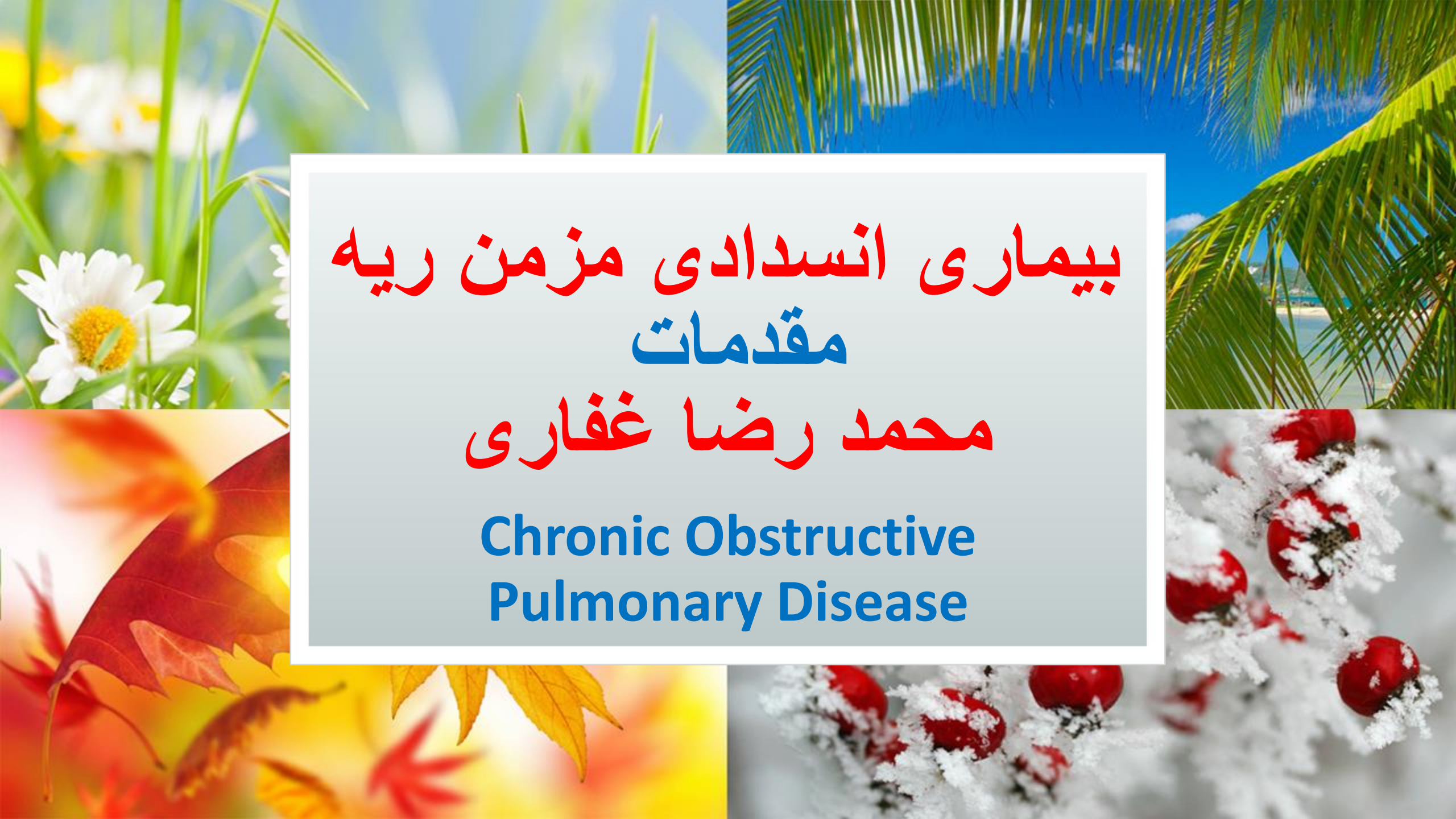


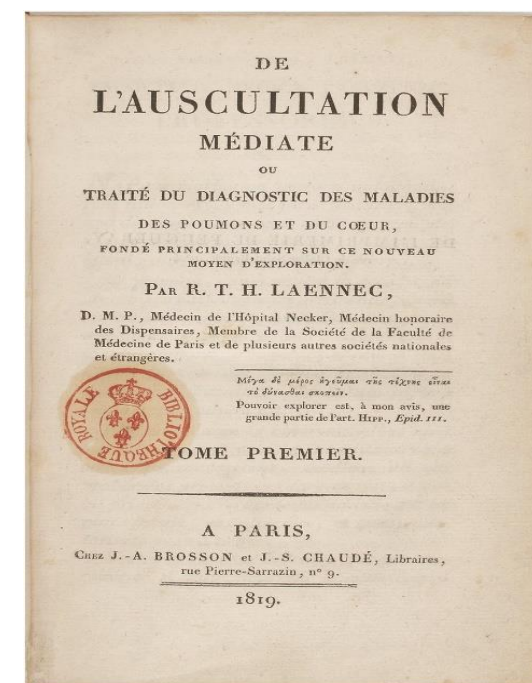


بیماری انسدادی مزمن ریه مقدمات

محمد رضا غفاری

Chronic Obstructive
Pulmonary Disease

IN 1819, OVER 200 YEARS AGO RENE LAENNEC PUBLISHED HIS TREATISE



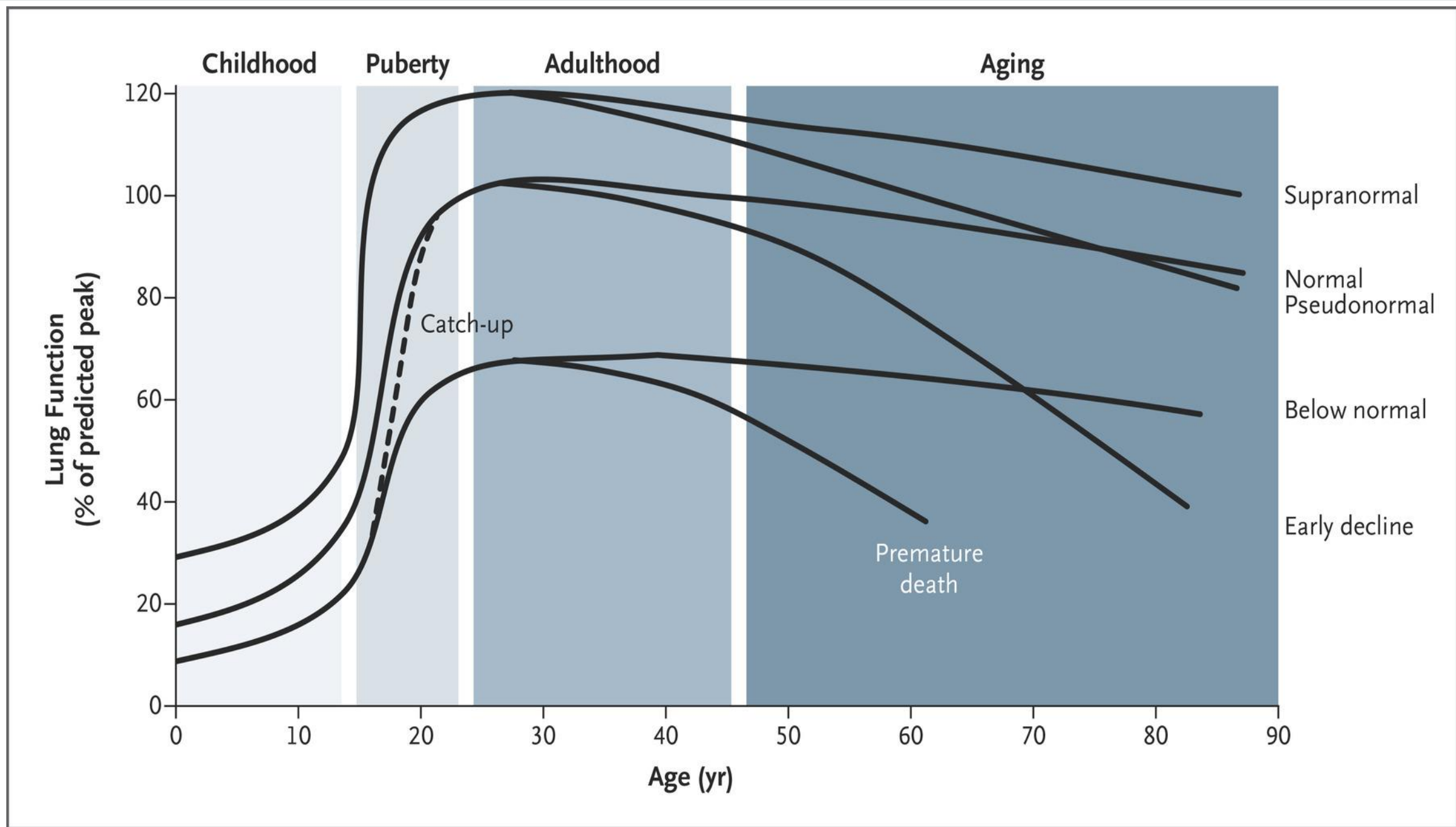


HE PROPHETICALLY STATED

- The disease can begin in **infancy** and continue for many years. More often cough with mucous catarrh, **worsens in the winter** and in the mornings. It is often accompanied by difficult respiration, which might end fatally with '**suffocative catarrh.**' Once present, dyspnea is constant, **worsened by anxiety and exercise** and additionally by acute catarrh.

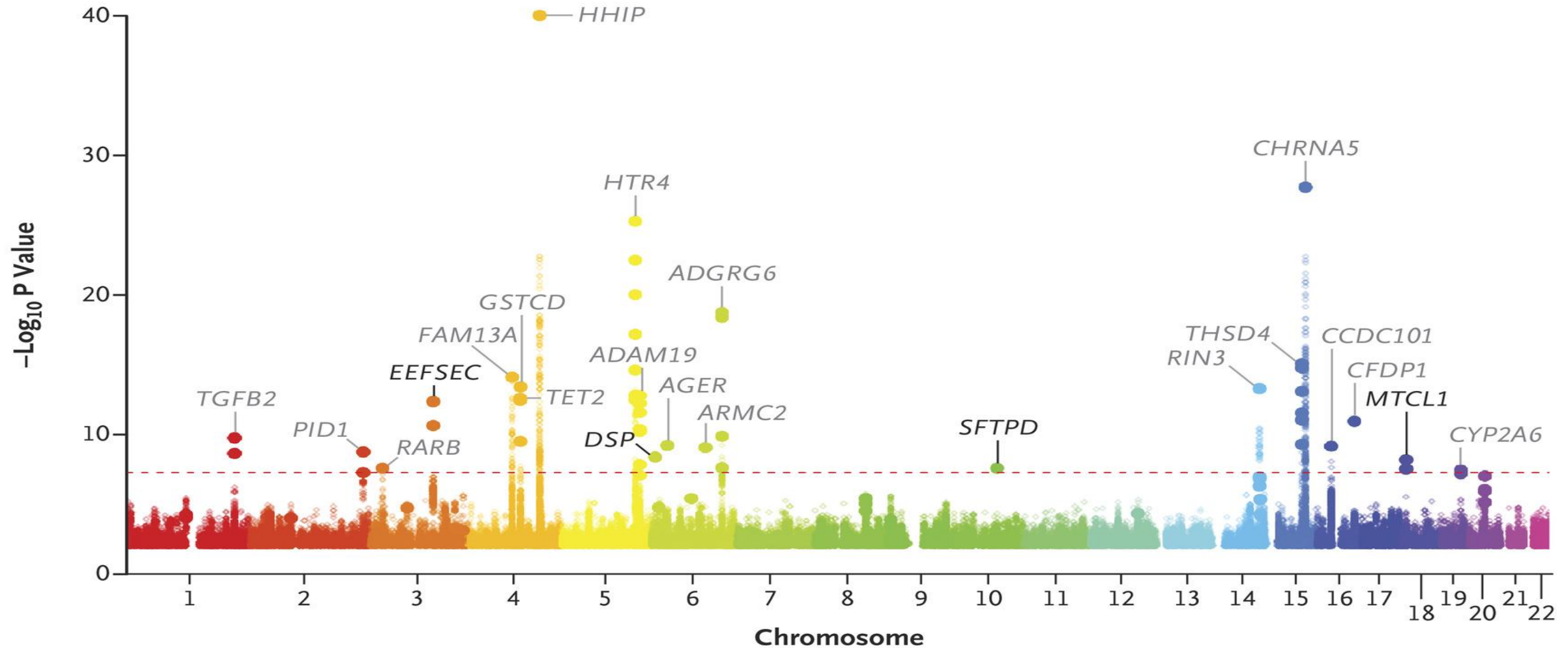


**DURING THESE 2
CENTURIES AND JUST AS
LAENNEC HAD PREDICTED**





COPD has an important genetic origin



Cigar smoking is not safe.

Regular cigar smoking causes lung diseases such as COPD, emphysema and chronic bronchitis.



We help the world breathe
PULMONARY • CRITICAL CARE • ALLERGY



ATS Lung Fact

Sources of Indoor Air Pollution



Genes Environmental exposure



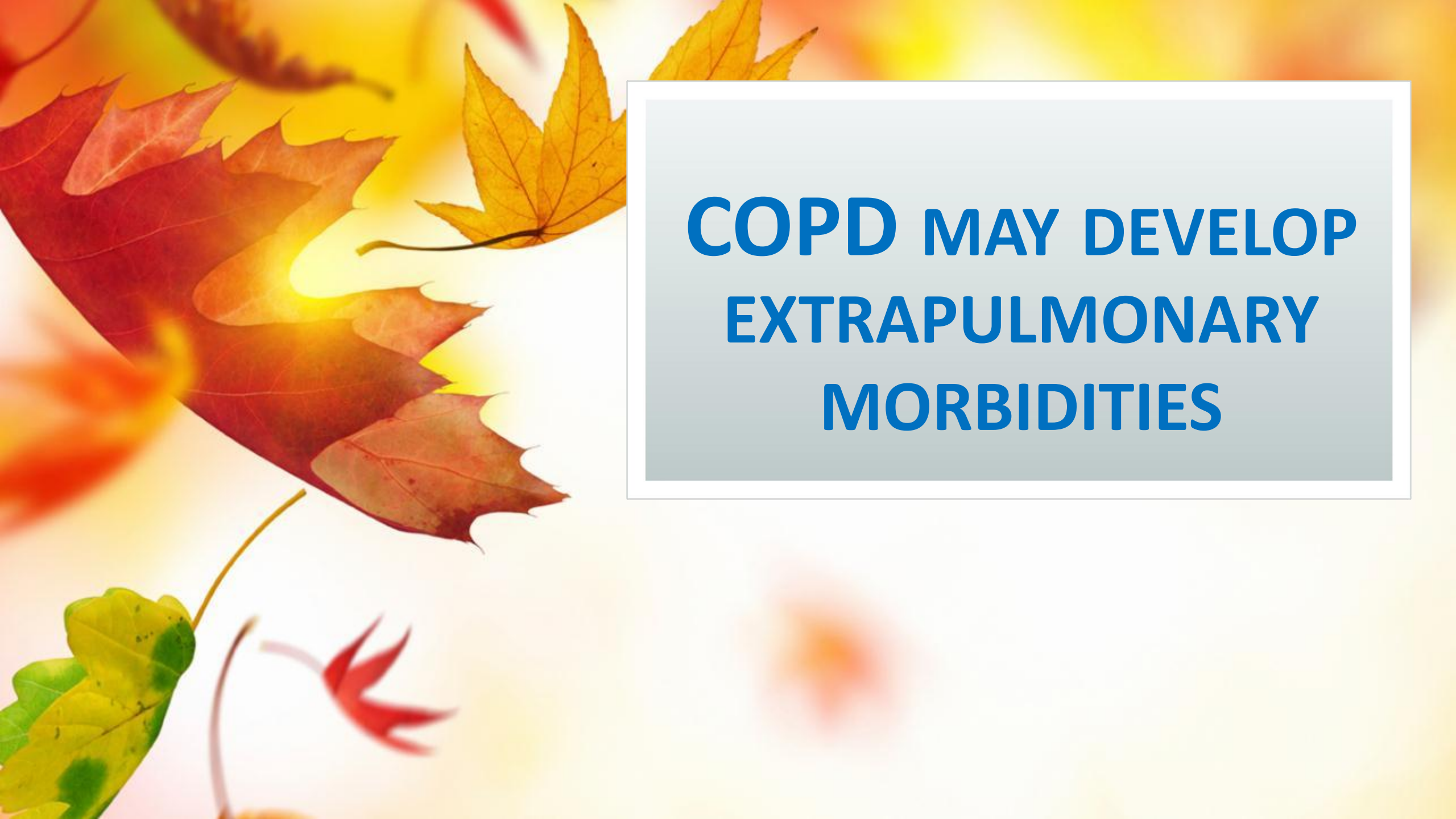
Figure 1S

Causes
Cigarette smoke
Biomass, pollution
Infections
Genetic (AAT and others)
Asthma
Developmental
Unknown

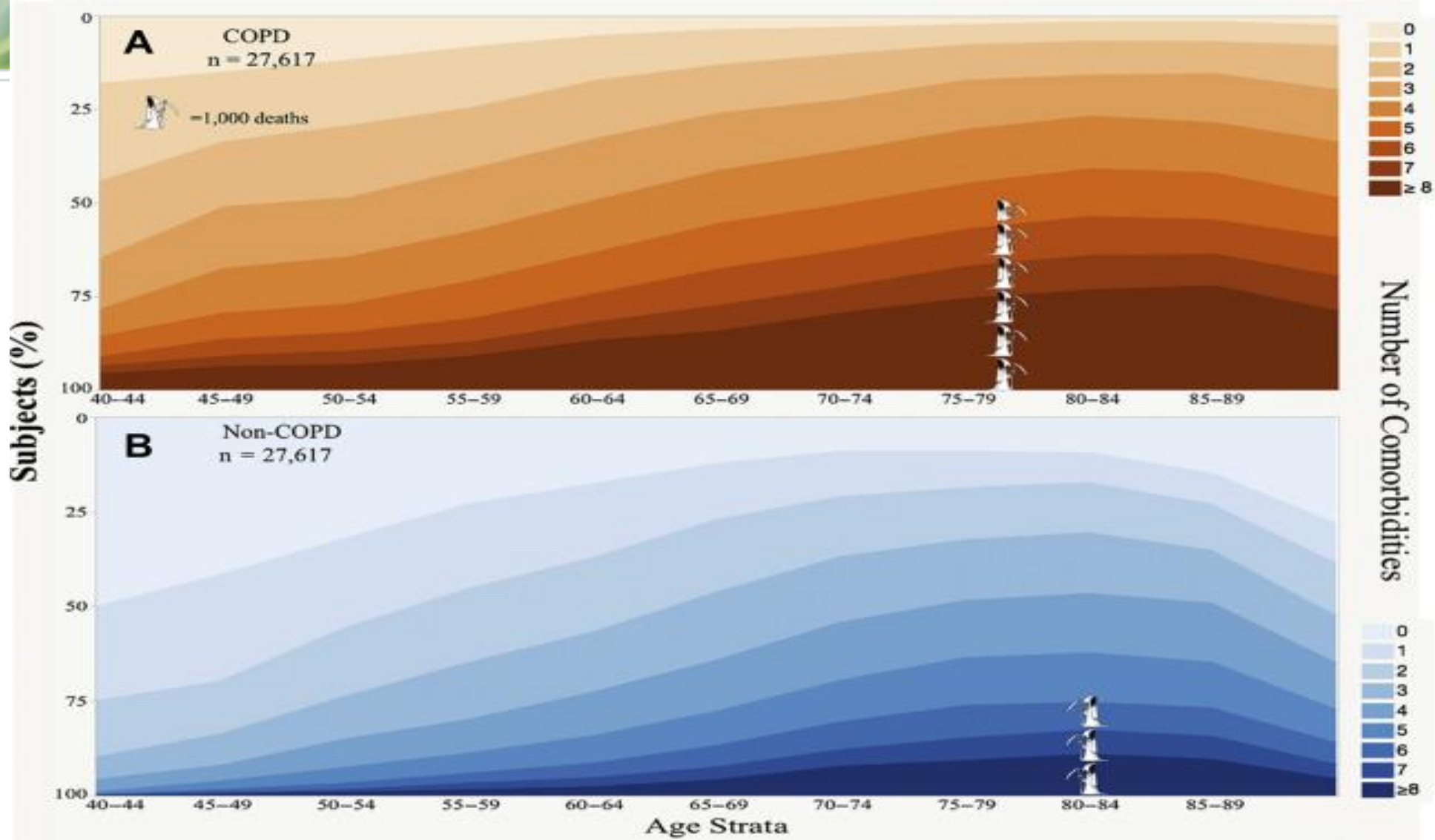
PRE COPD	
Lung Function	No airflow limitation Low DLCO Rapid rate of FEV ₁ decline
Symptoms	Cough, sputum, dyspnea
Structure	Emphysema Abnormal airways Vascular remodeling

COPD
Airflow limitation Abnormal lung functions Altered gas exchange
Dyspnea, cough, sputum, fatigue depression
More: Emphysema, airways and vascular remodeling Comorbidities

Disease progression

The background of the slide features a soft-focus image of autumn leaves. A large, vibrant red maple leaf is prominent on the left side, with several smaller yellow and orange leaves scattered around it. The overall color palette is warm, with yellows, oranges, and reds.

COPD MAY DEVELOP EXTRAPULMONARY MORBIDITIES



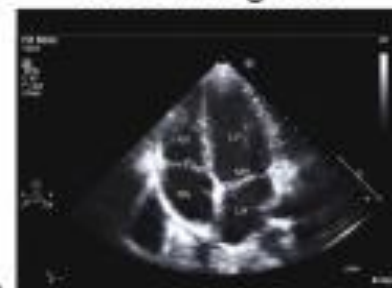
Number of comorbidities per individual by age bracket and total mortality. Each band represent the number of comorbidities per patient and the width the proportion of individuals with that number of comorbidities at different age brackets (X axis). (A) Represent those patients carrying the diagnosis of COPD and (B) those without COPD.



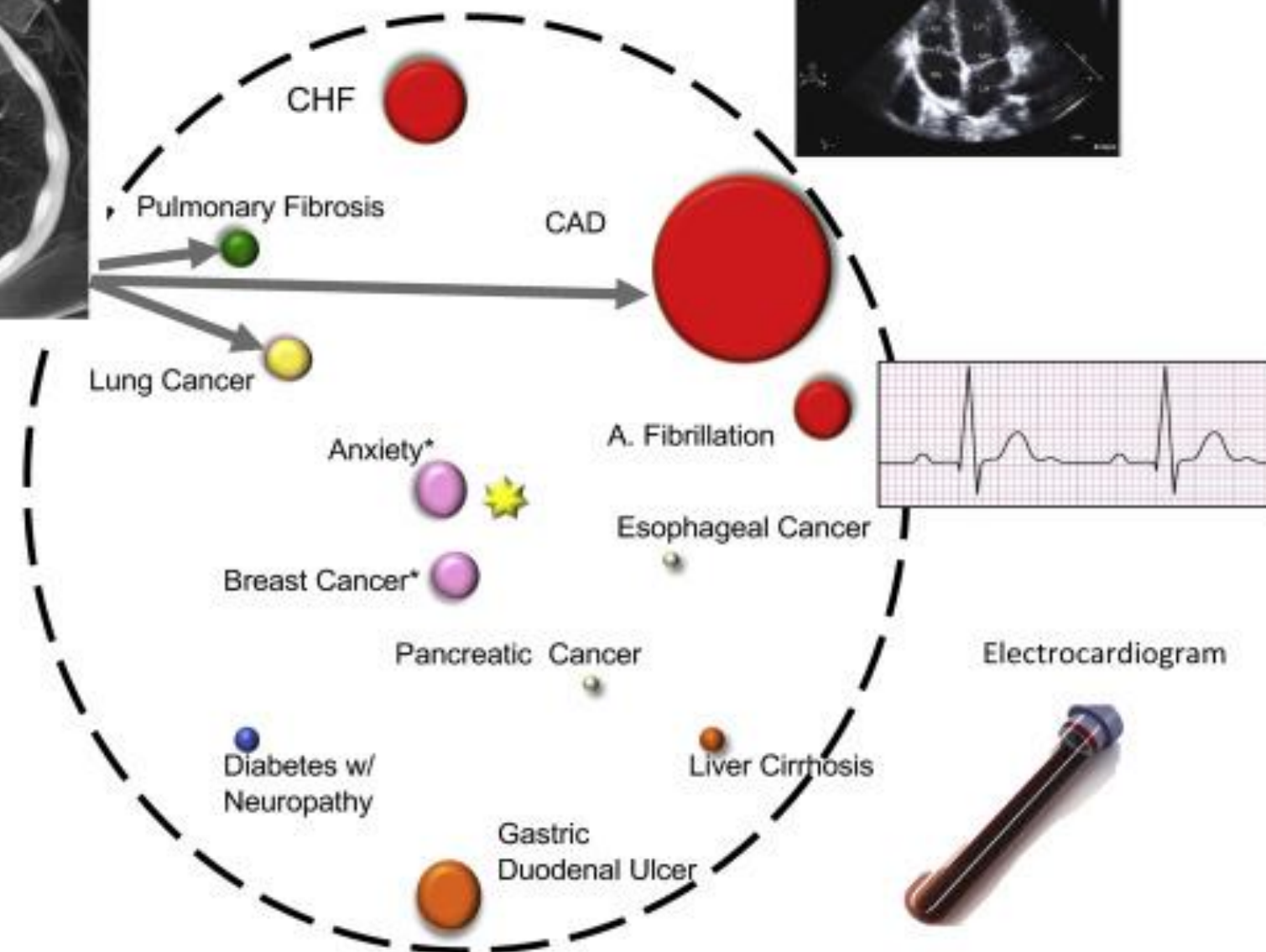
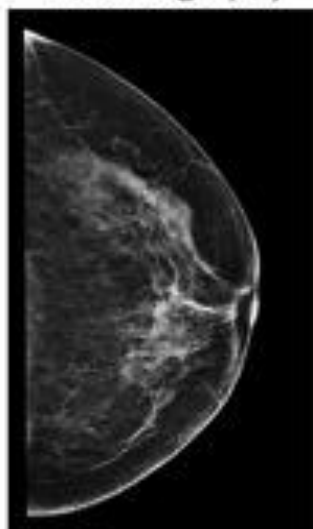
Computerized tomography of the chest



Echocardiogram



Mammography



Exacerbation triggers:



Bacteria

Viruses

Irritants

Stable state

- Greater inflammation (raised CRP, fibrinogen, IL-6)
- Heightened susceptibility to viral infection
- Greater bacterial colonisation
- Faster FEV₁ and functional decline
- Poorer healthcare status
- More severe depression and poorer cognition
- Worsened comorbidity
- Increased cardiovascular risk
- Increased hospitalisation and mortality

INCREASED EXACERBATION SUSCEPTIBILITY

Higher exacerbation susceptibility

EXACERBATION

Persistent inflammation
Slower recovery

Chalk Cliffs on Rügen

German: *Kreidefelsen auf Rügen*

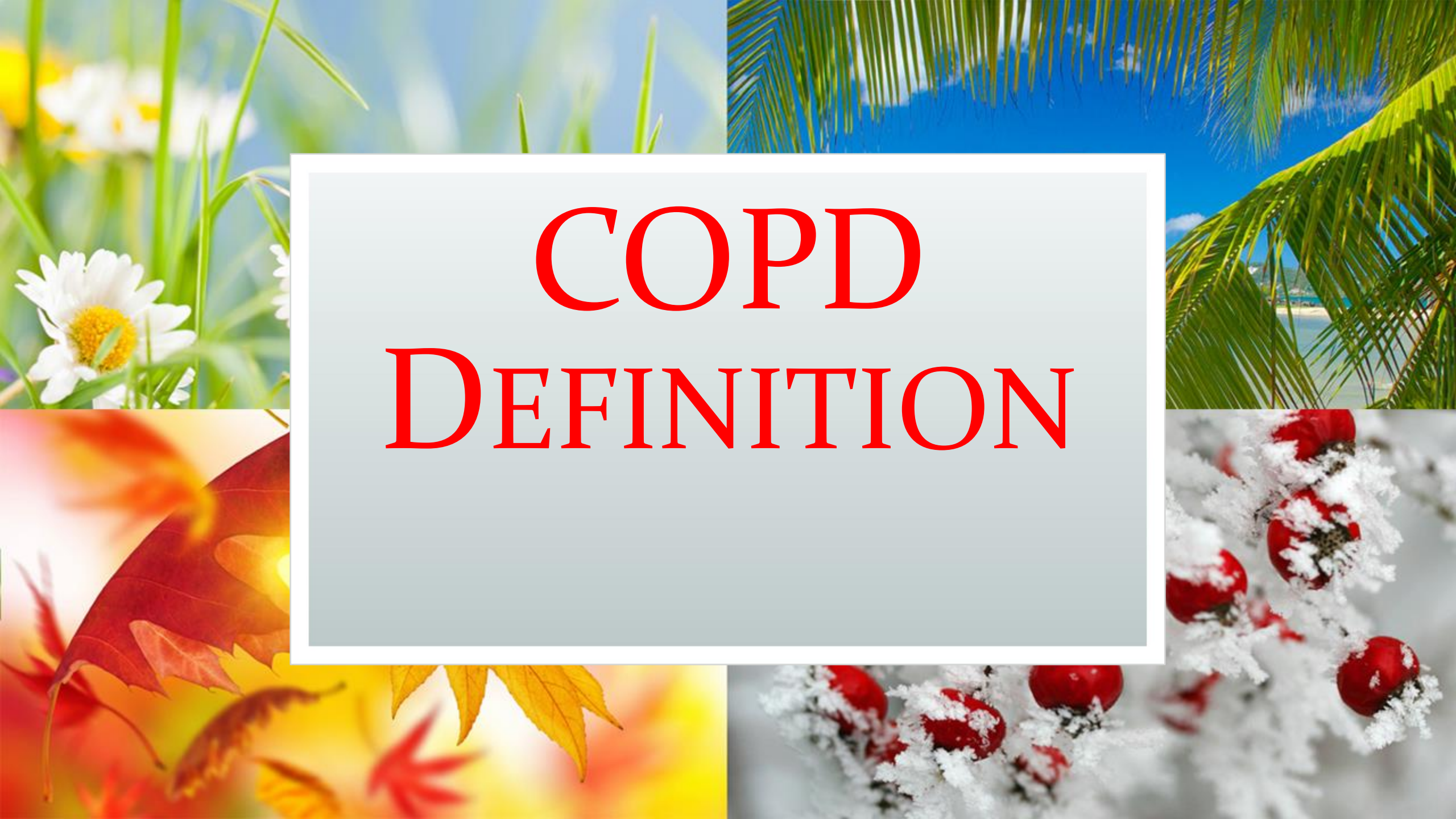


Artist Caspar David Friedrich
Year 1818
Medium Oil on canvas
Dimensions 90.5 cm × 71 cm (35.6 in × 27.9 in)
Location Kunst Museum Winterthur – Reinhart
am Stadtgarten, [Winterthur](#)

**IF RENE' LAENNEC COULD
RETURN, HE WOULD BE
VERY
PROUD**



the fact that although COPD is currently the third leading cause of death worldwide, its overall impact has been decreasing over the last decade. It is our hope that with more emphasis on prevention, and better implementation of pharmacologic and nonpharmacologic therapies, we may be able to eradicate COPD's impact on society



COPD DEFINITION

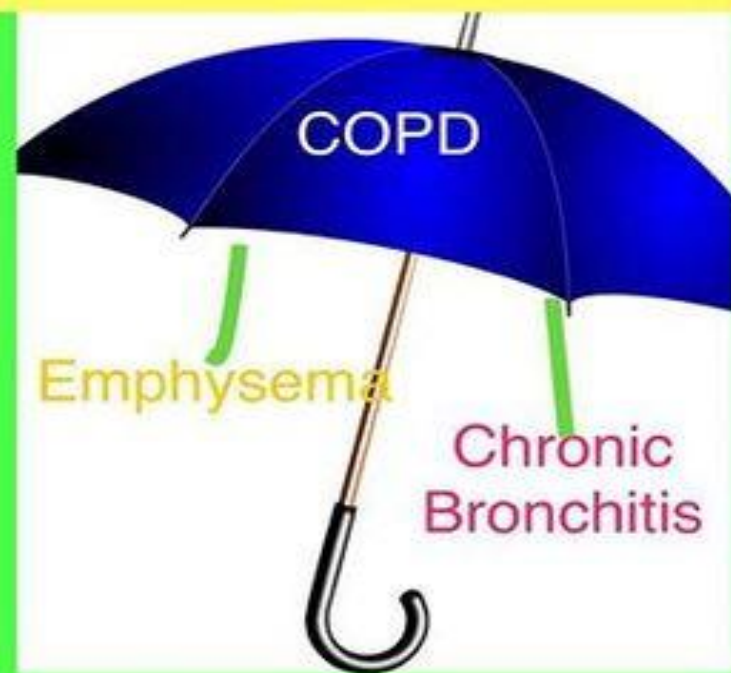


WHAT IS THE DIFFERENCE?

COPD -vs- EMPHYSEMA

COPD:

Is an umbrella term that includes the diagnoses emphysema and chronic bronchitis



EMPHYSEMA:

This is a type of COPD. Emphysema is when the alveoli (air sacs in the lungs) are overinflated and damaged. This results in a loss of their elasticity and ability to recoil. Air gets trapped in these sacs. This causes issues with the exchange of oxygen and CO₂.

WHY ARE COPD & EMPHYSEMA USED INTERCHANGEABLY?

Healthcare providers most often use the term COPD because individuals with emphysema usually have a combination of both emphysema and chronic bronchitis.

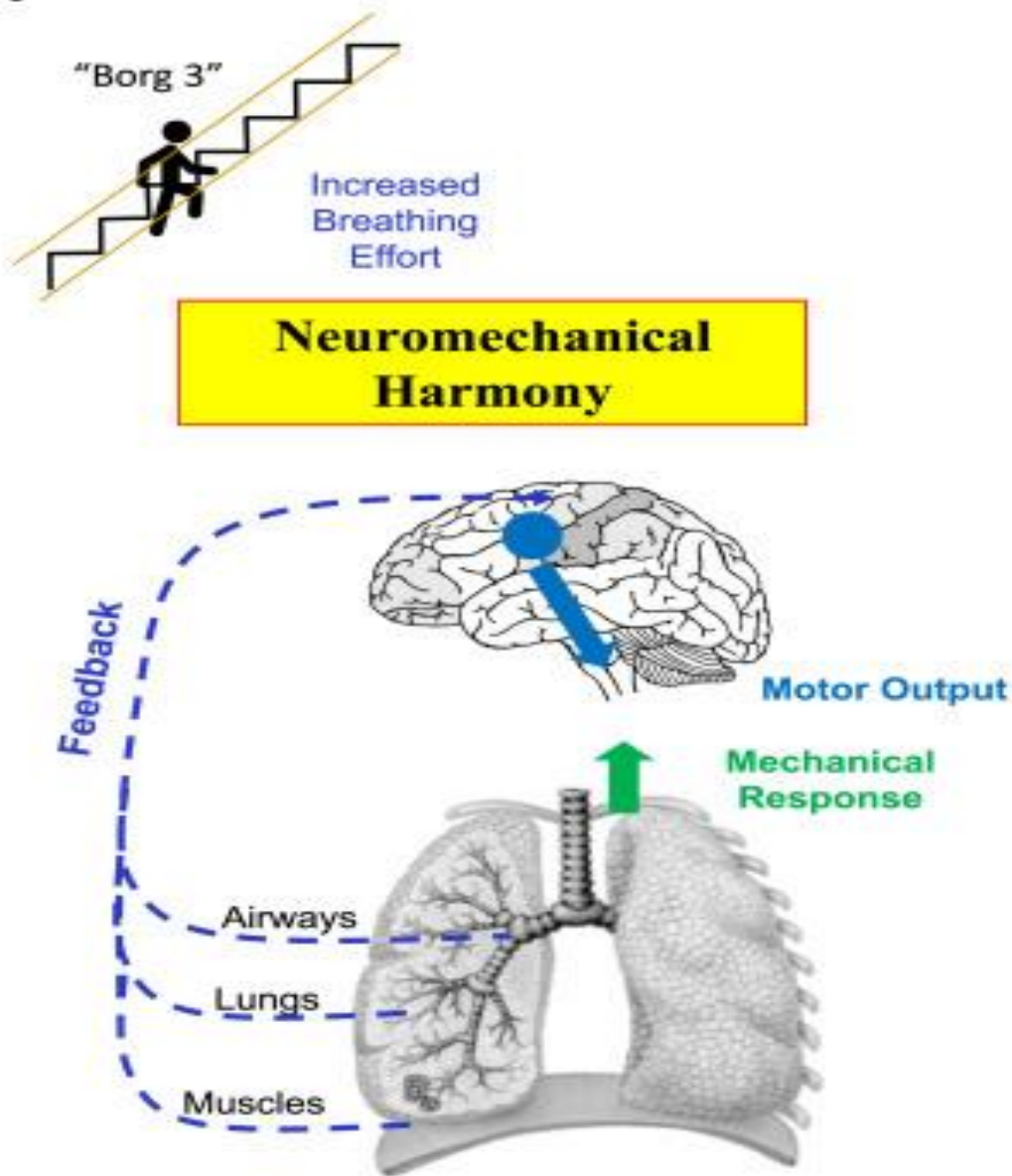
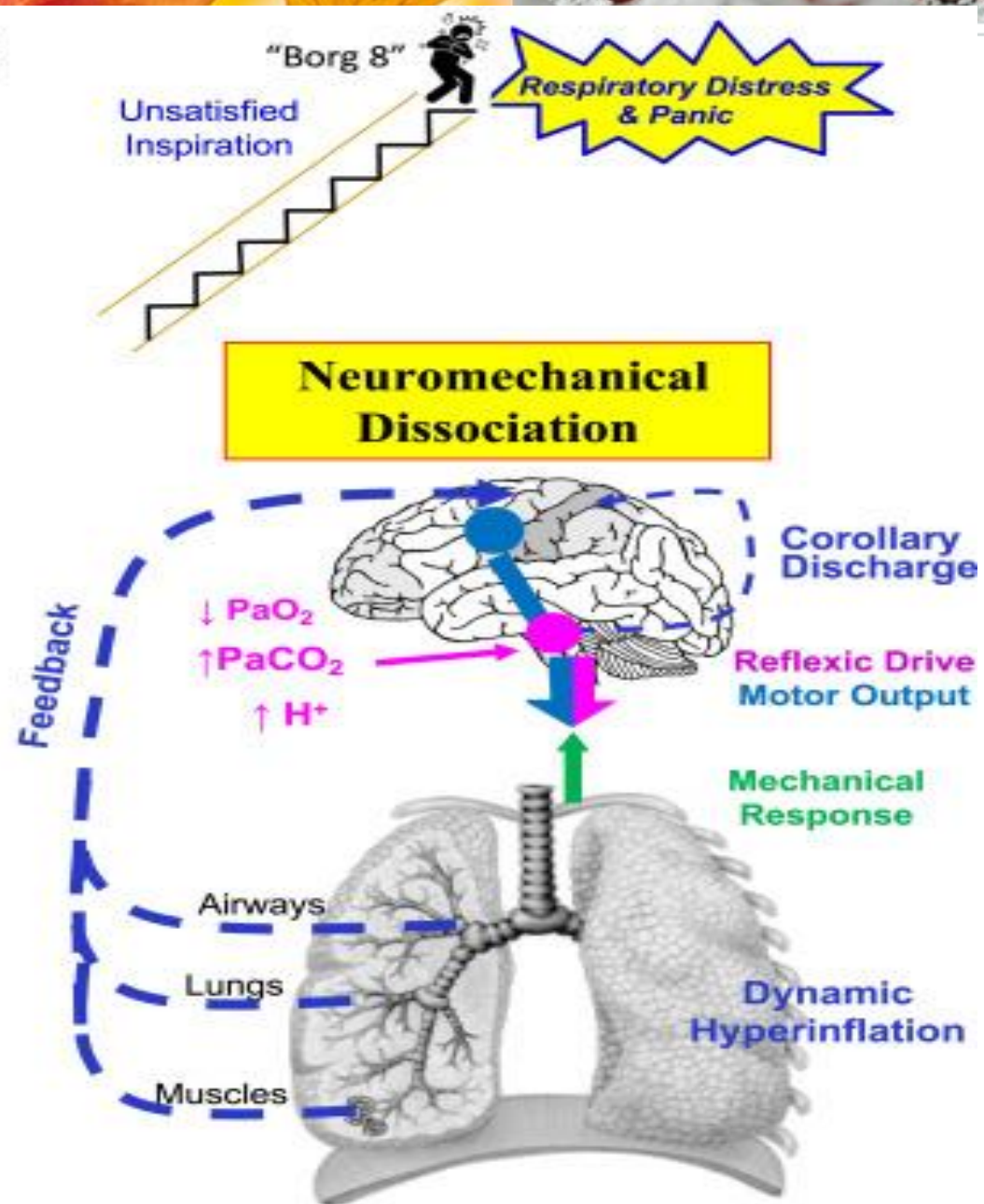


DEFINITION

- COPD is better defined as a clinical syndrome characterized by chronic respiratory symptoms, structural pulmonary abnormalities (airways disease, emphysema, or both), lung function impairment (primarily airflow limitation that is poorly reversible), or any combination of these. Patients with COPD are at a higher risk than patients without COPD for the development of coexisting conditions that are associated with poor outcomes, including death



PATHOPHYSIOLOGY OF DYSPNEA AND EXERCISE INTOLERANCE IN COPD

A**B**



BOX 2

Management of dyspnea in COPD

1. Increased inspiratory capacity:

- Bronchodilators
- Surgical/endoscopic lung volume resection
- Oxygen/heliox/exercise training

2. Reduce IND:

- Oxygen
- Exercise training
- Opiates/anxiolytics

3. Increase ventilatory muscle strength:

- Exercise training
- Specific inspiratory muscle training

4. Alter affective dimension:

- Opiates/anxiolytics/oxygen/exercise training/counseling/behavioral modification

Abbreviation : IND, inspiratory neural drive.

A tropical beach scene with large green palm fronds in the foreground, a sandy beach, and turquoise water under a blue sky with white clouds.

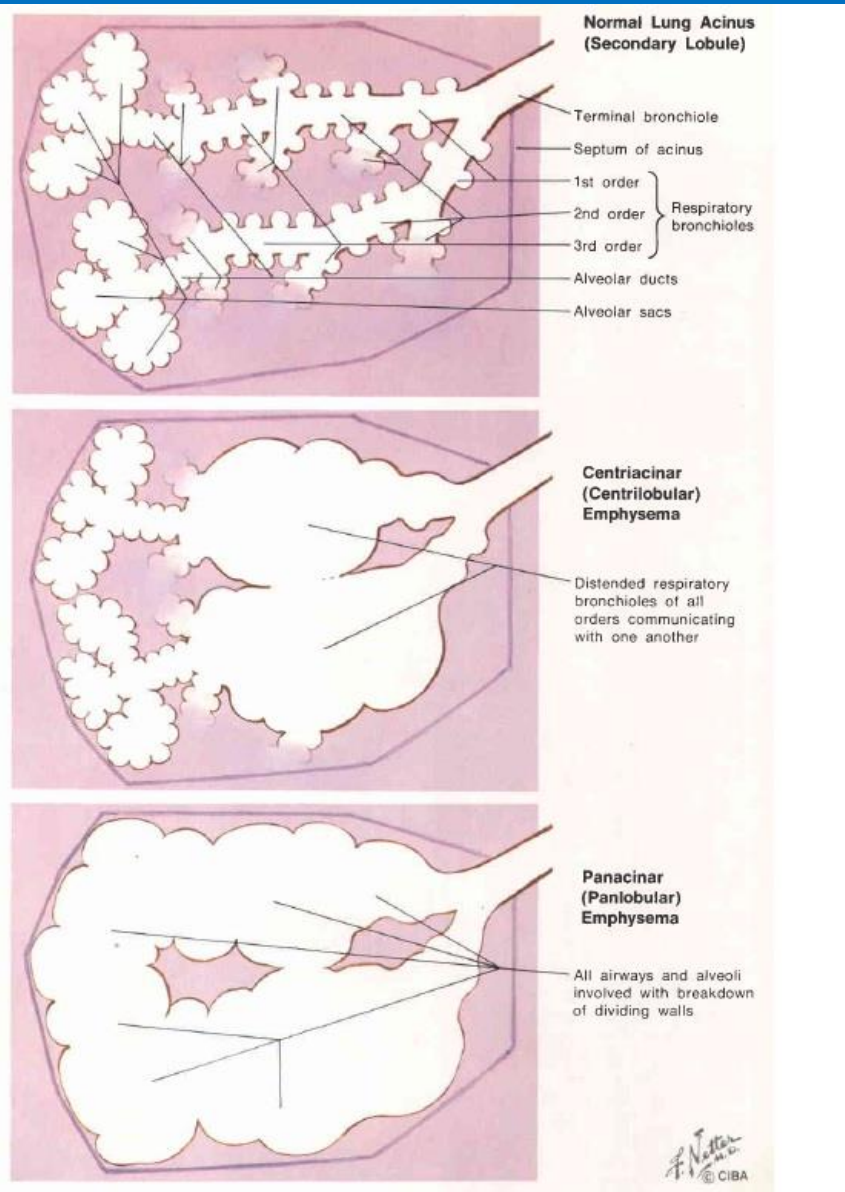
In individuals with COPD who experience advanced refractory dyspnea despite otherwise optimal therapy, we suggest that opioid-based therapy be considered for dyspnea management within a personalized shared decision-making approach (conditional recommendation, very low certainty evidence).

Bronchoalveolar lavage

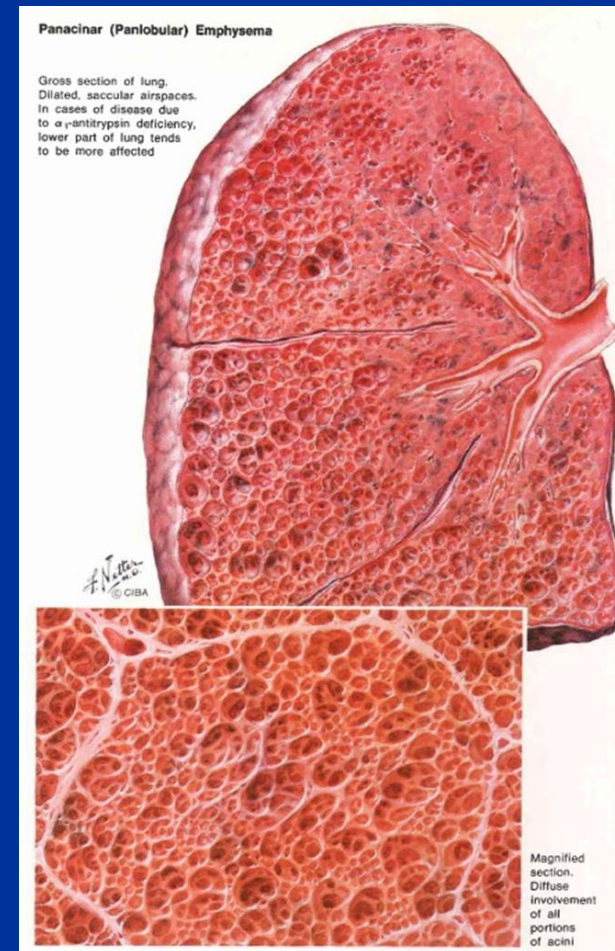
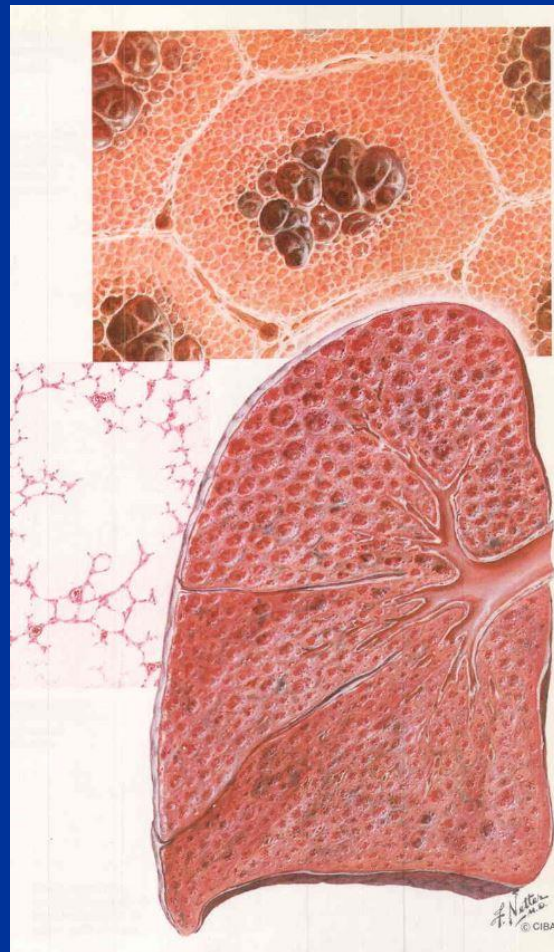
- **Bronchoalveolar lavage fluid contains roughly five times as many macrophages as lavage from nonsmokers.**
- **In smokers' lavage fluid, macrophages comprise >95% of the total cell count.**
- **T lymphocytes, particularly CD8+ cells, are also increased in the alveolar space of smokers.**

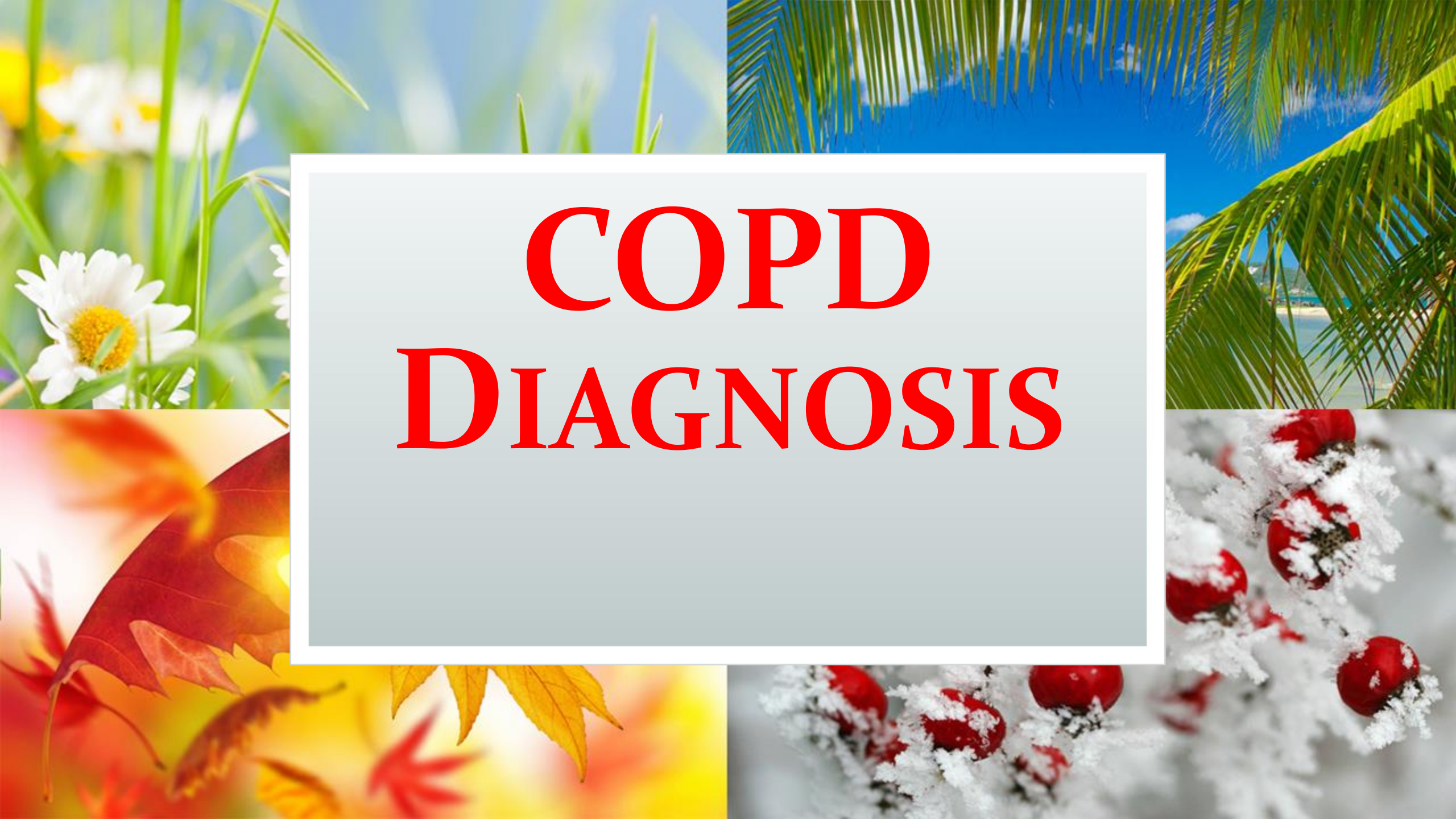
Emphysema: Centriacinar Panacinar

- 1- **Centriacinar emphysema**, the type most frequently associated with cigarette smoking, is characterized by enlarged airspaces found (initially) in association with respiratory bronchioles.
 - Centriacinar emphysema is most prominent in the upper lobes and superior segments of lower lobes and is often quite focal.
- 2- **Panacinar emphysema** refers to abnormally large airspaces evenly distributed within and across acinar units.
 - Panacinar emphysema is usually observed in patients with 1AT deficiency, which has a predilection for the lower lobes.



Centriacinar vs. panacinar





COPD DIAGNOSIS



▶ PATHWAYS TO THE DIAGNOSIS OF COPD

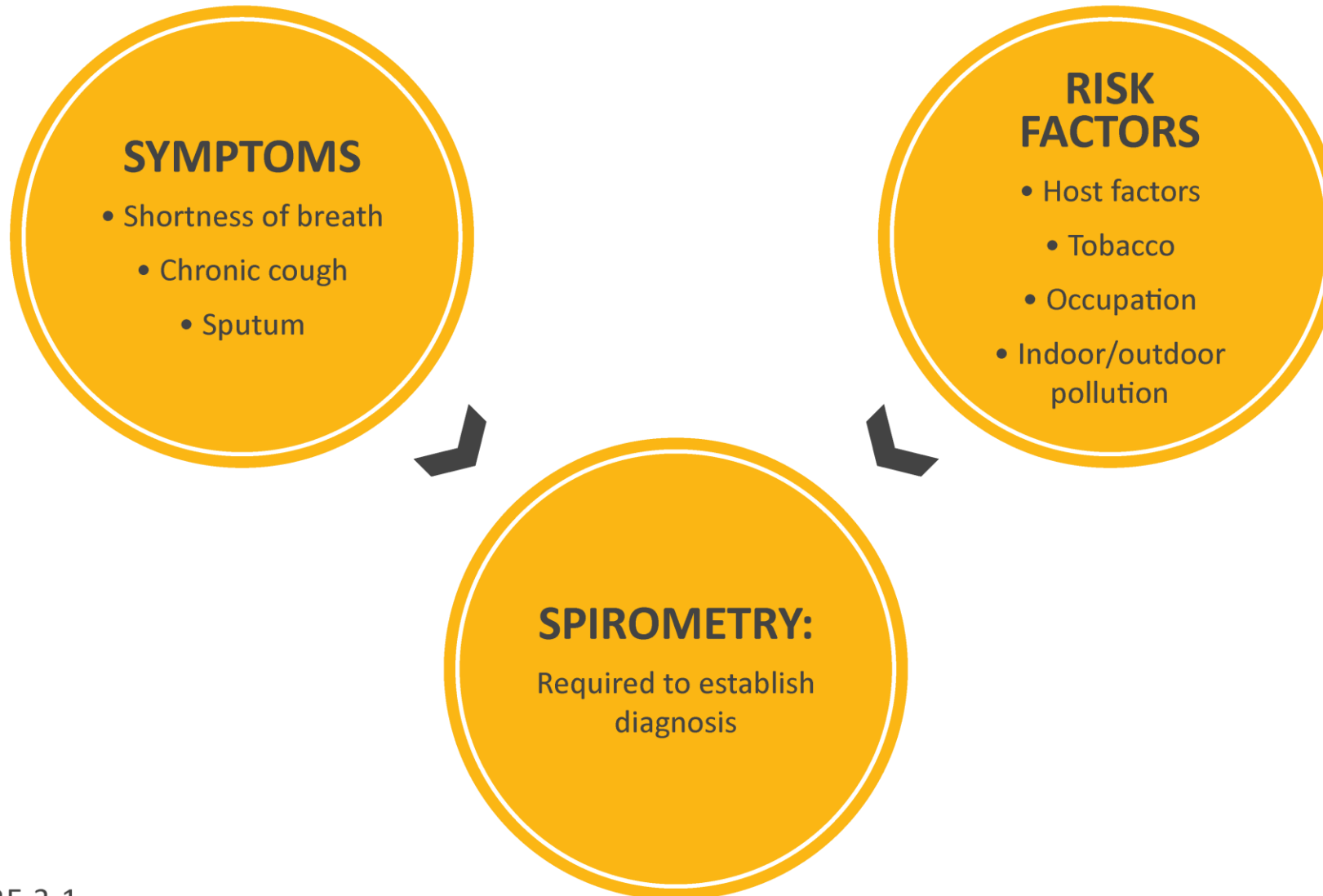


FIGURE 2.1

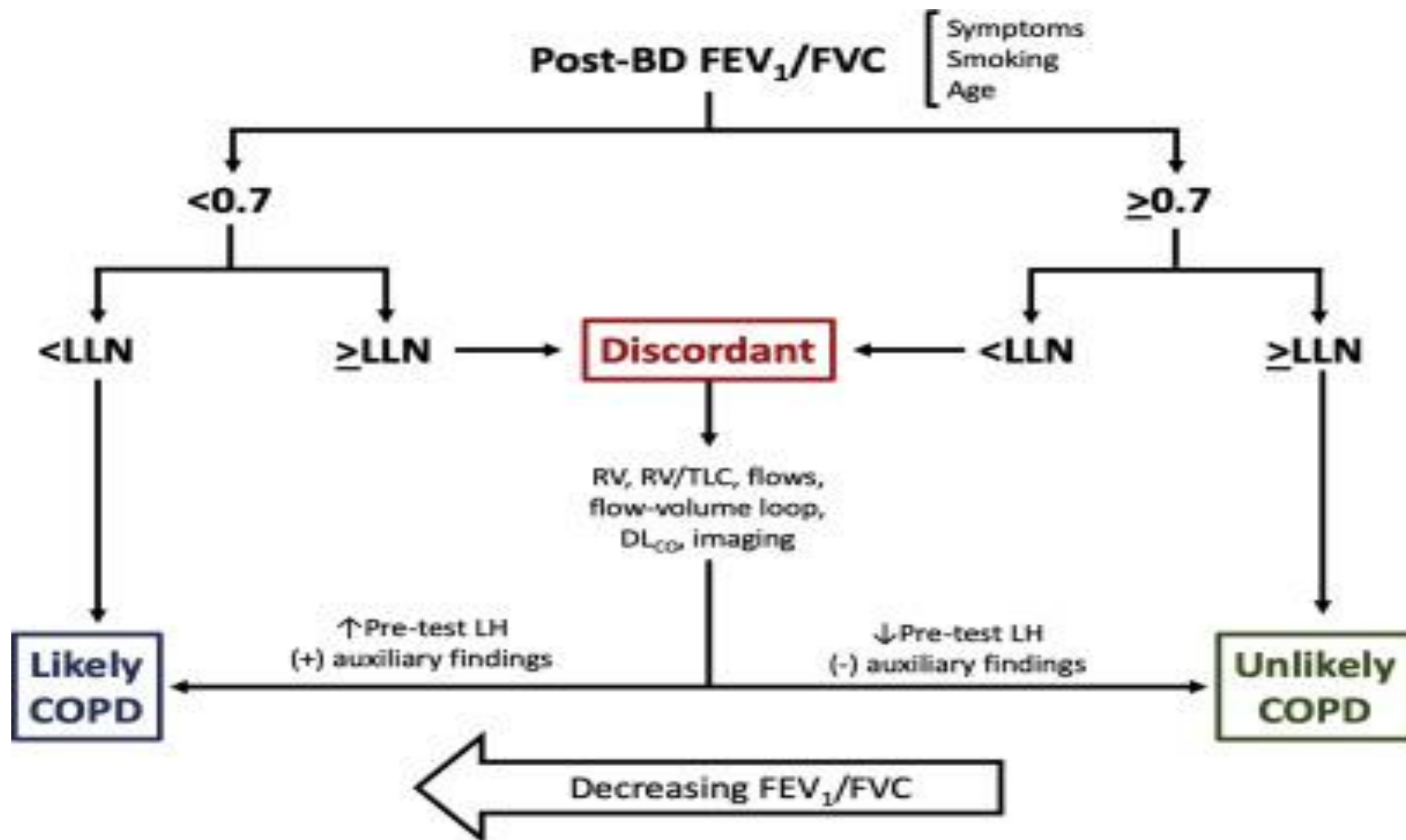


KEY INDICATORS FOR CONSIDERING A DIAGNOSIS OF COPD

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.

TABLE 2.1





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
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GOLD 2:	Moderate	50% ≤ FEV ₁ < 80% predicted
---------	----------	--

GOLD 3:	Severe	30% ≤ FEV ₁ < 50% predicted
---------	--------	--

GOLD 4:	Very Severe	FEV ₁ < 30% predicted
---------	-------------	----------------------------------



▶ ROLE OF SPIROMETRY

- **Diagnosis**
- **Assessment of severity of airflow obstruction (for prognosis)**
- **Follow-up assessment**
 - » Therapeutic decisions.
 - Pharmacological in selected circumstances (e.g., discrepancy between spirometry and level of symptoms).
 - Consider alternative diagnoses when symptoms are disproportionate to degree of airflow obstruction.
 - Non-pharmacological (e.g., interventional procedures).
 - » Identification of rapid decline.

پایان
با آرزوی سلامتی

