

## Pfts, copd, tb: Management and support.

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### Introduction

Pulmonary function tests are fundamental in managing COPD, providing essential data for diagnosis, severity assessment, and monitoring treatment response. This review explores both established and emerging PFT techniques, highlighting their evolving role in personalized COPD care and identifying areas for future research and clinical application. [1]

Many individuals who successfully complete tuberculosis treatment experience persistent and often severe pulmonary function impairment. This systematic review and meta-analysis quantifies the significant burden of post-TB lung disease, including both obstructive and restrictive patterns, underscoring the long-term impact of TB on respiratory health. [2]

Non-invasive ventilation (NIV) plays a critical role in managing acute exacerbations of COPD, effectively reducing the need for invasive mechanical ventilation and improving patient outcomes. This comprehensive review and meta-analysis solidifies the evidence for NIV as a cornerstone therapy for hypercapnic respiratory failure in this patient population. [3]

Patients with severe tuberculosis often require mechanical ventilation, presenting complex challenges in critical care. This study analyzes the outcomes of these patients, identifying risk factors for mortality and providing insights into prognosis and optimal management strategies within the intensive care setting for TB-related respiratory failure. [4]

COPD and tuberculosis share numerous risk factors and often present with overlapping clinical features, complicating diagnosis and management. This article delves into their intricate relationship, advocating for increased awareness and integrated approaches to diagnosis and treatment to improve patient outcomes in regions where both diseases are prevalent. [5]

Beyond standard spirometry, advanced pulmonary function tests like lung volumes, diffusion capacity, and exercise testing offer crucial insights for diagnosing and managing complex respiratory conditions. This article provides a practical guide for clinicians on integrating these sophisticated PFTs into daily practice to optimize

patient care and improve diagnostic precision. [6]

High-flow nasal cannula (HFNC) therapy has emerged as a valuable respiratory support tool for patients with acute respiratory failure. This systematic review and meta-analysis demonstrates its effectiveness in improving oxygenation and reducing the need for invasive mechanical ventilation in selected patient populations, marking it as a significant advancement in respiratory care. [7]

The 2023 GOLD report introduced pivotal updates in the diagnosis, management, and prevention of COPD, emphasizing a more personalized approach to therapy. This commentary highlights the significant shifts, including refined diagnostic criteria and updated treatment algorithms, which guide clinicians in providing contemporary, evidence-based care for COPD patients. [8]

Pulmonary function tests are crucial not only in diagnosing tuberculosis but also in assessing the extent of lung damage, monitoring treatment effectiveness, and predicting long-term respiratory sequelae. This review articulates how PFTs can be effectively integrated into the comprehensive management of TB patients, from initial presentation through rehabilitation. [9]

Extracorporeal membrane oxygenation (ECMO) provides advanced life support for patients with severe acute respiratory distress syndrome unresponsive to conventional mechanical ventilation. This systematic review and meta-analysis highlights the potential of ECMO to improve survival in carefully selected patients, emphasizing the importance of specialized centers and skilled teams for its successful application. [10].

### Conclusion

Pulmonary function tests (PFTs) are fundamental in managing Chronic Obstructive Pulmonary Disease (COPD), offering essential data for diagnosis, severity assessment, and treatment response. They are equally crucial in tuberculosis (TB) for assessing lung damage, monitoring treatment, and predicting long-term respiratory sequelae [1, 9]. Advanced PFT techniques, beyond standard spirometry, provide deeper insights for complex conditions and contribute to personalized patient care [6]. Many individuals who

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recover from TB experience persistent pulmonary impairment, emphasizing the long-term impact of the disease [2]. COPD and TB share risk factors and often present with overlapping features, necessitating integrated diagnostic and management strategies [5]. For acute respiratory issues, non-invasive ventilation (NIV) plays a critical role in COPD exacerbations, reducing the need for invasive mechanical ventilation and improving outcomes [3]. High-flow nasal cannula (HFNC) therapy also provides valuable respiratory support, enhancing oxygenation and potentially preventing invasive ventilation in acute respiratory failure [7]. In severe cases, mechanical ventilation is often required for TB patients, presenting significant critical care challenges [4]. For severe acute respiratory distress syndrome unresponsive to conventional ventilation, Extracorporeal Membrane Oxygenation (ECMO) serves as advanced life support, showing potential for improved survival in specialized centers [10]. Recent guidelines, such as the 2023 GOLD report, continually update the diagnosis and management of COPD, promoting a personalized approach to therapy and guiding clinicians in providing contemporary, evidence-based care [8].

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