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Documentation of Smoking History and Adherence to the USPSTF Recommendation for Lung Cancer Screening: A Retrospective Chart Review

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Documentation of Smoking History and Adherence to the USPSTF Recommendation for Lung
Cancer Screening: A Retrospective Chart Review

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Abstract

Purpose: The purpose of this project was to evaluate provider compliance with documentation of smoking history and, if criteria met, referral for lung cancer screening as recommended by the United States Preventive Services Task Force in 2013.

Methods: A retrospective chart review was conducted using an electronic medical record (EMR) at a large, rural community family practice clinic. Patients meeting inclusion criteria of having a smoking history (current or past) of 30 pack years, aged 55 to 80 years, and no history of lung cancer diagnosis were included for randomization. One hundred patients were selected from 300 randomized charts; five were excluded due to not meeting criteria. The number of patients with completed smoking history and appropriate referral for lung cancer screening were calculated. Descriptive statistics were used to analyze the data.

Results: From the electronic medical records reviewed (n=95), only 48.4% (n=46) of patients had pack years completed. Among all patients, lung cancer screening criteria eligibility were met in 44.2% (n=42) of the patients while 51.6% (n=49) were unknown due to incompleteness of their smoking history. Among patients who had documentation of pack years completed (n=46), 42 (91%) were eligible for screening. None of these patients had a computed tomography scan (CT) ordered or completed. Only one (1.1%) patient of the 95 reviewed in this practice was referred for lung cancer screening. This patient did not have smoking history completed nor did this patient follow up to complete the screen.

Conclusion: Without completion of patients' smoking history, including length of smoking and packs per day, proper risk assessment for lung cancer cannot be completed. Risk assessment is key to determining eligibility for referral thus prompting providers to initiate referrals for

screening. Noting a 20% reduction in death due to lung cancer with low dose CT, 19 patients from this sample of 95 could face death related to lung cancer due to lack of screening. Recognizing that only 1.1% (n=1) of the reviewed patients was recommended for screening, it is imperative to educate providers on assessing patients for eligibility, providing face to face counseling, making referrals, and evaluating the effectiveness of the EMR screening tool. Implementing such measures can enhance detection of early stages of lung cancer and improve survival rates.

Keywords: lung cancer, screening, low dose CT scanning

Documentation of Smoking History and Adherence to the USPSTF Recommendation for Lung

Cancer Screening: A Retrospective Chart Review

Introduction

Lung cancer is the second most common cancer and is the leading cause of cancer death in the United States (U.S. Department of Health and Human Services [USDHHS], 2015). Cigarette smoking is linked to 87% of lung cancer deaths in men and 70% of lung cancer deaths in women (National Cancer Institute, 2014). The American Cancer Society (ACA; 2016) reported that in 2016 an estimated 224,390 people will receive the diagnosis of lung cancer in the United States and an estimated 158,080 people will lose their lives from this disease. In Kentucky, approximately 4,960 new cases and 3,570 deaths will result from lung cancer during 2016 (ACA, 2016). Results from the National Lung Screening Trial (NLST) documented 20% fewer lung cancer deaths among participants who underwent three annual low dose CT scanning for early detection of lung cancer versus 6.7% fewer deaths in those who received chest radiography (Humphrey, Deffebach, Pappas, Baumann, Artis, Mitchell, Zakher, Fu, & Slatore, 2013). With early detection of lung cancer and 20% fewer deaths, we could see a reduction of more than 31,600 deaths per year in this country, including 714 fewer in Kentucky.

Background

The US Preventive Services Task Force (USPSTF) released a B recommendation for lung cancer screening in December 2013. This recommendation is for annual lung cancer screening using low dose computed tomography (LDCT) in adults aged 55 to 80. The USPSTF B recommendation states "there is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial" (United States Preventive

Services Task Force [USPSTF], p. 98, 2015). To meet the criteria for LDCT, the patient must have a 30-pack year smoking history (average number of packs smoked per day times the number of years smoked), must either currently smoke or quit smoking in the past 15 years, be asymptomatic of lung cancer and have never had a diagnosis of lung cancer. Annual screening is recommended or until the patient has not smoked for more than 15 years, has limited life expectancy, or is not able or willing to seek curative lung surgery if a cancer diagnosis ensues (USPSTF, 2015).

The recommendations provided by the USPSTF were based on the National Lung Screening Trial results. Along with this agency, the American Cancer Society, American Association for Thoracic Surgery, American College of Chest Physicians, American Society of Clinical Oncology, American Thoracic Society, American Lung Association, and the National Comprehensive Cancer Network Guidelines have all endorsed LDCT scanning for lung cancer screening (Humphrey, et al., 2013). These organizations have varied inclusion criteria, though they are not very different from the USPSTF recommendation.

Low dose CT screening for lung cancer is vital for patients who meet the described criteria per the USPSTF. Prior to the release of the USPSTF lung cancer screening recommendation, Eberth and Sercy (2015) conducted a survey of 82 institutions associated with the Society of Thoracic Radiology. An active screening program was identified in 54 (66%) of the responding surveys but 28% of respondents reported low screening rates. In 2014, a second survey reported active lung cancer screening programs in 62 of 75 (83%) reporting facilities. The survey data concluded that there was an increase in institutions with lung cancer screening programs, an increased number of patients being screened, and improved smoking cessation counseling integrated with the lung cancer-screening programs (Eberth & Sercy, 2015).

Purpose

A necessary antecedent to identifying at risk patients is to assess risk factors associated with lung cancer. With knowledge of risk factors, patients who would benefit from screening can be identified. The current state of screening practices at the clinic of interest in this study is unknown. Effective execution of the USPSTF recommendation requires knowledge of current smoking status and complete smoking history. Therefore, the purpose of this study is to evaluate the current rates of complete smoking history assessment and whether management of at risk patients has occurred based on USPSTF recommendations. In addition to assessing history completion and referral for screening, this study will review individual patient follow-up with lung cancer screening.

Methods

Study Design

This is a descriptive study using a retrospective electronic medical record (EMR) review. A random sample of 300 records was selected from 2,010 medical records of patients during the period of January 1, 2015 through December 31, 2015, who had a diagnosis of current or past smoking and were in the age range of 55 to 80. The sample was chosen from the first 100 of the 300 patient records with a completed smoking status (current or former). The smoking history is not a mandatory field in the EMR and the patient may have an ICD 9 or ICD 10 diagnosis code of smoking or smoking history without this section being complete. The patient population of interest had the following inclusion criteria: identified as a smoker (ICD 9 305.1 or ICD 10 F17.210) or previous smoker (ICD9 V15.82 or ICD 10 Z87.891), 55 to 80 years of age, a 30 pack-year smoking history as a current smoker or quit within the past 15 years, any race, ethnic

background, or gender. The documentation reviewed was from annual exams or follow up exams monitoring for any reason over one year. Exclusion criteria for this study were patients who never smoked, were less than 55 years or older than 80 years of age, had a less than 30 pack year history, symptoms of lung cancer, or a current or past diagnosis of lung cancer . The Institutional Review Board from the University of Kentucky and the Norton Healthcare Office of Research Administration granted approval for this study.

Population

The patient population reviewed was from a family practice office serving suburban and rural patients in Bullitt County, Kentucky. One hundred patient charts were reviewed from a possible 2,010 patients, in retrospect, for this descriptive study. The patient population of interest had the following inclusion criteria: identified as a smoker (ICD 9 305.1 or ICD 10 F17.210) or previous smoker (ICD 9 V15.82 or ICD 10 Z87.891), 55 to 80 years of age, a 30 pack-year smoking history as a current smoker or quit within the past 15 year, any race, ethnic background, or gender. The documentation reviewed was from annual exams or follow up exams monitoring for any reason over one year. Exclusion criteria for this study were patients who never smoked, were less than 55 years or older than 80 years of age, had less than a 30 pack-year history, symptoms of lung cancer, or a current or past diagnosis of lung cancer.

Data Analysis

Patient demographics collected included age, race, gender, and type of insurance. Other variables in the study included whether smoking status was completed in the history section of the EMR, was smoking status complete with the amount smoked per day, years of smoking updated, and pack years calculated. Further variables included total pack year history, whether a referral for LDCT scanning occurred (if criteria met), and if the screening was completed within 6 months.

A Microsoft Excel spreadsheet for data collection was used for this review (see Appendix A). An online random number calculator was used to select 300 records from 2,010; the calculator provided equal chance for any of the numbers 1 through 2,010 to be chosen (Stat Trek, 2016). The first 100 patients with a current or former smoking status were included for data collection, numbered one through 100, and de-identified to protect patient information. Of the 100 patients chosen through randomization, two were excluded due to having a history of lung cancer and three were excluded with a pack year history of less than 30 years. Thus, 95 patient records were selected for this study.

Data analysis was completed using IBM SPSS Statistics Version 22. Screening practices and referral data were analyzed using descriptive statistics including frequencies, means, and percentages (SPSS Version 22, 2013).

Results

The mean age of this sample was 63.96, with a range of 55 to 80, standard deviation of 6.4. Female patients accounted for 51.6% (n=49) of the sample population. Ninety-eight percent of patients were Caucasian with the remaining 2.1% being of other race, no patients in this study were African American. The majority of patients were insured with either Medicare (41%) or private insurance (41.1%), Medicaid patients made up 14.7% of the population, other government insured patients, such as Tricare, were 2.1%, and 1.1% had an unknown insurance status.

Former smokers comprised 59% (n=56) of the study population, 41% (n=39) of patients were current smokers. The amount smoked (packs per day) was complete on 62.1% (n=59) of patients and duration of smoking was completed on 51.6% (n=49). Calculation of pack years

requires both amount smoked and duration of smoking, 48.4% (n=46) of patients had this recorded in their smoking history. Among patients with completed pack year history, 91% (n=42) of patients were deemed eligible for lung cancer screening based on USPSTF criteria.

In the sample of 95 patients, only one (1.1%) received referral for lung cancer screening. The single patient was elderly person, identified as a current smoker with a four packs per day smoking history. The duration of smoking was not completed so in this review he was not included in the subgroup analysis of patients with sufficient documentation to determine eligibility. It was assumed this patient, with the number of packs per day smoked, met criteria. This patient did not complete the screening during the reviewed 6 months from the referral. None of the patients meeting criteria was referred for screening and no patients in this sample received a LDCT for lung cancer screening.

Discussion

The results of this retrospective chart review reveal an opportunity for improvement in completion of patient smoking history and referrals for lung cancer screening in this primary care clinic. The main issues noted in this study are incomplete documentation of smoking history and lack of referral for lung cancer screening for eligible patients. Among patients who had a smoking status documented, less than half had pack years calculated and thus eligibility for LDCT could not be determined. Criteria eligibility was noted in 42 (91%) of the 46 patients with pack year history documented, none of these patients was referred for lung cancer screening. The fact that only one patient from the sample of 95 had a LDCT ordered suggests that this procedure is not being done, with or without the calculation. This missing indicator of pack year history leaves providers unable to determine eligibility for lung cancer screening.

A variety of barriers to lung cancer screening exist, frequently cited ones include lack of awareness of the USPSTF recommendation, patient financial concern and insurance coverage, and potential patient harm with false positive findings. Lewis, et al. (2015) noted in a survey of 218 primary care providers that 53% were not aware of all guideline criteria for lung cancer screening. Concern for patient cost was reported by 86.9% of providers (including cost of follow-up diagnostic testing) and 82.7% were concerned about patient harm with false positive results (Lewis, et al., 2015). Provider time is an additional concern for completing screening. For example, a study was conducted with primary care providers in New Mexico regarding attitudes and beliefs for lung cancer screening (Hoffman, et al., 2015). Through a semi-structured interview, the researchers found that while most primary care providers felt lung cancer screening was good practice, they were concerned that time, with the already limited time with patients, adding screening with patient counseling may stress overwhelmed providers (Hoffman, et al., 2015). The interviews conducted by Hoffman, et al. (2015) also found lack of knowledge of the recommendation and patient financial concerns were additional barriers identified by primary care providers.

Another important barrier to consider in LDCT recommendations by providers is the low compliance with complete patient smoking history. Medical assistants (MA) are tasked with updating the patient's history, including smoking. Providers should conduct a review of history updates and, if the patient meets age and pack year history criteria, should complete a checklist to determine further eligibility. If either of these steps are omitted, the patient may miss the opportunity for screening. Identifying opportunities with a focus group of MAs and primary care providers is needed for process improvement, identification of barriers and facilitators, and increasing the number of patients screened for lung cancer.

Since the inception of this retrospective review, the healthcare organization involved in this study educated providers and staff in the primary care setting on the subject of lung cancer screening. The organization implemented a best practice advisory (BPA) in the health maintenance section of the electronic medical record early in 2016. The BPA prompts providers to determine a patient's eligibility for screening by reviewing the smoking history. A question box opens when an order is placed for a lung cancer screening CT to assist with determining further eligibility based on age, symptoms or history of lung cancer, and if face-to-face counseling and shared decision making occurred. Answering yes to these questions helps determine coverage eligibility, thus avoiding costs to those who do not meet screening criteria. In addition, a nurse navigator is available to assist patients through the process of screening completion and the need for further testing. The nurse navigator provides individual support to patients, guiding them through all portions of the process.

The USPSF issued a clinical guideline based on lung cancer screening recommendations in 2014. The guidelines include considerations for integrating lung cancer screening into practice. The guidelines outline proper screening for eligibility and screening intervals. Implementation of smoking cessation counseling should be included as part of the screening program in addition to receiving counseling prior to referral. Shared decision making between providers and patients allows patient questions to be answered. Continued discussion about the risk of false-positive results, and need for follow-up testing for positive results should also be included in the program. Standardized screening should be based on the recommendations of the USPSTF and follow up protocols should be established and clear (Moyer, 2014).

Limitations

Although this study provided valuable information regarding the need to improve completion of smoking history and the number of referrals, some limitations were noted. The first limitation of this study is lack of racial diversity. The population was primarily Caucasian with no African American patients identified. This likely did not affect the statistical outcome, as the intent was to identify provider compliance with screening and referral, and not to identify racial disparities in screening practices. An additional limitation is that it is not known if lung cancer screening occurred at a facility other than where this retrospective review was performed. As such, it is an assumption, at best, that those who were eligible for lung cancer screening did not receive any screening.

Recommendations and Conclusion

This study found low documentation of smoking history and referral for lung cancer screening. Provider education about lung cancer screening occurred and required health maintenance for lung cancer screening was added to the EMR after this retrospective review. A comparison study is recommended to determine improvement in practice since the lung cancer screening education was implemented in early 2016. A provider focus group is also recommended to determine satisfaction of the EMR screening tool, identify efficiency, facilitators, and barriers to use. A final recommendation is to survey patients for their satisfaction in the process. Questions such as did they complete the screen, if 'no', why not (what were the barriers); if 'yes', were there any concerns with the process (timing, location, out of pocket expenses for uninsured). Early detection of lung cancer is essential in treatment and reduction of lung cancer related deaths by up to 20%. Providers should ensure complete intake of smoking history to serve patients who qualify for lung cancer screening. With new systems in

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place in the EMR to facilitate screening, an increase in complete smoking history and lung

cancer screening should occur.

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http://stattrek.com/statistics/random-number-generator.aspx

Appendix A

Table A1

Data Collection Tool

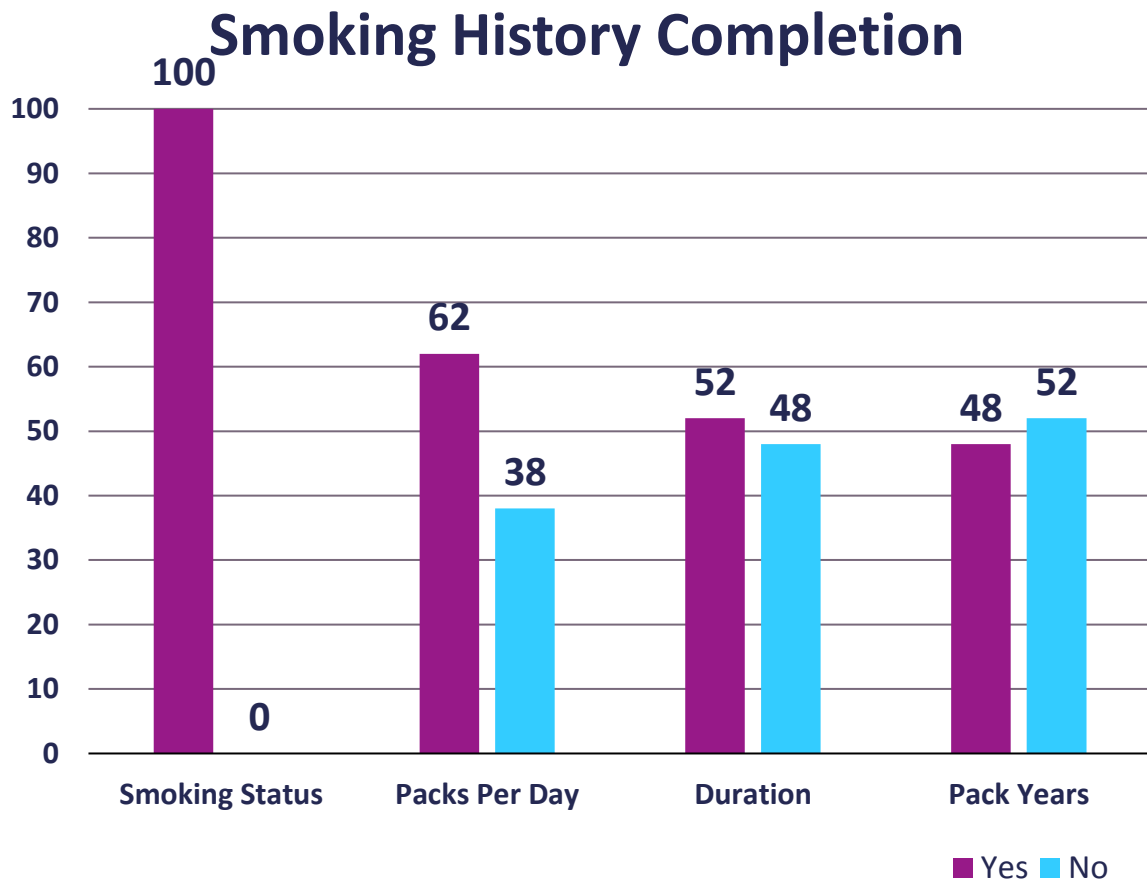| Smoking status complete with amount smoked	Smoking status complete with duration of smoking	Pack year history calculated	Total Pack Years	Referral for LDCT	Screen Criteria Met	Screen completed	Screen completed within 6 months

Appendix B

Smoking History Completion

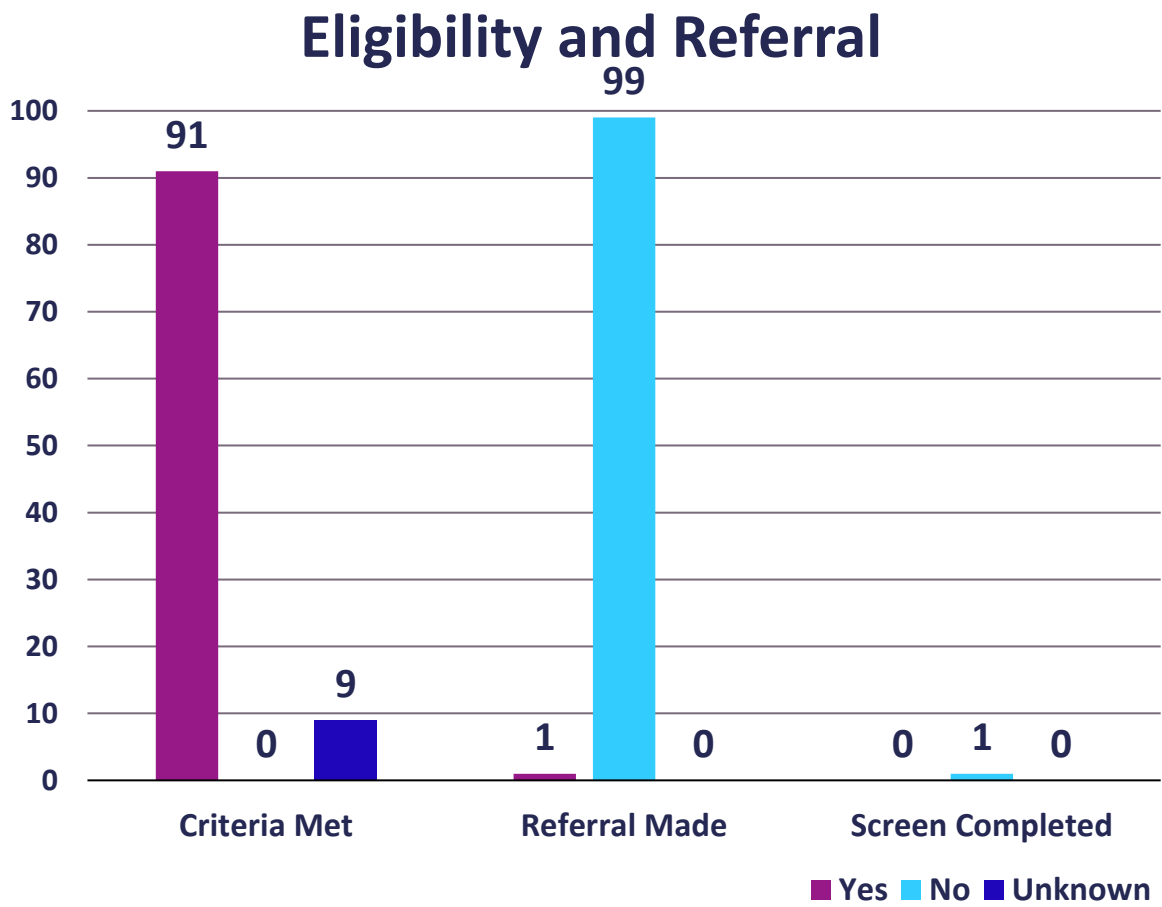*Figure B1*. Documentation of Smoking History

Eligibility and Referral

Figure C1. Eligibility and Referral for Lung Cancer Screening