

## JAMA Clinical Guidelines Synopsis

## Screening for Chronic Obstructive Pulmonary Disease

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**GUIDELINE TITLE** Chronic Obstructive Pulmonary Disease Screening

**DEVELOPER** Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017 Global Strategy for the Diagnosis, Management and Prevention of COPD

**RELEASE DATE** January 2017

**PRIOR VERSION** 2001

**FUNDING SOURCE** GOLD

**TARGET POPULATION** Adults aged 19 years or older

**MAJOR RECOMMENDATIONS**

- Asymptomatic patients should not be screened for chronic obstructive lung disease (COPD) with spirometry.
- Spirometry should be used for active case finding in patients with symptoms and risk factors.
- All patients with COPD should be screened 1 time for  $\alpha_1$ -antitrypsin deficiency.

**Summary of the Clinical Problem**

Chronic obstructive lung disease is the third leading cause of death in the United States,<sup>1</sup> with an annual reported incidence of 12 million that is generally considered to be an underestimate.<sup>1,2</sup> The failure to diagnose COPD increases health care costs and symptoms.<sup>3</sup> Conversely, there are numerous patients treated for COPD based on clinical symptoms that do not meet diagnostic criteria.<sup>4</sup> Despite this under- and overdiagnosis of COPD, and acknowledging that spirometry is the most reproducible and objective measurement of airflow limitation, the US Preventive Services Task Force recommended against screening for COPD using spirometry in 2016.<sup>5</sup>

**Characteristics of the Guideline Source**

The stated aim of GOLD is to raise awareness of and improve prevention and treatment of COPD.<sup>6</sup> GOLD is composed of an international network of health care professionals and public health officials with global expertise. GOLD was initially launched in 1997 and involved collaboration with the National Institutes of Health, National Heart, Lung, and Blood Institute, and World Health Organization. The committee reviews published literature to determine GOLD recommendations. The committee does not make any recommendations for therapies unless at least 1 major regulatory agency has approved such therapies. The GOLD board of directors and national leaders reviewed the recommendations, and 10 outside experts performed an external review. There was no mention in the report about how conflict of interest was managed. This summary focuses on screening for COPD.

**Evidence Base**

The guideline discussed here (Table) comes from the 2017 report, the fourth major revision of GOLD, which includes information reviewed by the science committee between 2015 and 2016.<sup>6</sup> Three main recommendations were made with respect to COPD screening.<sup>2,5,6</sup> First, similar to prior GOLD reports and other guidelines, screening asymptomatic patients for COPD with spirometry is not recommended.<sup>5-7</sup> Studies of pulmonary function screening conducted in Australia and Sweden showed a sensitivity of only

50%.<sup>5</sup> Furthermore, there are no data that screening improves morbidity, mortality, or quality of life. The lack of evidence comes more from an absence of studies than from the presence of negative studies. Among the limited evidence on this subject were a handful of studies evaluating whether screening affects smoking cessation. Four of 5 studies on this topic showed that screening does not affect smoking cessation.<sup>5,6</sup>

When the population of interest is narrowed to patients with risk factors (aged  $\geq 40$  years with a smoking history of more than 20 pack-years or recurrent chest infections and/or symptoms [chronic and progressive dyspnea, chronic cough with sputum production] of COPD), the evidence shows that screening spirometry identifies previously undiagnosed cases. Screening with postbronchodilator spirometry demonstrated a sensitivity of 80%.<sup>5</sup> There is limited evidence as to how screening this population changes management and outcomes related to COPD.<sup>5,6</sup>

The guideline recommends that all patients who have had diagnoses of COPD and their family members receive  $\alpha_1$ -antitrypsin deficiency testing, particularly in areas where there is high prevalence of  $\alpha_1$ -antitrypsin deficiency, such as Northern European (Scandinavian and British) and Iberian (Spanish and Portuguese) populations. The deficiency is underdiagnosed, and treatment with

**Table. Guideline Rating**

Standard	Rating
Establishing transparency	Fair
Management of conflict of interest in the guideline development group	Poor
Guideline development group composition	Good
Clinical practice guideline-systematic review intersection	Good
Establishing evidence foundations and rating strength for each of the guideline recommendations	Good
Articulation of recommendations	Good
External review	Fair
Updating	Good
Implementation issues	Good

$\alpha_1$ -antitrypsin augmentation therapy reduces the progressive decline in lung function.<sup>6,8</sup>

### Benefits and Harms

The goal of COPD screening is to identify patients with COPD at a stage at which identification can provide opportunities for treatment to limit symptoms and exacerbation frequency and improve quality of life. To date, evidence does not exist that supports this benefit.<sup>9</sup> In the general population, lung function does not predict mortality independent of a history of smoking, and there are no data on how lung function testing could be used to aid in treatment decisions or improve outcomes for patients with COPD diagnoses prior to symptom onset. The theoretical benefit of early diagnosis motivating smoking cessation has also generally not been supported. The potential harms of population screening include patient- and system-level burden of both spirometry assessments and false-positive and false-negative results.<sup>9</sup> One systematic review concluded that “hundreds of patients” would need to be screened with spirometry to avoid a single exacerbation.<sup>2</sup>

### Discussion

Although screening most asymptomatic people for COPD is not recommended, this and other guidelines recommend screening spirometry to diagnose airflow obstruction among symptomatic patients and those with appropriate risk factors.<sup>6,7</sup>

Additional screening guidance among patients already diagnosed as having COPD to aid in treatment decisions and early iden-

tification of associated risks are also provided in the 2017 GOLD report. All patients with a COPD diagnosis should be tested for  $\alpha_1$ -antitrypsin deficiency. Current and former smokers (within 15 years) with at least a 30-pack-year history of smoking should be assessed for lung cancer using low-dose computed tomography.<sup>6</sup>

### Areas in Need of Future Study or Ongoing Research

There is little evidence regarding the effects of screening spirometry on the management or outcomes of patients with COPD. Until more research is conducted, further guidance for screening asymptomatic patients will be based on opinion and extrapolation. Potential areas of interest are diagnostic test studies to determine the characteristics of patients at risk of developing COPD and randomized trials to test whether early diagnosis affects health outcomes without causing harm or undue costs.

#### Related Guidelines and Other Resources

US Preventive Services Task Force (2016)

<https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/chronic-obstructive-pulmonary-disease-screening>

American College of Physicians/American College of Chest Physicians/American Thoracic Society/European Respiratory Society clinical practice guideline update

<https://www.thoracic.org/statements/resources/copd/179full.pdf>

#### ARTICLE INFORMATION

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