

COPD: Why are we still missing early diagnoses?

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Chronic obstructive pulmonary disease (COPD) represents a significant global health burden, yet a substantial proportion of individuals with the condition remain undiagnosed, often until symptoms become severe. This diagnostic gap means many patients miss out on timely interventions that could slow disease progression and improve quality of life. The challenge lies in identifying those at risk before irreversible lung damage occurs.

KEY TAKEAWAYS

- **The Pivot:** Early detection of COPD is crucial but frequently missed, leading to delayed treatment and worse prognoses.
- **The Data:** A significant percentage of individuals with airflow limitation consistent with COPD are unaware of their condition.
- **The Action:** Clinicians should consider targeted screening strategies in high-risk populations to facilitate earlier diagnosis and intervention.

Chronic obstructive pulmonary disease is characterized by persistent respiratory symptoms and airflow limitation due to airway and/or alveolar abnormalities, usually caused by significant exposure to noxious particles or gases. Tobacco smoking is the primary risk factor, but exposure to occupational dusts, chemicals, and indoor air pollution also contribute. The disease progresses insidiously, with patients often attributing early symptoms like cough and breathlessness to aging or other factors, delaying medical consultation.

The standard for diagnosing COPD is spirometry, which measures lung function. A post-bronchodilator forced expiratory volume in one second (FEV1) to forced vital capacity (FVC) ratio of less than 0.70 confirms persistent airflow limitation. But spirometry is not routinely performed in primary care for asymptomatic or mildly symptomatic individuals, contributing to the high rates of undiagnosed disease. This diagnostic delay means that by the time patients present for evaluation, their lung function may already be significantly impaired, limiting the effectiveness of available therapies.

The Unmet Need for Early Identification

The global burden of COPD is substantial, with millions affected worldwide. Many individuals live with the condition for years without a formal diagnosis, missing opportunities for interventions that could modify disease trajectory.

This diagnostic gap is particularly pronounced in populations with limited access to healthcare or those who do not recognize the severity of their symptoms. Early detection allows for the implementation of smoking cessation programs, vaccinations, and pharmacotherapy, all of which can improve outcomes.

Current guidelines recommend spirometry for individuals with chronic cough, sputum production, dyspnea, or a history of exposure to risk factors. But these recommendations often target symptomatic patients, leaving a large pool of at-risk individuals unaddressed. The challenge is to identify these individuals before they develop overt symptoms or significant

lung damage. This requires a shift from reactive diagnosis to proactive screening, particularly in high-risk groups such as current and former smokers.

Screening Strategies and Their Limitations

Various screening strategies have been proposed to identify COPD earlier. These include symptom questionnaires, peak expiratory flow measurements, and targeted spirometry in at-risk populations. Symptom questionnaires can raise suspicion, but they lack the specificity to diagnose COPD definitively. Peak expiratory flow measurements are simple and inexpensive, but they are not a substitute for full spirometry and can miss early airflow limitation.

But implementing widespread spirometry screening in primary care faces practical hurdles, including equipment availability, staff training, and reimbursement issues. Despite these challenges, the potential benefits of earlier diagnosis, such as improved quality of life and reduced exacerbation rates, highlight the need for more effective screening programs. For a deeper dive into how lung function is assessed, clinicians might consult the Oxford Handbook of Respiratory Medicine.

Established Management and the Impact of Delay

Once COPD is diagnosed, management focuses on symptom control, reducing exacerbations, and improving exercise tolerance. Bronchodilators, both short-acting and long-acting, form the cornerstone of pharmacotherapy. Inhaled corticosteroids are added for patients with frequent exacerbations or significant eosinophilia. Pulmonary rehabilitation programs are also critical, improving physical function and reducing dyspnea. But these interventions are most effective when initiated early in the disease course.

Delayed diagnosis means patients often present with advanced disease, characterized by more severe symptoms, frequent exacerbations, and a greater decline in lung function. This not only diminishes their quality of life but also increases healthcare utilization, including hospitalizations for acute exacerbations. The economic burden of managing advanced COPD is substantial, highlighting the value of early intervention. Understanding the mechanisms of inflammation and mucus dysfunction in COPD is also an area of ongoing research, as explored in IL-33's Dual Role in COPD: Inflammation and Mucus Dysfunction.

The Role of Primary Care in Detection

Primary care physicians are uniquely positioned to identify individuals at risk for COPD. Regular health check-ups provide opportunities to inquire about smoking history, occupational exposures, and respiratory symptoms. Integrating simple screening tools or opportunistic spirometry into routine practice could significantly improve detection rates. Education campaigns targeting both the public and healthcare professionals are also essential to raise awareness of COPD symptoms and the importance of early diagnosis.

The lack of awareness among patients about their symptoms being indicative of a serious lung condition is a major barrier. Many individuals dismiss chronic cough or breathlessness as normal consequences of smoking or aging. This perception must change. Public health initiatives can play a vital role in educating the community about COPD risk factors and symptoms, encouraging earlier presentation to healthcare providers. This proactive approach could lead to more timely diagnoses and better long-term outcomes for patients. The ongoing discussion around very low nicotine cigarettes also highlights efforts to reduce smoking-related harm.

Challenges in Implementing Widespread Screening

Implementing widespread screening for COPD faces several practical and economic challenges. The cost-effectiveness of population-wide spirometry screening remains a subject of debate, particularly in low-prevalence populations.

Targeted screening in high-risk groups, such as current and former smokers over a certain age, appears to be a more pragmatic approach. But even targeted screening requires significant investment in equipment, training, and infrastructure.

Another challenge is the interpretation of spirometry results, which requires proper training to avoid misdiagnosis. False positives can lead to unnecessary anxiety and further investigations, while false negatives can delay appropriate treatment. Ensuring the quality and accuracy of spirometry testing in primary care settings is paramount for any successful screening program. The need for improved diagnostic accuracy extends to other areas of cardiopulmonary assessment, as discussed in CPET Advances Refine Cardiopulmonary Disease Assessment at ATS 2026.

Looking Ahead: Future Directions

Future efforts in COPD detection will likely focus on refining screening tools, leveraging digital health technologies, and integrating spirometry more seamlessly into primary care workflows. Portable spirometers and telemedicine platforms could make lung function testing more accessible, especially in remote areas. Biomarkers and artificial intelligence may also play a role in identifying individuals at high risk, though these technologies are still in early stages of development for this application.

The ultimate goal is to move towards a model where COPD is diagnosed earlier, allowing for timely interventions that preserve lung function, reduce symptoms, and prevent exacerbations. This requires a concerted effort from healthcare systems, policymakers, and public health organizations to overcome the existing barriers to early detection. Without a proactive approach, many patients will continue to suffer the consequences of delayed diagnosis. The ongoing development of therapies, including triple therapy for COPD, highlights the importance of getting patients into treatment pathways sooner.

CLINICAL IMPLICATIONS

The persistent failure to diagnose COPD early is not merely an academic point; it directly translates to patients presenting with advanced disease, often after significant, irreversible lung damage has occurred. Clinicians in primary care must adopt a lower threshold for suspicion, particularly in patients with any history of smoking or relevant environmental exposures, even if symptoms seem mild. Waiting for overt dyspnea or frequent exacerbations is a disservice.

Integrating simple, opportunistic spirometry into routine visits for at-risk individuals is a practical step. While resource limitations are real, the long-term costs of managing advanced COPD, including hospitalizations and reduced productivity, far outweigh the investment in earlier diagnostic tools. We need to move beyond a reactive model of care.

The pharmaceutical industry continues to develop therapies that improve symptom control and reduce exacerbations, but these drugs cannot reverse established lung damage. Their full benefit is realized when initiated earlier. A more proactive approach to detection would ensure that these treatments reach patients when they can make the most significant difference, rather than merely mitigating the consequences of years of undiagnosed disease.

Patients, too, need better education. The normalization of chronic cough or breathlessness among smokers is a dangerous misconception. GPs have a critical role in challenging these perceptions and empowering patients to seek evaluation for symptoms they might otherwise dismiss. This shift in patient awareness is as important as any diagnostic algorithm.

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