


Breathing Beyond the Barriers: The Latest 2024 GOLD Report


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0

Disclosure


- Dr. Miceli has no financial relationships with ineligible companies.



1

Objectives


- Recognize new definitions and parameters surrounding COPD
- Explain updates coinciding with screening and diagnosis for COPD
- Differentiate inhaler selection for COPD management corresponding to disease severity and patient specific factors
- Discuss non-pharmacotherapy strategies for COPD management
- Apply the 2024 GOLD standards to patient cases



2


Levels of Evidence

| Evidence Category | Sources of Evidence | Definition |
|-------------------|--|---|
| A | Randomized controlled trials (RCTs) Rich body of high quality evidence without any significant limitations or bias. | Evidence is from endpoints of well-designed RCTs that provide consistent findings in the population for which the recommendation is made without any important limitations. Requires high quality evidence from ≥ 2 clinical trials involving a substantial number of subjects, or a single high quality RCT involving substantial numbers of patients without any bias. |
| B | Randomized controlled trials (RCTs) with important limitations. Limited body of evidence | Evidence is from RCTs that include only a limited number of patients, post hoc or subgroup analyses of RCTs or meta-analysis of RCTs. Also pertains when few RCTs exist, or important limitations are evident (methodological flaws, small numbers, short duration, undertakes in a population that differs from the target population of the recommendation, or the results are somewhat inconsistent). |
| C | Non-randomized trials Observational studies | Evidence is from outcomes of uncontrolled or non-randomized trials or from observational studies. |
| D | Panel consensus judgment | Provision of guidance is deemed valuable but clinical literature addressing the subject is insufficient. Panel consensus is based on clinical experience or knowledge that does not meet the above stated criteria. |



3

Background



4


Current Understanding

Chronic Obstructive Pulmonary Disease (COPD) ¹:

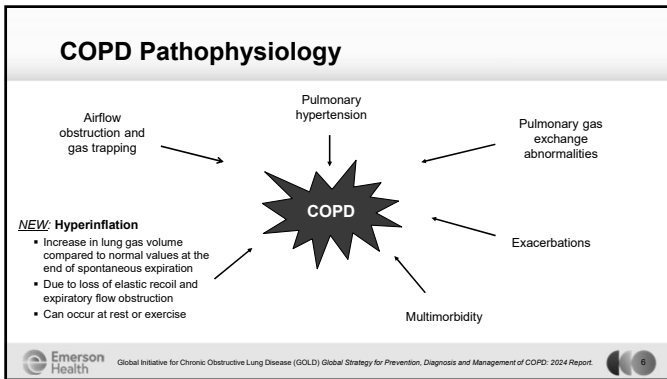
- Heterogeneous lung condition
- Symptoms:** dyspnea, chronic cough, sputum production, tightness/wheezing and/or exacerbations
- Abnormalities in airways (bronchitis, bronchiolitis) and/or alveoli (emphysema)
- Characterized by persistent, often progressive, airflow obstruction

- Risk factors include tobacco smoke, inhaling toxic particles or gases and mutations genetic makeup leading to alpha-1-trypsin deficiency. ¹
- COPD is one of the top three causes of deaths worldwide. ²
- Major cause of chronic morbidity and mortality. ²

1. Global Initiative for Chronic Obstructive Lung Disease (GOLD) Global Strategy for Prevention, Diagnosis and Management of COPD: 2024 Report. Hagan DM, Cull BK, Cerveri G, et al. The GOLD Summit on chronic obstructive pulmonary disease in low- and middle-income countries. *Int J Tuberc Lung Dis*. 2019;23(11):1131-1141. doi:10.5588/ijtld.19.0397



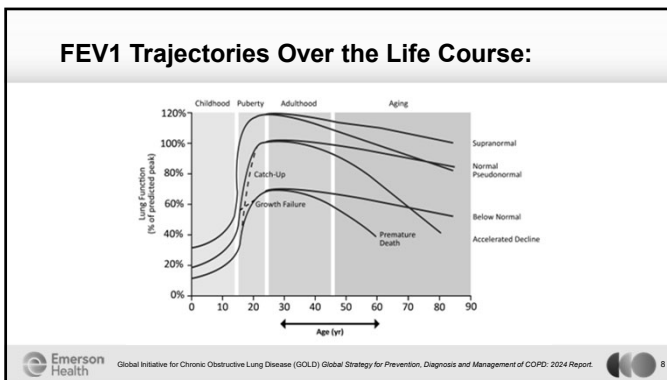
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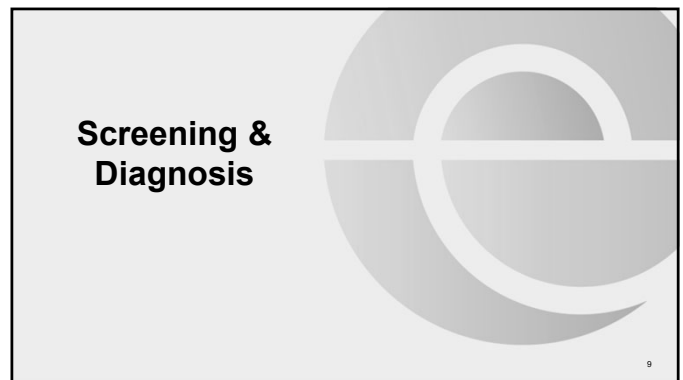
6

- ### Reducing Risk Factor Exposure
- Smoking cessation interventions should be actively pursued in all people with COPD (**Evidence A**)
 - Efficient ventilation, non-polluting cooking stoves and similar interventions should be recommended (**Evidence B**)
 - Clinicians should advise patients to avoid continued exposures to potential irritants, if possible (**Evidence D**)
- Emerson Health | Global Initiative for Chronic Obstructive Lung Disease (GOLD) Global Strategy for Prevention, Diagnosis and Management of COPD: 2024 Report

7



8



9

Differential Diagnoses

| Condition: | Suggestive Features: |
|--|---|
| <ul style="list-style-type: none"> • Asthma • Congestive heart failure • Tuberculosis • Bronchiectasis | <ul style="list-style-type: none"> • Younger age, symptoms & airflow obstruction vary, allergies, rhinitis +/- eczema also present • Chest X-ray shows dilated heart, pulmonary edema & pulmonary tests show volume restriction • Infiltrate on chest x-ray, high local tuberculosis prevalence, onset at all ages, microbiological confirmation • Commonly associated with bacterial infection, bronchial dilation on chest x-ray/HRCT, large volumes of purulent sputum |

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10

- ### Screening for COPD
- Consider risk factors who experience symptoms of COPD
 - **NEW SECTION:** Screening COPD in targeted populations
 - GOLD recommends leveraging imaging from lung cancer screening & incidental lung findings for COPD screening
 - Annual low dose chest computed tomography (LDCT) is recommended by United States Preventative Service Task Force (USPSTF) for individuals 50 to 80 years of age with ≥ 20 pack-year smoking history
 - Patients evaluated for COPD symptoms at lung cancer screening have ³⁻⁵:
 - Airflow obstruction in 34 to 57% of individuals
 - Emphysema in 68 to 73% of individuals
 - No prior diagnosis in 67% of individuals
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11

Role of Spirometry in COPD

FEV₁: forced expiratory volume in one second

FVC: forced vital capacity

Post-bronchodilator FEV₁/FVC < 0.7 confirms presence of non-fully reversible airflow obstruction

In COPD patients (FEV₁/FVC < 0.7):

| | | |
|----------------|-------------|--|
| GOLD 1: | Mild | FEV ₁ ≥ 80% predicted |
| GOLD 2: | Moderate | 50% ≤ FEV ₁ < 80% predicted |
| GOLD 3: | Severe | 30% ≤ FEV ₁ < 50% predicted |
| GOLD 4: | Very Severe | FEV ₁ < 30% predicted |

Prior to 2024 update:

- Using pre-bronchodilator to assessing degree of reversibility of airflow obstruction to inform therapeutic decisions is not recommended.

GOLD 2024 update:

- Pre-bronchodilator spirometry can be useful as an initial test to investigate whether symptomatic patients have airflow obstruction.

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12

Preserved Ratio Impaired Spirometry (PRISm)

- Spirometric pattern characterized by FEV₁/FVC ≥ 0.70 and post-BD FEV₁ < 80% predicted
- Unclear pathogenesis, possible mechanisms include:
 - Cardiac disease (i.e. lung edema)
 - Initial stages of obstructive or restrictive lung disease
 - Gas trapping
 - Incomplete inspiration or expiration

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13

Scoring Tools: Modified MRC Dyspnea Scale

mMRC:

- Measures breathlessness
- Predicts future mortality risk

| mMRC Grade 0 | mMRC Grade 1 | mMRC Grade 2 | mMRC Grade 3 | mMRC Grade 4 |
|---|--|---|--|---|
| I only get breathless with strenuous exercise | I get short of breath when hurrying on the level or walking up a slight hill | 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 | I stop for breath after walking about 100 meters or after a few minutes on the level | I am too breathless to leave the house or I am breathless when dressing or undressing |

mMRC: modified Medical Research Council

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14

Scoring Tools: CAT Assessment

CAT Assessment:

- 8 item questionnaire, ranging from 0 to 40
- Evaluates health status

| | | | |
|---|-------------|--|-------|
| EXAMPLE: I am very happy | 0 1 2 3 4 5 | I am very sad | Score |
| I never cough | 0 1 2 3 4 5 | I cough all the time | |
| I have no phlegm (mucus) in my chest at all | 0 1 2 3 4 5 | My chest is completely full of phlegm (mucus) | |
| My chest does not feel tight at all | 0 1 2 3 4 5 | My chest feels very tight | |
| When I walk up a hill or one flight of stairs I am not breathless | 0 1 2 3 4 5 | When I walk up a hill or one flight of stairs I am very breathless | |
| I am not limited doing any activities at home | 0 1 2 3 4 5 | I am very limited doing activities at home | |
| I am confident leaving my home despite my lung condition | 0 1 2 3 4 5 | I am not at all confident leaving my home because of my lung condition | |
| I sleep soundly | 0 1 2 3 4 5 | I don't sleep soundly because of my lung condition | |
| I have lots of energy | 0 1 2 3 4 5 | I have no energy at all | |

CAT: COPD Assessment Tool

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15

All Together

| | | | | |
|---|----------------|--------------------------------------|--|--|
| Post-bronchodilator FEV ₁ /FVC < 0.7 | GRADE | FEV₁ (% predicted) | EXACERBATION HISTORY (PER YEAR) ≥ 2 moderate exacerbations or ≥ 1 leading to hospitalization 0 or 1 moderate exacerbations (not leading to hospitalization) | <div style="border: 1px solid black; padding: 5px; width: 40px; margin: 0 auto;">E</div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; padding: 5px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">A</div> <div style="border: 1px solid black; padding: 5px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">B</div> </div> |
| | GOLD 1: | ≥ 80 | | |
| | GOLD 2: | 50-79 | | |
| | GOLD 3: | 30-49 | | |
| GOLD 4: | < 30 | | | |

mMRC 0-1 CAT < 10 mMRC ≥ 2 CAT ≥ 10

SYMPTOMS

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16

Patient Case 1

- CC:** Dyspnea
- HPI:** BB is a 76 year old male with a chief complaint of dyspnea who has a 20 year pack history
- PMH:** Hypertension, BPH & COPD
- Allergies:** NKDA
- Home Medications:** Lisinopril 20mg PO daily, tamsulosin 0.4mg PO daily, albuterol 90mcg 2 puffs INH q4H prn SOB, Anoro Ellipta 1 puff INH daily

Which of the following are screening tools that can be used to assess COPD symptom severity? (select ALL that apply)

- The COPD Assessment Test (CAT)
- The WHO functional classification
- The Modified British Medical Research Council (mMRC) dyspnea scale
- The GOLD assessment of airflow limitation
- Peak flow readings for the past 2 weeks

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17

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18

Pharmacological Treatment

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19

Initial Treatment

≥ 2 moderate exacerbations or ≥ 1 leading to hospitalization

GROUP E

LABA + LAMA*

consider LABA+LAMA+ICS if blood eos ≥ 300*

Eos: blood eosinophil count in cells per microliter

0 or 1 moderate exacerbations (not leading to hospital admission)

GROUP A

A bronchodilator

mMRC 0-1, CAT < 10

GROUP B

LABA + LAMA*

mMRC ≥ 2, CAT ≥ 10

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20

Maintenance Medications in COPD

| Generic Drug Name | DELIVERY OPTIONS | | | | Duration of Action |
|--|------------------|-----------|--------------------------------------|-----------|------------------------------------|
| | Inhaler Type | Nebulizer | Oral | Injection | |
| Short-acting (SAMA) | | | | | |
| Fenoterol | MDI | ✓ | pill, syrup | | 4-6 hours |
| Levalbuterol | MDI | ✓ | | | 6-8 hours |
| Salbutamol (albuterol) | MDI & DPI | ✓ | pill, syrup, extended release tablet | ✓ | 4-6 hours (12 hours inst. release) |
| Terbutaline | DPI | | pill | ✓ | 4-6 hours |
| Long-acting (LABA) | | | | | |
| Adformoterol | | ✓ | | | 12 hours |
| Formoterol | DPI | ✓ | | | 12 hours |
| Indacaterol | DPI | | | | 24 hours |
| Oxindolol | SMI | | | | 24 hours |
| Salmeterol | MDI & DPI | | | | 12 hours |
| Long-acting (LAMA) | | | | | |
| ginsengium bromide | MDI | ✓ | | | 6-8 hours |
| Oxtripolium bromide | MDI | | | | 7-9 hours |
| Long-acting (LABA) + Long-acting (LAMA) | | | | | |
| Acidinium bromide | DPI | | | | MDI 12 hours |
| Glycopyrronium bromide | DPI | | solution | ✓ | 12-24 hours |
| Tiotropium | DPI, SMI, MDI | | | | 24 hours |
| Umeclidinium | DPI | | | | 24 hours |
| Glycopyrronium | DPI | ✓ | | | 12 hours |
| Roxatadine | | ✓ | | | 24 hours |

DPI: Dry powder inhaler
MDI: Metered dose inhaler

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21

Maintenance Medications in COPD

| Generic Drug Name | DELIVERY OPTIONS | | | | Duration of Action |
|---|------------------|-----------|------|-----------|--------------------------|
| | Inhaler Type | Nebulizer | Oral | Injection | |
| Combination of Long-acting Beta₂-agonist Plus Anticholinergic in One Device (LABA+LAMA) | | | | | |
| Fenoterol/Salmeterol | MDI | ✓ | | | 6-8 hours |
| Formoterol/Salmeterol | MDI, MDI | ✓ | | | 6-8 hours |
| Combination of Long-acting Beta₂-agonist Plus Methylxanthine in One Device (LABA+AMA) | | | | | |
| Formoterol/Salmeterol | DPI | | | | 12 hours |
| Formoterol/Glycopyrronium | MDI | | | | 12 hours |
| Indacaterol/Glycopyrronium | DPI | | | | 12-24 hours |
| Umeclidinium/Salmeterol | DPI | | | | 24 hours |
| Oxindolol/Salmeterol | SMI | | | | 24 hours |
| Beta₂-agonists | | | | | |
| Albuterol | | ✓ | | | Variable, up to 24 hours |
| Terbutaline | DPI | | ✓ | | Variable, up to 24 hours |
| Combination of Long-acting Beta₂-agonist Plus Corticosteroid in One Device (LABA+ICS) | | | | | |
| Formoterol/Budesonide | MDI, DPI | | | | 12 hours |
| Formoterol/Budacortide | MDI, DPI | | | | 12 hours |
| Formoterol/Benacortolone | MDI | | | | 12 hours |
| Salmeterol/Fluticasone propionate | MDI, DPI | | | | 12 hours |
| Vilanterol/Fluticasone furoate | DPI | | | | 24 hours |
| LABA+LABAMA+ICS | | | | | |
| Fluticasone/Vilanterol | DPI | | | | 24 hours |
| Beclomethasone/Formoterol/Glycopyrronium | MDI, DPI | | | | 12 hours |
| Beclomethasone/Formoterol/Glycopyrronium | MDI | | | | 12 hours |
| LABA+LABAMA+AMA | | | | | |
| Formoterol/Salmeterol | | ✓ | | | 24 hours |
| Methylxanthines | | | | | |
| Roxatadine | | | ✓ | | 12 hours |
| Carbocysteine† | | | ✓ | | |
| Is any/anyone† | | | ✓ | | |

DPI: Dry powder inhaler
MDI: Metered dose inhaler

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22

Adverse Drug Events

| Beta-2 Agonists | Anticholinergics | Inhaled Corticosteroids | Methylxanthines | PDE-4 Inhibitor | Mucolytics |
|--|--|---|--|---|--|
| <ul style="list-style-type: none"> Tremor Tachycardia Palpitations Nervousness | <ul style="list-style-type: none"> Dry mouth Upper respiratory tract infections Cough Bitter taste | <ul style="list-style-type: none"> Oral candidiasis Cough Headache Dystonia | <ul style="list-style-type: none"> GI upset Insomnia Tachycardia Arrhythmias | <ul style="list-style-type: none"> Diarrhea Weight loss Nausea Insomnia | <ul style="list-style-type: none"> Hypersensitivity reaction GI upset Edema |

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PDE-4: Phosphodiesterase-4
Low-Drugs: UpToDate Lexicomp, UpToDate, Inc. <https://online.lexi.com>, Accessed April 28, 2024

23

Explorations of Biologic Therapy

BOREAS study ⁶

- Intervention:** Receive dupilumab (300 mg) or placebo subcutaneously once every 2 weeks
- Population:** COPD patients with blood eosinophil count of at least 300mcg/L and an elevated exacerbation risk despite the use of standard triple therapy
- Outcome:** Dupilumab group has fewer exacerbations, better lung function & quality of life and less severe respiratory symptoms compared to placebo
- GOLD 2024 acknowledged the results pending confirmation studies

Emerson Health | Bhatt SP, Rabe KF, Hanania NA, et al. Dupilumab for COPD with Type 2 Inflammation Indicated by Eosinophil Counts. *N Engl J Med.* 2023;389(3):205-214. doi:10.1056/NEJMoa2309591

24

Selecting an Inhaled Regimen

- Individualized, shared decision-making approach
- DPI are appropriate for those who can take **forceful** and **deep** inhalations
- MDI + SMi's are appropriate for those who can take **slow** and **deep** inhalations
 - May consider adding spacer for better adherence
- Smart inhalers can assess for issues with adherence/persistence or inhalation technique
- Reminder:** Types of inhalers can have varying carbon footprints
 - Driven by the existence of propellant gas, type of materials, manufacturing & transport processes
 - "Green devices" are those equipped with dry powder or soft mist

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25

Optimizing Bronchodilators

- Inhaled bronchodilators are recommended over oral bronchodilators (**Evidence A**)
- Scheduled and as needed SABA and SAMA improves FEV1 and symptoms (**Evidence A**)
- LABAs and LAMAs are preferred over short-acting agents except for patients with only occasional dyspnea (**Evidence A**) and for immediate relief of symptoms in patients already on long-acting bronchodilators for maintenance therapy
- LAMAs have greater effects on exacerbation reduction compared with LABAs (**Evidence A**) and decrease hospitalization (**Evidence B**)

Emerson Health | SAMA: Short acting muscarinic antagonist; SABA: Short acting beta agonist; LABA: Long acting beta agonist; LAMA: Long acting muscarinic antagonist

26

ICS Considerations

- Regular treatment with ICS increases the incidence of pneumonia (**Evidence A**)
- Treatment should always include ICS in patients with asthma features (**Evidence A**)
- LABA + LAMA + ICS (triple therapy) has been shown to be superior to LABA + ICS and is the preferred choice in COPD patients (**Evidence A**)
- Compared to LABA + ICS, LABA + LAMA or LAMA monotherapy, triple therapy improves lung function, symptoms and health status and reduces exacerbations (**Evidence A**)

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27

ICS Considerations

- IMPACT & ETHOS RCT's ⁷⁻⁸ :
 - Intervention:** relative risk reduction in annual rate of moderate or severe COPD exacerbations during treatment of single, triple therapy inhaler therapy **compared to** single, dual therapy of a long acting bronchodilator (LABD)
 - Population:** patients with history of frequent and/or severe exacerbations
 - IMPACT:** HR 0.72 (95% CI: 0.53, 0.99)
 - ETHOS:** HR 0.51 (95% CI: 0.33, 0.80)
 - Outcome:** single, triple therapy inhalers resulted in lower rates of COPD exacerbations therapies improved mortality over dual LABD

Emerson Health | Lipson DA, Barnhart F, Brealey N, et al. Once-Daily Single-Inhaler Triple versus Dual Therapy in Patients with COPD. *N Engl J Med.* 2018;378(18):1671-1680. doi:10.1056/NEJMoa1713901; Rabe KF, Martinez FJ, Ferguson GT, et al. Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate-to-Very-Severe COPD. *N Engl J Med.* 2009;361(11):981-991. doi:10.1056/NEJMoa0916026

28

Inhaled Corticosteroids (ICS)

| Strongly Favors Use | Favors Use | Against Use |
|---|--|--|
| <ul style="list-style-type: none"> History of hospitalization(s) for COPD exacerbations ≥ 2 moderate exacerbations per year Blood eosinophils ≥ 300 cells/mcgL Hx or concomitant asthma | <ul style="list-style-type: none"> 1 moderate COPD exacerbation per year Blood eosinophils 100 < 300 cells/mcgL | <ul style="list-style-type: none"> Repeated pneumonia events Blood eosinophils < 100 cells/mcgL History of mycobacterial infection |

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29

Considerations For Adjuvant Therapies

- Oral glucocorticoids
 - Long term use has numerous side effects (Evidence A) with no evidence of benefits (Evidence C)
- Phosphodiesterase-4 inhibitors
 - For patients with chronic bronchitis, severe to very severe COPD and a history of exacerbations, Roflumilast has been shown to improve lung function and reduces moderate and severe exacerbations (Evidence A)
- Methylxanthines are not recommended due to increased side effect profiles (Evidence B)
- Antioxidant mucolytics may reduce the risk of exacerbations in select patients (Evidence B)

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30

Considerations For Adjuvant Therapies

- Antibiotics
 - Azithromycin and erythromycin therapy for one year in patients prone to exacerbations reduces the risk for exacerbations compared to usual care (Evidence A)
 - Treatment with azithromycin is associated with an increased incidence of bacterial resistance (Evidence A) and hearing test impairments (Evidence B)
- Consider when patient meets 2 or more of the following:
 - Increase dyspnea
 - Increase sputum volume/viscosity
 - Increase sputum purulence

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31

Initial Exacerbation Management

Identify other potential causes for related symptoms:
-Pneumonia, heart failure and pulmonary embolism

Assess symptoms, severity of dyspnea and presence of cough
Assess for signs of tachypnea, tachycardia, sputum volume & color and respiratory distress

Evaluate severity by using other additional indicators:
-Pulse oximetry, laboratory assessments, CRP, arterial blood gas

Establish the cause of the event:
-Viral, bacterial, environmental, other

| Severity | Variable thresholds to determine severity |
|--|---|
| Mild (default) | - Dyspnea VAS < 5 - RR < 24 breaths/min - HR < 95 bpm - Resting SaO ₂ ≥ 92% breathing ambient air (or patient's usual oxygen prescription) AND change < 3% (when known) - CRP < 10 mg/L (if obtained) |
| Moderate (meets at least three of five*) | - Dyspnea VAS ≥ 5 - RR ≥ 24 breaths/min - HR ≥ 95 bpm - Resting SaO ₂ < 92% breathing ambient air (or patient's usual oxygen prescription) AND/OR change > 3% (when known) - CRP ≥ 10 mg/L *If obtained, ABG may show hypoxemia (PaO ₂ < 60 mmHg) and/or hypercapnia (PaCO ₂ > 45 mmHg) but no acidosis |
| Severe | - Dyspnea, RR, HR, SaO ₂ and CRP same as moderate - ABG show new onset/worsening hypercapnia and acidosis (PaCO ₂ > 45 mmHg and pH < 7.35) |

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32

Pharmacological Exacerbation Management

Bronchodilators:

- Increase doses/frequency of short acting agents
- Combine short-acting beta-2 agonists with or without anticholinergics (Evidence C)
- Consider use of long-acting bronchodilators when patient becomes stable
- Use spacers or air-driven nebulizers when appropriate

Consider corticosteroids (Evidence A), antibiotics (Evidence B), non-invasive mechanical ventilation (NIV) (Evidence A)

At all times:

- Monitor fluid status
- Consider subcutaneous heparin or low molecular weight heparin for inpatient VTE prophylaxis
- Identify & treat associated conditions

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33

Ongoing Management

Specific Considerations:

- Cost
- Cognition
- Dexterity/coordination
- Spacer appropriateness

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34

Follow-up Treatment

DYSPNEA

LABA or LAMA

LABA + LAMA*

* Consider switching inhaler device or molecules

* Implement or escalate non-pharmacological treatment(s)

* Investigate (and treat) other causes of dyspnea

EXACERBATIONS

LABA or LAMA

LABA + LAMA*

LABA + LAMA + ICS**

Roflumilast
FEV1 < 50% & chronic bronchitis

Azithromycin
Preferentially in former smokers

*Single inhaler therapy may be more convenient & effective than using multiple inhalers

**Consider de-escalation of ICS of pneumonia or other considerable side effects

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35

Patient Case 2

HPI: MM is a 70 year old female who was hospitalized for a moderate COPD exacerbation.
 PMH: COPD, hypothyroidism, hypertension
 Relevant labs: Blood eosinophils 250 cells/mcgL
 Home medications: levothyroxine 75mcg daily, Anoro Ellipta1 puff daily, amlodipine 10mg daily

The hospitalist is preparing for discharge and asks for advice on optimizing her inhaler therapy. Assuming cost is not a factor, which medication regimen would be most appropriate to recommendation at this time?

- A. Tiotropium 2.5mcg 2 puffs once daily
- B. Budesonide/formoterol/glycopyrrolate 140mcg/9mcg/4.8mcg 2 puff twice daily
- C. Fluticasone 44mcg 1 puff twice daily
- D. Umeclidinium 62.5mcg 1 puff daily
- E. Fluticasone furoate/vilanterol 200mcg/25mcg 1 puffs daily

36

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- B. Budesonide/formoterol/glycopyrrolate 140mcg/9mcg/4.8mcg 2 puff twice daily
- C. Fluticasone 44mcg 1 puff twice daily
- D. Umeclidinium 62.5mcg 1 puff daily
- E. Fluticasone furoate/vilanterol 200mcg/25mcg 1 puffs daily

37

Non-Pharmacological Treatment

38

38

Key Components

- Smoking cessation
 - Can add pharmacological strategies
- Vaccinations
- Additional for patient group B & E: pulmonary rehabilitation
- Physical activity
- Education and self-management
- Integrated care programs
- Reducing environmental and household pollution

39

39

Smoking Cessation

Findings & Recommendations from Tobacco Use & Dependence Clinical Practice Guidance Panel:

- Strong dose-response relation between intensity of tobacco dependence counseling and its effectiveness
- Financial incentive programs offered by the state
- Decreases mortality
- Three types of effective counseling techniques:
 1. Practical counseling
 2. Social support from family & friends
 3. Social support outside of treatment

40

Smoking Cessation Strategies

- 5 A's
 - Ask, advice, assess, assist & arrange
- First line pharmacotherapies:
 - NRT
 - Patches, gum, spray
 - Bupropion SR
 - Varenicline
 - Nortriptyline
- NRT vs. e-cigarettes Meta-Analysis ⁹
 - 5 RCT's suggest e-cigarettes are superior to NRT for achieving abstinence from smoking tobacco for 6 months
 - RR 1.43 (95% CI: 1.19–1.72)
 - **Lacking long term data, not possible to recommend e-cigarettes as an intervention for smoking cessation in patients with COPD**

NRT: Nicotine replacement therapy

41

Vaccine Recommendations

Centers for Disease Control Prevention (CDC) recommends:

- Influenza vaccine is recommended for people with COPD (**Evidence B**)
- New respiratory syncytial virus (RSV) vaccine for individuals over 60 years and/or chronic heart or lung disease (**Evidence A**)
- Pneumococcal conjugate vaccine for people with COPD (**Evidence B**):
 - One dose of 20-valent pneumococcal conjugate vaccine (PCV20); **or**
 - One dose of 15-valent pneumococcal conjugate vaccine (PCV15) followed by one dose of 23-valent pneumococcal conjugate vaccine (PCV23)

42

Vaccine Recommendations

Centers for Disease Control Prevention (CDC) recommends:

- World Health Organization (WHO) and CDC recommend SARS-CoV-2
- Tdap (dTdap/dTPa) vaccination to protect against pertussis (whooping cough) for people with COPD that were not vaccinated in adolescence (**Evidence B**)
- Zoster vaccine to protect against shingles for people with COPD over 50 years (**Evidence B**)

43

Other Non-pharmacological Strategies

Pulmonary rehabilitation:

- Indicated in all patients with relevant symptoms and/or a high risk for exacerbation (**Evidence A**)
- Reduced hospitalization among patients with a recent exacerbation (≤ 4 weeks from prior hospitalizations) (**Evidence B**)
- Leads to reduction in symptoms of anxiety and depression (**Evidence A**)

Physical Activity:

- Strong predictor of mortality (**Evidence A**) and should be encouraged to increase physical activity level, although we still do not know how to best ensure the likelihood of success

44

Other Non-pharmacological Strategies

Education & self-management:

- Education is needed to change patients knowledge however there is no evidence that when used alone it will change their behavior (**Evidence C**)
- Self-management intervention with communication with a health care professional improves health status and decreases hospitalizations and emergency department visits (**Evidence B**)

Integrated care programs:

- Integrated care and telehealth have not demonstrated a benefit at this time (**Evidence B**)

45

Patient Case 3

- **HPI:** DK is a 67 year old male hospitalized on 4/30 for an acute exacerbation of his COPD and pneumonia.
- **PMH:** COPD, active tobacco user (pack per day) and GERD
- **Home medications:** Acicidinium (Tudorza Pressair) 1 inhalation BID, Nexium OTC prn
- **Inpatient orders:** Duonebs 3mL via nebulization q4H, Zosyn per pharmacy, Protonix 40mg IV daily

Which of the following interventions will provide the most benefit in slowing the progression of DK's COPD?

- Adding PDE-4 inhibitor, such as Roflumilast, to his home regimen
- Treating the infection in his lungs
- Adding SABA to his home regimen
- Proving pulmonary rehabilitation
- Smoking cessation

46

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47

Patient Case 3 continued

- **HPI:** DK is a 67 year old male hospitalized on 4/30/24 for an acute exacerbation of his COPD and pneumonia.
- **PMH:** COPD, active tobacco user (pack per day) and GERD
- **Home medications:** Acclidinium (Tudorza Pressair) 1 inhalation BID, Nexium OTC prn
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Which vaccines should DK receive before discharge (if no contraindications are present)?

- A. High dose quadrivalent influenza and meningococcal
- B. Hepatitis and meningococcal
- C. PCV20 followed by PCV15
- D. PCV 20 only

48

Patient Case 3 continued

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49

Thank you!

Questions?

50

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51