

The Use of Lung Cancer Screening to Increase Chronic Obstructive Pulmonary Disease Diagnosis in Veterans Affairs Primary Care

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Background: Chronic obstructive pulmonary disease (COPD) is underdiagnosed and most diagnoses occur when the disease is advanced, which is associated with worse outcomes. Veterans have a higher prevalence of COPD compared to nonveterans, but some veterans are unlikely to report early symptoms of COPD and primary care practitioners (PCPs) do not routinely ask high-risk patients (aged 50-80 years with a smoking history ≥ 20 pack years) if they have symptoms. There is a pressing need for innovative methods to diagnose COPD earlier in its course.

Observations: Lung cancer screening (LCS) studies have found evidence of emphysema on computed tomography

(CT) in patients without prior history of COPD. Detection of emphysema on CT allows PCPs to identify patients who may benefit from symptom screening, spirometry, and tobacco cessation efforts. In 2022, the Veterans Affairs Northeast Ohio Healthcare System internal medicine residents and faculty implemented a quality improvement project to increase early COPD diagnosis in primary care patients using CT for LCS.

Conclusions: We propose asking all patients who are eligible for LCS about their COPD symptoms and creating a clinical reminder for COPD screening in patients with tobacco use.

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Primary care practitioners (PCPs) in the US Department of Veterans Affairs (VA) provide care for patients with higher rates of many diseases—diabetes, heart disease, cancer, chronic obstructive pulmonary disease (COPD), and stroke—compared to the nonveteran population.¹ Due to the medical complexities of these diseases, they are often misdiagnosed or not diagnosed at all.

COPD is hiding in plain sight, impacting quality of life and burdening US health care systems.² Research has yielded new treatments and evidence-based guidelines; however, COPD remains underdiagnosed. Only 13 million of the estimated 79 million US adults with COPD aged 20 to 79 years have been formally diagnosed.³ By the time patients are diagnosed, the disease is often advanced, and therapies are less effective. In 2 large studies of patients with COPD symptoms, later diagnosis was associated with worse outcomes.^{4,5}

Veterans have a higher prevalence of COPD (8%-19%) than nonveterans (6%), likely due to higher rates of smoking and service-related exposures, especially among veterans of post-9/11 conflicts.^{6,7} Veterans do not always report symptoms and PCPs may not ask about symptoms, leading to underdiagnosis.⁸ The combination of high

likelihood and underdetection of COPD presents a challenge and a target for VA quality improvement (QI).

The US Preventive Services Task Force (USPSTF) recommends against screening asymptomatic patients for COPD. However, both the USPSTF and the Global Initiative for Chronic Obstructive Lung Disease Report advocate for active case finding in primary care clinics to determine whether high-risk patients, such as smokers, experience COPD symptoms and warrant spirometry.^{9,10} To make early COPD diagnoses, clinicians may use questionnaires alone or in combination with handheld peak expiratory flow rate measurements.^{11,12} Formal spirometry, considered the gold standard for COPD diagnosis, is ordered for patients who report COPD symptoms (ie, shortness of breath with exertion) or who have both COPD symptoms and reduced peak flow rates.

A systematic review and meta-analysis found that while the combination of questionnaires and peak flows was the more effective strategy overall, questionnaires alone were also valuable for identifying patients with possible COPD.¹³ Implementation of either screening method in primary care practices would be challenging. In a simulation study that applied chronic disease and preventive care guidelines to hypothetical

patient panels, the time required for PCPs to provide guideline-recommended chronic and preventive care in addition to acute care far exceeded 8 hours per day, even in team-based settings.¹⁴ Overburdened PCPs are therefore unlikely to accept additional tasks like COPD case finding.

Why don't patients report their pulmonary symptoms? Patients may not recognize the symptoms as evidence of COPD. Others may be afraid of a COPD diagnosis or the stigma that is associated with it.¹⁵ Perhaps they believe COPD treatment is ineffective because of lung damage from smoking. Some patients may not want to know if they have COPD, while others reduce activity levels to avoid symptoms.¹⁶

QUALITY IMPROVEMENT PROJECT

Given the high prevalence of COPD among veterans and the potential for underdiagnosis, VA Northeast Ohio Healthcare System (VANEHHS) internal medicine residents and faculty assessed the state of COPD diagnosis in its primary care clinic with a QI project in 2022. Patients in the clinic between August 1, 2015, and November 30, 2022, with an *International Classification of Diseases-10* (ICD-10) COPD diagnosis code (J44) in the electronic health record were included. Of 157 included patients, 105 patients who had prior spirometry testing were excluded. Of the 52 patients with diagnosed COPD and no spirometry testing, 30 patients had computed tomography (CT) findings consistent with COPD (ie, airway thickening, emphysema, air trapping) that was performed for CT lung cancer screening (LCS).¹⁷ Twenty-three of these 30 patients were contacted by phone. All 23 were ever smokers and 13 reported COPD symptoms. The PCPs of the symptomatic patients were then contacted. Spirometry was ordered for all 13 patients and completed by 7. Three spirometry tests confirmed the COPD diagnosis. One PCP initiated inhaler therapy for a patient with newly diagnosed COPD.

All 11 PCPs of symptomatic patients were interviewed (many had > 1 symptomatic patient). They reported being unaware of patients' COPD symptoms because the patients did not mention them, noting that screening for COPD was not a priority.

Role of Lung Cancer Screening

VA PCPs use electronic health record clinical reminders to track tests, consults, chronic disease education, cancer screenings, and routine health maintenance. A clinical reminder already exists (based on USPSTF recommendations) for LCS for patients aged 50 to 80 years who have a smoking history of 20 pack years. Patients who meet these criteria would also be considered high risk for COPD.

The VANEHHS QI project suggests that previously undiagnosed patients with findings of COPD on LCS may also have symptoms of COPD. Therefore, we wondered whether the LCS clinical reminder could serve a second purpose by prompting PCPs to ask veterans who meet LCS criteria about their COPD symptoms.

In 2022, about 13 million patients were eligible for LCS.¹⁸ Patients who qualify for LCS are at high risk for other cardiopulmonary disorders, such as COPD and coronary artery disease. Lung cancer is detected in only 1% of patients screened with CT at baseline. However, more often LCS yields evidence of additional cardiopulmonary disorders, such as emphysema or coronary artery calcifications. The International Early Lung Cancer Program (I-ELCAP) and the National Lung Cancer Screening Trial (NLST), which included > 79,000 patients, found evidence of emphysema on CT imaging in 24% and 31% of cases, respectively.^{19,20} In both cohorts, > 80% of patients with emphysema on CT imaging had no prior history of COPD.

In a 2022 article summarizing the potential impact of CT LCS on COPD diagnosis, Mulshine et al suggest that detection of emphysema on CT LCS provides "earlier recognition for PCPs to identify patients who would benefit from detailed symptom screening to prompt spirometry for COPD detection" and additional motivation for tobacco cessation.²¹ The VANEHHS QI project was developed and implemented prior to I-ELCAP or NLST reporting results but reinforces the value of CT LCS for COPD diagnosis.

Early diagnosis of COPD remains challenging because PCPs do not ask, patients do not tell, and symptoms can easily be dismissed. However, earlier diagnosis of COPD in symptomatic patients improves

outcomes.^{3,4} To bridge this gap, VA PCPs and primary care patient aligned care teams (PACTs) need to commit to probing high-risk patients for COPD symptoms and ordering spirometry for those who are symptomatic. To accomplish this task, primary care teams need help.

The VANEHS QI project confirmed that some patients with evidence of COPD on CT have symptoms of COPD that they did not share with their PCPs and suggests that LCS can be used as a dual action case finding method to screen both for lung cancer and COPD. We propose that patients who are eligible for LCS should also be probed for COPD symptoms at their clinic visits; for symptomatic patients, spirometry should be ordered, and COPD evidence-based management should be initiated when spirometry results are consistent with COPD. Annual probing for COPD symptoms could be considered in asymptomatic patients with ongoing tobacco use or emphysema on CT, since they may develop symptoms in the future. This new case-finding method bypasses the need for time-prohibitive questionnaires or peak flow measurements.

Future Opportunities

VA PCPs juggle many priorities and despite the simplicity of this new case finding COPD method, it may be unintentionally overlooked. PCPs often run out of time or may forget to ask patients about COPD symptoms when ordering LCS.

Future innovations to increase COPD diagnosis could include the creation of a yearly VA clinical reminder linked to the tobacco use reminder that has check boxes asking about symptoms of COPD in current and prior smokers. If patients have COPD symptoms, the reminder can prompt the ordering of spirometry. Similar reminders could be implemented to identify veterans with exposures to burn pits or other military environmental exposures who may have COPD symptoms. Another possible way to increase COPD diagnosis would be a partnership between primary care and the VA LCS program where patients receiving screening are asked about COPD symptoms during their LCS interviews and PACTs are alerted to order spirometry for symptomatic patients.

Elusive no longer! We can pull the veil back on COPD diagnosis and identify patients with possible COPD earlier in their course using their eligibility for LCS as a yearly reminder to probe them for symptoms. While not all patients who undergo LCS—even those with evidence of COPD on CT—will have COPD symptoms, symptoms may develop over time. LCS provides the possibility of 2 diagnoses from 1 test. This is an opportunity we cannot afford to miss.

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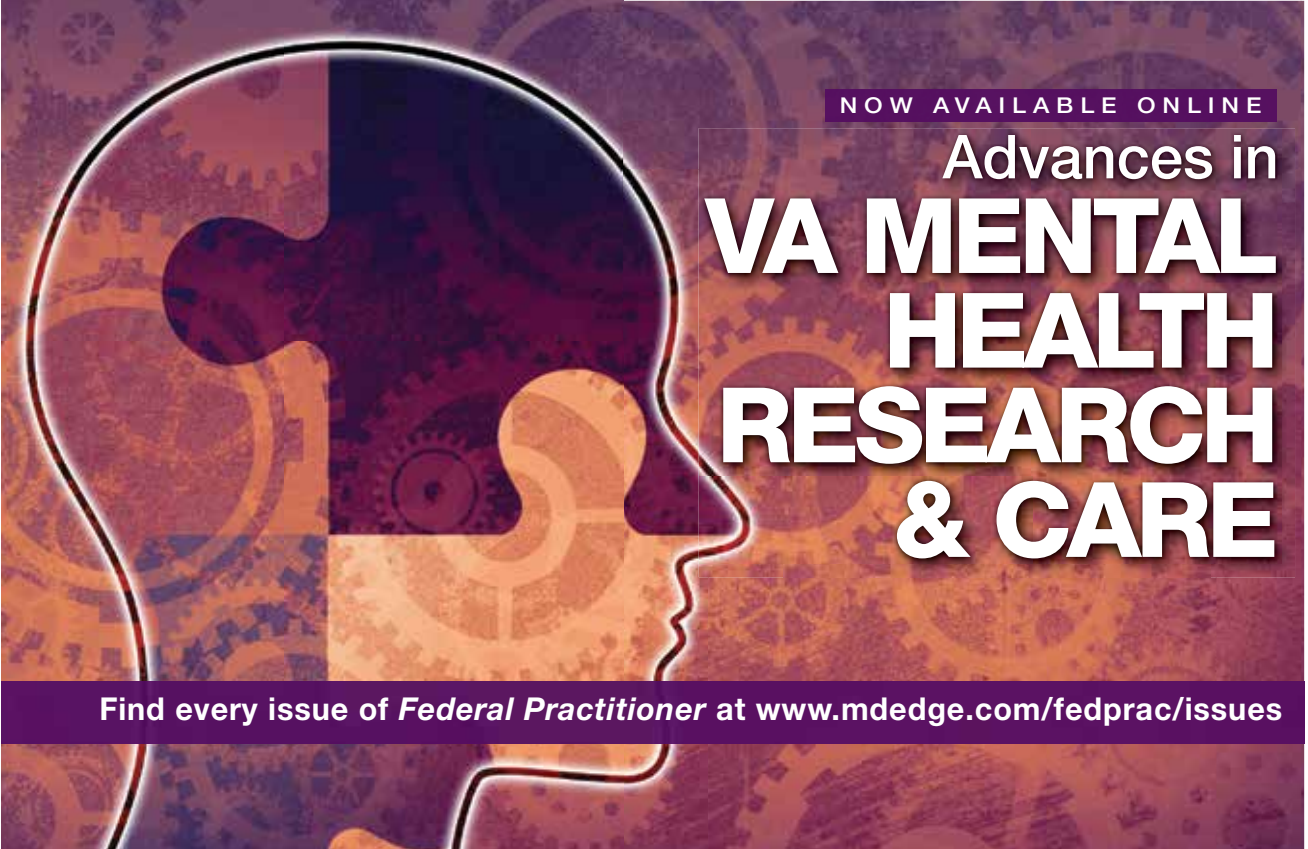
Ethics and consent

The Veterans Affairs Northeast Ohio Healthcare System Institutional Review Board Determinations Committee reviewed and ruled this quality improvement project to be exempt from oversight because it did not constitute research activities.

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