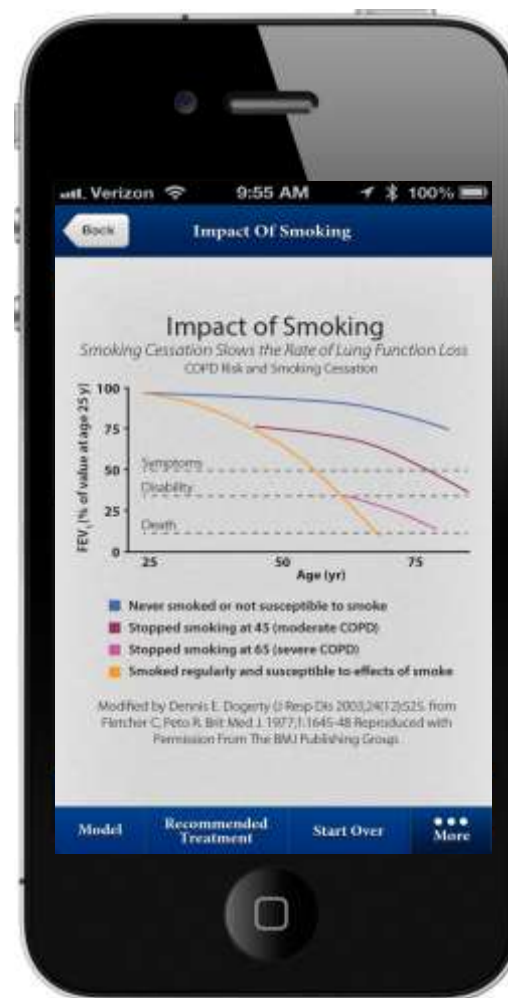
Emphysema: reduced density on CT scan, can be localized, abnormal high lung volumes, abnormal low diffusion capacity.

Chronic bronchitis: cough, sputum most days for at least 3 months in at least 2 years.

Comorbidities: defining and treating comorbid conditions, particularly cardiovascular, are critical components of COPD care.

MOBILE APP

FREE- APP STORE: SEARCH- COPDFFOUNDATION



SEVEN SEVERITY DOMAINS

1. Spirometry Grades
2. Regular Symptoms
3. Exacerbations
4. Oxygenation
5. Emphysema
6. Chronic bronchitis
7. Comorbidities

SEVERITY DOMAIN: SPIROMETRY GRADES

Spirometry Grades:

SG 0 Normal spirometry does not rule out emphysema, chronic bronchitis, asthma, or risk of developing either exacerbations or COPD.

SG 1 Mild: Post bronchodilator FEV_1/FVC ratio < 0.7 , $FEV_1 \geq 60\%$ predicted.

SG 2 Moderate: Post bronchodilator FEV_1/FVC ratio < 0.7 , $30\% \leq FEV_1 < 60\%$ predicted.

SG 3 Severe: Post bronchodilator FEV_1/FVC ratio < 0.7 , $FEV_1 < 30\%$ predicted.

SG U Undefined: FEV_1/FVC ratio > 0.7 , $FEV_1 < 80\%$ predicted. This is consistent with restriction, muscle weakness, and other pathologies.



SEVERITY DOMAIN: REGULAR SYMPTOMS

- Dyspnea at rest or exertion
- Chronic cough/ sputum
- Use COPD Assessment Test (CAT) or mMRC Breathless Scale to follow course of disease
- Presence of regular symptoms has therapeutic implications

COPD ASSESSMENT TEST (CAT)



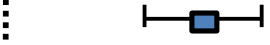
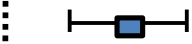
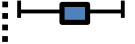

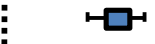
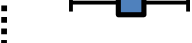






- A CAT score over 10 suggests significant symptoms
- A change in CAT score of 2 or more suggests a possible change in health status
- A worsening of CAT score could be explained by an exacerbation, poor medication adherence, poor inhaler technique, or progression of COPD or comorbid condition. An adjustment in therapy may be needed.

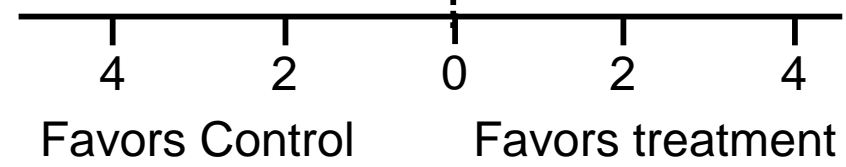
The image shows a screenshot of the COPD Assessment Test (CAT) questionnaire. At the top, there are input fields for 'Your name:' and 'Today's date:'. To the right is the 'CAT' logo with the text 'COPD Assessment Test' below it. The main heading is 'How is your COPD? Take the COPD Assessment Test™ (CAT)'. Below this is an introductory paragraph: 'This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment. For each item below place a mark (X) in the box that best describes you (currently). Be sure to only select one response for each question.' An example is provided: 'Example: I am very happy: 0 X 1 2 3 4 5 I am very sad'. The questionnaire consists of 10 items, each with a 6-point scale from 0 to 5. The items are: 1. 'I never cough' vs 'I cough all the time' (score 0-5); 2. 'I have no phlegm (mucus) in my chest at all' vs 'My chest is completely full of phlegm (mucus)' (score 0-5); 3. 'My chest does not feel tight at all' vs 'My chest feels very tight' (score 0-5); 4. 'When I walk up a hill or one flight of stairs I am not breathless' vs 'When I walk up a hill or one flight of stairs I am very breathless' (score 0-5); 5. 'I am not limited doing any activities at home' vs 'I am very limited doing activities at home' (score 0-5); 6. 'I am confident leaving my home despite my lung condition' vs 'I am not at all confident leaving my home because of my lung condition' (score 0-5); 7. 'I sleep soundly' vs 'I don't sleep soundly because of my lung condition' (score 0-5); 8. 'I have lots of energy' vs 'I have no energy at all' (score 0-5). A 'SCORE' column is on the right of each item, and a 'TOTAL SCORE' box is at the bottom right. At the bottom left, there is small text: 'COPD Assessment Test and the CAT logo is a trade mark of the GlaxoSmithKline group of companies. ©2009 GlaxoSmithKline group of companies. All rights reserved. Last Updated: February 24, 2012'.

MMRC BREATHLESSNESS SCALE

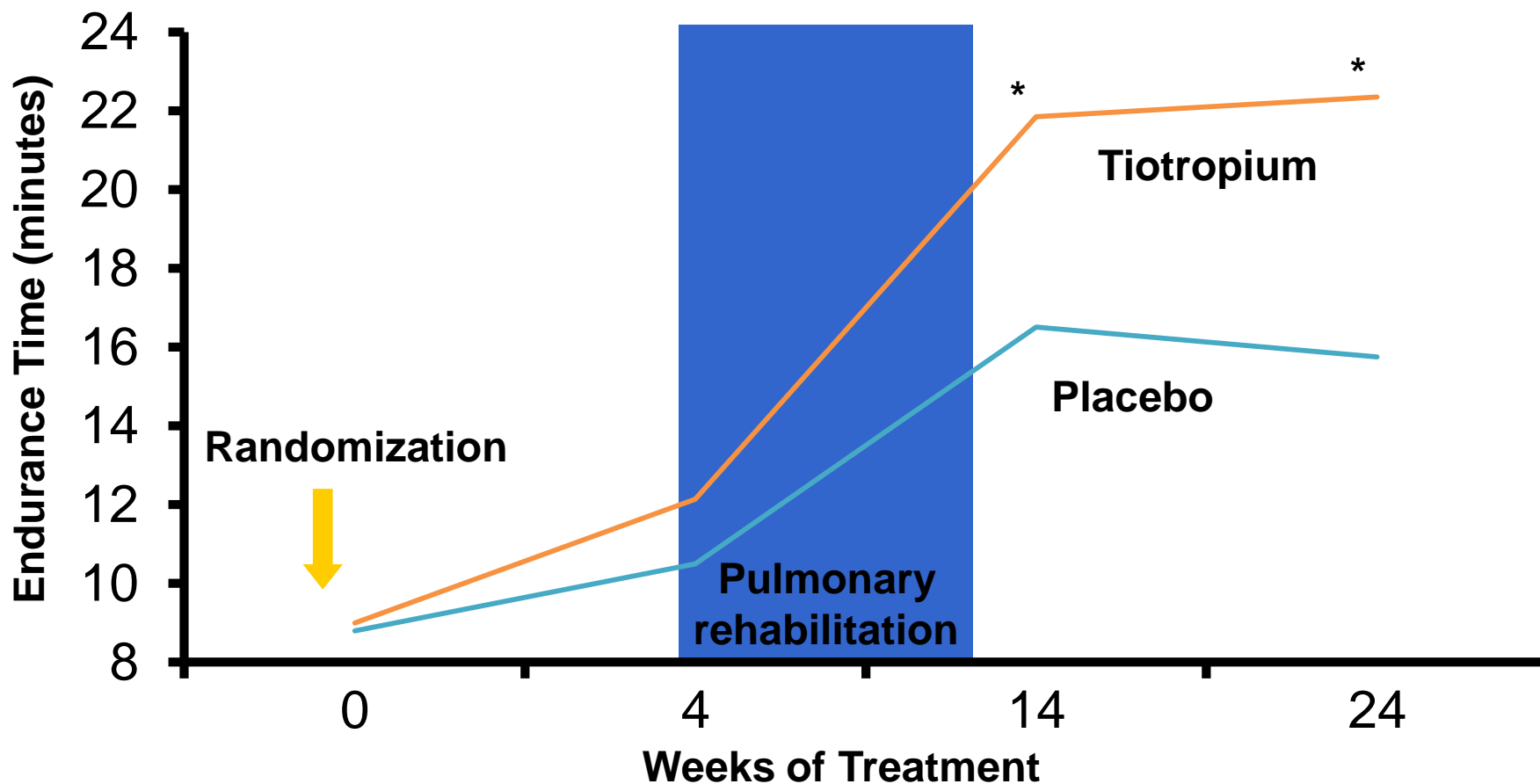
Grade	Description of Breathlessness
0	I only get breathless with strenuous exercise
1	I get short of breath when hurrying on level ground or walking up a slight hill
2	On level ground, I walk slower than people of the same age because of breathlessness, or have to stop for breath when walking at my own pace
3	I stop for breath after walking about 100 yards or after a few minutes on level ground
4	I am too breathless to leave the house or I am breathless when dressing

PULMONARY REHABILITATION IMPROVES CRQ DYSPNEA

		Mean Difference (95% CI)
Behnke 2000		2.26 (1.34, 3.18)
Cambach 1997		1.20 (0.36, 2.04)
Goldstein 1994		0.66 (0.12, 1.20)
Gosselink 2000		0.82 (0.17, 1.47)
Griffiths 2000		1.18 (0.85, 1.51)
Gell 1995		1.30 (0.64, 1.96)
Gell 1998		1.00 (0.20, 1.80)
Hernandez 2000		0.78 (0.02, 1.54)
Simpson 1992		1.20 (0.37, 2.03)
Singh 2003		0.88 (0.35, 1.41)
Wijkstra 1994		0.90 (0.13, 1.67)
Total		1.06 (0.85, 1.26)



TREADMILL ENDURANCE TIME IMPROVES WITH COMBINATION TIOTROPIUM AND PULMONARY REHABILITATION RANDOMIZED TO TIOTROPIUM OR PLACEBO



* $P < 0.05$

From: A Systematic Review With Meta-Analysis of Dual Bronchodilation With LAMA/LABA for the Treatment of Stable COPD

Chest. 2016;149(5):1181-1196. doi:10.1016/j.chest.2016.02.646

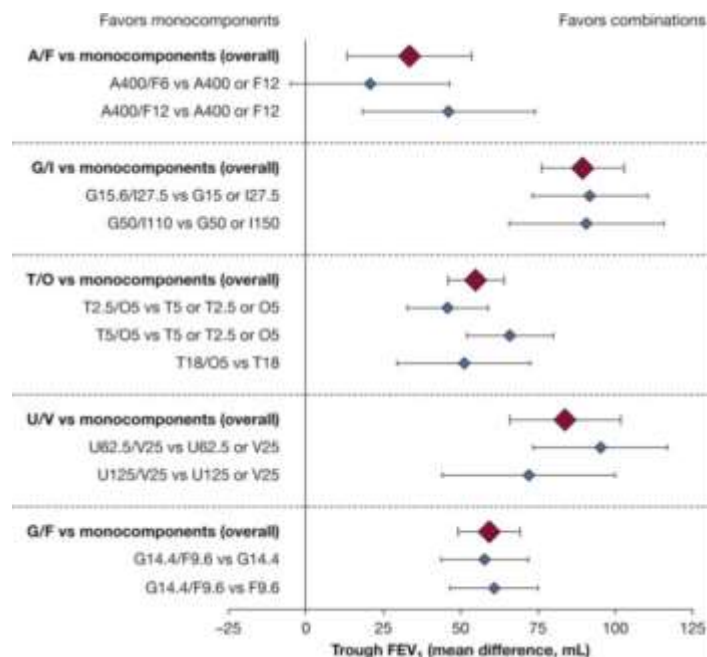


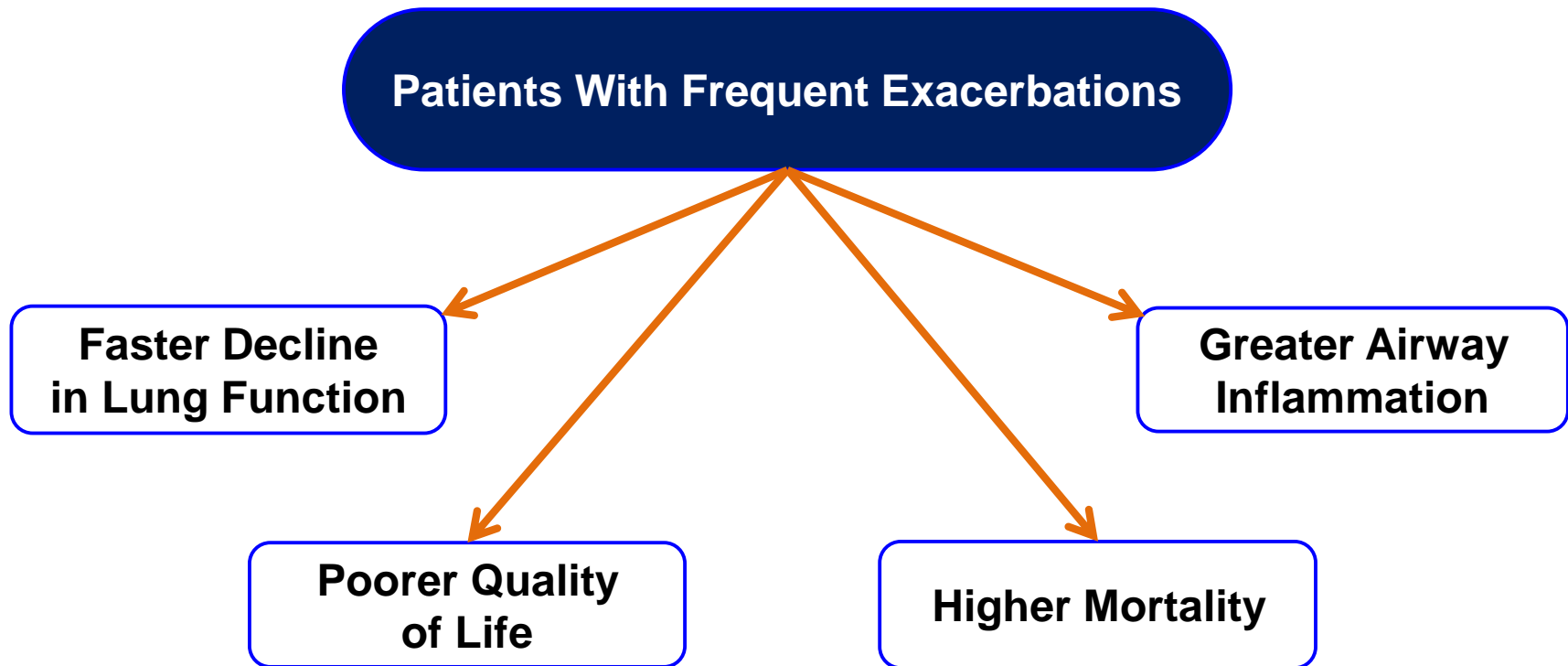
Figure Legend:

Overall forest plot meta-analysis of the impact of long-acting muscarinic antagonist/long-acting β 2-agonist combinations on trough FEV1 and subgroup analysis performed on lower and higher doses of acclidinium (A), formoterol (F), glycopyrronium (G), indacaterol (I), olodaterol (O), tiotropium (T), umeclidinium (U), and vilanterol (V). Because of the scarce number of studies, the subgroup analysis of the glycopyrronium/formoterol combination was performed vs glycopyrronium and formoterol administered as monocomponents. The doses of medications are expressed as micrograms and results as the mean difference (mL) vs monocomponents.

SEVERITY DOMAIN: EXACERBATIONS

- High Risk:
 - Two or more exacerbations in past year
 - Especially if FEV1 < 50% predicted
- High risk for exacerbations has therapeutic implications

IMPACT OF EXACERBATIONS IN COPD



MANAGEMENT OF ACUTE EXACERBATIONS IN COPD

- Oxygen as needed
- Maximize bronchodilator therapy
- Add systemic steroids if baseline FEV₁ < 50% predicted
- Add antibiotics in patients with 2 or more symptoms: worsening dyspnea, increased sputum volume, increased sputum purulence
- Consider noninvasive ventilation (NIPPV) in severe exacerbations to minimize need for intubation and ventilator support

COPD EXACERBATIONS PREVENTIVE MEASURES

- Smoking cessation
- Immunizations-influenza vaccine
- Long acting bronchodilators
- Inhaled corticosteroids
- Phosphodiesterase inhibitors
- Mucolytics/Antioxidants
- Macrolides
- Pulmonary Rehabilitation
- Lung Volume Reduction Surgery
- Augmentation therapy in Alpha 1 deficiency
- Beta blockers? Statins XXX
- Case Management

- 1368 centers, 16,485 patients
- Moderate COPD with heightened cardiovascular risk
- Compared with placebo Fluticasone Furoate (FF) and Vilanterol VI) reduced the rate of moderate and/or severe exacerbations by 29% and the rate of hospitalized exacerbations by 27%
- These relative effects were similar whether subjects had a history of exacerbations the year before the study or an FEV1 <60% predicted.
- FF/VI also reduced rate of exacerbations treated with corticosteroids alone or with corticosteroids plus antibiotics but not rates of those treated with antibiotics alone.
- Martinez FJ, et al.; Am J Respir Crit Care Med. First published online 21 Oct 2016 as DOI: 10.1164/rccm.201607-1421OC

- 1367 patients with symptomatic severe or very severe COPD at risk for exacerbations
- BDP/FF/GB vs BDP/FF -26 weeks
- Triple therapy: Greater improvement in lung function, health related quality of life and prevention of moderate to severe exacerbations but no better improvement in dyspnea
- First study showing clinical benefits of stepping up COPD patients from LABAICS to Triple therapy

FLAME TRIAL

NEJM 5/25/16 DOI:1056/NEJMOA1516385

- Indacaterol-Glycopyrronium (IG) 1680 pts vs Salmeterol-Fluticasone (SF) 1682 pts
- IG reduced exacerbations 11% better than SF
- IG longer time to first exacerbation 71 days vs 51 days
- Annual rate of moderate or severe exacerbations lower in IG group 0.98 vs 1.19
- Incidence of pneumonia 3.2% in IG group vs 4.8% in SF group

IMPACT STUDY

LIPSON ET AL NEJM 4/18/18 DOI:10.1056/NEJMOA1713901

- GSK study 10,355 patients –fluticasone/umeclidinium/vilanterol:

15% reduction in moderate/severe exacerbations vs
fluticasone/vilanterol

25% reduction vs umeclidinium/vilanterol

Annual rate of exacerbations lower with triple regardless of eos level
altho greater reduction In those with eos>150 cells/microliter

Annual rate of severe exacerbations resulting in hospitalization triple
0.13 vs 0.19 for LAMA/LABA

Higher incidence of pneumonia in steroid groups

All cause mortality lower with triple regimen

BLOOD EOSINOPHIL COUNT TO PREDICT TREATMENT RESPONSE

Retrospective analysis have shown:

Greater exacerbation reduction with ICS/LABA vs LABA or LAMA in patients with blood eos 2% or higher.

Increased rate of exacerbations on ICS withdrawal from triple therapy in patients with blood eos 2% or higher.

Blood eosinophil count <2% is associated with higher risk of pneumonia, independent of treatment.

Impact of eosinophil count on exacerbation risk less clear in ECLIPSE and SPIROMICS data sets

MACRO STUDY

- Once daily azithromycin in addition to usual care
- Decreased frequency of AECOPD
- 1.48 vs 1.83 /patient-year $p=0.01$, HR for acute exacerbation per patient year -0.73.
- Median time to first exacerbation 266 days vs 174 days $p<0.001$
- Improved quality of life of exacerbation prone COPD patient
- Hearing loss more common-25%vs20%
- Cardiac concerns-QTc interval

SEVERITY DOMAIN: CHRONIC BRONCHITIS

- Cough, sputum most days for at least 3 months in at least 2 years
- Presence of chronic bronchitis has therapeutic implications

REACT STUDY

MARTINEZ ET AL THELANCET 2015 [HTTP://DX.DOI.ORG/10.1016/S01406736\(14\)62410-7](http://dx.doi.org/10.1016/S01406736(14)62410-7)

- 1935 pts with severe COPD -98% on ICS/LABA
- 1346 of these (70%) also on LAMA
- Despite these inhaled therapies frequent exacerbations and impaired health status
- Adding Roflumilast vs placebo -24.3% reduction in severe exacerbations, 23.9% reduction in exacerbations requiring hospitalizations.
- No difference in mortality between Roflumilast and placebo groups
- Adverse events more common in Roflumilast (11%) vs placebo (5%)

SEVERITY DOMAIN: OXYGENATION

- Oxygenation should be checked in symptomatic patients with moderate or severe COPD
- Severe hypoxemia: resting O₂ sat <88% or arterial pO₂<55 mmHg
- Episodic hypoxemia: exercise or nocturnal desaturation
- Severe hypoxemia has therapeutic implications
- Episodic hypoxemia may have therapeutic implications in some cases

THE LONG TERM OXYGEN TREATMENT TRIAL

NEJM 375:17; 2016

To test whether supplemental Oxygen would result in longer term survival and delay to first hospitalization in stable COPD with moderate resting desaturation (O₂ sats 89-93%) or in stable COPD with moderate exercise induced desaturation (O₂ sats 80-89%)

738 patients at 42 centers followed for 1-6 years

In patients with stable COPD and resting or exercise-induced moderate desaturation, the prescription of long-term supplemental oxygen did not result in a longer time to death or first hospitalization than no long-term supplemental oxygen, nor did it provide sustained benefit with regard to any of the other measured outcomes.

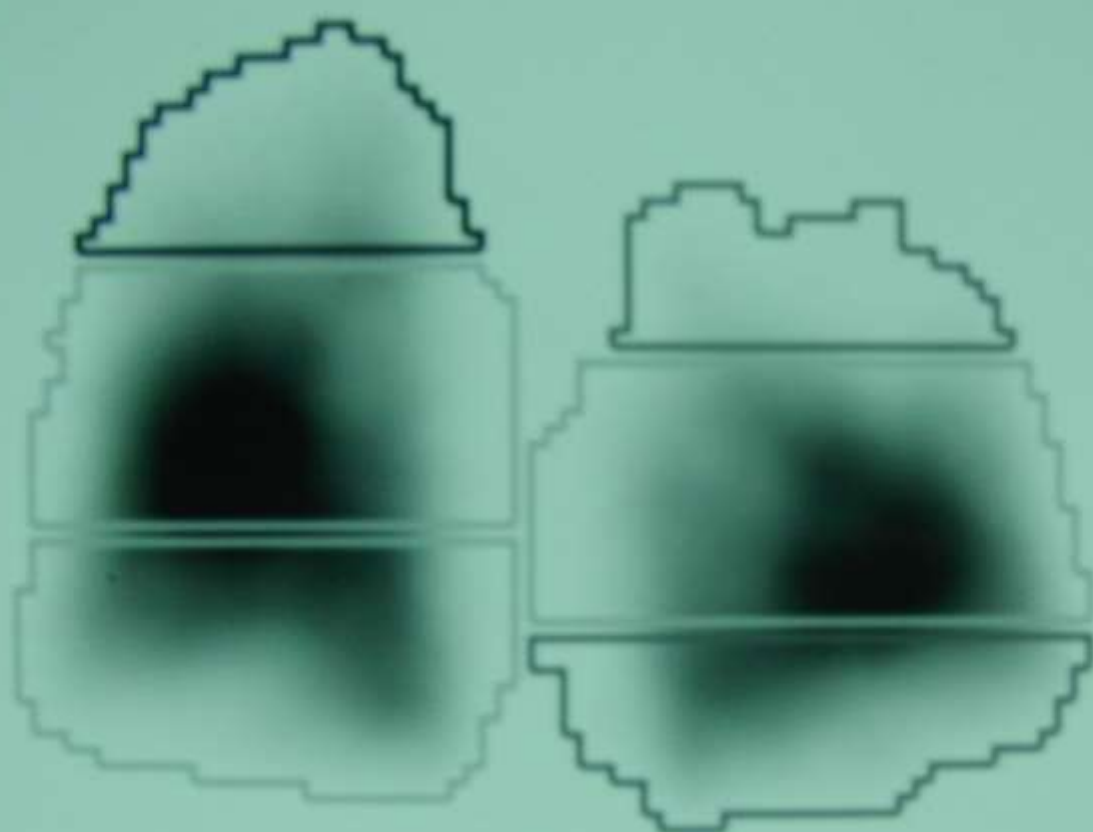
SEVERITY DOMAIN: EMPHYSEMA

- Presence of emphysema should be evaluated in patients with severe COPD
- Reduced density on CT scan
- Can be diffuse or localized
- Abnormal high lung volumes
- Abnormal low diffusion capacity
- Localized emphysema particularly localized to upper lung zones could have therapeutic implications

LEFT

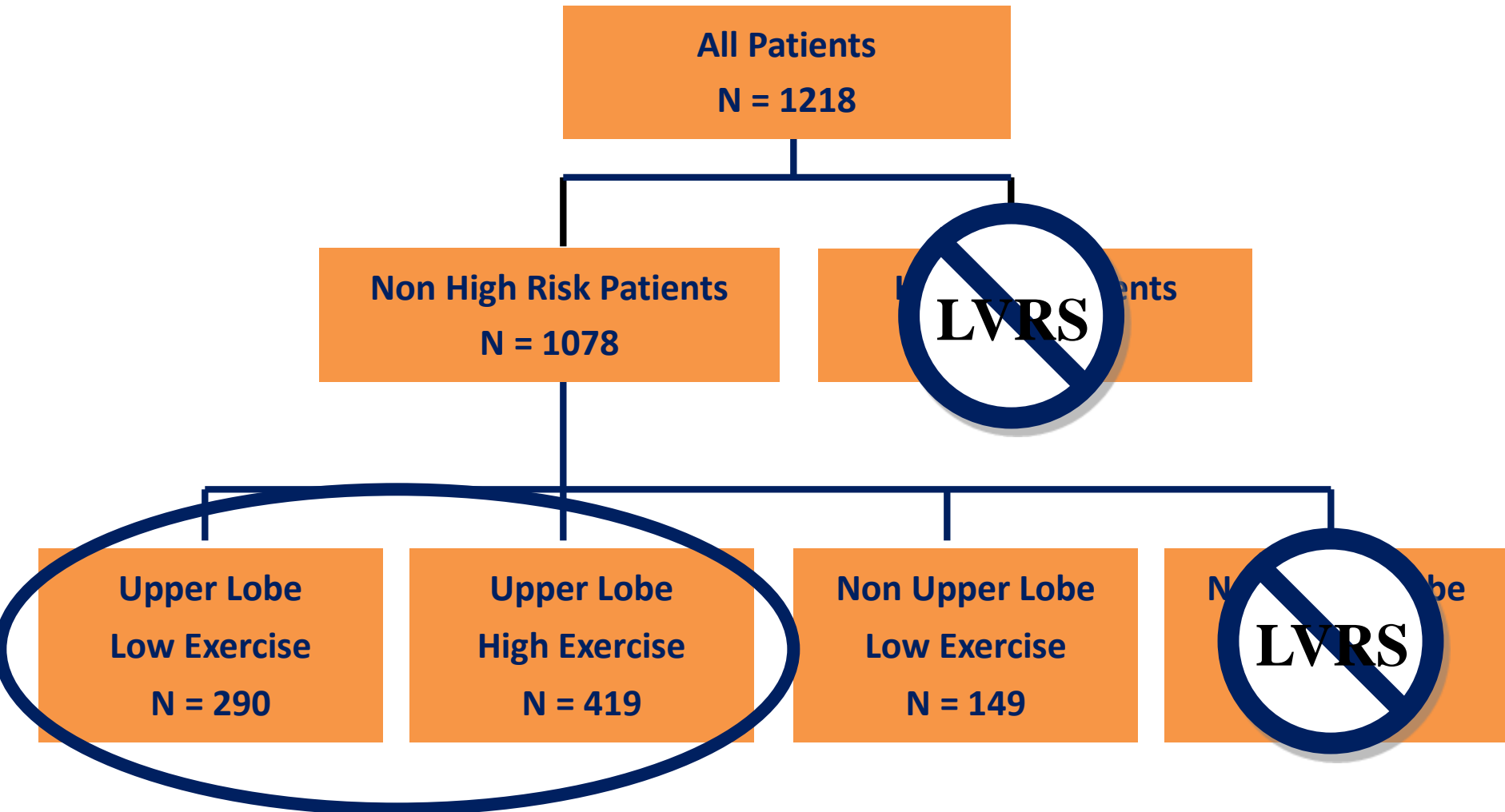
POSTERIOR

RIGHT



LUNG VOLUME REDUCTION SURGERY IS APPROPRIATE IN SUBGROUPS OF COPD

. NEJM 2003;348:2059-73

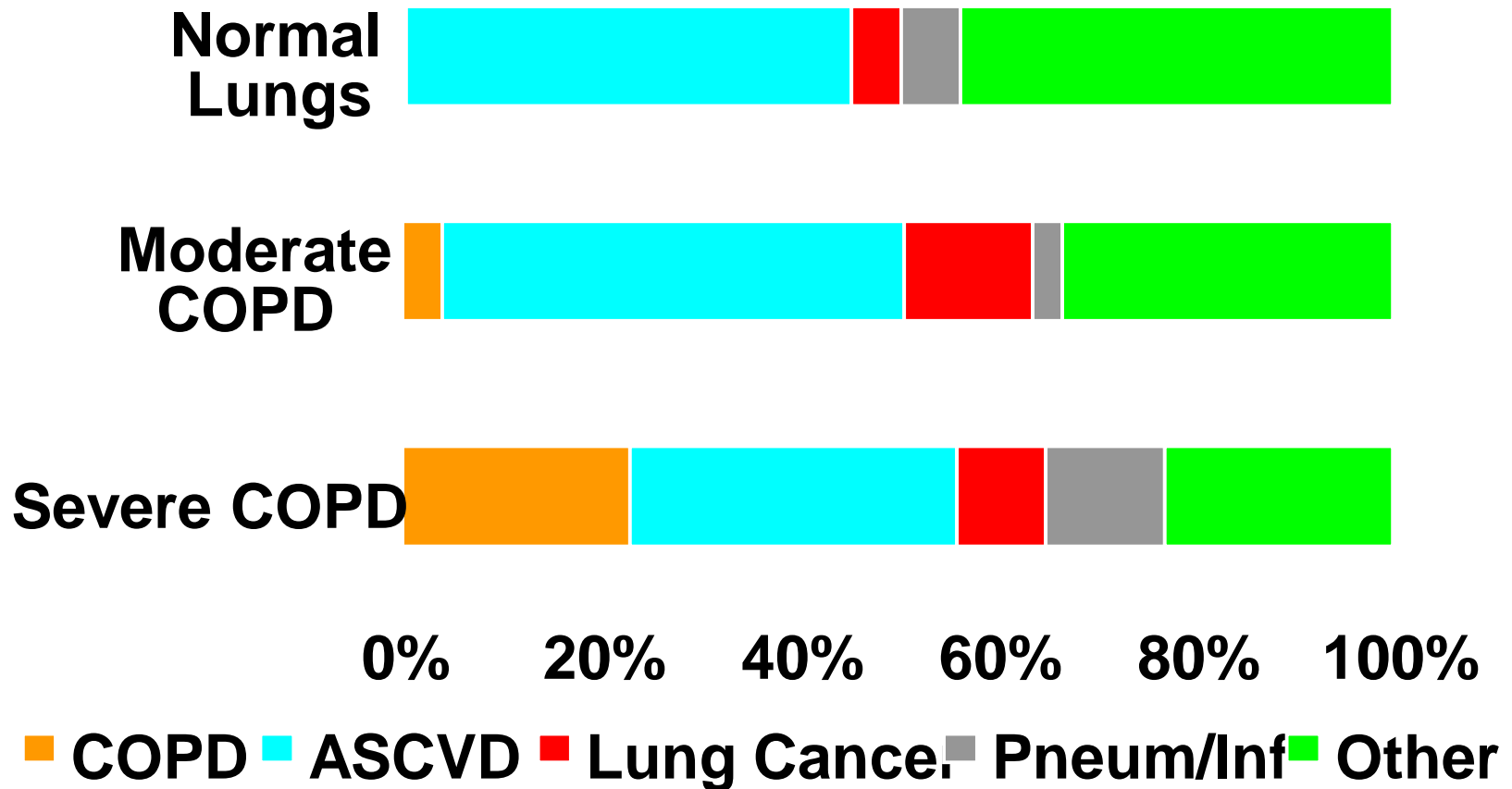


SEVERITY DOMAIN: COMORBIDITIES

- Comorbidities are extremely common in COPD and impact morbidity, hospitalization and re-hospitalization rates and mortality.
- Evidence suggests that COPD may be an independent risk factor for the development of cardiovascular disease, lung cancer, depression, osteoporosis.
- Defining and treating comorbid conditions, particularly cardiovascular, are critical components of COPD care.

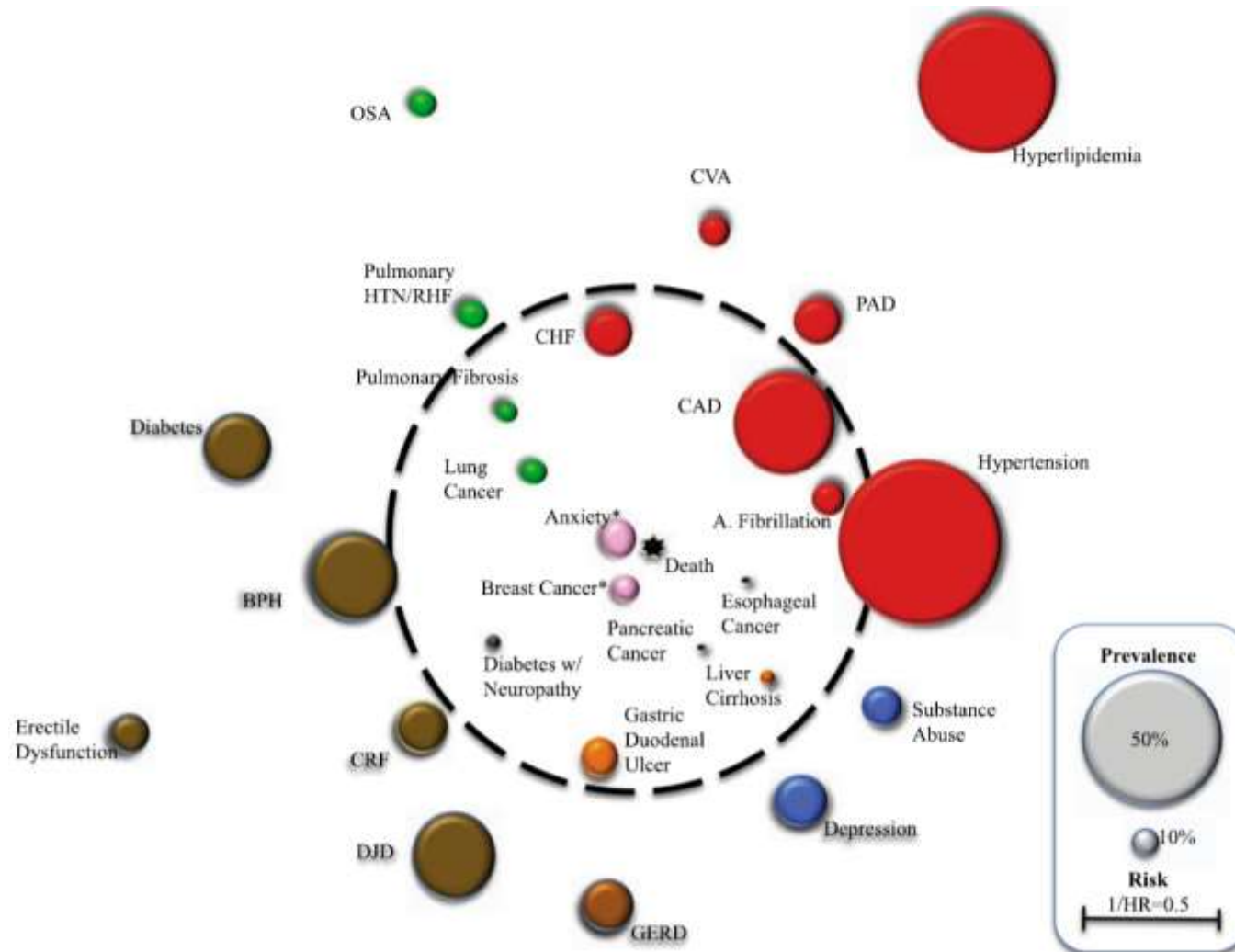
IMPACT OF COMORBIDITIES ON COPD MORTALITY

(MANNINO ET AL THORAX 2003)



Comorbidities and Risk of Mortality in Patients with Chronic Obstructive Pulmonary Disease

Miguel Divo¹, Claudia Cote^{2†}, Juan P. de Torres³, Ciro Casanova⁴, Jose M. Marin⁵, Victor Pinto-Plata¹, Javier Zulueta³, Carlos Cabrera⁶, Jorge Zagaceta³, Gary Hunninghake¹, and Bartolome Celli¹; for the BODE Collaborative Group
























Guide to COPD Treatment

All patients should receive:

Smoking cessation; vaccination for influenza, pneumococcus, pertussis, alpha-1 testing

	short acting bronchodilator (as needed)	LAMA or LABA or LAMA plus LABA	ICS/LABA	roflumilast	oxygen	exercise/pulmonary rehabilitation	lung volume reduction surgery	azithromycin
Spirometry Grade SG1 Mild								
SG 2/3 Moderate/ Severe								
Regular symptoms								
Exacerbation risk high								
Oxygenation severe hypoxemia								
episodic hypoxemia								
Emphysema								
Chronic bronchitis								
Comorbidities	 Evaluate and treat identified comorbid conditions.							

THE COPD POCKET CONSULTANT

COPD Foundation Guide for Management of COPD

COPD is defined by post bronchodilator FEV₁/FVC ratio < 0.7 on spirometry.

All COPD patients should have smoking cessation if smoking, vaccinations and be on a regular exercise program

Symptoms (CAT or MMRC) and Exacerbations

MMRC 0,1 CAT < 10
Exacerbations < 2/year

MMRC ≥ 2, CAT ≥ 10
with or without Exacerbations

MMRC 0,1 CAT < 10
Exacerbations ≥ 2/year

prn SABD

LAMA or LAMA+LABA
plus
Pulmonary Rehabilitation

LAMA or
LAMA+LABA or
LABA+ICS

Persistent
Symptoms

Persistent Symptoms
or Exacerbations

LAMA

LAMA+LABA+ICS

assessment
treatment
instrument or metric

FEV₁=Forced expiratory volume 1 second; FVC=Forced vital capacity; CAT=COPD Assessment Test; MMRC=Dyspnea assessment test; SABD=Short acting bronchodilator – includes SABA=Short acting beta-2 agonist, SAMA=Short acting muscarinic agent, and combined SAMA/SABA; LAMA=Long acting muscarinic agent; LABA=Long acting beta-2 agonist; ICS = Inhaled corticosteroid

The presence of eosinophilia may help select those exacerbators who could benefit from addition of ICS.

For those with recurrent exacerbations despite inhaled regimen consider:

- a. Adding PDE4 Inhibitor Roflumilast (if chronic bronchitic) and/or
- b. Adding Macrolide (if not active smoker) as immune modulator.

COPD patients with $FEV_1 < 60\%$ should have O₂ saturation assessed.

- a. Resting O₂ sats $\leq 88\%$ merit assessment for Oxygen therapy.
- b. COPD patients with O₂ sats $\leq 88\%$ should have arterial blood gas tested and if significant hypercapnea consider for sleep study and potential noninvasive ventilation.

COPD patients with $FEV_1 \leq 45\%$ should undergo Chest CT scanning and evaluation for Lung Volume Reduction Surgery or if FDA approves, bronchoscopic Lung Volume Reduction.

Annual low-dose CT scan for lung cancer screening - ages 55-79 years with 30 packyears and cigarette smoking in the last 15 years.

COPD 2018

- Almost always preventable, Almost always treatable
- LAMA/LABA may well be mainstay of Rx for most with significant COPD
- Pulmonary Rehabilitation works
- Those with more severe COPD and frequent exacerbations more likely to benefit from triple Rx
- ICS role may be defined by eosinophilia
- To treat COPD need to address comorbid conditions
- Improve communication
- All COPD is not the same and future therapies need to address this issue!