

PSIM – FEBRUARY 17, 2012

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Global Initiative for Chronic Obstructive Lung Disease





Description of Levels of Evidence

Evidence Category	Sources of Evidence
A	Randomized controlled trials (RCTs). Rich body of data
B	Randomized controlled trials (RCTs). Limited body of data
C	Nonrandomized trials Observational studies.
D	Panel consensus judgment

Slovenia Germany *Brazil* Ireland Saudi Arabia Bangladesh
 United States Australia Canada Yugoslavia Croatia
 Philippines Mongolia Portugal Austria Taiwan ROC
 Moldova Norway Thailand Greece Yeman Malta
 Kazakhstan China South Africa
 United Kingdom Syria Hong Kong ROC
 Italy New Zealand Nepal Chile Israel
 Argentina Mexico Pakistan Russia
 United Arab Emirates

Poland Korea **GOLD National Leaders** Peru Japan
 Switzerland India Venezuela Egypt Netherlands
 Turkey Czech Republic Iceland Macedonia France Georgia
 Romania Columbia Ukraine Singapore Spain
 Uruguay Sweden Albania Kyrgyzstan Vietnam



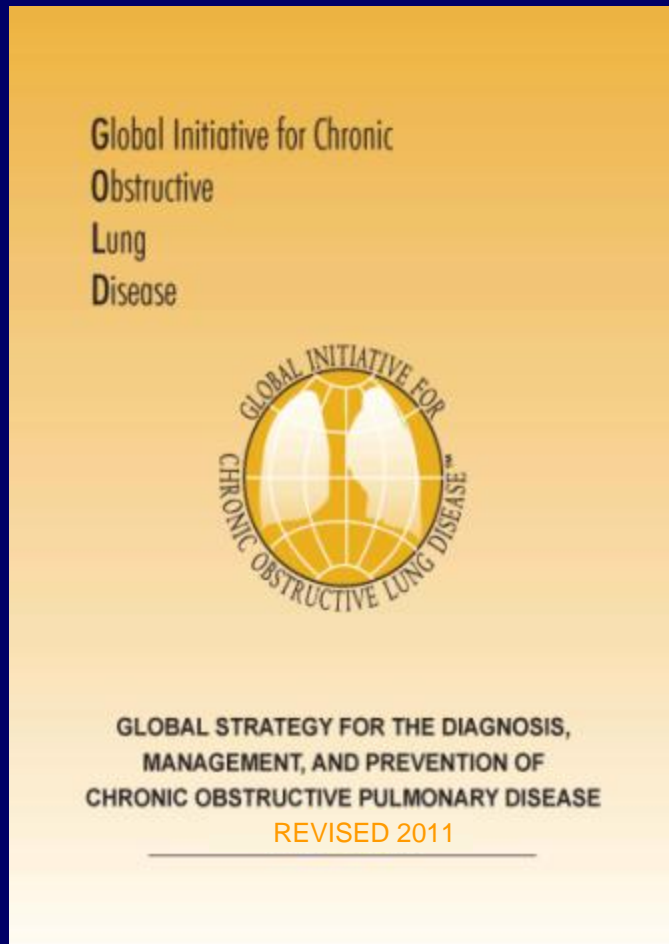
GOLD Website Address

<http://www.goldcopd.org>

GOLD Objectives

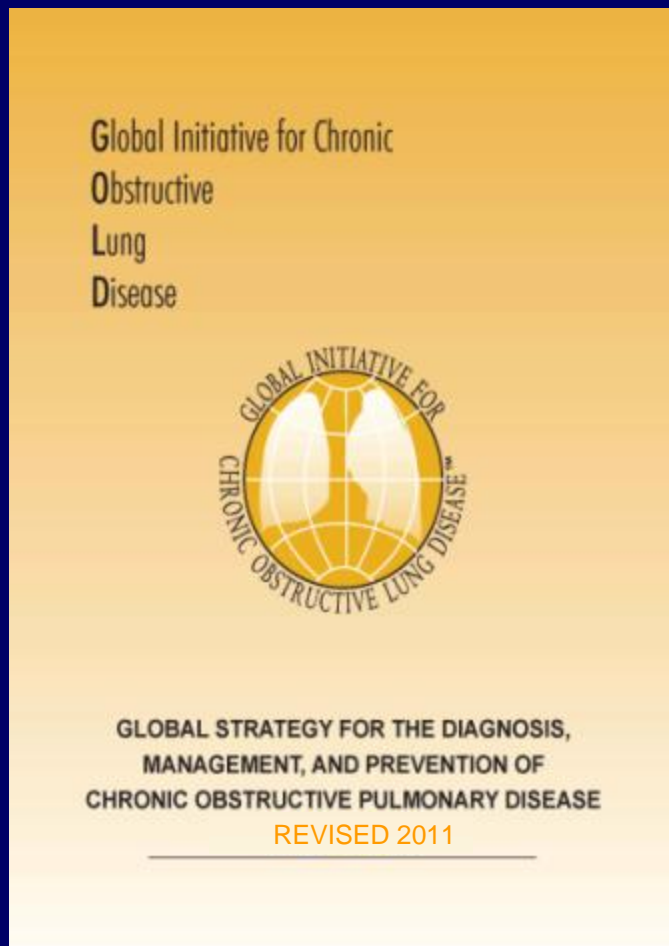
- n Increase awareness of COPD among health professionals, health authorities, and the general public
- n Improve diagnosis, management and prevention
- n Decrease morbidity and mortality
- n Stimulate research

Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Chapters



- n Definition and Overview
- n Diagnosis and Assessment
- n Therapeutic Options
- n Manage Stable COPD
- n Manage Exacerbations
- n Manage Comorbidities

Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Chapters



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Definition of COPD

- n COPD, a common preventable and treatable disease, is characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases.
- n Exacerbations and comorbidities contribute to the overall severity in individual patients.



Global Strategy for Diagnosis, Management and Prevention of COPD

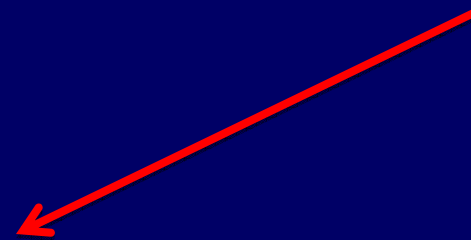
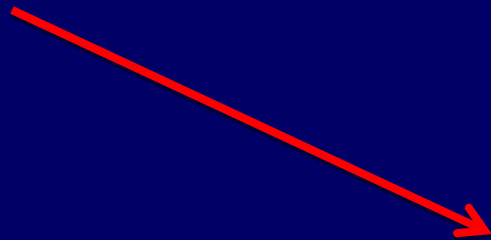
Mechanisms Underlying Airflow Limitation in COPD

Small Airways Disease

- Airway inflammation
- Airway fibrosis, luminal plugs
- Increased airway resistance

Parenchymal Destruction

- Loss of alveolar attachments
- Decrease of elastic recoil



AIRFLOW LIMITATION



Global Strategy for Diagnosis, Management and Prevention of COPD

Burden of COPD

- COPD is a leading cause of morbidity and mortality worldwide.
- The burden of COPD is projected to increase in coming decades due to continued exposure to COPD risk factors and the aging of the world's population.
- COPD is associated with significant economic burden.



COPD: Global Burden

- * An estimated 210 million people worldwide have COPD.
- * More than 3 million people died of COPD in 2005; this represented 5% of all deaths worldwide.
- * Almost 90% of COPD deaths occur in low- and middle-income countries where effective strategies for prevention and control are not always implemented or available.
- * Total deaths from COPD are projected to increase by >30% over the next 10 years without interventions to decrease risk, particularly exposure to tobacco smoke.
- * COPD will become the third-leading cause of death worldwide by 2030.

Risk Factors for COPD

Genes

Exposure to particles

- Tobacco smoke
- Occupational dusts, organic and inorganic
- Indoor air pollution from heating and cooking with biomass in poorly ventilated dwellings
- Outdoor air pollution

Lung growth and development

Gender

Age

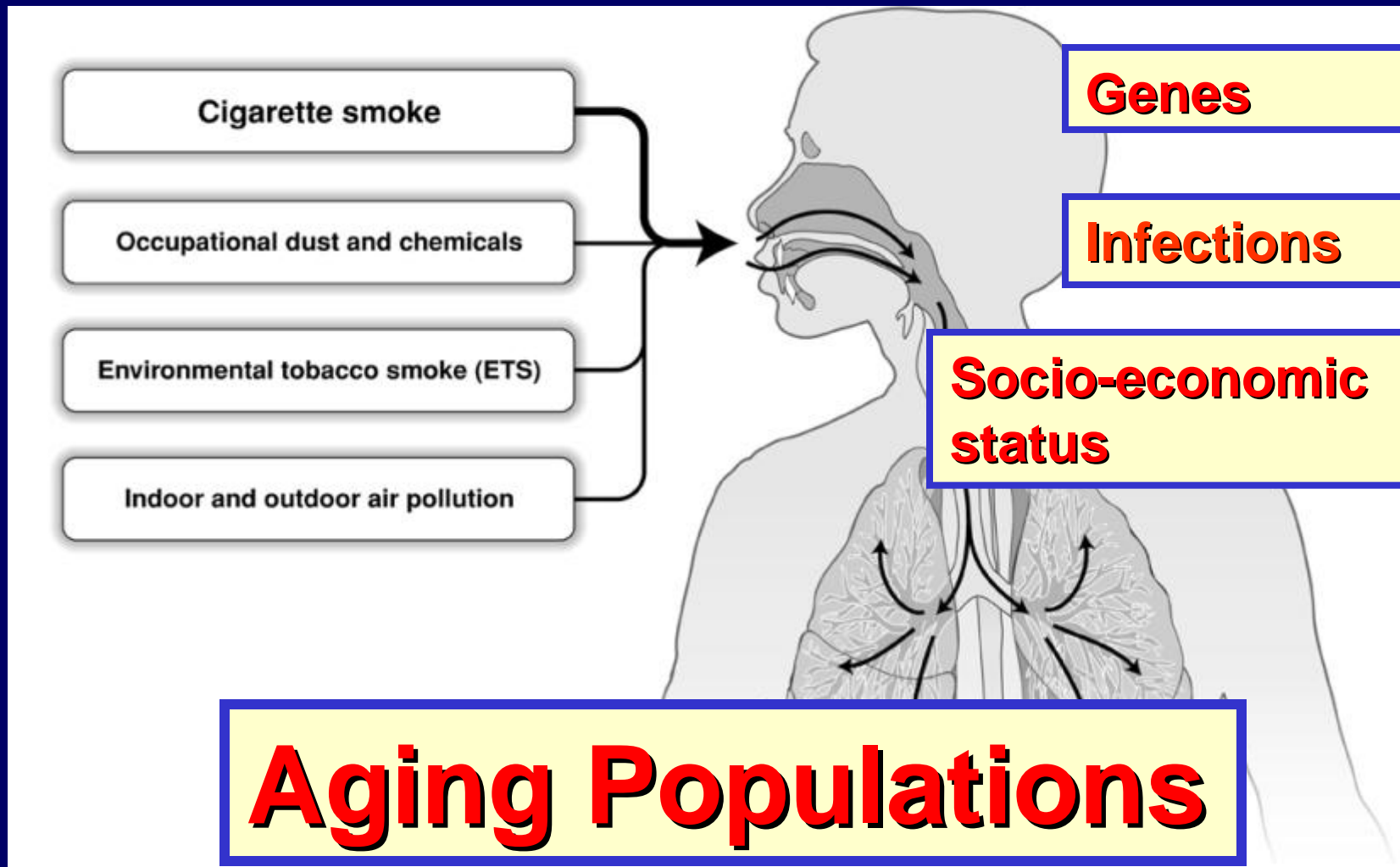
Respiratory infections

Socioeconomic status

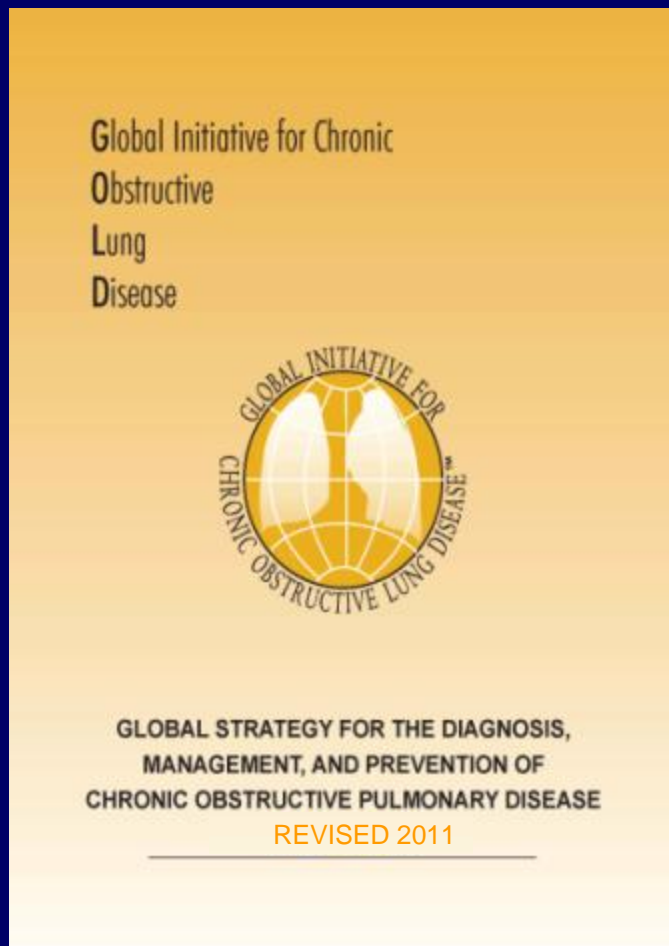
Asthma/Bronchial hyperreactivity

Chronic Bronchitis

Risk Factors for COPD



Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Chapters



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Diagnosis and Assessment: Key Points

- n A clinical diagnosis of COPD should be considered in any patient who has dyspnea, chronic cough or sputum production, and/or a history of exposure to risk factors for the disease.
- n Spirometry is *required* to make the diagnosis; the presence of a post-bronchodilator $FEV_1/FVC < 0.70$ confirms the presence of persistent airflow limitation and thus of COPD.

Diagnosis and Assessment: Key Points

- n The goals of COPD assessment are to determine the severity of the disease, including the severity of airflow limitation, the impact on the patient's health status, and the risk of future events.
- n Comorbidities occur frequently in COPD patients, and should be actively looked for and treated appropriately if present.

Diagnosis of COPD

SYMPTOMS

shortness of breath
chronic cough
sputum

EXPOSURE TO RISK FACTORS

tobacco
occupation
indoor/outdoor pollution

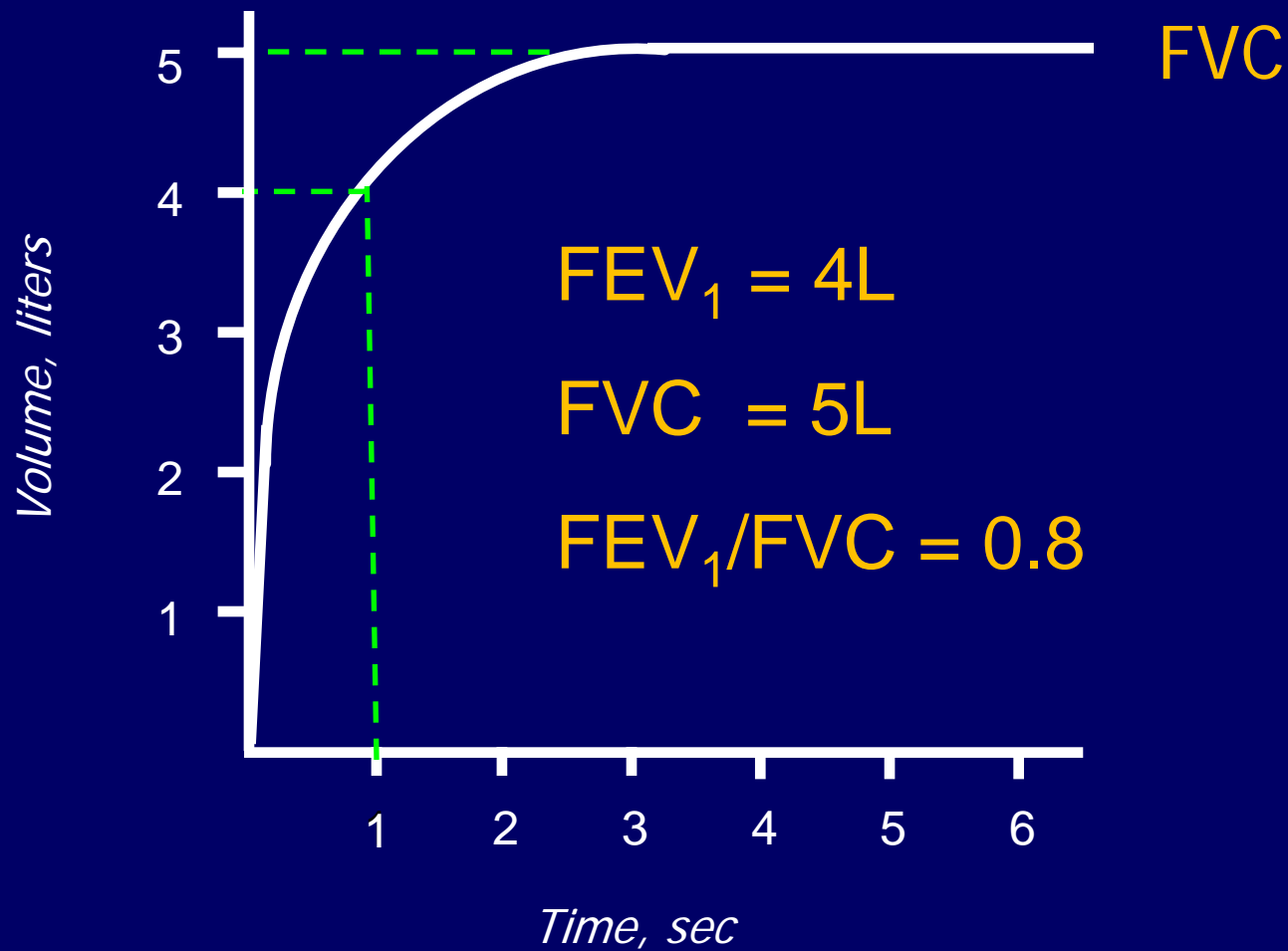


SPIROMETRY: Required to establish diagnosis

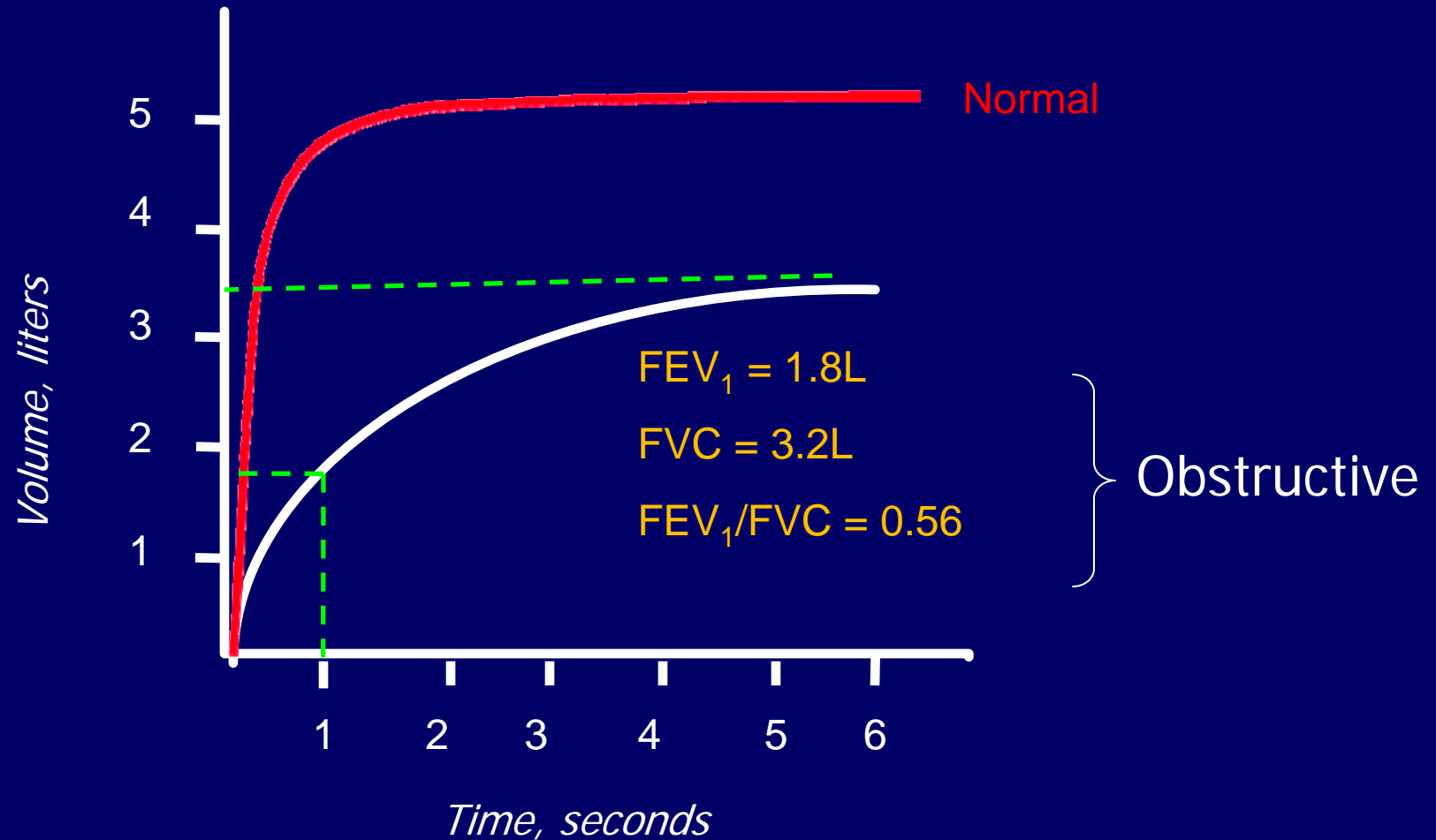
Assessment of Airflow Limitation: Spirometry

- Spirometry should be performed after the administration of an adequate dose of a short-acting inhaled bronchodilator to minimize variability.
- A post-bronchodilator $FEV_1/FVC < 0.70$ confirms the presence of airflow limitation.
- Where possible, values should be compared to age-related normal values to avoid overdiagnosis of COPD in the elderly.

Spirometry: Normal Trace Showing FEV_1 and FVC



Spirometry: Obstructive Disease



Slide 21

CRJ3

Sue i have inserted a bracket and shifted the obstructive label. The FVC in this slide is about 3.4 by eyeball - should be moved down to 3.2 or the numbers should be changed

Christine Jenkins, 4/14/2008

Assessment of COPD: Goals

Determine the severity of the disease, its impact on the patient's health status and the risk of future events (for example exacerbations) to guide therapy. Consider the following aspects of the disease separately:

- current level of patient's symptoms
- severity of the spirometric abnormality
- frequency of exacerbations
- presence of comorbidities.



Global Strategy for Diagnosis, Management and Prevention of COPD

Assessment of COPD

- Assess symptoms
- Assess degree of airflow limitation using spirometry
- Assess risk of exacerbations
- Assess comorbidities

Symptoms of COPD

The characteristic symptoms of COPD are chronic and progressive dyspnea, cough, and sputum production.

Dyspnea: Progressive, persistent and characteristically worse with exercise.

Chronic cough: May be intermittent and may be unproductive.

Chronic sputum production: COPD patients commonly cough up sputum.



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Assessment of COPD

- Assess symptoms

Use the COPD Assessment Test(CAT)

or

mMRC Breathlessness scale

Assessment of Symptoms

COPD Assessment Test (CAT): An 8-item measure of health status impairment in COPD (<http://catestonline.org>).

Breathlessness Measurement using the Modified British Medical Research Council (mMRC) Questionnaire: relates well to other measures of health status and predicts future mortality risk.



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Modified MRC (mMRC) Questionnaire

PLEASE TICK IN THE BOX THAT APPLIES TO YOU
(ONE BOX ONLY)

mMRC Grade 0. I only get breathless with strenuous exercise.

☐

mMRC Grade 1. I get short of breath when hurrying on the level
or walking up a slight hill.

☐

mMRC Grade 2. I walk slower than people of the same age on the
level because of breathlessness, or I have to stop for breath when
walking on my own pace on the level.

☐

mMRC Grade 3. I stop for breath after walking about 100 meters or
after a few minutes on the level.

☐

mMRC Grade 4. I am too breathless to leave the house or I am
breathless when dressing or undressing.

☐



Global Strategy for Diagnosis, Management and Prevention of COPD

Assessment of COPD

- Assess symptoms
- Assess degree of airflow limitation

Use spirometry for grading severity according to spirometry, using four grades split at 80%, 50% and 30% of predicted value

Classification of Severity of Airflow Limitation in COPD*

In patients with $FEV_1/FVC < 0.70$:

GOLD 1: Mild $FEV_1 \geq 80\%$ predicted

GOLD 2: Moderate $50\% \leq FEV_1 < 80\%$ predicted

GOLD 3: Severe $30\% \leq FEV_1 < 50\%$ predicted

GOLD 4: Very Severe $FEV_1 < 30\%$ predicted

**Based on Post-Bronchodilator FEV_1*



Global Strategy for Diagnosis, Management and Prevention of COPD

Assessment of COPD

- Assess symptoms
- Assess degree of airflow limitation using spirometry
- Assess risk of exacerbations

Use history of exacerbations and spirometry.
Two exacerbations or more within the last year
or an $FEV_1 < 50\%$ of predicted value are
indicators of high risk



Global Strategy for Diagnosis, Management and Prevention of COPD

Assess Risk of Exacerbations

To assess risk of exacerbations use history of exacerbations and spirometry:

- Two or more exacerbations within the last year *or* an $FEV_1 < 50\%$ of predicted value are indicators of high risk.

Combined Assessment of COPD

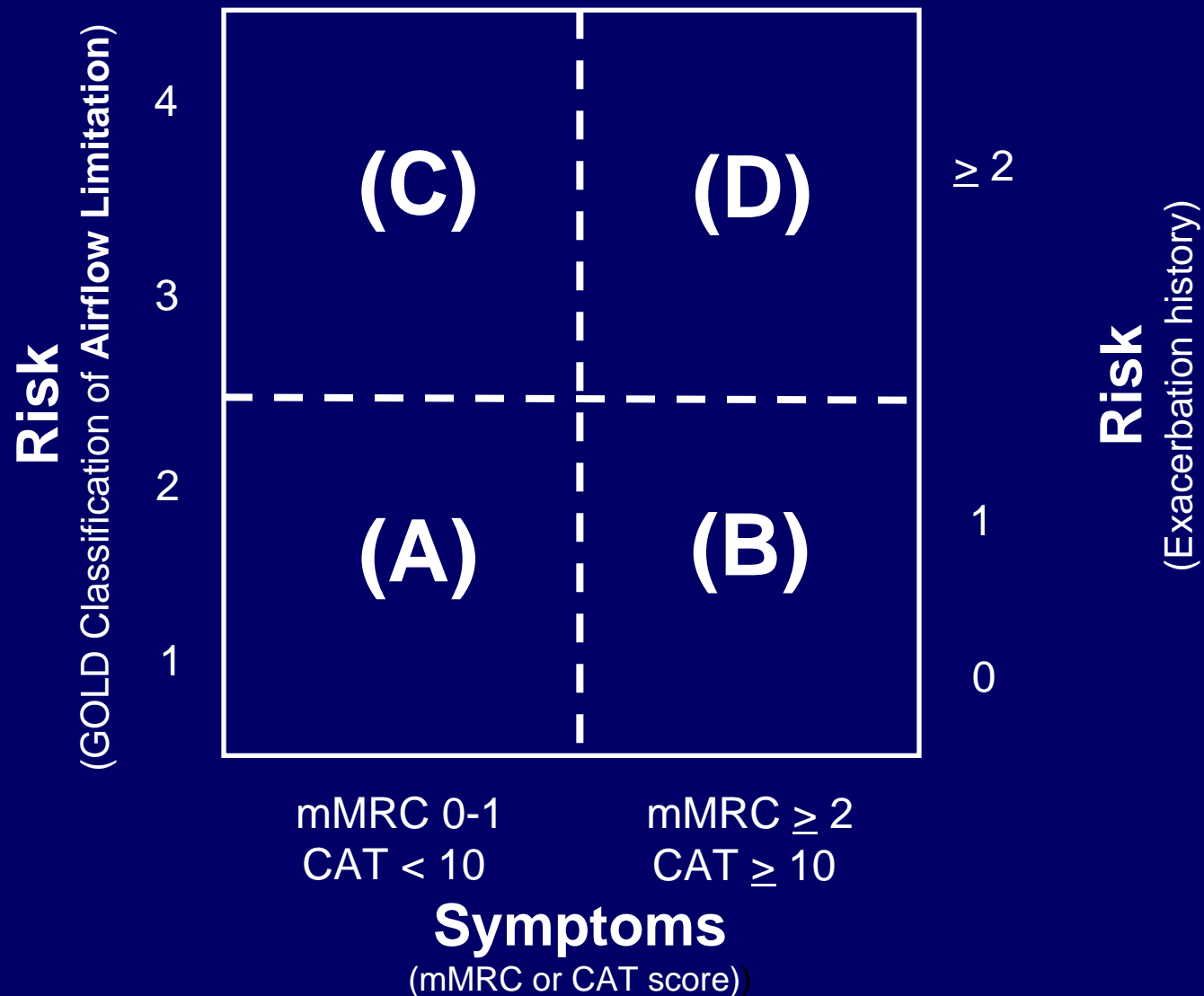
- Assess symptoms
- Assess degree of airflow limitation using spirometry
- Assess risk of exacerbations

Combine these assessments for the purpose of improving management of COPD



Global Strategy for Diagnosis, Management and Prevention of COPD

Combined Assessment of COPD

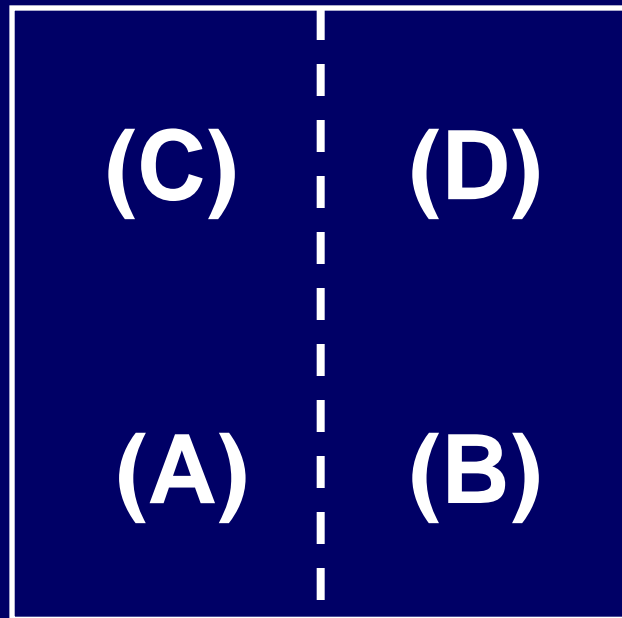




Global Strategy for Diagnosis, Management and Prevention of COPD

Combined Assessment of COPD

Assess symptoms first



mMRC 0-1
CAT < 10

mMRC ≥ 2
CAT ≥ 10

Symptoms

(mMRC or CAT score)

If mMRC 0-1 or CAT < 10:
Less Symptoms (A or C)

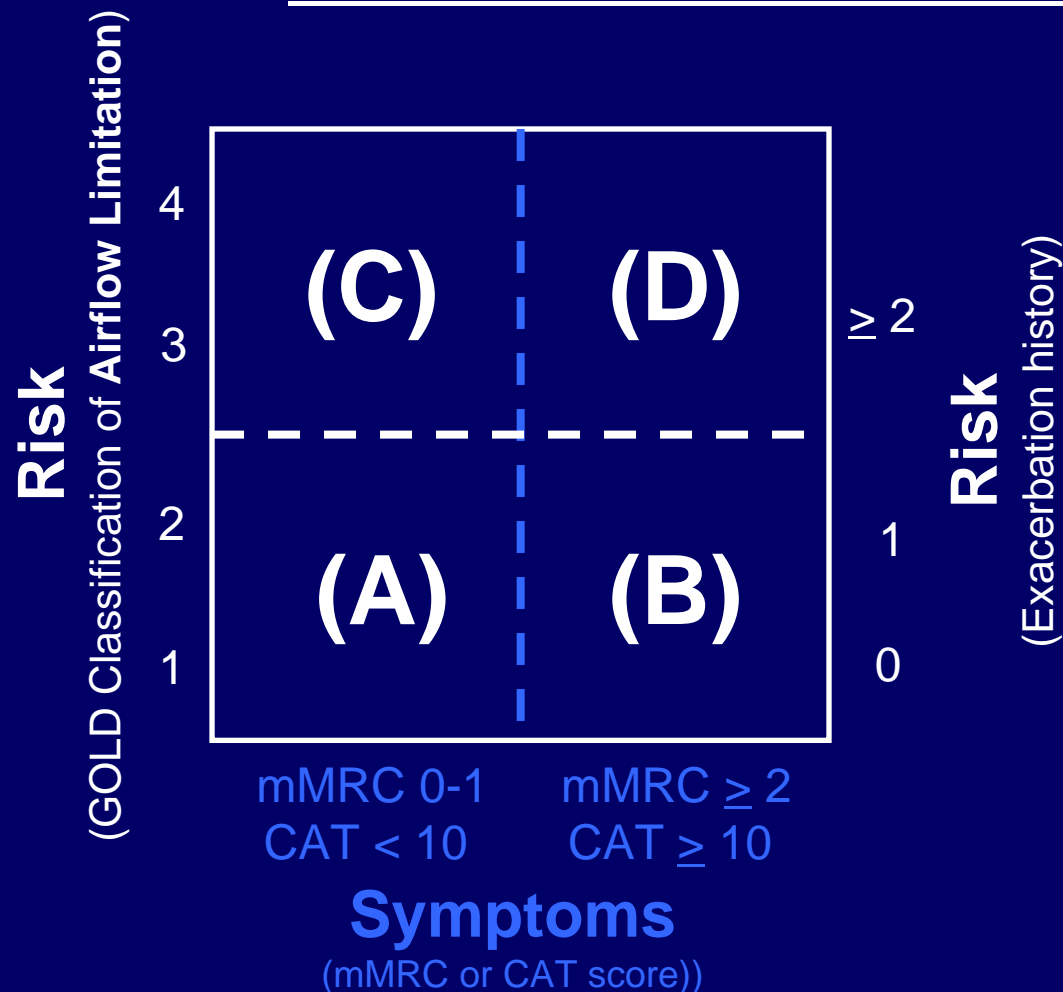
If mMRC ≥ 2 or CAT ≥ 10 :
More Symptoms (B or D)



Global Strategy for Diagnosis, Management and Prevention of COPD

Combined Assessment of COPD

Assess risk of exacerbations next



If GOLD 1 or 2 *and* only 0 or 1 exacerbations per year:
Low Risk (A or B)

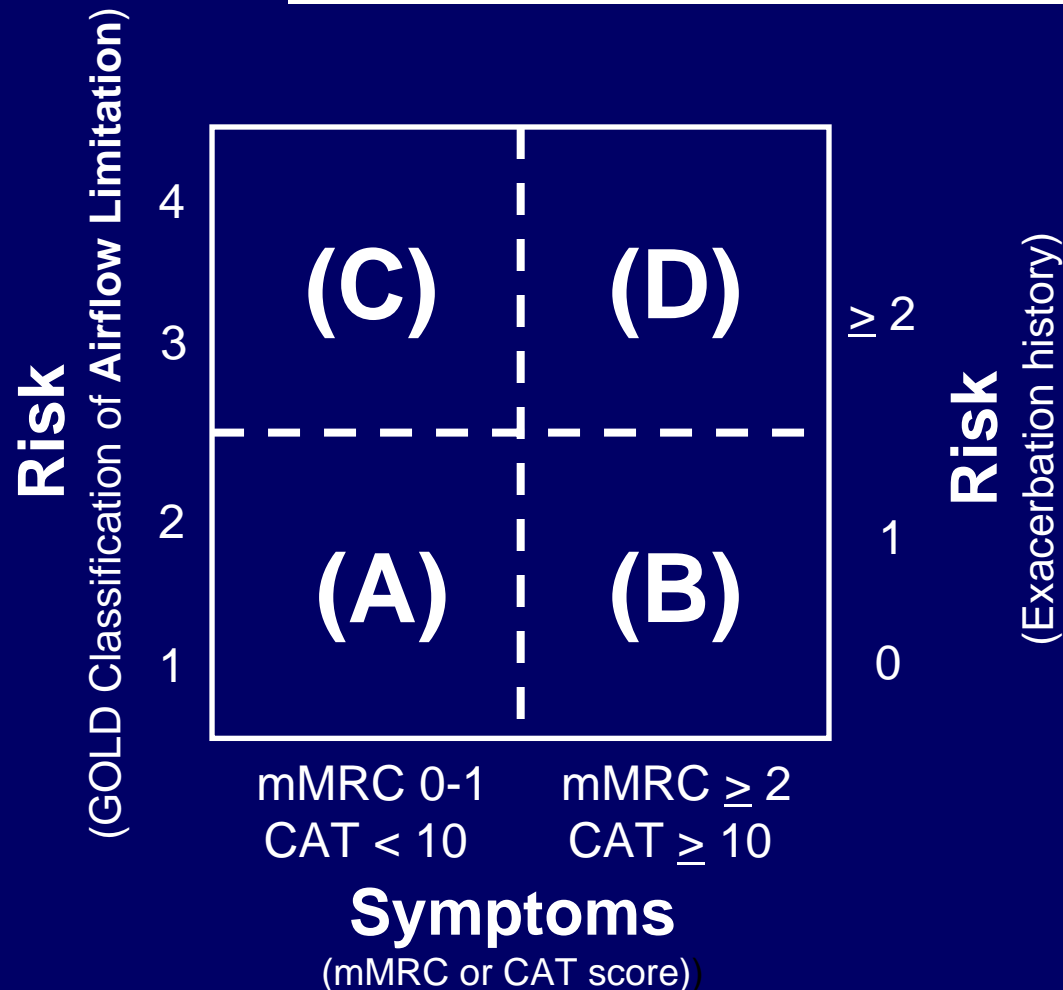
If GOLD 3 or 4 or two or more exacerbations per year:
High Risk (C or D)



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Combined Assessment of COPD

Use combined assessment



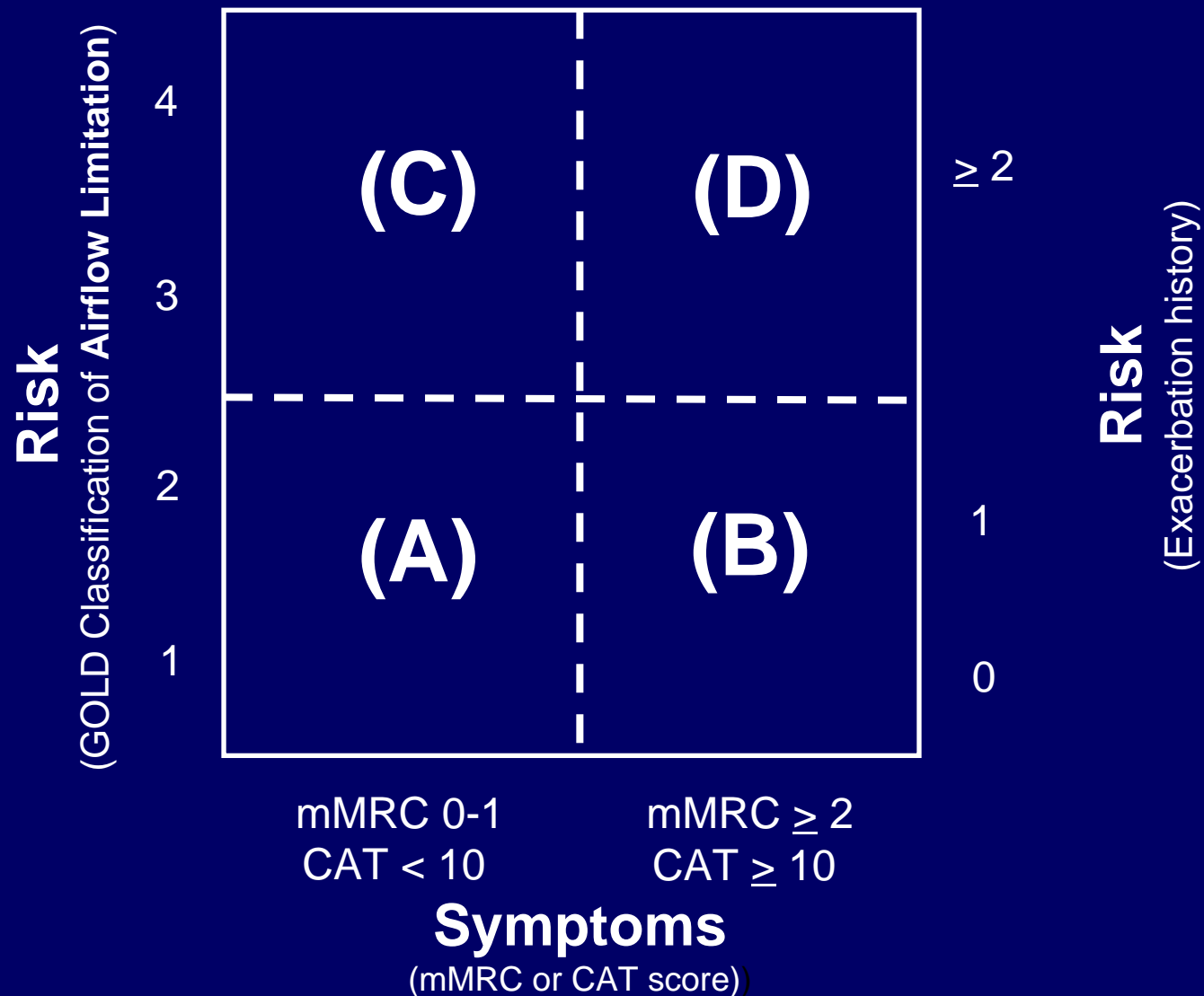
Patient is now in one of four categories:

- A: Less symptoms, low risk
- B: More symptoms, low risk
- C: Less symptoms, high risk
- D: More symptoms, high risk



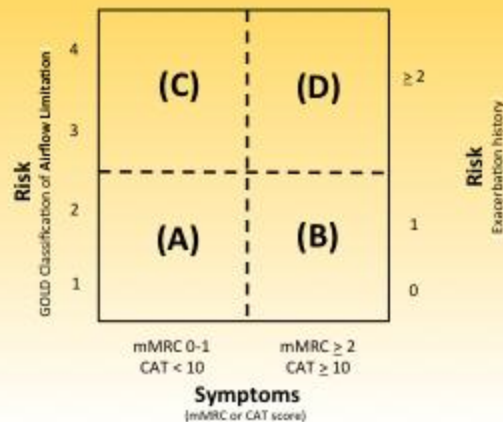
Global Strategy for Diagnosis, Management and Prevention of COPD

Combined Assessment of COPD



Global Strategy for Diagnosis, Management and Prevention of COPD

Combined Assessment of COPD



*When assessing risk, choose the **highest** risk according to GOLD grade or exacerbation history*

Patient	Characteristic	Spirometric Classification	Exacerbations per year	mMRC	CAT
A	Low Risk Less Symptoms	GOLD 1-2	≤ 1	0-1	< 10
B	Low Risk More Symptoms	GOLD 1-2	≤ 1	≥ 2	≥ 10
C	High Risk Less Symptoms	GOLD 3-4	≥ 2	0-1	< 10
D	High Risk More Symptoms	GOLD 3-4	≥ 2	≥ 2	≥ 10



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Assess COPD Comorbidities

COPD patients are at increased risk for:

- Cardiovascular diseases
- Osteoporosis
- Respiratory infections
- Anxiety and Depression
- Diabetes
- Lung cancer

These comorbid conditions may influence mortality and hospitalizations and should be looked for routinely, and treated appropriately.



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Differential Diagnosis: COPD and Asthma

COPD

- Onset in mid-life
- Symptoms slowly progressive
- Long smoking history

ASTHMA

- Onset early in life (often childhood)
- Symptoms vary from day to day
- Symptoms worse at night/early morning
- Allergy, rhinitis, and/or eczema also present
- Family history of asthma



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Additional Investigations

Chest X-ray: Seldom diagnostic but valuable to exclude alternative diagnoses and establish presence of significant comorbidities.

Lung Volumes and Diffusing Capacity: Help to characterize severity, but not essential to patient management.

Oximetry and Arterial Blood Gases: Pulse oximetry can be used to evaluate a patient's oxygen saturation and need for supplemental oxygen therapy.

Alpha-1 Antitrypsin Deficiency Screening: Perform when COPD develops in patients of Caucasian descent under 45 years or with a strong family history of COPD.



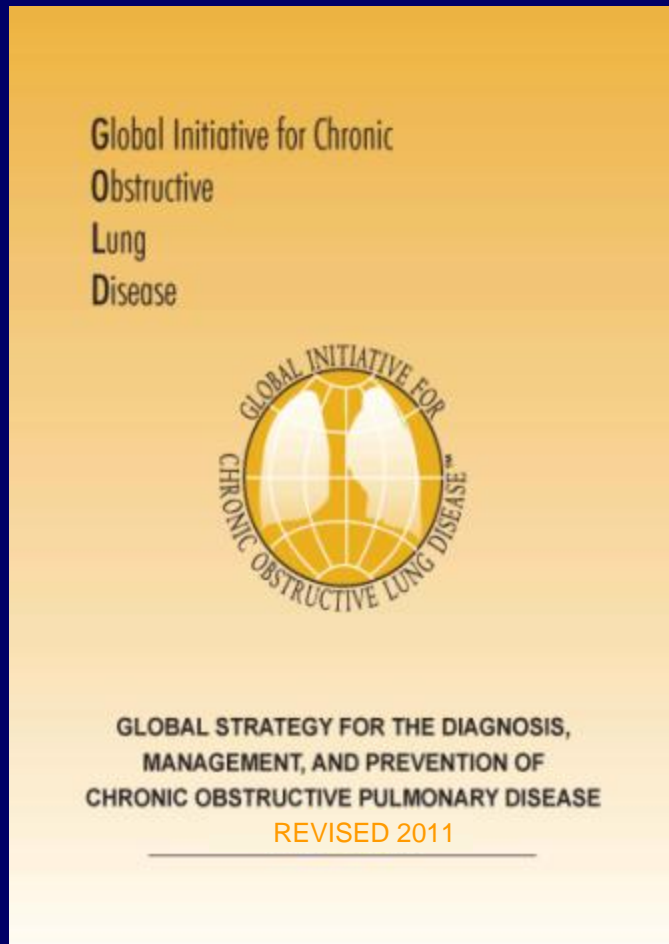
Global Strategy for Diagnosis, Management and Prevention of COPD

Additional Investigations

Exercise Testing: Objectively measured exercise impairment, assessed by a reduction in self-paced walking distance (such as the 6 min walking test) or during incremental exercise testing in a laboratory, is a powerful indicator of health status impairment and predictor of prognosis.

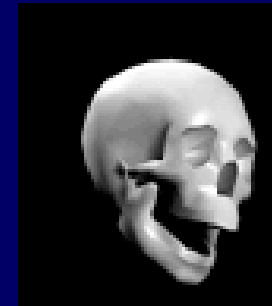
Composite Scores: Several variables (FEV_1 , exercise tolerance assessed by walking distance or peak oxygen consumption, weight loss and reduction in the arterial oxygen tension) identify patients at increased risk for mortality.

Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Chapters



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“There is an overwhelming medical and scientific consensus that cigarette smoking causes lung cancer, heart disease, emphysema and other serious diseases in smokers”



Landmark Admission by Philip Morris

...In the hope of making it more difficult for smokers to sue in the future claiming unawareness of the dangers....

Smoking Cessation Strategies

- n Psychological component
- n Behavioral component

Intensive Counselling

A large, stylized blue letter 'P' is positioned on the left side of the image. The background is black, and there is a large, wispy cloud of white smoke or steam that fills the right side and partially overlaps the letter 'P'.

P

rotect people from
tobacco smoke

Second-Hand Smoke KILLS!





Global Strategy for Diagnosis, Management and Prevention of COPD

Therapeutic Options: Key Points

- Smoking cessation has the greatest capacity to influence the natural history of COPD. Health care providers should encourage all patients who smoke to quit.
- Pharmacotherapy and nicotine replacement reliably increase long-term smoking abstinence rates.
- All COPD patients benefit from regular physical activity and should repeatedly be encouraged to remain active.



Global Strategy for Diagnosis, Management and Prevention of COPD

Therapeutic Options: Key Points

- Appropriate pharmacologic therapy can reduce COPD symptoms, reduce the frequency and severity of exacerbations, and improve health status and exercise tolerance.
- None of the existing medications for COPD has been shown conclusively to modify the long-term decline in lung function.
- Influenza and pneumococcal vaccination should be offered depending on local guidelines.



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Therapeutic Options: Smoking Cessation

- Counseling delivered by physicians and other health professionals significantly increases quit rates over self-initiated strategies. Even a brief (3-minute) period of counseling to urge a smoker to quit results in smoking quit rates of 5-10%.
- Nicotine replacement therapy (nicotine gum, inhaler, nasal spray, transdermal patch, sublingual tablet, or lozenge) as well as pharmacotherapy with varenicline, bupropion, and nortriptyline reliably increases long-term smoking abstinence rates and are significantly more effective than placebo.



Brief Strategies to Help the Patient Willing to Quit Smoking

- **ASK** Systematically identify all tobacco users at every visit
- **ADVISE** Strongly urge all tobacco users to quit
- **ASSESS** Determine willingness to make a quit attempt
- **ASSIST** Aid the patient in quitting
- **ARRANGE** Schedule follow-up contact.



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Therapeutic Options: Risk Reduction

-
- Encourage comprehensive **tobacco-control policies** with clear, consistent, and repeated nonsmoking messages.
 - Emphasize primary prevention, best achieved by elimination or reduction of **exposures in the workplace**. Secondary prevention, achieved through surveillance and early detection, is also important.
 - Reduce or avoid **indoor air pollution** from biomass fuel, burned for cooking and heating in poorly ventilated dwellings.
 - Advise patients to monitor public announcements of **air quality** and, depending on the severity of their disease, avoid vigorous exercise outdoors or stay indoors during pollution episodes.



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Therapeutic Options: COPD Medications

Beta₂-agonists

Short-acting beta₂-agonists

Long-acting beta₂-agonists

Anticholinergics

Short-acting anticholinergics

Long-acting anticholinergics

Combination short-acting beta₂-agonists + anticholinergic in one inhaler

Methylxanthines

Inhaled corticosteroids

Combination long-acting beta₂-agonists + corticosteroids in one inhaler

Systemic corticosteroids

Phosphodiesterase-4 inhibitors



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Therapeutic Options: Bronchodilators

- Bronchodilator medications are central to the symptomatic management of COPD.
- Bronchodilators are prescribed on an as-needed or on a regular basis to prevent or reduce symptoms.
- The principal bronchodilator treatments are beta₂-agonists, anticholinergics, theophylline or combination therapy.
- The choice of treatment depends on the availability of medications and each patient's individual response in terms of symptom relief and side effects.



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Therapeutic Options: Bronchodilators

- Long-acting inhaled bronchodilators are convenient and more effective for symptom relief than short-acting bronchodilators.
- Long-acting inhaled bronchodilators reduce exacerbations and related hospitalizations and improve symptoms and health status.
- Combining bronchodilators of different pharmacological classes may improve efficacy and decrease the risk of side effects compared to increasing the dose of a single bronchodilator.



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Therapeutic Options: Inhaled Corticosteroids

- Regular treatment with inhaled corticosteroids (*ICS*) improves symptoms, lung function and quality of life and reduces frequency of exacerbations for COPD patients with an $FEV_1 < 60\%$ predicted.
- Inhaled corticosteroid therapy is associated with an increased risk of pneumonia.
- Withdrawal from treatment with inhaled corticosteroids may lead to exacerbations in some patients.



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Therapeutic Options: Combination Therapy

- An inhaled corticosteroid combined with a long-acting beta₂-agonist is more effective than the individual components in improving lung function and health status and reducing exacerbations in moderate to very severe COPD.
- Combination therapy is associated with an increased risk of pneumonia.
- Addition of a long-acting beta₂-agonist/inhaled glucocorticosteroid combination to an anticholinergic (tiotropium) appears to provide additional benefits.



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Therapeutic Options: Systemic Corticosteroids

- Chronic treatment with systemic corticosteroids should be avoided because of an unfavorable benefit-to-risk ratio.



Global Strategy for Diagnosis, Management and Prevention of COPD

Therapeutic Options: Phosphodiesterase-4 Inhibitors

- In patients with severe and very severe COPD (GOLD 3 and 4) and a history of exacerbations and chronic bronchitis, the phosphodiesterase-4 inhibitor (*PDE-4*), roflumilast, reduces exacerbations treated with oral glucocorticosteroids.



Global Strategy for Diagnosis, Management and Prevention of COPD

Therapeutic Options: Theophylline

- Theophylline is less effective and less well tolerated than inhaled long-acting bronchodilators and is not recommended if those drugs are available and affordable.
- There is evidence for a modest bronchodilator effect and some symptomatic benefit compared with placebo in stable COPD. Addition of theophylline to salmeterol produces a greater increase in FEV₁ and breathlessness than salmeterol alone.
- Low dose theophylline reduces exacerbations but does not improve post-bronchodilator lung function.



Global Strategy for Diagnosis, Management and Prevention of COPD

Therapeutic Options: Other Pharmacologic Treatments

Influenza vaccines can reduce serious illness.

Pneumococcal polysaccharide vaccine is recommended for COPD patients 65 years and older and for COPD patients younger than age 65 with an $FEV_1 < 40\%$ predicted.

The use of *antibiotics*, other than for treating infectious exacerbations of COPD and other bacterial infections, is currently not indicated.



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Therapeutic Options: Other Pharmacologic Treatments

Alpha-1 antitrypsin augmentation therapy: not recommended for patients with COPD that is unrelated to the genetic deficiency.

Mucolytics: Patients with viscous sputum may benefit from mucolytics; overall benefits are very small.

Antitussives: Not recommended.

Vasodilators: Nitric oxide is contraindicated in stable COPD. The use of endothelium-modulating agents for the treatment of pulmonary hypertension associated with COPD is not recommended.



Global Strategy for Diagnosis, Management and Prevention of COPD

Therapeutic Options: Rehabilitation

- All COPD patients benefit from *exercise training programs* with improvements in exercise tolerance and symptoms of dyspnea and fatigue.
- Although an effective pulmonary rehabilitation program is 6 weeks, the longer the program continues, the more effective the results.
- If exercise training is maintained at home the patient's health status remains above pre-rehabilitation levels.



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Therapeutic Options: Other Treatments

Oxygen Therapy: The long-term administration of oxygen (> 15 hours per day) to patients with chronic respiratory failure has been shown to increase survival in patients with severe, resting hypoxemia.

Ventilatory Support: Combination of noninvasive ventilation (NIV) with long-term oxygen therapy may be of some use in a selected subset of patients, particularly in those with pronounced daytime hypercapnia.



Global Strategy for Diagnosis, Management and Prevention of COPD

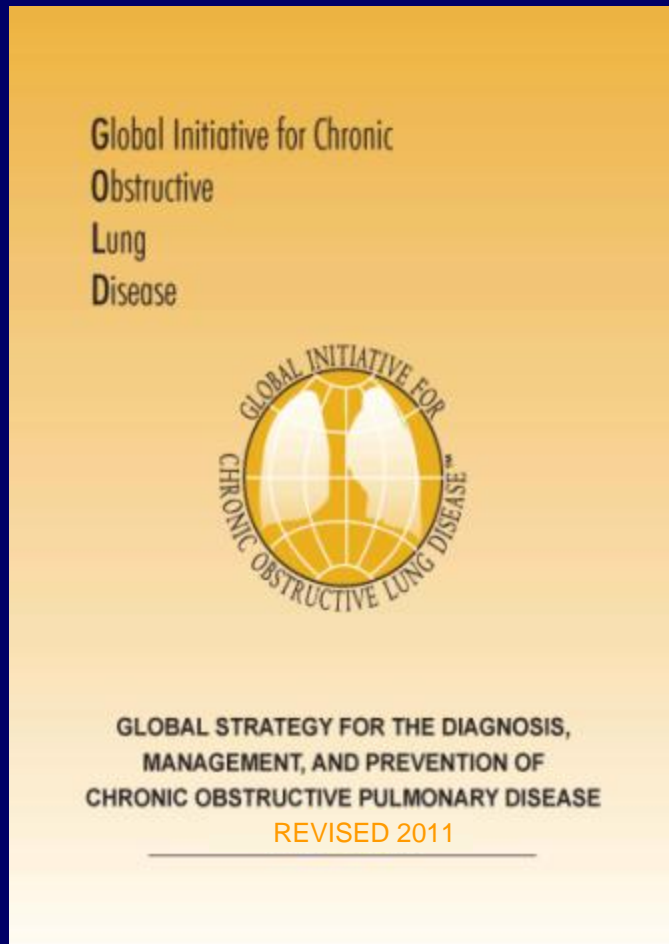
Therapeutic Options: Surgical Treatments

Lung volume reduction surgery (LVRS) is more efficacious than medical therapy among patients with upper-lobe predominant emphysema and low exercise capacity.

LVRS is costly relative to health-care programs not including surgery.

In appropriately selected patients with very severe COPD, *lung transplantation* has been shown to improve quality of life and functional capacity.

Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Major Chapters



- n Definition and Overview
- n Diagnosis and Assessment
- n Therapeutic Options
- n Manage Stable COPD
- n Manage Exacerbations
- n Manage Comorbidities



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Stable COPD: Key Points

- n Identification and reduction of exposure to risk factors are important steps in prevention and treatment.
- n Individualized assessment of symptoms, airflow limitation, and future risk of exacerbations should be incorporated into the management strategy.
- n All COPD patients benefit from rehabilitation and maintenance of physical activity.
- n Pharmacologic therapy is used to reduce symptoms, reduce frequency and severity of exacerbations, and improve health status and exercise tolerance.



Manage Stable COPD: Key Points

- Long-acting formulations of beta₂-agonists and anticholinergics are preferred over short-acting formulations. Based on efficacy and side effects, inhaled bronchodilators are preferred over oral bronchodilators.
- Long-term treatment with inhaled corticosteroids added to long-acting bronchodilators is recommended for patients with high risk of exacerbations.



Manage Stable COPD: Key Points

- Long-term monotherapy with oral or inhaled corticosteroids is not recommended in COPD.
- The phosphodiesterase-4 inhibitor roflumilast may be useful to reduce exacerbations for patients with $FEV_1 < 50\%$ of predicted, chronic bronchitis, and frequent exacerbations.



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Stable COPD: Goals of Therapy

- Relieve symptoms
 - Improve exercise tolerance
 - Improve health status
- } Reduce symptoms
- Prevent disease progression
 - Prevent and treat exacerbations
 - Reduce mortality
- } Reduce risk



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Stable COPD: All COPD Patients

n Avoidance of risk factors

- smoking cessation
- reduction of indoor pollution
- reduction of occupational exposure

n Influenza vaccination



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Stable COPD: Non-pharmacologic

Patient	Essential	Recommended	Depending on local guidelines
A	Smoking cessation (can include pharmacologic treatment)	Physical activity	Flu vaccination Pneumococcal vaccination
B, C, D	Smoking cessation (can include pharmacologic treatment) Pulmonary rehabilitation	Physical activity	Flu vaccination Pneumococcal vaccination



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Stable COPD: Pharmacologic Therapy

(Medications in each box are mentioned in alphabetical order, and therefore not necessarily in order of preference.)

Patient	First choice	Second choice		Alternative Choices
A	SAMA prn or SABA prn	LAMA or LABA or SABA and SAMA		Theophylline
B	LAMA or LABA	LAMA and LABA		SABA and/or SAMA Theophylline
C	ICS + LABA or LAMA	LAMA and LABA		PDE4-inh. SABA and/or SAMA Theophylline
D	ICS + LABA or LAMA	ICS and LAMA or ICS + LABA and LAMA or ICS+LABA and PDE4-inh. or LAMA and LABA or LAMA and PDE4-inh.		Carbocysteine SABA and/or SAMA Theophylline



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Stable COPD: Pharmacologic Therapy

FIRST CHOICE

				Exacerbations per year	
		C	D		
GOLD 4	ICS + LABA or LAMA	ICS + LABA or LAMA	ICS + LABA or LAMA		
GOLD 3					
		A	B		
GOLD 2	SAMA <i>prn</i> or SABA prn	LABA or LAMA	LABA or LAMA		
GOLD 1					
mMRC 0-1 CAT < 10		mMRC ≥ 2 CAT ≥ 10			



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Manage Stable COPD: Pharmacologic Therapy

SECOND CHOICE

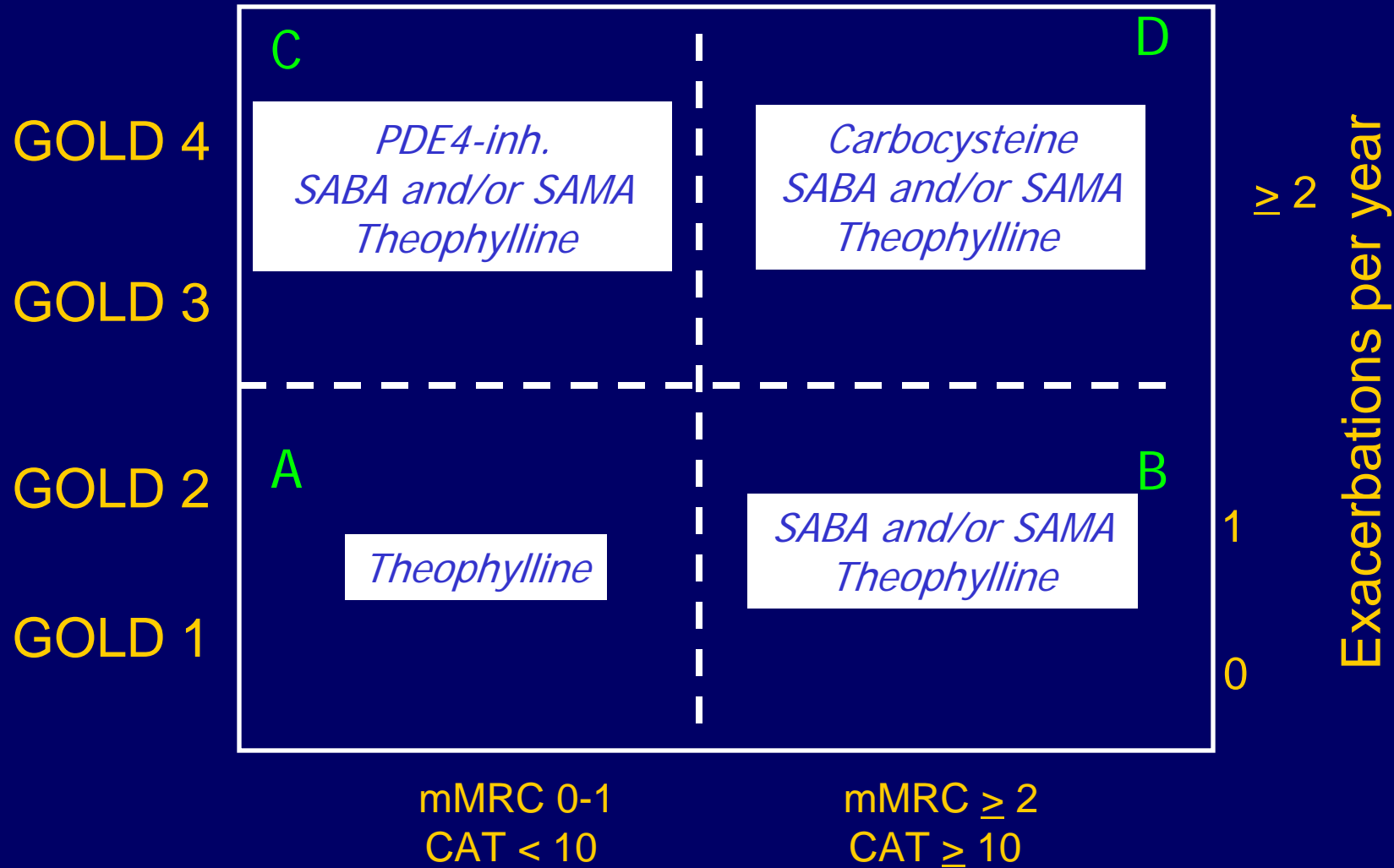
	C		D	
GOLD 4	LAMA and LABA		ICS and LAMA <i>or</i> ICS + LABA and LAMA <i>or</i> ICS + LABA and PDE4-inh <i>or</i> LAMA and LABA <i>or</i> LAMA and PDE4-inh.	≥ 2
GOLD 3				
	A		B	
GOLD 2	LAMA <i>or</i> LABA <i>or</i> SABA and SAMA		LAMA and LABA	1
GOLD 1				0
	mMRC 0-1 CAT < 10		mMRC ≥ 2 CAT ≥ 10	
	Exacerbations per year			



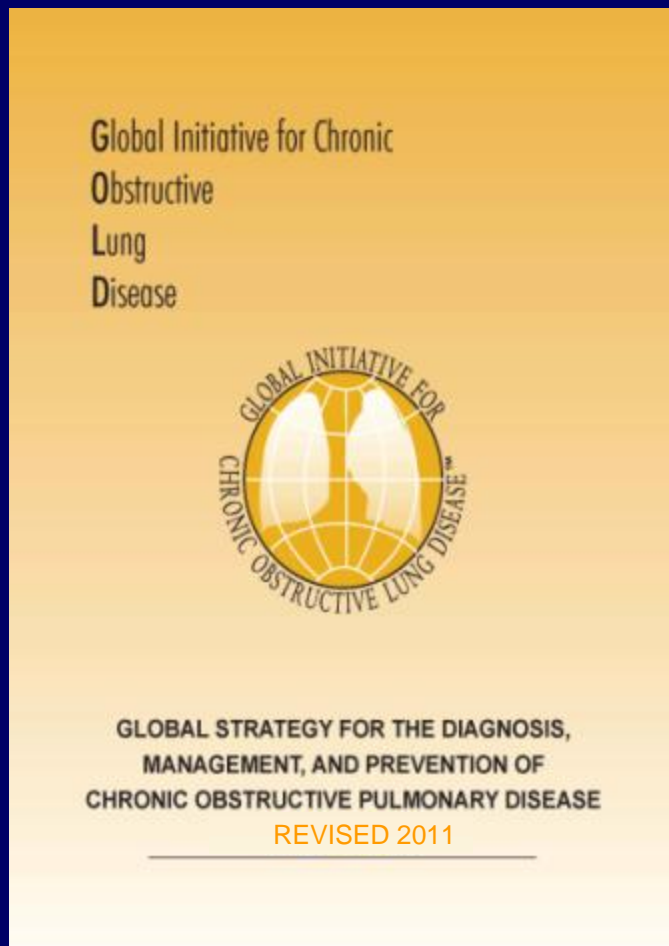
Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Stable COPD: Pharmacologic Therapy

ALTERNATIVE CHOICES



Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Chapters



- n Definition and Overview
- n Diagnosis and Assessment
- n Therapeutic Options
- n Manage Stable COPD
- n Manage Exacerbations
- n Manage Comorbidities



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Exacerbations

An exacerbation of COPD is:

"an acute event characterized by a worsening of the patient's respiratory symptoms that is beyond normal day-to-day variations and leads to a change in medication."



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Exacerbations: Key Points

- The most common causes of COPD exacerbations are viral upper respiratory tract infections and infection of the tracheobronchial tree.
- Diagnosis relies exclusively on the clinical presentation of the patient complaining of an acute change of symptoms that is beyond normal day-to-day variation.
- The goal of treatment is to minimize the impact of the current exacerbation and to prevent the development of subsequent exacerbations.



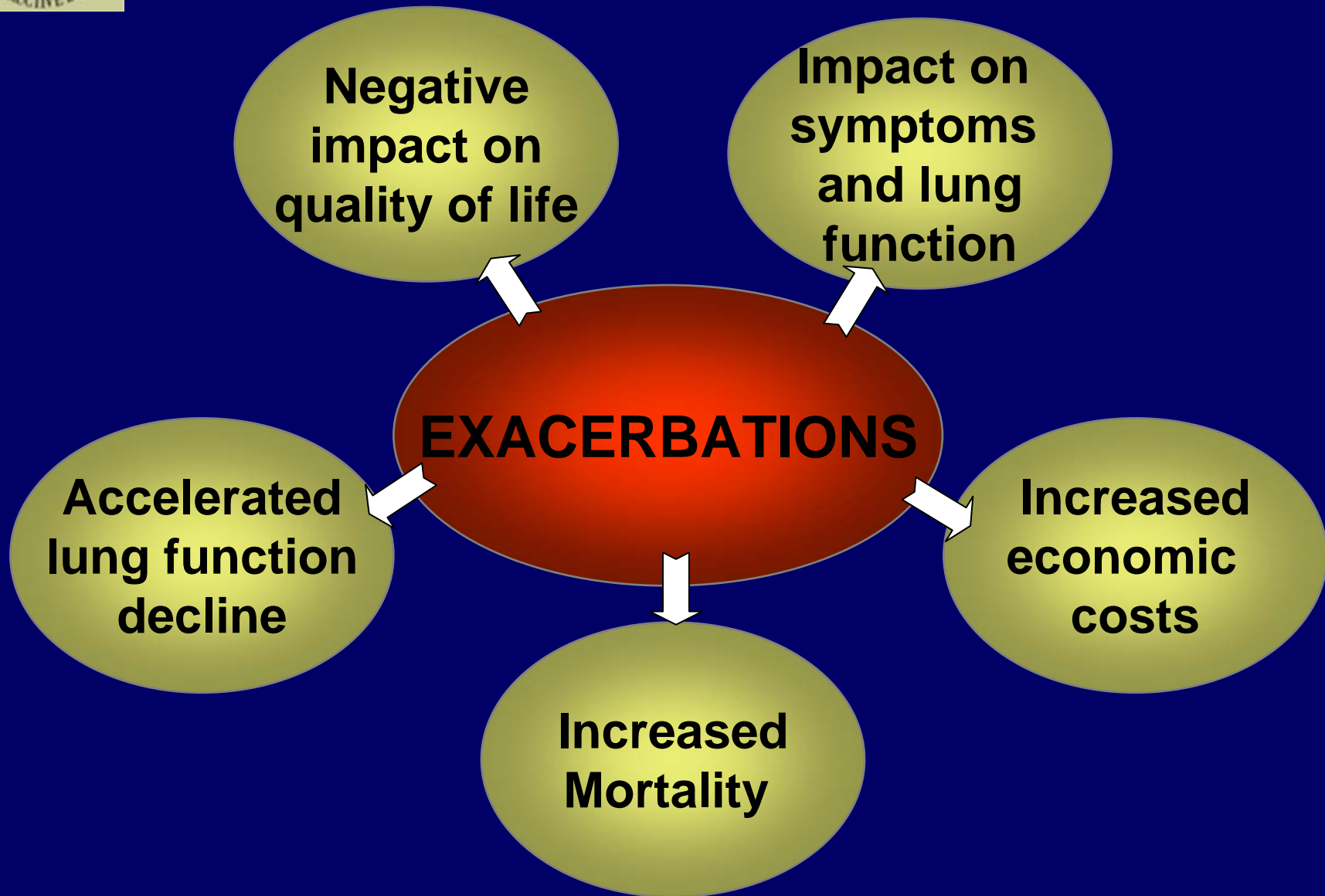
Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Exacerbations: Key Points

- Short-acting inhaled beta₂-agonists with or without short-acting anticholinergics are usually the preferred bronchodilators for treatment of an exacerbation.
- Systemic corticosteroids and antibiotics can shorten recovery time, improve lung function (FEV₁) and arterial hypoxemia (PaO₂), and reduce the risk of early relapse, treatment failure, and length of hospital stay.
- COPD exacerbations can often be prevented.



Consequences Of COPD Exacerbations





Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Exacerbations: Assessments

Arterial blood gas measurements (in hospital): $\text{PaO}_2 < 8.0$ kPa with or without $\text{PaCO}_2 > 6.7$ kPa when breathing room air indicates respiratory failure.

Chest radiographs: useful to exclude alternative diagnoses.

ECG: may aid in the diagnosis of coexisting cardiac problems.

Whole blood count: identify polycythemia, anemia or bleeding.

Purulent sputum during an exacerbation: indication to begin empirical antibiotic treatment.

Biochemical tests: detect electrolyte disturbances, diabetes, and poor nutrition.

Spirometric tests: not recommended during an exacerbation.



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Exacerbations: Treatment Options

Oxygen: titrate to improve the patient's hypoxemia with a target saturation of 88-92%.

Bronchodilators: Short-acting inhaled β_2 -agonists with or without short-acting anticholinergics are preferred.

Systemic Corticosteroids: Shorten recovery time, improve lung function (FEV_1) and arterial hypoxemia (PaO_2), and reduce the risk of early relapse, treatment failure, and length of hospital stay. A dose of 30-40 mg prednisolone per day for 10-14 days is recommended.



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Exacerbations: Treatment Options

Antibiotics should be given to patients:

- With three cardinal symptoms: increased dyspnea, increased sputum volume, and increased sputum purulence.
- Who require mechanical ventilation.



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Exacerbations: Treatment Options

Noninvasive ventilation (NIV):

- Improves respiratory acidosis, reduces respiratory rate, severity of dyspnea, complications and length of hospital stay.
- decreases mortality and needs for intubation.

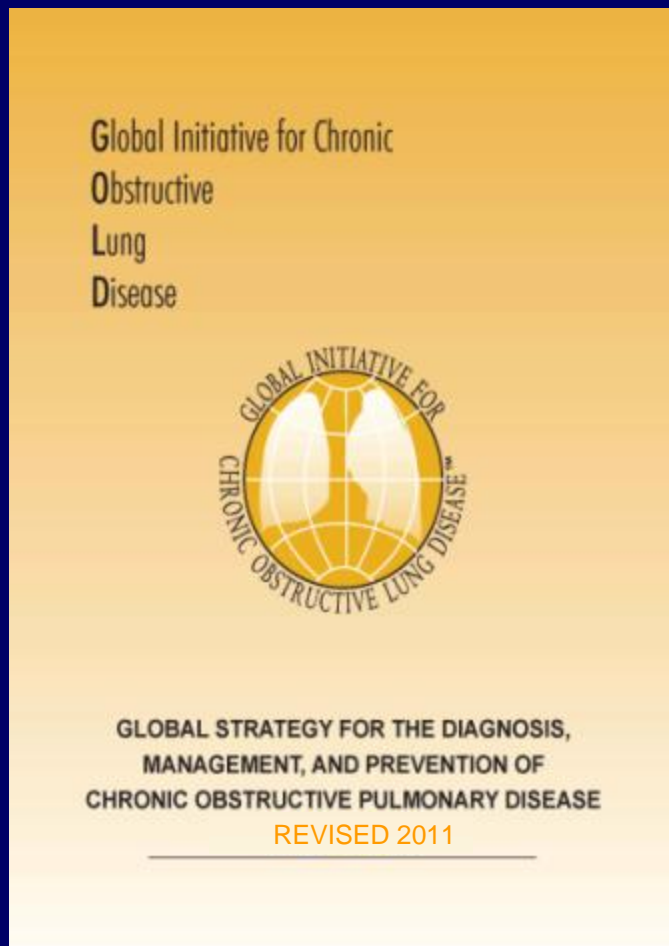


Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Exacerbations: Indications for Hospital Admission

- Marked increase in intensity of symptoms
- Severe underlying COPD
- Onset of new physical signs
- Failure of an exacerbation to respond to initial medical management
- Presence of serious comorbidities
- Frequent exacerbations
- Older age
- Insufficient home support

Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Major Chapters



- n Definition and Overview
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Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Comorbidities

COPD often co-exists with other diseases (co-morbidities) that may have a significant impact on prognosis. In general, presence of co-morbidities should not alter COPD treatment and comorbidities should be treated as if the patient did not have COPD.



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Comorbidities

Cardiovascular disease (including ischemic heart disease, heart failure, atrial fibrillation, and hypertension) is a major comorbidity in COPD and probably both the most frequent and most important disease coexisting with COPD. Cardioselective beta-blockers are **not** contraindicated in COPD.



Global Strategy for Diagnosis, Management and Prevention of COPD

Manage Comorbidities

Osteoporosis and *anxiety/depression*: often under-diagnosed and associated with poor health status and prognosis.

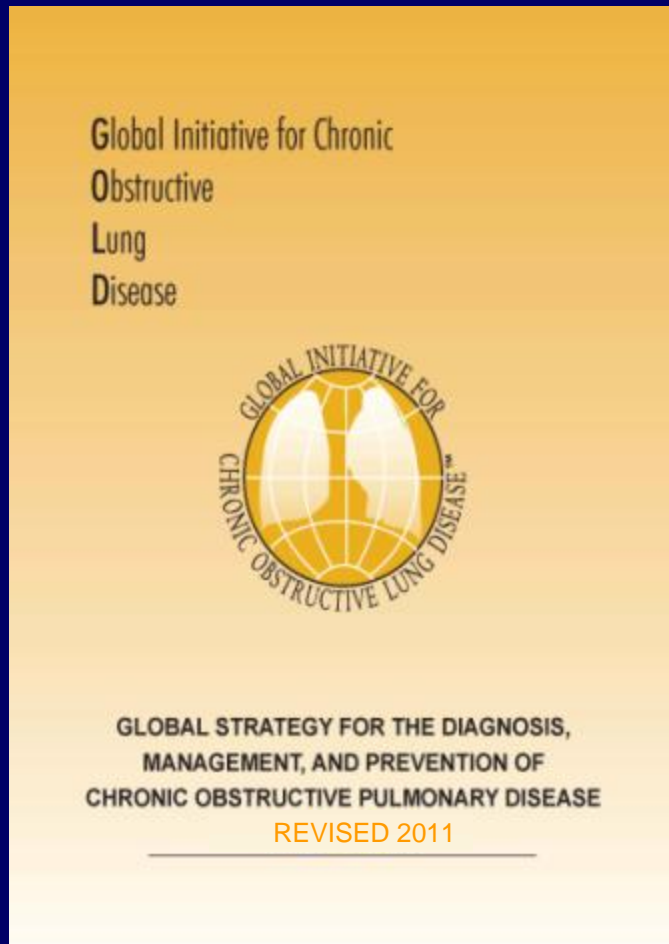
Lung cancer: frequent in patients with COPD; the most frequent cause of death in patients with mild COPD.

Serious infections: respiratory infections are especially frequent.

Metabolic syndrome and manifest *diabetes*: more frequent in COPD and the latter is likely to impact on prognosis.



Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Chapters



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Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Summary

- Prevention of COPD is to a large extent possible and should have high priority
- Spirometry is *required* to make the diagnosis of COPD; the presence of a post-bronchodilator $FEV_1/FVC < 0.70$ confirms the presence of persistent airflow limitation and thus of COPD
- The beneficial effects of pulmonary rehabilitation and physical activity cannot be overstated



Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Summary

- Assessment of COPD requires assessment of symptoms, degree of airflow limitation, risk of exacerbations, and comorbidities
- Combined assessment of symptoms and risk of exacerbations is the basis for non-pharmacologic and pharmacologic management of COPD



Global Strategy for Diagnosis, Management and Prevention of COPD, 2011: Summary

- Treat COPD exacerbations to minimize their impact and to prevent the development of subsequent exacerbations
- Look for comorbidities – and if present treat to the same extent as if the patient did not have COPD

WORLD COPD DAY

November 14, 2012



Raising COPD Awareness Worldwide

Thank you and Good Day!

