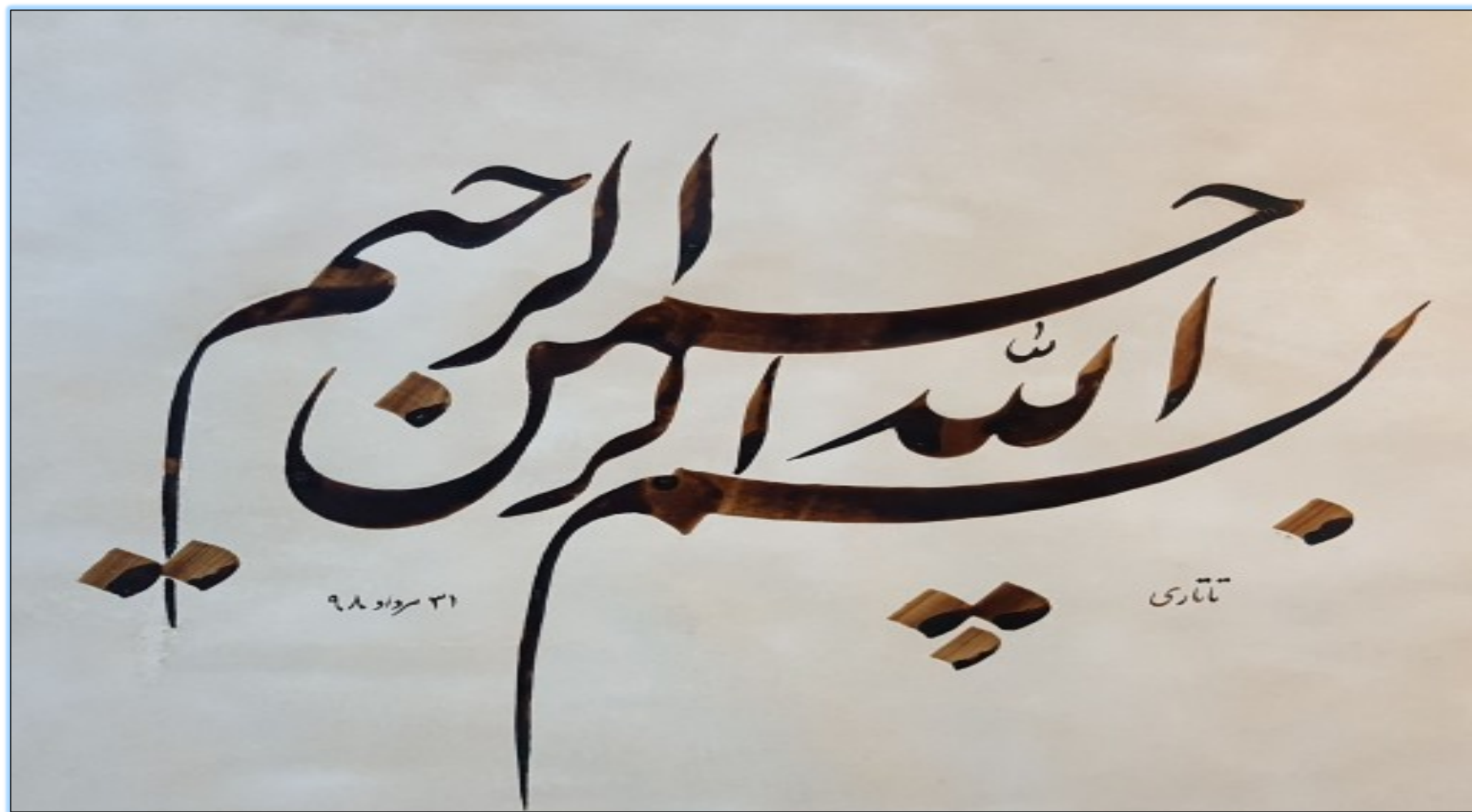




COPD Update2022

- Dr.A.Abedini MD
- Interventional pulmonologist

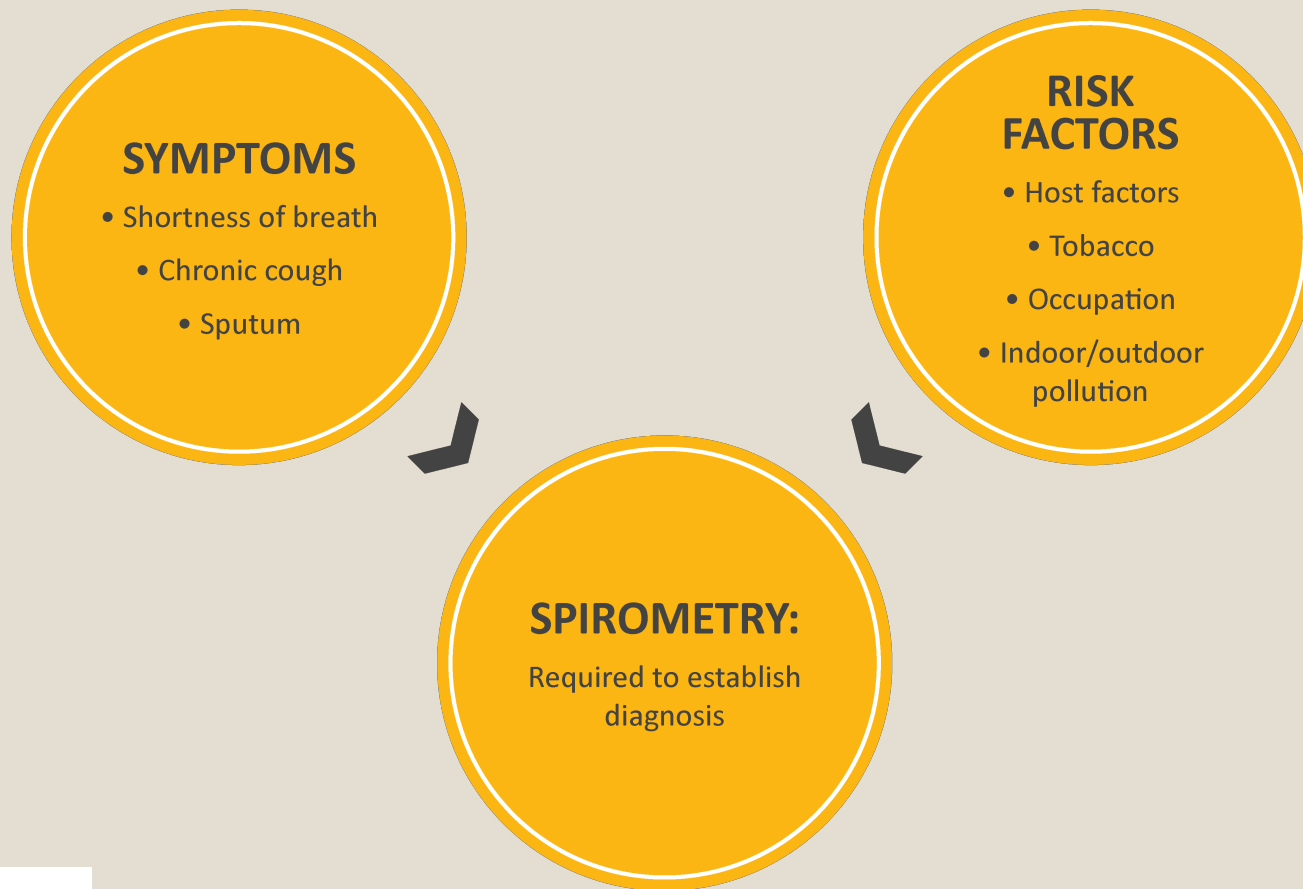
Your Lungs for Life



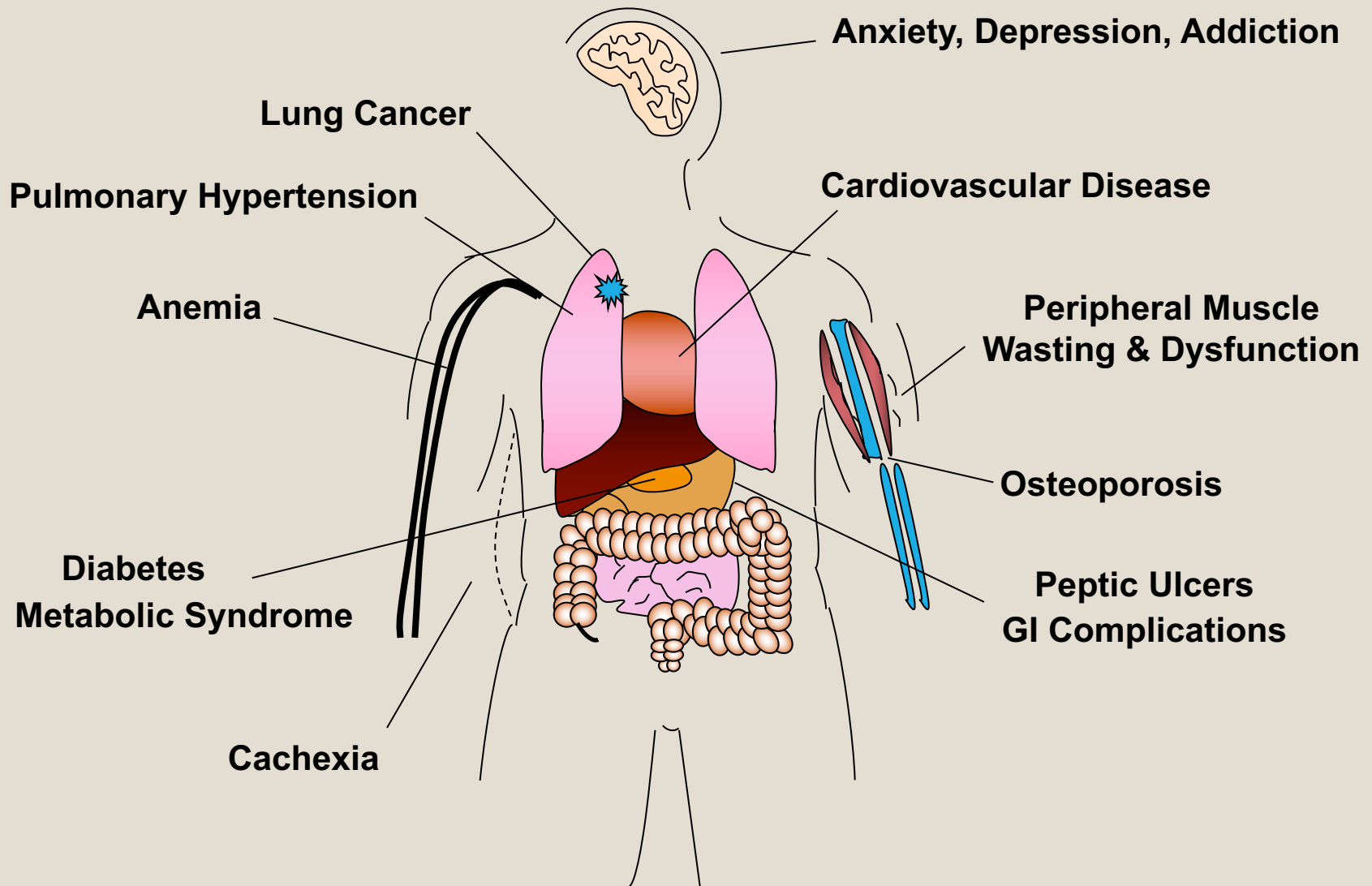
ETIOLOGY, PATHOBIOLOGY AND PATHOLOGY OF COPD LEADING TO AIRFLOW LIMITATION AND CLINICAL MANIFESTATIONS

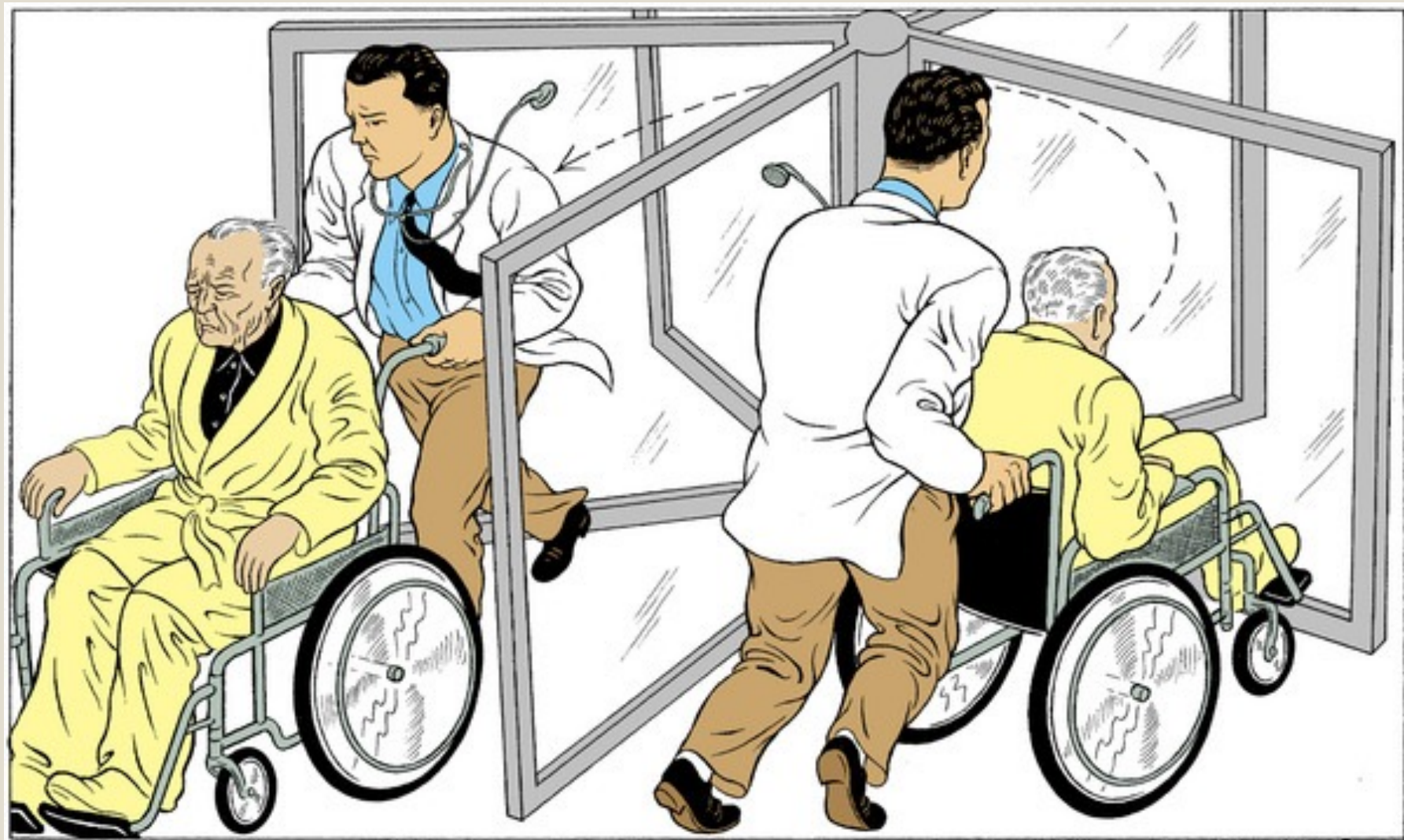


▶ PATHWAYS TO THE DIAGNOSIS OF COPD



COPD is a Multisystem Disease





Dynamic Hyperinflation

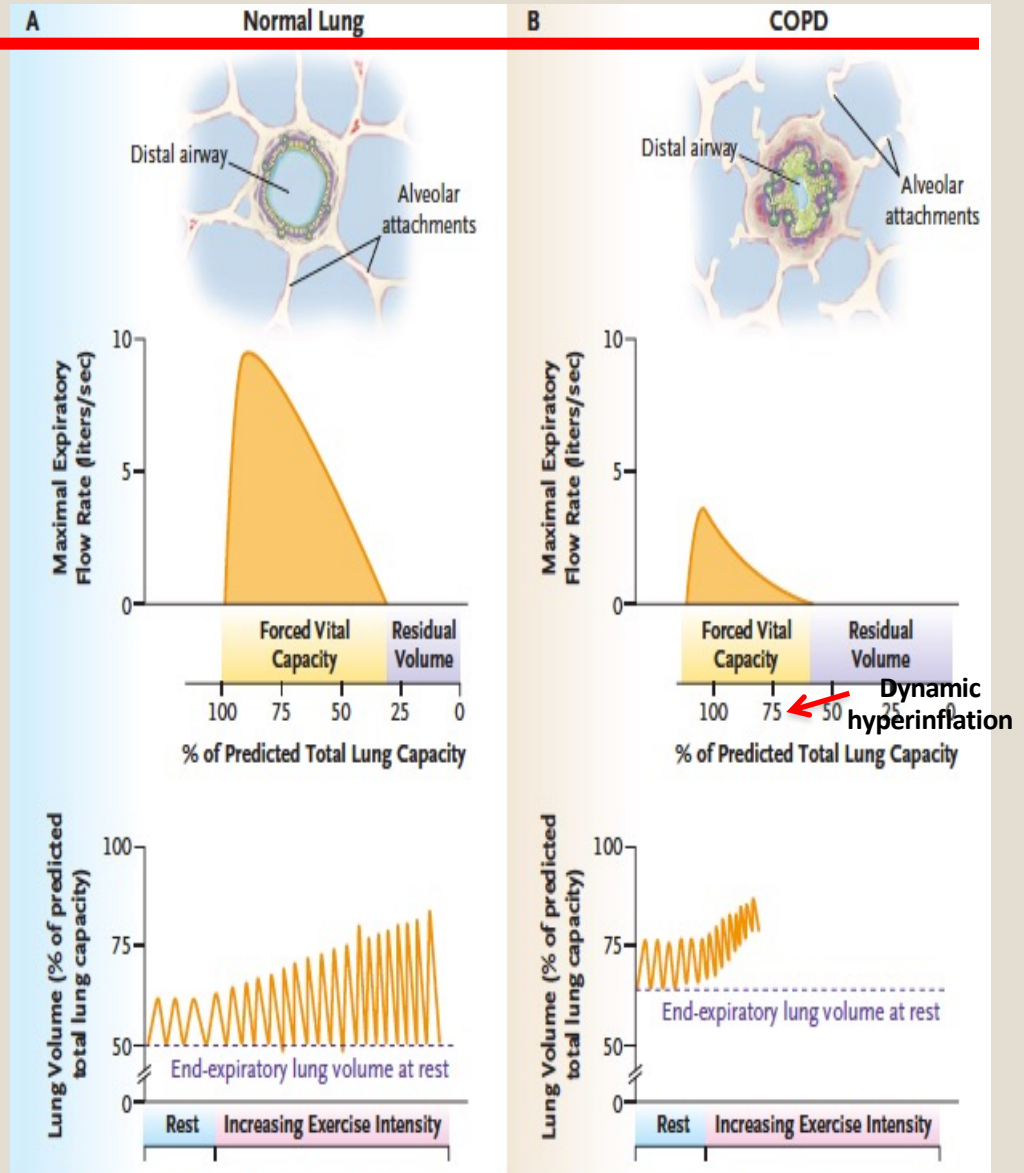
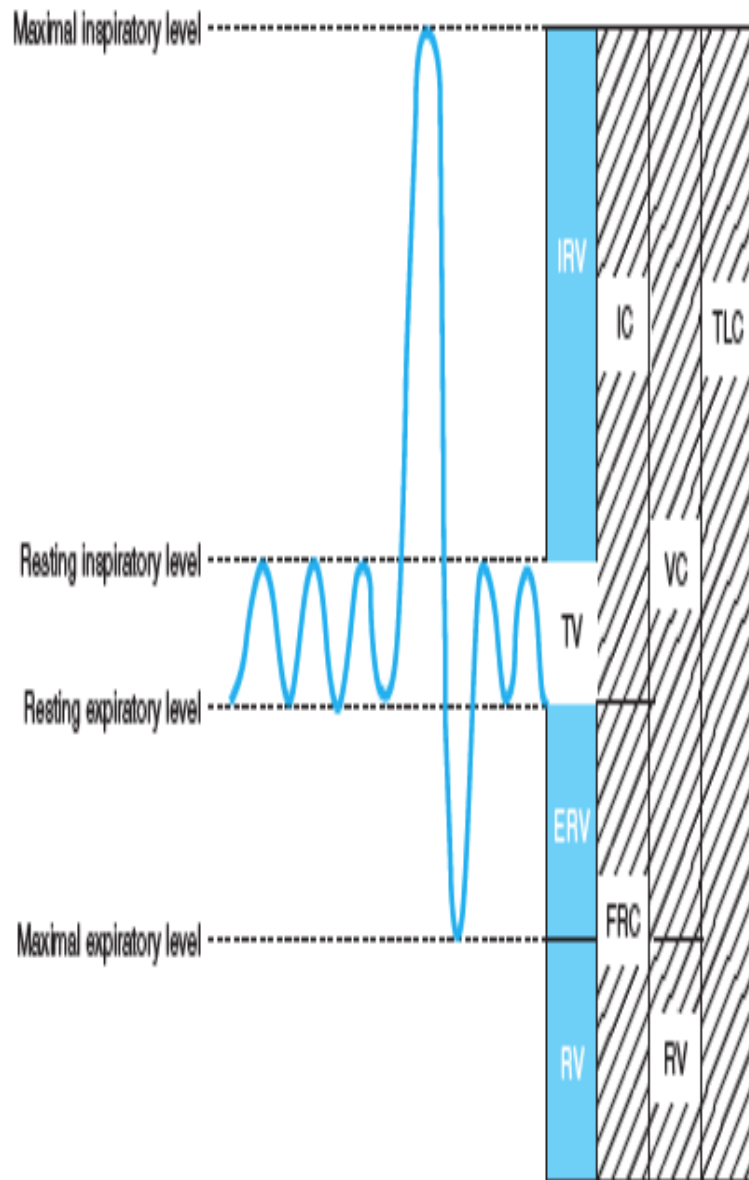


Figure 1. Pathophysiological Features of Airflow Obstruction in Chronic Obstructive Pulmonary Disease (COPD).

The Stage of Life	The Risk Factors for Lung Function
Genetics	α 1-antitrypsin deficiency
	ADAM33, SOX5, TNSI
Antenatal period	Maternal smoking
	LBW/VLBW, Preterm birth
	Maternal nutrition
	Mode of delivery Vitamin D deficiency
Childhood	Childhood smoking
	Air Pollution
	Childhood respiratory infections
	Childhood asthma Manual working class and overcrowding

Abbreviations: LBW, low birth weight; VLBW, very low birth weight.

Early COPD	Disadvantages	Future
1) <50 year of age and smoking >10 packs/year	● Age < 50 years should be adjusted earlier. ● Smoking exposure should be redefined. ● 25–45% with COPD are non-smokers, resulting in missed diagnosis in some patients.	● Adjust the range of age and number of cigarettes smoked. ● Antenatal and childhood risk factors should be added in early COPD.
2) Meet any of the following:		
FEV ₁ /FVC < LLN (post-bronchodilators);	● LLN is the value before the inhalation of bronchodilators.	● Change post-bronchodilators to prebronchodilators.
Chest CT showed small airway obstruction or thickened airway walls;	● The threshold for CT scan abnormalities are not clear.	● More studies are needed to clarify thresholds.
Lung function reduced rapidly; with the decline in FEV ₁ >60mL/year;	● FEV₁ can also decrease with acute pulmonary inflammation, but it can later return to normal. ● The majority of adult COPD patients progress without accelerated decline in lung function. ● Symptomatology is an important basis of COPD.	● The duration of FEV₁ decrease by 60mL/year should be specifically defined. ● The symptoms (cough or sputum production) should be considered.

Mild COPD	Early COPD
1) $FEV_1/FVC < 70\%$ (post-bronchodilators) 2) $FEV_1 > 80\%$ predicted value	< 50 year of age and smoking > 10 packs/ year 2) Meet any of the following: $FEV_1/FVC < LLN$ (post-bronchodilators); Chest CT showed small airway obstruction or thickened airway walls; Lung function reduced rapidly; with the decline in $FEV_1 > 60\text{mL/year}$

Note: Other known chronic lung diseases were excluded except for asthma.

Abbreviations: FEV_1 , forced expiratory volume in 1 second; FVC, forced vital capacity; LLN, lower limit of normal; COPD, chronic obstructive pulmonary disease; CT, computer tomography.

Table 2
Diagnosis of early COPD as proposed.

Reference	Diagnosis
Rennard et al, 2015 ⁶ Celli et al, 2019 ³⁸	An interval in time at the beginning of the disease course Cough, sputum, dyspnea; A low DLco; No airflow limitation
Siafakas et al 2018 ³⁹	Chronic cough; Sputum expectoration; No airflow limitation
Martinez et al, 2018 ³⁶	Age <50 years; At least 10 pack-years of smoking history. Any one of: FEV1/FVC less than LLN; Compatible CT abnormalities; Accelerated FEV1 decline (≥ 60 mL/year)
Çolak et al, 2020 ⁹	Age < 50 years; FEV1/FVC less than LLN; At least 10 pack-years of tobacco consumption

COPD: chronic obstructive pulmonary disease; DLco: diffusing capacity of the lung for carbon monoxide; LLN: lower limit of normal; CT: computed tomography; FEV1: forced expiratory volume in the first second; FVC: forced vital capacity.

use of the term "pre-COPD" in individuals with symptoms (e.g., "Non-Obstructive Chronic Bronchitis" (NOCB)), physiologic (e.g., low DLCO) and/or imaging abnormalities (e.g. CT emphysema) but spirometry in the normal range, who are at risk of developing COPD defined by a reduced FEV1/FVC ratio.

We acknowledge, however, that further research on early disease in young individuals will be critical to develop a clinically operable definition of "pre-COPD" that demonstrates good sensitivity and specificity.

- **Why does early diagnosis matter?**
- **What are the barriers to making a diagnosis earlier?**
- **How do we promote early diagnosis?**
- **Can early intervention and screening help?**

Why does early diagnosis matter?

- Preserve lung function
- Preserve quality of life for the patient
- Encourage smoking cessation
- Enable earlier interventions to prevent exacerbations
- Reduce costs
- Decrease mortality

What are the barriers to earlier diagnosis?

- It is difficult to chart the progression of COPD currently.
- There are no accepted biochemical or clinical markers to allow measurement of COPD activity.
- There are however clinical predictors (of disease progression) through increased frequency of exacerbations in those with the clinical phenotype of cough and sputum.

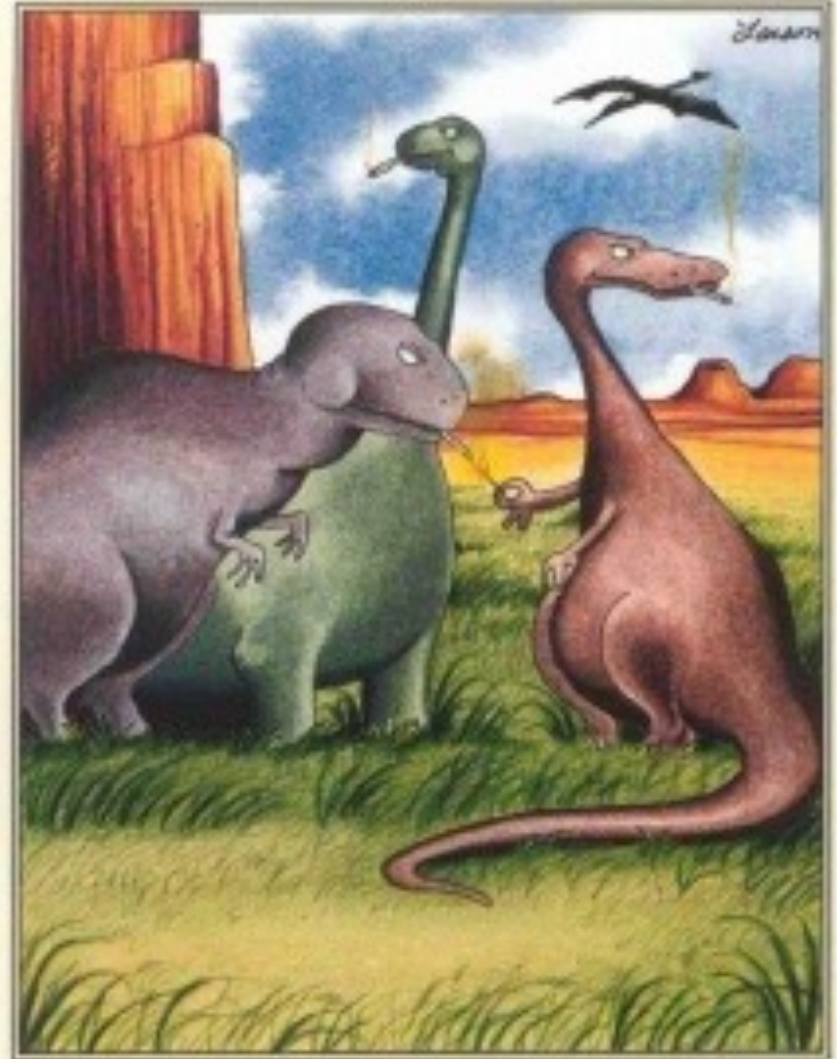
Barriers for early diagnosis - Doctor Centred

- Lack of interest – a heart sink disease
- Lack of facilities for diagnosis – spirometry
- Smoking or lifestyle related

Barriers for early diagnosis - Patient Related

- Low knowledge (ignorance) of the disease
- Afraid of danger diagnosis (lung cancer)
- Adaptation – getting old
- Excuse of the symptoms – smoker's cough

Should we
screen ALL
smokers for
COPD?



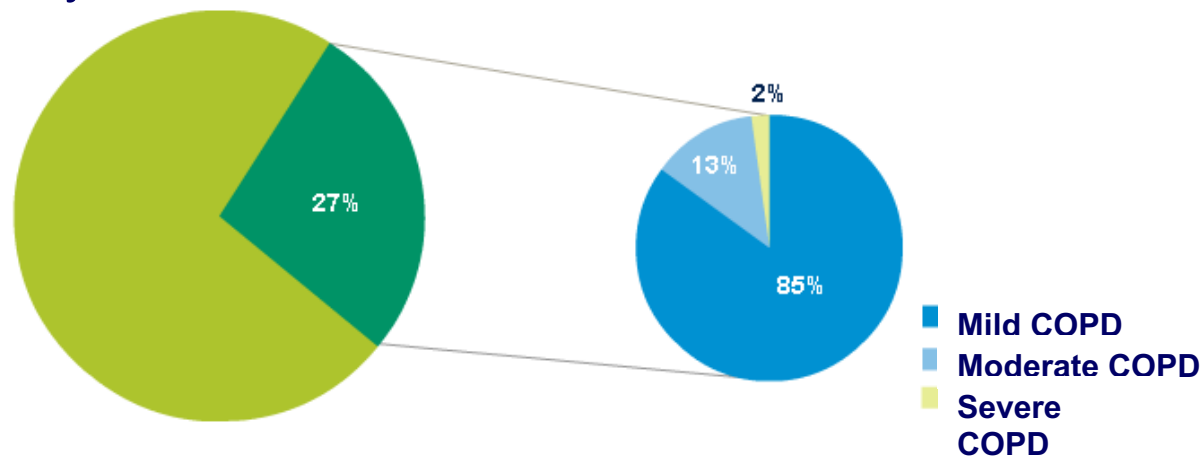
The real reason dinosaurs became extinct

And who to screen?

With active screening you find lot of smokers with COPD, earlier unrecognised COPD

27% of the smokers,
40-55 years, had COPD

85% of those had mild
COPD



The dangers of screening

- Spirometry in early COPD (GOLD 1) may be normal and a disincentive to smoking cessation
- There is limited evidence that isolated abnormal spirometry influences smoking cessation
- Smoking cessation is the only thing that influences disease outcome

Case finding: Who should be tested with spirometry?

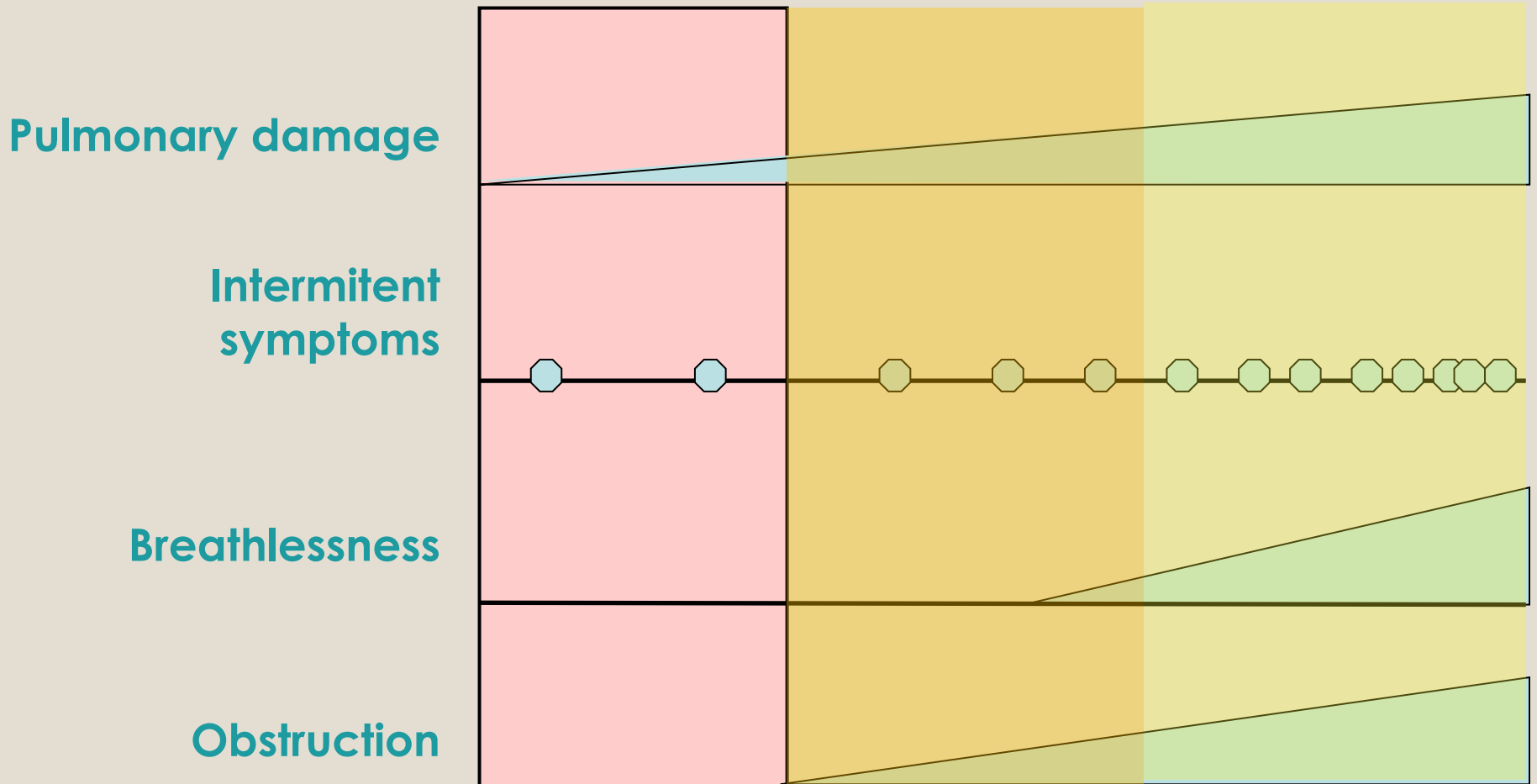
- Smokers >10 paq-year
- Age > 35
- Symptoms:
 - Cough
 - Sputum
 - Shortness of breath



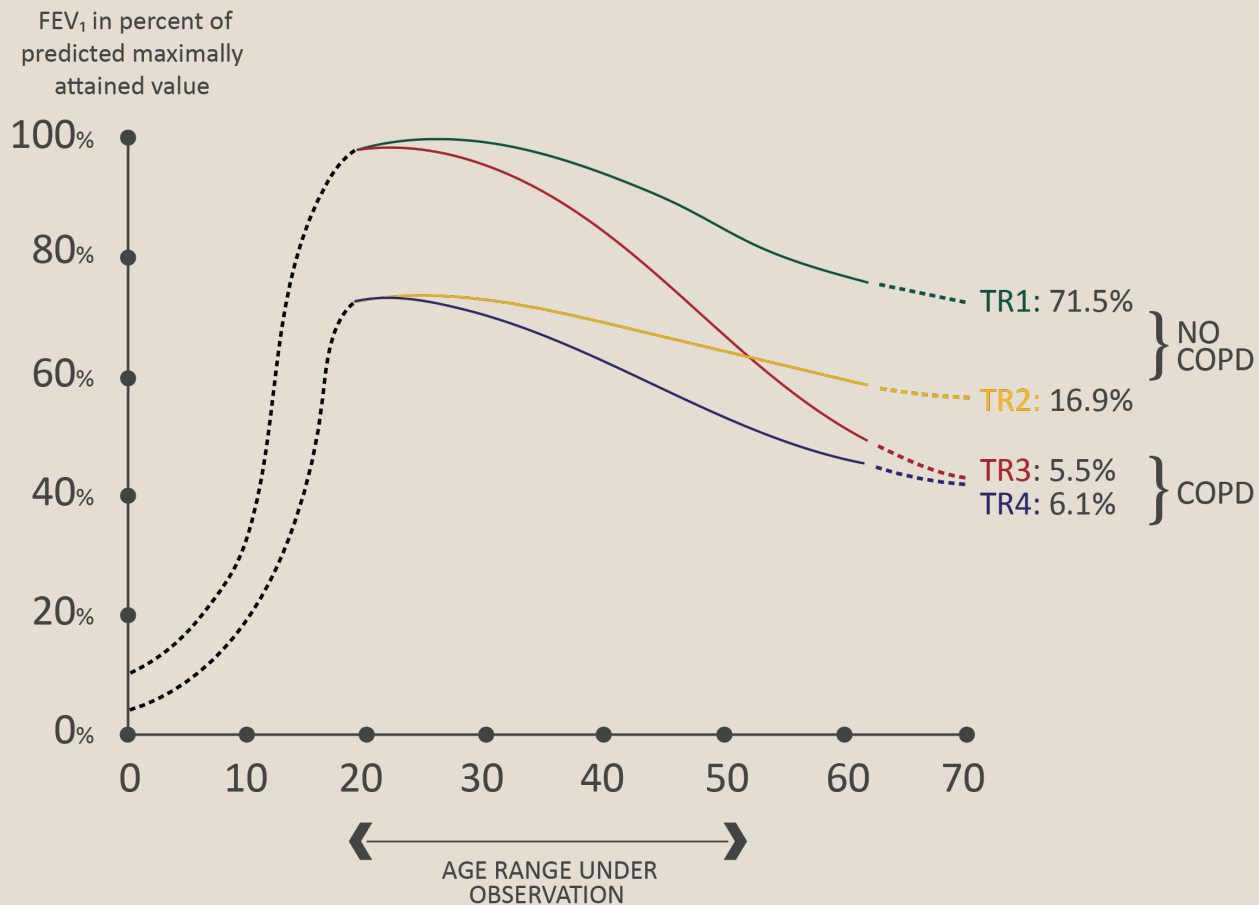
SPIROMETRY

**If you test one smoker
with cough every day
You will diagnose
one patient
With COPD
a week**

The challenge of early detection



FEV₁ PROGRESSION OVER TIME



- TR1: Normal
- TR2: Small lungs but no COPD
- TR3: Normal initial FEV₁ with rapid decline leading to COPD
- TR4: Small lungs leading to COPD

Note: This is a simplified diagram of FEV₁ progression over time. In reality, there is tremendous heterogeneity in the rate of decline in FEV₁ owing to the complex interactions of genes with environmental exposures and risk factors over an individual's lifetime [adapted from Lange et al. NEJM 2015;373:111-22].



KEY INDICATORS FOR CONSIDERING A DIAGNOSIS OF COPD

Consider COPD, and perform spirometry, if any of these indicators are present in an individual over age 40. These indicators are not diagnostic themselves, but the presence of multiple key indicators increases the probability of a diagnosis of COPD. Spirometry is required to establish a diagnosis of COPD.

Dyspnea that is:

Progressive over time.
Characteristically worse with exercise.
Persistent.

Chronic Cough:

May be intermittent and may be unproductive.
Recurrent wheeze.

Chronic Sputum Production:

Any pattern of chronic sputum production may indicate COPD.

Recurrent Lower Respiratory Tract Infections

History of Risk Factors:

Host factors (such as genetic factors, congenital/developmental abnormalities etc.).
Tobacco smoke (including popular local preparations).
Smoke from home cooking and heating fuels.
Occupational dusts, vapors, fumes, gases and other chemicals.

Family History of COPD and/or Childhood Factors:

For example low birthweight, childhood respiratory infections etc.



CLASSIFICATION OF AIRFLOW LIMITATION SEVERITY IN COPD (BASED ON POST-BRONCHODILATOR FEV₁)

In patients with FEV₁/FVC < 0.70:

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

► MODIFIED MRC DYSPNEA SCALE^a

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 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.	☐

^a Fletcher CM. BMJ 1960; 2: 1662.

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.

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	
							TOTAL SCORE:	

Reference: Jones et al. ERJ 2009; 34 (3); 648-54.

▶ THE REFINED ABCD ASSESSMENT TOOL

Spirometrically
Confirmed Diagnosis



Assessment of
airflow limitation



Assessment of
symptoms/risk
of exacerbations

**Moderate or Severe
Exacerbation History**

Post-bronchodilator
 $FEV_1/FVC < 0.7$

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

≥2 or
≥ 1 leading
to hospital
admission

0 or 1
(not leading
to hospital
admission)

C

D

A

B

mMRC 0-1
CAT < 10

mMRC ≥ 2
CAT ≥ 10

Symptoms

▶ VACCINATION FOR STABLE COPD

- Influenza vaccination reduces serious illness and death in COPD patients (**Evidence B**).
- The WHO and CDC recommend SARS-Cov-2 (COVID-19) vaccination for people with COPD (**Evidence B**).
- The 23-valent pneumococcal polysaccharide vaccine (PPSV23) has been shown to reduce the incidence of community-acquired pneumonia in COPD patients aged < 65 years with an FEV₁ < 40% predicted and in those with comorbidities (**Evidence B**).
- In the general population of adults ≥ 65 years the 13-valent conjugated pneumococcal vaccine (PCV13) has demonstrated significant efficacy in reducing bacteremia & serious invasive pneumococcal disease (**Evidence B**).
- The CDC recommends Tdap (dTaP/dTPa) vaccination to protect against pertussis (whooping cough) for adults with COPD who were not vaccinated in adolescence (**Evidence B**) and Zoster vaccine to protect against shingles for adults with COPD aged ≥ 50 years (**Evidence B**).

TABLE 3.2

▶ BRONCHODILATORS IN STABLE COPD

- Inhaled bronchodilators in COPD are central to symptom management and commonly given on a regular basis to prevent or reduce symptoms (**Evidence A**).
- Regular and as-needed use of SABA or SAMA improves FEV₁ and symptoms (**Evidence A**).
- Combinations of SABA and SAMA are superior compared to either medication alone in improving FEV₁ and symptoms (**Evidence A**).
- LABAs and LAMAs significantly improve lung function, dyspnea, health status, and reduce exacerbation rates (**Evidence A**).
- LAMAs have a greater effect on exacerbation reduction compared with LABAs (**Evidence A**) and decrease hospitalizations (**Evidence B**).
- Combination treatment with a LABA and LAMA increases FEV₁ and reduces symptoms compared to monotherapy (**Evidence A**).
- Combination treatment with a LABA/LAMA reduces exacerbations compared to monotherapy (**Evidence B**).
- Tiotropium improves the effectiveness of pulmonary rehabilitation in increasing exercise performance (**Evidence B**).
- Theophylline exerts a small bronchodilator effect in stable COPD (**Evidence A**) and that is associated with modest symptomatic benefits (**Evidence B**).

FACTORS TO CONSIDER WHEN INITIATING ICS TREATMENT

Factors to consider when initiating ICS treatment in combination with one or two long-acting bronchodilators (note the scenario is different when considering ICS withdrawal):

• STRONG SUPPORT •	• CONSIDER USE •	• AGAINST USE •
• History of hospitalization(s) for exacerbations of COPD[#] • ≥ 2 moderate exacerbations of COPD per year[#] • Blood eosinophils ≥ 300 cells/μL • History of, or concomitant, asthma	• 1 moderate exacerbation of COPD per year[#] • Blood eosinophils ≥ 100 to < 300 cells/μL	• Repeated pneumonia events • Blood eosinophils <100 cells/μL • History of mycobacterial infection

[#]despite appropriate long-acting bronchodilator maintenance therapy (see Table 3.4 and Figure 4.3 for recommendations);

*note that blood eosinophils should be seen as a continuum; quoted values represent approximate cut-points; eosinophil counts are likely to fluctuate.

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DOI: 10.1183/13993003.01219-2018 Published 13 December 2018

FIGURE 3.1

▶ THE INHALED ROUTE

- When a treatment is given by the inhaled route, the importance of education and training in inhaler device technique cannot be over-emphasized.
- The choice of inhaler device has to be individually tailored and will depend on access, cost, prescriber, and most importantly, patient's ability and preference.
- It is essential to provide instructions and to demonstrate the proper inhalation technique when prescribing a device, to ensure that inhaler technique is adequate and re-check at each visit that patients continue to use their inhaler correctly.
- Inhaler technique (and adherence to therapy) should be assessed before concluding that the current therapy is insufficient.

▶ OTHER PHARMACOLOGICAL TREATMENTS

ALPHA-1 ANTITRYPSIN AUGMENTATION THERAPY

- Intravenous augmentation therapy may slow down the progression of emphysema (**Evidence B**).

ANTITUSSIVES

- There is no conclusive evidence of a beneficial role of antitussives in patients with COPD (**Evidence C**).

VASODILATORS

- Vasodilators do not improve outcomes and may worsen oxygenation (**Evidence B**).

PULMONARY REHABILITATION, SELF-MANAGEMENT AND INTEGRATIVE CARE IN COPD

PULMONARY REHABILITATION

- Pulmonary rehabilitation improves dyspnea, health status and exercise tolerance in stable patients (**Evidence A**).
- Pulmonary rehabilitation reduces hospitalization among patients who have had a recent exacerbation (≤ 4 weeks from prior hospitalization) (**Evidence B**).
- Pulmonary rehabilitation leads to a reduction in symptoms of anxiety and depression (**Evidence A**).

EDUCATION AND SELF-MANAGEMENT

- Education alone has not been shown to be effective (**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

- Integrative care and telehealth have no demonstrated benefit at this time (**Evidence B**).

PALLIATIVE CARE, END OF LIFE AND HOSPICE CARE IN COPD

- Opiates, neuromuscular electrical stimulation (NMES), oxygen and fans blowing air on to the face can relieve breathlessness (**Evidence C**).
- In malnourished patients, nutritional supplementation may improve respiratory muscle strength and overall health status (**Evidence B**).
- Fatigue can be improved by self-management education, pulmonary rehabilitation, nutritional support and mind-body interventions (**Evidence B**).

▶ INTERVENTIONAL THERAPY IN STABLE COPD

LUNG VOLUME REDUCTION SURGERY

- Lung volume reduction surgery improves survival in severe emphysema patients with an upper-lobe emphysema and low post-rehabilitation exercise capacity (**Evidence A**).

BULLECTOMY

- In selected patients, bullectomy is associated with decreased dyspnea, improved lung function and exercise tolerance (**Evidence C**).

TRANSPLANTATION

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

BRONCHOSCOPIC INTERVENTIONS

- In select patients with advanced emphysema, bronchoscopic interventions reduce end-expiratory lung volume and improve exercise tolerance, health status and lung function at 6-12 months following treatment. Endobronchial valves (**Evidence A**); Lung coils (**Evidence B**); Vapor ablation (**Evidence B**).

▶ GOALS FOR TREATMENT OF STABLE COPD

- Relieve Symptoms
- Improve Exercise Tolerance
- Improve Health Status



REDUCE SYMPTOMS

and

- Prevent Disease Progression
- Prevent and Treat Exacerbations
- Reduce Mortality



REDUCE RISK

TABLE 4.1

► IDENTIFY & REDUCE RISK FACTOR EXPOSURE

- Smoking cessation interventions should be actively pursued in all COPD patients (**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**).

▶ KEY POINTS FOR INHALATION OF DRUGS

- The choice of inhaler device has to be individually tailored and will depend on access, cost, prescriber, and most importantly, patient's ability and preference.
- It is essential to provide instructions and to demonstrate the proper inhalation technique when prescribing a device, to ensure that inhaler technique is adequate and re-check at each visit that patients continue to use their inhaler correctly.
- Inhaler technique (and adherence to therapy) should be assessed before concluding that the current therapy requires modification.

▶ KEY POINTS FOR THE USE OF BRONCHODILATORS

- 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.
- Patients may be started on single long-acting bronchodilator therapy or dual long-acting bronchodilator therapy. In patients with persistent dyspnea on one bronchodilator treatment should be escalated to two (**Evidence A**).
- Inhaled bronchodilators are recommended over oral bronchodilators (**Evidence A**).
- Theophylline is not recommended unless other long-term treatment bronchodilators are unavailable or unaffordable (**Evidence B**).

▶ KEY POINTS FOR THE USE OF ANTI-INFLAMMATORY AGENTS

- Long-term monotherapy with ICS is not recommended (**Evidence A**).
- Long-term treatment with ICS may be considered in association with LABAs for patients with a history of exacerbations despite appropriate treatment with long-acting bronchodilators (**Evidence A**).
- Long-term therapy with oral corticosteroids is not recommended (**Evidence A**).
- In patients with severe to very severe airflow limitation, chronic bronchitis and exacerbations the addition of a PDE4 inhibitor to a treatment with long acting bronchodilators with/without ICS can be considered (**Evidence B**).
- Preferentially, but not only in former smokers with exacerbations despite appropriate therapy, macrolides, in particular azithromycin, can be considered (**Evidence B**).
- Statin therapy is not recommended for prevention of exacerbations (**Evidence A**).
- Antioxidant mucolytics are recommended only in selected patients (**Evidence A**).

▶ INITIAL PHARMACOLOGICAL TREATMENT

≥ 2 moderate exacerbations or ≥ 1 leading to hospitalization

Group C

LAMA

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

Group A

A Bronchodilator

Group D

LAMA or
LAMA + LABA* or
ICS + LABA**

*Consider if highly symptomatic (e.g. CAT > 20)

**Consider if eos ≥ 300

Group B

A Long Acting Bronchodilator
(LABA or LAMA)

mMRC 0-1, CAT < 10

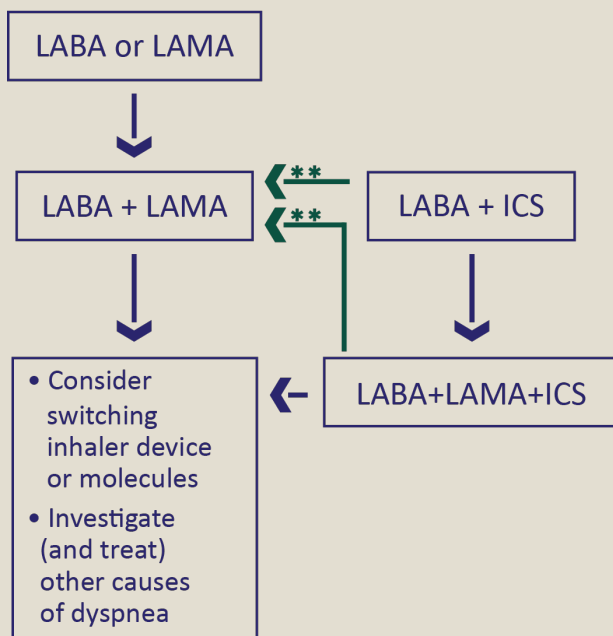
mMRC ≥ 2, CAT ≥ 10

FOLLOW-UP PHARMACOLOGICAL TREATMENT

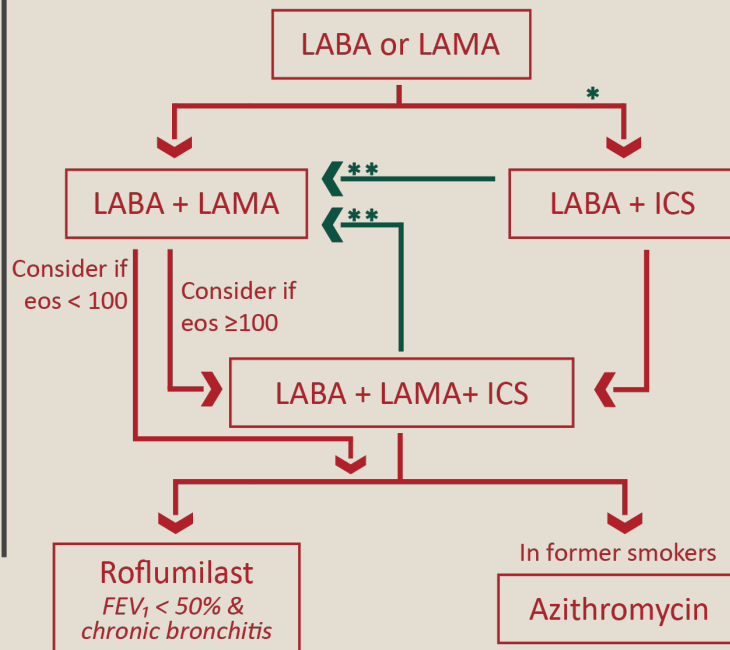
1. IF RESPONSE TO INITIAL TREATMENT IS APPROPRIATE, MAINTAIN IT.

2. IF NOT:
- ✓ Consider the predominant treatable trait to target (dyspnea or exacerbations)
 - Use exacerbation pathway if both exacerbations and dyspnea need to be targeted
 - ✓ Place patient in box corresponding to current treatment & follow indications
 - ✓ Assess response, adjust and review
 - ✓ These recommendations do not depend on the ABCD assessment at diagnosis

• DYSPNEA •



• EXACERBATIONS •



eos = blood eosinophil count (cells/ μ L)

* Consider if eos ≥ 300 or eos ≥ 100 AND ≥ 2 moderate exacerbations / 1 hospitalization

** Consider de-escalation of ICS or switch if pneumonia, inappropriate original indication or lack of response to ICS

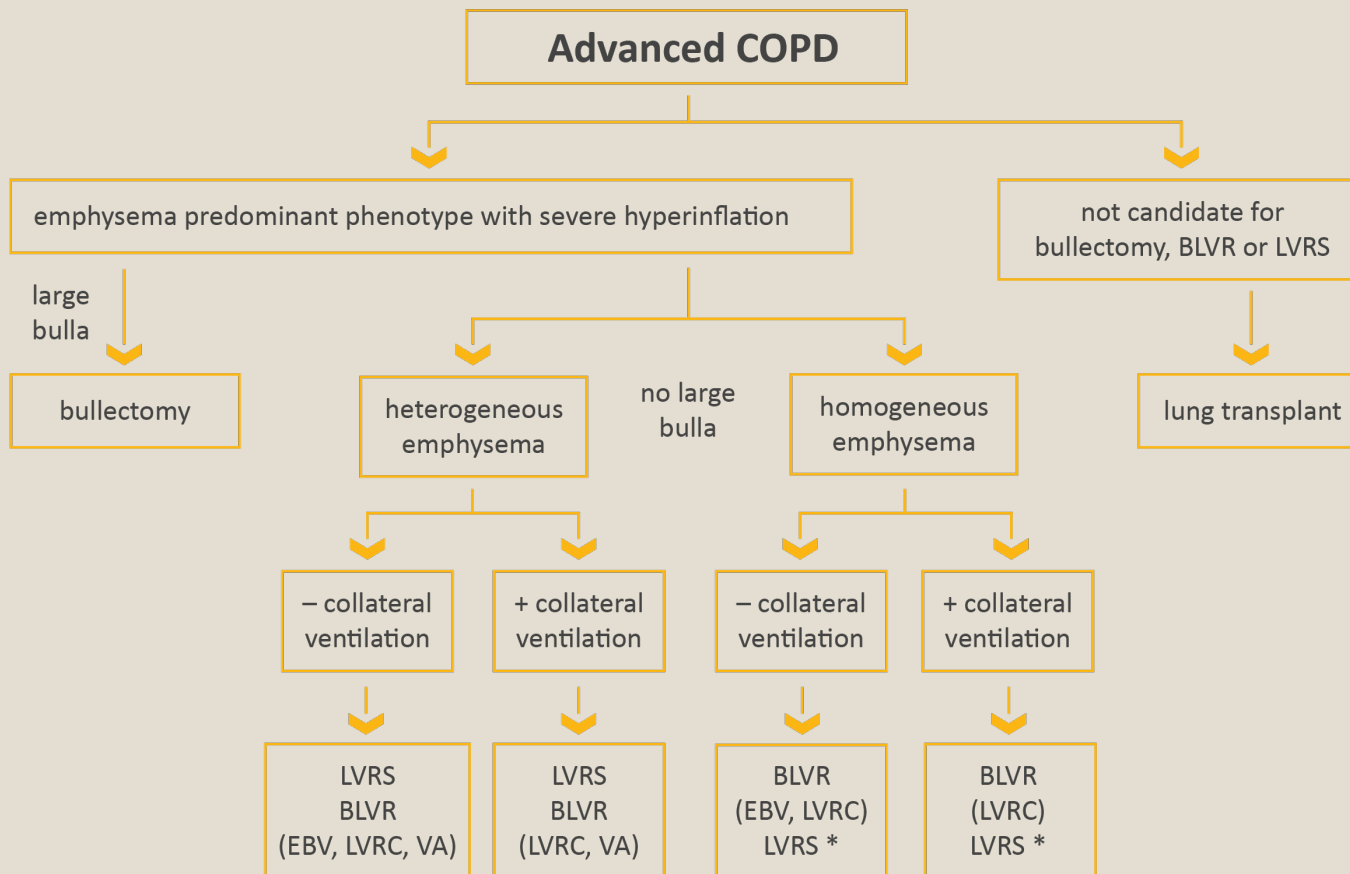
▶ NON-PHARMACOLOGIC MANAGEMENT OF COPD*

PATIENT GROUP	ESSENTIAL	RECOMMENDED	DEPENDING ON LOCAL GUIDELINES
A	Smoking Cessation (can include pharmacologic treatment)	Physical Activity	Flu Vaccination Pneumococcal Vaccination Pertussis Vaccination Covid-19 Vaccination
B, C and D	Smoking Cessation (can include pharmacologic treatment) Pulmonary Rehabilitation	Physical Activity	Flu Vaccination Pneumococcal Vaccination Pertussis Vaccination Covid-19 Vaccination
*Can include pharmacologic treatment.			

TABLE 4.8

INTERVENTIONAL BRONCHOSCOPIC AND SURGICAL TREATMENTS FOR COPD

Overview of various therapies used to treat patients with COPD and emphysema worldwide. Note that all therapies are not approved for clinical care in all countries. Additionally, the effects of BLVR on survival or other long term outcomes or comparison to LVRS are unknown.



Definition of Abbreviations: BLVR, Bronchoscopic Lung Volume Reduction, EBV, endobronchial Valve, LVRS, Lung volume reduction surgery, LVRC, Lung volume reduction coil, VA, Vapor ablation

*at some but not all centers

INTERVENTIONS THAT REDUCE THE FREQUENCY OF COPD EXACERBATIONS

INTERVENTION CLASS	INTERVENTION
Bronchodilators	LABAs LAMAs LABA + LAMA
Corticosteroid-containing regimens	LABA + ICS LABA + LAMA + ICS
Anti-inflammatory (non-steroid)	Roflumilast
Anti-infectives	Vaccines Long Term Macrolides
Mucoregulators	N-acetylcysteine Carbocysteine Erdosteine
Various others	Smoking Cessation Rehabilitation Lung Volume Reduction Vitamin D Shielding measures (e.g., mask wearing, minimizing social contact, frequent hand washing)

TABLE 5.9

▶ COMMON RISK FACTORS FOR DEVELOPMENT OF LUNG CANCER

- Age > 55
- Smoking history > 30 pack years
- Presence of emphysema by CT scan
- Presence of airflow limitation $FEV_1/FVC < 0.7$
- BMI < 25 kg/m²
- Family history of lung cancer

KEY POINTS FOR THE MANAGEMENT OF PATIENTS WITH COPD AND SUSPECTED OR PROVEN COVID-19

SARS-CoV-2 TESTING

- Swab/Saliva PCR if new or worsening respiratory symptoms, fever, and/or any other symptoms that could be COVID related

OTHER INVESTIGATIONS

- Avoid spirometry unless essential
- Consider CT for COVID pneumonia and to exclude other diagnoses e.g. PE
- Avoid bronchoscopy unless essential
- Assess for co-infection

COPD PHARMACOTHERAPY

- Ensure adequate supplies of medication
- Continue maintenance therapy unchanged including ICS
- Use antibiotics and oral steroids in line with recommendations for exacerbations
- Avoid nebulization when possible

COPD NON-PHARMACOLOGICAL THERAPY

- Maintain physical activity as able

PROTECTIVE STRATEGIES

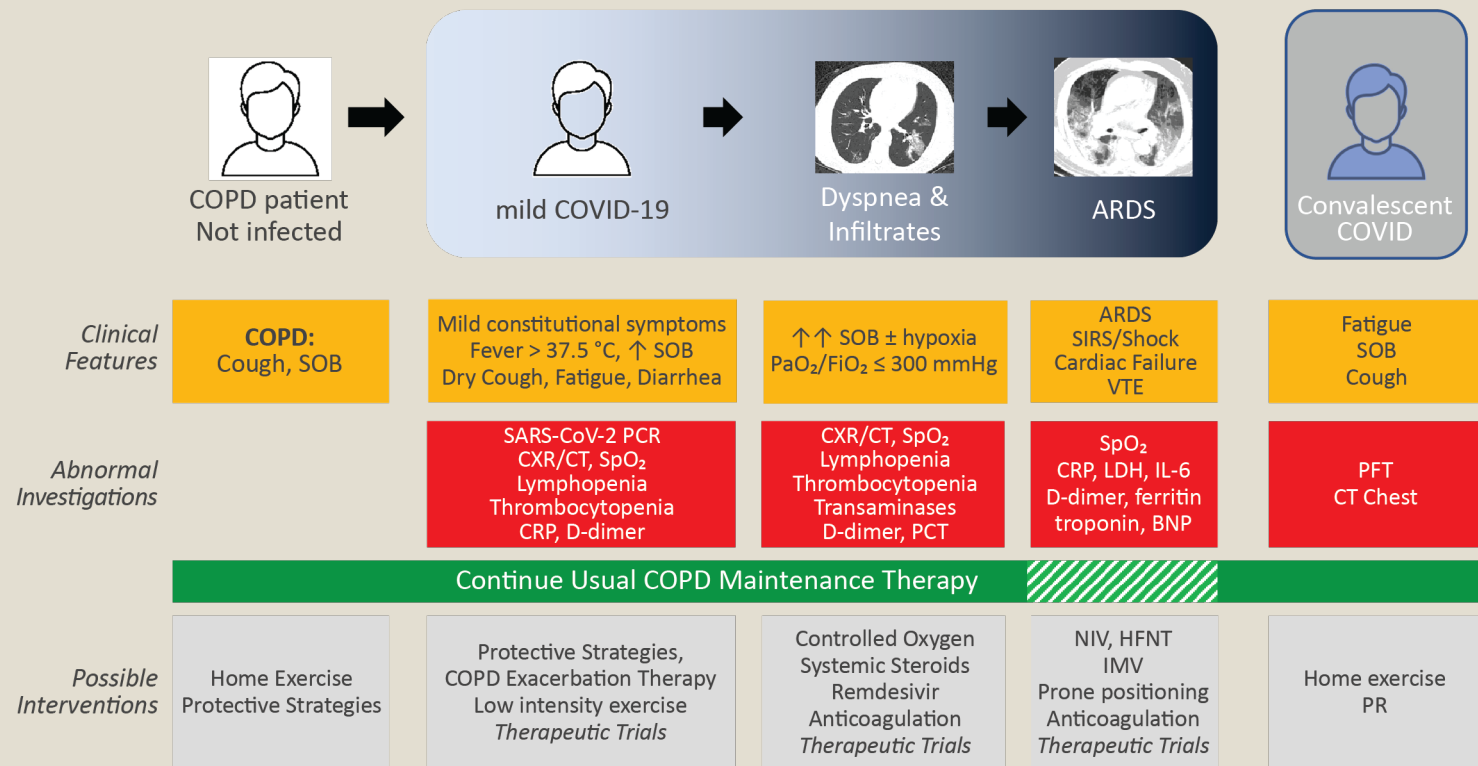
- Have the COVID-19 vaccination in line with national recommendations.
- Follow basic infection control measures
- Maintain physical distancing
- Wear a face covering

COVID-19 THERAPY

- Use systemic steroids and remdesivir as recommended for patients with COVID-19
- Use HFNT or NIV for respiratory failure if possible
- Use invasive mechanical ventilation if HFNT or NIV fails
- Post COVID-19 rehabilitation
- Ensure appropriate post COVID-19 follow-up

TABLE 7.2

COVID-19 & COPD



(ARDS, Adult respiratory distress syndrome; BNP, brain natriuretic peptide; CRP, C reactive protein; CT, computed tomography; CXR, chest radiograph; HFNT, high flow nasal therapy; IL-6, interleukin 6; IMV, invasive mechanical ventilation; LDH, lactate dehydrogenase; NIV, non-invasive ventilation; PCT, procalcitonin; PFT, pulmonary function tests; PR, pulmonary rehabilitation; SOB, Shortness of breath; SpO₂, peripheral oxygen saturation; VTE, venous thromboembolism)

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Halpin et al. 2020. Global Initiative for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease: The 2020 GOLD Science Committee Report on COVID-19 & COPD. Published Ahead of Print: <https://www.atsjournals.org/doi/abs/10.1164/rccm.202009-3533SO>

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COPD Follow-Up Checklist

In-person Follow-up ☐

Phone Follow-up ☐

Virtual/online Follow-up ☐

Date: YYYY / MM / DD

Diagnosis:

1. BASELINE SYMPTOMS – Breathlessness on a regular day: mMRC /4

Daily sputum production: ☐ no ☐ yes, color:

Regular cough ☐ no ☐ yes

Recent change in symptoms ☐ no ☐ yes

If yes, since when:

☐ Sputum color:

☐ Sputum volume ↑ = ↓

☐ Dyspnea ↑ = ↓

☐ Fatigue ↑ = ↓

☐ Cough ↑ = ↓

☐ Other

☐ Signs of hypercapnia

CAT: /40

Maintenance Medication and adherence:

☐ SABA

☐ LABA/LAMA

☐ LABA

☐ LABA/ICS

☐ LAMA

☐ ICS/LABA/LAMA

☐ Other:

Non pharmacological Rx:

O2:

CPAP:

BIPAP:

2. COVID-19 – If patient is feeling unwell, check other symptoms: ☐ Fever ☐ Sore throat ☐ Anosmia ☐

Others

Contact with someone COVID-19 positive? ☐ no ☐ yes

Tested for COVID-19? ☐ no ☐ yes If yes ☐ positive ☐ negative

3. WRITTEN ACTION PLAN – no ☐ yes ☐

Instruction and any additional treatment:

Last time it has been used (date):

4. RECENT ADMISSIONS AND EMERGENCY VISITS

Comments:

Hospital/ER	Where	Date	Length	Reason (Dx)

5. COPD Self-management (healthy behaviors) – Integrated (patient has used it in his daily life)?

Smoke-free environment yes no cannot tell

Medication adherence yes no cannot tell

Prevention/management of exacerbations yes no cannot tell

Breathing control yes no cannot tell

Stress management yes no cannot tell

Physical activity and exercise yes no cannot tell

Other yes no

Comments and what patient should prioritize based on his/her need:

6. MAIN ISSUES

1.	2.	3.

7. SUMMARY, INTERVENTIONS & PLAN

(healthcare professional name & signature)

- مردم این سرزمین قبل از ظهور زرتشت (سمنی مذهب) بوده اند و بتخانه بزرگ آنان در محل سمنان فعلی واقع بوده است. در حال حاضر خود مردم سمنان بر خلاف لغت مکتوب، "سمنان" را سمن و "سمنانی" را سمنی می گویند.
- سمنان در اصل "سکنان" بوده است که منسوب به طوایف سکاهاست و الف و نون آن نشانه نسبت مکان است، به این صورت که پسوند الف و نون آن مانند پسوندهای موجود در واژه های گیلان و توران است این واژه (نام) در اثر مرور زمان بویژه بعد از تسلط اعراب و تحریف و تعریب اسامی شهرها و دیگر کلمات فارسی به سمنان تبدیل شده و به همین صورت ثبت گردیده است.
- برخی معتقدند که نام اصلی شهر "سیم و لام" بوده است به این معنی که بنای اولیه سمنان به دست دو نفر از فرزندان نوح نبی به نام "سیم النبی" و "لام النبی" پایه گذاری شده است و لغت "سیم لام" در اثر کثرت استعمال و به مرور زمان به سمنان تبدیل شده است.
- سمنان در اصل "سم نان" بوده به این صورت که زمانی نان شهر به سم آلوده گشته است. عده ای دیگر معتقدند هنگامی که حضرت رضا (ع) به خراسان می رفته است، مردم شهر برای هر یک از همراهان ایشان سه من نان پخته اند و بدین ترتیب نام سه من نان در اثر مرور زمان به سمنان تغییر یافته است



