



Chronic obstructive pulmonary disease (COPD)

Michael Budziłowicz
ED Science Club

Definition:

COPD is a chronic pulmonary disease characterized by persistent respiratory symptoms and airflow limitation, which is caused by a mixture of small airway obstruction and parenchymal destruction

Etiology:

Tobacco use (90%), smoking is the major risk factor for COPD

Air pollution or fine dusts

- Nonorganic dust, organic dust

Lung growth and development abnormalities

- Recurrent pulmonary infections and tuberculosis
- Premature birth
- α_1 -Antitrypsin deficiency
- Antibody deficiency syndrome
- Primary ciliary dyskinesia

GOLD classification of severity of airflow limitation:

Category	Symptoms	FEV ₁ % of the predicted value
GOLD 1 (Class I)	• Mild	• $\geq 80\%$
GOLD 2 (Class II)	• Moderate	• $50\% \leq \text{FEV}_1 < 80\%$
GOLD 3 (Class III)	• Severe	• $30\% \leq \text{FEV}_1 < 50\%$
GOLD 4 (Class IV)	• Very severe	• $< 30\%$

<https://next.com/us/article/3h0Sdf#L8d35b1751e1fb105ed540cdee65a1245amboss>

Diagnostics:

- Spirometry and body plethysmography
- Postbronchodilator test
- Pulse oximetry, ABG
- Serum α_1 -antitrypsin level

Treatment:

- Cessation of tobacco use
- Pneumococcal vaccination (PPSV23)
- Influenza/COVID-19 vaccination
- Physical activity, physiotherapy with breathing exercises
- Pharmacological treatment with SABA, LABA, SAMA, LAMA

Prognosis:

- 40–70% of all COPD patients survive the first 5 years after diagnosis
- Survival rates vary significantly depending on the severity of the disease
- Measures that improve survival:

Cessation of tobacco use

Long-term oxygen therapy is the only treatment that improves mortality

- COPD is the third most common cause of death worldwide