Improving COPD Screening in an Internal Medicine Practice by Implementing the GOLD

Guidelines

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Abstract

Purpose: Improve chronic obstructive pulmonary disease (COPD) screening in primary care by implementing Global Initiative for Chronic Obstructive Lung Disease (GOLD) screening criteria.

Background and Significance: Evidence shows primary care providers (PCPs) are not adhering to the GOLD Guidelines for COPD screening.

Methods: Guideline education with pre/post-intervention survey and percent of eligible participants screened.

Results: Pre-intervention surveys (n=10) and post-intervention surveys (n=8) completed. Significant increase in knowledge regarding the CAT score (*M* score = *11.50, U* = 24.000, p<.05). Part 2) 24% (n=6) of participants were screened with the CAT questionnaire.

Conclusions: PCPs are aware of the GOLD Guidelines, but do not always adhere to its recommendations. Future research should concentrate on effective ways to implement the GOLD Guidelines screening recommendations in primary care clinics.

Keywords: chronic obstructive pulmonary disease, COPD, GOLD guidelines, COPD screening

Introduction

Chronic obstructive pulmonary disease (COPD) is a progressive respiratory disease that affects people worldwide. Although there are clinical guidelines for the diagnosis and management of COPD, many primary care providers (PCPs) are not adhering to guideline recommendations. Improved adherence to guidelines can decrease exacerbations and improve health and quality of life (QOL) for those with COPD.

Background and significance

COPD is a global health concern. The worldwide prevalence of COPD in people over 40 years is estimated between 9% and 10% (Landis et al., 2014). The disease is projected to become the third leading cause of mortality worldwide by 2020 (Perez, Wisnivesky, Lurslurchachai, Kleinman, & Kronish, 2012). In the United States, COPD is the third-ranked cause of death: 120,000 deaths each year (Angelis et al., 2013). Over 12 million Americans are diagnosed with COPD, although 24 million have impaired lung function and may be undiagnosed (Guarascio et al., 2013).

The Global Initiative for Obstructive Lung Disease (GOLD) guidelines focus on the screening and treatment of COPD to relieve and reduce symptoms while preventing future adverse health effects such as acute exacerbations (GOLD, 2016). They are considered a standard of care (Perez et al., 2012). PCPs are familiar with the GOLD guidelines, but demonstrate suboptimal adherence (Perez et al., 2012).

COPD Diagnosis and Mismanagement

COPD is often misdiagnosed or underdiagnosed (Guarascio et al., 2013; Joo, Au, Fitzgibbon, McKell, & Lee, 2011; Salinas et al., 2011; Melbye, Drivenes, Dalback, Leinan, Høegh-Henrichsen, & Østrem, 2011). This is significant due to evidence that the most rapid

decline in lung function occurs early in the disease (Csikesz & Gartman, 2013). As part of the

guidelines screening process, spirometry should be used to help determine the severity of COPD

(GOLD, 2016). However, studies demonstrate that spirometry is underutilized (Joo et al, 2011;

Salinas et al., 2011).

Significance of the Problem

Anxiety, QOL, and depression have been correlated with COPD. As disease progresses

from moderate to severe, there is often a decline in QOL attributed to financial burden caused by

hospitalizations, loss of work productivity, and disability (Borge, Mengshoel, Moum, & Wahl,

2016; Rycroft et al., 2012).

PICOT Question and Search Strategy

Because evidence demonstrates that PCPs are not appropriately screening for COPD, the

following clinically relevant PICOT question was asked, "In primary care healthcare providers,

how does application of the GOLD guidelines compared to usual care affect emergency

department visits and hospital admission rates?"

An exhaustive search was performed to find literature related to the PICOT question. The

medical-based databases included were: EBSCOhost, PubMed, Cochrane Review, Proquest

Medline, and Elsevier ScienceDirect. Keywords were carefully selected and the initial searches

most commonly included: *COPD, chronic obstructive pulmonary disease, GOLD, GOLD*

guidelines, primary care, internal medicine, and *family practice.* To further narrow results, the

additional keywords *management, adherence, (re)admission, diagnosis, improvement,* and

spirometry combined with Boolean connectors AND/OR produced a broad yet manageable list

of articles to review and analyze.

The final yield for all three databases was 159 citations. Of these, 22 articles were selected for closer review. Twelve articles were then excluded based on incomplete data, use of guidelines other than the GOLD guidelines, and inclusion of settings other than primary care.

Evidence Synthesis

Five studies focused on physician adherence to the GOLD guidelines, three studies examined COPD screening, and two studies analyzed COPD-related hospital or emergency department readmissions. The majority of studies were conducted in the U.S. Sample sizes ranged from 132 to 23,957 and included patients or providers depending on the objectives of the study. The articles ranged from level I to level IV evidence, with eight of the ten studies ranking as level IV. Although level IV articles are only considered moderately strong evidence, they reveal important trends in GOLD guideline adherence.

The overarching outcome is that PCPs do not properly follow the GOLD guideline recommendations for COPD screening and treatment. Patients are readmitted to hospitals and emergency departments due to lack of knowledge regarding disease management and improper use of healthcare resources for disease exacerbation. The evidence suggests that PCPs are using subjective information to diagnose and treat patients with COPD, which leads to inaccurate diagnoses and management.

The Project

A project was designed to create an objective, standardized COPD screening process for an internal medicine practice. The benefits of the project include earlier and more accurate diagnoses of COPD, and therefore, earlier treatment and slowed disease progression. The Chronic Care Model (CCM) was used as a framework to understand COPD management and guide the project design. The Stetler Model of Research Utilization serves as an effective model

for individual practitioners to incorporate critical thinking and research findings into practice (Melnyk & Fineout-Overhalt, 2015). The Stetler Model was deemed appropriate because the providers at the internal medicine site practice independently.

Methods

The Institutional Review Board at Arizona State University granted approval for an expedited review in August 2016. The intervention was twofold. First, providers were given a pre-intervention survey with three knowledge questions about the GOLD Guidelines and nine questions about their current practice regarding COPD screening and diagnosis. An identical post-intervention survey was administered four months later at the project's completion.

The second part of the intervention was implementation of the GOLD Guideline screening measures using the COPD Assessment Test (CAT) and spirometry. The setting was a large internal medicine practice in the greater Phoenix area. The electronic medical record identified potential participants who met the inclusion criteria: age 40 years or older, current or former smoker, and a pre-scheduled annual exam between August and December 2016, which would facilitate discussion of screening results.

A graduate student, who was a co-investigator in the project, called participants for screening using the CAT. Because this was not resulting in a high level of participation, the delivery method was changed to use the patient portal system to administer the questionnaire. A score of 10 or higher on the CAT resulted in subsequent screening with spirometry. The CAT results and/or spirometry results were then forwarded to his/her PCP to be discussed at the annual exam.

Results

Sixty-two percent (n=10) of providers completed the pre-intervention survey and 50% (n=8) completed the post-intervention survey. Knowledge scores regarding the CAT score significantly increased based on the Mann Whitney U test (*M* score = 7.90) (*M* score = *11.50, U* = 24.000, p<.05) and had a moderate positive correlation based on the Spearman test (*rho* (16) = .478, p<.05).

Twenty-four percent (n=6) of the 25 participants called at home responded to the CAT. Only one participant scored over 10 and completed spirometry. Over 150 patient portal messages were delivered; however, no responses were received.

Discussion

The results demonstrate similar trends found in the current literature; PCPs have suboptimal adherence to the GOLD Guideline recommendations for COPD screening. Although PCPs report knowing about the guidelines, they also recognize that they do not consistently follow its recommendations for COPD screening using the CAT and spirometry.

Strengths

The project site had a large pool of potential participants that met the inclusion criteria. The site also had all of the necessary equipment to perform the screenings, including the nebulizer and spirometer to perform pre and post-bronchodilation spirometry. Therefore, the project's cost was minimal. Additionally, the CEO and clinical director at the site were supportive, as well as a nurse practitioner who assisted with project implementation and survey administration and collection.

Weaknesses

The project had several weaknesses. First, the graduate student/co-PI of the project was responsible for all of the screening phone calls and patient portal messages, and it was difficult to coordinate schedules with the business hours of the project site. Additionally, the survey distribution methods were not ideal. Many potential participants did not answer the phone when they were called. To circumvent the issues associated with phone call screening, the patient portal system was used to deliver the CAT. Unfortunately, the survey format in the patient portal system was not user friendly to respond to the messages. Future medical practices should utilize this method only if the questionnaire could be easily formatted into their messaging system.

Recommendations

Future research should focus on streamlining a process for CAT questionnaire distribution in a primary care setting. Suggestions for this are to include the CAT during the annual exam for patients at risk for COPD, which would encourage participation by minimizing the office visits required to complete screening. Additional research could evaluate alternate methods of CAT delivery to make it user-friendly for a wide population of people. Telephone screenings are not the most time effective and patient portal messages require a user-friendly interface to encourage responses.

<div align="center">**Conclusion**</div>

The project's purpose was to implement the GOLD Guideline screening recommendations into an internal medicine practice that lacked a standardized process for COPD screening. Although the small number of patient participants was a weakness, the project brought awareness to the providers about the GOLD Guidelines and COPD screening. By better managing COPD, patients will have an improved QOL and providers will decrease the use of resources and costs associated with COPD exacerbations.

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