

COPD

Definition

- heterogeneous lung condition characterized by chronic respiratory symptoms
 - dyspnea, cough, sputum production, and/or exacerbations
- due to abnormalities of the airways (bronchitis, bronchiolitis), and/or alveoli (emphysema)
- that cause persistent, often progressive, airflow obstruction

Causes

- Smoking
- Biomass
 - pollution, household gasses
- Occupational exposure
- Abnormal lung development
- Accelerated lung aging
- Gene mutations (alpha 1 antitrypsin deficiency)

Symptoms:

- Dyspnea
- Activity limitations
- Cough +/- sputum
- Exacerbations (URIs, smoke, weather changes, allergies)
- URIs last longer
- SOB

Terms:

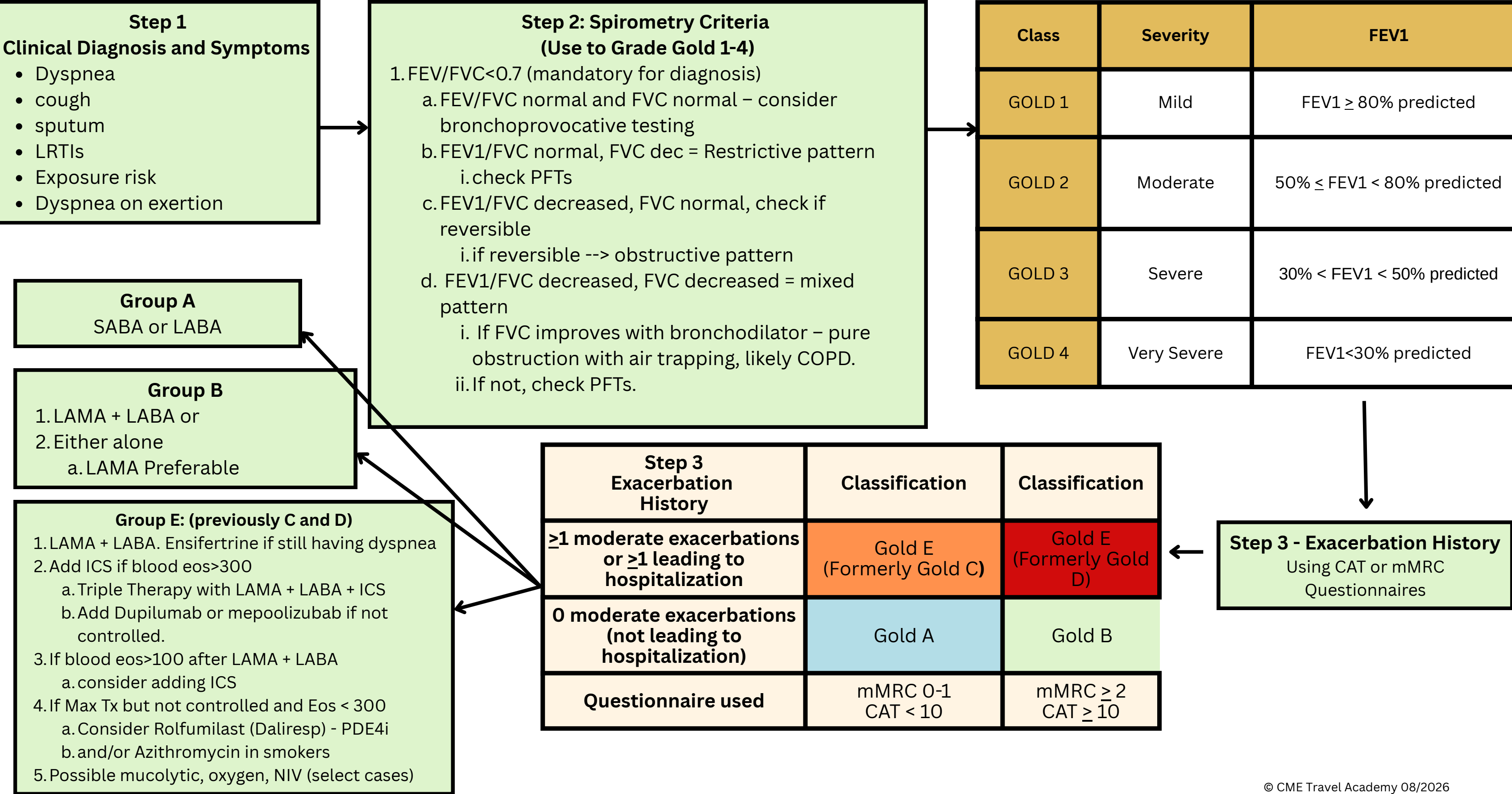
- Chronic Bronchitis:
 - chronic cough and sputum production for at least 3 months per year x 2 consecutive years without other conditions that can explain the diagnosis.
 - persistent inflammation/swelling of airways (bronchial tubes) leading to mucus production/cough
- Bronchiolitis
 - acute inflammatory injury of bronchioles (usually viral etiology and usually in pediatrics).
- Bronchiectasis
 - chronic lung condition, permanent widening/thickening of airways (bronchi) , usually due to infection, causes mucus to collect in airways.
- Emphysema
 - progressive lung disease, form of COPD.
 - abnormal permanent enlargement of air spaces distal to terminal bronchioles, with destruction of alveolar walls and without obvious fibrosis.

Differential Diagnosis:

- Intrathoracic
 - asthma, lung cancer, tuberculosis, bronchiectasis, CHF, interstitial lung disease, cystic fibrosis, obliterative bronchilitis
- Extrathoracic
 - Allergies, postnasal drip, upper airway cough syndrome, GERD, medications (ACEi)

COPD Types Abbreviation	Description	Details
COPD-G	Genetically determined COPD	A1 antitrypsin deficiency, other genetic variants
COPD-D	COPD due to abnormal lung development	Premature birth, low birth weight early life events
COPD-C	Environmental COPD	Exposure of tobacco smoke in utero, passive smoking exposure, vaping or e-cigarette use, cannabis
COPD-P	Biomass and pollution exposure COPD	Household pollution, ambient air pollution, wildfire smoke, occupational hazards
COPD-I	COPD due to infections	Childhood infections, TB associated COPD, HIV associated COPD
COPD-A	COPD and asthma	
COPD-U	COPD of unknown cause	
Pre-COPD	Patient, any age, with respiratory symptoms or structural/functional abnormalities without airflow obstruction on spirometry.	May or may not develop COPD over time.
PRISM	Preserved ratio impaired spirometry	FEV1/FVC>0.7 but FEV1<80%. 7-11% of patients. High in smokers. May have higher morbidity/hospitalization.

Diagnosis, Classification, Staging, Management



COPD Management

Vaccinations

- Flu annually
- PCV 20 or PCV 21
 - (once prior to 50 and once after 50)
- COVID (annually)
- TDAP (every 10 years)
- RSV (once)
 - select patients over 60 with chronic lung disease

Lifestyle Management

- Exercise, diet
- Assess for need for PT, Nutritionist
- Self Management education
- Managing co-morbidities

Smoking Cessation Options

- Counseling
- NRT (patches, gum, lozenges)
 - replace based on cigarette consumption
 - 1 cig - 1 mg nicotine
 - 1 gum = 1 mg nicotine
 - 14 mg patch = ½ ppd smoker
 - 21 mg patch = 1 ppd smoker
- Bupropion SR 150 mg bid x 3 months OR
- Varenicline
- Nortriptyline

Oxygen Therapy

- Criteria:
 - PO₂ < 55mm Hg or O₂ sat<88% with/without hypercapnia confirmed twice over 3 weeks OR
 - If PO₂ 55-60mm Hg or O₂ Sat<88% if Pulm HTN, edema from CHF, or polycythemia (hct>55%)
- Prescription for oxygen to titrate/maintain SaO₂ ≥ 90%
- Recheck in 60-90 days if still indicated and if effective

Noninvasive Ventilation

- Severe chronic hypercapnia (PA CO₂>53mm Hg) + hx of hospitalization for acute respiratory failure

Management of Flares

Mild exacerbation

- mild dyspnea
- RR<24
- HR<95
- O₂ Sat > 92% RA at rest and change ≤3% when known
- ABG normal

Moderate exacerbation (meets 3 of 5)

- increased dyspnea
- RR≥24, HR≥95
- O₂<92% RA at rest and/or change>3%
- ABG with PaO₂ <60, no acidosis

Severe exacerbation

- same/worse criteria as moderate but ABG with new/worse hypoxia (PaO₂<60 mmHg) and/or, hypercapnea and acidosis
 - (PaCO₂>45mm Hg and pH<7.35)

When to Refer to Specialist

- Not controlled despite triple therapy
- Frequent exacerbations or hospitalizations
- Consideration for Interventional procedures and surgery
 - Bronchoscopic interventions
 - giant bullectomy
 - lung volume reduction surgery
 - lung transplant
- New/experimental meds

When to Refer to Hospital

- Severe Symptoms or exacerbation
- Acute respiratory failure
- New physical signs of cyanosis, edema
- Failure of response to treatment of exacerbation
- Serious comorbidities during moderate/severe exacerbation (arrhythmia, ischemia, angina, heart failure exacerbation, infectious etiology requiring hospitalization, delirium, CVA, DKA, cellulitis, etc)
- Insufficient home support
- Inability to follow up
- Patient not reliable for follow up or management of exacerbation

Hospital Follow Up Visit

- Should be done within 1 week of discharge
- Obtain/review H/P, DC Summary, Consult Notes, Imaging, Labs, Procedures/interventions
- Medication Reconciliation
- Medication compliance (including inhaler technique)
- Assess and address polypharmacy/duplicate meds/herbs/supplements
- Ask about appetite, Independence level (IADL/ADLs)
- Transportation for follow ups. Affordability of meds
- Balance issues, fall risk, frailty assessment, physical ability/activity/tolerance
- Nutritional support, Support system
- Palliative care need (if appropriate), Pulmonary Rehab (Groups B/E)
- Address/screen for depression/anxiety
- Access to emergency meds, Review Inhaler technique
- Assess voiding/stooling
- Vitals: Weight, BP, HR, Pulse ox, RR, Temp
- Exam:
 - General, CV, Pulmonary, Abdomen, Skin, MSK (gait/strength/ROM), Neuropsych, Skin (wounds/sores), Lines/drains
- Address any follow up testing needed from hospital
 - Labs, imaging, cultures
 - follow up care with specialists, DME equipment needed
 - Handicap placard
- Make Follow up appointment
 - 1-2 weeks if not controlled
- 1 month if doing fair/well in terms of breathing, vitals, examination

Routine Visits

- Address Meds, Polypharmacy, Address Symptoms, exacerbation signs and management
- Ask about hospitalizations, Action Plan
- Verify GOLD Classification - Spirometry
- Symptom score and Classification - CAT or mMRC tool
- Ask about IADL/ADL, support system, affordability of meds
- Smoking status, risk factor mitigation, allergen management
- Inhaler technique/adherence/affordability
- Physical activity, exercise, Need for pulmonary rehab (Groups B/E), Need for oxygen
- Spirometry annually, LDCT annually, AAA Screen (if not done)
- Vaccinations - assess need
 - Flu, COVID, TDAP, Shingrix, RSV, PCV 20 or 21
- Control of Co-Morbidities, Palliative care need (if appropriate)
- Address/screen for depression/anxiety