

Increasing Lung Cancer Screening in First Hand Smokers: An Effort to Aid in Early Detection of Lung Cancer

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Introduction

Lung cancer is the second most common cancer and the leading cause of cancer death in the U.S. The most important risk factor for lung cancer is smoking, estimated to account for about 90% of all lung cancer cases with a relative risk of lung cancer approximately 20-fold higher in smokers than in non-smokers. Lung cancer has a generally poor prognosis, with an overall 5-year survival rate of 20.5%. However, early stage lung cancer has a better prognosis and more applicable treatment options. The USPSTF recently expanded lung cancer screening criteria to include adults aged 50 - 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years. Specifically, USPSTF recommends annual screening for this group with low dose computed tomography (LDCT) (Grade B recommendation). Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery. The recent change in guidelines and realization of the underutilization of lung cancer screening prompted us to review the number of orders placed for LDCT chest vs the number of orders that did actually get carried out. Our EHR review included the number of active smokers documented from 11/1/2020 to 10/31/2021 and the numbers of LDCT chest orders placed during that period. This date was then compared to the LDCT chest orders that were performed. We were surprised to find out that during the studied period, only 10% of the active smokers received an order for lung cancer screening, and out of this only 19% of the orders were completed. We developed an informative flyer in English and Spanish, with a plan to educate our patients, co-residents and medical assistants regarding the need and criteria for annual lung cancer screening and how to properly document a patient's smoking history to aid in the identification of qualifying individuals. Through our intervention, we hope to increase the rate of orders placed by 20% in the next five months and by 50% in the next 12 months. Our data review was limited due to lack of accurate quantification of smoking history, therefore assumption was made that all smokers during this period qualified for LDCT chest. We hope to correct this by the time of a five month analysis by educating our medical assistants to correctly document smoking history into pack years during intake for easier identification. Our long term goal is to aid in the early detection of lung cancer by screening high risk individuals in order to reduce lung cancer mortality.

Methods

Quantitative data gathering was conducted from NextGen EMR system in a community based FQHC in central NJ.

We were able to obtain the active number of active smokers and the number of CT scans ordered. Specifically, our EHR review included the number of active smokers documented from 11/1/2020 to 10/31/2021 and the numbers of LDCT chest orders placed during that period.

Population	Recommendation	Grade
Adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years	The USPSTF recommends annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.	B

Background

In 2021, the projected number of estimated new cases of lung cancer was 235,000, with an estimated of 131,880 deaths based on prior years. While the annual rates of new lung cancers has been declining over the past decade, a there is a higher incidence of new cancer cases reported yearly. In 2017, 225,412 new lung and bronchus cancer cases were reported. The USPSTF recommends a yearly screening low dose CT for people between 50 and 80 years of age who have smoked at least 20 pack years over their lifetime and either still smoke or have smoked within the past 15 years. A pack year is defined as a person smoking one pack of cigarettes per day for 1 year. This is a recent change; the 2021 screening recommendations reduced the minimum age from 55 to 50 years of age.

Unfortunately, underserved populations, including Hispanic and LatinX populations our clinic serves, have experienced barriers to care and early screening for lung cancer. 59% of Hispanic patients are diagnosed at a later stage, compared to 52% of non-Hispanic white patients. A study from 2019 reviewed awareness of lung cancer screening, with 34.1% of LatinX individuals having awareness of lung cancer screening with 48.1% of non-LatinX population. However, when informed, 90.7% of the LatinX population wanted screening. Based on this data, the LatinX community would likely benefit from increased education by primary care providers regarding low dose screening CTs.

Also of note, a review of 223 publications demonstrated a reduction in lung cancer mortality for annual low dose CT screening compared to chest X-rays. The number needed to screen was 323 to prevent one lung cancer death over 6.5 years. The review also noted that the low dose CT scans had a sensitivity of over 80% with a specificity over 75%. The National Lung Screening Trial, a large randomized study which led to the USPSTF lung cancer screening guideline, showed that screening with a LDCTs reduced lung cancer mortality in high risk people by up to 20%. Much of the mortality benefit is derived from detection of lung cancer at earlier stages. However, a 2017 study by the CDC reported that in their review of ten states, only one in eight people (12.5%) who were eligible for screening per the old USPSTF criteria of ages 55-80 years with a 30 pack year history of greater received a screening CT.

Our study is based at the Freehold Family Health Center, a Federally Qualified Health Center whose main demographic is an underserved population.

LUNG CANCER SCREENING

THE AMERICAN CANCER SOCIETY'S ESTIMATES FOR LUNG CANCER IN THE UNITED STATES FOR 2021 ARE:

- ABOUT 235,760 NEW CASES OF LUNG CANCER (119,000 IN MEN AND 116,660 IN WOMEN)
- ABOUT 131,880 DEATHS FROM LUNG CANCER (69,410 IN MEN AND 62,470 IN WOMEN)

LOW-DOSE COMPUTED TOMOGRAPHY (LDCT) IS RECOMMENDED IN ADULTS AGED 50 TO 80 YEARS WHO:

- HAVE A 20 PACK-YEAR SMOKING HISTORY AND CURRENTLY SMOKE OR HAVE QUIT WITHIN THE PAST 15 YEARS

LDCT SCREENING REDUCES LUNG CANCER MORTALITY AND ALL-CAUSE MORTALITY COMPARED TO CHEST X-RAY SCREENING IN HIGH-RISK ADULTS

LDCT SCREENING TEST GOALS:

- FIND CANCER BEFORE SYMPTOMS OCCUR
- FIND CANCER AT AN EARLY STAGE WHEN IT IS EASY TO TREAT AND CURE
- REDUCE CHANCES OF DYING FROM CANCER

TOO LATE TO STOP SMOKING?

- STOPPING SMOKING CAN IMPROVE CANCER OUTCOMES AT ANY STAGE OF DISEASE
- STOPPING SMOKING MAY HELP YOU HEAL BETTER IF YOU NEED SURGERY, CUT DOWN ON SIDE EFFECTS FROM SYSTEMIC THERAPIES LIKE CHEMOTHERAPY AND RADIATION, AND ALLOW

PATIENTS SHOULD NOTIFY HEALTHCARE PROVIDER IF:

- A COUGH THAT GETS WORSE OR DOES NOT GO AWAY
- INCREASING SHORTNESS OF BREATH
- COUGHING UP BLOOD
- CHEST PAIN
- HOARSE VOICE
- FATIGUE, UNINTENDED WEIGHT LOSS, NIGHT SWEATS

This is a sample of a flyer that will be used to promote lung cancer screening at the FQHC in English and Spanish.

Detección De Cáncer De Pulmones

Las estimaciones de la American Cancer Society para el cáncer de pulmón en los Estados Unidos para 2021 son:

- Unos 235,760 nuevos casos de cáncer de pulmón (119,000 en hombres y 116,660 en mujeres)
- Unas 131,880 muertes por cáncer de pulmón (69,410 en hombres y 62,470 en mujeres)

Se recomienda la tomografía computarizada de baja dosis en adultos de 50 a 80 años que:

- Tiene un historial de fumar de 20 paquetes-año y actualmente fuma o ha dejado de fumar en los últimos 15 años

La tomografía computarizada de baja dosis reduce la mortalidad por cáncer de pulmón y la mortalidad por todas las causas en comparación con los resultados de detección de radiografías de tórax en adultos de alto riesgo

Objetivos de la prueba de detección de TC de dosis baja:

- Encontrar los síntomas del cáncer antes de que ocurran
- Encontrar el cáncer en una etapa temprana cuando es fácil de tratar y curar
- Reducir las posibilidades de morir de cáncer

¿Demasiado tarde para dejar de fumar?

- Dejar de fumar puede mejorar los resultados del cáncer en cualquier etapa de la enfermedad
- Dejar de fumar puede ayudarlo a sanar mejor si necesita cirugía, y reducir los efectos secundarios de las terapias sistémicas como la quimioterapia y la radiación

Los pacientes deben notificar a un proveedor de atención médica si:

- Tiene una tos que empeora o no desaparece
- Tiene aumento de la dificultad para respirar
- Tosiendo sangre
- Tiene dolor de pecho
- Tiene una voz ronca
- Tiene fatiga, pérdida de peso involuntaria, sudores nocturnos



Cessation of Smoking

- Can reduce the risk of developing lung cancer by up to 50% after 5–10 years
- After 15–20 years, the risk of lung cancer is the same as that of never smokers
- Smoking cessation is also associated with other substantial health benefits, including a reduced risk of coronary heart disease, pulmonary disease, infections, and hip fracture
- Smoking cessation is associated with a mortality benefit for individuals of all ages. Stopping smoking before age 40 is associated with a larger decline in premature mortality than stopping at a later age.
- Since tobacco use is both a learned behavior and a physical addiction to nicotine for the majority of those who smoke, the most effective way to promote smoking cessation is to combine both behavioral and pharmacologic therapies, which have a higher quit rate than either therapy alone

Types of Lung Cancer

- Non Small Cell Lung Cancer
- Squamous Cell Carcinoma, location: central, strong association with smoking
 - Large Cell Carcinoma, location: peripheral, strong association with smoking
 - Adenocarcinoma, location: peripheral, more common in women and non-smokers
- Lung Neuroendocrine Tumor
- Small Cell Lung Cancer, location: central, strong association with smoking

Results

We analyzed the data to quantify the percentage of qualified patients who were screened for lung cancer. After EMR review, we found out that only 26 low dose CT chests were ordered in the time period between 11/1/2020-10/31/2021 at our practice.

We were surprised to find out that during this studied period, only 10% of the active smokers received an order for lung cancer screening, and out of this only 19% of the orders were completed.

Future considerations:

- Measuring the number of lung cancer screening tests ordered after distribution of the flyer
- Consider obtaining quantitative data regarding our dominant Hispanic population

References

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