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MILWAUKEE • MUSKEGO

Updates in COPD

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Disclosures

- None

Talk Objectives

By the end of this talk you should be able to:

1. Discuss 3 nonpharmacologic treatment strategies for stable COPD patients
2. Understand and apply GOLD staging-based pharmacotherapy principles to COPD patients
3. Discuss treatment of COPD exacerbation
4. Recognize common COPD comorbidities, including the asthma-COPD overlap syndrome

Outline

- Definition
- Diagnosis/ Assessment
- Management of Stable Disease
- Management of Exacerbations
- Comorbidities

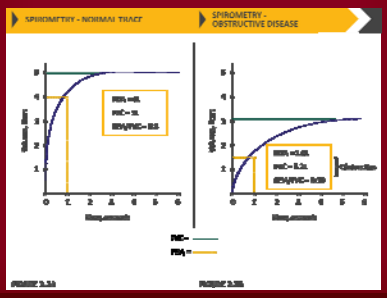
Definition of COPD

- Persistent respiratory symptoms
  - Need to account for sedentary lifestyle
- Chronic airflow limitation
  - Airways disease
  - Parenchymal destruction
- Caused by exposures/ genetics
  - Tobacco (>10 pack years)
  - Biofuel burning-related air pollution
  - Alpha-1 Antitrypsin deficiency (mean age 46 +/- 11, basilar disease, liver disease, FH of COPD/ liver disease)

Diagnosis of COPD

- FEV_1/FVC ratio < 0.70
  - Overdiagnosis in older patients
  - Possible underdiagnosis in younger patients
- Lower limit of normal for FEV_1/FVC ratio
- Re-testing patients with suggestive history and symptoms with FEV_1/FVC ratio 0.7-0.8

Diagnosis of COPD



Diagnosis of COPD

CLASSIFICATION OF AIRFLOW LIMITATION SEVERITY IN COPD (BASED ON POST-BRONCHODILATOR FEV_1)

In patients with FEV1/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

TABLE 2.4

Management of Stable COPD

- Smoking cessation
  - Uncertain role of e-cigarettes
- Vaccination
  - Annual influenza
  - PPSV23 if COPD, age <65 and FEV1 <40% or sig comorbidities
  - PCV13 and PPSV 23 for all patients ≥65
- Pharmacotherapy based on symptom burden and exacerbation history/risk:

Assessing COPD Symptom Burden

CAT™ ASSESSMENT

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.

	0	1	2	3	4	5	
	0	1	2	3	4	5	
	0	1	2	3	4	5	
	0	1	2	3	4	5	
	0	1	2	3	4	5	
	0	1	2	3	4	5	
	0	1	2	3	4	5	
	0	1	2	3	4	5	

Assessing COPD Symptom Burden

MODIFIED MRC DYSPNEA SCALE*

PLEASE TICK IN THE BOX THAT APPLIES TO YOU | ONE BOX ONLY | Grades 0 - 4

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 at my own pace on the level.	☐
mMRC Grade 3:	I stop for breath after walking about 100 metres 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.	☐

* Fletcher CM. BMJ 1959; 2: 1662.
TABLE 2.5

Pharmacotherapy of COPD

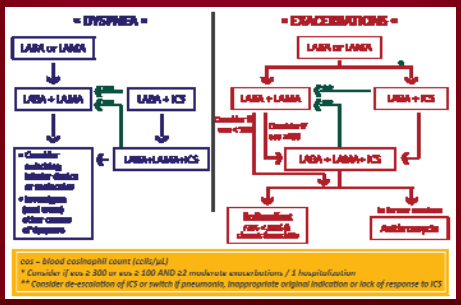
INITIAL PHARMACOLOGICAL TREATMENT

≥2 moderate exacerbations or ≥1 leading to hospitalization	Group C: LAMA	Group D: LAMA or LAMA + LABA* or ICS + LABA**
0 or 1 moderate exacerbation (not leading to hospital admission)	Group A: A Bronchodilator	Group B: A Long Acting Bronchodilator (LABA or LAMA)
	mMRC 0-1 (CAT < 10)	mMRC ≥ 2 (CAT ≥ 10)

*Consider if highly symptomatic (e.g. CAT > 20)
**If available & affordable

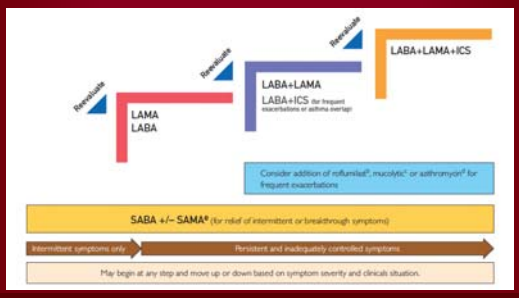
FIGURE 4.1

Pharmacotherapy of COPD



GOLD 2019.

Pharmacotherapy of COPD



Mirza S et al. Mayo Clin Proc 2018.

Pharmacotherapy of COPD

- Roflumilast
  - PDE4 inhibitor
  - Consider in patients with FEV1<50%, chronic bronchitis, frequent exacerbations
- Macrolides[1]
  - Azithromycin 250-500mg MWF for 3-12 months
  - Former smokers (not active) w frequent exacerbations
  - Cardiac risk, ototoxicity, and resistance are considerations
- Mucolytics (guaifenesin, N-acetylcysteine)
  - Poor quality data to support regular use but possible individualized role in patients with sig sputum production and frequent exacerbations

1- Herath SC et al. Cochrane 2018.

Management of Stable COPD

- Education
  - COPD Action Plan
  - Advanced directive/ Palliative strategies (GOLD C, D)
- Pulmonary rehabilitation/ Regular exercise
  - 60-80% max effort (BORG scale 4-6)
  - Combination interval training with strength training
  - Increased activity by as little as 600 steps/day[1]

1- Demeyer H et al. PLoS One 2016.

Management of Stable COPD

Oxygen Therapy:

- $PaO_2 \leq 55$mHg or $SaO_2 \leq 88\%$ at rest
- PaO_2 55-60 mmHg or $SaO_2 = 88\%$ at rest IF also w pHTN, cor pulmonale, erythrocytosis
- Goal $SaO_2 \geq 90\%$
- UNCERTAIN benefit in patients with only exertional desaturation (LTOT trial)[1] and nocturnal desaturation (INOX trial)
  - Not included in GOLD recommendations
  - Expert consensus suggests individualized approach

1- Albert RK et al. NEJM 2016.

Management of Stable COPD

- Surgical considerations
  - Bullectomy/ Lung volume reduction → refer
  - Valves/ Coils → select pts, no high-quality data yet
  - Transplantation → refer
- Noninvasive ventilation
  - Patients with OSA overlap syndrome
  - Patients with significant hypercapnia (awake $PaCO_2 \geq 52$ mmHg) AND nocturnal $SaO_2 \leq 88\%$ for ≥ 5 cumulative min
  - Patients with hypercapnia (awake $PaCO_2 > 53$ mmHg) following hospital admission for COPD exacerbation[1]

1- Murphy PB et al. JAMA 2017.

COPD Exacerbation Management

- Rule out comorbidities: ACS, CHF, Pneumonia, *Pulmonary embolism* ←16% prevalence in COPD exacerbation![1]
- Utilize short-acting bronchodilators (though no RCT evidence)
- Systemic steroids- no more than 40 mg for no more than 5-7 days without tapering[2]
- Antibiotics *when indicated,* for 5-7 days[3]
  - Increased sputum purulence
  - Need for noninvasive or invasive mechanical ventilation
  - Procalcitonin guidance?

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1- Aleva FE et al. Chest 2017.
2- Leuppi JD et al. JAMA 2013.
3- Vollenweider DJ et al. Cochrane 2012.

COPD Exacerbation Management

- Supplemental oxygen to achieve saturation 88-92%, avoid over-oxygenation
- NIV for hospitalized patients w/ increased work of breathing and/or worsened hypercarbia ($PaCO_2$ >45 mmHg AND pH ≤ 7.35
- Caution *against* overly pessimistic attitude toward intubation of COPD patients → better ICU survival than other causes of resp failure
- Close followup and rehabilitation

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1- Aleva FE et al. Chest 2017.
2- Leuppi JD et al. JAMA 2013.

COPD Comorbidities

- Cardiovascular disease
  - CHF
  - Ischemic disease
  - Arrythmia
  - PVD
  - HTN
- Osteoporosis
- Anxiety/ depression
- GERD
- Lung cancer
- Bronchiectasis
- Pulmonary hypertension
- OSA
- Nontuberculous mycobacterial infection

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Asthma-COPD Overlap

- Up to 1/3 COPD patients may have asthma features
- Definition still murky:
  - FEV1 bronchodilator response on PFT >200mL / 12%
  - Clinical asthma history
  - Blood eosinophilia ≥ 300 cells/μL
- Worse outcomes than patients with either disease alone

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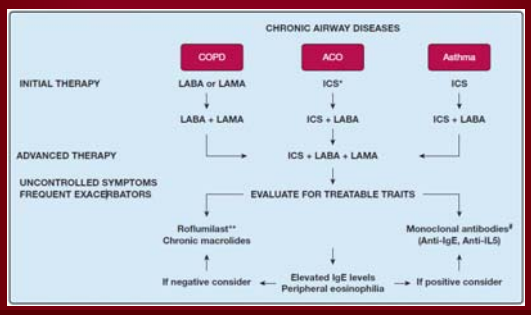
Maselli DJ et al. Chest 2019.

Asthma-COPD Overlap



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Maselli DJ et al. Chest 2019.

Talk Summary

- Nonpharmacologic treatment for stable COPD
  - Smoking cessation
  - Vaccination
  - Exercise
  - O_2 for resting hypoxemia
  - NIV for OSA-COPD overall or chronic hypercapnia
  - Education- Action Plan, End-of-life
- Pharmacotherapy for stable COPD- based on sx burden/ exacerbation risk
  - Low risk/ fex sx → SAMA or SABA or LAMA or LABA
  - Low risk/ more sx → LAMA or LABA
  - High risk/ few sx → LAMA
  - High risk/ more sx → LAMA, LAMA + LABA, or LABA + ICS

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Talk Summary

- Treatment of COPD exacerbation
  - Recognize and eval for common comorbidities (eg PE)
  - SABA +/- SAMA
  - Prednisone no more than 40 mg for no more than 5-7d
  - Short course ABX in specific circumstances
  - NIV if significant hypercapnia
- Common COPD comorbidities
  - Bronchiectasis
  - OSA
  - Pulmonary HTN
  - Nontuberculous mycobacterial disease
  - Asthma overlap (1/3 of COPD pts)

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